St. Johns River
Water Management District
Ann B. Shortelle, Ph.D., Executive Director

525 Community College Parkway S.E. • Palm Bay, FL 32909 • 321-984-4940
On the internet at www.sjrwmd.com.

DATE: August 20, 2021

TO: Prospective Respondents

FROM: Amy Lucey, Procurement Specialist

SUBJECT: Addendum #1 to Request for Qualifications # 33042, Field Evaluation of In-Lake Treatments to Reduce Water Column Phosphorus in Lake Jesup

As a result of inquiries, the following clarifications/changes are provided for your information. Please make all appropriate changes to your proposal documents. Note: changes are reflected with original language shown with strike-through and new language is underlined.

Q1. My question is – Can you provide a report or any information regarding the results of the Bench-scale assessment? For example, what chemicals or amendments were evaluated and what was selected to carry forward into the Phase 2 effort?

A1: Please find attached a copy of the Wood, Inc. 2021 "Lake Jesup: In-Lake Phosphorus Reduction Phosphorus Technology Update and Evaluations (Task 1-5) Final Report.

Q2: Is a copy of the Phase I final report for the *In-Lake Treatments to Reduce Water Column Phosphorus in Lake Jesup* project available for review?

A2: Please see attached report.

Attachments:
Wood, Inc. 2021 "Lake Jesup: In-Lake Phosphorus Reduction Phosphorus Technology Update and Evaluations (Task 1-5) Final Report.

NOTE: The Proposal Due Date **remains** 2:00 p.m., **Tuesday, September 7, 2021.**

Please acknowledge receipt of this Addendum on the Submittal FORM provided in the proposal package.

If you have any questions, please e-mail me at alucey@sjrwmd.com.

Lake Jesup: In-Lake Phosphorus Reduction Phosphorus Technology Update and Evaluation (Tasks 1-5) Final Report

Prepared for

St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177

Prepared by

Wood Environment & Infrastructure Solutions, Inc.
1101 Channelside Drive, Suite 200
Tampa, FL 33602

Wood Project No. 600698

February 2021

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 BACKGROUND & PURPOSE

Lake Jesup is a shallow, impaired water body in Central Florida ranging in size from 4,047 to 6,475 hectares and directly connected with the St. Johns River (**Figure A.1** in **Appendix A**). The Florida Department of Environmental Protection (FDEP) developed a Total Maximum Daily Load (TMDL) for the Lake in 2006, which established a load-based reduction for both total nitrogen (TN) and total phosphorus (TP) and set target TP and TN concentrations at 0.096 mg/L and 1.27 mg/L, respectively. A Basin Management Action Plan (BMAP) for Lake Jesup was adopted in 2010 which includes load reduction allocations for stakeholders and documents credits for projects implemented in support of the TMDL. As a result of research undertaken to support a BMAP revision in 2019, both FDEP and the District recognize that sediment P flux within Lake Jesup is likely a significant factor in ongoing water quality impairments. Both agencies have identified the reduction of water column TP as a key step in the timely achievement of TMDL goals for Lake Jesup and are actively pursuing treatment technologies to address in-lake phosphorus loading.

The St. Johns River Water Management District (District) previously issued two Requests for Information (RFI) titled "Lake Jesup: In-Lake Phosphorus Reduction Advanced Technology Review". Responses to the first RFI (original) were received by the District in September 2016 and responses to the second RFI (update) were received by the District in June 2020. Following the original RFI, the District held a two-day public workshop in March 2017, which provided a forum for each vendor to attend and provide specific details related to their responses. Responses to the first RFI and supporting information submitted during and following the public workshops were evaluated by CDM Smith as part of a technical memorandum titled "Lake Jesup In-Lake Phosphorus Reduction Review of Treatment Options", submitted to the District in 2017. CDM Smith and the District prepared a ranking system for evaluating the various technologies which considered performance, economic, and operational criteria. The evaluation criteria framework that was developed by CDM Smith is provided in **Table A.1** (**Appendix A**). In total, 15 responses were reviewed by CDM but only 9 were recommended for additional evaluation.

Seven different companies responded to the second RFI, offering a variety of treatment technologies to achieve the District's stated removal target of 1 to 2.3 MT total phosphorus (TP) per year (2,205 to 5,071 lbs/yr) for Lake Jesup. Only two of the seven vendors responding to the second RFI also provided a submittal for the first RFI. Wood was tasked to provide a review of relevant literature concerning sediment and water quality data as well as review the original and updated RFI submittals. Following the review, Wood performed a laboratory bench-scale sediment flux analyses of three treatment alternatives including Phoslock, ViroPhos, and Nclear TPX to document the reduction of nutrient flux and internal loading from Lake Jesup.

This report builds on the previously submitted technical summaries that covered the first three tasks of the Lake Jesup: In-Lake Phosphorus Reduction Phosphorus Technology Update and Evaluation: Data/Literature Review and Phosphorus Treatment Technology Review (**Task 1**), Sediment Flux Reduction Bench Study: Sediment Core Collection (**Task 2**), and Flux Lab Operation and Assessments (**Task 3**). As part of **Task 1**, literature pertaining to sediment and water quality conditions was reviewed alongside the new and previous RFI submittals. In **Task 2**, physical and

chemical sediment characterization was performed to provide a baseline of information regarding sediment quality within Lake Jesup. Additionally, phosphorus fractionation sampling and analyses were conducted to estimate the mass of bioavailable phosphorus (BAP) and recalcitrant phosphorus present in the uppermost layer of the sediments. Results from **Tasks 1-2** were used to design a sediment sampling plan and conduct sediment flux analysis using select treatment technologies in **Task 3**. Data from **Task 3** were analyzed and further used to compare and rank treatment performance and cost efficiencies of each treatment technology in **Task 4**. This report documents a culmination of efforts completed as part of **Tasks 1-5.**

2.0 DATA/LITERATURE REVIEW AND PHOSPHORUS TREATMENT TECHNOLOGY REVIEW

In **Task 1**, Wood reviewed literature pertaining to sediment and water quality conditions, the new and previous RFI submittals, and provided an update to the RFIs by scoring and ranking all technologies using a method that was used by CDM in 2016/2017.

2.1. Literature Review Summary

The District and Wood compiled previous studies and background information about sediment and water quality in Lake Jesup, including technical reports, academic theses, and journal articles. A master inventory of all reviewed materials can be found in **Table A.5** (**Appendix A**). The information reviewed in **Task 1** was used to develop a preliminary sediment screening plan to provide recommendations for the **Task 2** detailed sediment flux reduction bench study. A summary of relevant literature is provided below.

- Cable et al. (1997). Sediment and Nutrient Deposition in Lake Jesup, Florida (USA). Report prepared for St. Johns River Water Management District, Contract No. 95K204.
    - This study provided a paleolimnological overview of Lake Jesup.
    - Organic matter content, total phosphorus, non-apatite inorganic phosphorus, and total nitrogen accumulation have increased within the central basin and northern narrow channel since the early 1900s.
    - Lake Jesup was found to have uneven sediment distribution and lake sediments were generally comprised of clays, carbonates, and black-brown organic material.
    - The western embayment of Lake Jesup was shown to mix poorly with the central and northern regions of the lake and was shown to contain the highest accumulation of organic matter and nutrients throughout the 1950s to mid-1980s.
    - Seventy-six percent of TP storage within the lake sediments was deposited prior to the 1900s.
    - Diatom evidence suggests that lake Jesup has been eutrophic since the early 1900s, with the lake becoming hypereutrophic in the 1950s and 1960s as expected with increased population and nutrient loading from wastewater effluent discharge.

- Kenney et al. (2002). Sediment Records of Phosphorus-Driven Shifts to Phytoplankton Dominance in Shallow Florida Lakes. *Journal of Paleolimnology*, 367-377.

- This study examined the influence of phosphorus load and water column P concentration on the primary producer community structure (PPCS) on four shallow Florida lakes including Lake Jesup.
- PPCS can shift between phytoplankton and macrophyte dominance with intermediate P loading, but phytoplankton will dominate at the exceedance of a P loading threshold
- Results demonstrated that as P loading increased, phytoplankton contribution to PPCS increased within all four of the analyzed lake sediments, including Jesup.

- Brandt-Williams & Godfrey (n.d.). Phosphorus Content in Lake Jesup's Flocculant Sediment Layer.
  - Unreviewed draft study on the estimation of volume and mass of TP in the soft sediment layer of Lake Jesup.
  - The study used soft flocculant sediment thickness core data generated in the Cable et al. 1997 study alongside GIS analysis techniques.
  - Total soft flocculant volume is estimated to be approximately 60,000 m^3 with 106 metric tons (MT) of TP. The TP mass in the sediment was an order of magnitude higher than the TP mass measured in the water column, and soft flocculent volume and sediment TP mass were highly correlated (**Figures A.2** and **A.3** in **Appendix A**).
  - The southwest shore near the outfall of the three creeks (Howell, Gee, and Soldier) presented the highest levels of both flocculent sediment and TP.
  - The Soldier Creek area contains the highest non-apatite inorganic phosphorus mass.
  - Limited soft sediment was present surrounding Bird Island.

- Nielsen, Shauna (2011). Sediment Dynamics of a Shallow Hypereutrophic Lake: Lake Jesup, Florida, USA.
  - This study examined the nutrient budget of Lake Jesup to further examine sediment resuspension. Results included the following:
    - Sediment within Lake Jesup was found to be constantly resuspending within the water column.
    - The lake level was found to affect sediment resuspension and total suspended solids (TSS).
    - Water column TP and TN concentrations showed a seasonal pattern, with higher TP and TN concentrations in the summer months.
    - TP concentrations did not reflect interactions between the water and floc sediment layer when correlations between the water column TP and floc TP were analyzed. A possible lag between the suspension of particles and the release of nutrients from the particles into the water column could be responsible.

- CDM Smith (2017). Lake Jesup In-Lake Phosphorus Reduction - Review of Treatment Options. Report prepared for St. Johns River Water Management District.
    - This report provides a review of phosphorus reduction methods and their cost-effectiveness to remove water column P or permanently sequester sediment P in Lake Jesup and included a literature review comprised of roughly three hundred articles and vendor treatment technology summaries. The treatment technology evaluation and ratings will be further discussed in the sections below.

2.2. Summary of 2017 Technology Ranking and Review by CDM Smith

CDM Smith provided an evaluation of nine technologies submitted as part of the District's 2016 RFI and applied the ranking system shown in **Table A.1** (**Appendix A**) to each technology submitted. CDM Smith also ranked 3 additional standard "reference" technologies provided by the District which included alum, treatment wetlands, and dredging. Alum ranked third, treatment wetlands ranked fifth, and dredging ranked ninth out of twelve total technologies evaluated. It was noted in CDM Smith's report that all information utilized in preparing the vendor ranking was provided solely by the vendor and was not independently verified. Additional information provided by the vendors in a series of public technical meetings was also included in CDM Smith's review.

The results of CDM Smith's evaluation are provided in **Table A.2** (**Appendix A**). Scores for each technology evaluated ranged from 3.9 to 7.1 out of 10. Most technologies included at least one type of chemical treatment either added directly or by contact through fixed media. The top four technologies were similar in a score ranging from 6.5 to 7.1. Three of these four top-ranked technologies addressed P flux via in-situ sequestration (i.e. chemical inactivation) and included alum along with two additional chemical application technologies referred to as Phoslock and ViroPhos. All three in-situ technologies utilized different chemistries to bind and prevent P release from the sediment. ViroPhos was reportedly capable of flocculating suspended particles and had lower O&M costs than alum which resulted in a slightly higher score than both alum and Phoslock. Alum and Phoslock have been used throughout the world for P sequestration while ViroPhos had only been utilized in industrial applications at the time of the evaluation. Phoslock received the lowest of the top four scores because it is not a flocculant and does not directly address water column P.

Cavitation technology (Ferthaul) scored second in the ranking and did not require the use of chemical additives. Unlike alum and Phoslock, cavitation received the maximum point values for several heavily weighted factors including pounds of P removed, cost per pound of P removed, and demonstrated potential for recovered costs. CDM Smith noted that at least part of the P mass removal attributed with cavitation technology was associated with concurrent removal of sediments which tend to be higher in P concentration than the water column, resulting in much higher mass removals.

Three additional vendors provided off-line treatment systems requiring a combination of chemical application, media or biological P removal, and mechanical filtration. These technologies received moderate scores between 5.2 and 6.1 and ranked below the standard treatment wetland

technology score of 6.2. Limited details are available for the technology provided by Gator Aquatic, but this vendor proposed a combination of processes involving solids separation and dewatering. The technology proposed by Gator Aquatic scored higher than P-Kill and ABNR because it received maximum points for water quality improvement. P-Kill technology involved media filtration with pre-treatment and the spent media could be land applied for beneficial use.

Standard dredging technology scored 5.2 out of 10 points and was followed closely by the technology proposed by Aquafiber which scored a 5.0. Aquafiber received relatively low scores for total lbs of P removed and cost/lb of P removed, which reduced its overall rank significantly. Aquafiber uses dissolved air flotation and a proprietary filtration process to produce a semi-dry product that could have subsequent uses in a variety of industries.

The final two technologies received a total point score that was considerably lower than the other technologies. The algal turf scrubber proposed by Hydomentia has shown promise in other small-scale applications with high dissolved P. However, relatively low P mass reduction and high capital, operation and management (O&M) costs, and land requirement significantly reduced the total score to 4.1. Electrocoagulation technology had similar P removal capabilities as other technologies but received a "0" score for cost/lb of P removed capital costs and O&M costs for a total score of 3.9.

2.3. Summary of 2020 RFI Technology Ranking and Review by Wood

The District received eight responses to the second "update" RFI in June 2020. However, one of the submittals was not complete, so the submittal was not provided to Wood to review as part of this task. The seven respondents that submitted complete submittals in 2020 that were reviewed by Wood are listed below:

1) AquaFiber Technologies Corporation (ID VU01)
2) Ferrate Solutions, Inc. (ID VU02)
3) Lapin Environmental, Inc. (ID VU03)
4) MicroBio Engineering, Inc. (ID VU04)
5) Nclear, Inc. (ID VU05)
6) Solitude Lake Management (ID VU06)
7) Water Warriors, Inc. (ID VU07)

Five of the seven respondents provided the minimum information and similar applications to qualify for ranking. The two vendors that were disqualified due to a lack of sufficient information were Lapin Environmental, Inc. and Water Warriors, Inc. The five qualifying vendors and the type of technology submitted are shown along with the standard and previous technologies provided by the District in **Table A.3** (**Appendix A**) for a total of 15 technologies that were ranked for comparison. Scores for individual criteria were calculated using the criteria developed by CDM Smith in 2017 as shown in **Table A.1** (**Appendix A**). Lapin Environmental and AquaFiber were the only two vendors who provided submittals for both the 2020 RFI update and the original RFI in 2016. **Table A.4** (**Appendix A**) provides the updated combined scores and the associated re-ranking of all qualifying submittals provided for the original 2016 RFI and the updated 2020 RFI.

AquaFiber Technologies Corporation submitted a response similar to the response provided in 2016, which included an overview of their AquaLutions technology that has previously been demonstrated on Lake Jesup. Some changes were noted in total P removal and capital costs because AquaFiber anticipates removing 2.4 MT. AquaFiber ranked 13th in the updated ranking.

The response submitted by Ferrate Solutions, Inc. was deemed "confidential", thus a summary of the technology cannot be provided. However, rankings were based on Wood's project manager's sole assessment, which was the only authorized individual permitted to evaluate this submittal, outside of the District's project manager. Wood's project manager provided a technical assessment of the submittal, and based on the information provided, derived the lbs/yr of P and N that were estimated to be removed. Also, several scoring categories were unclear, such as capital costs, O&M costs, and whether pre-treatment or if post-aeration are necessary to implement the technology. Therefore, the technology was ranked ninth in the updated ranking table.

The oxygen injection technology submittal provided by Lapin Environmental was not included in the initial ranking by CDM Smith because the technology had not been demonstrated in any location other than a wash-down pond. Similar information was provided by Lapin Environmental in response to the second RFI, although a second case study was included for nitrate reduction within a wastewater reject pond. The vendor did not indicate how stimulating nitrification would benefit P removal or how settled particulates would be removed or if they were intended to remain in the sediment or how the material would respond once the concentrated oxygen source was removed. Wood concurs with CDM Smith that the technology still lacks sufficient field verification to provide an assessment of functionality within a waterbody with relatively low nutrient concentration compared to the industrial-type facilities provided. This technology was not ranked and is not recommended for further evaluation at this point until additional information is provided.

The response submitted by MicroBio Engineering discussed an improvement of algal turf scrubber (ATS) technology previously submitted by Hydromentia. Similar to the ATS, the Attached Algae Flow-Way primarily removes water column dissolved TP so it is unclear if the technology would be effective in a flow-through system on Lake Jesup since most water column P would be assimilated within suspended algal cells. MicroBio Engineering indicates a $45/lb TP removal cost but also indicates that insufficient information was available to evaluate Lake Jesup water quality. Further clarification is necessary to verify the cost information provided by MicroBio Engineering. MicroBio ranked 10th out of 14 technologies in the updated ranking.

Nclear, Inc. submitted a technology known as TPX that would provide in-situ sequestration of P within the sediments to address nutrient flux. The product is a synthetic calcium silicate material that works by "seeding" the sediment with calcium silicate allowing for the formation of octacalcium phosphate. Nclear provided significant details regarding the principles and effectiveness of the technology and included several Florida-based case studies. In addition, Nclear provided modeling results from a simulated Lake Jesup treatment utilizing results obtained as part of a prior Lake Jesup seepage study. Nclear would apply a pelletized form of TPX to the lake bottom that is reportedly capable of sequestering 95% of the sediment P for a cost of approximately $55/lb TP. TPX does not address water column TP. This technology ranked first in

the updated ranking table and scored slightly higher but comparable to other in-situ P sequestration technologies that were evaluated in the original RFI.

The response provided by Solitude involves the use of alum and aluminum-based products which have already been vetted by the District as a reference technology. Alum and the Solitude submittal were ranked together, and both received a score of 6.7 and ranked fourth in the updated ranking table.

Water Warriors, Inc. submitted a media-based technology known as the Water Warrior's Poseidon Pellet (WWPP). This technology is reportedly used as a polishing step for nutrient reduction in the wastewater treatment industry. Although it specifically indicated a need for pre-filtration, the submittal lacked any design detail or supporting cost information, including how water would be pumped through the media and what kind of housing would be required for the media. The only cost information provided was for the media itself based on removal costs when the media was included in an effluent polishing step. Without accompanying particulate material removal, the submittal could not be evaluated directly with the other technologies and was therefore not included in the ranking list.

2.4. Summary of Task 1 Data/Literature Review and Phosphorus Treatment Technology Review

The response submitted by Nclear, which includes TPX as an in-situ chemical additive for P sequestration, appears to have similar performance characteristics as those reported for ViroPhos and Phoslock. ViroPhos and Phoslock were recommended for additional evaluation by CDM Smith following the original RFI. Based on the results and recommendations from CDM Smith and Wood's updated assessment, Wood recommended further evaluation of ViroPhos, Phoslock, and Nclear as part of **Task 2** and **3** Sediment Flux Reduction Bench Study to assess the performance and cost-effectiveness of these three products, prior to any larger field-scale applications and/or assessments. It is also notable that Solitude appears to be capable of large-scale alum operations which would be important for any alum projects considered on Lake Jesup.

A review of relevant sediment and water quality literature suggested that Lake Jesup generally contains the highest concentrations of open water TP and sediment TP within the northern, southwestern, and eastern portions of the lake. Wood recommended that sediment cores be retrieved from the southwestern and central/eastern basins for the screening level assessment for initial P fractionation evaluation as part of the sediment flux reduction bench study.

3.0 SEDIMENT CHARACTERIZATION

3.1. Methodology for Phosphorus Fractionation and Sediment Characterization

Three thirty-centimeter (30 cm) intact sediment cores were collected for sediment characterization, sequential phosphorus extraction, and fractionation on August 6th, 2020, from locations within Lake Jesup (see map in **Appendix B)**. Sediment station locations were chosen based on the review of sediment (bathymetric and chemical) and water quality data noted in **Task**

1. Preliminary data were screened to select stations in areas shown to contain higher recorded levels of sediment TP and soft flocculent sediments. Sediment characterization was performed on the top 10 cm of each core to measure % dry weight, % moisture, bulk density, total organic carbon, iron, calcium, aluminum, and ammonia. At the time of sediment core collection, water quality depth profiles were collected at the top, middle, and bottom of the water column to measure water temperature, dissolved oxygen (DO), pH, specific conductivity, and turbidity. Additionally, qualitative characteristics of the sediment cores were recorded at the time of coring.

Sequential phosphorus extraction procedures used to calculate the mass of potentially bioavailable P in the upper 10 cm of sediments were modified by Meis et al. (2012) and based on methods developed earlier by Hupfer et al. (1995) and Psenner et al. (1988). Operational sediment phosphorus availability is defined from most available to most strongly bound, in order of labile, reductant-soluble, metal-oxide, organic, and apatite, and residual.

The P fractionation extraction sequence includes the following steps:

1. Extraction with 1M NH_4Cl to determine loosely adsorbed and porewater P ('labile P').
2. Extraction with 0.11 M $NaHCO_3$/0.11 M $Na_2S_2O_4$ to determine P mainly bound to Fe-hydroxides or manganese (Mn) compounds ('reductant-soluble P').

3a. Extraction in 1 M NaOH to mobilize P, which is mainly exchangeable against hydroxide ions determined as Soluble Reactive Phosphorus ('metal-oxide adsorbed P').

3b. Organic bound P in the same fraction quantified by subtraction NaOH-SRP from Na-OH-TSP ('organic P').

4. Extraction with 0.5 M HCl to determine P bound to carbonates and apatite P ('apatite bound P').
5. Digestion with 30% (v/v) H2SO4 and 8% K2S2O4 followed by TSP quantification to determine refractory P ('residual P').

3.2. Sediment Characterization and Phosphorus Fractionation Results

Sediment cores collected at each of the three sites appeared to be composed primarily of loosely consolidated dark brown organic sediments. Physical and chemical characterization data and laboratory analytical reports can be found in **Appendix C.** Detailed descriptions and photographs of the sediment cores collected for bulk sediment characterization are provided in **Appendix D.**

Table 3.1 provides the range of in-situ water quality data measured across the vertical profiles at the time of sediment core collection. In-situ water quality data measurements were taken at depths ranging from 0.2 to 2.1 meters, representing the top, middle, and bottom of the water column. Water temperatures were consistent across sampling locations. Values of observed pH and conductivity differed within the vertical profile. DO values suggested an aerobic environment in the top section of the water column and DO values that reached levels of anoxia were observed at the middle and bottom sections of the water column at some sites. Turbidity measurements

collected at the time of sampling ranged from 9.46 to 13.41 NTU and were measured between water depths of 0.2 to 0.5 meters.

Table 3.2 provides a summary of physical and chemical sediment characterization results. Percent dry weight was higher in sediments with lower organic content and lower moisture content. Stations LJ-1 and LJ-3 had similar values across the different parameters. LJ-2 data were lower than the other two for TOC, iron, aluminum, ammonia, and calcium.

Table 3.1 – Ranges of In-situ Sample Profile Water Quality Data at Each Station

Site	Water Depth (m)	Water Temp (degrees C)	DO (mg/L)	DO (%)	Conductivity (uS/cm)	pH	Turbidity (NTU)
LJ-1	0.5-2.1	29.6	0.3-7.1	4.0-93.3	573-626	6.7-9.1	13.41
LJ-2	0.2-1.8	29.5-29.8	0.3-8.8	3.4-116.3	572-728	6.6-9.2	12.22
LJ-3	0.2-1.8	29.2-30.1	0.3-12.9	3.3-171.6	589-824	6.6-9.7	9.46

Table 3.2 – Summary of Physical and Chemical Sediment Characterization Results

Sample Location	Percent (%) Moisture	Percent (%) Dry Weight	Bulk Density (g/cc)	Total Organic Carbon (mg/kg)	Iron (mg/kg)	Aluminum (mg/kg)	Ammonia Nitrogen (mg/kg)	Calcium (mg/kg)
LJ-1	90	9.9	0.098	183,000	19,000	14,000	290	16,000
LJ-2	88	14.2	0.150	106,000	3,900	2,400	50	10,000
LJ-3	91	9.3	0.095	180,000	18,000	12,000	220	14,000

Table 3.3 describes the different forms of phosphorus in the fractionation data along with physiochemical drivers and the likelihood of biologically available phosphorus (BAP) release. **Table 3.4** provides the measured concentrations of phosphorus fractions in the upper 10 cm of the three sites, along with the drivers and likelihood of each potential type of phosphorus release. Sediment fractionation analyses showed the lowest fraction concentrations of readily available phosphorus in site LJ-2. Site LJ-2 displayed higher proportions of more recalcitrant forms of phosphorus such as residual P and apatite bound P (recalcitrant fractions of P) than sites LJ-1 and LJ-3, which had higher values of BAP. Sediment characterization and fractionation analyses will be used to select which station(s) will be sampled for sediment flux core collection, based on the BAP data and other physical and chemistry data. Total phosphorus concentrations within the three sediment locations ranged from 577 to 1,200 mg/kg (**Table 3.3)**. The lowest TP concentrations were found at sites LJ-1 and LJ-3, while the highest TP concentration was observed at site LJ-2, which is the opposite pattern as compared to BAP. It should be noted that ammonia in the porewater was found to be highest at station LJ-3 (98.9 mg/kg), which was slightly lower at LJ-1 (84.9 mg/kg), and lowest at LJ-2 (18.3 mg/kg; data provided in **Appendix C**). This spatial pattern was similar for soluble reactive phosphorus in the porewater as well (**Table 3.4**). Operational sediment P fractions within Lake Jesup were similar in range to those found in nearby lakes. Values

are subject to significant differences in lake hydrology, acreage, and sediment type should be considered when comparing systems.

Table 3.3 – Phosphorus Fractionation Forms with Drivers of BAP Release

P FRACTION	P FORMS IN FRACTION	DRIVER OF BAP RELEASE FROM SEDIMENTS	LIKELIHOOD OF BAP RELEASE TO WATER COLUMN
Labile P	Directly bioavailable P; loosely bound or adsorbed P	Desorption; diffusion; steep concentration gradients	High
Reductant soluble P	P bound to Fe-hydroxides and Mn-compounds	Anoxia	High
Organic P	Allochthonous organic material; detritus	Bacterial mineralization (temperature dependent)	Medium to High
Metal-oxide adsorbed P	P adsorbed to metal oxides (mainly FE, Al); P exchangeable against OH-	High pH (e.g., from high levels of photosynthetic activity in water column)	Medium to High
Apatite bound P	P bound to carbonates and apatite P	Low pH	Medium
Residual P	Refractory compounds		Low
Total BAP	Labile P + Reductant soluble P + Metal oxide adsorbed P + Organic P	See individual driver's above	Medium to High

Table 3.4- Measured Concentrations of Phosphorus Forms in Lake Jesup Sediments (Stations LJ-1, LJ-2, LJ-3)

	Phosphorus Fraction Concentration (MG/KG)			
P FRACTION	**LJ-1**	**LJ-2**	**LJ-3**	**[+]Other Study Lakes**
Labile P	22.6	27.5	25	1.3-49
Reductant soluble P	29.8[1]	29.2[1]	29.9	3-177
Organic P	112[1]	27.8[1]	85	6.4-1,028
Metal-oxide adsorbed P	64.3[1]	32.3[1]	50.6	18-2,180
Apatite bound P	209[1,2]	1,110[1]	145	3.1-755
Residual P	225[1]	77[1]	227	89-3,300
Total BAP	228.7	116.8	190.5	36-4,158
Total P	577.0	1,200	632.0	65-6,340

Notes:
[1] Result based on the mean of two or more determinations: average of lab dup and/or extraction dup results.
[2] Estimated value
Total BAP = Labile P + Reductant soluble P + Organic P + Metal-oxide P
Cells shaded grey are not included in BAP calculation
[+] Other study lakes include a range of mean concentrations for Lake Weston, Lake Parker, Lake Hollingsworth, and Lake Bonnet.

3.3. Summary of Task 2 Sediment Characterization

Three priority sampling stations were selected for bulk sediment characterization and phosphorus fractionation analysis based on sediment and water quality data reviewed in **Task 1**. Historically, the highest known concentrations of open water and sediment total phosphorus have been measured close to the river and creek outfalls in the northern, southwestern, and eastern portions of Lake Jesup. However, due to variable sediment distribution, soft flocculent sediments were most available within the southwestern portion of the lake adjacent to the Howell, Gee, and Soldier Creek outfalls, and limited within the eastern portion of the lake between the Sweetwater and Salt Creek outfalls. Sediment stations were therefore chosen in the areas in which at least 30 cm of sediment were available.

Results of sediment characterization and phosphorus fractionation analyses displayed higher amounts of BAP in locations containing higher overall organic material than in locations with lower amounts of organic material. Stations LJ-1 and LJ-3 provided similar levels of P fraction concentrations, both displaying higher amounts of total BAP than station LJ-2, albeit there was relatively minimal heterogeneity across all three stations based on physical and chemical sediment concentrations and qualitative observations. Based on these data, Station LJ-3 was selected as an interpretative location for **Task 3** due to the central location within the lake and the physical and chemical similarities to Station LJ-1, which will be discussed in more detail in **Section 4**.

4.0 SEDIMENT FLUX BENCH STUDY - LAB OPERATION AND ASSESSMENTS

4.1. Methodology for Sediment Flux and Loading Calculation

Twenty 30-cm intact sediment cores were collected for flux analyses on November 16th and 30th, 2020 in clear polycarbonate tubes from Station LJ-3 within Lake Jesup (**Appendix B**). Collection and analyses were split between two events, with seven cores collected on November 16 and thirteen cores collected on November 30. At the time of sediment core collection, water quality depth profiles were collected at the top, middle, and bottom of the water column to measure water temperature, DO, pH, conductivity, and turbidity (only measured at the surface). Near-bottom ambient water was also collected at the coring site prior to sediment core collection to be homogenized and further filtered (using 0.45 μm filter) for use during both sediment nutrient flux core collection and incubation events.

Sediment flux analyses were performed in the Wood Flux Laboratory in accordance with Standard Operating Procedure (SOP) Wood-SFLUX-002 Rev. 9 (**Appendix E**). Sediment cores collected during each event were prepared and incubated to represent anoxic conditions. To maintain anoxic conditions, the overlying water columns of each core tube were bubbled with N_2 gas during the entire incubation period. Sediment core incubations were performed under darkroom conditions (i.e. red light) at controlled temperatures within the range of 23 to 27 °C for an incubation duration of 216 hours or nine days. Water column samples from each core were collected at 0, 24, 48, 96, 168, and 216 hours after core setup was complete and treatments had been applied. Samples were properly preserved and transported to a NELAC-certified analytical laboratory where they were analyzed for total phosphorus and ammonia-nitrogen (laboratory reports provided in **Appendix C**). An equal volume of filtered ambient site water was replaced after each sampling event to maintain a constant water column depth and volume. Turbidity values were monitored throughout the incubation period to examine the timing of sediment core equilibrium prior to conducting flux measurements. DO and pH were also monitored during the study to confirm that appropriate redox conditions were being met throughout the incubation period. Nutrient flux rates were estimated using the nutrient release rate (NRR) equation which is calculated based on the change of nutrient concentration over time (see equation in SOP-Wood-SFLUX-002 Rev. 7, **Appendix E**). For this study, the flux rates were calculated as the change of nutrient concentration over time for 0 to 216 hours, due to the linearity of the curves. If the curves were non-linear, then the slope equation could have been used to calculate flux rates. However, the gross flux results could be overestimated if the slope calculation was used with linear curves. Therefore, the more conservative NRR calculation approach was selected for this study.

Wood conducted a treatment alternatives analysis using the top-ranked treatment alternatives identified from **Task 1** to evaluate the effect of treatment amendment dosing levels on sediment inactivation and characteristics of the alteration in sediment P flux, as well as changes in P concentration of the overlaying water column. This analysis provided an indication of the effectiveness of each product applied at a range of dosing rates. Treatment amendments were added to the surface of 18 randomly selected sediment cores prior to the start of flux incubation. Two of the cores did not receive any amendments and were used as the sediment "control" or

untreated cores (core names; SC-A and SC-B). The treatments consisted of the bare sediment plus one of the three treatment products at the vendor-specified doses provided in **Table 4.1**. The doses for each treatment were calculated and prescribed by each vendor based on the mass of BAP as determined by sequential phosphorus fractionation and the associated P mass within the overlying water column. One suite of cores for each treatment included the standard dose prescribed by the manufacturer (PHOS, TPX, or VP**-1** A or B) and the second and third treatments included half (PHOS, TPX, or VP**-0.5** A or B) and double (PHOS, TPX, or VP**-2** A or B) the prescribed dosages for each product. Each treatment amendment and dose combination was replicated as indicated by an "A" or "B" at the end of each core name in **Table 4.1**.

At the time of application, each treatment alternative was applied to the surface water and allowed to settle naturally within the water column, as to avoid disturbing surface sediments. The capsulate form of Phoslock settled on the surface 0-1 cm layer of the sediment core and began to break apart almost immediately after application, completely dissolving within the first 48 hours of application. Similarly, the pelletized form of the Nclear TPX compound settled onto the surface of the sediment core between 0-1 cm and dissipated into the water column within the first 48 hours of the incubation period. ViroPhos, a blend of dry powder, persisted in the water column for the first 72 hours of the incubation period, staining the water a rust color and raising the measured turbidity (**Figure 4.1**).

Figure 4.1 – Sediment Core Incubation Set Up for Cores Treated with ViroPhos at T=0

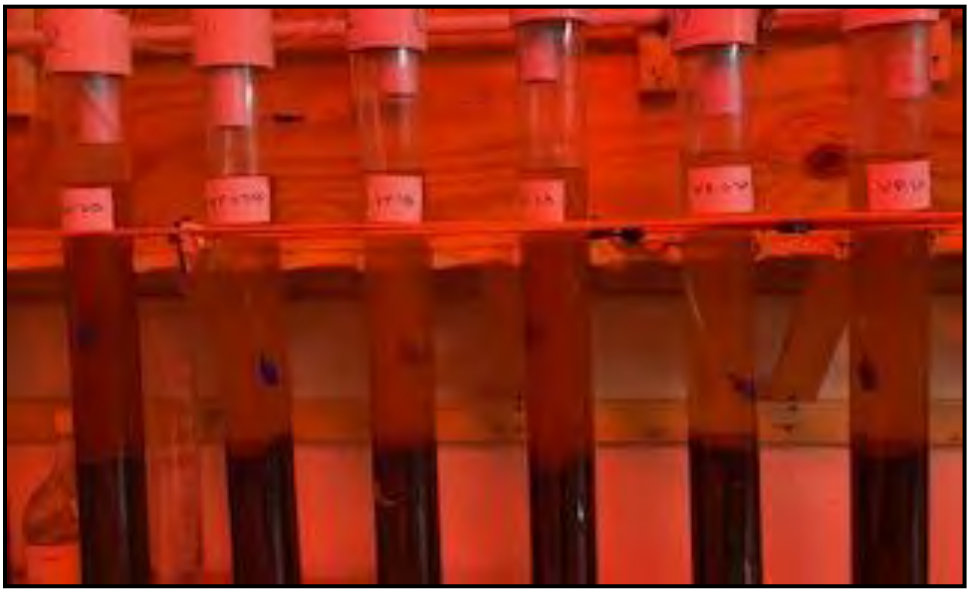


Table 4.1 – Vendor Prescribed Treatment Amendment Dosages

Core Name	Treatment	Dose (g)	Dosing Level	Dose Based on Water Quality or Sediment BAP Data
PHOS-1A	Phoslock	2.73	Prescribed	Water Quality and Sediment BAP
PHOS-0.5A		1.37	Half of prescribed	
PHOS-2A		5.46	Double of prescribed	
PHOS-1B		2.73	Prescribed	
PHOS-0.5B		1.37	Half of prescribed	
PHOS-2B		5.46	Double of prescribed	
TPX-1A	Nclear TPX-AC21	0.70	Prescribed *	Water Quality and Sediment BAP
TPX-0.5A		0.35	Half of prescribed	
TPX-2A		1.40	Double of prescribed	
TPX-1B		0.70	Prescribed *	
TPX-0.5B		0.35	Half of prescribed	
TPX-2B		1.40	Double of prescribed	
VP-1A	ViroPhos	5.66	Prescribed	Unknown/Proprietary
VP-0.5A		2.83	Half of prescribed	
VP-2A		10.9	Double of prescribed	
VP-1B		5.45	Prescribed	
VP-0.5B		2.72	Half of prescribed	
VP-2B		10.9	Double of prescribed	

Note: Treatment manufacturer/distributor names provided in parentheses in "Treatment" column. [1]Nclear dosage was originally prescribed by vendor at 0.2 grams per core and required stirring into top 10 cm. To avoid disturbing surface sediments, the dosage was increased per vender specifications.

4.2. Sediment Nutrient Flux and Loading Results

Sediment cores collected at the sediment flux site appeared to be composed primarily of loosely consolidated dark brown organic sediments. **Table 4.2** provides the range of in-situ water quality data measured across the vertical profiles during the time of sediment core collection for both collection events. In-situ water quality data measurements were taken at depths ranging from 0.2 to 2.1 meters, representing the top, middle, and bottom of the water column. Overall, water temperatures ranged from 22.6 to 24.9 °C, and the observed pH values ranged from 6.5 to 8.3. DO values suggested an aerobic environment in the top and middle sections of the water column, while lower DO values were observed at the bottom section of the water column, suggesting conditions that were approaching a less aerobic environment. Turbidity measurements collected at the time of sampling were similar across the two events and ranged from 13.2 to 14.8 NTU at a water depth of 0.3 meters.

Table 4.2 – Ranges of In-situ Sample Profile Water Quality Data at Station LJ-3

Collection Date	Sample Depth (m)	Water Temperature (°C)	DO (mg/L)	DO (%)	pH (SU)	Specific Conductance (uS/cm)	Turbidity (NTU)
11/16/2020	0.3-2.1	24.9	1.4-8.6	17.3-104.3	6.5-8.3	560-615	13.2
11/30/2020	0.3-2.1	22.6-22.7	2.0-8.6	23.7-99.7	7.0-8.3	540-591	14.8

Figures 4.2 and **4.3** display the average TP and ammonia concentration time series (flux curves) for sediment cores dosed with the different treatment alternatives (Phoslock, Nclear TPX, and ViroPhos). TP and ammonia concentration flux curves for individual treatment cores and their respective replicate cores are shown in **Figures A.4** through **A.9** in **Appendix A**. Sediment cores treated with Phoslock showed an initial peak in TP concentration at the 24-hour mark and slowly decreased until the 168-hour mark, where the TP concentrations began to increase to the end of the incubation period. Sediment cores amended with ViroPhos all showed an initial peak in TP concentrations between the 24- and 48-hour mark, decreasing between the 48- and 98- hour mark, and then gradually decreasing until the end of the incubation period. Sediment cores treated with Nclear TPX generally showed TP concentrations with initial peaks at the 48-hour mark, except for core TPX-2B, which displayed a sharp initial peak at the 24-hour mark before gradually increasing to a small peak at the 168-mark. TPX-2B displayed the lowest concentration of TP after the 24-hour mark.

TP concentrations in the averaged sediment control cores gradually increased towards the 48-hour mark and remained constant until a secondary increase at the 168-hour mark, which continued to the end of the incubation period. The early formation of a secondary peaks at the 168-hour mark suggests the possible release of more recalcitrant forms of BAP after the initial labile phosphorus release, which is expressed by peaks shown at 24- and 48-hour marks.

Ammonia flux from the lake sediments represents the dissolved species of nitrogen that is mineralized from organic nitrogen and then released from the sediment into the water column by diffusion through the sediment-water interface. Ammonia is used as a proxy for TN since it approximates TN flux, based on numerous previous studies. The averaged bare sediment control cores displayed a small peak at the 24-hour mark and continued to increase until the end of the incubation period. Ammonia concentrations in sediment cores incubated with the treatment alternatives also generally remained low and constant throughout the incubation period, except for core TPX-2 (**Figure 4.3**) and TPX-2A (**Appendix A, Figure A.9**), which increased by over 4.5 mg/L (on average) throughout the incubation period. Ammonia concentrations within the cores treated with Phoslock and ViroPhos generally remained below the sediment control for most of the time steps, and most of the cores, except for TPX-2A and TPX-2B, were below the sediment control at T=216.

Figure 4.2 – Average Total Phosphorus Concentrations Measured under Anoxic Conditions during Laboratory Incubations for all Treatment Alternatives at all Doses

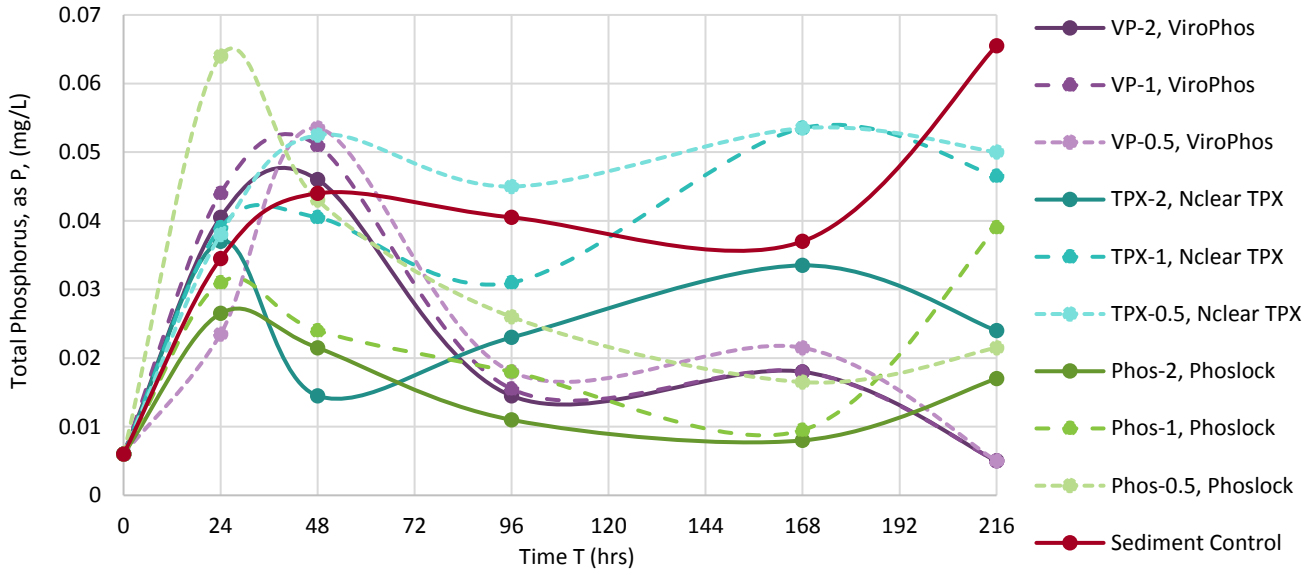
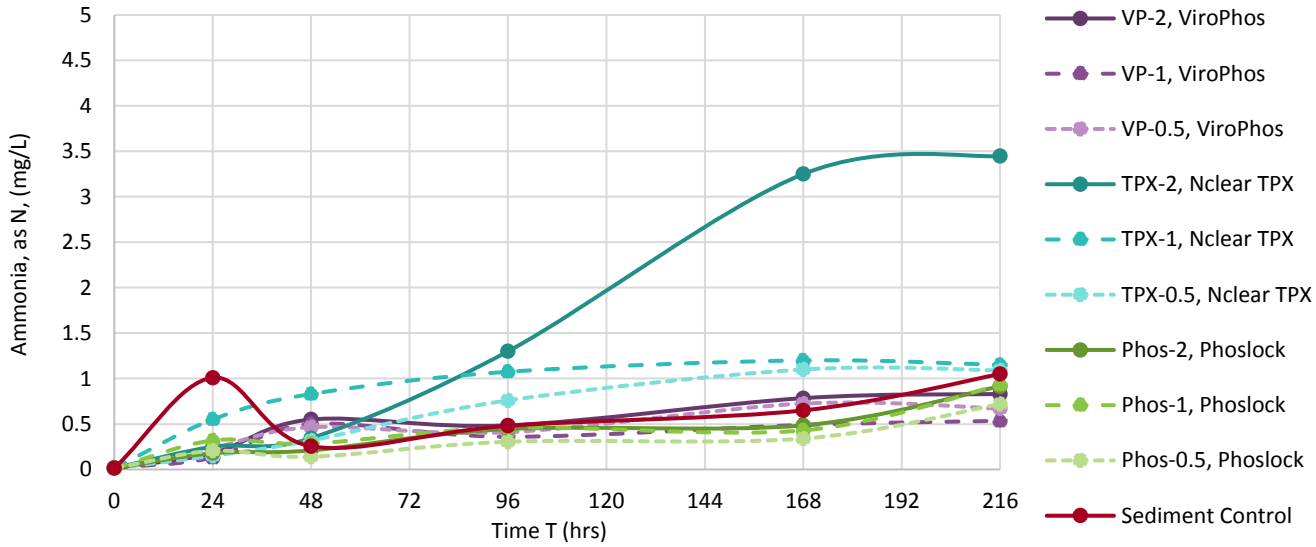


Figure 4.3 – Average Ammonia Concentrations Measured under Anoxic Conditions during Laboratory Incubations for all Treatment Alternatives at all Doses



Tables 4.3 and **4.4** provide summaries of calculated average anoxic nutrient flux rates for the sediment cores. T=0 sampling interval is used as the "starting concentration" to calculate nutrient flux rates. Sediment cores capped with treatment alternatives and incubated under anoxic conditions showed a range of TP rates from -0.03 to 1.47 mg/m^2/d (NRR), and ammonia flux rates

ranging from 17.33 to 114.50 mg/m^2/d (NRR). The TP flux rates for the untreated bare sediment control cores were 1.98 mg/m^2/d (NRR), and for ammonia, 34.50 mg/m^2/d (NRR).

Negative flux rates suggest nutrient retention, which is evidenced by an overall decrease in the initial concentration due to chemical inactivation during the incubation period (under select treatments). Positive flux rates suggest that nutrient release is still occurring, but the magnitude of the rate for each treatment is compared to the sediment control to assess how efficient the amendment is at reducing flux from the sediment to the water column.

Sediment cores capped with the treatment amendment ViroPhos displayed the lowest overall flux rates for both TP and ammonia within the incubation period as compared to untreated sediment and the other alternatives. However, all three products showed a measurable reduction of flux rate for TP. It should be noted that increased ammonia flux rates have been seen in other bench-scale treatment alternative analyses. However, when it occurs, it appears that the potential issue may be a factor of the bench-scale size and set up and did not transfer to mesocosm scale during follow-up pilot studies. The only amendment that showed higher ammonia than sediment control at the end of the experiment was TPX in the two replicate cores that had a double dose of TPX.

From the values shown in **Tables 4.3** and **4.4**, it does not appear that there was a consistently direct linear response based on the dosing level for each of the treatment amendments. ViroPhos displayed similar flux rates across all three doses, mainly because the TP concentrations ended up below the minimum detection level (MDL, 0.005 mg/L TP) for all cores treated with ViroPhos by the end of the incubation period. Phoslock displayed the lowest flux rates (highest TP reductions compared to the sediment control) in sediment cores treated with double the vendor-recommended dose, but the response from adjusting the dosing was more variable and not directly linear, which was evidenced by the flux rate from the prescribed dose of Phoslock being higher than half the prescribed dose. The only alternative that showed a linear response to dosing level was TPX, where the flux rate reduced from half to double the dose for rates calculated with the NRR equation. All treatments at the various doses were successful in reducing the TP flux rates and loads as compared to the untreated sediment.

Table 4.3 – Average Total Phosphorus Flux Rates Under Anoxic Conditions

Core Name	Treatment Type	NRR Flux Rate ($mg/m^2/d$)
Phos-0.5	Phoslock	0.52
Phos-1		1.10
Phos-2		0.37
TPX-0.5	Nclear TPX	1.47
TPX-1		1.35
TPX-2		0.60
VP-0.5	ViroPhos	-0.03[(1)]
VP-1		-0.03[(1)]
VP-2		-0.03[(1)]
Sediment Control	**Bare (No treatment)**	**1.98**

[1] Measured TP concentrations were below minimum detection levels (MDL) during the T= 216 incubation period, driving the flux rate to -0.03 $mg/m^2/d$ for each dose (NRR).

Table 4.4 – Average Ammonia Flux Rates Under Anoxic Conditions

Core Name	Treatment Type	NRR Flux Rate ($mg/m^2/d$)
Phos-0.5	Phoslock	23.50
Phos-1		30.50
Phos-2		30.00
TPX-0.5	Nclear TPX	35.83
TPX-1		37.83
TPX-2		114.50
VP-0.5	ViroPhos	21.83
VP-1		17.33
VP-2		27.17
Sediment Control	**Bare (No treatment)**	**34.50**

Table 4.5 – Average Percent Reduction of Total Phosphorus for all Treatment Alternatives

Core Name	Treatment	Percent Reduction (Flux Rate) NRR
Phos-0.5	Phoslock	80%
Phos-1		57%
Phos-2		86%
TPX-0.5	Nclear TPX	-2%
TPX-1		6%
TPX-2		58%
VP-0.5	ViroPhos	102%[(1)]
VP-1		102%[(1)]
VP-2		102%[(1)]

[1] Measured TP concentrations were below minimum detection levels (MDL) during the T= 216 incubation period, driving the flux rate to -0.03 mg/m^2/d for each dose (NRR).

Figure 4.4 – Average Percent Reduction of Total Phosphorus Flux Rate for all Treatment Alternatives Throughout Incubation Period

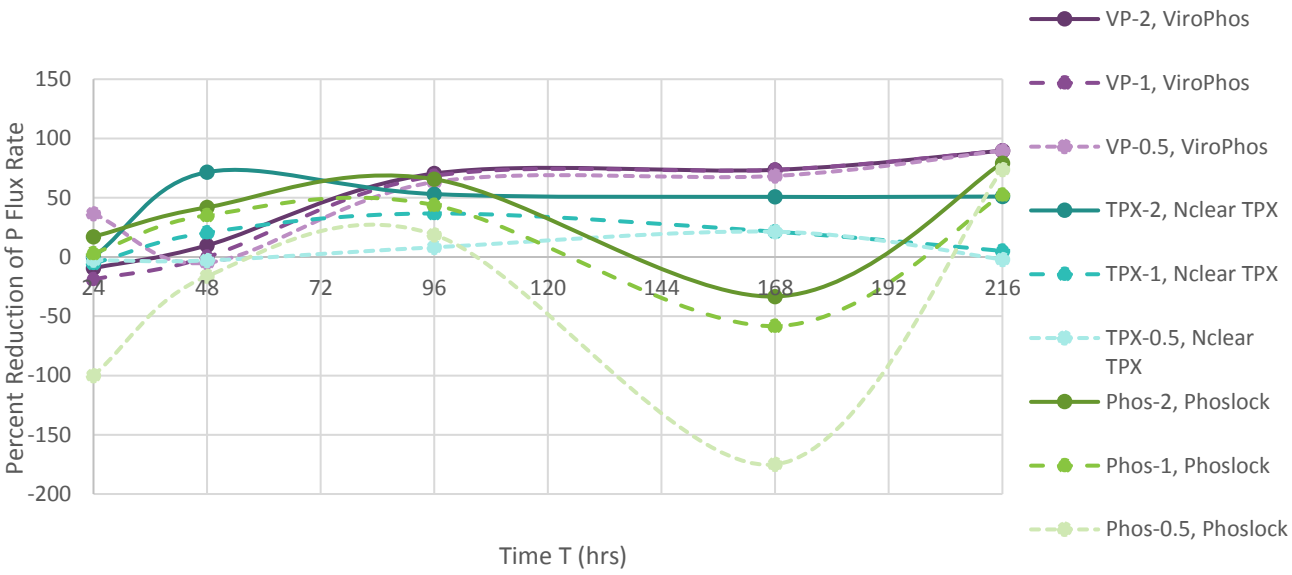
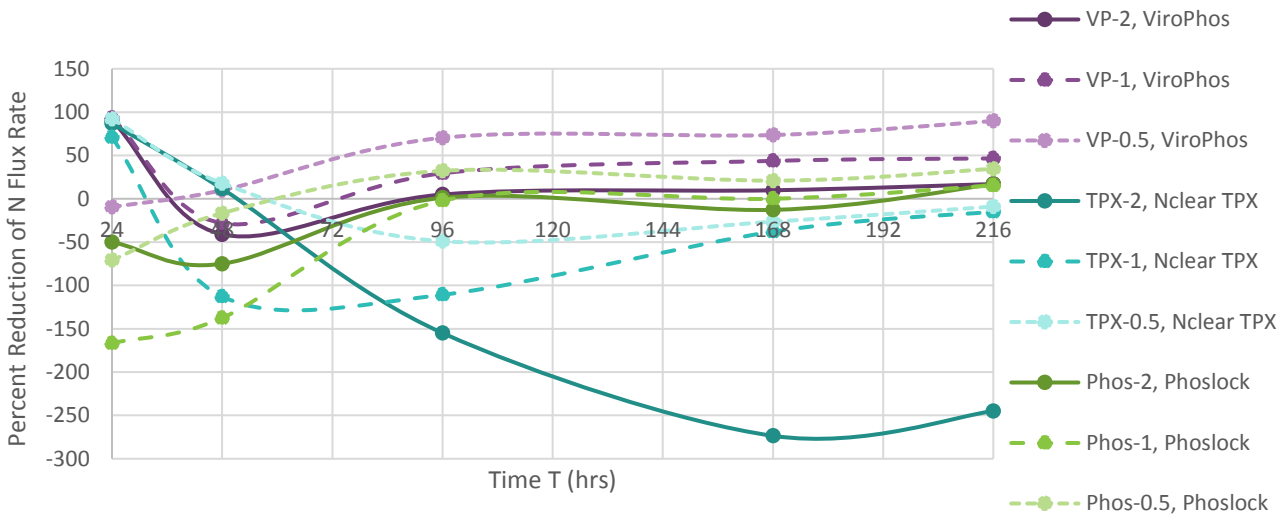


Table 4.6 – Average Percent Reduction of Ammonia for all Treatment Alternatives

Core Name	Treatment	Percent Reduction (Flux Rate) NRR
Phos-0.5	Phoslock	35%
Phos-1		16%
Phos-2		17%
TPX-0.5	Nclear TPX	-9%
TPX-1		-15%
TPX-2		-249%
VP-0.5	ViroPhos	34%
VP-1		47%
VP-2		17%

Figure 4.5 – Average Percent Reduction of Ammonia Flux Rate for all Treatment Alternatives Throughout Incubation Period



Changes in percent reductions over the course of the incubation period can be viewed in **Figures 4.4** and **4.5**. Average TP and ammonia percent reductions for individual treatment cores and their respective replicate cores are shown in **Figures A.10** through **A.15** in **Appendix A**. ViroPhos appears to perform consistently over time for each of the dosage applications for both TP and ammonia. This suggests that each dosage can reduce the different fractionations of phosphorus within the sediments during anoxic conditions as they are released during the incubation period. Phoslock displayed similar percent reductions in both the halved vendor recommended dose and doubled dose for TP. Nclear displayed different percent reductions for each dosage amount.

4.3. Summary of Flux Lab Operation and Assessments

The sediment flux analysis showed that TP was generally found at low concentrations within the untreated and treated sediment cores (0.006 mg/L to 0.082 mg/L, **Tables A.6** and **A.7** in **Appendix A**). Overall, all three amendments reduced flux rates within the treated cores for TP. ViroPhos was the sediment treatment alternative that showed the most consistently high reduction efficiencies in TP flux when compared to untreated sediment control cores, followed by Phoslock and Nclear TPX. A linear response regarding dosing level was only found in the TPX treated cores. Results from the treatment alternatives assessment were used as part of the cost efficiency evaluation discussed in Section 5.

5.0 PERFORMANCE/COST EFFICIENCY EVALUATION

Wood conducted a cost efficiency evaluation for TP that compared costs for treatment at the different dosing levels on a cost per pound ($/lb) basis. Total TP reduction and cost per acre ($/ac) treated for the three treatment alternatives were evaluated as part of the sediment flux study. Cost efficiencies were calculated for the amendments through a mathematical function that relates the areal application cost (as provided by the vendors) to the unit change in overlying core TP concentration, which was expressed as a percent reduction (performance efficiency). The vendor-provided cost/lb and cost/ac information were used to compare and normalize costs so that a cost/lb could be derived based on Wood's bench-scale study to allow the ability to appropriately rank the treatment alternatives based on performance and cost-effectiveness.

The vendor-provided cost information for the standard areal cost included the cost of the product, shipping, and application labor/expenses. To provide a relatively consistent comparison of performance and cost-efficiency across the three alternative application rates, it was assumed that the standard areal cost for the doubled dose was doubled, and the standard areal cost was halved for half the dose. The assumption may overestimate the cost of higher doses and underestimate the cost of lower doses, but the assumption was used across the board, so the potential error is applied uniformly across all amendments and dosing levels. A proportional increase in cost was applied for all treatment-dose combinations, assuming that treatment application methodologies would be similar. Therefore, application and product cost assumptions applied to doubled or half of the prescribed dosing levels, as applicable. The information utilized in preparing the cost efficiency evaluation for the vendor provided cost information was provided solely by the vendor and was not independently verified. The information derived by the flux study was used to rank the alternatives based on performance efficiencies that were estimated from the measured flux rates. The flux study derived (FSD) cost/lb of TP reduced was used to provide an initial (using all dosing levels) and final (average of all dosing levels) rank of effectiveness.

Table 5.1 provides a summary of the cost efficiency evaluation and **Table 5.2** provides a summary of the effectiveness rankings.

The method used to calculate the FSD cost/lb of TP reduced was as follows:

1) FSD performance efficiency (FSD Efficiency, % TP reduced) was used to calculate FSD sediment load reduction from 1000 acres (acreage selected to standardize calculations on areal basis) of targeted treatment lake area [FSD %Efficiency X load (lb/yr) from untreated 1000 ac lake area].

2) Vendor-provided cost/ac treated for TP was used to calculate the cost for treatment from 1000 ac targeted treatment lake area [Vendor provided cost/ac X 1000 ac].

3) Results from #2 (cost for treatment of 1000 ac) were divided by results from #1 (load reduced from 1000 ac) to calculate a FSD cost/lb TP reduced [Cost for treatment of 1000 ac / load reduced from 1000 ac].

4) Rankings were developed based on the lowest FSD cost/lb per dosing level (initial) and an average of all doses (final).

Results from the performance/cost efficiency evaluation showed that ViroPhos was the most effective in terms of both performance and cost with a rank of 1. Phoslock was ranked second and Nclear TPX was ranked third. It is important to note that Wood's adjusted FSD costs for each treatment were found to be considerably higher than the vendor-provided cost/lb removed values. A reason for this could be that the adjusted FSD cost/lb values were based on a bench scale flux study and not based on a full-scale application. The FSD costs were calculated and used to provide a normalized and equitable method to assess the different treatment alternatives with the information provided by the vendors. The costs are for informational purposes only and should only be used to evaluate performance/cost-effectiveness as part of the overall bench-scale flux study for Lake Jesup. The conditions of the lake sediments at the time of collection, conditions in the lab during the incubation, and other factors all played into the results from this evaluation. Although cost effectiveness of ammonia reduction was not included as an aspect of ranking, it should be noted that ViroPhos also had the highest overall ammonia performance efficiencies.

Table 5.1 – Summary of Performance/Cost Efficiency Evaluation

Alternative-Dosage	*FSD Estimated Average Performance Efficiency for TP (%)	FSD Estimated Average Untreated Sediment TP Load from 1000 ac Targeted Area (lb/yr)	Estimated Average Sediment TP Load Reduced from 1000 ac Targeted Area (lb/yr)	Vendor Provided Cost/lb TP Reduced ($/lb)	Vendor Provided Cost Per Acre Treated for TP	Cost for Treatment of 1000 ac Targeted Area	Flux Study Derived (FSD) Cost/lb TP Reduced ($/lb) [All Doses]	Flux Study Derived (FSD) Cost/lb TP Reduced ($/lb) [Average Across all Doses]
Phos-0.5	80%	6445	5156	87	$1,685	$1,685,000	$327	$820
Phos-1	57%	6445	3674	174	$3,370	$3,370,000	$917	
Phos-2	86%	6445	5543	348	$6,740	$6,740,000	$1,216	
TPX-0.5	-2%	6445	-129	68	$600	$600,000	NA	$1,873
TPX-1	6%	6445	387	135	$1,200	$1,200,000	$3,103	
TPX-2	58%	6445	3738	270	$2,400	$2,400,000	$642	
VP-0.5	102%	6445	6574	58	$1,500	$1,500,000	$228	$532
VP-1	102%	6445	6574	115	$3,000	$3,000,000	$456	
VP-2	102%	6445	6574	230	$6,000	$6,000,000	$913	

Note: *FSD performance efficiency (percent reduction) value was calculated from the NRR equation, being the more appropriate method.

Table 5.2 – Summary of Performance/Cost Effectiveness Rankings

Alternative-Dosage	Rank Based on Cost Derived from Flux Study	Initial Effectiveness Rank Based on Cost Derived from Flux Study	Final Effectiveness Rank Based on Cost Derived from Flux Study
	[All Doses]	[Average Across All Doses]	[Average Across all Doses]
Phos-0.5	2	5	2
Phos-1	6		
Phos-2	7		
TPX-0.5	9	7	3
TPX-1	8		
TPX-2	4		
VP-0.5	1	3	1
VP-1	3		
VP-2	5		

5.1. Summary of Performance/Cost Efficiency Evaluation

The results from the bench-scale flux study were used to perform a cost/performance efficiency evaluation. Results showed that ViroPhos ranked #1 and was found to be the most effective, with Phoslock as second and NClear TPX ranked third.

6.0 SUMMARY AND RECOMMENDATIONS

Wood conducted a study to evaluate the ability of several treatment technologies to reduce TP flux rates and loading from Lake Jesup sediments to the water column. A review of relevant literature pertaining to sediment and water quality data was provided, as well as a review of the original and updated RFI submittals. Following the review, Wood performed phosphorus fractionation and sediment characterization and a sediment flux bench-scale study. Results showed that higher amounts of BAP were found in locations containing higher overall organic material than in locations with lower amounts of organic material. Location LJ-3 was selected for the laboratory bench-scale sediment flux analysis of three treatment alternatives (Phoslock, ViroPhos, and Nclear TPX). Of the three treatment amendments studied in the experimental sediment flux assessment, overall ViroPhos out preformed both Nclear TPX and Phoslock and was found to be the most cost-effective at reducing TP at the three applied dosages and provided the most consistent level of nutrient flux reduction.

Based on the results of the bench-scale flux study and performance/cost evaluation, Wood recommends confirming the performance and cost-effectiveness by the implementation of an in-situ mesocosm scale assessment in the lake with ViroPhos prior to applying the product at full-scale implementation. Additionally, some level of toxicity testing to assess safety of the product at a larger scale should be performed. The mesocosm scale project to test ViroPhos and perhaps Phoslock (if budget allows) could be accomplished by enclosing a portion of the lake using limnocorral. Wood did not examine the potential effects of long-term application and/or toxicity of any of the tested products. It is recommended to assess all potential environmental health and safety hazards before large-scale application to the lake.

7.0 REFERENCES

Meis, S., Spears, B.M., Maberly, S.C., O'Malley, M.B., Perkins, R.G. 2012. Sediment amendment with Phoslock® in Clatto Reservoir (Dundee, UK): Investigating changes in sediment elemental composition and phosphorus fractionation. Journal of Environmental Management. 93(1):185-93, doi.org/10.1016/j.jenvman.2011.09.015.

Psenner, R., Boström, B., Dinka, M., Petterson, K., Pucsko, R., Sager, M., 1988. Fractionation of phosphorus in suspended matter and sediment. Archive für Hydrobiologie: Ergebnisse der Limnologie 30, 98e103.

APPENDIX A

Task 1 Tables and Figures

Figure A.1 – Lake Jesup Bathymetric Map (Seminole County Water Atlas)

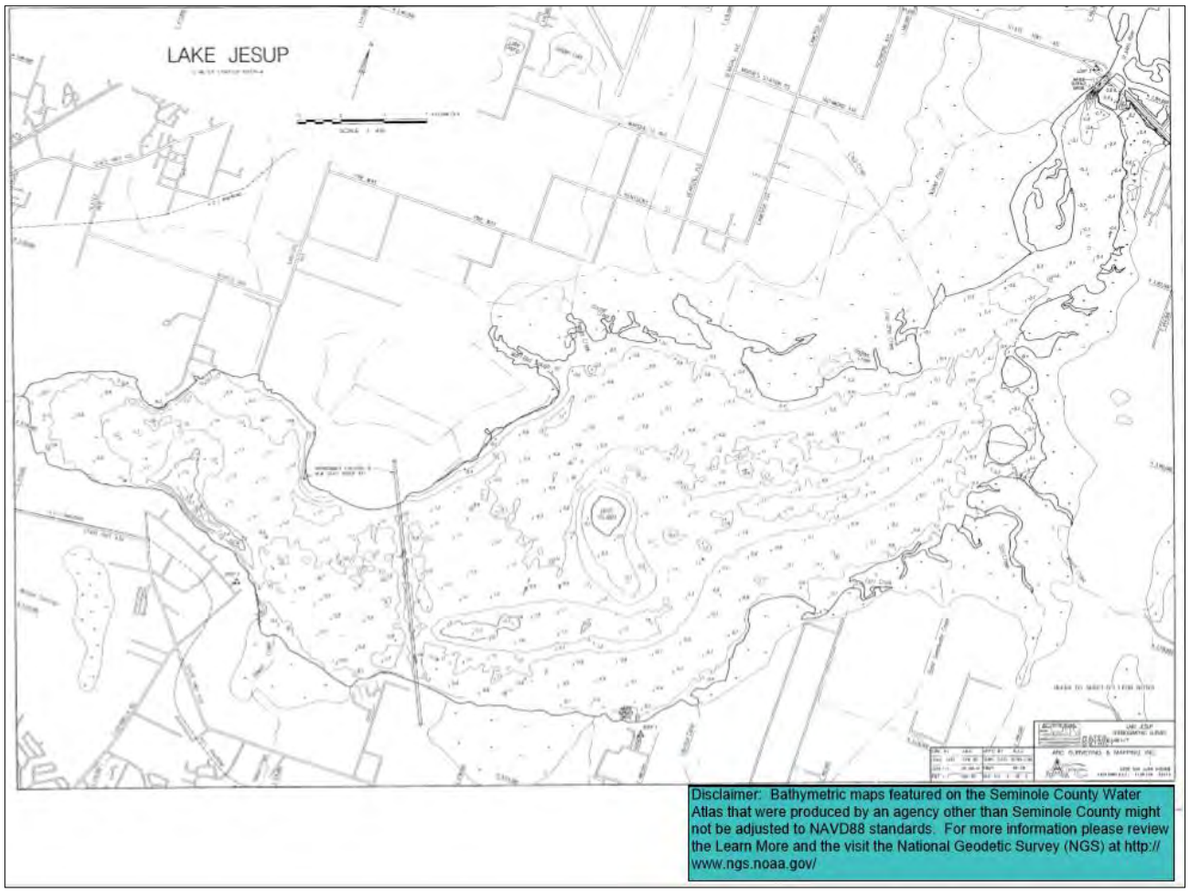


Figure A.2 – Thickness of the soft Sediment Layer in Lake Jesup (Brandt-Williams & Godfrey (n.d.))

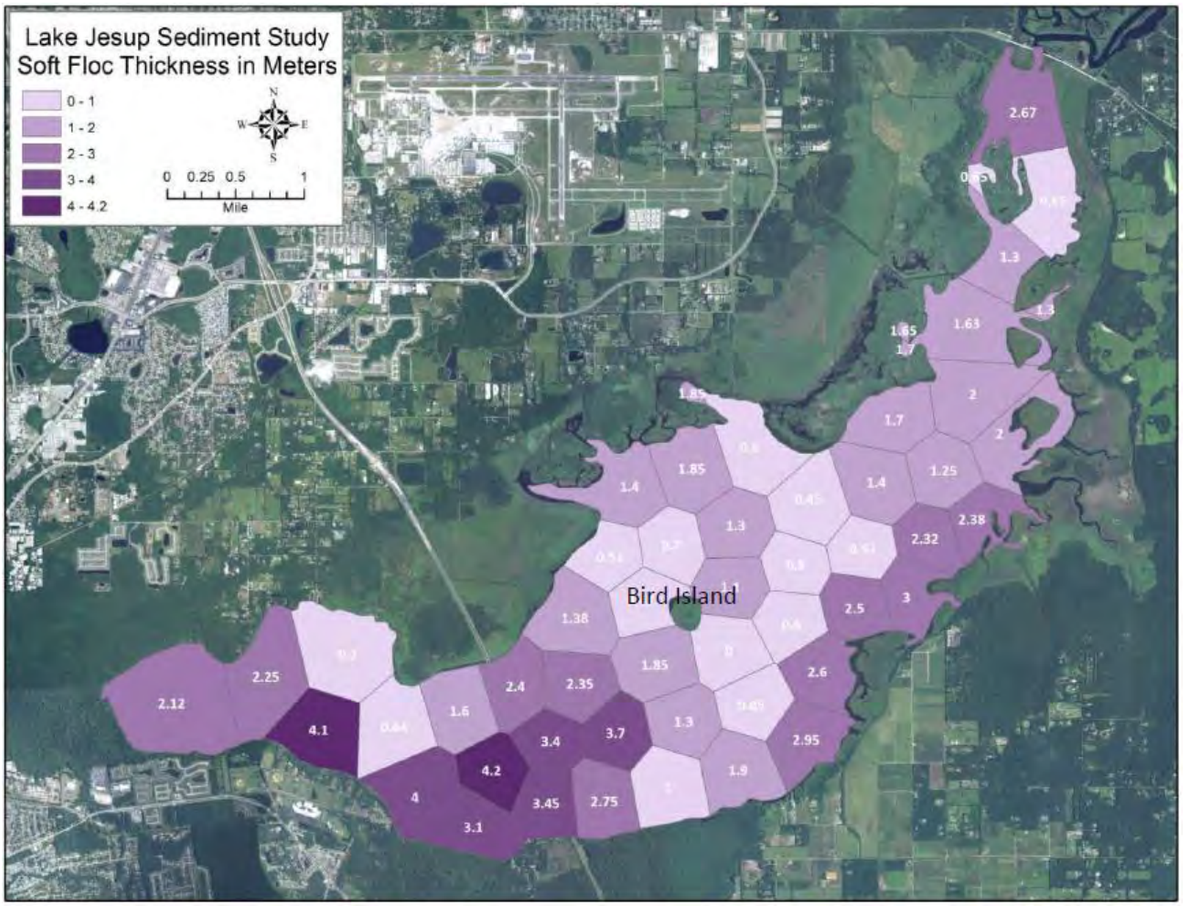


Figure A.3 – Relative Levels of TP Mass within Lake Jesup
(Brandt-Williams & Godfrey (n.d.))

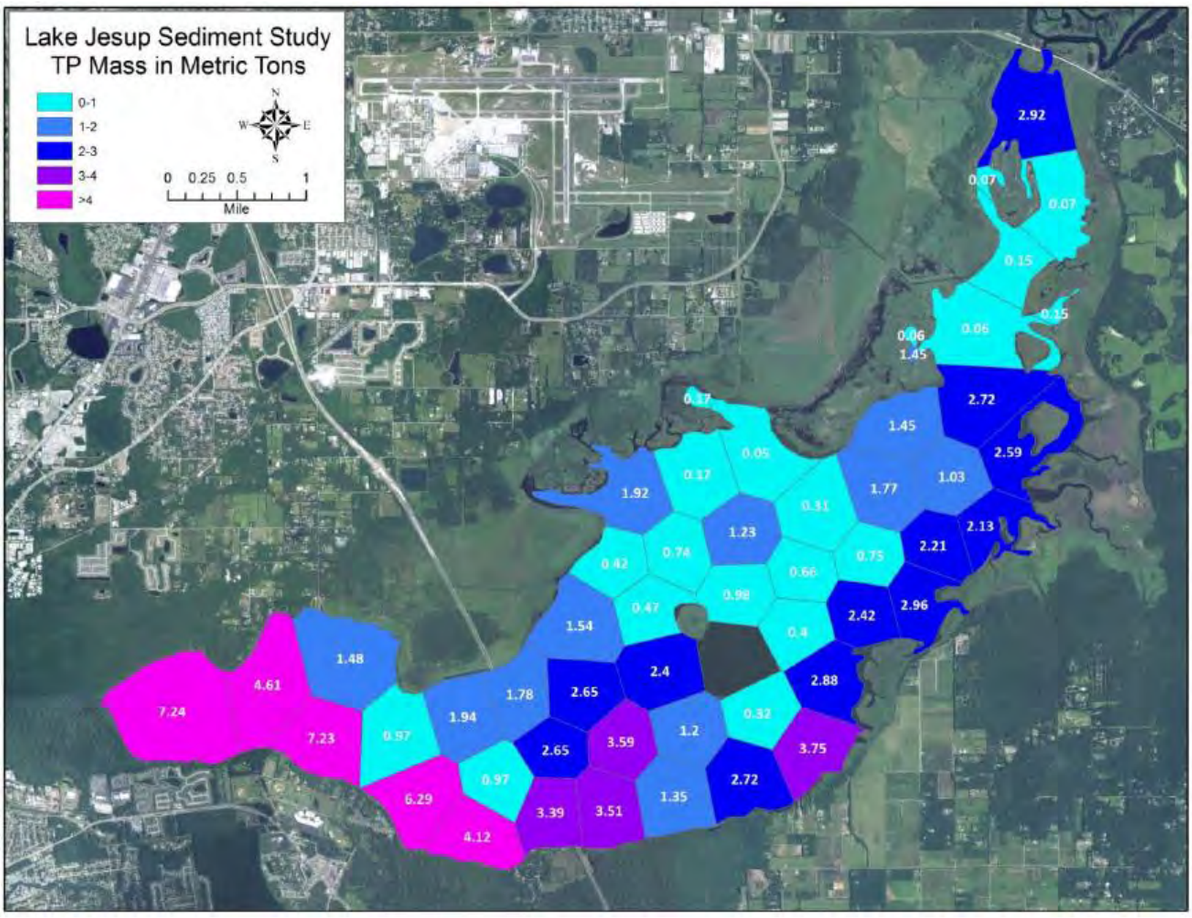


Table A.1 – Evaluation Criteria Framework for Treatment Technologies Developed by CDM Smith (2017)

Criteria	Weight	Score	Definition
Performance Criteria			
PC1: lbs of P Removed/yr	12.0%	10 8 6 4 2	High (≥100,000 lb/year) Medium-High (≥10,000 lb/year and <100,000 lb/year) Medium (≥5,000 lb/year and <10,000 lb/year) Medium-Low (≥1,000 lb/year and <5,000 lb/year)
PC2: Water Quality Improvement	10.0%	10 5 1	High (P ≤ 0.05 mg/l) Medium (P<0.2 mg/l and >0.05 mg/l) Low (P ≥ 0.2 mg/l))
PC3. Address available P in the Water Column, Organic P Bound in Algae, or Both?	8.0%	10 5 1	Both Algal Water Column Only
PC4. Fate of P	3.0%	10 5	Removes P out of the lake Sequesters P in sediments
PC5: lbs of N Removed/yr	3.0%	10 8 6 4 2 0	High (≥1,000,000 lb/year) Medium-High (≥100,000 lb/year <1,000,000 lb/year) Medium (≥50,000 lb/year & <100,000 lb/year) Medium-Low (≥10,000 lb/year & <50,000 lb/year) Low (< 10,000 lb/year)
PC6: Water Column P Response Timeframe	4.0%	10 5 1	Immediate Intermediate Long-Term
Economic Criteria			
EC1: Cost/lb of P Removed-Equivalent Basis Without Recovered Cost	20.0%	10 5 1 0	Low (≤ $100/lb) Medium (>$100/lb and <$500/lb) High (≥ $500/lb) Not provided
EC2: Capital Costs	8.0%	10 8 6 4 2 0	Low (No Capital Cost) Medium-Low (≥$0 and <$1,000,000) Medium (≥$1,000,000 and <$2,000,000) Medium-High (≥$2,000,000 & <$5,000,000) High (>$5,000,000)
EC3: O&M Costs	8.0%	10 8 6 4 2 0	Low (No O&M Cost) Medium (≥$0/yr and <$500,000/yr) Medium (≥$500,000/yr and <$1,000,000/yr) Medium-High (≥$1,000,000/yr & <$5,000,000/yr) High (>$5,000,000/yr)
EC4: Demonstrated potential for recovered costs	4.0%	10 1	Yes No
Operational Criteria			
OC1: Land Requirement	5.0%	10 5 1	No Land Requirement 20 acres or less Greater than 20 acres
OC2: Waste Byproduct	5.0%	10 1	No Yes or Unclear
OC3: Pretreatment Required	5.0%	10 1	No Yes or Unclear
OC4: Post Aeration Required	5.0%	10 1	No Yes or Unclear

Table A.2 – Original RFI Submittal Treatment Technology Evaluation and Ranking (CDM Smith 2017)

ID	Treatment Technology		PC1: lbs of P Removed/yr	PC2: Water Quality Improvement	PC3. Address available P in the Water Column, Organic P Bound in Algae, or Both?	PC4. Fate of P	PC5: lbs of N Removed/yr	PC6: Water Column P Response Timeframe	EC1: Cost/lb of P Removed-Equivalent Basis Without Recovered Cost	EC2: Capital Costs	EC3: O&M Costs	EC4: Demonstrated potential for recovered costs	OC1: Land Requirement	OC2: Waste Byproduct	OC3: Pretreatment Required	OC4: Post Aeration Required	Total	Rank
		Category Weight:	**40%**						**40%**				**20%**					
		Treatment Type	**12%**	**10%**	**8%**	**3%**	**3%**	**4%**	**20%**	**8%**	**8%**	**4%**	**5%**	**5%**	**5%**	**5%**	**100%**	
V-07	Enviremed (Virophos)	Chemical	6	10	10	5	2	10	5	2	10	1	10	10	10	10	7.1	1
V-08	Ferthaul (Cavitation)	Physical	8	1	10	10	4	1	10	6	4	10	5	1	10	10	6.8	2
C-17	Alum	Chemical	8	10	10	5	2	10	5	2	2	1	10	10	10	10	6.7	3
V-13	SePRO (Phoslock)	Chemical	6	10	1	5	0	10	5	10	4	1	10	10	10	10	6.5	4
C-40	Treatment Wetland	Biological	6	5	10	10	8	1	5	4	8	1	1	10	10	10	6.2	5
V-09	Gator Aquatic	Chemical	4	10	10	10	0	1	5	8	6	1	5	1	10	10	6.1	6
V-01	Allied Group (P-Kill)	Chemical	6	5	10	10	6	1	5	8	6	10	5	1	1	10	5.9	7
V-04	Clearas (ABNR™)	Chemical / Algal	6	1	10	10	4	1	5	2	8	1	5	1	10	10	5.2	8
C-50	Dredging	Sediment Removal	10	5	5	10	10	5	1	10	2	1	1	1	10	10	5.2	9
V-02	Aquafiber (Mobile Unit)	Chemical / Algal	2	10	10	10	4	1	1	6	6	1	5	1	10	10	5	10
V-11	Hydromentia (Algal Turf Scrubber)	Algal	4	5	10	10	2	1	5	0	0	1	5	1	1	10	4.1	11
V-10	Gerber Pumps (Electrocoagulation)	Physical	6	10	10	10	6	1	0	0	0	1	5	1	10	1	3.9	12

Represents traditional lake management techniques; values for PC1, PC2, PC5, EC1, EC2 and EC3 were assigned based on information provided by the District.

Table A.3– Lake Jesup 2020 Updated RFI Submittal Treatment Technology Evaluation and Ranking

			PC1: lbs of P Removed/yr	PC2: Water Quality Improvement	PC3. Address available P in the Water Column, Organic P Bound in Algae, or Both?	PC4. Fate of P	PC5: lbs of N Removed/yr	PC6: Water Column P Response Timeframe	EC1: Cost/lb of P Removed-Equivalent Basis Without Recovered Cost	EC2: Capital Costs	EC3: O&M Costs	EC4: Demonstrated potential for recovered costs	OC1: Land Requirement	OC2: Waste Byproduct	OC3: Pretreatment Required	OC4: Post Aeration Required	Total (Low to High Rank)	Rank
ID	**Treatment Technology**	**Category Weight:**	**40%**						**40%**				**20%**					
		Treatment Type	**12%**	**10%**	**8%**	**3%**	**3%**	**4%**	**20%**	**8%**	**8%**	**4%**	**5%**	**5%**	**5%**	**5%**	**100%**	
VU-05	Nclear (TPX)	Chemical	8	10	1	5	0	10	10	10	10	1	10	10	10	10	8.1	1
C-17/VU06	Alum / Solitude	Chemical	8	10	10	5	2	10	5	2	2	1	10	10	10	10	6.7	2
C-40	Treatment Wetland	Biological	6	5	10	10	8	1	5	4	8	1	1	10	10	10	6.2	3
VU-04	MicroBio	Chemical	4	5	10	10	0	1	5	8	6	1	5	1	10	10	5.6	5
C-50	Dredging	Sediment Removal	10	5	5	10	10	5	1	10	2	1	1	1	10	10	5.2	6
VU-02	Ferrate Solutions	Chemical	2	10	10	10	4	1	10	0	8	10	5	1	1	1	5.9	4
VU-01	Aquafiber (Mobile Unit)	Chemical / Algal	2	10	10	10	4	1	1	6	6	1	5	1	10	10	5	7

Represents traditional lake management techniques; values for PC1, PC2, PC5, EC1, EC2 and EC3 were assigned based on information provided by the District.

Note: Technologies not evaluated included Lapin Environmental and Water Warriors.

Table A.4– Lake Jesup Combined RFI Submittal Treatment Technology Evaluation and Ranking

ID*	Treatment Technology		PC1: lbs of P Removed/yr	PC2: Water Quality Improvement	PC3. Address available P in the Water Column, Organic P Bound in Algae, or Both?	PC4. Fate of P	PC5: lbs of N Removed/yr	PC6: Water Column P Response Timeframe	EC1: Cost/lb of P Removed-Equivalent Basis Without Recovered Cost	EC2: Capital Costs	EC3: O&M Costs	EC4: Demonstrated potential for recovered costs	OC1: Land Requirement	OC2: Waste Byproduct	OC3: Pretreatment Required	OC4: Post Aeration Required	Total	Original Rank	Updated Combined Rank
		Category Weight:	**40%**						**40%**				**20%**						
		Treatment Type	**12%**	**10%**	**8%**	**3%**	**3%**	**4%**	**20%**	**8%**	**8%**	**4%**	**5%**	**5%**	**5%**	**5%**	**100%**		
V-07	Enviremed (Virophos)	Chemical	6	10	10	5	2	10	5	2	10	1	10	10	10	10	7.1	1	2
V-08	Ferthaul (Cavitation)	Physical	8	1	10	10	4	1	10	6	4	10	5	1	10	10	6.8	2	3
C-17/VU06	Alum/ Solitude	Chemical	8	10	10	5	2	10	5	2	2	1	10	10	10	10	6.7	3	4
V-13	SePRO (Phoslock)	Chemical	6	10	1	5	0	10	5	10	4	1	10	10	10	10	6.5	4	5
C-40	Treatment Wetland	Biological	6	5	10	10	8	1	5	4	8	1	1	10	10	10	6.2	5	6
V-09	Gator Aquatic	Chemical	4	10	10	10	0	1	5	8	6	1	5	1	10	10	6.1	6	7
V-01	Allied Group (P-Kill)	Chemical	6	5	10	10	6	1	5	8	6	10	5	1	1	10	5.9	7	8
V-04	Clearas (ABNR™)	Chemical / Algal	6	1	10	10	4	1	5	2	8	1	5	1	10	10	5.2	8	11
C-50	Dredging	Sediment Removal	10	5	5	10	10	5	1	10	2	1	1	1	10	10	5.2	9	12
VU-01	Aquafiber (Mobile Unit)	Chemical / Algal	2	10	10	10	4	1	1	6	6	1	5	1	10	10	5	10	13
V-11	Hydromentia (Algal TurfScrubber)	Algal	4	5	10	10	2	1	5	0	0	1	5	1	1	10	4.1	11	14
V-10	Gerber Pumps (Electrocoagulation)	Physical	6	10	10	10	6	1	0	0	0	1	5	1	10	1	3.9	12	15
VU-02	Ferrate Solutions	Chemical	2	10	10	10	4	1	10	0	8	10	5	1	1	1	5.9	N/A	9
VU-05	Nclear (TPX)	Chemical	8	10	1	5	0	10	10	10	10	1	10	10	10	10	8.1	N/A	1
VU-04	MIcroBio	Chemical	4	5	10	10	0	1	5	8	6	1	5	1	10	10	5.6	N/A	10

Represents traditional lake management techniques; values for PC1, PC2, PC5, EC1, EC2 and EC3 were assigned based on information provided by the District.

*Technology ID descriptors: V denotes vendor submittals received as part of the original 2016 RFI. VU denotes vendor submittals received as part of the updated 2020 RFI. C denotes standard technologies identified by the District. All Information used to conduct the evaluation and to rank the different technologies relied strictly upon information provided by the vendors and should be used with caution and for informational purposes only since this information could not be confirmed nor verified as part of this project. Technologies not evaluated included Lapin Environmental and Water Warriors.

Table A.5– Lake Jesup Data Review Master Inventory

Filename	File Type	Document Title	Author	Document Date	General Description
28739 RFI FINALpdf	Report	RFI for LAKE JESUP: IN-LAKE PHOSPHORUS REDUCTION – ADVANCED TECHNOLOGY REVIEW	SJRWMD	2016	REQUEST FOR INFORMATION NUMBER 28739 for SJRWMD
Basis for Ranking of Treatment Options for Lake Jesup.pdf	Draft Stand Alone Table	Basis for Ranking of Treatment Options for Lake Jesup Phosphorus Reduction	NA	NA	Draft table includes preliminary criteria, revised criteria, metrics of treatment options; cost benefit factors; maintenance factors
Cable et al 1997 Sediment and nutrient deposition in Lake Jesup.pdf	Final Report	Sediment and Nutrient Deposition in Lake Jesup, Florida (USA)	Cable, et al	1997	Paleo report including isotopes, 201Pb dating, nutrient profiles, diatom evidence
DRAFT_Three Tier Screening JesupPReduction_REV2.pdf	Draft Stand Alone Table	Lake Jesup: In-Lake Phosphorus Reduction - Review of Treatment Options	NA	NA	Preliminary screening matrix from vendor information review includes technology description and total costs from each vendor; advantages/disadvantages
In-Lake Options Summary.docx	Tech Memo	Lake Jesup In-Lake Phosphorus Reduction – Review of Treatment Options	CDM Smith and ESA	Aug-17	Review of phosphorus reduction methods and their cost-effectiveness to remove P by CDM Smith and ESA; highlights alum, dredging, phoslock
Lake Jesup In-Lake Phosphorus Reduction TM August 2017.pdf	Full Tech Memo w/ appendix	Lake Jesup In-Lake Phosphorus Reduction – Review of Treatment Options	CDM Smith and ESA	Aug-17	Comprehensive review of phosphorus reduction methods and their cost-effectiveness to remove P by CDM Smith and ESA - full report w. lit review, workshops, results of preliminary screening
Link to Jesup Bathymetry GIS Files	Link to website	NA	SJRWMD	NA	Bathymetry GIS files
Memo_JesupDraftLitReview_2017Mar28.pdf	Tech Memo	Lake Jesup In-lake Phosphorus Reduction – Review of Treatment Options	CDM Smith	Mar-17	Literature Review of roughly 300 papers
Phosphorus content in Lake Jesup.pdf	Draft Report	Phosphorus Content in Lake Jesup's Flocculant Sediment Layer	Sherry Brandt-Williams and Robert Godfrey	NA	Draft estimation of volume and mass of TP in soft sediment layer based off Cable et al and GIS analysis
Table 1 Lake Jesup In-lake P reduction Final Evaluation Matrix 6-27-17.pdf	Draft Stand Alone Table	Evaluation Criteria Framework for Treatment Technologies	CDM Smith and ESA	Aug-17	Clipped from "Lake Jesup In-Lake Phosphorus Reduction – Review of Treatment Options" tech memo
Table 2 Lake Jesup In-lake P reduction Final Evaluation Matrix 6-27-17.pdf	Draft Stand Alone Table	Treatment Technology Evaluation and Ranking	CDM Smith and ESA	Aug-17	Clipped from "Lake Jesup In-Lake Phosphorus Reduction – Review of Treatment Options" tech memo
Table 3 Lake Jesup In-lake P reduction Final Evaluation Matrix 6-27-17.pdf	Draft Stand Alone Table	Treatment Technology Evaluation and Ranking continued	CDM Smith and ESA	Aug-17	Clipped from "Lake Jesup In-Lake Phosphorus Reduction – Review of Treatment Options" tech memo

Filename	File Type	Document Title	Author	Document Date	General Description
Three tier Preliminary Screening_JesupPRemoval_Draft.pdf	Draft Stand Alone Table	Preliminary Screening Matrix from Vendor and Literature Review	CDM Smith and ESA	Aug-17	Clipped from "Lake Jesup In-Lake Phosphorus Reduction – Review of Treatment Options" tech memo
VendorCostTemplateSummary_LakeJesup.pdf	Draft Stand Alone Table	Vendor Cost Summary	CDM Smith and ESA	Aug-17	Clipped from "Lake Jesup In-Lake Phosphorus Reduction – Review of Treatment Options" tech memo
Wshop Agenda_030717-030817.pdf	Meeting Agenda	Meeting Agenda	CDM Smith	Mar-17	Public workshop agenda March 7th-8th
Wshop Summary_030717-030817.pdf	Meeting Summary	Meeting Summary	CDM Smith	Mar-17	Public workshop summary March 7th-8th - Public comments
Kenney_et_al_2002.pdf	Journal Article	Sediment Records of Phosphorus-Driven Shifts to Phytoplankton Dominance in Shallow Florida Lakes	Kenney et al	2002	Study on the effect of phosphorus on primary producer community structure in shallow lakes
Neilsen_Thesis_2011.pdf	Thesis	Sediment Dynamics of a Shallow Hypereutrophic Lake: Lake Jesup, Florida USA	Shauna Neilsen	2011	Study on the vertical sediment flux within Lake Jesup.

Table A.6 – Total Phosphorus Concentrations Measured under Anoxic Conditions during Laboratory Incubations

Sample	Total Phosphorus, as P, (mg/L)					
	T=0	T=24	T=48	T=96	T=168	T=216
Phos-1A, Phoslock	0.006	0.018	0.025	0.018	0.013	0.053
Phos-0.5A, Phoslock	0.006	0.03	0.023	0.013	0.008	0.011
Phos-2A, Phoslock	0.006	0.023	0.013	0.011	0.011	0.018
Phos-1B, Phoslock	0.006	0.044	0.023	0.018	0.006	0.025
Phos-0.5B, Phoslock	0.006	0.098	0.063	0.039	0.025	0.032
Phos-2B, Phoslock	0.006	0.03	0.03	0.011	0.005	0.016
SC-A, Sediment Control	0.006	0.032	0.037	0.032	0.006	0.082
TPX-1A, Nclear TPX	0.006	0.044	0.042	0.039	0.07	0.065
TPX-0.5A, Nclear TPX	0.006	0.042	0.049	0.07	0.042	0.046
TPX-2A, Nclear TPX	0.006	0.03	0.018	0.028	0.037	0.03
TPX-1B, Nclear TPX	0.006	0.034	0.039	0.023	0.037	0.028
TPX-0.5B, Nclear TPX	0.006	0.034	0.056	0.02	0.065	0.054
TPX-2B, Nclear TPX	0.006	0.044	0.011	0.018	0.03	0.018
VP-1A, ViroPhos	0.006	0.065	0.056	0.011	0.02	0.005
VP-0.5A, ViroPhos	0.006	0.005	0.056	0.011	0.02	0.005
VP-2A, ViroPhos	0.006	0.044	0.046	0.006	0.018	0.005
VP-1B, ViroPhos	0.006	0.023	0.046	0.02	0.016	0.005
VP-0.5B, ViroPhos	0.006	0.042	0.051	0.025	0.023	0.005
VP-2B, ViroPhos	0.006	0.037	0.046	0.023	0.018	0.005
SC-B, Sediment Control	0.006	0.037	0.051	0.049	0.068	0.049

Table A.7 – Ammonia Concentrations Measured under Anoxic Conditions during Laboratory Incubations

Sample	Ammonia, as N, (mg/L)					
	T=0	T=24	T=48	T=96	T=168	T=216
Phos-1A, Phoslock	0.015	0.33	0.3	0.46	0.41	1
Phos-0.5A, Phoslock	0.015	0.27	0.15	0.29	0.3	0.66
Phos-2A, Phoslock	0.015	0.11	0.18	0.47	0.49	1
Phos-1B, Phoslock	0.015	0.31	0.27	0.46	0.45	0.86
Phos-0.5B, Phoslock	0.015	0.14	0.13	0.32	0.38	0.78
Phos-2B, Phoslock	0.015	0.25	0.24	0.42	0.48	0.83
SC-A, Sediment Control	0.015	0.12	0.12	0.45	0.43	1.1
TPX-1A, Nclear TPX	0.015	0.8	0.82	1.2	1.4	1.2
TPX-0.5A, Nclear TPX	0.015	0.19	0.43	0.66	1.1	1.2
TPX-2A, Nclear TPX	0.015	0.09	0.26	1.4	4.4	4.8
TPX-1B, Nclear TPX	0.015	0.3	0.84	0.95	1	1.1
TPX-0.5B, Nclear TPX	0.015	0.11	0.21	0.86	1.1	0.98
TPX-2B, Nclear TPX	0.015	0.41	0.43	1.2	2.1	2.1
VP-1A, ViroPhos	0.015	0.06	0.76	0.32	0.48	0.54
VP-0.5A, ViroPhos	0.015	0.28	0.66	0.38	0.76	0.66
VP-2A, ViroPhos	0.015	0.11	0.31	0.47	0.7	0.74
VP-1B, ViroPhos	0.015	0.2	0.24	0.4	0.5	0.53
VP-0.5B, ViroPhos	0.015	0.19	0.27	0.44	0.69	0.68
VP-2B, ViroPhos	0.015	0.25	0.79	0.5	0.87	0.92
SC-B, Sediment Control	0.015	1.9	0.39	0.51	0.87	1

Figure A.4 – Total Phosphorus Concentrations Measured under Anoxic Conditions during Laboratory Incubations Using Treatment Amendment ViroPhos

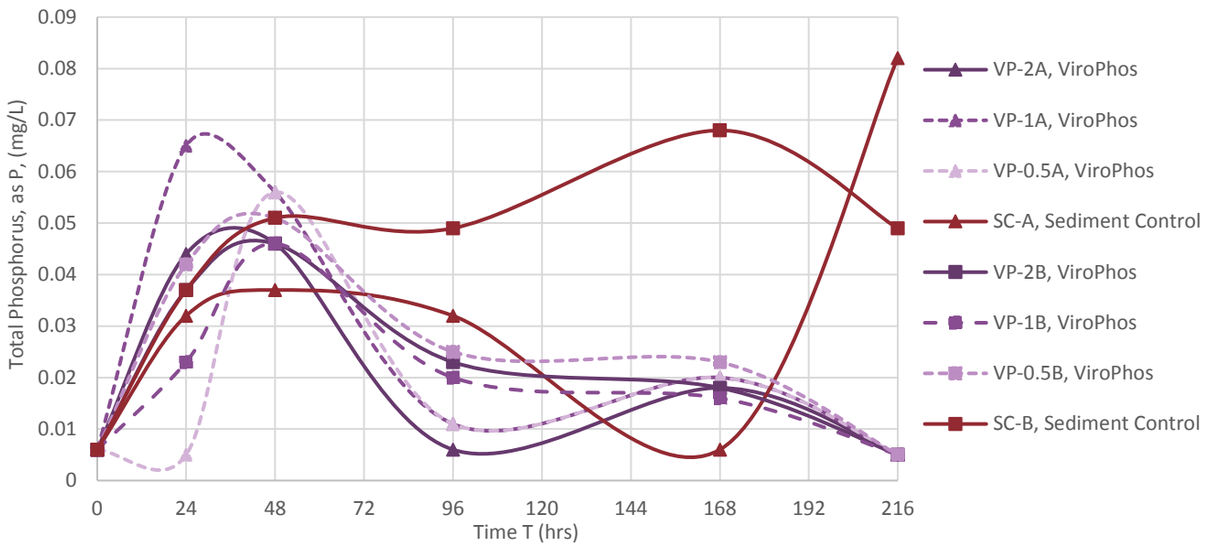


Figure A.5 – Total Phosphorus Concentrations Measured under Anoxic Conditions during Laboratory Incubations Using Treatment Amendment Nclear TPX

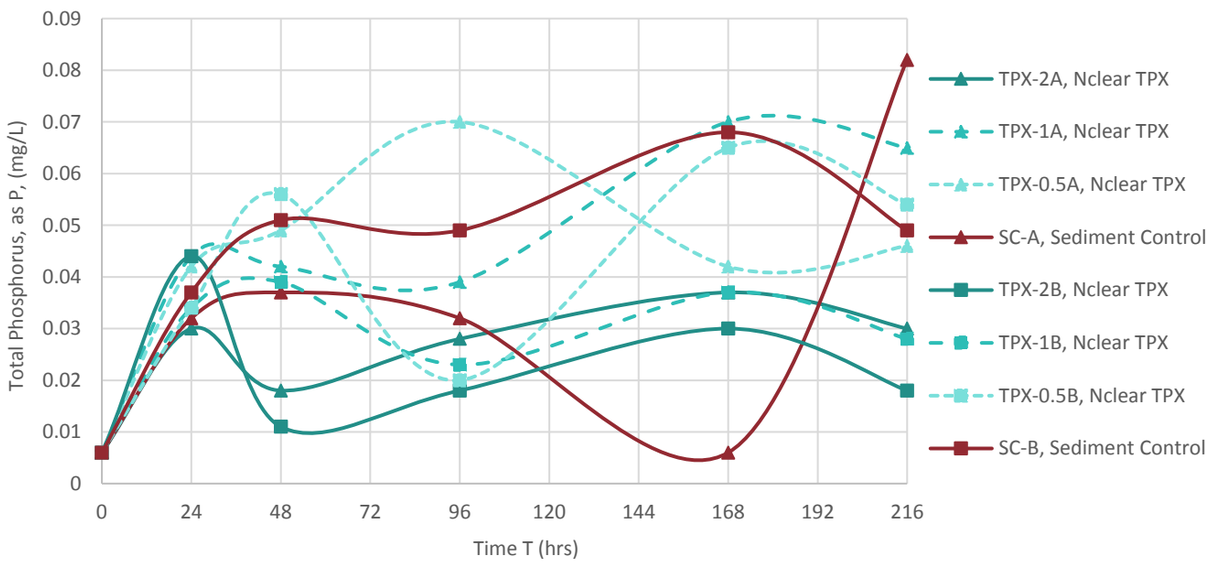


Figure A.6 – Total Phosphorus Concentrations Measured under Anoxic Conditions during Laboratory Incubations Using Treatment Amendment Phoslock

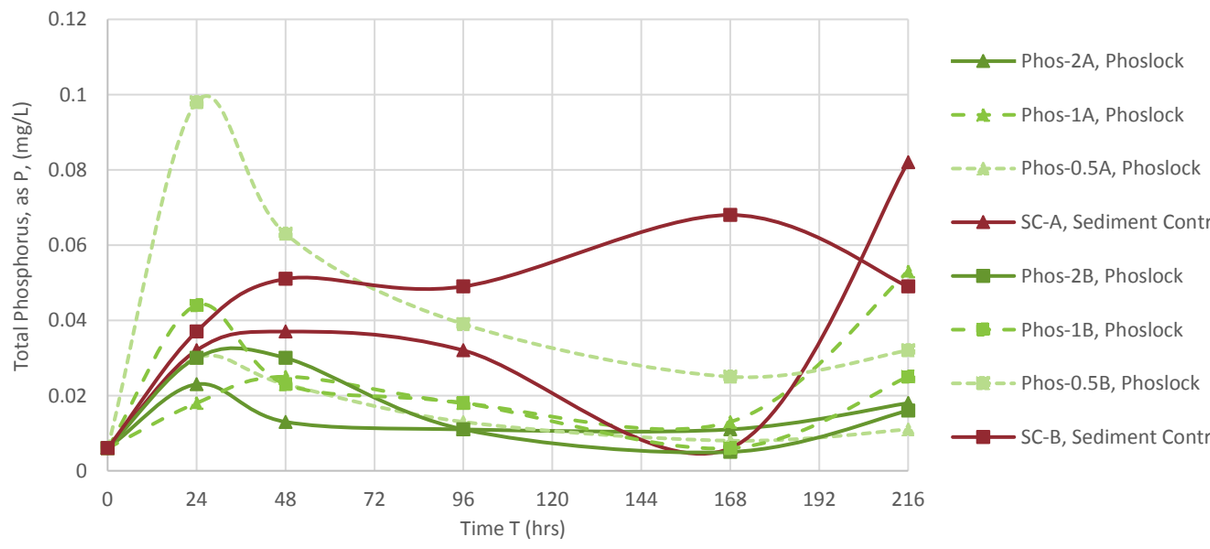


Figure A.7 – Ammonia Concentrations Measured under Anoxic Conditions during Laboratory Incubations Using Treatment Amendment ViroPhos

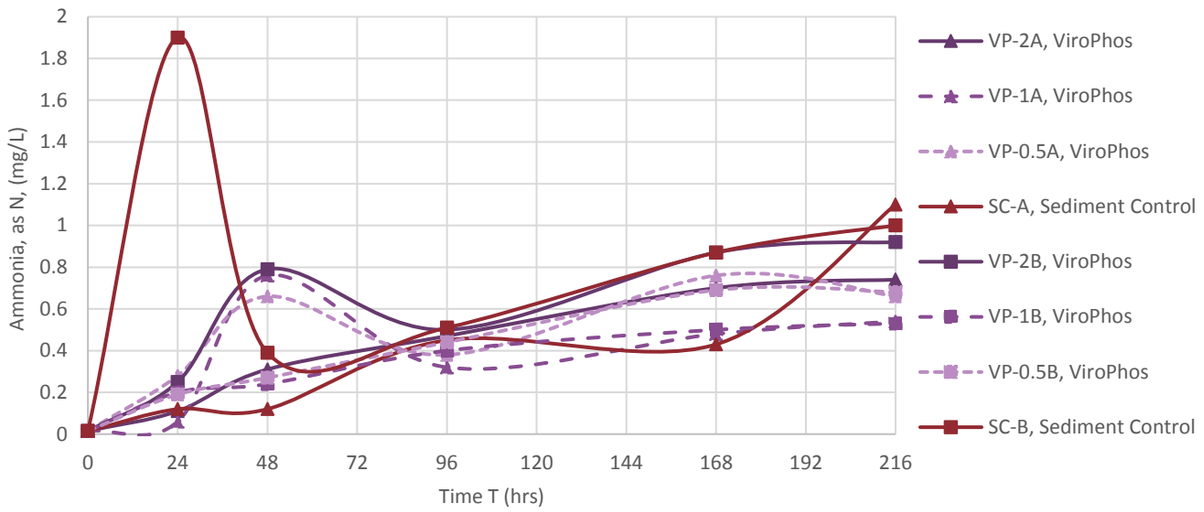


Figure A.8 – Ammonia Concentrations Measured under Anoxic Conditions during Laboratory Incubations Using Treatment Amendment Nclear TPX

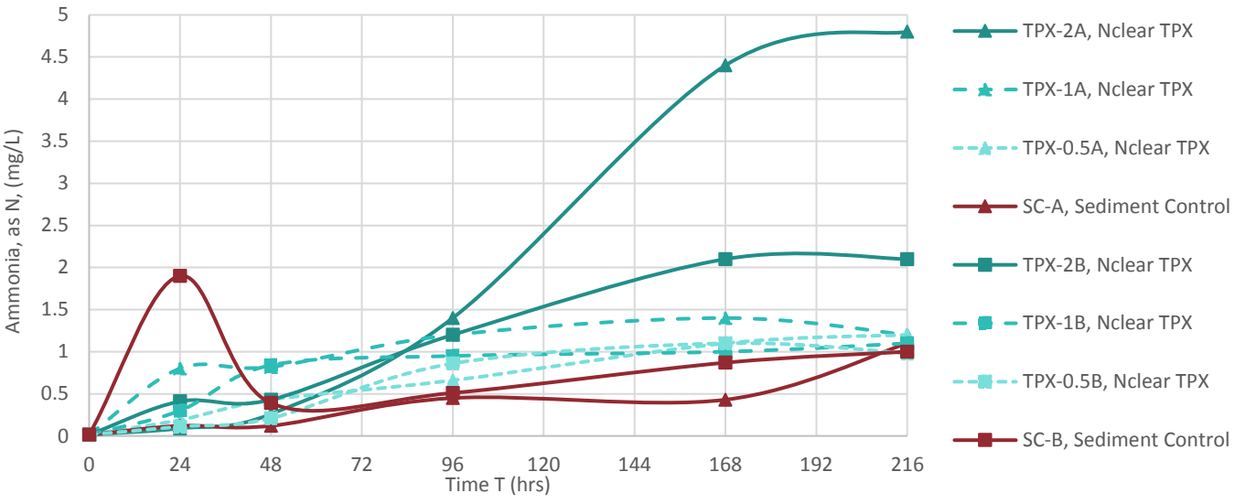


Figure A.9 – Ammonia Concentrations Measured under Anoxic Conditions during Laboratory Incubations Using Treatment Amendment Phoslock

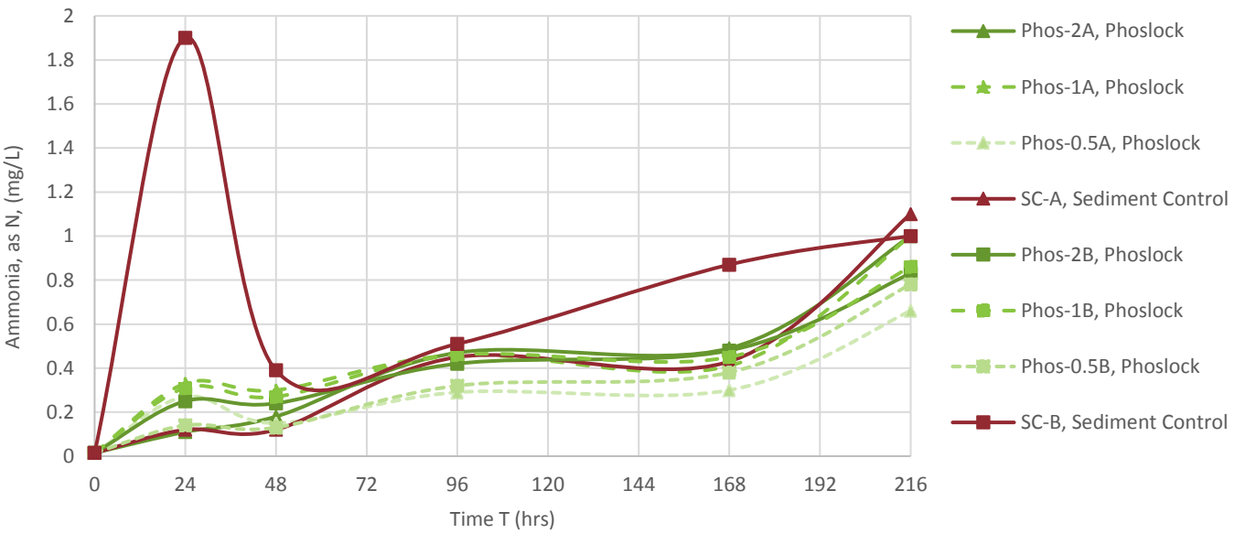


Figure A.10 – Average Percent Reduction of Total Phosphorus using Treatment Alternative ViroPhos

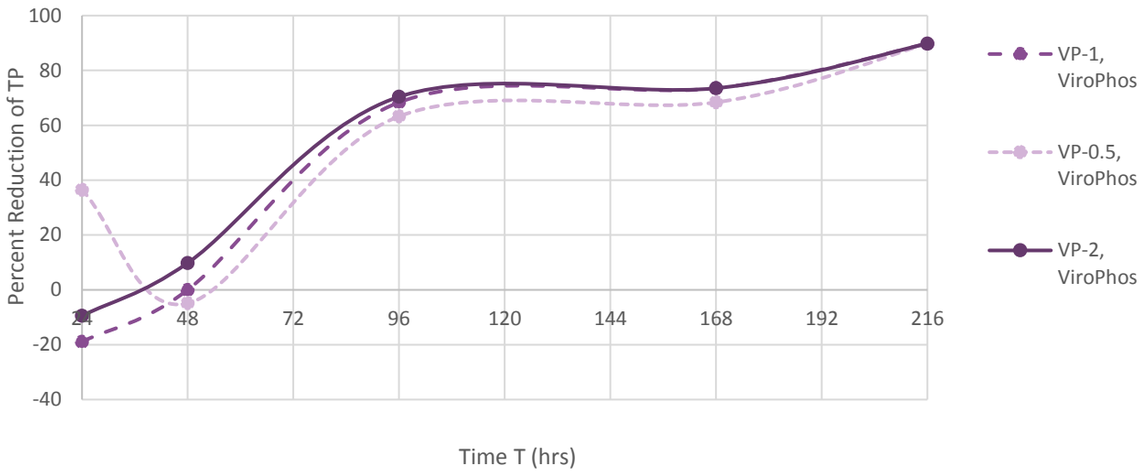


Figure A.11 – Average Percent Reduction of Total Phosphorus using Treatment Alternative Nclear TPX

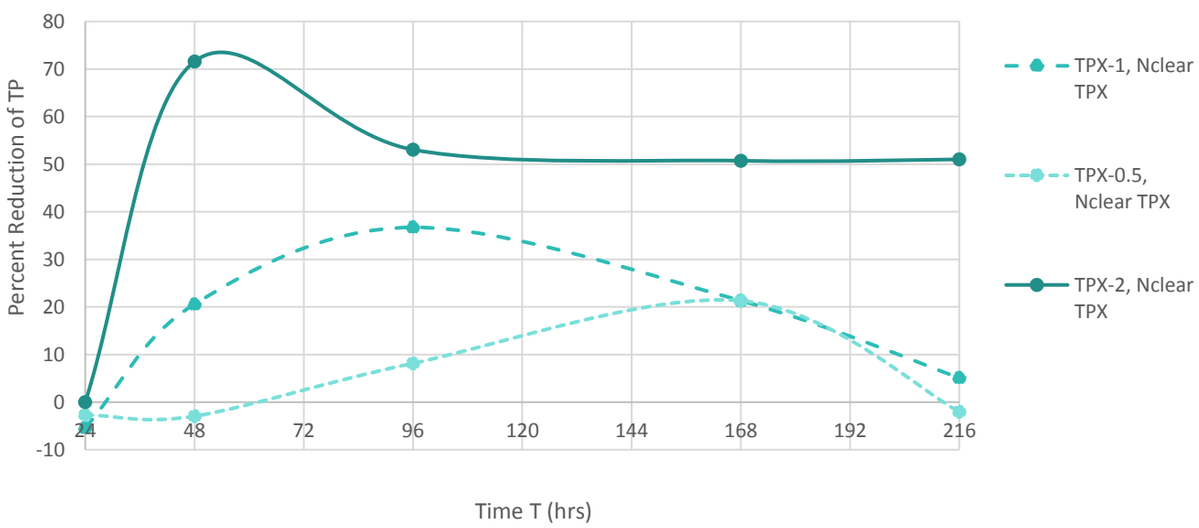


Figure A.12 – Average Percent Reduction of Total Phosphorus Using Treatment Alternative Phoslock

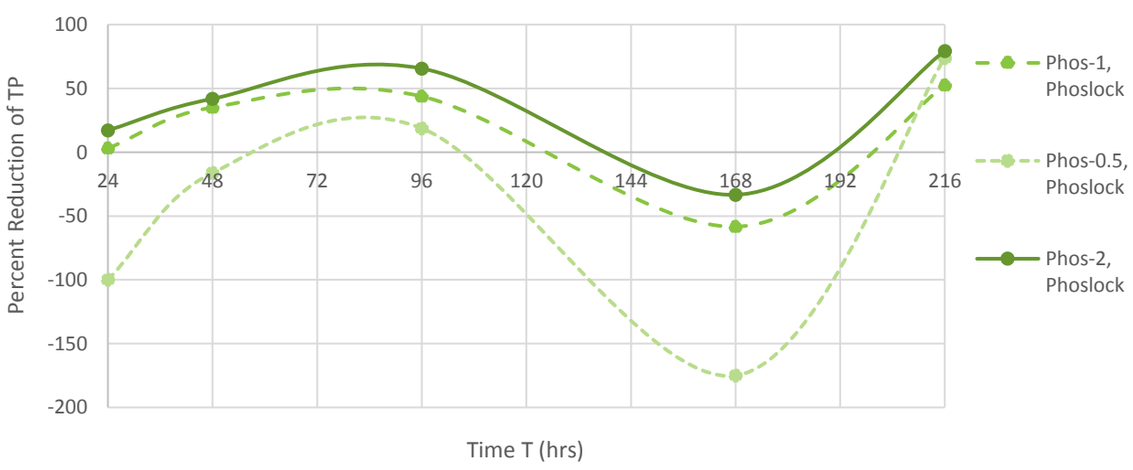


Figure A.13 – Average Percent Reduction of Ammonia using Treatment Alternative ViroPhos

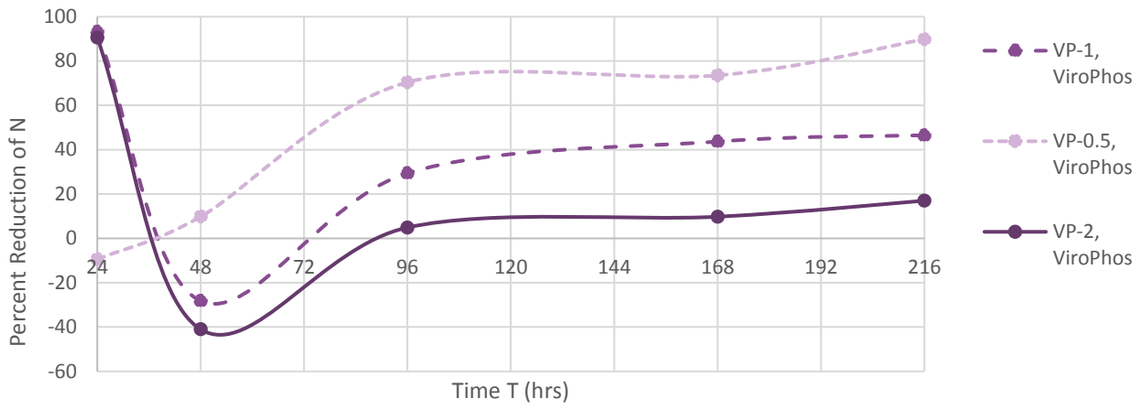


Figure A.14 – Average Percent Reduction of Ammonia using Treatment Alternative Nclear TPX

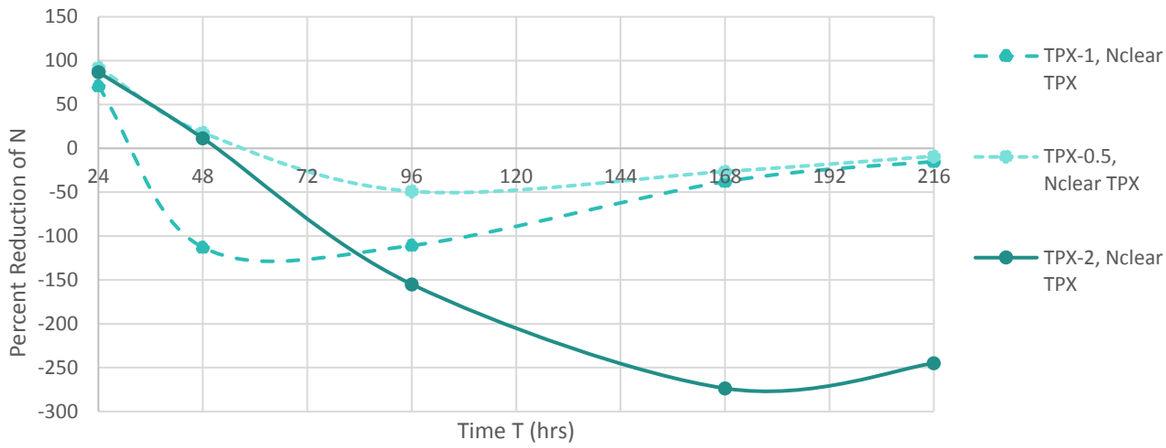
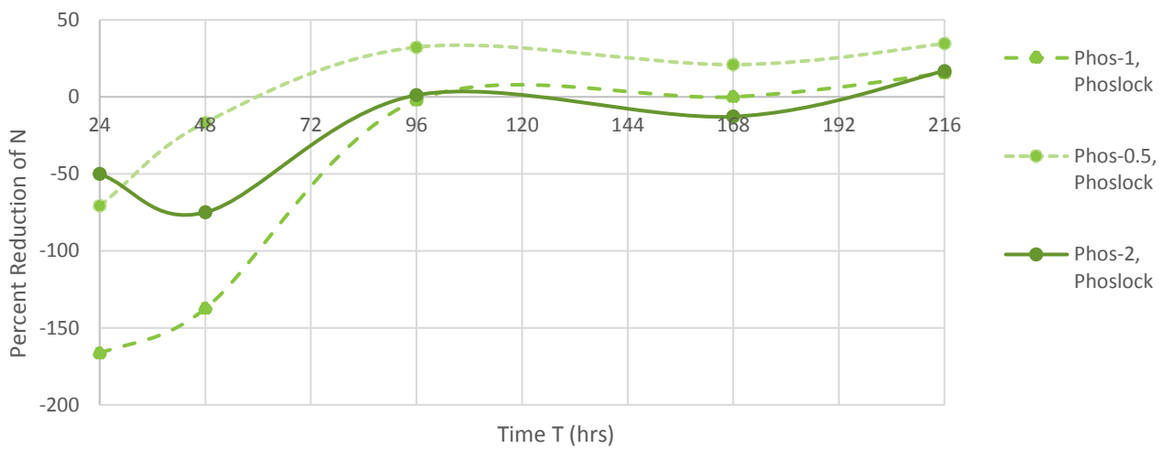
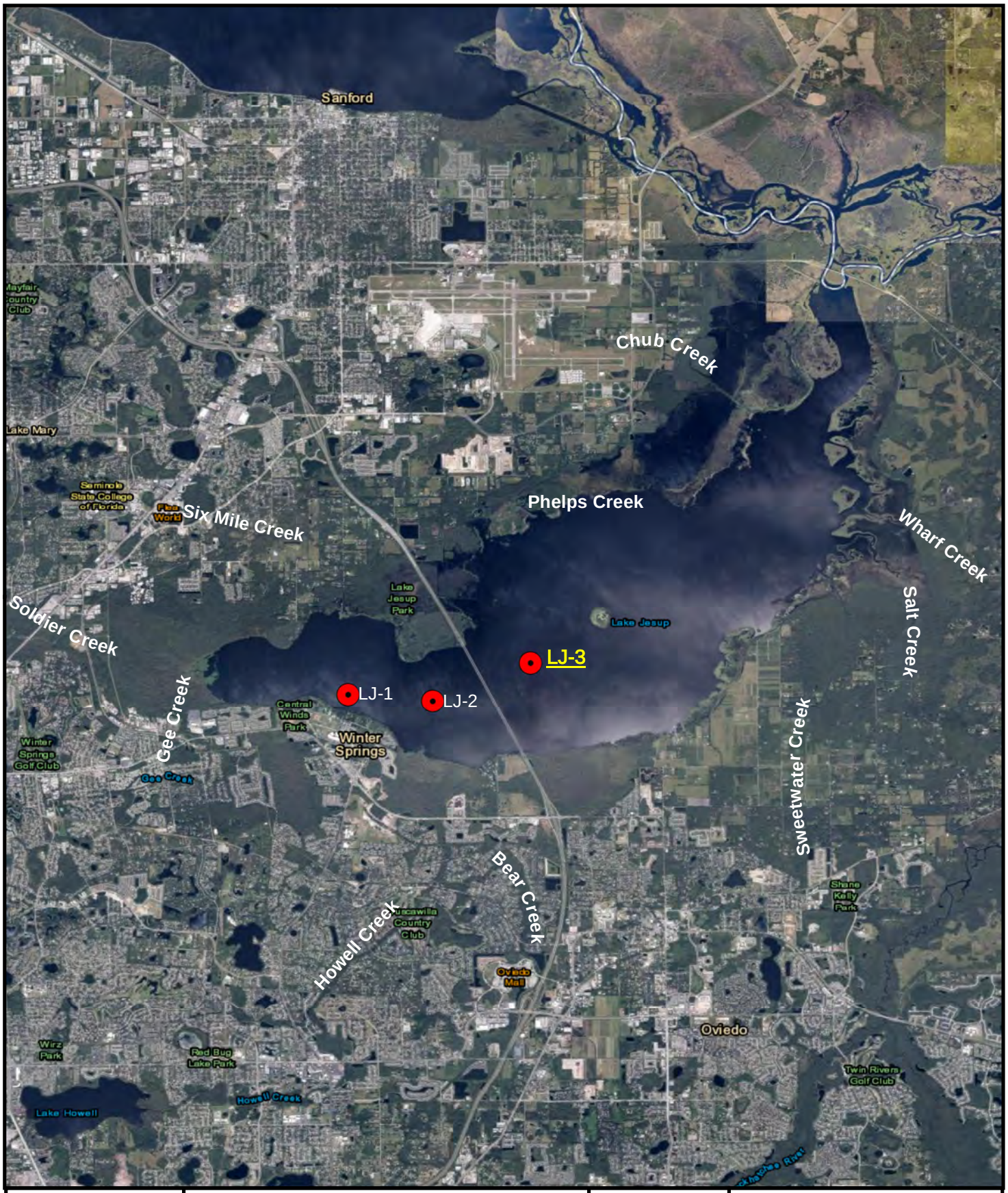


Figure A.15 – Average Percent Reduction of Ammonia Using Treatment Alternative Phoslock



APPENDIX B

Sediment Core Locations



Notes:

1- Project No.: 600698

2- Data Source - Esri

3- This map is intended to be used for planning purposes only. It is not a survey.

Date: 11/4/2020
Revised: TF
Checked By: FL

Explanation of Features

N

Sediment Core Sampling Locations

0 5,000

1"=5000 Feet

wood.

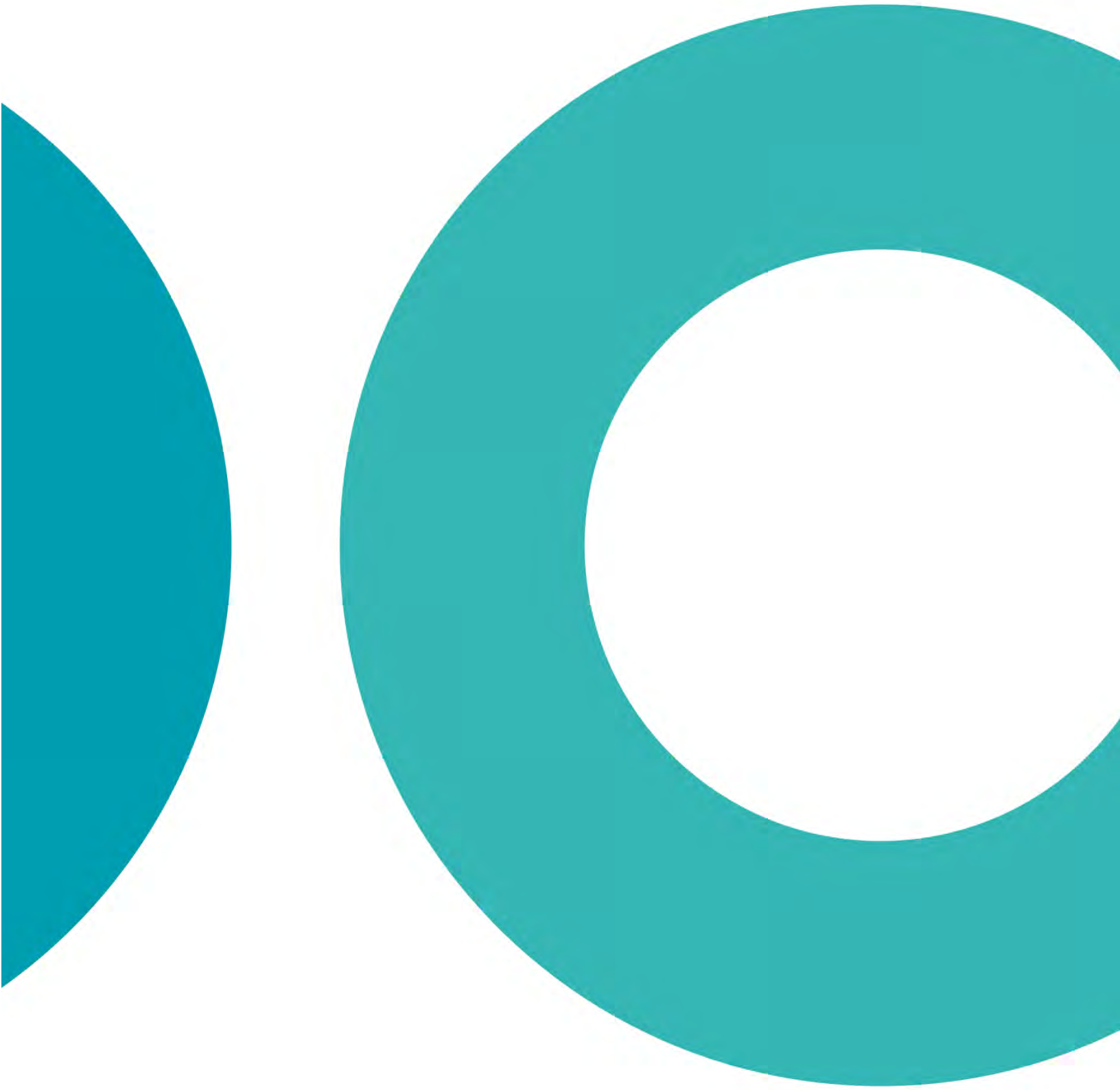
Wood Environment & Infrastructure Solutions, Inc.
1101 Channelside Drive, Ste #200
Tampa, FL 33602
CA-5392
(813) 636-1500

Sediment Core Sampling Location Map Lake Jesup Pinellas County, FL

Path: C:\Users\francesca.lauterman\Documents\ArcGIS\Packages\Fig_3_Topo_52285149-520D-4D2C-8CAF-70D514553A61\v103\Fig_3_Topo.mxd

APPENDIX C

Laboratory Reports



Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

August 25, 2020

Francesca Lauterman
Wood EIS
1101 Channelside Suite
200 Tampa, FL 33602

RE: Workorder: T2014845 Lake Jesup

Dear Francesca Lauterman:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, August 07, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heidi Parker - Project Manager
HParker@AELLab.com

Enclosures

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

SAMPLE SUMMARY

Workorder: T2014845 Lake Jesup

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T2014845001	LJ-1	Soil	8/6/2020 12:00	8/7/2020 10:30
T2014845002	LJ-2	Soil	8/6/2020 13:00	8/7/2020 10:30
T2014845003	LJ-3	Soil	8/6/2020 13:25	8/7/2020 10:30

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2014845 Lake Jesup

Lab ID: **T2014845001** Date Received: 08/07/20 10:30 Matrix: Soil

Sample ID: **LJ-1** Date Collected: 08/06/20 12:00

Results for sample T2014845001 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Soils	Preparation Method: SW-846 3050B Analytical Method: SW-846 6010							
Aluminum	**14000**		**mg/Kg**	**1**	420	100	8/18/2020 19:54	T
Calcium	**16000**		**mg/Kg**	**1**	830	210	8/18/2020 19:54	T
Iron	**19000**		**mg/Kg**	**1**	420	100	8/18/2020 19:54	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Soil	Analytical Method: EPA 350.1							
Ammonia (N)	**290**		**mg/Kg**	**1**	104.54	26.14	8/10/2020 15:20	T
WET CHEMISTRY								
Analysis Desc: Percent Solids,SM2540G,Soil	Analytical Method: SM 2540G							
Percent Moisture	**90**		**%**	**1**	0.0010	0.0010	8/12/2020 11:00	T

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2014845 Lake Jesup

Lab ID: **T2014845002** Date Received: 08/07/20 10:30 Matrix: Soil

Sample ID: **LJ-2** Date Collected: 08/06/20 13:00

Results for sample T2014845002 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Soils	Preparation Method: SW-846 3050B Analytical Method: SW-846 6010							
Aluminum	**2400**		**mg/Kg**	**1**	340	84	8/18/2020 19:57	T
Calcium	**10000**		**mg/Kg**	**1**	670	170	8/18/2020 19:57	T
Iron	**3900**		**mg/Kg**	**1**	340	84	8/18/2020 19:57	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Soil	Analytical Method: EPA 350.1							
Ammonia (N)	**50**	**I**	**mg/Kg**	**1**	82.42	20.60	8/10/2020 15:21	T
WET CHEMISTRY								
Analysis Desc: Percent Solids,SM2540G,Soil	Analytical Method: SM 2540G							
Percent Moisture	**88**		**%**	**1**	0.0010	0.0010	8/12/2020 11:00	T

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2014845 Lake Jesup

Lab ID: **T2014845003** Date Received: 08/07/20 10:30 Matrix: Soil

Sample ID: **LJ-3** Date Collected: 08/06/20 13:25

Results for sample T2014845003 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Soils	Preparation Method: SW-846 3050B Analytical Method: SW-846 6010							
Aluminum	**12000**		**mg/Kg**	**1**	440	110	8/18/2020 20:01	T
Calcium	**14000**		**mg/Kg**	**1**	870	220	8/18/2020 20:01	T
Iron	**18000**		**mg/Kg**	**1**	440	110	8/18/2020 20:01	T
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Soil	Analytical Method: EPA 350.1							
Ammonia (N)	**220**		**mg/Kg**	**1**	114.11	28.53	8/10/2020 15:21	T
WET CHEMISTRY								
Analysis Desc: Percent Solids,SM2540G,Soil	Analytical Method: SM 2540G							
Percent Moisture	**91**		**%**	**1**	0.0010	0.0010	8/12/2020 11:00	T

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS QUALIFIERS

Workorder: T2014845 Lake Jesup

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2014845 Lake Jesup

QC Batch: WCAt/5639 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2014845001, T2014845002, T2014845003

METHOD BLANK: 3575805

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/Kg	2.50	2.50	U

LABORATORY CONTROL SAMPLE: 3575806

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/Kg	5	5.0	99.2	90-110	

QC Batch: DGMt/2156 Analysis Method: SW-846 6010
QC Batch Method: SW-846 3050B Prepared: 08/18/2020 08:00
Associated Lab Samples: T2014845001, T2014845002, T2014845003

METHOD BLANK: 3584786

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
METALS				
Aluminum	mg/Kg	10	10	U
Calcium	mg/Kg	20	20	U
Iron	mg/Kg	10	10	U

LABORATORY CONTROL SAMPLE: 3584787

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
METALS						
Aluminum	mg/Kg	100	110	105	80-120	
Calcium	mg/Kg	100	100	101	80-120	
Iron	mg/Kg	100	97	97	80-120	

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2014845 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2014845001	LJ-1			EPA 350.1	WCAt/5639
T2014845002	LJ-2			EPA 350.1	WCAt/5639
T2014845003	LJ-3			EPA 350.1	WCAt/5639
T2014845001	LJ-1			SM 2540G	WCAt/5692
T2014845002	LJ-2			SM 2540G	WCAt/5692
T2014845003	LJ-3			SM 2540G	WCAt/5692
T2014845001	LJ-1	SW-846 3050B	DGMt/2156	SW-846 6010	ICPt/1666
T2014845002	LJ-2	SW-846 3050B	DGMt/2156	SW-846 6010	ICPt/1666
T2014845003	LJ-3	SW-846 3050B	DGMt/2156	SW-846 6010	ICPt/1666

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ Jacksonville: 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ Gainesville: 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☒ Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name:	Wood PLC
Address:	1101 Channelside Dr #200
	Tampa, FL 33602
Phone:	813-289-0750
FAX:	
Contact:	Francesca Lauterman
Sampled By:	
Turn Around Time:	(Standard) Rush
AEL Profile #:	

Project Name:	Lake Jesup
Project Number:	~~600537418.07~~
PO Number:	600648x02.
FDEP Facility No:	0126097732
FDEP Facility Addr:	
Special Instructions:	
	ADaPT EQuIS Other

T20145845

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: Ca, Al, Fe	ANALYSIS REQUIRED: NH3	LABORATORY I.D. NUMBER
							Preservation			
							Field-Filtered?			
LJ-1	LJ-1 0-30cm	Comp	8/16/20	12:00 pm	SO	1		1	1	201
LJ-2	LJ-2 0-30cm	Comp	8/16/20	1:00 pm	SO	1		1	1	202
LJ-3	LJ-3 0-30cm	Comp	8/16/20	1:25 pm	SO	1		1	1	203

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 (T: 10A) A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		8/16/20	4:30 pm		8/17/20	1230
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID: _____

Contact Person: _____

Supplier of Water: _____

Site-Address: _____

DB Environmental

September 16, 2020

Wood PLC
Attention: Mary Szafraniac
1101 Channelside Dr. Suite 200
Tampa, FL 33602

PO #: C012609733
Project Name: Lake Jesup In-Lake Phosphorus Update
Project No.: 600698-02
Batch ID: 365563

Dear Mary Szafraniac:

DB Environmental received 3 samples on August 7, 2020 @ 14:45 for the analyses presented in the following report.

Analyses are performed with method required calibration and QA/QC samples whenever applicable. Method performance, which is based on the calibration and QA/QC samples, establishes the validity and certainty of the reported sample results. These results are calculated on a dry-weight basis, unless otherwise noted. These results relate only to the samples as received. The report shall not be reproduced except in full, without the written approval of the laboratory.

This report contains a total of 6 pages:

cover letter	1	case narrative	1	report	2
QC summary	1	COC	1	analytical results	0
correspondence	0	invoice	0		

Please note that any unused portion of the samples will be disposed of 30 days following issuance of report, unless you have requested otherwise.

If you have any questions regarding the analytical results, please feel free to call me at 321-639-4896.

Sincerely,

Nancy Chan
Project Manager

Enclosure

THIS DOCUMENT MEETS NELAC STANDARDS
NELAP Certification #E 83330

Environmental

CASE NARRATIVE

September 16, 2020

Wood PLC
Attention: Mary Szafraniac
1101 Channelside Dr. Suite 200
Tampa, FL 33602

PO #: C012609733
Project Name: Lake Jesup In-Lake Phosphorus Update
Project No.: 600698-02
Batch ID: 365563

Parameter: HCl TSP
Lab Log #: 365536

The extraction dup was outside the 0-40% acceptance range for %rsd. The data was accepted because the associated laboratory check standard results were acceptable. The result has been qualified.

Nancy Chan
Project Manager

DB Environmental, Inc., 365 Gus Hipp Blvd., Rockledge, FL 32955 - (321) 639-4896
NELAP/FDOH# E 83330

Date: September 16, 2020

REPORT OF ANALYSIS

Client: Wood PLC
Attention: Mary Szafraniac
1101 Channelside Dr. Suite 200
Tampa, FL 33602

Date and Time Received: 8/7/2020 14:45

PO #: C012609733
Project Name : Lake Jesup In-Lake Phosphorus Update
Project No. : 600698-02
Matrix: Sediment

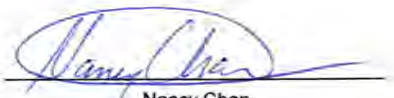
SAMPLE ID	LAB LOG NUMBER	DATE SAMPLED	TIME SAMPLED	PARAMETER	METHOD NUMBER	RESULTS	UNITS	METHOD DETECTION LIMIT	DATE/TIME OF ANALYSIS	QUALIFIER CODE
LJ-1	365536	8/6/2020	12:00	% Dry Weight	ASA 21-2	9.85	%	0.01	8/10/2020	
LJ-2	365537	8/6/2020	13:00	% Dry Weight	ASA 21-2	14.15	%	0.01	8/10/2020	
LJ-3	365538	8/6/2020	13:25	% Dry Weight	ASA 21-2	9.25	%	0.01	8/10/2020	
LJ-1	365536	8/6/2020	12:00	Bulk Density	ASA 13	0.098	g/cc	0.001	8/10/2020	
LJ-2	365537	8/6/2020	13:00	Bulk Density	ASA 13	0.15	g/cc	0.001	8/10/2020	
LJ-3	365538	8/6/2020	13:25	Bulk Density	ASA 13	0.095	g/cc	0.001	8/10/2020	
LJ-1	365536	8/6/2020	12:00	Total Phosphorus	DBE SOP TP	577	mg/kg dry	20	8/21/2020	
LJ-2	365537	8/6/2020	13:00	Total Phosphorus	DBE SOP TP	1200	mg/kg dry	20	8/21/2020	A
LJ-3	365538	8/6/2020	13:25	Total Phosphorus	DBE SOP TP	632	mg/kg dry	20	8/21/2020	
LJ-1	365536	8/6/2020	12:00	Porewater SRP	DBE SOP OPO4	0.340	mg/L	0.004	8/12/2020 12:57	A
LJ-2	365537	8/6/2020	13:00	Porewater SRP	DBE SOP OPO4	0.114	mg/L	0.002	8/12/2020 12:57	A
LJ-3	365538	8/6/2020	13:25	Porewater SRP	DBE SOP OPO4	0.556	mg/L	0.010	8/12/2020 12:57	
LJ-1	365536	8/6/2020	12:00	Porewater SRP	DBE SOP OPO4	3.1	mg/kg dry	0.037	8/12/2020 12:57	A
LJ-2	365537	8/6/2020	13:00	Porewater SRP	DBE SOP OPO4	0.66	mg/kg dry	0.011	8/12/2020 12:57	A
LJ-3	365538	8/6/2020	13:25	Porewater SRP	DBE SOP OPO4	5.3	mg/kg dry	0.096	8/12/2020 12:57	
LJ-1	365536	8/6/2020	12:00	Porewater NH_3-N	SM 4500-NH3 (18th ed.)	9.23	mg/L	0.200	8/25/2020	A
LJ-2	365537	8/6/2020	13:00	Porewater NH_3-N	SM 4500-NH3 (18th ed.)	3.19	mg/L	0.040	8/25/2020	A
LJ-3	365538	8/6/2020	13:25	Porewater NH_3-N	SM 4500-NH3 (18th ed.)	10.3	mg/L	0.200	8/25/2020	
LJ-1	365536	8/6/2020	12:00	Porewater NH_3-N	SM 4500-NH3 (18th ed.)	84.9	mg/kg dry	1.8	8/25/2020	A
LJ-2	365537	8/6/2020	13:00	Porewater NH_3-N	SM 4500-NH3 (18th ed.)	18.3	mg/kg dry	0.2	8/25/2020	A
LJ-3	365538	8/6/2020	13:25	Porewater NH_3-N	SM 4500-NH3 (18th ed.)	98.9	mg/kg dry	1.9	8/25/2020	
LJ-1	365536	8/6/2020	12:00	NH_4Cl TSP*	DBE SOP TP	22.6	mg/kg dry	0.8	8/27/2020	A
LJ-2	365537	8/6/2020	13:00	NH_4Cl TSP*	DBE SOP TP	27.5	mg/kg dry	0.8	8/27/2020	A

SAMPLE ID	LAB LOG NUMBER	DATE SAMPLED	TIME SAMPLED	PARAMETER	METHOD NUMBER	RESULTS	UNITS	METHOD DETECTION LIMIT	DATE/TIME OF ANALYSIS	QUALIFIER CODE
LJ-3	365538	8/6/2020	13:25	NH_4Cl TSP*	DBE SOP TP	25.0	mg/kg dry	0.8	8/27/2020	
LJ-1	365536	8/6/2020	12:00	$NaHCO_3/Na_2S_2O_4$ TSP**	DBE SOP TP	29.8	mg/kg dry	3.1	8/27/2020	A
LJ-2	365537	8/6/2020	13:00	$NaHCO_3/Na_2S_2O_4$ TSP**	DBE SOP TP	29.2	mg/kg dry	3.1	8/27/2020	A
LJ-3	365538	8/6/2020	13:25	$NaHCO_3/Na_2S_2O_4$ TSP**	DBE SOP TP	29.9	mg/kg dry	3.1	8/27/2020	
LJ-1	365536	8/6/2020	12:00	NaOH SRP***	DBE SOP OPO4	64.3	mg/kg dry	4.2	8/20/2020 11:38	A
LJ-2	365537	8/6/2020	13:00	NaOH SRP***	DBE SOP OPO4	32.3	mg/kg dry	4.1	8/20/2020 11:38	A
LJ-3	365538	8/6/2020	13:25	NaOH SRP***	DBE SOP OPO4	50.6	mg/kg dry	4.2	8/20/2020 11:38	
LJ-1	365536	8/6/2020	12:00	NaOH TSP	DBE SOP TP	176	mg/kg dry	3.3	8/28/2020	A
LJ-2	365537	8/6/2020	13:00	NaOH TSP	DBE SOP TP	60.1	mg/kg dry	3.2	8/28/2020	A
LJ-3	365538	8/6/2020	13:25	NaOH TSP	DBE SOP TP	136	mg/kg dry	3.3	8/28/2020	
LJ-1	365536	8/6/2020	12:00	NaOH TSP minus NaOH SRP†	Calculation	112	mg/kg dry	4.2	n/a	A
LJ-2	365537	8/6/2020	13:00	NaOH TSP minus NaOH SRP†	Calculation	27.8	mg/kg dry	4.1	n/a	A
LJ-3	365538	8/6/2020	13:25	NaOH TSP minus NaOH SRP†	Calculation	85	mg/kg dry	4.2	n/a	
LJ-1	365536	8/6/2020	12:00	HCl TSP††	DBE SOP TP	209	mg/kg dry	3.1	8/28/2020	A J
LJ-2	365537	8/6/2020	13:00	HCl TSP††	DBE SOP TP	1110	mg/kg dry	15.3	8/28/2020	A
LJ-3	365538	8/6/2020	13:25	HCl TSP††	DBE SOP TP	145	mg/kg dry	3.1	8/28/2020	
LJ-1	365536	8/6/2020	12:00	Residual P	DBE SOP TP	225	mg/kg dry	15	8/28/2020	A
LJ-2	365537	8/6/2020	13:00	Residual P	DBE SOP TP	77	mg/kg dry	10	8/28/2020	A
LJ-3	365538	8/6/2020	13:25	Residual P	DBE SOP TP	227	mg/kg dry	15	8/28/2020	
LJ-1	365536	8/6/2020	12:00	Total Organic Carbon	DBE SOP MVP/COE 3-73	183000	mg/kg dry	3030	9/3/2020	
LJ-2	365537	8/6/2020	13:00	Total Organic Carbon	DBE SOP MVP/COE 3-73	106000	mg/kg dry	3030	9/3/2020	
LJ-3	365538	8/6/2020	13:25	Total Organic Carbon	DBE SOP MVP/COE 3-73	180000	mg/kg dry	3030	9/3/2020	

Key to Qualifier Code

A Result based on the mean of two or more determinations; average of lab dup and/or extraction dup results.

J Estimated value. The extraction dup was outside the acceptance range for %rsd. The data was accepted because the associated laboratory check standard results were acceptable.

Project Manager: 
Nancy Chan

Reference

Meis, S., Spears, B.M., Maberly, S.C., O'Malley, M.B., Perkins, R.G. 2012. Sediment amendment with Phoslock® in Clatto Reservoir (Dundee, UK): Investigating changes in sediment elemental composition and phosphorus fractionation. *J. Environ. Manag.*; 93, 185-193.

*NH_4Cl TSP = Labile P

**$NaHCO_3/Na_2S_2O_4$ TSP = Reductant-Soluble P

***NaOH SRP = Metal-Oxide Adsorbed P

†NaOH TSP minus NaOH SRP = Organic P

††HCl TSP = Apatite Bound P

QC SUMMARY
Wood PLC
PO # : C012609733
Project Name: Lake Jesup In-Lake Phosphorus Update
Project No. : 600698-02
(365536-365538)

PARAMETER	LAB DUPLICATES	% RSD	SPIKES	% RECOVERY	BLANKS
Total Phosphorus	366537	0.0	366538	104	<10 mg/kg dry
Porewater SRP	366536	0.0	366538	103	<0.002 mg/L / <0.016 mg/kg dry
Porewater NH3-N	366536	1.1	366538	108	<0.020 mg/L / <0.074 mg/kg dry
NH_4Cl TSP	366537	2.2	366538	97	<0.8 mg/kg dry
$NaHCO_3/Na_2S_2O_4$ TSP	366537	0.0	366538	108	<3.0 mg/kg dry
NaOH SRP	366537	0.0	366538	98	<4.0 mg/kg dry
NaOH TSP	366537	8.4	366538	103	<3.1 mg/kg dry
HCl TSP	366536 ED 366537	49.7* 1.7	366538	108	<3.0 mg/kg dry
Residual P	366537	9.3	366538	103	<10 mg/kg dry
Total Organic Carbon	366537	14.7	366538	96	<3030 mg/kg dry

*The extraction dup was outside the 0-40% acceptance range for %rsd.

DB Environmental, Inc.

365 Gus Hipp Blvd. Rockledge, FL 32955
Ph: (321) 639-4896 Fax: (321) 631-3169
e-mail: info@dbenv.com Lab Certification #: E83330

CHAIN OF CUSTODY

Revision 8.0, Effective 8/31/2018

Client:	Address:	City:	State:	Zip:	Phone:	Fax:
Wood PLC	1101 Channelside Dr #200	Tampa	FL	33602	813-289-	0750

Contact Person:	Contact Info	Invoice #:	Requested Analysis
Francesca Lauterman	352-702-1254		

Project: Lake Jesup - 6066498x02

Collected By: Francesca Lauterman

pH Checked (for Lab Use Only)	Lab Log #:	Date	Time	Comp/ Grab	Matrix Code	Field- Filter Y/N	Preservative: Thermal (4°C, <0°C, or n/a)	Preservative: pH Code	Sample ID:	Sample Description	1. dry weight	bulk density	sand/silt/clay	TP	Extractable SRP	Extractable NH3	Mehlich P Extract	TOC	Remarks
	365536	8/6/20	12:00	comp	SE				LJ-1	LJ-1 0-30cm	1	1	1	1	1	1	1	1	
	365537	8/6/20	1:00 pm	comp	SE				LJ-2	LJ-2 0-30cm	1	1	1	1	1	1	1	1	
	365538	8/6/20	1:25 pm	comp	SE				LJ-3	LJ-3 0-30cm	1	1	1	1	1	1	1	1	

Custody Transfer:

	Relinquished by: Signature	Date/Time	Received by: Signature	Date/Time
1		8/6/20	Vanessa Preston	8/6/20 4:10pm
2	Vanessa Preston	8/6/20 4:40 pm		
3			Alexis Bak	8/7/20 1445
4				

Matrix ID		pH Code
F-Fish	DI- DI Water	H: HCl to pH <2
FL-Floc	DW-Drinking Water	N: HNO_3 to pH <2
G-Gas	GW-Ground Water	S1: H_2SO_4 to pH <2
I-Invertebrate	IW- Incubation Water	S2: H_2SO_4 to pH 2-3
L-Leachate	PW-Porewater	
PE- Periphyton	RW-Rain Water	OH1: ZnAc+NaOH
PT-Plant/Veg	SW-Surface Water	to pH >9
SD-Sludge	WW-Waste Water	OH2: NaOH to pH >12
SE-Sediment	O-Other _____	
SO-Soil		O: Other _____

Sample Receiving - For Lab Use Only

Method of Shipping/Delivery: Fedex
Received on ice or similar Yes X No____ n/a____
Receiving Temperature (°C) - *if applicable:* 3.3
Thermometer #: G4 Initials: AB
pH checked in accordance with Preservation Codes
Yes____ No____ n/a X Initials: AB
First Lab Log # (Batch ID): 365536

Comments:

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

December 4, 2020

Francesca Lauterman
Wood EIS
1101 Channelside
Suite 200
Tampa, FL 33602

RE: Workorder: T2021678 Lake Jesup

Dear Francesca Lauterman:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, November 20, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heidi Parker - Project Manager
HParker@AELLab.com

Enclosures

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

SAMPLE SUMMARY

Workorder: T2021678 Lake Jesup

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T2021678001	Ambient T=O	Water	11/16/2020 19:10	11/20/2020 16:23
T2021678002	Ambient Dup T=O	Water	11/16/2020 19:15	11/20/2020 16:23
T2021678003	DI-T=O	Water	11/16/2020 19:00	11/20/2020 16:23
T2021678004	DI-DUP-T=O	Water	11/16/2020 19:05	11/20/2020 16:23
T2021678005	Phos-IA-T=24	Water	11/17/2020 19:45	11/20/2020 16:23
T2021678006	Phos-0.5A-T=24	Water	11/17/2020 19:50	11/20/2020 16:23
T2021678007	Phos-2A-T=25	Water	11/17/2020 19:55	11/20/2020 16:23
T2021678008	Phos-IB-T=24	Water	11/17/2020 20:00	11/20/2020 16:23
T2021678009	Phos0.5B-T=24	Water	11/17/2020 20:05	11/20/2020 16:23
T2021678010	Phos-2B-T=24	Water	11/17/2020 20:10	11/20/2020 16:23
T2021678011	SC-A-T=24	Water	11/17/2020 20:15	11/20/2020 16:23
T2021678012	WC-A-T=24	Water	11/17/2020 20:20	11/20/2020 16:23
T2021678013	Phos-1A-T=48	Water	11/18/2020 18:40	11/20/2020 16:23
T2021678014	Phos-0.5A-T=48	Water	11/18/2020 18:45	11/20/2020 16:23
T2021678015	Phos-2A-T=48	Water	11/18/2020 18:50	11/20/2020 16:23
T2021678016	Phos-1B-T=48	Water	11/18/2020 18:55	11/20/2020 16:23
T2021678017	Phos-0.5B-T=48	Water	11/18/2020 19:00	11/20/2020 16:23
T2021678018	Phos-2B-T=48	Water	11/18/2020 19:05	11/20/2020 16:23
T2021678019	SC-A-T=48	Water	11/18/2020 19:10	11/20/2020 16:23
T2021678020	WC-A-T=48	Water	11/18/2020 19:15	11/20/2020 16:23

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678001**
Sample ID: **Ambient T=O**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/16/20 19:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	11/30/2020 15:19	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.023**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678002** Date Received: 11/20/20 16:23 Matrix: Water

Sample ID: **Ambient Dup T=O** Date Collected: 11/16/20 19:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	11/30/2020 15:24	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.006**	**I**	**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678003** Date Received: 11/20/20 16:23 Matrix: Water

Sample ID: **DI-T=O** Date Collected: 11/16/20 19:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	11/30/2020 15:27	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.005**	**U**	**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678004**
Sample ID: **DI-DUP-T=O**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/16/20 19:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	11/30/2020 15:27	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.011**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678005**
Sample ID: **Phos-IA-T=24**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/17/20 19:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.33**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:28	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.018**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678006** Date Received: 11/20/20 16:23 Matrix: Water

Sample ID: **Phos-0.5A-T=24** Date Collected: 11/17/20 19:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.27**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:29	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.030**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678007**
Sample ID: **Phos-2A-T=25**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/17/20 19:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.11**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:30	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.023**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678008**
Sample ID: **Phos-IB-T=24**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/17/20 20:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.31**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:30	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.044**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678009**
Sample ID: **Phos0.5B-T=24**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/17/20 20:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.14**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:31	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.098**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678010** Date Received: 11/20/20 16:23 Matrix: Water

Sample ID: **Phos-2B-T=24** Date Collected: 11/17/20 20:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.25**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:32	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.030**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678011**
Sample ID: **SC-A-T=24**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/17/20 20:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.12**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:33	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.032**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678012** Date Received: 11/20/20 16:23 Matrix: Water

Sample ID: **WC-A-T=24** Date Collected: 11/17/20 20:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	11/30/2020 15:39	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.110**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678013**
Sample ID: **Phos-1A-T=48**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/18/20 18:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.30**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:41	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.025**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678014**
Sample ID: **Phos-0.5A-T=48**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/18/20 18:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.15**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:42	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.023**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678015**
Sample ID: **Phos-2A-T=48**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/18/20 18:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.18**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:42	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.013**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678016**
Sample ID: **Phos-1B-T=48**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/18/20 18:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.27**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:43	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.023**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678017**
Sample ID: **Phos-0.5B-T=48**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/18/20 19:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.13**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:44	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.063**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678018**
Sample ID: **Phos-2B-T=48**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/18/20 19:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.24**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:45	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.030**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678019** Date Received: 11/20/20 16:23 Matrix: Water

Sample ID: **SC-A-T=48** Date Collected: 11/18/20 19:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.12**		**mg/L**	**1**	0.030	0.015	11/30/2020 15:45	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.037**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021678 Lake Jesup

Lab ID: **T2021678020**
Sample ID: **WC-A-T=48**

Date Received: 11/20/20 16:23 Matrix: Water
Date Collected: 11/18/20 19:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	11/30/2020 15:46	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.110**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:30	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS QUALIFIERS

Workorder: T2021678 Lake Jesup

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

G	DOH Certification #E82001(AEL-G)(FL NELAC Certification)
T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2021678 Lake Jesup

QC Batch: WCAt/7874 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2021678001, T2021678002, T2021678003, T2021678004, T2021678005, T2021678006, T2021678007,

METHOD BLANK: 3697916

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3697917

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.50	101	90-110	

QC Batch: WCAt/7875 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2021678012, T2021678013, T2021678014, T2021678015, T2021678016, T2021678017, T2021678018,

METHOD BLANK: 3697922

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3697923

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.52	103	90-110	

QC Batch: WCAg/4975 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/01/2020 11:30
Associated Lab Samples: T2021678001, T2021678002, T2021678003, T2021678004, T2021678005, T2021678006, T2021678007,

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2021678 Lake Jesup

METHOD BLANK: 3698715

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3698717

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.101	101	80-120	

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2021678 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2021678001	Ambient T=O			EPA 350.1	WCAt/7874
T2021678002	Ambient Dup T=O			EPA 350.1	WCAt/7874
T2021678003	DI-T=O			EPA 350.1	WCAt/7874
T2021678004	DI-DUP-T=O			EPA 350.1	WCAt/7874
T2021678005	Phos-IA-T=24			EPA 350.1	WCAt/7874
T2021678006	Phos-0.5A-T=24			EPA 350.1	WCAt/7874
T2021678007	Phos-2A-T=25			EPA 350.1	WCAt/7874
T2021678008	Phos-IB-T=24			EPA 350.1	WCAt/7874
T2021678009	Phos0.5B-T=24			EPA 350.1	WCAt/7874
T2021678010	Phos-2B-T=24			EPA 350.1	WCAt/7874
T2021678011	SC-A-T=24			EPA 350.1	WCAt/7874
T2021678012	WC-A-T=24			EPA 350.1	WCAt/7875
T2021678013	Phos-1A-T=48			EPA 350.1	WCAt/7875
T2021678014	Phos-0.5A-T=48			EPA 350.1	WCAt/7875
T2021678015	Phos-2A-T=48			EPA 350.1	WCAt/7875
T2021678016	Phos-1B-T=48			EPA 350.1	WCAt/7875
T2021678017	Phos-0.5B-T=48			EPA 350.1	WCAt/7875
T2021678018	Phos-2B-T=48			EPA 350.1	WCAt/7875
T2021678019	SC-A-T=48			EPA 350.1	WCAt/7875
T2021678020	WC-A-T=48			EPA 350.1	WCAt/7875
T2021678001	Ambient T=O	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678002	Ambient Dup T=O	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678003	DI-T=O	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678004	DI-DUP-T=O	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678005	Phos-IA-T=24	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678006	Phos-0.5A-T=24	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678007	Phos-2A-T=25	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678008	Phos-IB-T=24	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678009	Phos0.5B-T=24	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678010	Phos-2B-T=24	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678011	SC-A-T=24	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678012	WC-A-T=24	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2021678 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2021678013	Phos-1A-T=48	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678014	Phos-0.5A-T=48	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678015	Phos-2A-T=48	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678016	Phos-1B-T=48	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678017	Phos-0.5B-T=48	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678018	Phos-2B-T=48	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678019	SC-A-T=48	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976
T2021678020	WC-A-T=48	EPA 365.3	WCAg/4975	EPA 365.3	WCAg/4976

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ Jacksonville: 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E81109
☐ Gainesville: 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☒ Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name: Wood PLC	Project Name: Lake Josue
Address: 1101 Channelside Dr #200	Project Number: 600698
Tampa, FL 33602	PO Number:
Phone: 813-289-0750	FDEP Facility No:
FAX:	FDEP Facility Addr:
Contact: Francesca Lauterman	
Sampled By: Francesca Lauterman	Special Instructions:
Turn Around Time: (Standard) Rush	
AEL Profile #:	ADaPT EQuIS Other

* T 2021678 *

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: TP	ANALYSIS REQUIRED: NH3	LABORATORY I.D. NUMBER
	Preservation							H2SO4	H2SO4	
	Field-Filtered?									
Ambient T=0		Grab	11/16/20	1910	SW	2		1	1	001
Ambient Dup T=0		Grab	11/16/20	1915	SW	2		1	1	002
DI-T=0		Grab	11/16/20	1900	SW	2		1	1	003
DI-DUP-T=0		Grab	11/16/20	1905	SW	2		1	1	004
Phos-1A-T=24		Grab	11/17/20	19:45	SW	2		1	1	005
Phos-0.5A-T=24		Grab	11/17/20	19:50	SW	2		1	1	006
Phos-2A-T=24		Grab	11/17/20	19:55	SW	2		1	1	007
Phos-1B-T=24		Grab	11/17/20	20:00	SW	2		1	1	008
Phos-0.5B-T=24		Grab	11/17/20	20:05	SW	2		1	1	009
Phos-2B-T=24		Grab	11/17/20	20:10	SW	2		1	1	010

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge **Preservation Code:** I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☒ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☒ Where required, pH checked Temp. when received (observed) 0 °C Temp. when received (corrected) 0 °C

DCN: AD-D051web Form last revised 08/07/2019 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		11/20/20			11/20/20	16:23
2						
3						
4						

FOR DRINKING WATER USE:
(When PWS Information not otherwise supplied) PWS ID:
Contact Person:
Supplier of Water:
Site-Address:

T2021678

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ Jacksonville: 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ Gainesville: 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☑ Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name: Wood PLC	Project Name: Lake Jessup
Address: 1101 Channelside Dr #200	Project Number: 600698
Tampa, FL 33602	PO Number:
Phone: 813-289-0750	FDEP Facility No:
FAX:	FDEP Facility Addr:
Contact: Francesca Lauterman	
Sampled By: Francesca Lauterman	Special Instructions:
Turn Around Time: (Standard) Rush	
AEL Profile #:	ADaPT EQuIS Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: T8	ANALYSIS REQUIRED: N1+3	LABORATORY I.D. NUMBER
							Preservation	HSO4	H2SO4	
							Field-Filtered?			
SC-A-T=24		Grab	11/17/20	2015	SW	2		1	1	011
UC-A-T=24		Grab	11/17/20	2020	SW	2		1	1	012
Phos-1A-T=48		Grab	11/18/20	1940	SW	2		1	1	013
Phos-0.5A-T=48		Grab	11/18/20	1845	SW	2		1	1	014
Phos 2A - T=48		Grab	11/18/20	1850	SW	2		1	1	015
Phos 1B - T=48		Grab	11/18/20	1855	SW	2		1	1	016
Phos 0.5B - T=48		Grab	11/18/20	1900	SW	2		1	1	017
Phos 2B - T=48		Grab	11/18/20	1905	SW	2		1	1	018
SC-A-T=48		Grab	11/18/20	1910	SW	2		1	1	019
WC-A-T=48		Grab	11/18/20	1915	SW	2		1	1	020

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge **Preservation Code:** I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN. AD-D051web Form last revised 08/07/2019 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		11/20/20			11/20/20	16:23
2						
3						
4						

FOR DRINKING WATER USE:
(When PWS Information not otherwise supplied) PWS ID:
Contact Person:
Supplier of Water:
Site-Address:

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

December 14, 2020

Francesca Lauterman
Wood EIS
1101 Channelside
Suite 200
Tampa, FL 33602

RE: Workorder: T2022297 Lake Jesup

Dear Francesca Lauterman:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, December 02, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heidi Parker - Project Manager
HParker@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

SAMPLE SUMMARY

Workorder: T2022297 Lake Jesup

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T2022297001	TPX-1A-T=24	Water	12/1/2020 18:30	12/2/2020 15:45
T2022297002	TPX-0.5A-T=24	Water	12/1/2020 18:35	12/2/2020 15:45
T2022297003	TPX-2A-T=24	Water	12/1/2020 18:40	12/2/2020 15:45
T2022297004	TPX-1B-T=24	Water	12/1/2020 18:45	12/2/2020 15:45
T2022297005	TPX-0.5B-T=24	Water	12/1/2020 18:50	12/2/2020 15:45
T2022297006	TPX-2B-T=24	Water	12/1/2020 18:55	12/2/2020 15:45
T2022297007	VP-1A-T=24	Water	12/1/2020 19:00	12/2/2020 15:45
T2022297008	VP-0.5A-T=24	Water	12/1/2020 19:05	12/2/2020 15:45
T2022297009	VP-2A-T=24	Water	12/1/2020 19:10	12/2/2020 15:45
T2022297010	VP-1B-T=24	Water	12/1/2020 19:15	12/2/2020 15:45
T2022297011	VP-0.5B-T=24	Water	12/1/2020 19:20	12/2/2020 15:45
T2022297012	VP-2B-T=24	Water	12/1/2020 19:25	12/2/2020 15:45
T2022297013	SCB-T=24	Water	12/1/2020 19:30	12/2/2020 15:45
T2022297014	WC-B-T=24	Water	12/1/2020 19:35	12/2/2020 15:45
T2022297015	DI-2-T=0	Water	12/1/2020 17:50	12/2/2020 15:45
T2022297016	DI-2-T=0 Dup	Water	12/1/2020 17:55	12/2/2020 15:45
T2022297017	Ambent 2-T=0	Water	12/1/2020 18:05	12/2/2020 15:45
T2022297018	Ambent 2-T=0 Dup	Water	12/1/2020 18:00	12/2/2020 15:45

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297001** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **TPX-1A-T=24** Date Collected: 12/01/20 18:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.80**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:19	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.044**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297002** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **TPX-0.5A-T=24** Date Collected: 12/01/20 18:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.19**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:22	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.042**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297003** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **TPX-2A-T=24** Date Collected: 12/01/20 18:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.09**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:22	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.030**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297004** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **TPX-1B-T=24** Date Collected: 12/01/20 18:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.30**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:23	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.034**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297005** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **TPX-0.5B-T=24** Date Collected: 12/01/20 18:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.11**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:24	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.034**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297006** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **TPX-2B-T=24** Date Collected: 12/01/20 18:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.41**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:25	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.044**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297007**
Sample ID: **VP-1A-T=24**

Date Received: 12/02/20 15:45 Matrix: Water
Date Collected: 12/01/20 19:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.06**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:25	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.065**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297008** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **VP-0.5A-T=24** Date Collected: 12/01/20 19:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.28**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:26	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.005**	**U**	**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297009** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **VP-2A-T=24** Date Collected: 12/01/20 19:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.11**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:27	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.044**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297010** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **VP-1B-T=24** Date Collected: 12/01/20 19:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.20**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:28	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.023**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297011**
Sample ID: **VP-0.5B-T=24**

Date Received: 12/02/20 15:45 Matrix: Water
Date Collected: 12/01/20 19:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.19**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:49	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.042**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297012** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **VP-2B-T=24** Date Collected: 12/01/20 19:25

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.25**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:51	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.037**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297013**
Sample ID: **SCB-T=24**

Date Received: 12/02/20 15:45 Matrix: Water
Date Collected: 12/01/20 19:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.9**		**mg/L**	**1**	0.030	0.015	12/8/2020 10:52	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.037**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297014**
Sample ID: **WC-B-T=24**

Date Received: 12/02/20 15:45 Matrix: Water
Date Collected: 12/01/20 19:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	12/8/2020 10:52	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.032**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297015**
Sample ID: **DI-2-T=0**

Date Received: 12/02/20 15:45 Matrix: Water
Date Collected: 12/01/20 17:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	12/8/2020 10:53	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.016**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297016**
Sample ID: **DI-2-T=0 Dup**

Date Received: 12/02/20 15:45 Matrix: Water
Date Collected: 12/01/20 17:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	12/8/2020 10:54	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.013**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297017**
Sample ID: **Ambent 2-T=0**

Date Received: 12/02/20 15:45 Matrix: Water
Date Collected: 12/01/20 18:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	12/8/2020 10:55	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.034**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022297 Lake Jesup

Lab ID: **T2022297018** Date Received: 12/02/20 15:45 Matrix: Water

Sample ID: **Ambent 2-T=0 Dup** Date Collected: 12/01/20 18:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	12/8/2020 10:55	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.032**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS QUALIFIERS

Workorder: T2022297 Lake Jesup

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

G	DOH Certification #E82001(AEL-G)(FL NELAC Certification)
T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2022297 Lake Jesup

QC Batch: WCAg/5051 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/07/2020 13:20
Associated Lab Samples: T2022297001, T2022297002, T2022297003, T2022297004, T2022297005, T2022297006, T2022297007

METHOD BLANK: 3705318

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3705320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.105	105	80-120	

QC Batch: WCAg/5052 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/07/2020 13:20
Associated Lab Samples: T2022297008, T2022297009, T2022297010, T2022297011, T2022297012, T2022297013, T2022297014, T2022297015,

METHOD BLANK: 3705325

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3705327

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.105	105	80-120	

QC Batch: WCAt/8050 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2022297001, T2022297002, T2022297003, T2022297004, T2022297005, T2022297006, T2022297007,

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2022297 Lake Jesup

METHOD BLANK: 3706155

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3706156

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.47	93	90-110	

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2022297 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2022297001	TPX-1A-T=24	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2022297002	TPX-0.5A-T=24	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2022297003	TPX-2A-T=24	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2022297004	TPX-1B-T=24	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2022297005	TPX-0.5B-T=24	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2022297006	TPX-2B-T=24	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2022297007	VP-1A-T=24	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2022297008	VP-0.5A-T=24	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297009	VP-2A-T=24	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297010	VP-1B-T=24	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297011	VP-0.5B-T=24	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297012	VP-2B-T=24	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297013	SCB-T=24	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297014	WC-B-T=24	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297015	DI-2-T=0	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297016	DI-2-T=0 Dup	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297017	Ambent 2-T=0	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297018	Ambent 2-T=0 Dup	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022297001	TPX-1A-T=24			EPA 350.1	WCAt/8050
T2022297002	TPX-0.5A-T=24			EPA 350.1	WCAt/8050
T2022297003	TPX-2A-T=24			EPA 350.1	WCAt/8050
T2022297004	TPX-1B-T=24			EPA 350.1	WCAt/8050
T2022297005	TPX-0.5B-T=24			EPA 350.1	WCAt/8050
T2022297006	TPX-2B-T=24			EPA 350.1	WCAt/8050
T2022297007	VP-1A-T=24			EPA 350.1	WCAt/8050
T2022297008	VP-0.5A-T=24			EPA 350.1	WCAt/8050
T2022297009	VP-2A-T=24			EPA 350.1	WCAt/8050
T2022297010	VP-1B-T=24			EPA 350.1	WCAt/8050
T2022297011	VP-0.5B-T=24			EPA 350.1	WCAt/8050
T2022297012	VP-2B-T=24			EPA 350.1	WCAt/8050
T2022297013	SCB-T=24			EPA 350.1	WCAt/8050
T2022297014	WC-B-T=24			EPA 350.1	WCAt/8050

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2022297 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2022297015	DI-2-T=0			EPA 350.1	WCAt/8050
T2022297016	DI-2-T=0 Dup			EPA 350.1	WCAt/8050
T2022297017	Ambent 2-T=0			EPA 350.1	WCAt/8050
T2022297018	Ambent 2-T=0 Dup			EPA 350.1	WCAt/8050

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ Jacksonville: 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ Gainesville: 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☑ Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name:	Wood PLC	Project Name:	Lake Jesup
Address:	1101 Channelside Dr #200	Project Number:	600698
	Tampa, FL 33602	PO Number:	
Phone:	813-289-0750	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Francesca Lauterman		
Sampled By:	Francesca Lauterman	Special Instructions:	
Turn Around Time:	Standard Rush		
AEL Profile #:		ADaPT EQuIS Other	

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED										LABORATORY I.D. NUMBER
								T8	NH3									
							Preservation	H_2SO_4	H_2SO_4									
							Field Filtered?											
TBX-1A	- T=24	Grab	12/1/20	1830	SW	2		1	1									01
TBX-0.5A	- T=24	Grab	12/1/20	1835	SW	2		1	1									02
TBX-2A	- T=24	Grab	12/1/20	1840	SW	2		1	1									03
TBX-1B	- T=24	Grab	12/1/20	1845	SW	2		1	1									04
TBX-0.5B	- T=24	Grab	12/1/20	1850	SW	2		1	1									05
TBX-2B	- T=24	Grab	12/1/20	1855	SW	2		1	1									06
VP-1A	- T=24	Grab	12/1/20	1900	SW	2		1	1									07
VP-0.5A	- T=24	Grab	12/1/20	1905	SW	2		1	1									08
VP-2A	- T=24	Grab	12/1/20	1910	SW	2		1	1									09
VP-1B	- T=24	Grab	12/1/20	1915	SW	2		1	1									10

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge **Preservation Code:** I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☐ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		12/2/20	1040		12/2/20	1545
2						
3						
4						

FOR DRINKING WATER USE:
(When PWS information not otherwise supplied) PWS ID:
Contact Person:
Supplier of Water:
Site-Address:

T2222297

Page 2 of 2

Advanced Environmental Laboratories, Inc.

- ☐ **Altamonte Springs:** 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
- ☐ **Fort Myers:** 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
- ☐ **Jacksonville:** 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
- ☐ **Tallahassee:** 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
- ☐ **Gainesville:** 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
- ☐ **Miramar:** 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
- ☒ **Tampa:** 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name:	Wood PLC	Project Name:	Lake Jesup
Address:	1101 Channelside Dr #200	Project Number:	600698
	Tampa, FL 33602	PO Number:	
Phone:	813-289-0750	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Francesca Lauterman		
Sampled By:	Francesca Lauterman	Special Instructions:	
Turn Around Time:	(Standard) Rush		
AEL Profile #:		ADaPT EQuIS Other	

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: TP	ANALYSIS REQUIRED: NH3	LABORATORY I.D. NUMBER
							Preservation	H2SO4	H2SO4	
							Field-Filtered?			
VP-0.5	B-T=24	Grab	12/11/20	1920	SW	2		1	1	011
VP-2B-	T=24	Grab	12/11/20	1925	SW	2		1	1	012
SC-B-	T=24	Grab	12/11/20	1430	SW	2		1	1	013
WC-B-	T=24	Grab	12/11/20	1935	SW	2		1	1	014
DI-2-	T=0	Grab	11/30/20	1750	SW	2		1	1	015
DI-2-	T=0 dup	Grab	11/30/20	1755	SW	2		1	1	016
Ambient	2-T=0	Grab	11/30/20	1805	SW	2		1	1	017
Ambient	-2-T=0 dup	Grab	11/30/20	1800	SW	2		1	1	018

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on ice ☐ Yes ☐ No ☐ Temp taken from sample ☐ Temp from blank ☒ Where required, pH checked

Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		12/21/20	1400		12/21/20	1515
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID: _____

Contact Person: _____

Supplier of Water: _____

Site-Address: _____

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

December 10, 2020

Francesca Lauterman
Wood EIS
1101 Channelside
Suite 200
Tampa, FL 33602

RE: Workorder: T2021734 Lake Jesup

Dear Francesca Lauterman:

Enclosed are the analytical results for sample(s) received by the laboratory on Monday, November 23, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heidi Parker - Project Manager
HParker@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

SAMPLE SUMMARY

Workorder: T2021734 Lake Jesup

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T2021734001	Phos-1A-T=96	Water	11/20/2020 18:20	11/23/2020 14:15
T2021734002	Phos-OSA-T=96	Water	11/20/2020 18:25	11/23/2020 14:15
T2021734003	Phos2A-T=96	Water	11/20/2020 18:30	11/23/2020 14:15
T2021734004	Phos1B-T=96	Water	11/20/2020 18:35	11/23/2020 14:15
T2021734005	Phos OSB-T=96	Water	11/20/2020 18:40	11/23/2020 14:15
T2021734006	Phos 2B-T=96	Water	11/20/2020 18:45	11/23/2020 14:15
T2021734007	SC-A-T=96	Water	11/20/2020 18:50	11/23/2020 14:15
T2021734008	WC-A-T=96	Water	11/20/2020 18:55	11/23/2020 14:15
T2021734009	Phos-1A-T=168	Water	11/23/2020 13:00	11/23/2020 14:15
T2021734010	Phos-OSA-T=168	Water	11/23/2020 13:05	11/23/2020 14:15
T2021734011	Phos-2A-T=168	Water	11/23/2020 13:10	11/23/2020 14:15
T2021734012	Phos-1B-T=168	Water	11/23/2020 13:15	11/23/2020 14:15
T2021734013	Phos-OSB-T=168	Water	11/23/2020 13:20	11/23/2020 14:15
T2021734014	SC-A-T=168	Water	11/23/2020 13:30	11/23/2020 14:15
T2021734015	WC-A-T=168	Water	11/23/2020 13:35	11/23/2020 14:15
T2021734016	Phos-2B-T=168	Water	11/23/2020 13:25	11/23/2020 14:15

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734001**
Sample ID: **Phos-1A-T=96**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/20/20 18:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.46**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:42	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.018**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734002**
Sample ID: **Phos-OSA-T=96**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/20/20 18:25

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.29**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:42	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.013**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734003**
Sample ID: **Phos2A-T=96**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/20/20 18:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.47**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:43	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.011**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734004** Date Received: 11/23/20 14:15 Matrix: Water

Sample ID: **Phos1B-T=96** Date Collected: 11/20/20 18:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.46**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:44	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.018**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734005**
Sample ID: **Phos OSB-T=96**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/20/20 18:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.32**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:45	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.039**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734006**
Sample ID: **Phos 2B-T=96**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/20/20 18:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.42**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:45	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.011**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734007** Date Received: 11/23/20 14:15 Matrix: Water

Sample ID: **SC-A-T=96** Date Collected: 11/20/20 18:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.45**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:46	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.032**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734008**
Sample ID: **WC-A-T=96**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/20/20 18:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	11/30/2020 16:48	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.098**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734009**
Sample ID: **Phos-1A-T=168**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/23/20 13:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.41**		**mg/L**	**1**	0.030	0.015	11/30/2020 16:50	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.013**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734010**
Sample ID: **Phos-OSA-T=168**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/23/20 13:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.30**		**mg/L**	**1**	0.030	0.015	11/30/2020 16:51	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.008**	**I**	**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734011**
Sample ID: **Phos-2A-T=168**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/23/20 13:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.49**		**mg/L**	**1**	0.030	0.015	11/30/2020 16:51	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.011**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734012**
Sample ID: **Phos-1B-T=168**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/23/20 13:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.45**		**mg/L**	**1**	0.030	0.015	11/30/2020 16:52	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.006**	**I**	**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734013**
Sample ID: **Phos-OSB-T=168**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/23/20 13:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.38**		**mg/L**	**1**	0.030	0.015	11/30/2020 16:53	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.025**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734014**
Sample ID: **SC-A-T=168**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/23/20 13:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.43**		**mg/L**	**1**	0.030	0.015	11/30/2020 16:54	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.006**	**I**	**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734015**
Sample ID: **WC-A-T=168**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/23/20 13:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	11/30/2020 16:54	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.084**		**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021734 Lake Jesup

Lab ID: **T2021734016**
Sample ID: **Phos-2B-T=168**

Date Received: 11/23/20 14:15 Matrix: Water
Date Collected: 11/23/20 13:25

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.48**		**mg/L**	**1**	0.030	0.015	11/30/2020 16:55	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.005**	**U**	**mg/L**	**1**	0.01	0.005	12/1/2020 11:50	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS QUALIFIERS

Workorder: T2021734 Lake Jesup

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

G	DOH Certification #E82001(AEL-G)(FL NELAC Certification)
T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2021734 Lake Jesup

QC Batch: WCAt/7877 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2021734001, T2021734002, T2021734003, T2021734004, T2021734005, T2021734006, T2021734007,

METHOD BLANK: 3697942

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3697943

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.51	101	90-110	

QC Batch: WCAg/4977 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/01/2020 11:50
Associated Lab Samples: T2021734001, T2021734002, T2021734003, T2021734004, T2021734005, T2021734006, T2021734007,

METHOD BLANK: 3698780

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3698782

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.094	94	80-120	

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2021734 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2021734001	Phos-1A-T=96			EPA 350.1	WCAt/7877
T2021734002	Phos-OSA-T=96			EPA 350.1	WCAt/7877
T2021734003	Phos2A-T=96			EPA 350.1	WCAt/7877
T2021734004	Phos1B-T=96			EPA 350.1	WCAt/7877
T2021734005	Phos OSB-T=96			EPA 350.1	WCAt/7877
T2021734006	Phos 2B-T=96			EPA 350.1	WCAt/7877
T2021734007	SC-A-T=96			EPA 350.1	WCAt/7877
T2021734008	WC-A-T=96			EPA 350.1	WCAt/7877
T2021734009	Phos-1A-T=168			EPA 350.1	WCAt/7877
T2021734010	Phos-OSA-T=168			EPA 350.1	WCAt/7877
T2021734011	Phos-2A-T=168			EPA 350.1	WCAt/7877
T2021734012	Phos-1B-T=168			EPA 350.1	WCAt/7877
T2021734013	Phos-OSB-T=168			EPA 350.1	WCAt/7877
T2021734014	SC-A-T=168			EPA 350.1	WCAt/7877
T2021734015	WC-A-T=168			EPA 350.1	WCAt/7877
T2021734016	Phos-2B-T=168			EPA 350.1	WCAt/7877
T2021734001	Phos-1A-T=96	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734002	Phos-OSA-T=96	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734003	Phos2A-T=96	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734004	Phos1B-T=96	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734005	Phos OSB-T=96	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734006	Phos 2B-T=96	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734007	SC-A-T=96	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734008	WC-A-T=96	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734009	Phos-1A-T=168	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734010	Phos-OSA-T=168	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734011	Phos-2A-T=168	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734012	Phos-1B-T=168	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734013	Phos-OSB-T=168	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734014	SC-A-T=168	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734015	WC-A-T=168	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978
T2021734016	Phos-2B-T=168	EPA 365.3	WCAg/4977	EPA 365.3	WCAg/4978

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ Jacksonville: 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ Gainesville: 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☒ Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name: Wood PLC	Project Name: Lake Jem
Address: 1101 Channelside Dr #200	Project Number: 60068
Tampa, FL 33602	PO Number:
Phone: 813-289-0750	FDEP Facility No:
FAX:	FDEP Facility Addr:
Contact: Francesca Lauterman	
Sampled By: Francesca Lauterman	Special Instructions:
Turn Around Time: (Standard) Rush	
AEL Profile #:	ADaPT EQuIS Other

* T 2021734 *

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	ANALYSIS REQUIRED: BOTTLE SIZE & TYPE	TP	NH3							LABORATORY I.D. NL
							Preservation	H2SO4	H2SO4							
							Field-Filtered?									
Phos-1A - T=96		Grab	11/20/20	1820	SW	2		1	1							001
Phos-0.5A - T=96		Grab	11/20/20	1825	SW	2		1	1							002
Phos2A - T=96		Grab	11/20/20	1830	SW	2		1	1							003
Phos1B - T=96		Grab	11/20/20	1835	SW	2		1	1							004
Phos0.5B - T=96		Grab	11/20/20	1540	SW	2		1	1							005
Phos2B - T=96		Grab	11/20/20	1545	SW	2		1	1							006
SC-A - T=96		Grab	11/20/20	1850	SW	2		1	1							007
WC-A - T=96		Grab	11/20/20	1855	SW	2		1	1							008
Phos-1A - T=168		Grab	11/23/20	1300	SW	2		1	1							009
Phos-0.5A-T=168		Grab	11/23/20	1305	SW	2		1	1							010

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		11/23/20	215		11/24/20	1415
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS information not otherwise supplied) PWS ID:

Contact Person:

Supplier of Water:

Site-Address:

T20719 34

Page 2 of 3

Advanced Environmental Laboratories, Inc.

- ☐ **Altamonte Springs:** 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
- ☐ **Fort Myers:** 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
- ☐ **Jacksonville:** 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
- ☐ **Tallahassee:** 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
- ☐ **Gainesville:** 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
- ☐ **Miramar:** 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
- ☒ **Tampa:** 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name: Wood PLC	Project Name: Lake Jesup
Address: 1101 Channelside Dr #200	Project Number: 6006498
Tampa, FL 33602	PO Number:
Phone: 813-289-0750	FDEP Facility No:
FAX:	FDEP Facility Addr:
Contact: Francesca Lauterman	
Sampled By:	Special Instructions:
Turn Around Time: (Standard) Rush	
AEL Profile #:	ADaPT EQuIS Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: T8	ANALYSIS REQUIRED: NH3	LABORATORY I.D. NUMBER
							Preservation	H2SO4	H2SO4	
							Field-Filtered?			
Phos-2A - T=168		Grab	11/23/20	1310	SW	2		1	1	011
Phos-1B - T=168		Grab	11/23/20	1315	SW	2		1	1	012
Phos-0.5B - T=168		Grab	11/23/20	1320	SW	2		1	1	013
SC-A - T=168		Grab	11/23/20	1330	SW	2		1	1	014
WC-A - T=168		Grab	11/23/20	1335	SW	2		1	1	015
Phos-2B - T=168		Grab	11/23/20	1325	SW	2		1	1	016

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = Ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☒ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked

Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		11/23/20	21:5		11/23/20	1915
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID:

Contact Person:

Supplier of Water:

Site-Address:

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

December 10, 2020

Francesca Lauterman
Wood EIS
1101 Channelside
Suite 200
Tampa, FL 33602

RE: Workorder: T2021956 Lake Jesup

Dear Francesca Lauterman:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, November 25, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heidi Parker - Project Manager
HParker@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

SAMPLE SUMMARY

Workorder: T2021956 Lake Jesup

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T2021956001	Phos-1A-T=216	Water	11/25/2020 12:00	11/25/2020 14:20
T2021956002	Phos-OSA-T=216	Water	11/25/2020 12:05	11/25/2020 14:20
T2021956003	Phos-2A-T=216	Water	11/25/2020 12:10	11/25/2020 14:20
T2021956004	Phos-1B-T=216	Water	11/25/2020 12:15	11/25/2020 14:20
T2021956005	Phos-OSB-T=216	Water	11/25/2020 12:20	11/25/2020 14:20
T2021956006	Phos-2B-T=216	Water	11/25/2020 12:25	11/25/2020 14:20
T2021956007	SC-A-T=216	Water	11/25/2020 12:30	11/25/2020 14:20
T2021956008	WC-A-T=216	Water	11/25/2020 12:35	11/25/2020 14:20

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021956 Lake Jesup

Lab ID: **T2021956001** Date Received: 11/25/20 14:20 Matrix: Water

Sample ID: **Phos-1A-T=216** Date Collected: 11/25/20 12:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.0**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:52	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.053**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021956 Lake Jesup

Lab ID: **T2021956002** Date Received: 11/25/20 14:20 Matrix: Water

Sample ID: **Phos-OSA-T=216** Date Collected: 11/25/20 12:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.66**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:54	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.011**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021956 Lake Jesup

Lab ID: **T2021956003** Date Received: 11/25/20 14:20 Matrix: Water

Sample ID: **Phos-2A-T=216** Date Collected: 11/25/20 12:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.0**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:55	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.018**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021956 Lake Jesup

Lab ID: **T2021956004**
Sample ID: **Phos-1B-T=216**

Date Received: 11/25/20 14:20 Matrix: Water
Date Collected: 11/25/20 12:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.86**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:56	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.025**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021956 Lake Jesup

Lab ID: **T2021956005** Date Received: 11/25/20 14:20 Matrix: Water

Sample ID: **Phos-OSB-T=216** Date Collected: 11/25/20 12:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.78**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:57	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.032**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021956 Lake Jesup

Lab ID: **T2021956006**
Sample ID: **Phos-2B-T=216**

Date Received: 11/25/20 14:20 Matrix: Water
Date Collected: 11/25/20 12:25

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.83**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:57	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.016**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021956 Lake Jesup

Lab ID: **T2021956007** Date Received: 11/25/20 14:20 Matrix: Water

Sample ID: **SC-A-T=216** Date Collected: 11/25/20 12:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.1**		**mg/L**	**1**	0.030	0.015	11/30/2020 17:58	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.082**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2021956 Lake Jesup

Lab ID: **T2021956008**
Sample ID: **WC-A-T=216**

Date Received: 11/25/20 14:20 Matrix: Water
Date Collected: 11/25/20 12:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	11/30/2020 17:59	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.096**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS QUALIFIERS

Workorder: T2021956 Lake Jesup

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

G	DOH Certification #E82001(AEL-G)(FL NELAC Certification)
T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2021956 Lake Jesup

QC Batch: WCAt/7885 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2021956001, T2021956002, T2021956003, T2021956004, T2021956005, T2021956006, T2021956007, T2021956008

METHOD BLANK: 3698191

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3698192

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.53	106	90-110	

QC Batch: WCAg/5051 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/07/2020 13:20
Associated Lab Samples: T2021956001, T2021956002, T2021956003, T2021956004, T2021956005, T2021956006, T2021956007, T2021956008

METHOD BLANK: 3705318

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3705320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.105	105	80-120	

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2021956 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2021956001	Phos-1A-T=216			EPA 350.1	WCAt/7885
T2021956002	Phos-OSA-T=216			EPA 350.1	WCAt/7885
T2021956003	Phos-2A-T=216			EPA 350.1	WCAt/7885
T2021956004	Phos-1B-T=216			EPA 350.1	WCAt/7885
T2021956005	Phos-OSB-T=216			EPA 350.1	WCAt/7885
T2021956006	Phos-2B-T=216			EPA 350.1	WCAt/7885
T2021956007	SC-A-T=216			EPA 350.1	WCAt/7885
T2021956008	WC-A-T=216			EPA 350.1	WCAt/7885
T2021956001	Phos-1A-T=216	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2021956002	Phos-OSA-T=216	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2021956003	Phos-2A-T=216	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2021956004	Phos-1B-T=216	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2021956005	Phos-OSB-T=216	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2021956006	Phos-2B-T=216	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2021956007	SC-A-T=216	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054
T2021956008	WC-A-T=216	EPA 365.3	WCAg/5051	EPA 365.3	WCAg/5054

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ Jacksonville: 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ Gainesville: 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☑ Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name:	Wood PLC	Project Name:	Lake Jesup
Address:	1101 Channelside Dr #200	Project Number:	606698
	Tampa, FL 33602	PO Number:	
Phone:	813-289-0750	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Francesca Lauterman		
Sampled By:	Francesca	Special Instructions:	
Turn Around Time:	Standard Rush		
AEL Profile #:		ADaPT EQuIS Other	

* T 2 0 2 1 9 5 6 *

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	ANALYSIS REQUIRED: TP	NH3	LABORATORY I.D. NU.
							Preservation: H2SO4	H2SO4	
							Field-Filtered?		
Phos-1A-	T=216	Grab	11/25/20	1200	SW	2	1	1	001
Phos 0.5A-	T=216	Grab	11/25/20	1205	SW	2	1	1	002
Phos 2A-	T-216	Grab	11/25/20	1210	SW	2	1	1	003
Phos-1B-	T=216	Grab	11/25/20	1215	SW	2	1	1	004
Phos 0.5B-	T=216	Grab	11/25/20	1220	SW	2	1	1	005
Phos 2B-	T=216	Grab	11/25/20	1225	SW	2	1	-	006
SC-A-	T=216	Grab	11/25/20	1230	SW	2	1	1	007
WC-A-	T=216	Grab	11/25/20	1235	SW	2	1	1	008

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		11/25/20	2220		11/25/20	1472
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID:

Contact Person:

Supplier of Water:

Site-Address:

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

December 24, 2020

Francesca Lauterman
Wood EIS
1101 Channelside
Suite 200
Tampa, FL 33602

RE: Workorder: T2022561 Lake Jesup

Dear Francesca Lauterman:

Enclosed are the analytical results for sample(s) received by the laboratory on Monday, December 07, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heidi Parker - Project Manager
HParker@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

SAMPLE SUMMARY

Workorder: T2022561 Lake Jesup

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T2022561001	TPX-1A-T=96	Water	12/4/2020 18:40	12/7/2020 16:35
T2022561002	TPX-0.5A-T=96	Water	12/4/2020 18:45	12/7/2020 16:35
T2022561003	TPX-2A-T=96	Water	12/4/2020 18:50	12/7/2020 16:35
T2022561004	TPX-1B-T=96	Water	12/4/2020 18:55	12/7/2020 16:35
T2022561005	TPX-0.5B-T=96	Water	12/4/2020 19:00	12/7/2020 16:35
T2022561006	TPX-2B-T=96	Water	12/4/2020 19:05	12/7/2020 16:35
T2022561007	VP-1A-T=96	Water	12/4/2020 19:10	12/7/2020 16:35
T2022561008	VP-0.5A-T=96	Water	12/4/2020 19:15	12/7/2020 16:35
T2022561009	VP-2A-T=96	Water	12/4/2020 19:20	12/7/2020 16:35
T2022561010	VP-1B-T=96	Water	12/4/2020 19:25	12/7/2020 16:35
T2022561011	VP-0.5B-T=96	Water	12/4/2020 19:30	12/7/2020 16:35
T2022561012	VP-2B-T=96	Water	12/4/2020 19:35	12/7/2020 16:35
T2022561013	SC-B-T=96	Water	12/4/2020 19:40	12/7/2020 16:35
T2022561014	WC-B-T=96	Water	12/4/2020 19:45	12/7/2020 16:35
T2022561015	TPX-1A-T=160	Water	12/6/2020 18:40	12/7/2020 16:35
T2022561016	TPX-0.5A-T=160	Water	12/6/2020 18:45	12/7/2020 16:35
T2022561017	TPX-2A-T=160	Water	12/6/2020 18:50	12/7/2020 16:35
T2022561018	TPX-1B-T=160	Water	12/6/2020 18:55	12/7/2020 16:35
T2022561019	TPX-0.5B-T=160	Water	12/6/2020 19:00	12/7/2020 16:35
T2022561020	TPX-2B-T=160	Water	12/6/2020 19:05	12/7/2020 16:35
T2022561021	VP-1A-T=160	Water	12/6/2020 19:10	12/7/2020 16:35
T2022561022	VP-0.5A-T=160	Water	12/6/2020 19:15	12/7/2020 16:35
T2022561023	VP-2A-T=160	Water	12/6/2020 19:20	12/7/2020 16:35
T2022561024	VP-1B-T=160	Water	12/6/2020 19:25	12/7/2020 16:35
T2022561025	VP-0.5B-T=160	Water	12/6/2020 19:30	12/7/2020 16:35
T2022561026	SC-B-T=160	Water	12/6/2020 19:40	12/7/2020 16:35
T2022561027	WC-B-T=160	Water	12/6/2020 19:45	12/7/2020 16:35
T2022561028	VP-2B-T=160	Water	12/6/2020 19:35	12/7/2020 16:35

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561001** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **TPX-1A-T=96** Date Collected: 12/04/20 18:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.2**		**mg/L**	**1**	0.030	0.015	12/17/2020 13:58	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.039**		**mg/L**	**1**	0.01	0.005	12/9/2020 12:00	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561002** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **TPX-0.5A-T=96** Date Collected: 12/04/20 18:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.66**		**mg/L**	**1**	0.030	0.015	12/17/2020 13:58	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.070**		**mg/L**	**1**	0.01	0.005	12/9/2020 12:00	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561003** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **TPX-2A-T=96** Date Collected: 12/04/20 18:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.4**		**mg/L**	**1**	0.030	0.015	12/17/2020 13:59	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.028**		**mg/L**	**1**	0.01	0.005	12/9/2020 12:00	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561004** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **TPX-1B-T=96** Date Collected: 12/04/20 18:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.95**		**mg/L**	**1**	0.030	0.015	12/17/2020 14:00	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.023**		**mg/L**	**1**	0.01	0.005	12/9/2020 12:00	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561005** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **TPX-0.5B-T=96** Date Collected: 12/04/20 19:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.86**		**mg/L**	**1**	0.030	0.015	12/17/2020 14:01	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.020**		**mg/L**	**1**	0.01	0.005	12/9/2020 12:00	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561006** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **TPX-2B-T=96** Date Collected: 12/04/20 19:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.2**		**mg/L**	**1**	0.030	0.015	12/17/2020 14:01	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.018**		**mg/L**	**1**	0.01	0.005	12/9/2020 12:00	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561007** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-1A-T=96** Date Collected: 12/04/20 19:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.32**		**mg/L**	**1**	0.030	0.015	12/17/2020 14:02	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.011**		**mg/L**	**1**	0.01	0.005	12/9/2020 12:00	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561008** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-0.5A-T=96** Date Collected: 12/04/20 19:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.38**		**mg/L**	**1**	0.030	0.015	12/17/2020 14:03	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.011**		**mg/L**	**1**	0.01	0.005	12/9/2020 12:00	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561009** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-2A-T=96** Date Collected: 12/04/20 19:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.47**		**mg/L**	**1**	0.030	0.015	12/17/2020 14:04	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.006**	**I**	**mg/L**	**1**	0.01	0.005	12/9/2020 12:00	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561010** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-1B-T=96** Date Collected: 12/04/20 19:25

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.40**		**mg/L**	**1**	0.030	0.015	12/17/2020 14:04	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.020**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561011** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-0.5B-T=96** Date Collected: 12/04/20 19:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.44**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:23	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.025**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561012** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-2B-T=96** Date Collected: 12/04/20 19:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.50**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:24	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.023**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561013** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **SC-B-T=96** Date Collected: 12/04/20 19:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.51**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:24	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.049**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561014**
Sample ID: **WC-B-T=96**

Date Received: 12/07/20 16:35 Matrix: Water
Date Collected: 12/04/20 19:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	12/21/2020 15:25	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.025**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561015**
Sample ID: **TPX-1A-T=160**

Date Received: 12/07/20 16:35 Matrix: Water
Date Collected: 12/06/20 18:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.4**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:26	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.070**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561016**
Sample ID: **TPX-0.5A-T=160**

Date Received: 12/07/20 16:35 Matrix: Water
Date Collected: 12/06/20 18:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.1**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:27	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.042**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561017** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **TPX-2A-T=160** Date Collected: 12/06/20 18:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**4.4**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:27	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.037**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561018**
Sample ID: **TPX-1B-T=160**

Date Received: 12/07/20 16:35 Matrix: Water
Date Collected: 12/06/20 18:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.0**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:34	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.037**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561019** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **TPX-0.5B-T=160** Date Collected: 12/06/20 19:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.1**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:36	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.065**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561020**
Sample ID: **TPX-2B-T=160**

Date Received: 12/07/20 16:35 Matrix: Water
Date Collected: 12/06/20 19:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**2.1**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:37	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.030**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561021** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-1A-T=160** Date Collected: 12/06/20 19:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.48**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:38	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.020**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561022** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-0.5A-T=160** Date Collected: 12/06/20 19:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.76**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:39	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.020**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561023** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-2A-T=160** Date Collected: 12/06/20 19:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.70**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:39	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.018**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561024** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **VP-1B-T=160** Date Collected: 12/06/20 19:25

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.50**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:40	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.016**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561025**
Sample ID: **VP-0.5B-T=160**

Date Received: 12/07/20 16:35 Matrix: Water
Date Collected: 12/06/20 19:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.69**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:41	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.023**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561026** Date Received: 12/07/20 16:35 Matrix: Water

Sample ID: **SC-B-T=160** Date Collected: 12/06/20 19:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.87**		**mg/L**	**1**	0.030	0.015	12/21/2020 15:42	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.068**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561027**
Sample ID: **WC-B-T=160**

Date Received: 12/07/20 16:35 Matrix: Water
Date Collected: 12/06/20 19:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	12/21/2020 15:42	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.032**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022561 Lake Jesup

Lab ID: **T2022561028**
Sample ID: **VP-2B-T=160**

Date Received: 12/07/20 16:35 Matrix: Water
Date Collected: 12/06/20 19:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.87**	**J4**	**mg/L**	**1**	0.030	0.015	12/21/2020 15:49	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.018**		**mg/L**	**1**	0.01	0.005	12/11/2020 16:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS QUALIFIERS

Workorder: T2022561 Lake Jesup

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J4	Estimated Result

LAB QUALIFIERS

G	DOH Certification #E82001(AEL-G)(FL NELAC Certification)
T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2022561 Lake Jesup

QC Batch: WCAg/5095 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/09/2020 12:00
Associated Lab Samples: T2022561001, T2022561002, T2022561003, T2022561004, T2022561005, T2022561006, T2022561007,

METHOD BLANK: 3709208

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3709210

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.096	96	80-120	

QC Batch: WCAg/5108 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/10/2020 12:56
Associated Lab Samples: T2022561010, T2022561011, T2022561012, T2022561013, T2022561014, T2022561015, T2022561016, T2022561017,

METHOD BLANK: 3711264

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3711266

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.101	101	80-120	

QC Batch: WCAt/8300 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2022561001, T2022561002, T2022561003, T2022561004, T2022561005, T2022561006, T2022561007,

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2022561 Lake Jesup

METHOD BLANK: 3718910

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3718911

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.53	105	90-110	

QC Batch: WCAt/8366 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2022561011, T2022561012, T2022561013, T2022561014, T2022561015, T2022561016, T2022561017

METHOD BLANK: 3722190

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3722191

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.49	98	90-110	

QC Batch: WCAt/8367 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2022561018, T2022561019, T2022561020, T2022561021, T2022561022, T2022561023, T2022561024,

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2022561 Lake Jesup

METHOD BLANK: 3722203

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3722204

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.50	99	90-110	

QUALITY CONTROL DATA QUALIFIERS

Workorder: T2022561 Lake Jesup

QUALITY CONTROL PARAMETER QUALIFIERS

U The compound was analyzed for but not detected.

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

J4 Estimated Result

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2022561 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2022561001	TPX-1A-T=96	EPA 365.3	WCAg/5095	EPA 365.3	WCAg/5096
T2022561002	TPX-0.5A-T=96	EPA 365.3	WCAg/5095	EPA 365.3	WCAg/5096
T2022561003	TPX-2A-T=96	EPA 365.3	WCAg/5095	EPA 365.3	WCAg/5096
T2022561004	TPX-1B-T=96	EPA 365.3	WCAg/5095	EPA 365.3	WCAg/5096
T2022561005	TPX-0.5B-T=96	EPA 365.3	WCAg/5095	EPA 365.3	WCAg/5096
T2022561006	TPX-2B-T=96	EPA 365.3	WCAg/5095	EPA 365.3	WCAg/5096
T2022561007	VP-1A-T=96	EPA 365.3	WCAg/5095	EPA 365.3	WCAg/5096
T2022561008	VP-0.5A-T=96	EPA 365.3	WCAg/5095	EPA 365.3	WCAg/5096
T2022561009	VP-2A-T=96	EPA 365.3	WCAg/5095	EPA 365.3	WCAg/5096
T2022561010	VP-1B-T=96	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561011	VP-0.5B-T=96	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561012	VP-2B-T=96	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561013	SC-B-T=96	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561014	WC-B-T=96	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561015	TPX-1A-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561016	TPX-0.5A-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561017	TPX-2A-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561018	TPX-1B-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561019	TPX-0.5B-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561020	TPX-2B-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561021	VP-1A-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561022	VP-0.5A-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561023	VP-2A-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561024	VP-1B-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561025	VP-0.5B-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561026	SC-B-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561027	WC-B-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561028	VP-2B-T=160	EPA 365.3	WCAg/5108	EPA 365.3	WCAg/5109
T2022561001	TPX-1A-T=96			EPA 350.1	WCAt/8300
T2022561002	TPX-0.5A-T=96			EPA 350.1	WCAt/8300
T2022561003	TPX-2A-T=96			EPA 350.1	WCAt/8300
T2022561004	TPX-1B-T=96			EPA 350.1	WCAt/8300

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2022561 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2022561005	TPX-0.5B-T=96			EPA 350.1	WCAt/8300
T2022561006	TPX-2B-T=96			EPA 350.1	WCAt/8300
T2022561007	VP-1A-T=96			EPA 350.1	WCAt/8300
T2022561008	VP-0.5A-T=96			EPA 350.1	WCAt/8300
T2022561009	VP-2A-T=96			EPA 350.1	WCAt/8300
T2022561010	VP-1B-T=96			EPA 350.1	WCAt/8300
T2022561011	VP-0.5B-T=96			EPA 350.1	WCAt/8366
T2022561012	VP-2B-T=96			EPA 350.1	WCAt/8366
T2022561013	SC-B-T=96			EPA 350.1	WCAt/8366
T2022561014	WC-B-T=96			EPA 350.1	WCAt/8366
T2022561015	TPX-1A-T=160			EPA 350.1	WCAt/8366
T2022561016	TPX-0.5A-T=160			EPA 350.1	WCAt/8366
T2022561017	TPX-2A-T=160			EPA 350.1	WCAt/8366
T2022561018	TPX-1B-T=160			EPA 350.1	WCAt/8367
T2022561019	TPX-0.5B-T=160			EPA 350.1	WCAt/8367
T2022561020	TPX-2B-T=160			EPA 350.1	WCAt/8367
T2022561021	VP-1A-T=160			EPA 350.1	WCAt/8367
T2022561022	VP-0.5A-T=160			EPA 350.1	WCAt/8367
T2022561023	VP-2A-T=160			EPA 350.1	WCAt/8367
T2022561024	VP-1B-T=160			EPA 350.1	WCAt/8367
T2022561025	VP-0.5B-T=160			EPA 350.1	WCAt/8367
T2022561026	SC-B-T=160			EPA 350.1	WCAt/8367
T2022561027	WC-B-T=160			EPA 350.1	WCAt/8367
T2022561028	VP-2B-T=160			EPA 350.1	WCAt/8367

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ Jacksonville: 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ Gainesville: 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☑ Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

T20225 61

Client Name:	Wood PIC	Project Name:	Lake Jesup
Address:	1101 Channelside Dr #200	Project Number:	600698
	Tampa FL	PO Number:	
Phone:	3527021254	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Francesca Lauterman		
Sampled By:	Francesca Lauterman	Special Instructions:	
Turn Around Time:	Standard x Rush		
AEL Profile #:		ADaPT EQuiS Other	

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: TP	NH3	LABORATORY I.D. NUMBER
							Preservation	H2SO4	H2SO4	
							Field Filtered?			
	TPX-1A-T=96	G	12/4/20	18:40	SW	2		X	X	01
	TPX-0.5A-T=96	G	12/4/20	18:45	SW	2		X	X	02
	TPX-2A-T=96	G	12/4/20	18:50	SW	2		X	X	03
	TPX-1B-T=96	G	12/4/20	18:55	SW	2		X	X	04
	TPX-0.5B-T=96	G	12/4/20	19:00	SW	2		X	X	05
	TPX-2B-T=96	G	12/4/20	19:05	SW	2		X	X	06
	VP-1A-T=96	G	12/4/20	19:10	SW	2		X	X	07
	VP-0.5A-T=96	G	12/4/20	19:15	SW	2		X	X	08
	VP-2A-T=96	G	12/4/20	19:20	SW	2		X	X	09
	VP-1B-T=96	G	12/4/20	19:25	SW	2		X	X	10

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge **Preservation Code:** I = ice, H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice: ☐ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked

Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

DCN: AD-D051web Form last revised: 08/07/2019

	Relinquished by:	Date	Time	Received by:	Date	Time
1					12/9/20	1635
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS information not otherwise supplied) PWS ID:

Contact Person:

Supplier of Water:

Site Address:

12.22561

Advanced Environmental Laboratories, Inc.

Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E83076
Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
Jacksonville: 6661 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6074 • Lab ID: E811095
Gainesville: 4955 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84569

Client Name:	Wood PIC	Project Name:	Lake Jesup
Address:	1101 Channelside Dr #200	Project Number:	600698
	Tampa FL	PO Number:	
Phone:	3527021254	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Francesca Lauterman		
Sampled By:	Francesca Lauterman	Special Instructions:	
Turn Around Time:	Standard X Rush		
AEL Profile #:		ADaPT EQuIS Other	

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: TP	NH3									LABORATORY I.D. NUMBER
	Preservation							H2SO4	H2SO4									
	Field-Filtered?																	
	VP-IPX-0.5B-T=96	G	12/4/20	19:30	SW	2		X	X									011
	VP-IPX-2B-T=96	G	12/4/20	19:35	SW	2		X	X									012
	SC-B-T=96	G	12/4/20	19:40	SW	2		X	X									013
	WC-B-T=96	G	12/4/20	19:45	SW	2		X	X									014
	VP-2B-T=96	G	12/4/20	20:00	SW	2		X	X									

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = Ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

Received on Ice ☐ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

DCN: AD-D051web Form last revised 08/07/2019

	Relinquished by:	Date	Time	Received by:	Date	Time
1					12/4/20	1650
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS information not otherwise supplied) PWS ID:

Contact Person:

Supplier of Water:

Site Address:

Advanced Environmental Laboratories, Inc.

☐ **Altamonte Springs:** 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ **Fort Myers:** 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ **Jacksonville:** 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ **Tallahassee:** 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ **Gainesville:** 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ **Miramar:** 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☑ **Tampa:** 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

T202561

Client Name: Wood PIC	Project Name: Lake Jesup
Address: 1101 Channelside Dr #200	Project Number: 600698
Tampa FL	PO Number:
Phone: 3527021254	FDEP Facility No:
FAX:	FDEP Facility Addr:
Contact: Francesca Lauterman	
Sampled By: Francesca Lauterman	Special Instructions:
Turn Around Time: Standard x Rush	
AEL Profile #:	ADaPT EQuIS Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: TP	NH3								LABORATORY I.D. NUMBER
							Preservation	H2SO4	H2SO4								
							Field-Filtered?										
✓	TPX-1A-T=160	G	12/7/20	18:40	SW	2		X	X								015
✓	TPX-0.5A-T=160	G	12/7/20	18:45	SW	2		X	X								016
✓	TPX-2A-T=160	G	12/7/20	18:50	SW	2		X	X								017
✓	TPX-1B-T=160	G	12/7/20	18:55	SW	2		X	X								018
✓	TPX-0.5B-T=160	G	12/7/20	19:00	SW	2		X	X								019
✓	TPX-2B-T=160	G	12/7/20	19:05	SW	2		X	X								020
✓	VP-1A-T=160	G	12/7/20	19:10	SW	2		X	X								021
✓	VP-0.5A-T=160	G	12/7/20	19:15	SW	2		X	X								022
✓	VP-2A-T=160	G	12/7/20	19:20	SW	2		X	X								023
✓	VP-1B-T=160	G	12/7/20	19:25	SW	2		X	X								024

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☐ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked

Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1					12/8/20	1633
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID:

Contact Person:

Supplier of Water:

Site-Address:

Advanced Environmental Laboratories, Inc.

☐ **Altamonte Springs:** 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ **Fort Myers:** 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ **Jacksonville:** 6681 Soulhpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ **Tallahassee:** 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ **Gainesville:** 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ **Miramar:** 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☑ **Tampa:** 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name: Wood PIC	Project Name: Lake Jesup
Address: 1101 Channelside Dr #200	Project Number: 600698
Tampa FL	PO Number:
Phone: 3527021254	FDEP Facility No:
FAX:	FDEP Facility Addr:
Contact: Francesca Lauterman	
Sampled By: Francesca Lauterman	Special Instructions:
Turn Around Time: Standard x Rush	
AEL Profile #:	ADaPT EQuIS Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	TP (H2SO4)	NH3 (H2SO4)	LABORATORY I.D. NUMBER
	~~VP-IPX-0.5B-T=160~~	G	12/7/20	19:30	SW	2	X	X	025
	~~VP-IPX-2B-T=160~~	~~G~~	~~12/7/20~~	~~19:35~~	~~SW~~	~~2~~	~~X~~	~~X~~	
	SC-B-T=160	G	12/7/20	19:40	SW	2	X	X	026
	WC-B-T=160	G	12/7/20	19:45	SW	2	X	X	027
	~~IPX-2B-T=160~~								
	~~VP-2B-T=160~~	~~G~~	~~12/7/20~~	~~19:50~~	~~SW~~	~~2~~	~~X~~	~~X~~	12/7/20 028
	VP-2B-T=160	G	12/7/20	19:35	SW	2	X	X	028
			12/6/2020 EW Per Client						

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☐ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1					12/9/20	1635
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID: _____

Contact Person: _____

Supplier of Water: _____

Site-Address: _____

Advanced Environmental Laboratories, Inc.

6681 Southpoint Parkway
Jacksonville, Florida 32216
Office (904) 363-9350
Fax (904) 363-9354

Project No.: T2022561

Client Name: Wood PLC

ProjectID: Lake Jesup

I. Receipt

No Exceptions were encountered.

II. Holding Times

Preparation: All holding times were met.

Analysis: All holding times were met.

III. Method

Analysis: EPA 350.1

Preparation: None

IV. Preparation

Sample preparation proceeded normally.

V. Analysis

A. Calibration: All acceptance criteria were met.

B. Blanks: All acceptance criteria were met.

C. Duplicates: All acceptance criteria were met.

D. Spikes: The matrix spike recovery of Ammonia for T2022561028 was outside control criteria. Recoveries in the Laboratory Control Sample (LCS), Matrix Spike Duplicate (MSD) and %RPD were acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential low bias in this matrix. No further corrective action was required.

E. Serial Diluion: All acceptance criteria were met.

F. Samples: Sample analyses proceeded normally.

G. Other:

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

December 18, 2020

Francesca Lauterman
Wood EIS
1101 Channelside
Suite 200
Tampa, FL 33602

RE: Workorder: T2022911 Lake Jesup

Dear Francesca Lauterman:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, December 11, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heidi Parker - Project Manager
HParker@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

SAMPLE SUMMARY

Workorder: T2022911 Lake Jesup

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T2022911001	TPX-1A-T=216	Water	12/9/2020 12:30	12/11/2020 08:00
T2022911002	TPX-0.5A-T=216	Water	12/9/2020 12:35	12/11/2020 08:00
T2022911003	TPX-2A-T=216	Water	12/9/2020 12:40	12/11/2020 08:00
T2022911004	TPX-1B-T=216	Water	12/9/2020 12:45	12/11/2020 08:00
T2022911005	TPX-0.5B-T=216	Water	12/9/2020 12:50	12/11/2020 08:00
T2022911006	TPX-2B-T=216	Water	12/9/2020 12:55	12/11/2020 08:00
T2022911007	VP-1A-T=216	Water	12/9/2020 13:00	12/11/2020 08:00
T2022911008	VP-0.5A-T=216	Water	12/9/2020 13:05	12/11/2020 08:00
T2022911009	VP-2A-T=216	Water	12/9/2020 13:10	12/11/2020 08:00
T2022911010	VP-1B-T=216	Water	12/9/2020 13:15	12/11/2020 08:00
T2022911011	VP-0.5B-T=216	Water	12/9/2020 13:20	12/11/2020 08:00
T2022911012	VP-2B-T=216	Water	12/9/2020 13:25	12/11/2020 08:00
T2022911013	SC-B-T=216	Water	12/9/2020 13:30	12/11/2020 08:00
T2022911014	WC-B-T=216	Water	12/9/2020 13:35	12/11/2020 08:00

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911001**
Sample ID: **TPX-1A-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 12:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.2**		**mg/L**	**1**	0.030	0.015	12/17/2020 12:49	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.065**		**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911002**
Sample ID: **TPX-0.5A-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 12:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.2**		**mg/L**	**1**	0.030	0.015	12/17/2020 12:52	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.046**		**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911003**
Sample ID: **TPX-2A-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 12:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**4.8**		**mg/L**	**1**	0.030	0.015	12/17/2020 12:52	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.030**		**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911004**
Sample ID: **TPX-1B-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 12:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.1**		**mg/L**	**1**	0.030	0.015	12/17/2020 12:53	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.028**		**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911005**
Sample ID: **TPX-0.5B-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 12:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.98**		**mg/L**	**1**	0.030	0.015	12/17/2020 12:54	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.054**		**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911006**
Sample ID: **TPX-2B-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 12:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**2.1**		**mg/L**	**1**	0.030	0.015	12/17/2020 12:55	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.018**		**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911007** Date Received: 12/11/20 08:00 Matrix: Water

Sample ID: **VP-1A-T=216** Date Collected: 12/09/20 13:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.54**		**mg/L**	**1**	0.030	0.015	12/17/2020 12:55	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.005**	**U**	**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911008**
Sample ID: **VP-0.5A-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 13:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.66**		**mg/L**	**1**	0.030	0.015	12/17/2020 12:56	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.005**	**U**	**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911009**
Sample ID: **VP-2A-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 13:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.74**		**mg/L**	**1**	0.030	0.015	12/17/2020 12:57	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.005**	**U**	**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911010**
Sample ID: **VP-1B-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 13:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.53**		**mg/L**	**1**	0.030	0.015	12/17/2020 13:02	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.005**	**U**	**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911011**
Sample ID: **VP-0.5B-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 13:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.68**		**mg/L**	**1**	0.030	0.015	12/17/2020 13:04	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.005**	**U**	**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911012**
Sample ID: **VP-2B-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 13:25

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.92**		**mg/L**	**1**	0.030	0.015	12/17/2020 13:05	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.005**	**U**	**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911013**
Sample ID: **SC-B-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 13:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**1.0**		**mg/L**	**1**	0.030	0.015	12/17/2020 13:06	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.049**		**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022911 Lake Jesup

Lab ID: **T2022911014**
Sample ID: **WC-B-T=216**

Date Received: 12/11/20 08:00 Matrix: Water
Date Collected: 12/09/20 13:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	12/17/2020 13:07	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.006**	**I**	**mg/L**	**1**	0.01	0.005	12/16/2020 11:25	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS QUALIFIERS

Workorder: T2022911 Lake Jesup

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

G	DOH Certification #E82001(AEL-G)(FL NELAC Certification)
T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2022911 Lake Jesup

QC Batch: WCAg/5171 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/16/2020 11:25
Associated Lab Samples: T2022911001, T2022911002, T2022911003, T2022911004, T2022911005, T2022911006, T2022911007, T2022911008,

METHOD BLANK: 3716720

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3716722

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.091	91	80-120	

QC Batch: WCAt/8297 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2022911001, T2022911002, T2022911003, T2022911004, T2022911005, T2022911006, T2022911007, T2022911008,

METHOD BLANK: 3718871

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3718872

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.49	98	90-110	

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2022911 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2022911001	TPX-1A-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911002	TPX-0.5A-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911003	TPX-2A-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911004	TPX-1B-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911005	TPX-0.5B-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911006	TPX-2B-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911007	VP-1A-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911008	VP-0.5A-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911009	VP-2A-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911010	VP-1B-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911011	VP-0.5B-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911012	VP-2B-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911013	SC-B-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911014	WC-B-T=216	EPA 365.3	WCAg/5171	EPA 365.3	WCAg/5172
T2022911001	TPX-1A-T=216			EPA 350.1	WCAt/8297
T2022911002	TPX-0.5A-T=216			EPA 350.1	WCAt/8297
T2022911003	TPX-2A-T=216			EPA 350.1	WCAt/8297
T2022911004	TPX-1B-T=216			EPA 350.1	WCAt/8297
T2022911005	TPX-0.5B-T=216			EPA 350.1	WCAt/8297
T2022911006	TPX-2B-T=216			EPA 350.1	WCAt/8297
T2022911007	VP-1A-T=216			EPA 350.1	WCAt/8297
T2022911008	VP-0.5A-T=216			EPA 350.1	WCAt/8297
T2022911009	VP-2A-T=216			EPA 350.1	WCAt/8297
T2022911010	VP-1B-T=216			EPA 350.1	WCAt/8297
T2022911011	VP-0.5B-T=216			EPA 350.1	WCAt/8297
T2022911012	VP-2B-T=216			EPA 350.1	WCAt/8297
T2022911013	SC-B-T=216			EPA 350.1	WCAt/8297
T2022911014	WC-B-T=216			EPA 350.1	WCAt/8297

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53075
☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ Jacksonville: 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ Gainesville: 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☒ Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84569

Client Name:	Wood PIC	Project Name:	Lake Jesup
Address:	1101 Channelside Dr #200	Project Number:	600698
	Tampa FL	PO Number:	
Phone:	3527021254	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Francesca Lauterman		
Sampled By:	Francesca Lauterman	Special Instructions:	
Turn Around Time:	Standard x Rush		
AEL Profile #:		ADaPT EQuIS Other	

T2022911

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: TP	NH3								LABORATORY I.D. NUMB
							Preservation	H2SO4	H2SO4								
							Field-Filtered?										
TBX-1A	-T=216	G	12/9/20	1230	SW	2		1	1								221
TBX-0.5A	-T-216	G	12/9/20	1235	SW	2		1	1								222
TBX-2A	-T=216	G	12/9/20	1240	SW	2		1	1								223
TBX-1B	-T=216	G	12/9/20	1245	SW	2		1	1								224
TBX-0.5B	-T=216	G	12/9/20	1250	SW	2		1	1								225
TBX-2B	-T=216	G	12/9/20	1255	SW	2		1	1								226
VP-1A	T=216	G	12/9/20	1300	SW	2		1	1								227
VP-0.5A	-T=216	G	12/9/20	1305	SW	2		1	1								228
VP-2A	-T=216	G	12/9/20	1310	SW	2		1	1								229
VP-1B	-T=216	G	12/9/20	1315	SW	2		1	1								230

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☒ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☒ Where required, pH checked Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised: 08/07/2019 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		12/11/20	800am		12/11/20	8:00
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID: _____

Contact Person: _____

Supplier of Water: _____

Site-Address: _____

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ Jacksonville: 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ Gainesville: 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ Miramar: 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☒ Tampa: 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

T2372411

Client Name:	Wood PIC	Project Name:	Lake Jesup
Address:	1101 Channelside Dr #200	Project Number:	600698
	Tampa FL	PO Number:	
Phone:	3527021254	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Francesca Lauterman		
Sampled By:	Francesca Lauterman	Special Instructions:	
Turn Around Time:	Standard x Rush		
AEL Profile #:		ADaPT EQuIS Other	

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: TP	NH3	LABORATORY I.D. NUMBER
							Preservation	H2SO4	H2SO4	
							Field-Filtered?			
VP-0.5B-T=216		Grab	12/9/20	1320	SW	2		1	1	011
VP-2B-T=216		Grab	12/9/20	1325	SW	2		1	1	012
SC-B-T=216		Grab	12/9/20	1330	SW	2		1	1	013
WC-B-T=216		Grab	12/9/20	1335	SW	2		1	1	014

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = Ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☐ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked

Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1		12/9/20	8:00am		12/11/20	600
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS information not otherwise supplied) PWS ID: _____

Contact Person: _____

Supplier of Water: _____

Site-Address: _____

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

December 18, 2020

Francesca Lauterman
Wood EIS
1101 Channelside
Suite 200
Tampa, FL 33602

RE: Workorder: T2022463 Lake Jesup

Dear Francesca Lauterman:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, December 04, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heidi Parker - Project Manager
HParker@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

SAMPLE SUMMARY

Workorder: T2022463 Lake Jesup

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T2022463001	TPX-1A-T=48	Water	12/2/2020 18:40	12/4/2020 13:10
T2022463002	TPX-0.5A-T=48	Water	12/2/2020 18:45	12/4/2020 13:10
T2022463003	TPX-2A-T=48	Water	12/2/2020 18:50	12/4/2020 13:10
T2022463004	TPX-1B-T=48	Water	12/2/2020 18:55	12/4/2020 13:10
T2022463005	TPX-0.5B-T=48	Water	12/2/2020 19:00	12/4/2020 13:10
T2022463006	TPX-1B-T=48	Water	12/2/2020 19:05	12/4/2020 13:10
T2022463007	VP-1A-T=48	Water	12/2/2020 19:10	12/4/2020 13:10
T2022463008	VP-0.5A-T=48	Water	12/2/2020 19:15	12/4/2020 13:10
T2022463009	VP-2A-T=48	Water	12/2/2020 19:20	12/4/2020 13:10
T2022463010	VP-1B-T=48	Water	12/2/2020 19:25	12/4/2020 13:10
T2022463011	VP-0.5B-T=48	Water	12/2/2020 19:30	12/4/2020 13:10
T2022463012	VP-2B-T=48	Water	12/2/2020 19:35	12/4/2020 13:10
T2022463013	SC-B-T=48	Water	12/2/2020 19:40	12/4/2020 13:10
T2022463014	WC-B-T=48	Water	12/2/2020 19:45	12/4/2020 13:10

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463001** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **TPX-1A-T=48** Date Collected: 12/02/20 18:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.82**		**mg/L**	**1**	0.030	0.015	12/14/2020 08:59	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.042**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463002** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **TPX-0.5A-T=48** Date Collected: 12/02/20 18:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.43**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:00	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.049**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463003** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **TPX-2A-T=48** Date Collected: 12/02/20 18:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.26**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:01	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.018**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463004** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **TPX-1B-T=48** Date Collected: 12/02/20 18:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.84**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:02	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.039**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463005** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **TPX-0.5B-T=48** Date Collected: 12/02/20 19:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.21**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:02	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.056**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463006** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **TPX-1B-T=48** Date Collected: 12/02/20 19:05

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.43**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:03	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.011**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463007** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **VP-1A-T=48** Date Collected: 12/02/20 19:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.76**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:09	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.056**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463008** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **VP-0.5A-T=48** Date Collected: 12/02/20 19:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.66**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:11	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.056**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463009** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **VP-2A-T=48** Date Collected: 12/02/20 19:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.31**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:12	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.046**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463010** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **VP-1B-T=48** Date Collected: 12/02/20 19:25

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.24**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:13	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.046**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463011**
Sample ID: **VP-0.5B-T=48**

Date Received: 12/04/20 13:10 Matrix: Water
Date Collected: 12/02/20 19:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.27**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:14	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.051**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463012** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **VP-2B-T=48** Date Collected: 12/02/20 19:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.79**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:14	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.046**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463013** Date Received: 12/04/20 13:10 Matrix: Water

Sample ID: **SC-B-T=48** Date Collected: 12/02/20 19:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.39**		**mg/L**	**1**	0.030	0.015	12/14/2020 09:15	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.051**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS

Workorder: T2022463 Lake Jesup

Lab ID: **T2022463014**
Sample ID: **WC-B-T=48**

Date Received: 12/04/20 13:10 Matrix: Water
Date Collected: 12/02/20 19:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.015**	**U**	**mg/L**	**1**	0.030	0.015	12/14/2020 09:16	T
Analysis Desc: Total Phosphorus,E365.3,Analysis	Preparation Method: EPA 365.3 Analytical Method: EPA 365.3							
Total Phosphorus (as P)	**0.053**		**mg/L**	**1**	0.01	0.005	12/7/2020 13:20	G

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

ANALYTICAL RESULTS QUALIFIERS

Workorder: T2022463 Lake Jesup

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

G	DOH Certification #E82001(AEL-G)(FL NELAC Certification)
T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2022463 Lake Jesup

QC Batch: WCAg/5052 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/07/2020 13:20
Associated Lab Samples: T2022463001, T2022463002

METHOD BLANK: 3705325

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3705327

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.105	105	80-120	

QC Batch: WCAg/5053 Analysis Method: EPA 365.3
QC Batch Method: EPA 365.3 Prepared: 12/07/2020 13:20
Associated Lab Samples: T2022463003, T2022463004, T2022463005, T2022463006, T2022463007, T2022463008, T2022463009,

METHOD BLANK: 3705334

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Phosphorus (as P)	mg/L	0.005	0.005	U

LABORATORY CONTROL SAMPLE: 3705336

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Phosphorus (as P)	mg/L	0.1	0.105	105	80-120	

QC Batch: WCAt/8174 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T2022463001, T2022463002, T2022463003, T2022463004, T2022463005, T2022463006

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T2022463 Lake Jesup

METHOD BLANK: 3712986

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3712987

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.50	100	90-110	

QC Batch: WCAt/8175 Analysis Method: EPA 350.1

QC Batch Method: EPA 350.1 Prepared:

Associated Lab Samples: T2022463007, T2022463008, T2022463009, T2022463010, T2022463011, T2022463012, T2022463013, T2022463014

METHOD BLANK: 3713007

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.015	0.015	U

LABORATORY CONTROL SAMPLE: 3713008

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	0.5	0.53	106	90-110	

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA QUALIFIERS

Workorder: T2022463 Lake Jesup

QUALITY CONTROL PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J4	Estimated Result

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL 32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T2022463 Lake Jesup

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T2022463001	TPX-1A-T=48	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022463002	TPX-0.5A-T=48	EPA 365.3	WCAg/5052	EPA 365.3	WCAg/5055
T2022463003	TPX-2A-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463004	TPX-1B-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463005	TPX-0.5B-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463006	TPX-1B-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463007	VP-1A-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463008	VP-0.5A-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463009	VP-2A-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463010	VP-1B-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463011	VP-0.5B-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463012	VP-2B-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463013	SC-B-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463014	WC-B-T=48	EPA 365.3	WCAg/5053	EPA 365.3	WCAg/5056
T2022463001	TPX-1A-T=48			EPA 350.1	WCAt/8174
T2022463002	TPX-0.5A-T=48			EPA 350.1	WCAt/8174
T2022463003	TPX-2A-T=48			EPA 350.1	WCAt/8174
T2022463004	TPX-1B-T=48			EPA 350.1	WCAt/8174
T2022463005	TPX-0.5B-T=48			EPA 350.1	WCAt/8174
T2022463006	TPX-1B-T=48			EPA 350.1	WCAt/8174
T2022463007	VP-1A-T=48			EPA 350.1	WCAt/8175
T2022463008	VP-0.5A-T=48			EPA 350.1	WCAt/8175
T2022463009	VP-2A-T=48			EPA 350.1	WCAt/8175
T2022463010	VP-1B-T=48			EPA 350.1	WCAt/8175
T2022463011	VP-0.5B-T=48			EPA 350.1	WCAt/8175
T2022463012	VP-2B-T=48			EPA 350.1	WCAt/8175
T2022463013	SC-B-T=48			EPA 350.1	WCAt/8175
T2022463014	WC-B-T=48			EPA 350.1	WCAt/8175

Advanced Environmental Laboratories, Inc.

☐ **Altamonte Springs:** 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ **Fort Myers:** 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ **Jacksonville:** 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ **Tallahassee:** 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ **Gainesville:** 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ **Miramar:** 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☒ **Tampa:** 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

Client Name:	Wood PIC	Project Name:	Lake Jesup
Address:	1101 Channelside Dr #200	Project Number:	600698
	Tampa FL	PO Number:	
Phone:	3527021254	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Francesca Lauterman		
Sampled By:	Francesca Lauterman	Special Instructions:	
Turn Around Time:	Standard x Rush		
AEL Profile #:		ADaPT EQuIS Other	

* T 2 0 2 2 4 6 3 *

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: TP	NH3							LABORATORY I.D. NUMBER
							Preservation	H2SO4	H2SO4							
							Field-Filtered?									
	TPX-1A-T=48	G	12/2/20	18:40	SW	2		X	X							01
	TPX-0.5A-T=48	G	12/2/20	18:45	SW	2		X	X							02
	TPX-2A-T=48	G	12/2/20	18:50	SW	2		X	X							03
	TPX-1B-T=48	G	12/2/20	18:55	SW	2		X	X							04
	TPX-0.5B-T=48	G	12/2/20	19:00	SW	2		X	X							05
	TPX-1B-T=48	G	12/2/20	19:05	SW	2		X	X							06
	VP-1A-T=48	G	12/2/20	19:10	SW	2		X	X							07
	VP-0.5A-T=48	G	12/2/20	19:15	SW	2		X	X							08
	VP-2A-T=48	G	12/2/20	19:20	SW	2		X	X							09
	VP-1B-T=48	G	12/2/20	19:25	SW	2		X	X							10

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☐ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1					12/4/20	1319
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID: _____

Contact Person: _____

Supplier of Water: _____

Site-Address: _____

Advanced Environmental Laboratories, Inc.

☐ **Altamonte Springs:** 380 Northlake Blvd., Ste. 1048, FL 32701 • 407.937.1594 • Lab ID: E53076
☐ **Fort Myers:** 13100 Westlinks Terrace, Ste. 19, FL 33913 • 239.674.8130 • Lab ID: E84492
☐ **Jacksonville:** 6681 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ **Tallahassee:** 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ **Gainesville:** 4965 SW 41st Blvd., FL 32608 • 352.377.2349 • Lab ID: E82001
☐ **Miramar:** 10200 USA Today Way, FL 33025 • 954.889.2288 • Lab ID: E82535
☒ **Tampa:** 9610 Princess Palm Ave., FL 33619 • 813.630.9616 • Lab ID: E84589

T2022463

Client Name:	Wood PIC	Project Name:	Lake Jesup
Address:	1101 Channelside Dr #200	Project Number:	600698
	Tampa FL	PO Number:	
Phone:	3527021254	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Francesca Lauterman		
Sampled By:	Francesca Lauterman	Special Instructions:	
Turn Around Time:	Standard x Rush		
AEL Profile #:		ADaPT EQuIS Other	

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	ANALYSIS REQUIRED: BOTTLE SIZE & TYPE	TP	NH3									LABORATORY I.D. NUMBER
							Preservation	H2SO4	H2SO4									
							Field-Filtered?											
	VP ~~TPX~~-0.5B-T=48 BP 3 H	G	12/2/20	19:30	SW	2		X	X									01
	VP ~~TPX~~-2B-T=48 BP 3H	G	12/2/20	19:35	SW	2		X	X									02
	SC-B-T=48	G	12/2/20	19:40	SW	2		X	X									03
	WC-B-T=48	G	12/2/20	19:45	SW	2		X	X									04

Matrix Code: **WW** = wastewater **SW** = surface water **GW** = ground water **DW** = drinking water **O** = oil **A** = air **SO** = soil **SL** = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☐ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked

Temp. when received (observed) 6 °C Temp. when received (corrected) 6 °C

DCN: AD-D051web Form last revised 08/07/2019

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1					12/2/20	1410
2						
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID

Contact Person:

Supplier of Water:

Site-Address:

APPENDIX D

Sediment Core Photographs and Descriptions

Descriptions and Photos: Sediment Core Profiles

Client: St. Johns River Water Management District

Site Name: Lake Jesup

Project Number: 600698.02

Sample Location:
LJ-1

Description:
0-20 cm – Flocculant sediment, dark brown in color, sponge like consistency
20-30 cm – Flocculant/Compact sediment, dark brown in color, trace sand

APPENDIX E

Wood SOP Sediment Nutrient Flux

Descriptions and Photos: Sediment Core Profiles

Client: St. Johns River Water Management District

Site Name: Lake Jesup

Project Number: 600698.02

Sample Location:
LJ-2

Description:
0-10 cm – Flocculant sediment, dark brown in color
10-30 cm – Flocculant/Compact sediment, dark brown in color, fibrous roots and shell fragments

Descriptions and Photos: Sediment Core Profiles

Client: St. Johns River Water Management District

Site Name: Lake Jesup

Project Number: 600698.02

Sample Location:
LJ-3

Description:
0-13 cm – Flocculant sediment, dark brown in color
13-30 cm – Flocculant/Compact sediment, dark brown in color, trace sand

STANDARD OPERATING PROCEDURE
EVALUATION OF TREATMENT ALTERNATIVE EFFICIENCIESTHROUGH DIRECT MEASUREMENT OF DIFFUSIVE FLUX

Effective Date: June 11, 2018

Prepared by: Water Resources Technical Lead Scientist; Laboratory Scientist

Approved by: Quality Assurance Field Officer; Quality Assurance Laboratory Director

TABLE OF CONTENTS

1.0 Purpose

This SOP describes field and laboratory methods recommended to evaluate the potential internal nutrient loading from sediments that may occur in a waterbody, as part of the sediment nutrient flux assessment component of the subject Project. In addition, various treatment alternatives can also be evaluated by measuring the reduction of diffusive nutrient flux, which would directly relate to the alternative's treatment efficiency.

The flux study will aid in quantifying the potential beneficial impacts of adding a biological or chemical amendment or cap to improve water quality.

2.0 Scope, Application and Applicable Matrix

Sediment nutrient accumulations in waterbodies over time can contribute pollutant sources to the overlying water column, through biogeochemical processes such as adsorption, desorption and diffusion processes (Lijklema et al. 1993). Detailed physical and chemical characterizations of sediments are therefore essential to evaluate the nutrient exchange processes that occur at the sediment-water interface (Sahin et al. 2012).

Phosphorus is typically the limiting nutrient in lentic systems, and when found in excess, eutrophication can occur (Dorich et al. 1985). As a growing number of waterbodies worldwide suffer from cultural eutrophication, determination of the causes of water quality degradation is becoming increasingly important for water resource management and restoration (Ogdahl et al. 2014). Bottom sediments in waterbodies play a major role in releasing nutrients to the overlying water column during wind induced sediment resuspension and/or by constant flux due to diffusion (Reddy et al. 1996). Projects that include treatment alternatives to cap sediments containing high concentrations of biologically available

nutrients are beneficial to the recovery of water quality and ecological conditions in waterbodies such as lakes and streams.

Nutrient bioavailability and reactivity in the sediments can be quantified by measuring different forms of nitrogen (N) and phosphorus (P) content in the sediment (Olila et al. 1995) and release from the sediments into the water column (Ogdahl et al. 2014). The amounts and forms of reactive and nonreactive P in sediments can be examined using chemical extraction procedures to differentiate between the P fraction's solubility when exposed to various chemical extractants (Psenner et al. 1988; Olila et al. 1995). Readily available P (i.e. labile P) is defined as the sum of water-soluble P and NH_4Cl or KCl extractable P. These labile P fractions are desorbed and hydrolyzed or loosely bound or adsorbed (Hieltjes and Lijklema 1980; Topcu and Pulatsu 2008). The NaOH-extractable P fraction is the reductant soluble P form that can be released under certain environmental conditions and is extracted from iron hydroxide and aluminum hydroxide surfaces in the laboratory (Hieltjes and Lijklema 1980; Topcu and Pulatsu 2008). The sum of labile P and reductant soluble P forms typically account for the total biologically available P (BAP), which can be used as fuel to promote growth by phytoplankton in the water column (Reddy et al. 1998). Nutrient loading rates that diffuse from the sediments are dependent on the geologic nature (i.e. high natural phosphorus content) and/or legacy point source inputs into the system.

Flux rates of biologically available nutrients from the sediments can be quantified in the laboratory by incubating intact sediment cores under controlled laboratory conditions and measuring changes in nutrient concentrations over time in the water column overlying the sediment cores (e.g., Schelske et al. 1991, Trefry et al. 1992, Moore et al. 1998, and Ogdahl et al. 2014,). The primary benefit of the laboratory incubation approach is that the experimental conditions and the range of factors affecting flux rates can be carefully controlled. A slight drawback is the possibility that laboratory studies cannot completely mimic *in-situ* waterbody conditions and are subject to laboratory artifacts if sufficient controls are not put in place.

Intact sediment core incubations to determine flux rates rely on careful sediment extraction in the field and minimum disturbance during laboratory incubations. At the lab, nutrient concentration changes in the overlying water are evaluated overtime. Flux rates could be highly variable, dependending on the conditions that were encountered before and during inclubation. Some important considerations include the following:

1) Depth of sediment profiles collected and analyzed in the core
2) Depth of water analyzed on top of the sediment in the core
3) Initiation of incubation after inclusion of source water
4) The number and distribution (on time scale) of data points to develop the flux rate
5) The beginning and end points, and the length of incubation and time spanning between data points and from beginning to end of the run
6) Whether the tests are conducted in aerobic, anoxic, quiescent and/or turbulent conditions.

Depending on the study objective, it is possible to conduct the flux tests in both aerobic and anoxic conditions in separate core profiles (with replicates) to limit error introduced from biogeochemical processes not regularly encountered in the waterbody. Therefore, maintenance of low oxygen concentrations at anoxic levels by gentle purging with N_2 gas mixture is necessary to maintain the appropriate anoxic conditions. In contrast, gentle purging of air gas mixture is needed to mainain aerobic conditions. In addition, an appropriate stirring rate may be desired to establish a representative diffusive boundary layer thickness similar to the level of turbulance of the subject waterbody.

The intact sediment core laboratory incubation approach was selected to take advantage of strictly controlled laboratory conditions that can be manipulated to answer specific resource management questions.

Details of the experimental design and methodology are provided below, which are applicable to sediment samples collected by Wood field technicians, processed and/or analyzed by the Wood Laboratory and/or other certified laboratories. Trained field technicians and laboratory technical staff with applicable training and experience are responsible for performance of this SOP.

3.0 **Materials and Methods**

3.1 **Field Sample Collection Procedures, Preservation and Storage**

Three different types of samples and analyses should be conducted at each sampling site. The three types are identified by letters **a** through **c** below and should be collected in the following order for quality control purposes:

a) Water Chemistry *In-situ* Vertical Profile
b) Sediment Depth (*In-situ*)
c) Intact Sediment Cores

Intact sediment cores should be transported to the Wood Flux Laboratory for set-up and immediately after core extrusion. Sampling methods and laboratory procedures for each of the different sampling types are described in the following sub-sections.

3.1.1 Field Equipment and Supplies

1) Safety plan
2) Boat with motor
3) GPS
4) Camera
5) Maps with access, site locations, and contact information
6) FDEP SOPs for water sampling
7) Field sheets
8) Fine point sharpies
9) Labels
10) Putty knife and screwdriver
11) Metric ruler
12) YSI MDS 550 multiparameter water quality sonde (calibrated and checked (ICV, CCV) documented on calibration logs per FDEP SOP)
13) Turbidimeter (calibrated and checked (ICV, CCV) documented on calibration logs per FDEP SOP)
14) Secchi disk
15) Levelling rod for muck depth and hard bottom depth
16) Peristaltic pump or submersible pump for collection of near-bottom ambient water for carboys/jugs for use in incubations
17) 12 X 3" outer diameter (OD) clean clear polycarbonate core tube, with 2 $^{7}/_{8}$" inner diameter (ID) and a $^{1}/_{16}$" wall thickness, cut into 2' long pieces
18) Piston corer assembly for intact flux cores
19) Minimum of 16 3" test plugs to serve as bottom and top core plugs
20) Duct tape, epoxy glue, or other material to prevent leakage from cores
21) Extra-large black garbage bags to cover and keep core samples in the dark
22) Coolers with upright frame for flux core storage and transport

3.1.2 Field Equipment Calibration

Staff generated documentation of initial calibration, initial calibration verification and continuing calibration verification of water quality multiparameter sondes used to collect *in-situ* water chemistry profiles, and other field data collection equipment, as applicable. The FDEP SOPs (FS1000, FT1000, FD1000, FT1100, FT1200, FT1300, FT1400, FT1500, and FT1600), should be used for pre and post-

event instrument calibration and/or verification conducted prior to commencing sampling and at the end of each sampling day.

3.1.3 Field Sample Collection and QA/QC Procedures

Several SOPs such as the FDEP SOPs for water and sediment sampling (FS1000, FS2000, FS2100, and FS4000) should be kept on-hand during mobilization or pre-event preparation, and sampling. These SOPs should be followed to maintain a high level of accuracy in data collection and to ensure sound QA/QC management practices should be being followed.

3.1.3.1 Sample Type A: *In-situ* Vertical Profile of Water Chemistry

1) At each site, photographs should be taken showing the water column and habitat conditions of the site. In addition, photos should be taken of each of the sediment cores collected. The photographs taken should be noted on the field sheets.
2) Any notable field conditions should be noted such as weather or other environmental conditions that may affect sampling results.
3) At each site, *in-situ* water chemistry vertical depth profiles should be collected with a properly calibrated YSI multiparameter sonde.
4) The length of the YSI cord should be long enough to reach the bottom of the water column
5) At each site, YSI measurements should be recorded at three depths in the water column at the top, middle, and as near to the bottom as possible without disturbing the sediments (within 0.5 m of benthic surface).
6) Care must be taken to not disturb the sediments to cause error in the measurements.
7) The following parameters should be recorded for the overall site: total water depth, Secchi depth and measurement depth.
8) The following parameters should be recorded at each incremental depth: water temperature, dissolved oxygen (DO), pH, specific conductivity, salinity, ORP, and turbidity.

3.1.3.2 Sample Type B: Sediment Depth Collection

1) At each site, the top and bottom depth of flocculent sediment layer (muck), and the depth to hard bottom (refusal) should be measured with a levelling rod.
2) Sediment muck depths should be recorded on corresponding field sheets.

3.1.3.3 Sample Type C: Sediment Intact Cores Collection

1) At three predetermined sites, intact undisturbed sediment cores should be collected with a coring assembly (3' clear polycarbonate tube coupled with drive rods) to a depth of 20 cm from the top of sediment (0-20 cm).
    a. At all three predetermined sites 2 cores will be collected at each location (one for anoxic and one for aerobic incubation).
    b. Two water controls (one aerobic, and one anoxic) will be incubated along with the intact cores.

2) All core tubes must be labeled properly with site name, date, time, sampler names, and replicate number (1-8) on a piece of removable tape.
3) Care should be taken to ensure that homogenous replicate samples are collected from each site, which will require inspection of the replicates prior to placing the samples into the upright core racks (for storage and transportation). If the stratigraphy of the core samples differ, then a different, more homogeneous sediment strata should be located.
4) 25 to 40 cm of near-bottom ambient water should be included on top of the sediment core
5) After sediment is captured by the coring device, the core will be brought to the water's surface, sealed with a rubber stopper prior to breaking the water surface. Core retrieval approach may vary depending on the type of substrate. Slippage of sediments out of the bottom of the core must be stopped to avoid sample loss out of the bottom of the core and to avoid disturbing the sediments within the core.

6) The intact cores should be sealed with the appropriate top and bottom rubber stoppers.
7) The intact cores rubber stoppers will be wrapped with duct tape or an epoxy will be applied to the stopper to prevent leakage (epoxy is primarily needed for sandy samples with low organic matter content to prevent sample falling out the bottom of the core).
8) All cores must be,
    a. covered with a dark garbage bag to limit light affecting the cores, and
    b. transported in an upright position (using a rack) to the Wood Flux Lab for incubation and nutrient flux experiments
9) All COC paperwork must be filled out completely, and provided to the Wood lab
10) A copy of the COC signed by the laboratory must be received prior to departure

3.2 Sample Type C: Internal Laboratory Sample Preparation Procedure, Preservation and Storage for Intact Sediment Core Incubation Flux Measurement

3.2.1 Laboratory Equipment and Supplies

For set-up

1) Teflon tubing
2) Acid washed carboys
3) Deionized water (DI)
4) Labeling tape
5) 0.45 micron filtered ambient water

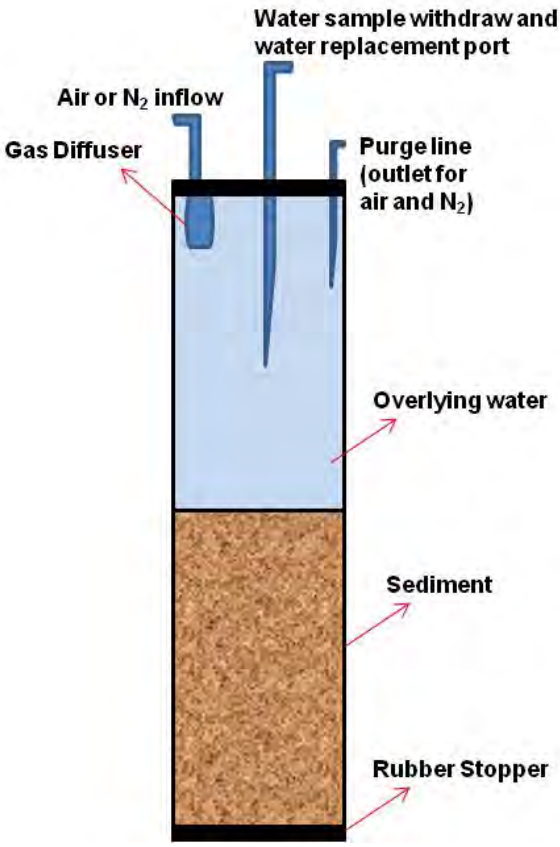
For nutrient flux experiment

1) Thermostat
2) Verification thermometer (ambient temperature)
3) pH meter
4) Oxygen meter with incorporated thermometer
5) Turbidity meter
6) Sterile polyethylene syringes
7) 0.45 µm membrane filters
8) Clean sample collection bottles (provided by analytical lab)
9) Diffuser
10) Teflon tubing
11) Labeling tape

3.2.2 Reagents and Standards

1) Nitrogen Gas

Figure 1. Intact Core Incubation Apparatus



3.2.3 Laboratory Procedure: Intact Sediment Core Preparation and Incubation

Near Bottom Ambient Water Preparation:

1) Prior to initialization of core incubation, the ambient water should be filtered using an in-line 0.45-micron capsule filter with a peristaltic pump. Once filtered, half of the containers should be bubbled with N_2 gas at a rapid rate to achieve and maintain anoxic conditions prior and during flux sampling. The other half will be stored until needed for water replacements on the intact cores. At that time, water containers will be bubbled with N_2 gas at room temperature until anoxic conditions are achieved and then used to refill intact cores.
2) The setup of the intact core apparatus is shown in **Figure 1**, and it includes fittings and tubing required for subsampling.

Adjustment of Sediment on Cores:

3) If cores are received with sediment depths that are not the desired amount (20 cm), then cores may be adjusted to the desired depth of sediment and overlying water column (~30 cm) prior to incubation.
4) To adjust sediment volumes on the cores, first remove overlaying water by siphoning with a Teflon tube, making sure not to disturb or remove the top layer of sediment, then remove the bottom stopper and carefully let the sediment out of the bottom of the core tube. Make sure to seal the bottom of the core well to prevent water leakage during flux study. Refill with filtered ambient water as described in step 5 below.

Replacing Overlying Water with Filtered Ambient Water:

5) If the sediments on the core do not require adjustment, remove the overlaying water and replace with ~30 cm of filtered near bottom ambient water from the carboy. The water should reach to the

top of the core. The water must be added slowly to prevent disturbance of sediments. After the water is replaced on the core, it is time to begin the stabilization/equilibration period.

Sediment Core Equilibration:

6) The time necessary for sedimentation/equilibration to be achieved is dependent on the composition of the sediment in upper portion of the core. Flocculent sediment material will require a longer duration for complete settling (up to 24 hours), whereby, sandy sediment may be equilibrated within the 12 hour timeframe). Systematic monitoring of turbidity can inform the length of time needed to achieve full equilibration and sedimentation in the core. It is recommended to allow enough time for the equilibration period to achieve ca. 85-90% reduction of measured turbidity values (via settling) prior to commencing flux sampling.
7) Nutrient release dynamics can be variable at the start of the intact sediment cores incubation, and are influenced by the cores equilibration time (Ogdahl et al. 2014). Therefore, the cores should be allowed to stabilize/equilibrate for a minimum of 24 hours, to allow for complete sedimentation processes to occur (Ogdahl et al. 2014) prior to commencement of the flux measurements.

Sediment Core Incubation and Sampling:

8) Cores from each site should be incubated in the dark using a temperature range between 23 to 27^0C (with a target incubation temperature of 25^0C), which should be consistent with ambient water conditions at the collection site with a tolerance range of $\pm 4^0$C during median temperature ranges.
9) The cores should be exposed and incubated under anoxic and aerobic conditions with replicates.
10) For the anoxic redox treatment, it is imperative to prevent oxygen exposure to the water column at all times while preparing for and during flux incubation and sampling. The water column should be bubbled with N_2 gas at a consistent rate that does not disturb and resuspend the upper layer of sediment in the core. However, the bubbling rate must be rapid enough to achieve and maintain anoxic conditions in the water column and sediment prior to commencing flux sampling.
11) Dissolved oxygen (DO) should be systematically monitored (e.g. every 6-8 hours) to ensure that the appropriate redox treatment is being achieved and maintained at the beginning and throughout the incubation. A DO concentration of less than 1 mg/L is required to maintain anoxic conditions.
12) The cores should be incubated for a period of no less than 5 days (120 hours), and up to 10 days (240 hours) with at least three discrete sampling time intervals between time= 0 hr, and time= 240 (if 10 days is selected as the length of incubation). Typically, sampling intervals should occur at T= at 48 hr, 168 hr, and 240 hours. However, depending on the day that the samples are collected, and the analytical lab's operating schedule, these intervals may be adjusted as needed. On many occasions, at four to five sampling intervals will be collected for better data resolution and to fit the curve.
13) A water sample should be periodically removed for sample analysis with a polyethylene syringe fitted with a length of 1-mm polyethylene tubing positioned to withdraw samples at mid-lower water column from each core as part of the sampling interval collections. Critical parameters for flux sampling include iron, total phosphorus and ammonia (NH_3) to meet project objectives, which should only require 50 ml per parameter, for a total of 150 ml of water removed from each core for a sample. However, additional parameters could also be sampled. The number of parameters sampled is based on the study design and goals, but it must be understood that with each parameter sampled, additional water volume must be replaced on the core, which can potentially introduce dilution error into later sampling interval samples. It is recommended to sample as few parameters as possible to avoid introducing dilution error into the results.
    a. For the NH3 sample, sulfuric acid must be added to properly preserve the sample.
14) The depth of water on top of the core should be maintained throughout the incubation at ~30 cm. The volume of water (150 ml) that is removed if all three parameters are collected during each subsampling interval shall be replaced with an equal volume of ambient water (under the appropriate redox condition). Based on a 7.3 cm diameter core, and a depth of 30 cm, the volume of water on top of each sediment core will be maintained at approximately 1260 ml. The ~150 ml

that would be removed if all three parameters are collected during each subsampling event represents less than 5% of the total volume of water on top of the sediment in the core, which should not have an effect on dilution of the remaining volume. The replacement amount shall not exceed more than 5% during each sampling interval to minimize the effect of replacement water on the remaining core water nutrient concentrations.

15) Discrete interval subsamples will be placed into sample containers and transported to the analytical laboratory in coolers on ice for analysis.

4.0 **Data Analyses**

4.1 **Calculation of Nutrient Flux Rates**

Nutrient flux rates should be estimated using the nutrient release rate equation, which was calculated based on the change of nutrient concentration over time (see equation below) and also by calculating the slope by using the interval sampling data and time step. Annual internal load of nutrients should be estimated following the methods described by Ogdahl et al. (2014) by using the nutrient release rate calculation and by calculating the rate with the slope.

Nutrient Release Rate Calculation - The flux rates for nitrogen and phosphorus species can be calculated using the following equation:

Eq. 1 Nrr = [(Ct - Ci) × V / A] / delta t

Where:

Nrr = the gross nutrient release (positive values) or retention (negative values) rate per unit surface area of sediment (mg /m^2/ d),

Ct = the final nutrient concentration at time t, or near the end of the incubation,

Ci = the initial nutrient concentration at time i, near the beginning of the incubation,

V = the volume of water in the water column,

A = the surface area of the sediment core, and

delta t = change in time, from time t-i.

5.0 **Quality Control**

1) All equipment was calibrated before use in the field and laboratory per FDEP SOPs noted in previous sections. Continuing verification of calibration was performed at the end of the day. SOPs should be used as a reference during field and laboratory activities to maintain quality control.

6.0 **Safety and Waste Management**

1) Laboratory staff must use proper safety equipment (e.g., eye protection, gloves, close-toe shoes)
2) Staff will perform necessary leak checks on gas cylinders.
3) Gas cylinders will be secured at all times and capped when not in use.
4) Sediments in core will be disposed as a solid waste.

7.0 **References**

Dorich, R. A., D. W. Nelson, and L. E. Sommers. 1985. Estimating Algal Available Phosphorus in Suspended Sediments by Chemical Extraction. J. Environ. Qual. 14: 400-405.

Hieltjes, A. H. M. and L. Lijklema. 1980. Fractionation of Inorganic Phosphates in Calcareous Sediments. J. Environ. Qual. 9:405-407.

Lijklema, L., A. A. Koelmans and R. Portielje. 1993. Water Quality Impacts of Sediment Pollution and the Role of Early Diagenisis. Wat. Sci. Tech. 28:1-12.

Montgomery, J. R., C. Zimmerman, and M. Price. 1979. The collection, analysis, and variation of nutrients in estuarine porewater. Estuarine and Coastal Marine Science. 9: 203-214.

Moore, P. A. Jr. K. R. Reddy, and M. M. Fisher. 1998. Phosphorus Flux between Sediment and Overlying Water in Lake Okeechobee, Florida: Spatial and Temporal Variations. J. Environ. Qual. 27:1428-1439

Ogdahl, M.E., Steinman, A.D., and M.E. Weinert. 2014. Laboratory-determined Phosphorus Flux from Lake Sediments as a Measure of Internal Phosphorus Loading. J. Vis. Exp. 85, e51617, doi:10.3791/51617.

Olila, O. G., K. R. Reddy, W. G. Harris, Jr. 1995. Forms and Distribution of Inorganic Phosphorus in Sediments of Two Shallow Eutrophic Lakes in Florida. Hydrobiologia. 302: 147-161.

Paulic, M., Steward, J., Busby. T., and M. Policastro. 2012. Indian River Lagoon Basin Management Action Plans (BMAPs): Muck Removal Project Credit Guidance. FDEP, Water Quality Restoration Program.

Psenner, R., Boström, B., Dinka, M., Petterson, K., Pucsko, R., Sager, M., 1988. Fractionation of phosphorus in suspended matter and sediment. Archive für Hydrobiologie: Ergebnisse der Limnologie 30, 98e103.

Reddy, K. R., M. M. Fisher, and D. Ivanhoff. 1996. Resuspension and Diffusive Flux of Nitrogen and Phosphorus in a Hypereutrophic Lake. J. Environ Qual. 25: 363-371

Reddy et al. 1998. Forms of soil phosphorus in selected hydrologic units of the Florida Everglades. Soil Sci. Soc. Am. J. 62:1134-1147.

Reddy, K. R., M. Fisher, H. Pant, P. Inglett, and J. White. 2001. Indian River Lagoon Hydrodynamics and Water Quality Model: Nutrient Storage and Transformations in Sediments. Final Report to St. Johns River Water Management District, Palatka, FL.

Sahin, Y., A. Demirak, and F. Keskin. 2012. Phosphorus Fractions and its Potential Release in the Sediments of Koycegiz Lake, Turkey. Lakes, Reservoirs and Ponds. 6: 139-153

Schelske, C.L., M. Brenner, and T.J. Whitmore. 1991. Lake Seminole Sediment Characterization and Analysis. Final report prepared for the Southwest Florida Water Management District. University of Florida Department of Fisheries and Aquaculture. Gainesville, Fl.

Southwest Florida Water Management District. 1992. Lake Seminole Diagnostic Feasibility Study. Final report prepared for the Pinellas-Anclote River Basin Board. Brooksville, Fl.

Topcu, A., and S. Pulatsu. 2008. Phosphorus Fractions in Sediment Profiles of the Eutrophic Lake Mogan, Turkey. Fresenius Environmental Bulletin 17: 164-172.

Trefry, J. H., H. Feng, R. Trocine, S. Metz, G. Grguric, R. Vereecke, and S. Cleveland. 1992. Concentrations and Benthic Fluxes of Nutrients from Sediments in the Indian River Lagoon, Florida (Project MUCK, Phase II). Final Report to the St. Johns River Water Management District, Palatka, FL.