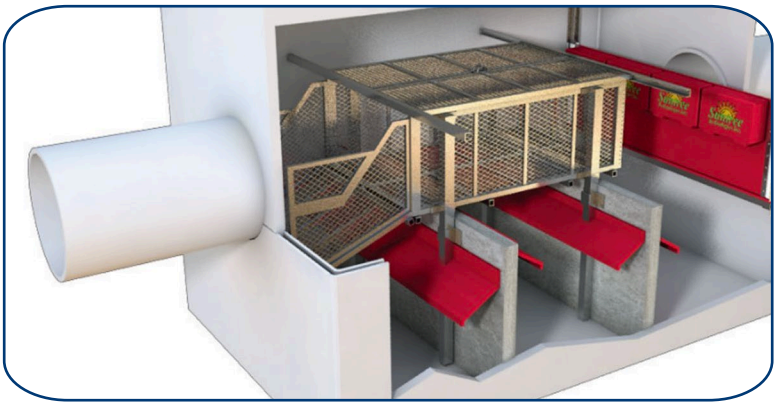
Keystone Drive NSBB-UFF Performance Metrics Monitoring – Y2

Technical Memorandum



Submitted by:
Geosyntec Consultants, Inc.
11301 Corporate Blvd
Building 400, Suite 305
Orlando, Florida 32817

November 2025

engineers | scientists | innovators

Geosyntec consultants

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KEYSTONE DRIVE NSBB-UFF PERFORMANCE METRICS MONITORING Y2

Technical Memorandum

Prepared for

Orange County Environmental Protection Division
3165 McCrory Place, Suite 200
Orlando, FL 32803

Prepared by

Geosyntec Consultants, Inc.
11301 Corporate Blvd
Building 400, Suite 305
Orlando, FL 328178

Project Number: FW9650

EPD PO#C20906B008

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Geosyntec Consultants, Inc.
11301 Corporate Blvd
Building 400, Suite 305
Orlando, FL 32817

Kevin Tyre, MS
Water Resources Scientist

Mike Hardin, PhD, PE, CFM
Principal Water Resources Engineer

Jacob Kent, EI
Staff Professional

Nick Hartshorn, PE
Project Engineer

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ACRONYMS AND ABBREVIATIONS

AV	Area Velocity
BAM	Biosorption Activated Media
BFA	Barnes, Ferland, and Associates, Inc.
BMP	Best Management Practice
DCIA	Directly Connected Impervious Area
EMC	Event Mean Concentration
FLUCFCS	Florida Land Use, Cover and Forms Classification System
GPS	Global Positioning System
MDL	Method Detection Limit
Mg/L	Milligrams per Liter
MS4	Municipal Separate Storm Sewer System
NOAA	National Oceanic and Atmospheric Administration
NSBB	Nutrient Separating Baffle Box
N	Nitrogen
P	Phosphorus
QAPP	Quality Assurance Project Plan
SJRWMD	St Johns River Water Management District
SRL	Southern Research Laboratories
TDN	Total Dissolved Nitrogen

TDP	Total Dissolved Phosphorus
TN	Total Nitrogen
TP	Total Phosphorus
TS	Total Solids
TSS	Total Suspended Solids
UFF	Upflow Filter

1 INTRODUCTION

This section contains background information for the project site and breaks down the different components of the Keystone Drive BMP. The project goals and objectives are also discussed here.

1.1 Authorization

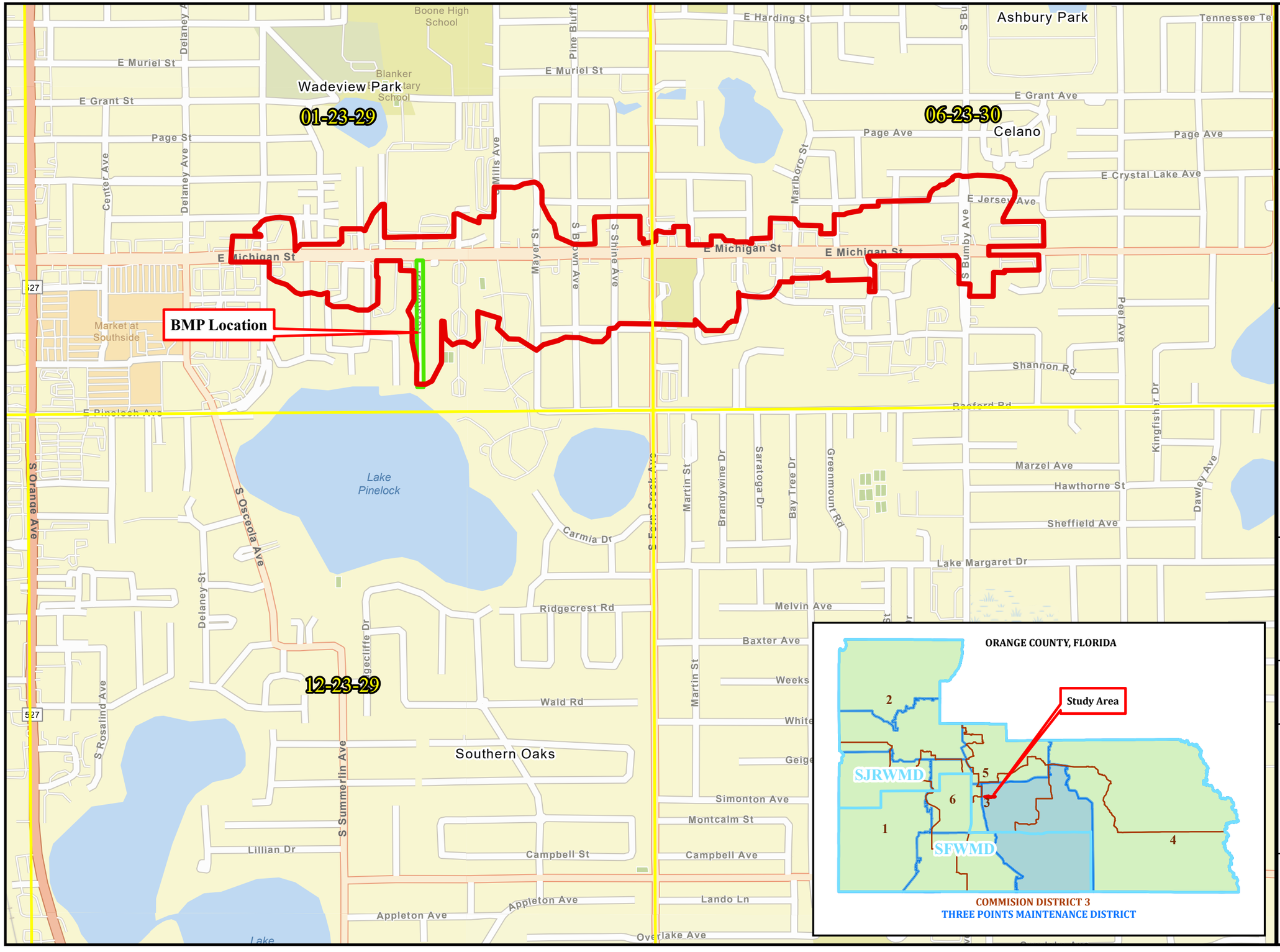
This report presents the results of the Keystone Drive NSBB-UFF Performance Metrics Monitoring project. Geosyntec was tasked by the Orange County Environmental Protection Division (EPD) to perform this study. The work was performed under the Orange County Continuing Water Quality Professional Services Contract Y20-906B.

1.2 Background

The purpose of this project is to evaluate the performance of the Nutrient Separating Baffle Box (NSBB) and off-line Upflow Filter (UFF) for nutrient removal, specifically for reduction of total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS). The project site is located within unincorporated Orange County in Section 1 of Township 23 South, Range 29 East. The project site is within the jurisdiction of the St. Johns River Water Management District (SJRWMD), within County Commission District 3, within the Boggy Creek Watershed, and within the County's Three Points Maintenance District. Stormwater pipes along Keystone Drive receive runoff from 109.3 acres and discharge into Lake Pineloch (Geosyntec, 2017; **Figure 1-1**). This accounts for approximately 15.4% of the total contributing area to the lake (707 acres; Geosyntec, 2016). Stormwater runoff collected from this basin flows into a 2nd generation NSBB and off-line UFF located at the Keystone Drive project site before discharging to the lake. The NSBB and off-line UFF are intended to reduce nutrient loading to the lake by removing N and P via settling and filtration. The initial study was conducted over one year; however, the monitoring period was extended to two years to collect additional data. This report presents findings and updated analyses from the first and second year of monitoring.

Stormwater, for the purpose of this report, is defined as rainfall that does not infiltrate into the ground after it falls on yards, streets, parking lots, and buildings, and then is generally conveyed to a receiving waterbody or other stormwater management system for attenuation and water quality treatment. Different land covers tend to have different stormwater responses to rain events based on the extent of impervious surfaces. Directly connected impervious areas (DCIAs) typically have the most rapid runoff response. As stormwater flows over different surfaces, it picks up different pollutants such as fertilizers, oil, chemicals, grass clippings, litter, pet waste, etc. According to Federal, State, and Local regulations, several types of pollutants commonly found in stormwater are of particular concern to receiving waterbodies as listed below:

- **Sediment** – Sediments can impact surface waterbodies in several ways. Sediments cloud the water and make it difficult or impossible for aquatic plants to grow due to decreased light penetration depth. Excessive sediment discharges can result in negative impacts to aquatic organisms, such as clogging fish gills and smothering benthic invertebrates. Finally, sediments can have metals, nutrients, and other pollutants adsorbed to the particle surface which can subsequently be released to the water column.



ORANGE COUNTY GOVERNMENT FLORIDA

N

0 400 800 Feet

Legend

- Drainage Area
- Project Area
- Section-Township-Range

Note: The project area is defined as Keystone Drive, since this is where the stormwater BMP is located

Sources
Background: ESRI
Section-Township-Range(STR): Orange County, 2004
Commissioner Districts: Orange County, 2013
Maintenance Districts: Orange County, 2012
WMDs: Orange County, 2012

Figure
1-1

Project Vicinity Map

Keystone Drive NSBB-UFF
Performance Metrics
Monitoring

Geosyntec consultants

- **Excess Nutrients** – Excess nutrients in stormwater runoff originating from fertilizers, pet waste, yard waste, or other sources can result in excessive biological production in lakes, including harmful algal blooms, which may have adverse health impacts to people and animals exposed to algal toxins. When algae die they sink to the bottom of the waterbody and decompose. Under aerobic conditions this process can happen relatively quickly, consuming dissolved oxygen from the water column which may be detrimental to fish. Anoxic conditions prevent the decomposition of organic material as anaerobic bacteria processes are significantly slower than aerobic bacteria. This can result in a buildup of organic materials which combine with lake sediments forming a nutrient rich muck layer. Over time, this muck layer grows in thickness and can become a significant long-term source of nutrients to the waterbody via internal recycling.
- **Bacteria and Other Pathogens** – Bacteria and pathogens in stormwater runoff originating from pet waste, wildlife, human waste, livestock, or other sources can be transported via stormwater runoff to surface waterbodies. Human pollution sources present unique health risks and may impact a waterbodies recreational use (e.g., waterbody closures).
- **Trash and Other Debris** – Trash and other debris that are washed into waterbodies can choke, suffocate, or disable aquatic wildlife such as ducks, fish, turtles, and birds. Trash and other debris can also negatively impact the aesthetics of community waterbodies and clog drainage infrastructure, which may cause flooding.
- **Hazardous Waste** – Hazardous chemicals such as insecticides, pesticides, paint, heavy metals, oils, grease, solvents, battery leachates, and other fluids can poison aquatic life and make waterbodies unsafe for fish consumption or recreation activities.

The focus of this project is nutrient and sediment removal. The anticipated concentration of nutrient pollutants in this study area, based on land use conditions within the contributing area and associated EMCs are TN = 2.32 mg/L, TP = 0.52 mg/L, and TSS = 77.8 mg/L (Harper & Baker, 2007).

The nutrient parameters TN and TP can be broken down into two categories which are present in stormwater: dissolved and particulate. Dissolved nutrients can be present in both organic and inorganic forms. Biological treatment and physical/chemical adsorption with media filters are often considered effective for removal of dissolved pollutants. Physical approaches, such as settling, filtering, and straining are often used for removal of particulate pollutants. The BMP examined for this monitoring project uses these removal mechanisms to achieve improved water quality in the effluent. The first component of the Keystone BMP is the NSBB, which is intended to removal particulates and gross solids through straining and settling. The second component is an off-line UFF, which is intended to remove fine particulates and dissolved pollutants via biological as well as physical/chemical processes. Because this system is surcharged, it must be isolated and drained for maintenance and cleaning events. To achieve this, Sungates are installed at the influent pipe of the NSBB and at the effluent pipe of the tie-in box. Once the system is isolated, stormwater can be pumped out of the system and back into the drainage network downstream of the tie-in box. Once maintenance is complete, the Sungates must be removed to restore system operation.

1.3 Nutrient Separating Baffle Box and Off-line Upflow Filter

The County installed a NSBB and off-line UFF in the 2700 block of Keystone Drive to reduce pollutant loads to Lake Pineloch. An NSBB paired with an off-line UFF is a complex stormwater BMP that reduces pollutants via numerous pathways within a small but concentrated "treatment train". The NSBB is a structure that contains several components: a lidded screen storage system, turbulence deflectors, sediment chambers, and a SkimBoss® Max Skimmer (**Figure 1-2**). The off-line UFF contains Bold and Gold® biosorption activated media (BAM; **Figure 1-3**). The purpose of each component of the BMP are presented below:

- **The Lidded Screen Storage System** provides removal of gross solids, such as trash and other debris, from stormwater inflows. However, it cannot effectively remove sediments and materials under 3/8 inch in diameter. The storage volume is about 4.3 cubic yards. If the storage volume becomes completely filled with trash and debris, stormwater flow continues around and/or overtop of the lidded screen. It is important to regularly maintain this system during regular cleaning events to remove accumulated debris so that trash does not bypass the system and accumulate in the upflow filter or discharge directly to Lake Pineloch.
- **The Three Sediment Chambers** facilitate the hydrodynamic separation of smaller particulates by providing a low turbulence area for these to settle. Settling is further aided by turbulence deflectors which prevent sediment from becoming resuspended during periods of high flow.
- **The SkimBoss Max Skimmer** diverts flow through the BAM filter for additional removal of fine particles and dissolved nutrients. However, should flows exceed design rates, the skimmer will rise, allowing water to bypass the off-line UFF and flow freely downstream. When water bypasses the off-line UFF, fine particles and dissolved nutrients will discharge directly to Lake Pineloch, while large particulates are still captured by the NSBB. An assessment of bypass conditions over the study period is included in **Section 4.2**.
- **The off-line BAM Upflow Filter** provides additional removal of dissolved pollutants. An internal weir directs stormwater flow into an initial sediment chamber and up through a layer of Bold & Gold filtration media. The media volume for the specific off-line UFF examined in this study is 550 cubic feet. It is noted that the provided removal is dependent on the flow rate through the media, which determines if there is sufficient contact time with the media to perform reasonable removal. See **Section 4.2** for details about the maximum treatable flow rate. The upflow filter also includes an integrated HydroSlide service system which enables the lower settling chamber to be easily cleaned by vacuum truck.

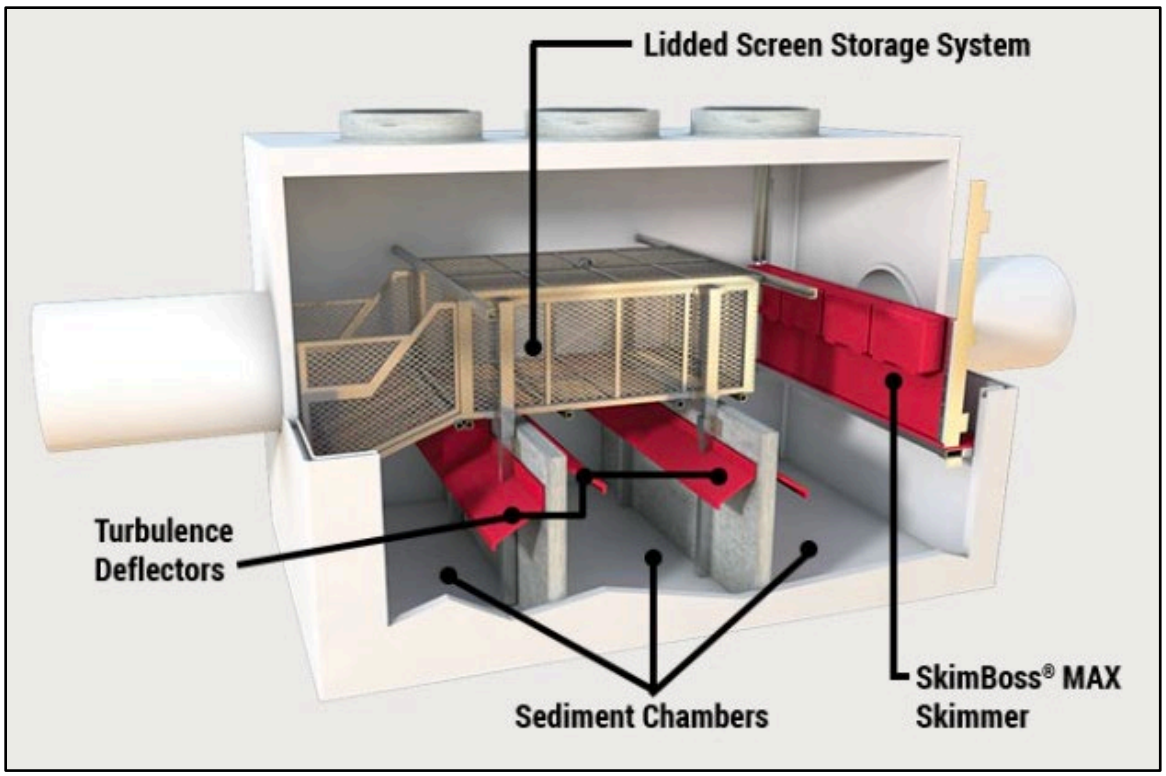
The 2nd generation NSBB installed at Keystone Drive is an improvement over previous designs which do not have the lidded screen storage system or the turbulence deflectors.

1.4 Project Goals and Objectives

The primary goal of the project is to evaluate the effectiveness of the newly constructed NSBB and off-line UFF at reducing nutrient loads from the Orange County Municipal Separate Storm Sewer System (MS4) to Lake Pineloch. To assess the effectiveness of the NSBB and off-line UFF, each of the primary removal pathways must be explicitly evaluated.

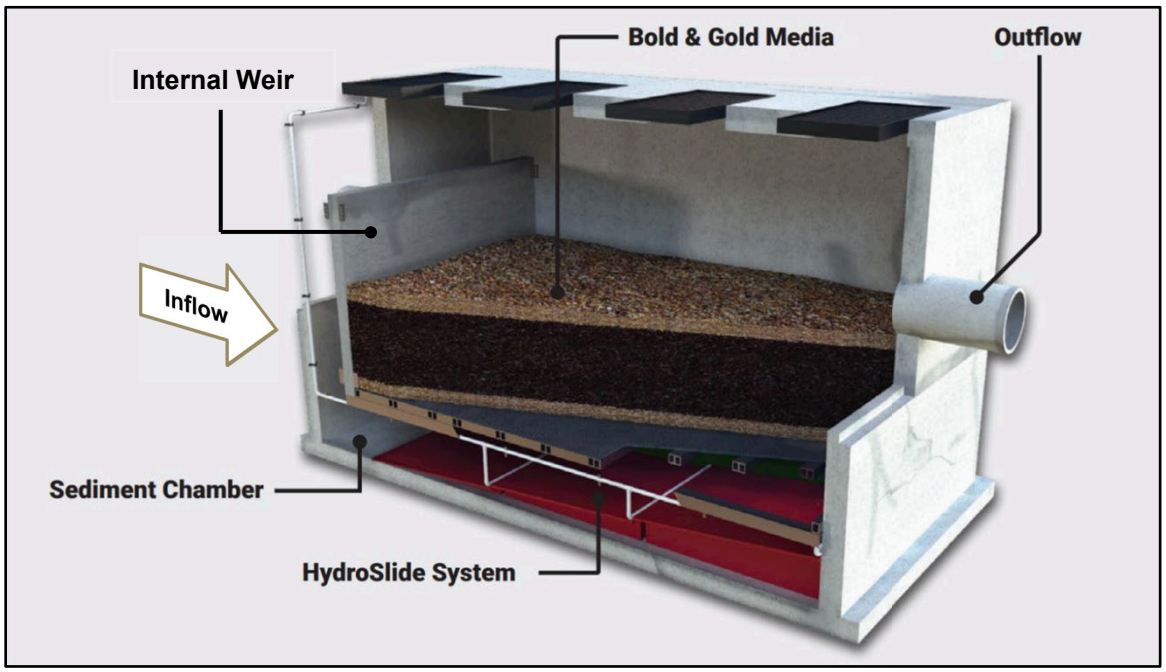
The following objectives were set to accomplish the primary goal of this study:

- Establish a real-time hydraulic monitoring system to:
    - Monitor the volume of flow discharged to Lake Pineloch.
    - Monitor the water level fluctuations in the NSBB and flow through the off-line UFF to determine when the system was providing treatment versus in bypass mode.
    - Monitor the onsite precipitation.
- Establish a water quality sampling program that is triggered based on real-time hydraulic monitoring to:
    - Collect composite water samples at the NSBB influent and effluent pipes and the off-line UFF influent and effluent pipes to evaluate the pollutant removal performance of each component of the BMP treatment train.
    - Samples were initially collected on a flow-weighted basis, meaning an aliquot was collected into a composite sample container at defined volumetric intervals as measured by a flow meter (e.g., collect one aliquot for every 1,000 gallons passing through the pipe during a storm event). However, this collection method proved problematic since any error in velocity reading from the flow meter during a storm event precluded sample collection. This is because accurate velocity readings are required for the autosampler to calculate how much volume is passing through the pipe per unit time. Therefore, sampling was switched to time-weighted after the fourth sample collection event during the first study, meaning an aliquot was collected into a composite sample container at defined time intervals (e.g., every 5 minutes during a storm event). Composite sampling remained on time-weighted pacing for the second study.
- Perform routine NSBB cleaning to:
    - Collect particulate and gross solids for nutrient composition analysis. This was used to evaluate the nutrient removal effectiveness associated with the capture and subsequent removal of particulate and gross solids mass.



Source: Oldcastle Infrastructure, Inc.

Figure 1-2: Nutrient Separating Baffle Box (NSBB)



Source: Oldcastle Infrastructure, Inc.

Figure 1-3: Off-line Upflow Filter (UFF)

2 DATA COLLECTION AND REVIEW

This section discusses the drainage infrastructure and land use within the project's drainage basin, along with other pertinent data obtained from previous studies.

2.1 Drainage Infrastructure

Drainage infrastructure data were obtained from the Keystone Drive Baffle Box Design Drainage Report (2018). As shown in **Figure 2-1**, pipes and curb inlets along the streets capture runoff generated from the contributing area and discharge via piped outfall to Lake Pineloch. Based on the extent of imperviousness within the watershed, it appears that the runoff response from rainfall is relatively fast and runoff discharges to Lake Pineloch soon after the storm begins and stops soon after the storm stops.

2.2 Previous Studies

Previously developed hydrologic and nutrient loading models were reviewed to determine predicted inflow nutrient concentrations, load reductions, and stormwater discharge within the Keystone Drive basin. Peak discharge rates at the project site for three storm events were previously assessed using a simulated hydrologic model in ICPR (Geosyntec, 2018). These results are presented in **Table 2-1**.

Table 2-1: Summary of Estimated Peak Discharge

Peak Discharge (cfs) in 54" RCP on Keystone Drive		
Mean Annual/ 24-hour	**10-year/ 24-hour**	**25-year/ 24-hour**
49.25	79.80	84.37

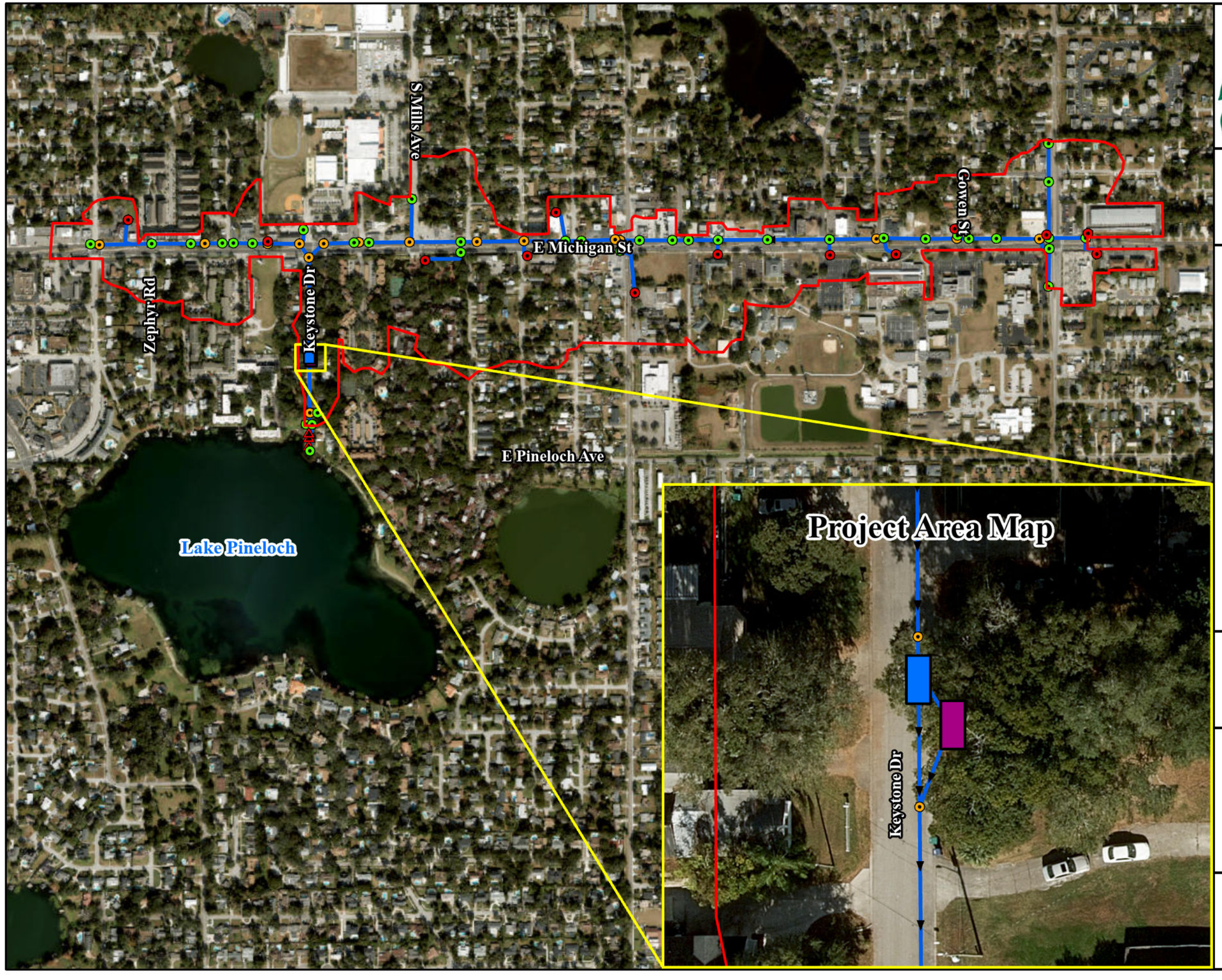
Source: Geosyntec, 2018

Nutrient loading to the project site and expected nutrient load reduction values for the NSBB and off-line UFF treatment systems were previously estimated by utilizing an annual average pollutant load model in BMPTRAINS version 8.2 (Geosyntec, 2018). Results from this analysis indicate expected removal efficiencies of 50% for TN and 49% for TP. This would yield removal rates of approximately 531 lb/year for TN and 79.6 lb/year for TP (**Table 2-2**).

Table 2-2: Estimated Load Reduction of BMP Treatment System

Parameter			Value
Drainage Area (ac)			109.3
Runoff Volume (ac-ft/yr)			186.71
Total Phosphorus	Existing Condition	TP Mass Loading (lb/year)	163.70
		TP Volumetric Loading (lb/ac-ft)	0.88
		TP Loading (lb/ac-yr)	1.50
	Proposed Condition	TP Mass Loading after BMP (lb/year)	84.12
		TP Mass Removed (lb/year)	79.58
		TP Loading after BMP (lb/ac-yr)	0.77
	Provided Overall Efficiency, Total Phosphorus (%)		**49**
Total Nitrogen	Existing Condition	TN Mass Loading (lb/year)	1,052.86
		TN Volumetric Loading (lb/ac-ft)	5.64
		TN Loading (lb/ac-yr)	9.63
	Proposed Condition	TN Mass Loading after BMP (lb/year)	522.36
		TN Mass Removed (lb/year)	530.50
		TN Loading after BMP (lb/ac-yr)	4.78
	Provided Overall Efficiency, Total Nitrogen (%)		**50**
Total Suspended Solids	Existing Condition	TSS Mass Loading (lb/year)	28,841.6
		TSS Volumetric Loading (lb/ac-ft)	593.3
		TSS Loading (lb/ac-yr)	263.9
	Proposed Condition	TSS Mass Loading after BMP (lb/year)	14,437.8
		TSS Mass Removed (lb/year)	14,403.8
		TSS Loading after BMP (lb/ac-yr)	132.1
	Provided Overall Efficiency, Total Suspended Solids (%)		**50**

Source: Geosyntec, 2018



ORANGE COUNTY GOVERNMENT
FLORIDA

N

0 600
Feet

Legend

- Drainage Area
- Pipe
- Drainage Well
- Manhole
- Inlet/Outlet
- Control Structure
- Upflow Filter
- Baffle Box

Sources:
Aerial & Roads: Esri, 2023
Drainage Infrastructure: Orange County, 2022

Figure 2-1:
Drainage Infrastructure Map

Keystone Drive NSBB-UFF Performance Metrics Monitoring

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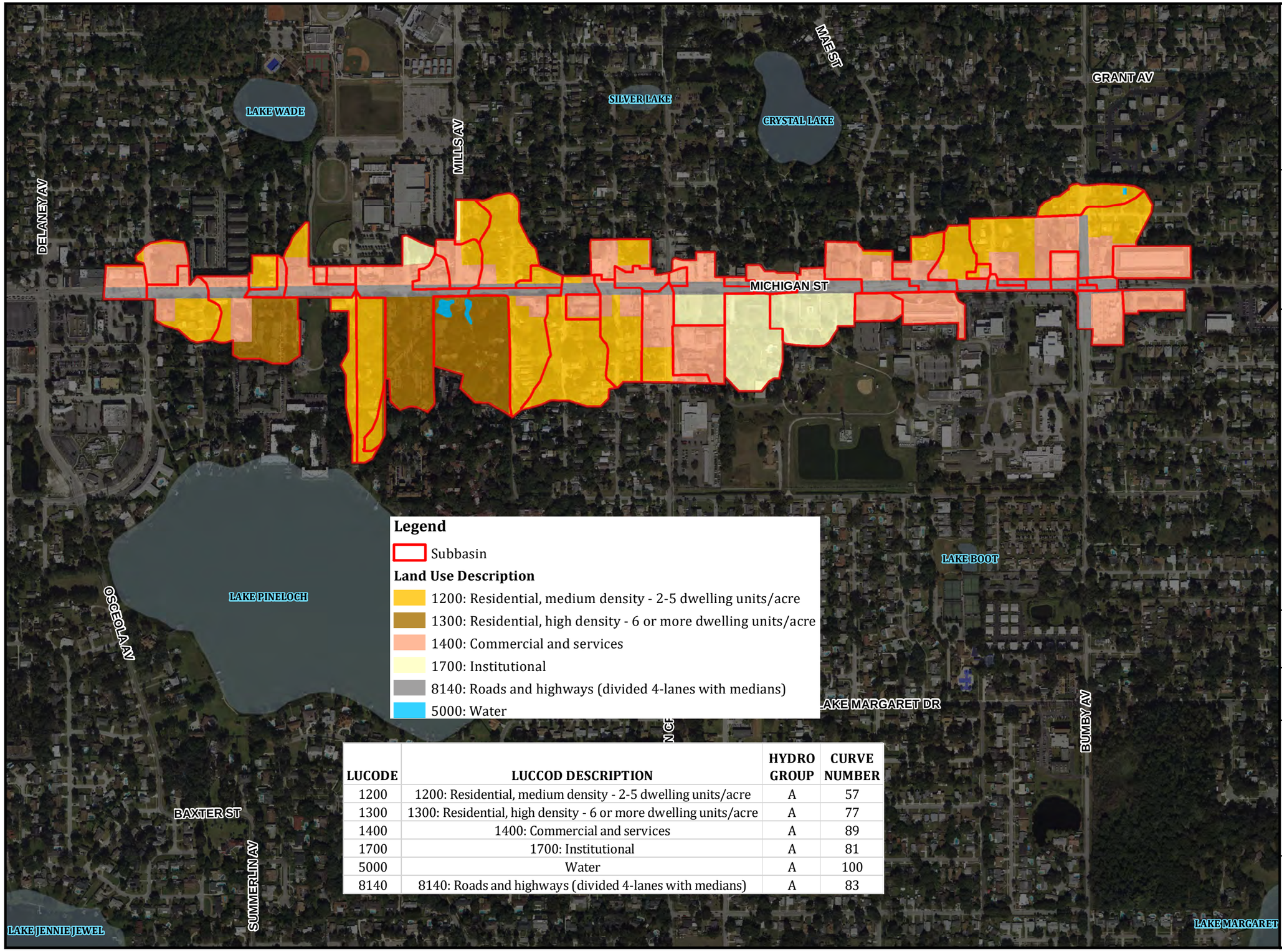


Legend

Subbasin

Land Use Description

- 1200: Residential, medium density - 2-5 dwelling units/acre
- 1300: Residential, high density - 6 or more dwelling units/acre
- 1400: Commercial and services
- 1700: Institutional
- 8140: Roads and highways (divided 4-lanes with medians)
- 5000: Water

LUCODE	LUCCOD DESCRIPTION	HYDRO GROUP	CURVE NUMBER
1200	1200: Residential, medium density - 2-5 dwelling units/acre	A	57
1300	1300: Residential, high density - 6 or more dwelling units/acre	A	77
1400	1400: Commercial and services	A	89
1700	1700: Institutional	A	81
5000	Water	A	100
8140	8140: Roads and highways (divided 4-lanes with medians)	A	83

ORANGE COUNTY GOVERNMENT FLORIDA

N

0 300 600 Feet

NOTE:
For project purposes, the landuse features provided by SJRWMD were modified where necessary to provide a more detailed representation of land use within the study area based on review of 2016 aerials.

Sources
Topography: OCPW, 2005 Roads: Orange County, 2015
Waterbodies: Orange County, 2015

Figure
2-2

Land Use Map

Keystone Drive NSBB-UFF Performance Metrics Monitoring

Geosyntec consultants

3 MONITORING AND SAMPLING METHODS

This section discusses the monitoring equipment and installation locations, maintenance events, and sampling methods.

3.1 Quality Assurance Project Plan

A Quality Assurance Project Plan (QAPP) was developed to document the monitoring methods, sampling equipment, sample collection procedures, sample analysis, quality assurance measures, and best practices to ensure data integrity for the project. The project approved QAPP is presented in **Appendix A**.

3.2 Land Use

Land use classification GIS data (FLUCFCS) were acquired from SJRWMD (2009). The GIS polygon feature class was previously updated and refined as part of the Keystone Drive BMP Assessment (Geosyntec, 2017) by comparing the land use polygons to recent aerials. Land Use is an important consideration when assessing BMP performance because removals are highly dependent on the nutrient load. For example, nutrient loads in residential areas with extensive tree canopy are expected to be greater than loads from commercial areas where tree canopy is generally less. Since the Keystone drainage area is largely commercial, it is expected that particulate organic matter (e.g. leaf litter) loads will be much less than would otherwise be observed in a residential area, which may result in differences in pollutant removal efficiencies. Refer to **Figure 2-2** for land use classifications within the study area.

3.3 Monitoring and Equipment Installation

Installation of monitoring and sampling equipment (see **Figure 3-1**) was performed to monitor the real-time onsite precipitation and the hydraulic conditions within the NSBB and off-line UFF. These conditions were used to trigger the sampling equipment to collect water samples when triggering conditions were met.

The sampling equipment was installed according to the approved project QAPP, to isolate the specific variables of interest for this project. Specifically, this includes the inflow and outflow to the NSBB as well as the off-line UFF (Figure 3-2 and **Figure 3-3**). This configuration was necessary to document the treatment effectiveness provided by each component of the treatment train, (i.e., NSBB and off-line UFF). A top down plan view of the entire Keystone BMP along with the equipment installation locations is shown in **Figure 3-4**. Refer to **Figure 3-5** for a side profile plan view of the NSBB along with various invert elevations, the normal low and high water elevations, and the AV sensor installation location. The installation of a sample tube can be seen in **Figure 3-6** and an installed A/V sensor is shown in **Figure 3-7**. The following monitoring and sampling equipment were installed onsite:

- Four (4) solar-powered ISCO autosamplers (Model #6712)
- One (1) solar-powered ISCO Signature® Flow Meter with an embedded modem
- One (1) ISCO area velocity flow meter (Model #750)
- One (1) ISCO area velocity flow meter (Model #2150)
- One (1) ISCO rain gauge (Model #674)

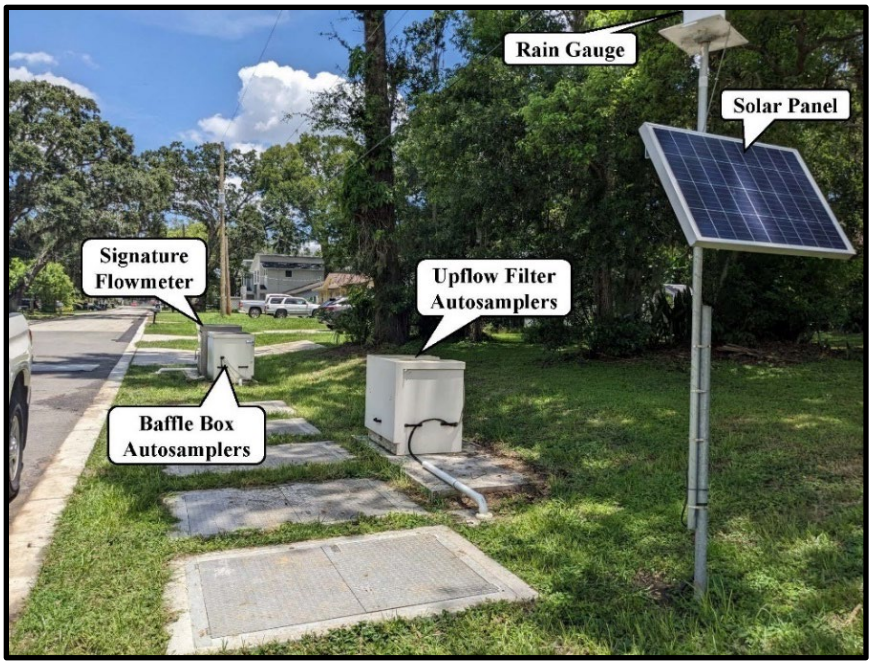
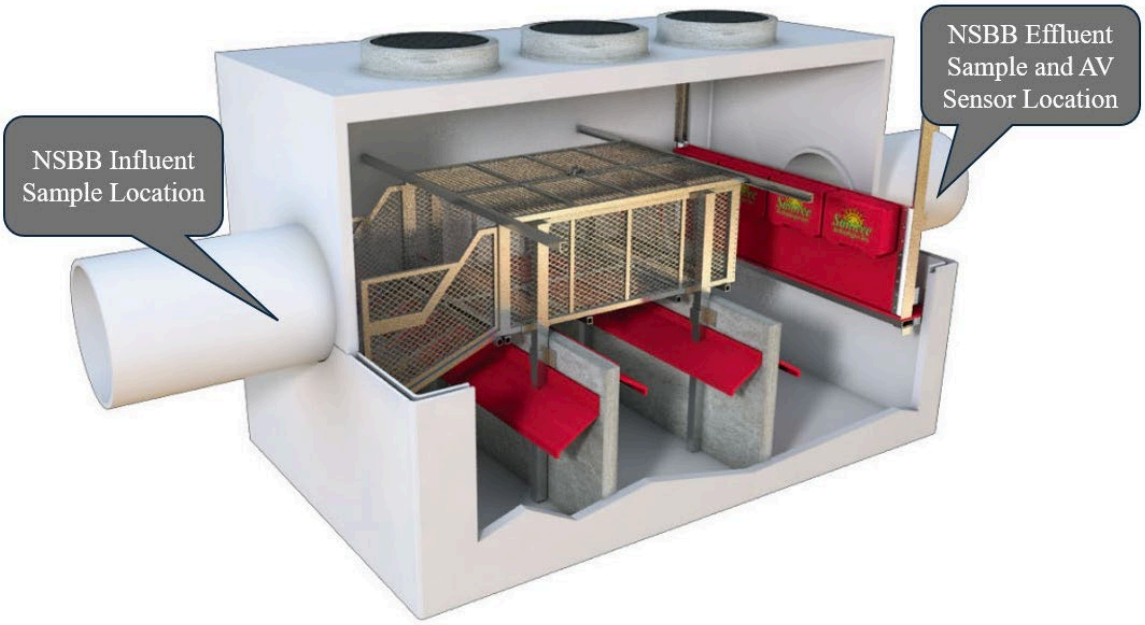
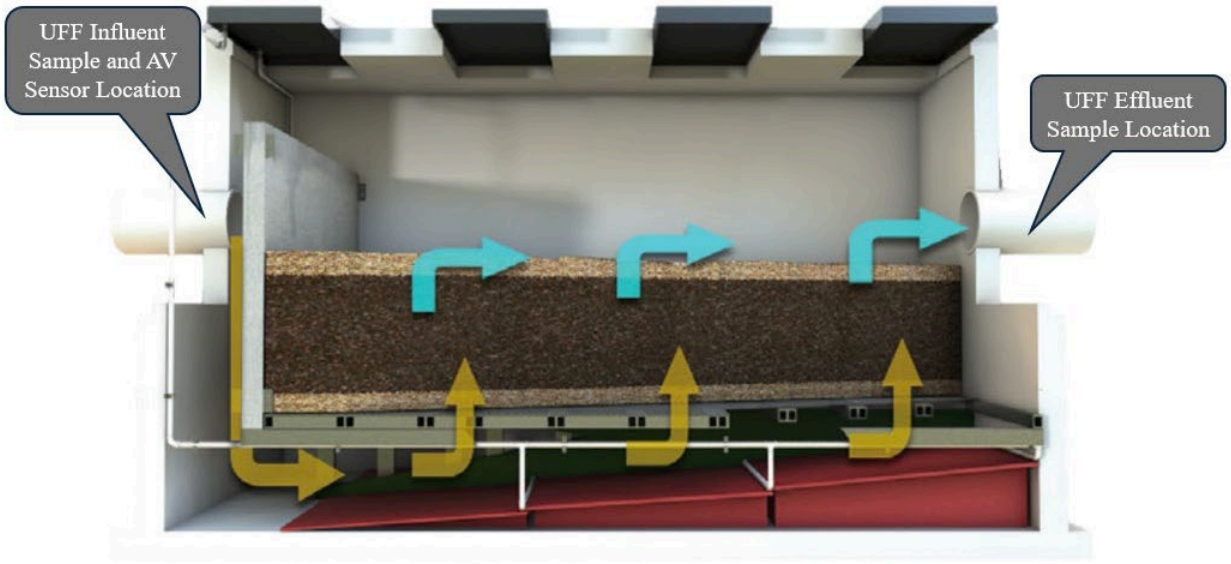


Figure 3-1: Installed Monitoring and Sampling Equipment



Source: Oldcastle Infrastructure, Inc.

Figure 3-2: NSBB Equipment Installation Locations



Source: Oldcastle Infrastructure, Inc.

Figure 3-3: Off-line UFF Equipment Installation Locations

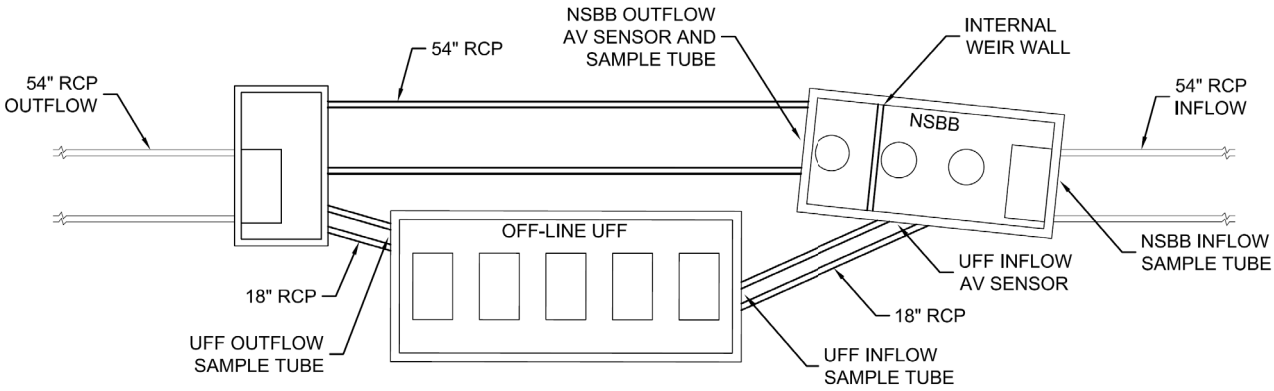


Figure 3-4: NSBB and Off-Line UFF Top View Equipment Installation Locations

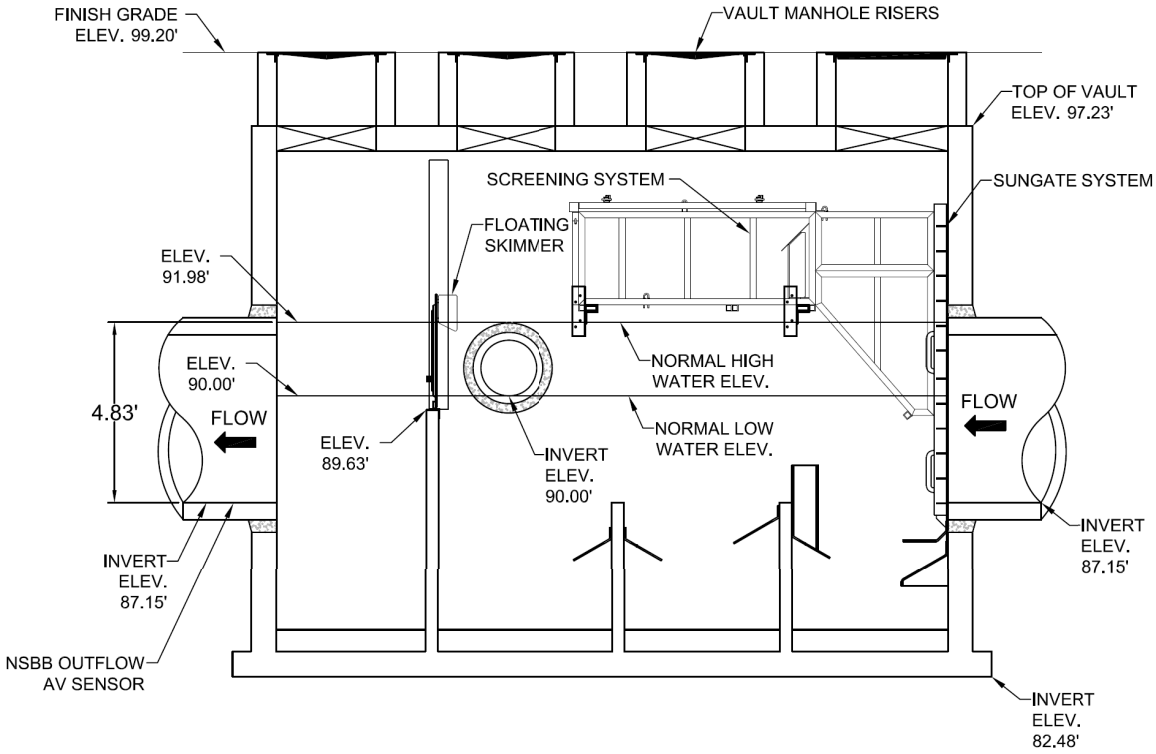


Figure 3-5: NSBB Side Profile with AV Sensor Location

Figure 3-6: Sample Tube Installation

Figure 3-7: AV Sensor Installation

3.4 Monitoring Equipment Inspection & Maintenance

To ensure proper function of the monitoring and sampling equipment, regular inspections and maintenance were performed. This included inspecting equipment for damage, technical issues, and environmental impacts. Inspection & maintenance of the monitoring equipment was accomplished by conducting routine site visits and reviewing retrieved data to ensure the monitoring system was providing reasonable results and thus working properly.

3.5 NSBB Maintenance

Regular maintenance of the NSBB is required to ensure proper performance of the BMP. Since the NSBB and off-line UFF are installed within a surcharged system, it is necessary to isolate these features from the rest of the drainage network so that standing water within the structures can be purged and maintenance activities can be performed. To achieve this, Sungates were installed which effectively plugged both the inlet and outlet pipes. This allowed the system to be pumped down and cleaned. Once the system was clean, the Sungates were removed – reconnecting the NSBB and off-line UFF to the rest of the drainage network.

The maintenance was performed by County subcontractor Oldcastle Infrastructure, Inc., (Oldcastle). Maintenance was performed using a vacuum truck, specifically the Vactor 2100. This vacuum truck has two 800-gallon water tanks to supply the jetter water, and a 2,800-gallon vacuum drum, where the vacuumed water and debris are captured.

The activities performed as part of NSBB maintenance include the following:

- Placing Sungates at influent and effluent locations of the BMP to isolate the system from the surcharged drainage network.

- Pumping out excess water to allow for more efficient and effective cleaning.
- Vacuuming collected particulates and gross solids out of the lidded screen storage system.
- Using high-pressure water from the truck jetter to wash sediments off the inner walls of the three sediment chambers.
- Using high-pressure water from the truck jetter to suspend sediments collected in the three sediment chambers so it can be vacuumed up and collected in the vacuum drum.
- Decant excess water onsite.
- Dispose of collected sediments and debris, getting weigh tickets showing truck weight prior to and immediately after disposal.

The maintenance activities performed to remove the collected particulates and gross solids are a primary method of pollutant removal for these types of systems. Physical removal of accumulated particulates and gross solids, which tend to have significant amounts of nutrients associated with them, allows for the pollutants to be completely removed from the watershed and disposed of properly. As such, this is an important component of these types of treatment systems that must be examined as part of the evaluation of the effectiveness of these types of BMPs.

3.6 Sampling Methods

Stormwater and solids/sediment sampling was performed to evaluate the nutrient removal performance of the NSBB and off-line UFF system. Stormwater was sampled using autosampler techniques which allowed for collection of composite stormwater samples. The purpose of the stormwater sampling component of this project was to evaluate the pollutant removal effectiveness of this BMP treatment train in removing nutrients during storm events. A total of 15 composite stormwater samples were collected (8 during the first study and 7 during the second study) by autosamplers during storm events as defined by the approved project QAPP (see **Appendix A**). Additionally, a total of 9 composite sediment sampling events were conducted (5 during the first study and 4 during the second study) in coordination with the County's NSBB cleaning/maintenance events.

The objective of the stormwater and sediment sampling was to evaluate the NSBB and off-line UFF treatment effectiveness regarding pollutant removal. The stormwater samples provide useful information on the dissolved pollutant loads entering and exiting the NSBB and off-line UFF. However, autosampling techniques are not effective for assessing nutrient loads associated with larger particulates and organic debris. This is because autosamplers collect water samples through a relatively small diameter hose and strainer system (3/8-inch diameter) that prevents collection of larger debris such as leaves and other organic material. Further, even if some particles are small enough to fit into the hose and strainer, the flow rate generated by the peristaltic pump may be too low to entrain some of these particles. Therefore, sediment samples were collected during NSBB cleaning events so that pollutant loads to the NSBB and UFF could be accurately assessed. This approach is discussed further in **Section 5.1**

3.6.1 Stormwater Sampling

Geosyntec installed a suite of monitoring and sampling equipment at the project site as previously discussed and described in detail in the project approved QAPP in **Appendix A**. Two Flow meters were installed to monitor flow rates and total flow volume into the NSBB and off-line UFF. Four

autosamplers were configured to collect samples from the influent and effluent pipes of both structures. A rain gauge was installed to monitor rainfall throughout the study. For the first study, the NSBB and off-line UFF were monitored from December 2022 to June 2024. During this period, the autosamplers collected 8 composite samples across 8 different storm events. For the second study, the NSBB and off-line UFF were monitored from June 2024 to April 2025. During this period, the autosamplers collected 7 composite samples across 7 different storm events. The composite samples were retrieved by Geosyntec subconsultant Barnes, Ferland, and Associates, Inc., (BFA) and delivered to Geosyntec Subconsultant Southern Research Laboratories, Inc., (SRL) under controlled chain of custody for analysis of the analytes displayed in **Table 3-1**. Sampling reports prepared by BFA can be found in **Appendix B**.

Stormwater samples were collected using autosamplers with telemetry allowing remote triggering based on site conditions. Composite sampling was triggered when rain was detected and a 0.1 ft increase in water level in the NSBB was observed in less than 1 hour (see **Appendix A**).

- Composite sampling scheme:
    - Once triggered, the autosamplers collected and composited 850 mL of stormwater samples every 10 minutes into a 9-liter glass jar until up to 10 aliquots were collected.
    - The composite stormwater samples were collected by Geosyntec subconsultant BFA staff into individual sample containers provided by Geosyntec subconsultant SRL under controlled chain of custody in accordance with the approved project QAPP (see **Appendix A**). This was done using a peristaltic pump. While collecting samples, a BFA staff was constantly stirring / agitating the 9-liter glass jar to minimize settling of the solids. This was to ensure that the stormwater samples were well mixed and representative of the water collected.

Table 3-1: Water Sample Analytes

Analyte	Method	MDL	Holding Time	Units
Alkalinity	SM 2320B	5	14 days	mg/L
Total Nitrogen (TN)	TKN+Nox	0.2	28 days	mg/L
Total Phosphorus (TP)	EPA 365.4	0.07	28 days	mg/L
Orthophosphate (OP)	365.1	0.0038	48 hours	mg/L
Ammonia (NH3)	350.1	0.035	28 days	mg/L
Nitrate + Nitrite (NOx)	353.2	0.015	28 days	mg/L
Particulate Nitrogen	EPA 351.2	0.2	28 days	mg/L
Particulate Phosphorus	EPA 365.4	0.07	28 days	mg/L
Total Organic Carbon (TOC)	SM 5310 B	1	28 days	mg/L
Total Solids (TS)	SM 2540B	5	7 days	mg/L
Total Suspended Solids (TSS)	SM 2540D	1	7 days	mg/L

Note: The second study did not include analysis for Alkalinity, Ammonia, Orthophosphate, Particulate Nitrogen, Particulate Phosphorus, Total Solids, or Total Organic Carbon

3.6.2 NSBB Cleaning Event Sampling

Over both study periods, Geosyntec coordinated nine (9) cleaning events with County subcontractor, Oldcastle. The purpose of these cleaning events was to remove organic matter, sediment, and debris from the NSBB. These solids collect over time as part of the normal operation of the structure. During these cleaning events, the NSBB and the off-line UFF were hydraulically isolated from the drainage system and large vacuum trucks removed a slurry of water and solids from the structures. Excess water was purged from the trucks on-site to reduce vehicle weight. Composite samples of this purge water were collected by Geosyntec subconsultant BFA and delivered to Geosyntec subconsultant SRL for analysis of the analytes displayed in **Table 3-1**. During cleaning events, the vacuum trucks use spray water to loosen sediment within the structure so that it can be removed. To account for any potential nutrient loading associated with these activities, samples of the spray water were also collected and analyzed for the analytes displayed in **Table 3-1**. Additionally, measurements of temperature, pH, specific conductance, turbidity, and dissolved oxygen were made for all water samples collected during the study. Finally, composite samples of the solids removed from the NSBB were collected by Geosyntec subconsultant BFA and delivered to Geosyntec subconsultant SRL for analysis of moisture content and bulk density, as well as the analytes displayed in **Table 3-2**. Geosyntec subconsultant BFA sampling reports can be found in **Appendix B**.

Table 3-2: Solid Sample Analytes

Sample Matrix	Analyte	Method	MDL	Holding Time	Units
solid	Total Nitrogen (TN)	EPA 351.2	11	28 days	mg/Kg
solid	Total Phosphorus (TP)	EPA 365.4	5.2	28 days	mg/Kg

NSBB cleaning and sampling events were conducted by Geosyntec subconsultant BFA staff during the County's NSBB cleaning/maintenance events. It is noted that the NSBB underwent an initial cleaning on August 1, 2022. The static water in the NSBB, which is vacuumed up by the vactor truck during cleaning, is typically purged from the vac truck onsite so it can drive safely. The purge water was discharged to a downstream manhole where composite water samples were collected in accordance with the approved QAPP (see **Appendix A**). Due to the expected variability of the nutrient concentrations in the purge water, two (2) purge water samples were collected during each of the nine (9) maintenance events. One sample was collected during the first half of purge water discharge event and the second sample was collected during the second half. A photo of Geosyntec staff collecting a purge water sample is shown below (See **Figure 3-8**). Note that the sampling was performed in accordance with the approved project QAPP (see **Appendix A**).

Figure 3-8: Purge Water Sample Collection

Since autosamplers are ill-equipped for sampling large particulates and gross solids, manual sampling of this material was performed. Particulate and gross solids sampling occurred on an approximately quarterly basis totaling nine (9) events. These sampling events were performed in coordination with the County's NSBB maintenance events. The accumulated particulates and gross solids were removed from the NSBB by the County's subcontractor, Oldcastle. The vactor truck utilized a high-powered vacuum to remove the debris captured in the lidded screen storage system and sediment from the three settling chambers. High-pressure water was used to clean the internal components of the NSBB, where the resulting mixture of water and particulates was then vacuumed into the truck debris collection drum.

Particulate and gross solids sampling occurred after the purge water sampling completed. Once the purge water was fully discharged, the vactor truck dumped the collected mixture of particulates and gross solids onto a new sheet of visqueen, per the project QAPP (see **Appendix A**). This occurred in an empty parking lot along Summerlin Avenue with permission from the Orange County School Board (28.495696, -81.367262). A total of six (6) evenly distributed particulate and gross solids sub-samples were collected from different parts of the debris pile and composited. This was done to ensure that the composited sample was representative of the material collected from the NSBB during the cleaning. The County's maintenance subcontractor provided the weight of the collected material that was disposed of in the form of a weight tare ticket (see **Appendix C**). The volume of purge water was estimated based on the dimensions of the NSBB. A photo showing a dumped particulate and gross solids pile is presented below (see **Figure 3-9**).

Figure 3-9: Particulate and Gross Solids Sampling Pile

4 MONITORING AND SAMPLING RESULTS

In this section, results from rainfall monitoring and flow monitoring can be found, along with results from stormwater sampling and solids sampling.

4.1 Rainfall Monitoring

For the first study, rainfall was monitored at the project site from December 2022 to July 2023, when an equipment error prevented the rain gauge from collecting subsequent data. Therefore, publicly available rainfall data was downloaded from NOAA Station ID GHCND:USW00012841 to supplement the project data. It is expected that rain data from this gauge is largely representative of site conditions given its close proximity to the site (~3 miles; GPS coordinates 28.54653, -81.33544). The two datasets were combined to provide a comprehensive dataset for the study period. See **Figure 4-1** for a rainfall summary plot.

For the second study, rainfall was monitored at the project site from June 2024 to June 2025. There was an error with the on-site rainfall gauge during the months of August and September of 2024. Publicly available rainfall data was downloaded from NOAA Station ID GHCND:USW00012841 to supplement the project data. The two datasets were combined to provide a comprehensive dataset for the study period. See **Figure 4-2** for a rainfall summary plot.

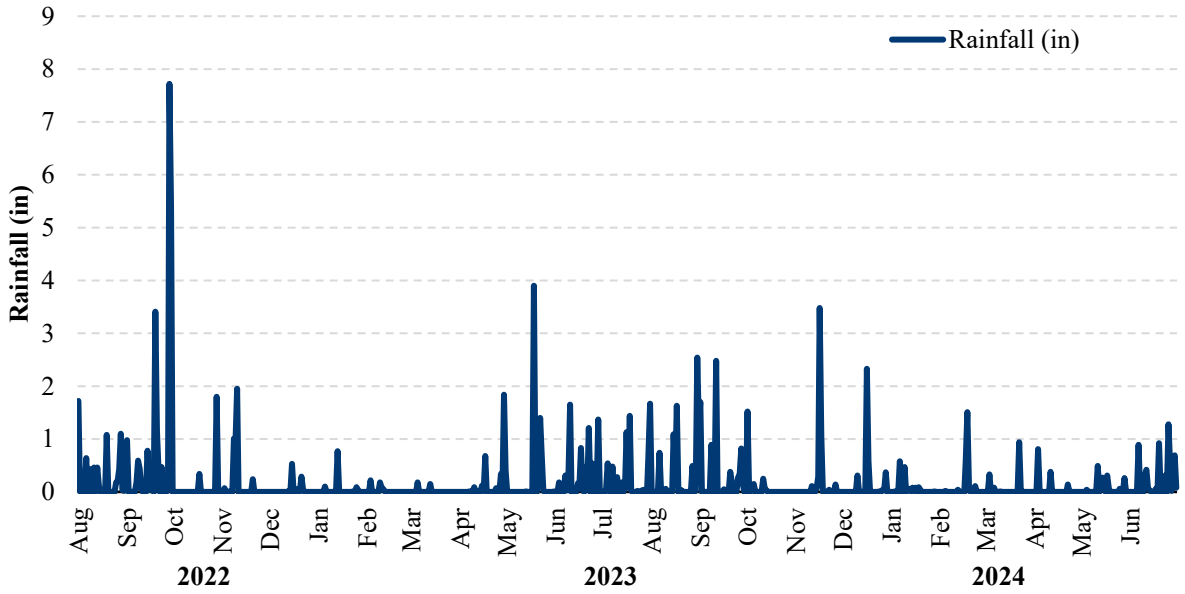


Figure 4-1: Study 1 Daily Rainfall Results

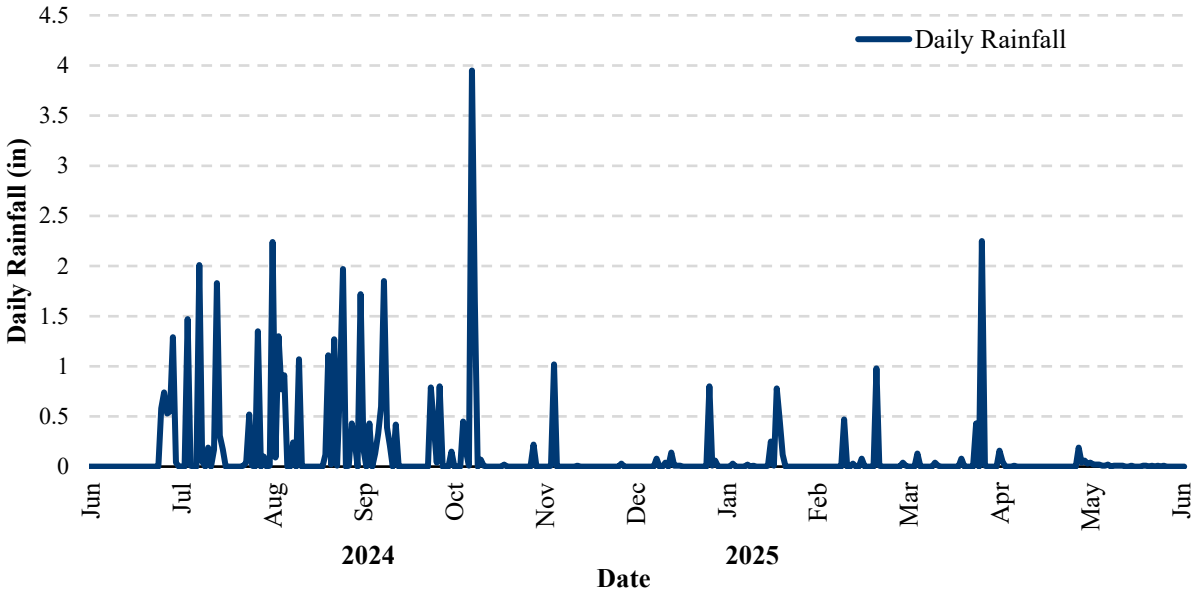


Figure 4-2: Study 2 Daily Rainfall Results

4.2 Flow Monitoring

Stormwater flow rate was monitored at two locations during the study period: (1) the off-line UFF inflow and (2) the NSBB outflow. The flow meters installed at these locations record velocity and depth to calculate flow rate based on the pipe diameter. For the first study, both flow meters collected data from December 2022 to June 2024, but each had significant data gaps that resulted from damaged flow meter cables (likely cut by lawn edger, the equipment had to be sent back to the manufacture for repair). The off-line UFF influent flow meter had a data gap from 5/3/2023 to 10/5/2023, while the NSBB discharge flow meter had a data gap from 6/25/2023 to 10/10/2023. Over the monitoring period, peak flow rates through the NSBB approached 30,000 gpm which is below the anticipated 10-year/24-hour peak flow rates of about 36,000 gpm (Geosyntec, 2017).

For the second study, both flow meters collected data from June 2024 to April 2025, but each had significant data gaps. The off-line UFF influent flow meter had a gap in level data from 5/9/2024 to 12/25/2024 due to a faulty A/V sensor that required replacement. The A/V sensor converts pressure to level data via a small air tube, but moisture in the tube can reduce accuracy. This does not affect the electronic velocity sensor, which remained operational. The level data for this period was estimated based on the measured data from the NSBB discharge flow meter and historical off-line UFF flow data from the previous study. The NSBB discharge flow meter had a data gap from 12/20/2024 to 1/21/2025 due to an equipment error. Over the monitoring period, peak flow rates through the NSBB approached 38,000 gpm which is slightly above the anticipated 10-year/24-hour peak flow rates of about 36,000 gpm (Geosyntec, 2017).

A summary of measured flow rates and rainfall totals for the first study are displayed in **Figure 4-3** through **Figure 4-6**. Note that the flow data is separated into multiple figures so that details can be seen. A summary of measured flow rates and rainfall totals for the second study are displayed in **Figure 4-7** and **Figure 4-8**. It should also be noted that the measured negative flows were due to backflow from lake Pineloch, when rainfall occurred within the watershed, but outside of the project subbasin. Backflow is normal whenever lake levels rise since the Keystone BMP is

surcharged. Further, the figures show times when flow was detected but no rainfall is recorded on the rain gauge (or vice-versa). This may be due to a variety of reasons such as a clogged rain gauge, isolated storms that resulted in flow to our project area but not in the rain gauge, or other miscellaneous reasons (e.g., fish swimming past sensor). It is important to note that not all of these reasons can be accounted for but every effort was made to ensure the data was as high quality and reliable as possible.

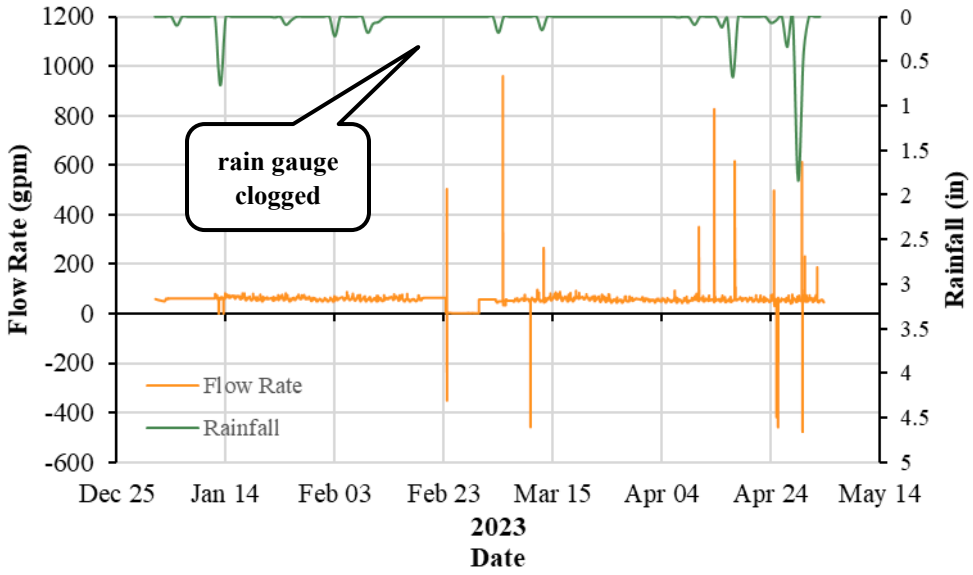
The observed delay between rainfall in the contributing area and stormwater flow in the BMP was about 15 minutes (**Figure 4-9**). When the water level in the NSBB reaches 4.8 feet above the flow meter, the floating skimmer (Skimboss® Max) passively raises and the system enters bypass mode. When in bypass mode, stormwater flows circumvent the off-line UFF entirely. Refer to **Figure 3-5** which shows the 4.8-foot difference between the NSBB outflow AV sensor and the normal high-water elevation threshold. The flow monitoring conducted as part of these studies revealed that stormwater flows occasionally resulted in bypass conditions (**Figure 4-10**, **Figure 4-11**, and **Figure 4-12**). Flow volume passing through the NSBB outflow pipe and the UFF inflow pipe was calculated in Isco Flowlink Software (version 5.19.156) as:

$$V = A \times v \times t$$

where:

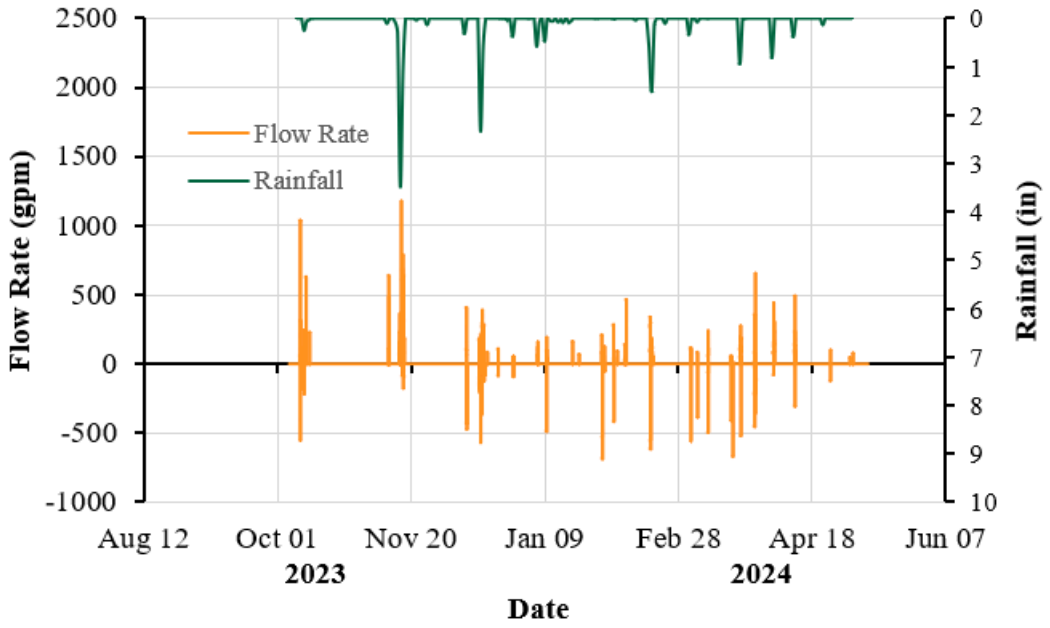
V is the total volume passing through the pipe over a specified period of time.
A is the cross-sectional area of the pipe.
v is the velocity of the fluid.
t is the time duration.

A summary of flow volume through the BMP is provided in **Table 4-1**.



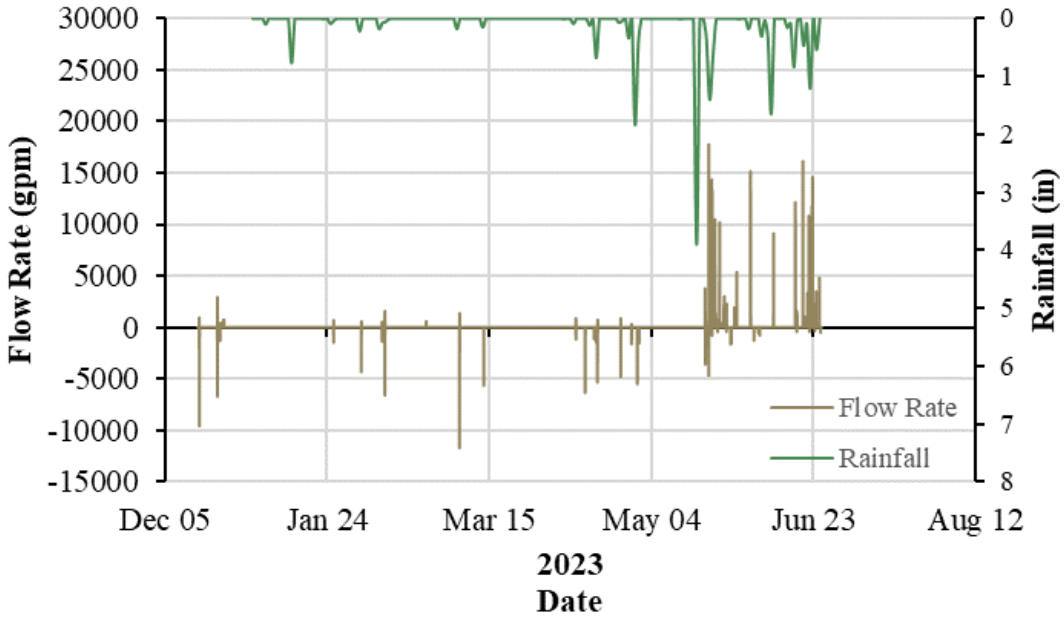
Note: Rainfall data from onsite rain gauge

Figure 4-3: Study 1 Off-line UFF Inflow Monitoring Results 1



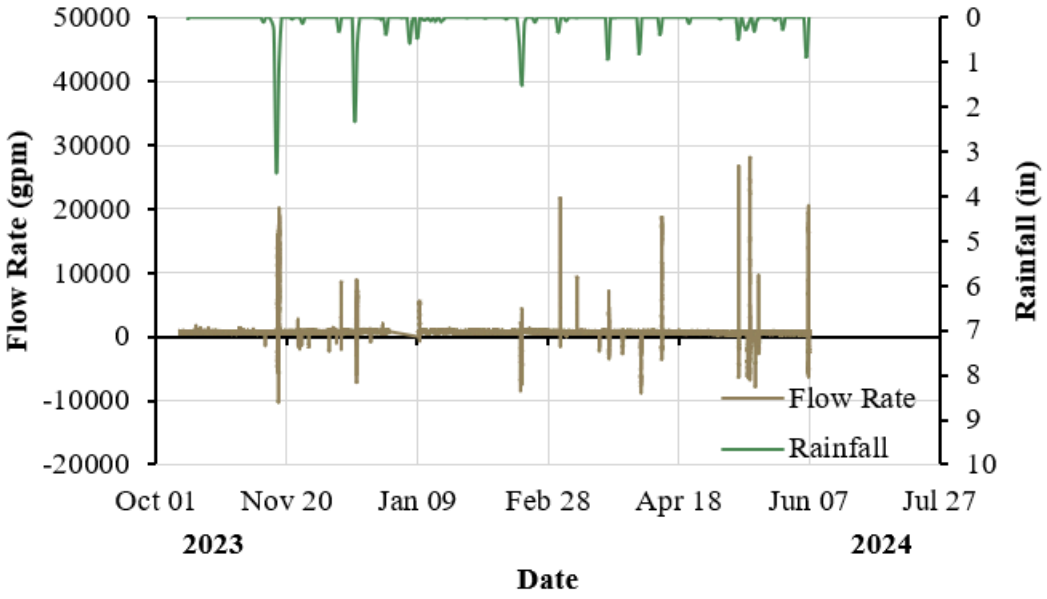
Note: Rainfall data from NOAA rain gauge

Figure 4-4: Study 1 Off-line UFF Inflow Monitoring Results 2



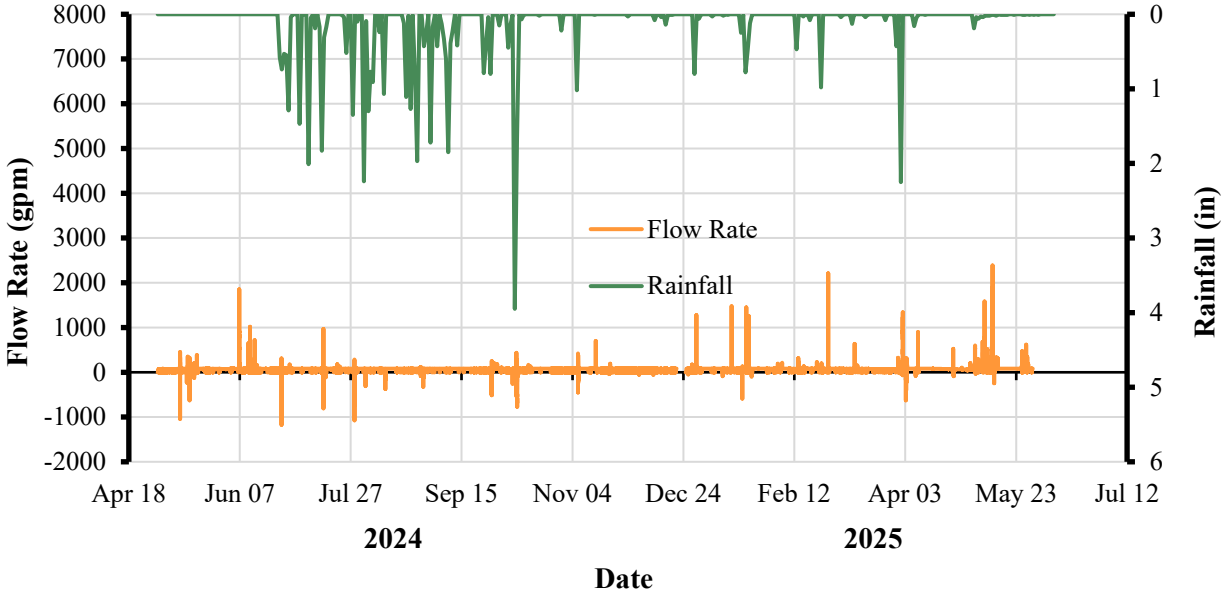
Note: Rainfall data from onsite rain gauge

Figure 4-5: Study 1 NSBB Outflow Monitoring Results 1



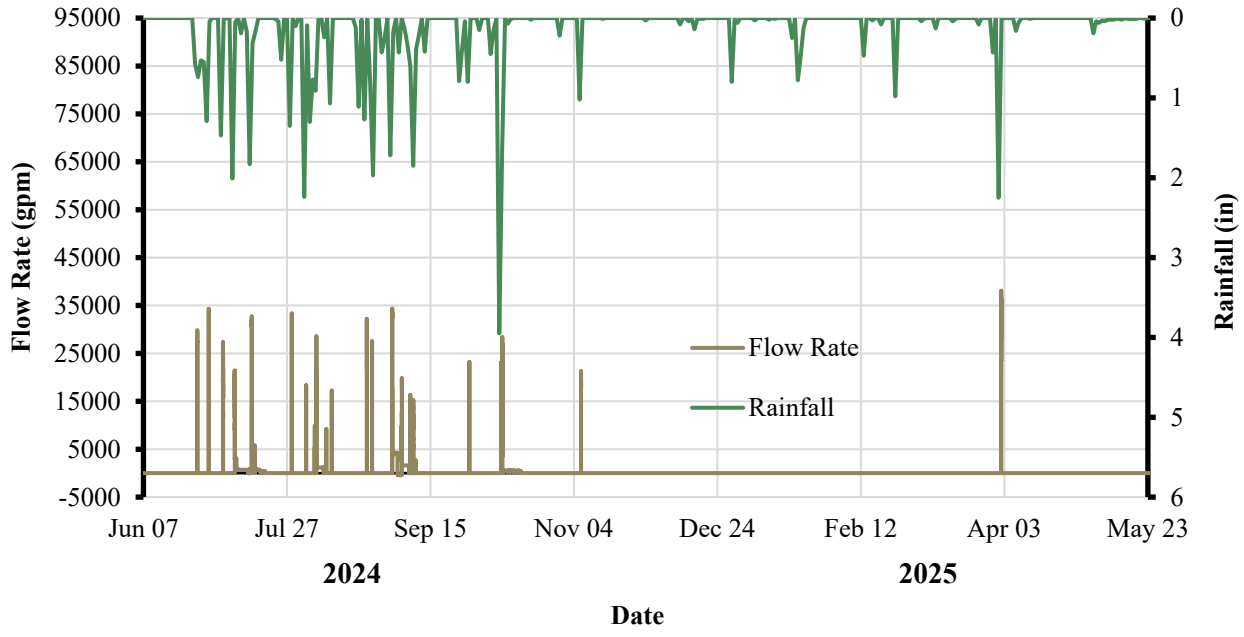
Note: Rainfall data from NOAA rain gauge

Figure 4-6: Study 1 NSBB Outflow Monitoring Results 2



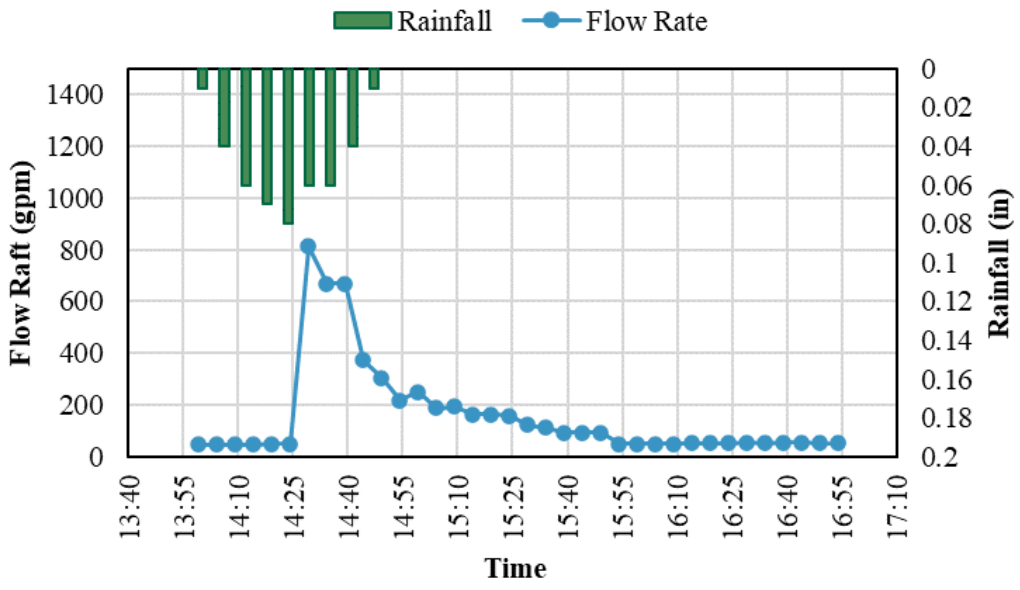
Note: Onsite rain gauge data supplemented with nearby NOAA rain gauge data

Figure 4-7: Study 2 Off-line UFF Inflow Monitoring Results



Note: Rainfall data from onsite rain gauge and NOAA rain gauge

Figure 4-8: Study 2 NSBB Outflow Monitoring Results



Note: Flow Data is from the Flow Meter at the off-line UFF Influent Location on 4/13/2023

Figure 4-9: Typical Storm Hydrograph Example

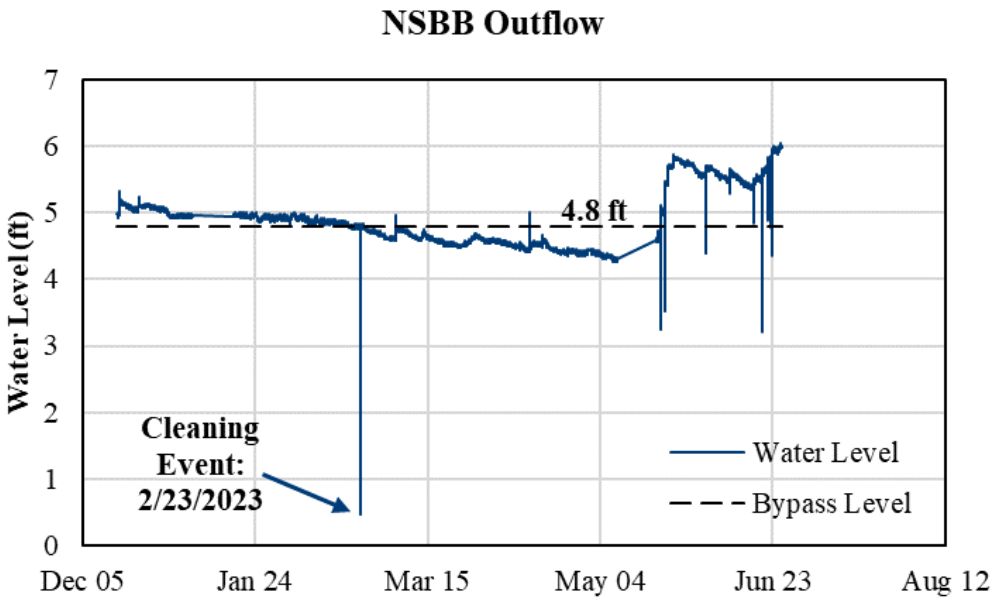


Figure 4-10: Water Level Inside the NSBB from December 2022 to June 2023

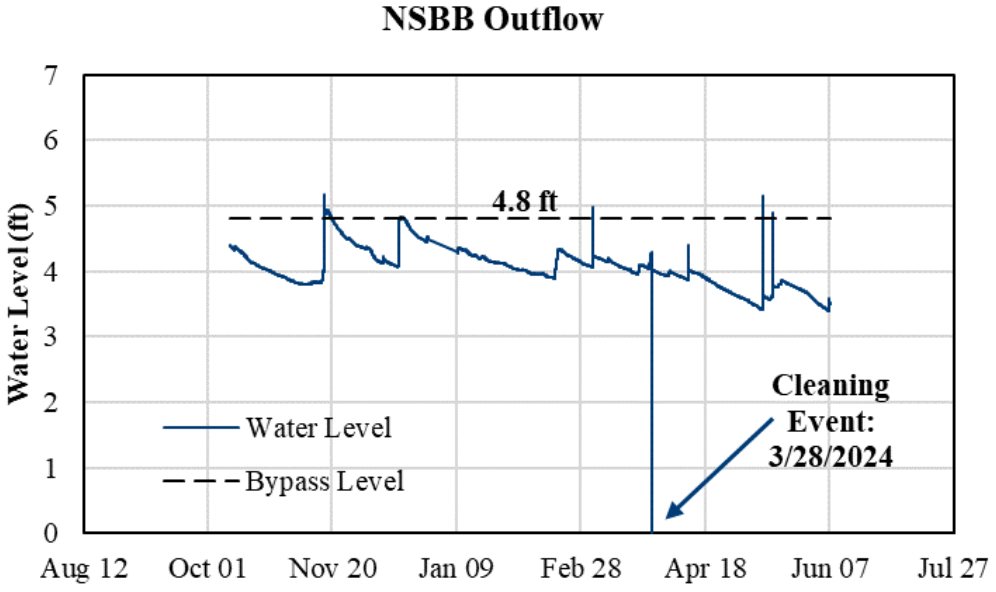


Figure 4-11: Water Level Inside the NSBB from October 2023 to June 2024

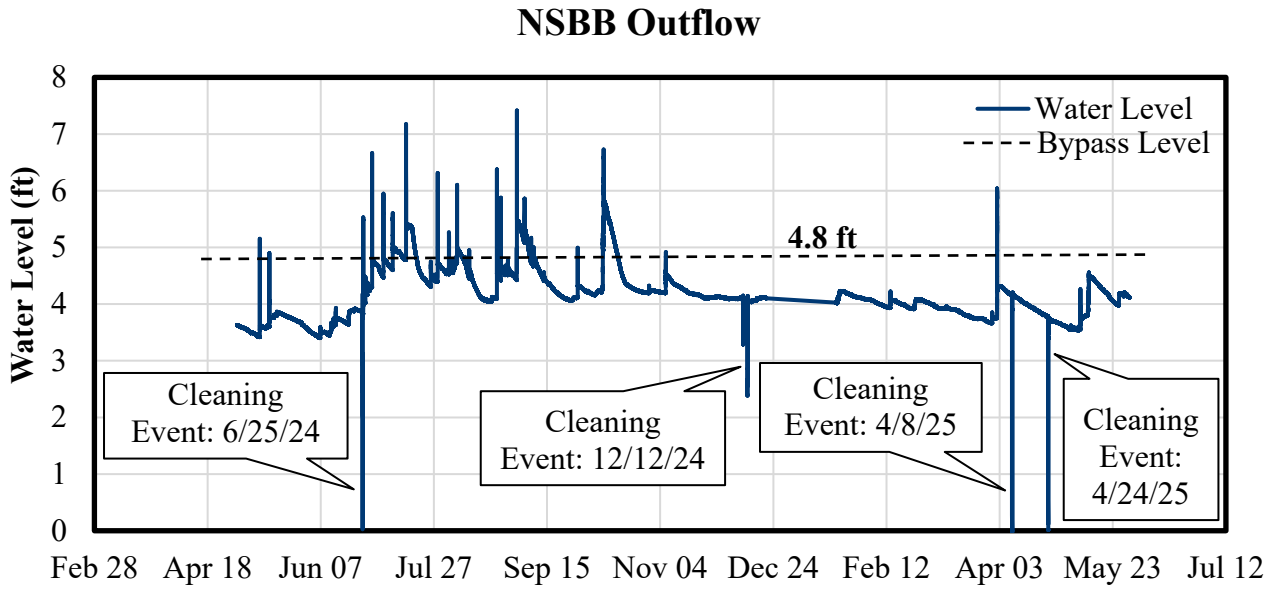


Figure 4-12: Water Level Inside the NSBB from April 2024 to May 2025

Table 4-1: Summary of Flows through the Keystone BMP

Study	NSBB Outflow Volume (gal) [a]	UFF Inflow Volume (gal) [b]	Total Flow Volume (gal) [c]	UFF Bypass Volume (%)
1[d]	5,443,643	10,054,786	15,498,430	35%
2	54,719,634	33,686,916	88,406,549	62%
Total	60,163,277	43,741,702	103,904,979	58%

[a] *The NSBB Outflow Volume represents the volume of water that bypassed the off-line UFF over the study periods. These values are measured directly by the AV sensor in the NSBB Outflow Pipe.*

[b] *The UFF Inflow Volume represents the volume of water that flowed through the off-line UFF over the study periods. These values are measured directly by the AV sensor in the UFF Inflow Pipe.*

[c] *Total Flow Volume through the entire Keystone BMP is calculated as the sum of the NSBB Outflow and UFF Inflow.*

[d] *From 5/11/2023 to 10/10/2023 there was an error with the A/V sensor at the NSBB out location resulting in missed data from the wet season. From 5/3/2023 to 10/5/2023 there was an error with the A/V sensor in the off-line UFF resulting is missed data from the wet season. These cables were damaged by lawn maintenance equipment and replaced during the next NSBB cleaning event.*

Because the AV sensor for the NSBB outflow is located in the outflow pipe beyond the internal weir wall (**Figure 3-4**), the NSBB outflow volume shown in **Table 4-1** is the total volume of water that overtopped the internal weir and bypassed the off-line UFF. The UFF inflow volume in **Table 4-1** is the total volume measured by the AV sensor located in the inflow pipe to the off-line UFF (**Figure 3-4**). The total flow volumes shown in **Table 4-1** are the sums of the NSBB outflow and UFF inflow volumes. Any volume that does not overtop the NSBB internal weir wall would flow

through the off-line UFF, thus the sum of these two values is the total flow volume through the system. It is important to note that overall flows through the Keystone BMP (**Table 4-1**) were much greater during the Study 2 period. This is largely explained by the significant data gaps during Study 1. The wet season in this area generally spans from about May 15 to October 15 annually. The data gap in the year 1 study spans nearly the entirety of the wet season, resulting in a large portion of overall flows through the Keystone BMP being unaccounted for. In the Study 2 period, flow data during the wet season was entirely captured, which explains the large variance in flows between the two study periods. This also explains why the Bypass Volume % is significantly higher in Study 2, since water levels in the lake and surcharged stormwater pipe are higher in the wet season.

Even when the system is not in bypass mode, it is possible for the flow rate to be too high for the off-line UFF to achieve the desired dissolved pollutant removals. The off-line UFF is designed to remove dissolved pollutants, which occur primarily through two removal mechanisms: (1) physiochemical adsorption of P and (2) N reduction via denitrification. Both removal mechanisms require adequate contact time (1 GPM/SF) to ensure effective treatment. Per the manufacturer's recommendation, the maximum flow rate passing through the media in the off-line UFF to achieve the required contact time and advertised pollutant removal rates was calculated as:

$$Q = A \cdot k \cdot \frac{1}{3600}$$

Where:

Q = Flow rate (CFS) measured in the downstream effluent pipe.
Note: The flow rate measurement is an instantaneous reading that occurs on a 5 minute interval
k = laboratory permeability of the filter media (8.0 ft/hr from media spec sheet).

A = Surface area of the media filter (220 SF), the area perpendicular to the flow direction.

Based on this equation, the maximum flow rate through the off-line UFF to achieve the manufacturer advertised TN and TP removal rates was calculated to be 0.489 CFS or 220 GPM. This maximum flow rate was plotted against the measured flow rates throughout the duration of the project. See **Figure 4-13** and **Figure 4-14** for the first study, see **Figure 4-15** for the second study. The flow rate through the off-line UFF was largely below the maximum flow rate, except during peak flows for large storm events. It is important to note that when the UFF was originally installed, the internal weir wall was too low and it was allowing stormwater to flow overtop regularly. The internal weir wall in the UFF was extended in early/mid-August 2022, which is why there is a change in the flow rate through the UFF after this time.

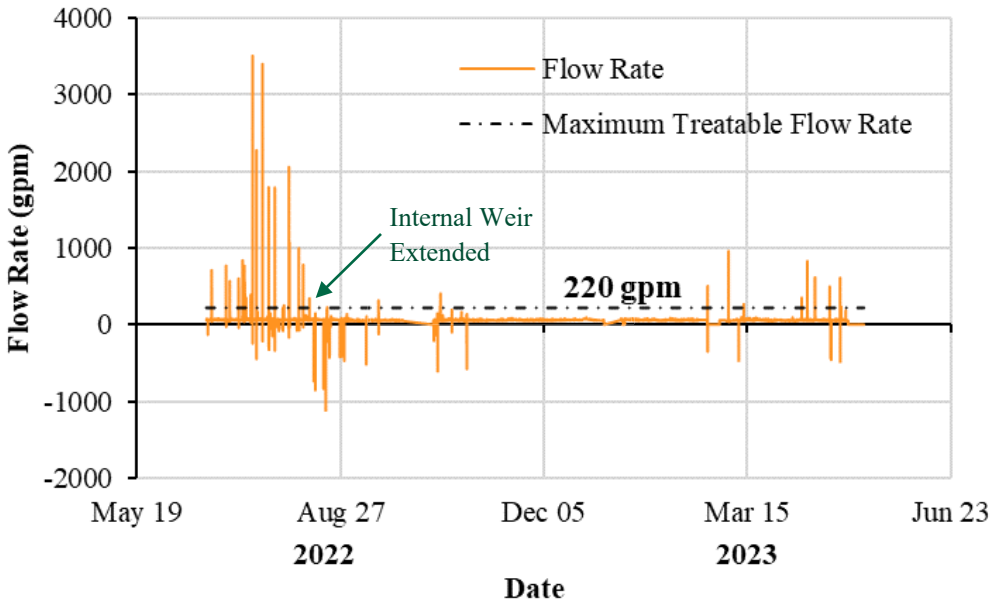


Figure 4-13: Study 1 Off-line UFF Flow Rate with Maximum Treatable Flow Rate 1

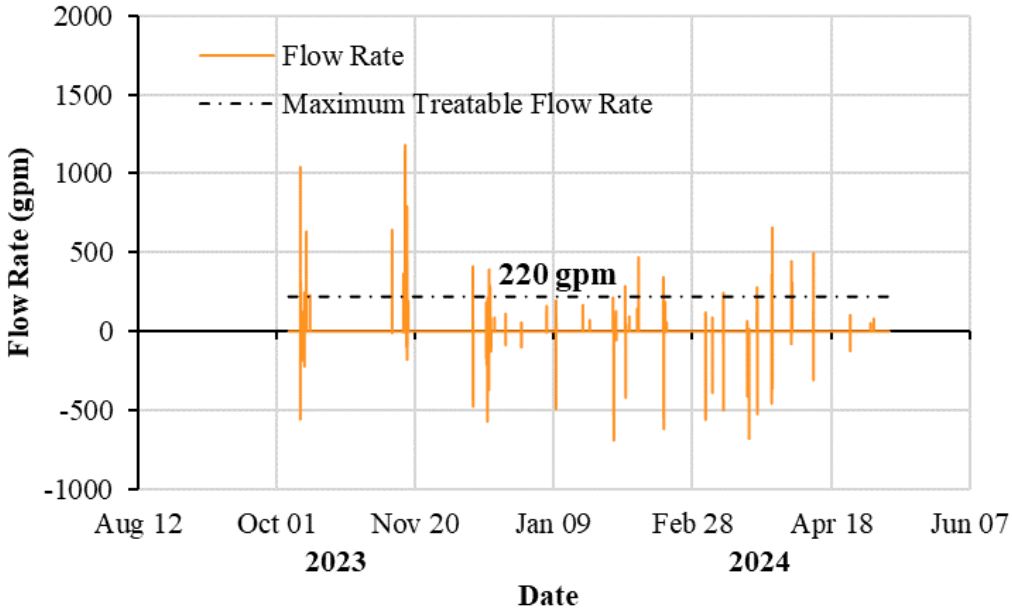


Figure 4-14: Study 1 Off-line UFF Flow Rate with Maximum Treatable Flow Rate 2

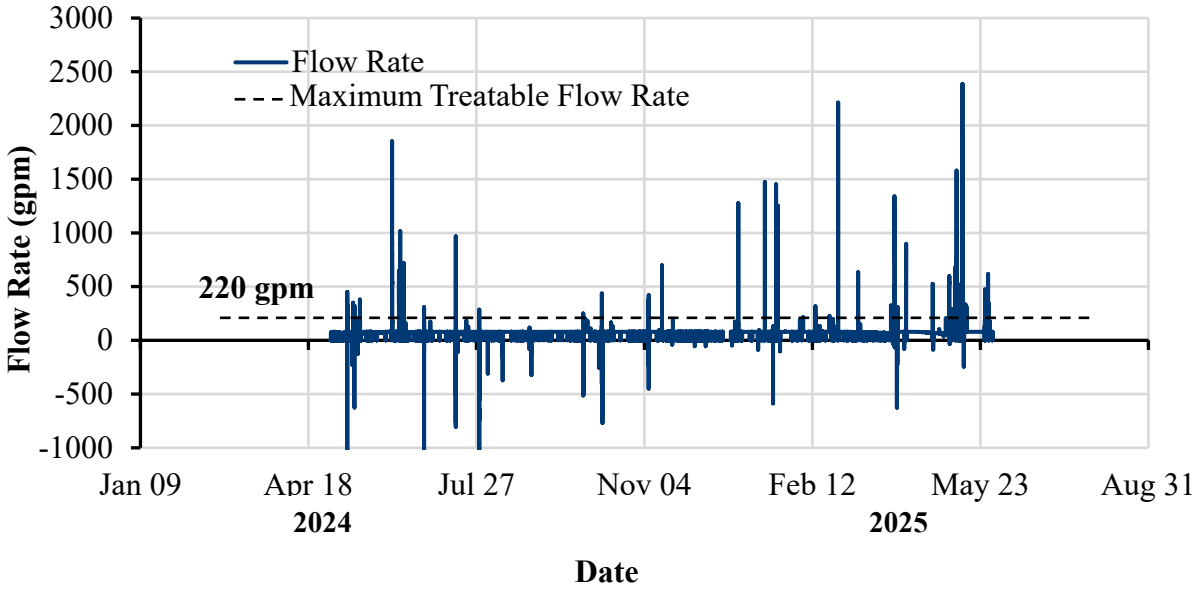
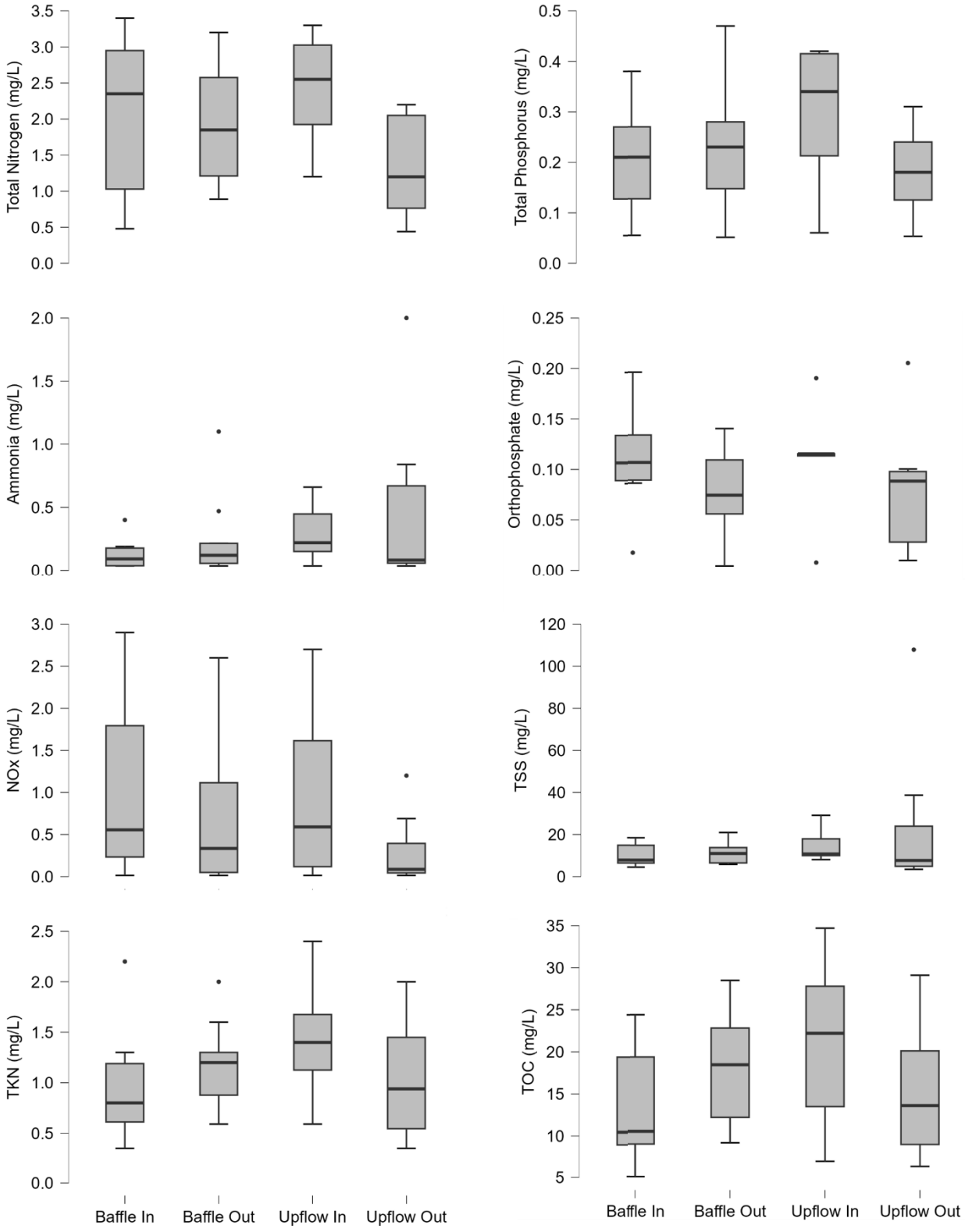


Figure 4-15: Study 2 Off-line UFF Flow Rate with Maximum Treatable Flow Rate

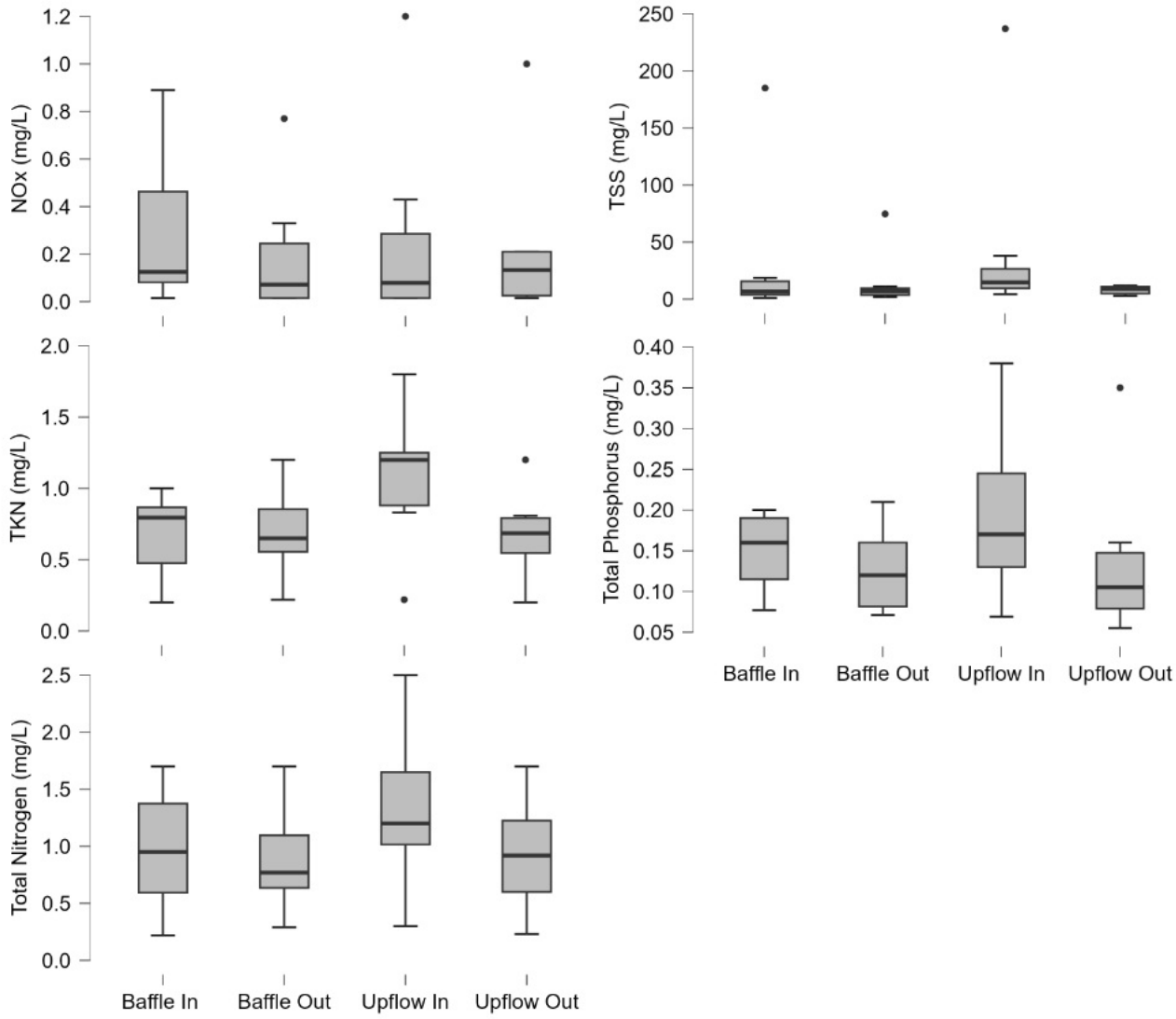
4.3 Stormwater Sampling

Composite stormwater samples were collected by autosamplers at four locations during the study period: (1) the NSBB inflow, (2) NSBB outflow, (3) off-line UFF inflow, and (4) off-line UFF outflow. The autosamplers were programmed to collect up to 10 individual aliquots over the storm hydrograph which were composited into a large glass jar in accordance with the project approved QAPP in **Appendix A**. Because stormwater is cleaner at the end of the hydrograph than during the "first flush", dispersion of sample aliquots across the storm hydrograph ensures that results are representative of the overall water quality. A record of sample event hydrographs and aliquot collections can be found in **Appendix D**. All composite stormwater samples were analyzed for the previously mentioned water quality parameters (**Table 3-1**). A summary of results from the first study are shown in **Figure 4-16**. A summary of results from the second study are shown in **Figure 4-17**.



Note: Boxplots show the median, Q1, Q3, minimum, maximum, and outliers.

Figure 4-16: Study 1 Stormwater Sampling Results



Note: Boxplots show the median, Q1, Q3, minimum, maximum, and outliers.

Figure 4-17: Study 2 Stormwater Sampling Results

4.4 Solids Sampling

A summary of removals for each NSBB cleaning event are shown in **Table 4-2**. This represents the total mass of TN and TP removed during NSBB cleaning events, which was determined based on a combination of the total weight of solids removed, total volume of water removed, and sampling of both the solids and liquid collected during cleaning. The total purge water volume is based on the size of the NSBB, off-line UFF, tie-in box, connecting pipe, and the volume of water brought to the site by the vactor truck. The total water volume was estimated to be 76,000 liters (20,077) gallons for all cleaning events, which assumes that the NSBB and UFF were filled to the normal design water elevation of 91 feet NAVD (**Figure 3-5**).

Table 4-2: Cleaning Event Removal Summary

Study	Cleaning Date	Sediment			Purge Water		TOTAL	
		Total Dry Mass of Solids Collected (lb)	TP Removed (lb)	TN Removed (lb)	TP Removed (lb)	TN Removed (lb)	TP Removed (lb)	TN Removed (lb)
1	3/28/2024	4,749	0.39	0.65	0.03	0.23	0.42	0.88
	10/9/2023	4,932	0.25	3.30	0.23	2.81	0.49	6.11
	5/9/2023	3,574	0.07	0.29	0.25	1.56	0.32	1.85
	2/23/2023	10,153	1.81	2.37	0.35	2.01	2.16	4.38
	11/15/2022	6,456	0.56	0.83	0.03	0.64	0.58	1.47
	TOTAL	**29,865**	**3.08**	**7.44**	**0.90**	**7.25**	**3.97**	**14.69**
2	6/25/2024	4,240	0.65	2.04	0.34	2.17	0.99	4.21
	9/3/2024	5,720	1.07	0.67	0.05	0.62	1.12	1.29
	12/12/2024	5,326*	0.28	0.55	0.05	0.66	0.32	1.21
	4/8/2025	18,160	3.87	9.28	0.38	1.41	4.24	10.70
	TOTAL	**28,120**	**5.86**	**12.55**	**0.81**	**4.87**	**6.68**	**17.41**
COMBINED TOTAL		**57,985**	**8.94**	**19.99**	**1.71**	**12.12**	**10.65**	**32.10**
ANNUAL ESTIMATE**		**21,556**	**3.32**	**7.43**	**0.64**	**4.51**	**3.96**	**11.93**

** The County's NSBB maintenance contractor did not record the total mass of solids for the 12/12/2024 cleaning event. This value is estimated as the median of the total dry masses for all other cleaning events.*

*** The annual estimate is calculated by dividing the combined total by 2.69 years – which is the total length of time sediments were accumulating between cleaning events (from 8/1/2022 to 4/8/2025). Numbers may not add up exactly due to rounding.*

4.5 Quality Assurance

Laboratory results received from SRL were reviewed by Geosyntec for quality assurance. For each sampling event, the duplicate (DUP) sample was compared to the parent sample for relative percent difference (RPD). Data was considered reasonable and acceptable for values less than 20% RPD per FDEP guidance (FDEP, 2023). Most values were under the 20% RPD threshold, but a few outliers were observed which may indicate variability in the sample matrix. Note that duplicate samples were not collected for sampling events 1, 2, and 3 during the first study due to insufficient sample volume. See **Appendix E** for a summary of duplicate sample analysis.

5 BMP PERFORMANCE ASSESSMENT

This section discusses the individual pollutant removals of each treatment train component along with the overall pollutant removal of the whole system. Inflow water quality, NSBB internal loading analysis, and maintenance evaluation are also discussed.

5.1 Estimating Inflow Water Quality

Understanding the inflow water quality is necessary for evaluating the overall NSBB pollutant removal performance. As previously noted, autosamplers are unable to sample larger particulates and gross solids, which could represent a significant nutrient load in stormwater runoff. Therefore, to properly characterize the nutrient loading to this BMP, this portion of the pollutant load must be estimated. To do this, the pollutant load associated with gross solids and stormwater debris needs to be added to the loading associated with the dissolved portion of the inflow that was characterized using autosamplers. The loading associated with the dissolved nutrients was determined using autosampling techniques, as previously discussed in **Section 3**. The loading associated with the large particulates and gross solids, was estimated based on the mass of material collected during the cleaning events. A mass balance approach was used to determine the inflow mass loading (see **Figure 5-1** and **Table 5-1**).

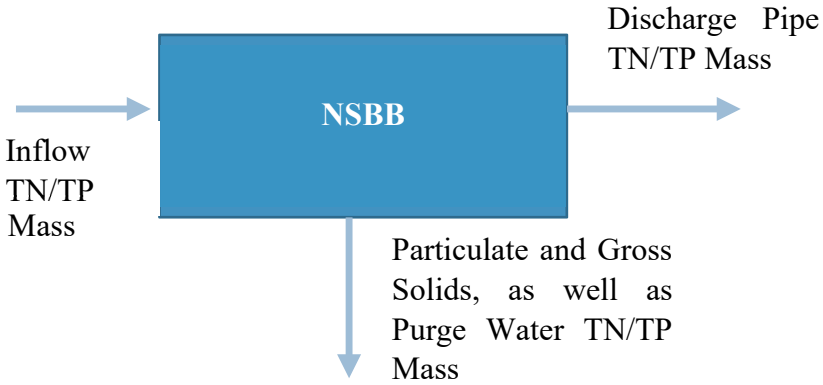


Figure 5-1: NSBB Mass Balance

Based on this mass balance approach, the total mass loading to the NSBB was calculated as:

$$I_M = O_M + CE_M$$

Where:

I_M = Total mass flowing into the NSBB

O_M = Total mass flowing out of the NSBB

CE_M = Total mass removed from the NSBB during cleaning events over the flow monitoring period. Study 1 from Dec 2022 to May 2024 (13.22 lb TN; 3.39 lb TP; 23,409 lb TSS)[1]. Study 2 from June 2024 to April 2025 (17.41 lb TN; 6.68 lb TP; 28,120 lb TSS). A conversion factor is applied to convert from lb to mg (1 lb = 453,592 mg).

[1] *Note: The cleaning event on 11/15/2022 is excluded in this calculation since this was outside the flow monitoring window*

The total mass flowing out of the NSBB (O_M) was calculated as:

$$O_M = O_C \times O_V$$

Where:

O_C = Average concentration flowing out of the NSBB. Study 1 (2.34 mg/L TN; 0.27 mg/L TP; 11.62 mg/L TSS). Study 2 (1.46 mg/L TN; 0.20 mg/L TP; 15.84 mg/L TSS).

O_V = Total volume flowing out of the NSBB (Study 1: 15,498,430 Gallons, Study 2: 88,406,549 Gallons; **Table 4-1**). A conversion factor is applied to convert from gallons to liters (1 gallon = 3.785 liters).

Finally, a theoretical inflow concentration (C_{in}) may be calculated as:

$$C_{in} = I_M \div O_V$$

Table 5-1: Estimation of Inflow Water Quality

Study	Total Flow Volume[a] (gal)	Outflow TN (mg/L)	Outflow TP (mg/L)	Outflow TSS (mg/L)	TN	TP	TSS
					Outflow Mass (lb)	Outflow Mass (lb)	Outflow Mass (lb)
1	15,498,430	2.34	0.27	11.62	302.02	34.85	1,500
				Cleaning Removal (lb)	13.22	3.39	23,409
				Total Inflow mass (lb)	315.25	38.24	24,909
				Total Inflow mass (mg)	142,993,728	17,345,958	11,298,326,960
				Total Inflow Volume (L)	58,667,939	58,667,939	58,667,939
				Theoretical Influent Concentration (mg/L)	**2.44**	**0.30**	**192.58**
Study	**Total Flow Volume[a] (gal)**	**Outflow TN (mg/L)**	**Outflow TP (mg/L)**	**Outflow TSS (mg/L)**	**TN**	**TP**	**TSS**
					Outflow Mass (lb)	**Outflow Mass (lb)**	**Outflow Mass (lb)**
2	88,406,549	1.46	0.20	15.84	1,074.91	147.1	11,661
				Cleaning Removal (lb)	17.41	6.68	28,120
				Total Inflow mass (lb)	1,092.33	153.8	39,781
				Total Inflow mass (mg)	495,471,404	69,752,423	18,044,172,846
				Total Inflow Volume (L)	334,655,192	334,655,192	334,655,192
				Theoretical Influent Concentration (mg/L)	**1.48**	**0.21**	**53.92**
				OVERALL AVERAGE THEORETICAL INFLUENT CONCENTRATION (mg/L)	**1.96**	**0.25**	**123.25**

[a] *Total Flow Volume is taken from **Table 4-1** and is the sum of flows through the NSBB outflow and UFF inflow pipes.*

5.2 NSBB Pollutant Removal

The settled particulates and gross solids collected in the NSBB (leaves, branches, sediment, etc.) represented a small portion of the overall nutrient mass in the stormwater inflow. This may be attributed to the land use in the watershed, which is predominantly commercial with limited tree canopy, resulting in minimal organic material for removal. Particulate and gross solids mass

(removed during cleaning events) accounted for 4.2% of the total TN load, 8.9% of the total TP load, and 94.0% of the total TSS load to the NSBB during the first study. During the second study, particulate and gross solids mass (removed during cleaning events) accounted for 1.6% of the total TN load, 4.3% of the total TP load, and 70.7% of the total TSS load to the NSBB. The remaining pollutant load is in the form of dissolved nutrients and fine suspended solids, which are targeted for removal by the off-line UFF.

The NSBB is not designed for dissolved nutrient removal. In fact, it is anticipated that captured sediments and organic material in the baffle chambers are an internal source of dissolved nutrients as organic matter decays. A mass balance approach was used to estimate the removal/conversion of dissolved nutrients. Dissolved nutrient removal in the NSBB was calculated as:

$$Pollutant\ \ Removal = \frac{\sum_1^n \frac{C_{inflow} - C_{outflow}}{C_{inflow}}}{n}$$

Where:

C_{inflow} = the average TN/TP concentration at the inflow location.

$C_{outflow}$ = the average TN/TP concentration at the outflow location.

n = number of events

The results of this analysis for the first study are displayed in **Figure 5-2**, the results for the second study are displayed in **Figure 5-3**. Negative values indicate that the accumulated solids in the NSBB are being converted to dissolved nutrients. Based on the results observed, there is strong evidence that this conversion of particulate organic nutrients to dissolved inorganic nutrients is occurring within the NSBB. Note that for the second study, due to budget constraints dissolved nutrients were not specifically analyzed. However, the TN and TP analysis includes dissolved nutrients and fine particles that are small enough to be sampled by autosamplers.

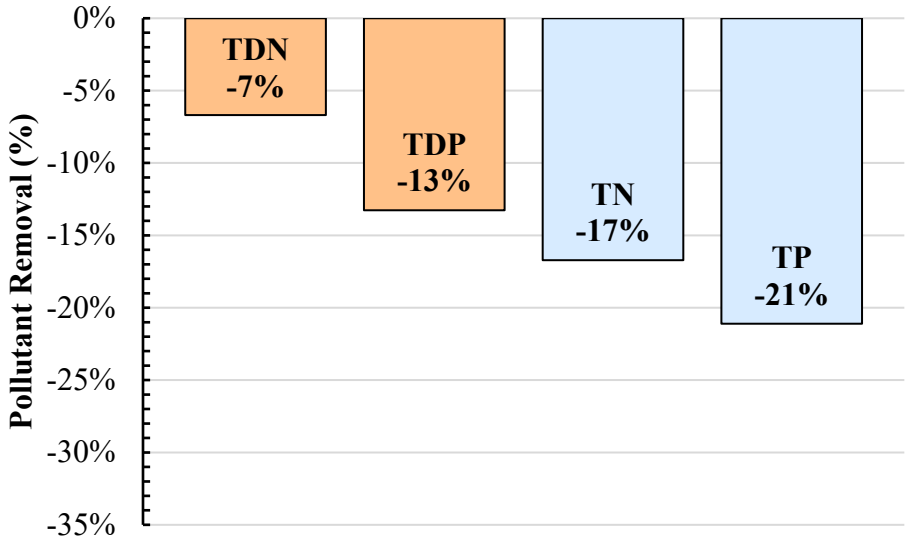
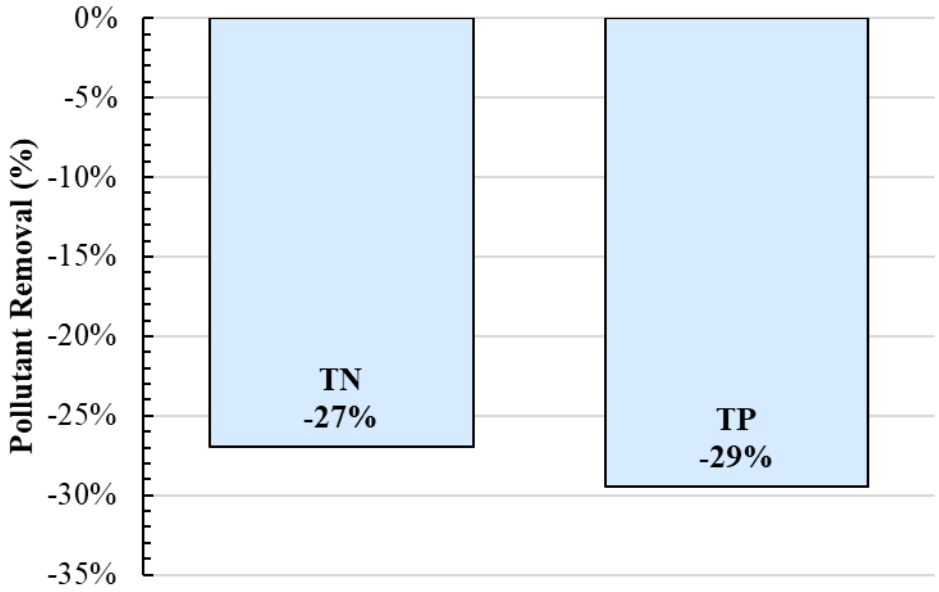


Figure 5-2: Study 1 NSBB Pollutant Removal



Note: For the second study dissolved pollutants were not analyzed

Figure 5-3: Study 2 NSBB Pollutant Removal

5.3 Off-line Upflow Filter Pollutant Removal

This section provides an evaluation of the effectiveness of the off-line UFF to remove TDN and TDP. The analysis is based on the difference between water quality samples taken at the influent and effluent off-line UFF pipes. Dissolved nutrient removal in the off-line UFF was calculated using the same formula in **Section 5.2** above. The average nutrient removal efficiencies for the first study are shown in **Figure 5-4**. Since the NSBB removes most particulate nutrients before reaching the off-line UFF, primarily dissolved nutrients remain. As a result, the values shown in **Figure 5-4** are similar for dissolved and total nutrient removals. Overall, the off-line UFF achieves good removal of dissolved nitrogen, but removal of dissolved phosphorus is much lower. Results shown in **Figure 4-16** show that the off-line UFF is achieving removal of NOx and TOC, which indicates that denitrification is occurring as intended. Dissolved nutrients were not analyzed for the second study. However, the removal efficiencies for TN and TP are shown in **Figure 5-5** for the second study, which are expected to be primarily dissolved nutrient forms based on the results from the first study.

It is noted that pollutant removals for Study 2 are somewhat reduced compared to the results from Study 1. This may be partially explained by a significant buildup of organic matter on top of the filter media in the off-line UFF, which was observed by Geosyntec field staff during the cleaning event on July 29, 2025. Buildup of organic matter in the off-line UFF filter will reduce the pollutant removal efficiency of the Keystone BMP. The County should ensure that the off-line UFF is inspected, cleaned, and maintained per manufacturer recommendations. This is discussed further in **Section 5.5**.

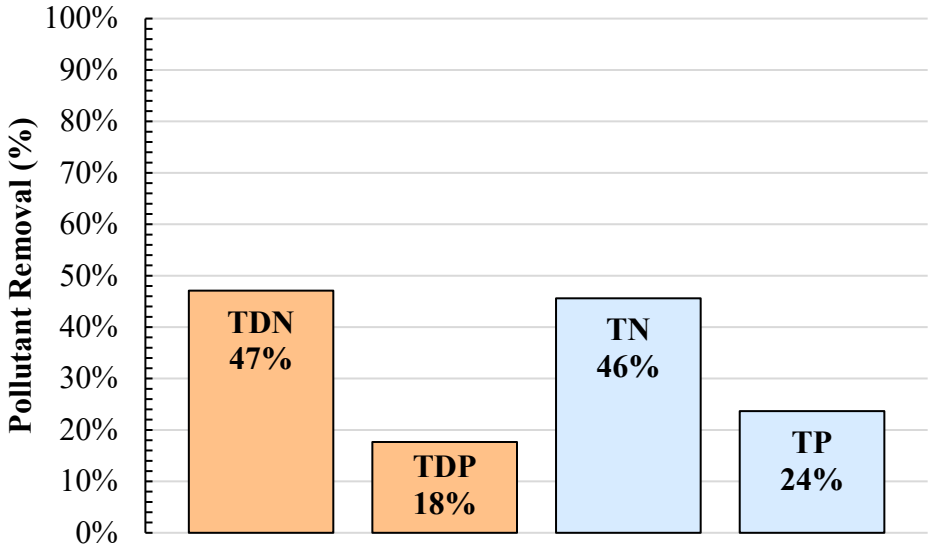
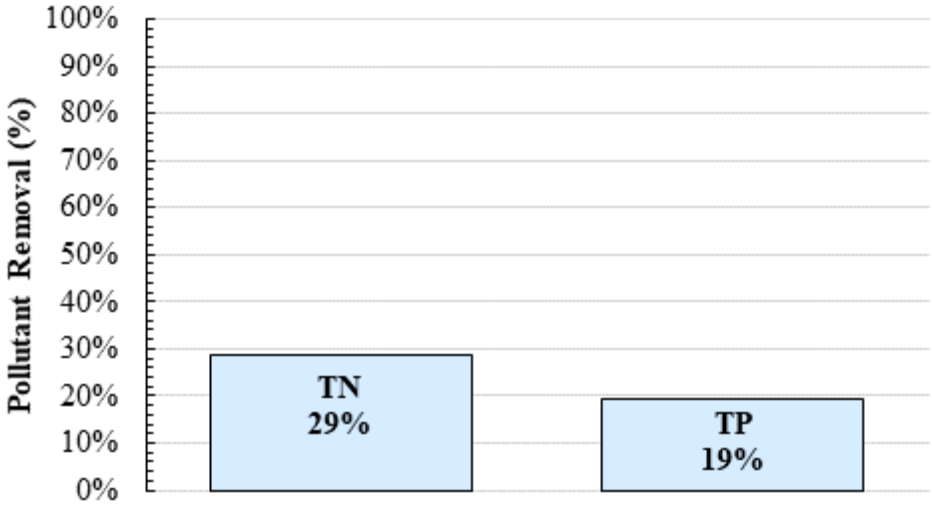


Figure 5-4: Study 1 Off-line UFF Pollutant Removal



Note: For the second study dissolved pollutants were not analyzed

Figure 5-5: Study 2 Off-line UFF Pollutant Removal

5.4 Overall Pollutant Removal

The overall pollutant removal for the study period was calculated based on the difference between the theoretical inflow TN/TP mass and the outflow TN/TP mass. Overall pollutant removal for the study period was calculated as:

$$Overall\ Pollutant\ Mass\ Removal = NSBB\ Mass\ Removal + UFF\ Mass\ Removal$$

A summary of this calculation is provided in **Table 5-2**. For the first study the overall pollutant removal was 34% for TN, 31% for TP, and 94% for TSS respectively (**Figure 5-6**). For the second study the overall pollutant removal was 20% for TN, 16% for TP, and 40% for TSS, respectively (**Figure 5-7**). Based on this, the overall average pollutant removal is estimated to be 27% for TN, 24% for TP, and 67% for TSS. The lower removals in the second study may have resulted from incomplete cleaning during multiple NSBB cleaning events. Incomplete cleanings occurred when the Sungates did not make a good seal and water was not able to be fully pumped out of the system. These incomplete cleanings resulted in a significant amount of sediment and organic matter being left in the NSBB, which may have decreased the performance of the BMP. Additionally, Geosyntec staff observed organic matter buildup on top of the off-line UFF during the cleaning and equipment demobilization event on July 29, 2025 (discussed in **Section 5.3**). Finally, it is noted that the second study included wet season flow volumes whereas the first study did not (due to damaged equipment, discussed previously in **Section 4.2**), which may also partially explain the reduced performance in the second study.

Table 5-2: Overall Pollutant Mass Removal

Study			TN	TP	TSS	units
1	1	NSBB In Mass	315.25	38.24	24,908.55	lb
	2	NSBB Out Mass	106.08	12.24	526.78	lb
	3	UFF In Mass	195.94	22.61	973.00	lb
	4	UFF Out Mass	102.85	14.28	964.35	lb
	5	NSBB Mass Removal [1-(2+3)]	13.22	3.39	23,408.76	lb
	6	UFF Mass Removal [3-4]	93.09	8.33	8.65	lb
	7	Overall Mass Removal [5+6]	106.31	11.72	23,417.41	lb
2	1	NSBB In Mass	1,092.33	153.78	39,780.59	lb
	2	NSBB Out Mass	607.38	89.12	21,365.17	lb
	3	UFF In Mass	373.92	54.87	13,152.99	lb
	4	UFF Out Mass	261.37	39.60	2,241.06	lb
	5	NSBB Mass Removal [1-(2+3)]	111.02	9.79	5,262.44	lb
	6	UFF Mass Removal [3-4]	112.55	15.26	10,911.93	lb
	7	Overall Mass Removal [5+6]	223.57	25.05	16,174.37	lb

[1] *Calculated per the equations in Section 5.1*

[2] *Calculated as the average TN/TP concentration at the UFF inflow/outflow location multiplied by the total volume passing through the upflow filter over the study period.*

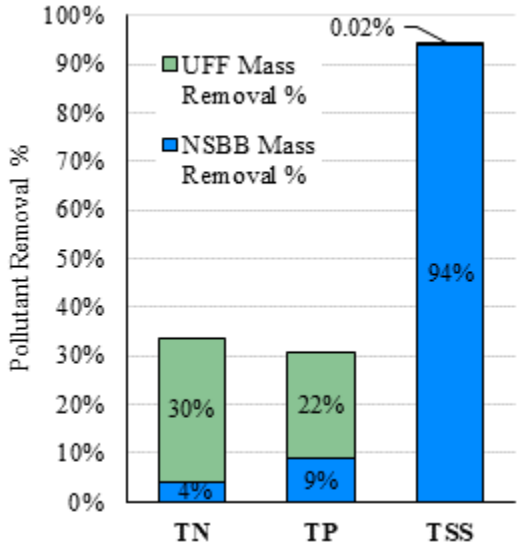


Figure 5-6: Study 1 Overall Pollutant Removal %

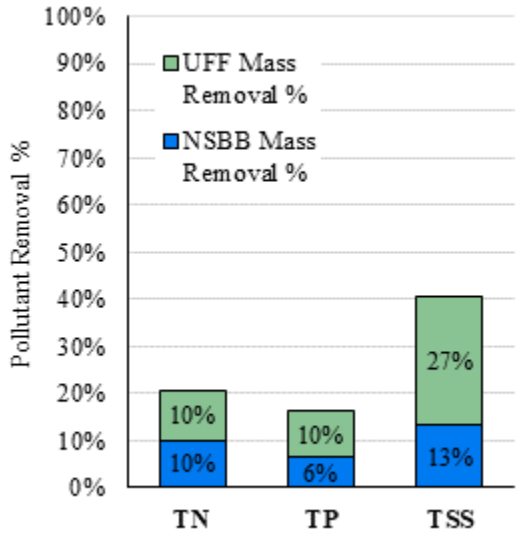


Figure 5-7: Study 2 Overall Pollutant Removal %

5.5 Maintenance Evaluation

Over time, the accumulation of sediment and organic matter within the NSBB and off-line UFF will eventually exceed the storage and treatment capacity of the system. As organic material accumulates in the NSBB, it is decomposed by microbes and becomes a source of dissolved nutrients. Therefore, regular maintenance of the Keystone NSBB and off-line UFF is required to ensure the desired functionality of the system. The data collected in this study and the previous study was utilized to inform the development of a maintenance schedule for the NSBB and off-line UFF by evaluating pollutant removal efficiencies before and after cleaning events.

There was no apparent change in pollutant removal efficiency when the NSBB had been recently cleaned versus when it had not (**Figure 5-8**). It is expected that the pollutant removal efficiency would eventually begin to decline at some point if cleaning is neglected. However, the data collected in these studies do not indicate any significant relationship between pollutant removal efficiency and cleaning frequency. It is important to note that there were several NSBB cleanings performed during this study which were only partially successful due to equipment issues and/or high water levels. This resulted in several "partial cleanings" in which some, but not all of the accumulated debris and sediment was removed from the NSBB and off-line UFF. These complications make it difficult to accurately assess the impact of cleaning on pollutant removal efficiency and may explain why no relationship between these variables was observed in the data.

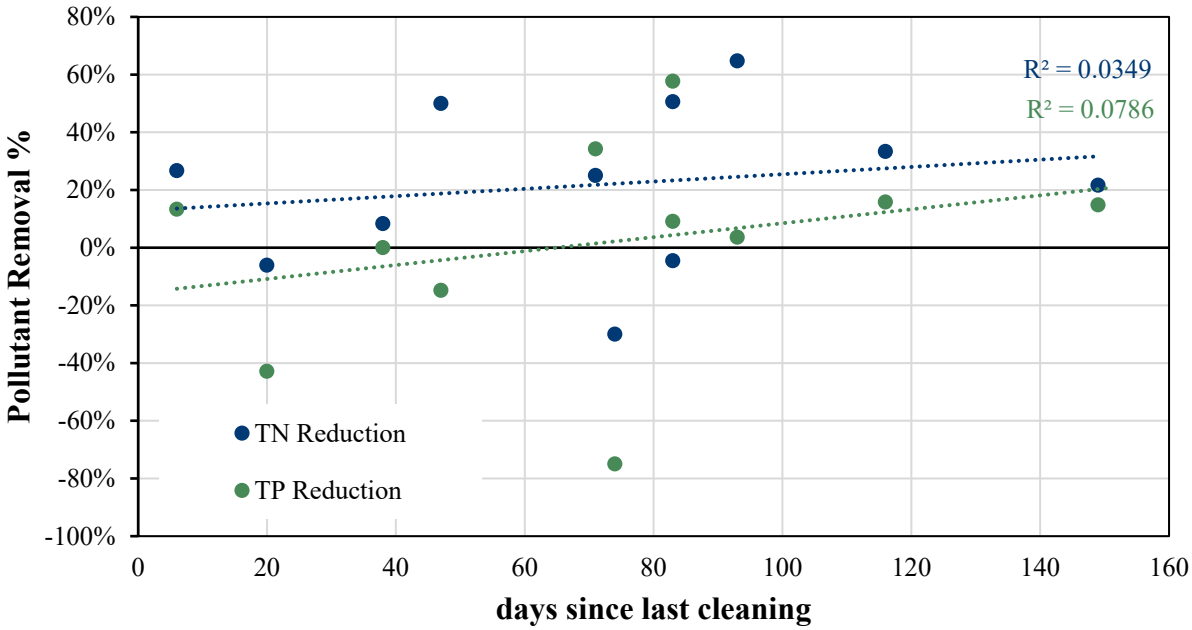


Figure 5-8: Impact of Cleaning on Pollutant Removal

Oldcastle Infrastructure provides Operation and Maintenance Manuals for these structures which are included in **Appendix G**. In these manuals, Oldcastle Infrastructure recommends that sediment accumulation inspections be conducted at a minimum of every six months for the NSBB. Cleanings are recommended every twelve months or when the NSBB baffle chambers reach 80% capacity. Given an estimated 14,404 lb per year of TSS removal (dry weight, See **Section 5.6**) and a sediment moisture content of about 25% (sampling data), the total wet weight of sediments removed in the NSBB baffle chambers annually is about 18,005 lbs. Then, given a sediment wet bulk density of about 100 lb per cubic foot (sampling data) and a total NSBB baffle chamber capacity of 378 cubic feet, the total sediment capacity of the NSBB is 37,800 lbs. If only filling to 80% capacity, the functional capacity of the NSBB is 30,240 lbs – which is equivalent to about 1.68 years of loading. For the offline-UFF, Oldcastle Infrastructure recommends quarterly inspections to assess sediment accumulation within the structure, and cleanings should be performed as needed to remove accumulated sediment. It is also noted that the County's existing MS4 permit requires a quarterly inspection for pollution control boxes. Therefore Geosyntec recommends quarterly inspections for both structures so that NSBB inspections coincide with

recommended off-line UFF inspection interval, and so that the County stays in compliance with their MS4 permit. NSBB cleanings should occur at minimum every 12 months or when the NSBB baffle chambers reach 80%. Cleanings for the off-line UFF should occur as needed to remove accumulated debris based on the quarterly inspections. It is noted that Geosyntec field staff observed significant organic sediment accumulation in the off-line UFF during monitoring equipment demobilization. This may have negatively impacted the nutrient removal efficiency over the study 2 period. Based on this observation, it is not clear if the County's cleaning contractor is sufficiently inspecting and cleaning the off-line UFF. The County is advised to confirm that their cleaning contractor is performing the required cleaning for the off-line UFF.

Over the study period, cleaning events were conducted approximately quarterly to support the monitoring program, but this is not necessarily required. Moving forward, a longer cleaning frequency may be acceptable. The frequency of inspections and cleanings for the NSBB and off-line UFF should be calibrated over time as the County becomes more familiar with the loading characteristics of the watershed. In addition to regular cleaning, replacement of the filter media in the off-line UFF may be required to restore the pollutant removal efficiency of the system as the media ages. Since the removal mechanism for nitrogen is biologically driven while the removal mechanism for phosphorus is largely through adsorption, phosphorus loading will determine the useful life of the filter media. The form of phosphorus that is targeted for removal by the off-line UFF is OP. The filtration media has a sorption capacity of 0.2 mg OP/g. Using the average OP concentration flowing into the off-line UFF (0.106 mg/L), the calculated life expectancy for removal is about 6.64 years. Once the media has exceeded this life expectancy, OP removal is expected to significantly decrease; however, N removal is expected to continue indefinitely since this removal process is microbially driven.

5.6 Benefit to Downstream Waterbodies

Lake Pineloch was on the 2014 Verified List of Impaired Waters maintained by FDEP but has since been delisted and is no longer queued for total maximum daily load (TMDL) development. However, Lake Pineloch is still located within the Lake Okeechobee Basin Management Action Plan (BMAP) area. The piped outfall discharging runoff from Keystone Drive was previously identified as a significant contributor of nutrient loads to the lake. This outfall has a contributing area of 109.3 acres, draining a highly urbanized area along Michigan Street. To address the prior impairment and reduce overall nutrient loads to the Lake Okeechobee BMAP, Orange County proactively constructed the Keystone Drive BMP discussed in this report.

A previous study by Geosyntec (2017) estimated that implementation of the Keystone BMP would reduce loads to Lake Pineloch from the Keystone Drive stormwater pipe outfall by 530 lb/year for TN (50% reduction), 80 lb/year for TP (49% reduction), and 14,404 lb/year for TSS (50% reduction). Based on the results of the two monitoring studies, the Keystone BMP provided average load reductions of 27% for TN, 24% for TP, and 67% for TSS. This amounts to an estimated load removal of 284 lb/yr for TN, 39 lb/yr for TP, and 19,324 lb/yr for TSS. Given a total construction cost of $823,279.50, an estimated 20-year maintenance cost of $1,238,092.64 (net present value), and an estimated 20-year media replacement cost of $135,511.61 (net present value), the nutrient removal cost benefit for the Keystone BMP over a 20-year period amounts to $387 per lb of TN removed, $2,817 per lb of TP removed, and $6 per lb of TSS removed. These results indicate that the installed BMPs are a cost-effective method for reducing nutrient loads to Lake Pineloch.

6 SUMMARY AND CONCLUSIONS

Geosyntec performed a detailed monitoring program of the County's newly installed NSBB and off-line UFF located on Keystone Drive. This BMP treatment train provides treatment of stormwater prior to discharging to Lake Pineloch. The monitoring included collection of rainfall volumes and stormwater flow data for strategic points of interest within the NSBB and off-line UFF. Geosyntec also performed 8 composite sampling events, and 5 NSBB maintenance sampling events during the first study, and 7 composite sampling events and 4 NSBB maintenance sampling events during the second study. The primary water quality parameters evaluated were TN, TP, and TSS, but other water quality parameters are also reported herein. A detailed assessment of the pollutant removal performance was provided based on the collected data. Any conclusions, observations, and/or recommendations made as part of this assessment are specific to the Lake Pineloch NSBB/UFF and should not be applied to other NSBBs without careful consideration on a case-by-case basis.

Land use can have a significant impact on nutrient removal efficiency for stormwater BMPs. The BMP assessed in the present study is located in a commercial area with less tree canopy than would typically be found in a residential area. Accordingly, nutrient loads are expected to be reduced (though still significant) compared to a residential area. These land use driven differences may have a direct impact on the removals achieved by the Keystone Drive BMP. The findings in this study may be applicable to NSBBs within urban areas with similar land uses.

Based on the results of the monitoring effort described above, the following conclusions were made.

- The NSBB and off-line UFF appears to be properly sized, only entering bypass conditions following heavy or prolonged rainfall events. Approximately 58% of the total stormwater inflow bypassed the off-line UFF based on the recorded flow data over the two studies.
- The average theoretical stormwater inflow pollutant concentrations were estimated as 1.96 mg/L TN, 0.25 mg/L TP, and 123 mg/L TSS over both study periods. The nutrient concentrations are relatively low for stormwater, which most likely results from the watershed characteristics. The Keystone drainage basin is highly urbanized urban, thus stormwater runoff contains comparatively more trash/debris and less nutrient rich organic material.
- Over both study periods, the NSBB provided approximately 7% removal of TN, 7.5% removal of TP, and 53.5% removal of TSS (mainly through settling of particulates and gross solids). The off-line UFF provided an additional 20% removal of TN, 16% removal of TP, and 13.5% removal of TSS, mainly through filtration of fine particles and removal of dissolved nutrients.
- The off-line UFF appears to be appropriately sized since the manufacturer recommended a maximum treatment flow rate of 220 GPM was only exceeded during large storms. The off-line UFF provided approximately 47% TDN, 18% TDP, 46% TN, and 24% TP removal during the first study and approximately 29% TN and 19% TP removal during the second study.

- Based on the estimated theoretical inflow TN/TP concentrations and the average discharge pipe TN/TP concentrations from composite sampling, the overall removal efficiencies were estimated as 34% TN, 31% TP, and 94% TSS for the first study, and 20% TN, 16% TP, and 40% TSS for the second study. Note that these removals include all of the volume that bypassed the off-line UFF. When not in bypass the removals are higher.
- Geosyntec recommends that the County inspect the Baffle Box and Upflow Filter quarterly. Baffle Box cleanings are recommended when the NSBB baffle chambers reach 80% capacity, but no less frequently than every 12 months. Cleaning of the Upflow Filter should be performed as needed to remove accumulated sediment.
- Based on the results of these studies, Geosyntec recommends the County replace the off-line UFF Bold & Gold media about every 6.64 years to restore OP removal performance.
- The Keystone Drive BMP addresses the prior Lake Pineloch impairment by reducing overall nutrient and TSS loads to the Lake Okeechobee BMAP by an estimated 284 lb/yr for TN, 39 lb/yr for TP, and 19,324 lb/yr for TSS.
- The Keystone Drive BMP achieved actual load reductions of 34% for TN, 31% for TP, and 94% for TSS for the first study, and 20% TN, 16% TP, and 40% TSS for the second study (compared to initial removal estimates of 50% for TN, 49% for TP, and 50% for TSS). The lower removal rates for the second study are likely due to the larger flow quantities measured through the Keystone BMP. Incomplete or partial NSBB cleanings and accumulated organic matter in the off-line UFF could also be contributing to the lower removal rates for the second study. There were two partial cleanings during the second study (9/3/2024 and 12/12/2024). Note that a complete cleaning occurs when enough water is pumped out of the system so that all of the accumulated sediment and debris can be removed. On 9/3/2024, it was not possible to pump water out of the NSBB because the water level was overtopping the sungate. On 12/12/2024, the cleaning contractor struggled to seal the sungates, so not all of the water was pumped out. Since then, some upgrades have been made to the sungates to improve the seal. Complete cleanings of the NSBB and off-line UFF moving forward should improve these removals.
- The nutrient removal cost benefit for the Keystone BMP over a 20-year period amounts to an estimated $387 per lb of TN removed, $2,187 per lb of TP removed, and $6 per lb of TSS removed, which are favorable removals.

7 REFERENCES

Geosyntec Consultants, Inc., (2018). Drainage Report for Keystone Drive Baffle Box Design. Orange County.

Geosyntec Consultants, Inc., (2017). Keystone Drive BMP Assessment, Lake Pineloch BMP Implementation Feasibility Study. Orange County.

Harper & Baker (2007). Evaluation of Current Stormwater Design Criteria Within the State of Florida, Final Report

APPENDIX A

Quality Assurance Project Plan

Quality Assurance Plan

or

Sampling and Analysis Plan

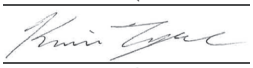
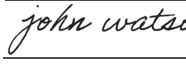
for

Keystone Drive NSBB-UFF Performance Metrics Monitoring (MO)

This Quality Assurance Plan (QAP) was prepared in general accordance with the FDEP/EPA requirements specified in *DEP-QA-002/02, "Requirements for Field and Analytical Work Performed for The Department of Environmental Protection Under Contract", Revision April 15, 2002,* and the minimum criteria for Quality Assurance Project Plans specified in *"EPA Requirements for Quality Assurance Project Plans" (EPA QA/R5), EPA/240/B-01/003, March 2001.* This project is being performed for Orange County Environmental Protection Division. This FDEP template was utilized for convenience as an outline for the QAP.

For the remainder of this QAP, text from the FDEP template is provided in 'black' and responses/information provided by Geosyntec are in 'green'.

Approving Signatures and Dates

Orange County, Water Sciences – **Mitchell Katz**	Approved:		Date:	11/02/2022
Project Manager – **Kevin Tyre**	Approved:		Date:	10/31/2022
Project Principal – **Mike Hardin**	Approved:		Date:	11/2/2022
Project Analytics and Testing – **Sherri Payne**	Approved:		Date:	10/28/22
Quality Assurance Manager – **Kevin Tyre**	Approved:		Date:	10/31/2022
Analytics Lab – **Sherri Payne**	Approved:		Date:	10/28/22
Analytics Lab Quality Assurance – **Sherri Payne**	Approved:		Date:	10/28/22
BFA Sampling Support – **John Watson**	Approved:		Date:	10/28/2022

A. PROJECT MANAGEMENT AND DESIGN

A.1. *PROJECT TITLE: Keystone Drive NSBB-UFF Performance Metrics Monitoring

A.2. *ORANGE COUNTY PO NUMBER: C20906B002

A.3. *REVISION DATE FOR THIS SUBMITTAL: N/A

☒ORIGINAL SUBMITTAL ☐REVISION

A.4. ORGANIZATIONS PERFORMING WORK FOR THIS PROJECT

All field and laboratory organizations performing work for this project are listed below.

***A.4.a. Contractor Organization Name:** Geosyntec Consultants, Inc. (Geosyntec)

A.4.b. Subcontractor(s) Organization Name: Southern Research Laboratories, Inc. (SRL)

A.4.b. Subcontractor(s) Organization Name: Barnes, Ferland and Associates (BFA)

A.5. PROJECT CONTACTS

List all contractors and subcontractors separately. Copy and paste to add lines for each entry.

***A.5.a. Contractor Project Manager or Principal:** Kevin Tyre

***A.5.b. Contractor QA Officer:** Julia Klens Caprio, MBA, ASQ-CMQ/OE

A.5.c. Secondary Contractor Manager or Principal: Mike Hardin, PhD, PE, CFM

A.5.d. Secondary Contractor QA Officer: N/A

***A.5.e. Laboratory Manager or Principal:** Sherri Payne

***A.5.f. Laboratory QA Officer:** Sherri Payne

A.5.g. Split Lab Manager: N/A

A.5.h. Split Lab QA officer: N/A

***A.5.i. DEP Contract Manager:** N/A

A.5.j. Other: N/A

A.5.k. Other: N/A

A.5.l. Signatures (digital signatures acceptable)

Provide printed names, signatures and dates for the persons listed in section A.5.
A separate page for signatures may be inserted. See Cover Sheet.

A.6. ORGANIZATION OF PROJECT ACTIVITIES

***A.6.a. The following activities will be performed by the Contractor**: Geosyntec Consultants, 3504 Lake Lynda Dr. Suite 155, Orlando, FL 32817: installation of water quality monitoring equipment, flow monitoring, and data evaluation.

A.6.b. The following activities will be performed by the Subcontractor(s):
Southern Research Laboratories, 2251 Lynx Lane, Suite 1, Orlando, Florida 32804: analytical laboratory services and reporting.

Barnes, Ferland and Associates, 1230 Hillcrest Street Suite 100
Orlando, FL 32803: field support and sampling to assist Geosyntec.

A.7. KEY PERSONNEL

The key personnel (managers or technical staff) within the Contractor (and Subcontractor) organization(s) listed in section A.5 who are responsible for specific project tasks are listed below and will ensure that any corrective actions that may be required as the result of audits or data reviews and validations are implemented for project work. ***Contact information (email address and/or phone number)*** *for the listed key personnel is also listed in the event that the DEP grant manager or DEP QA reviewer needs to obtain additional information about the project.*

***A.7.a. Personnel responsible for preparing and supplying equipment and sample containers:**
Sherri Payne, sherri.payne@srlab.com, 407-522-7100

***A.7.b. Personnel responsible for field equipment and field meter calibrations:**
Kevin Tyre, kevin.tyre@geosyntec.com, 321-747-1917
Mike Hardin, MHardin@geosyntec.com, 321-244-1464
Dan Wen, DWen@geosyntec.com, 321-244-1468
Kenneth Hamilton, Kenneth.Hamilton@geosyntec.com, 321-273-5570
Patrick Barnes, Jr., pbarnes2@bfaenvironmental.com, 407-227-8799

***A.7.c. Personnel responsible for sample collection:**
Kevin Tyre, kevin.tyre@geosyntec.com, 321-747-1917
Mike Hardin, MHardin@geosyntec.com, 321-244-1464
Kenneth Hamilton, Kenneth.Hamilton@geosyntec.com, 321-273-5570
Dan Wen, DWen@geosyntec.com, 321-244-1468
Patrick Barnes, Jr., pbarnes2@bfaenvironmental.com, 407-227-8799

***A.7.d. Personnel responsible for laboratory sample analyses:**
Sherri Payne, sherri.payne@srlab.com, 407-522-7100

***A.7.e. Personnel responsible for evaluating data and performing calculations (field and lab data):**
Kevin Tyre, kevin.tyre@geosyntec.com, 321-747-1917
Mike Hardin, MHardin@geosyntec.com, 321-244-1464
Kenneth Hamilton, Kenneth.Hamilton@geosyntec.com, 321-273-5570
Dan Wen, DWen@geosyntec.com, 321-244-1470

***A.7.f. Personnel responsible for performing, verifying and approving any audits, data validations and usability assessments:**
Kevin Tyre, kevin.tyre@geosyntec.com, 321-747-1917
Mike Hardin, MHardin@geosyntec.com, 321-244-1464
Julia Klens Caprio, JKlensCaprio@Geosyntec.com, 865-291-4696
Kenneth Hamilton, Kenneth.Hamilton@geosyntec.com, 321-273-5570
Dan Wen, DWen@geosyntec.com, 321-244-1470
Sherri Payne, sherri.payne@srlab.com, 407-522-7100

***A.7.g. Personnel responsible for preparing and submitting reports for this project:**
Kevin Tyre, kevin.tyre@geosyntec.com, 321-747-1917
Mike Hardin, MHardin@geosyntec.com, 321-244-1464

A.7.h. Personnel responsible for other tasks, as indicated below: N/A

A.8. PROJECT DESCRIPTION AND MONITORING DESIGN

***A.8.a. Description of the BMP(s), as constructed:**
The purpose of this monitoring project is to evaluate the total nitrogen (TN) and total phosphorus (TP) removal efficiencies of a nutrient separating baffle box (NSBB) and upflow filter BMP under field conditions. This will be accomplished by collecting hydrologic and water quality data from the Keystone Drive BMP. The BMP is located within the 2700 block of Keystone Drive in unincorporated Orange County within Section 1 of Township 23 South, Range 29 East. The project site is located within the jurisdiction of the St. Johns River Water Management District (SJRWMD), within County Commission District 3, within the Boggy Creek Watershed, within the County's Three Points Maintenance District, and within the Lake Okeechobee BMAP area. The BMP (consisting of a baffle box and upflow filter) is the focus of this project, specifically to evaluate their effectiveness at reducing nutrient concentrations and mass discharging from the Orange County Municipal Separate Storm Sewer System (MS4) to Lake Pineloch, which is classified as being potentially impaired by FDEP and part of the Upper Kissimmee Planning Unit. A NSBB is a stormwater BMP device intended to reduce nutrient pollutants via numerous pathways within a small but concentrated "treatment train". The Keystone Drive BMP reduces nutrients via numerous pathways using a "treatment train" approach. NSBBs remove particulate forms of nutrients (total nitrogen [TN] and total phosphorus [TP]) by capturing leaf litter and other large particulates in large internal straining baskets. Additional particulates are removed in the baffled sumps that result in the smaller particles settling on the sump floor. Finally, very small sediments and dissolved nutrients can be removed via the upflow filter, which is composed of Bold and Gold biosorption activated media (BAM). Based on the physical and biochemical removal mechanisms involved, this sampling plan needs to be performed in a manner so as to assess potential water quality improvements associated with both the particulate and dissolved pollutant removals due to the BMP.

The work pertaining to this QAP is the analysis phase of the project, including the collection of hydrologic data (i.e., flow data to validate annual runoff volumes and flow discharge rates into Lake Pineloch), water quality samples, and sediment samples to analyze nutrient reduction rates.

***A.8.b. Summary of the BMP effectiveness monitoring design:**
As previously mentioned in Section A.8.a, the objective of this evaluation is to collect hydrologic and water quality data for the Keystone Drive BMP. Geosyntec staff will install two (2) ISCO area velocity sensors (350 and 750), one (750) within the effluent pipe of the NSBB and one (350) installed within the influent pipe of the upflow filter chamber, one (1) sample tube in the NSBB

strainer basked immediately in front of the NSBB influent, one (1) sample tube in the NSBB effluent, one (1) sample tube in the upflow filter influent, and one (1) sample tube in the upflow filter effluent. One (1) ISCO rain gauge will be installed to monitor site specific rainfall depths. The equipment described above will be connected to four (4) ISCO autosamplers equipped with telemetry housed within the Keystone Drive right-of-way. The autosamplers will be powered by solar panels and batteries.

The NSBB will be monitored for a period of approximately nine (9) to twelve (12) months, with the goal of capturing up to eight (8) sampling events in all, associated with stormwater flow. Sample collection with autosamplers will consist of flow-weighted composite autosampling. Composite sampling combines aliquots throughout the storm into one larger sampling vessel. These methods are described in greater detail in Section A.8.i.

Since autosamplers are ill-equipped for sampling sediments and large organic matter, sampling of the collected organic matter and sediment is proposed as part of this work. Sediment sampling will occur on an approximate monthly basis for up to eight (8) events and coordinated during the County's NSBB maintenance events. The vegetation and organic matter (gross solids) will be collected by the County's subcontractor tasked with performing the baffle box maintenance. The collected organic matter and sediments are to be purged of excess water (liquid purge water) and dumped on new visqueen along the right-of-way of Keystone Drive. Six (6) gross solid samples will be collected from different parts of the debris pile to ensure that the composited sample is representative of the material collected. The resulting six (6) gross solids samples will be combined into a single composite sample using an intermediate, decontaminated mixing container and mixing apparatus. This procedure will be followed for each event. The County's maintenance subcontractor will provide the weight of the collected material that is disposed in the form of a weight tare ticket, or similar means.

NSBB liquid purge water will be collected from maintenance vehicles to determine the concentration and mass of nutrients contained within the water collected during the cleaning of the NSBB. Three (3) samples will be collected for each of the eight (8) maintenance events. During the NSBB maintenance events, standing water in the baffle box will be vacuumed into the vac truck and high-pressure water from the truck will be utilized to clean the internal components of the NSBB. During this process, collected sediment, organic matter, and water will be mixed within the vac truck. Additional water will then be pumped out (purged) of the vac truck. Due to the expected nutrient content variability of the liquid purge water, two (2) samples will be collected for each event to better capture the characteristics of the liquid purge water. One sample will be collected during the first half of liquid purging and the second sample will be collected during the second half of liquid purging. The third sample will be of the spray water to assess for potential loading from the spray water. Prior to performing maintenance activities, the inside of the maintenance vehicle should be cleaned (e.g., sprayed with high-pressure water) in an attempt to limit any contamination of the NSBB liquid purge water samples.

***A.8.c. The following lists the locations of all sampling points or stations that will be sampled for the project:**

The sampling locations for this monitoring project will be located within the NSBB and upflow filter and the right-of-way along Keystone Drive. Approximate coordinates of each site are provided below.

The area shall be restored to prior condition after a sampling event is completed (e.g., remove all debris, clean up trash, etc.).

Sample Location Table		
Sample Location	**Latitude**	**Longitude**
NSBB	28.512218°	-81.366027°
Upflow Filter	28.512237°	-81.366027°

***A.8.d. The following map indicates the sampling locations (a separate page may be inserted). Be sure to include minimum map details such as labeled points, which can include lat/longs (e.g., sampling locations, inflow/outflow locations), constructed features, overall location (including county), north arrow, and labeled roads and waterways:**

See **Figure 1** in **Attachment A** at the end of this QAP.

***A.8.e. The following description or rationale indicates how the selection of the sampling points will achieve the project objective(s):** The sampling points selected for this monitoring project were chosen to assess the effectiveness of the NSBB and off-line upflow filter by analyzing the primary nutrient removal pathways (i.e., large internal straining baskets, baffled sumps, and BAM). To accomplish this, the following sampling locations were selected.

One (1) sampling tube will be installed directly in the path of flow on the strainer basket, immediately in front of the NSBB influent pipe.

One (1) sampling tube will be installed in the NSBB effluent pipe

One (1) sampling tube will be installed in the upflow filter influent pipe.

One (1) sampling tube will be installed in the upflow filter effluent pipe.

One (1) ISCO rain gauge will be installed to monitor site specific rainfall depths.

Sampling of the collected organic matter and sediments will be done at the right-of-way along Keystone Drive. This sampling represents the loading and removal of nutrients associated with the particulate fraction, since the autosamplers cannot adequately sample this component.

The final sampling location will be of the purge water discharged during the maintenance event. This water represents the stagnant water in the baffle box at the time of cleaning as well as any cleaning water used during the maintenance event. This water will be discharged onsite and will also be sampled at the northeast corner of the right-of-way along Keystone Drive.

***A.8.f. Monitoring design components that differ from the grant work plan are as follows:**
N/A

A.8.g. The following historical data (e.g., the average historical influent or other historical concentrations) are relevant to the monitoring analytes for this project:
Measured concentrations of TN in Lake Pineloch range from 4 to 2,405 µg/L (parts-per-billion), with a mean value approximately of 800 µg/L (Figures 1 and 2).

Measured concentrations of TP in Lake Pineloch range from approximately 5 to 880 µg/L, with

a mean value approximately of 28 µg/L (Figures 3 and 4).

The subbasin served by the BMP is 108.51 acres and accounts for approximately 22% of the contributing area to Lake Pineloch from Keystone Drive. The subbasin consists primarily of Michigan St. and adjacent commercial and residential properties. The subbasin generates an average annual runoff volume of 64.79 ac-ft/yr. Water quality samples were collected by ERD for subbasin 4 that showed runoff concentrations of 0.993 mg/L and 0.227 mg/L for TN and TP, respectively. Based on volumetric calculations and measured nutrient concentrations, the mass loading of TN and TP from subbasin 4 Lake Pineloch from Keystone Drive was 174.8 lb/yr and 40 lb/yr, respectively.

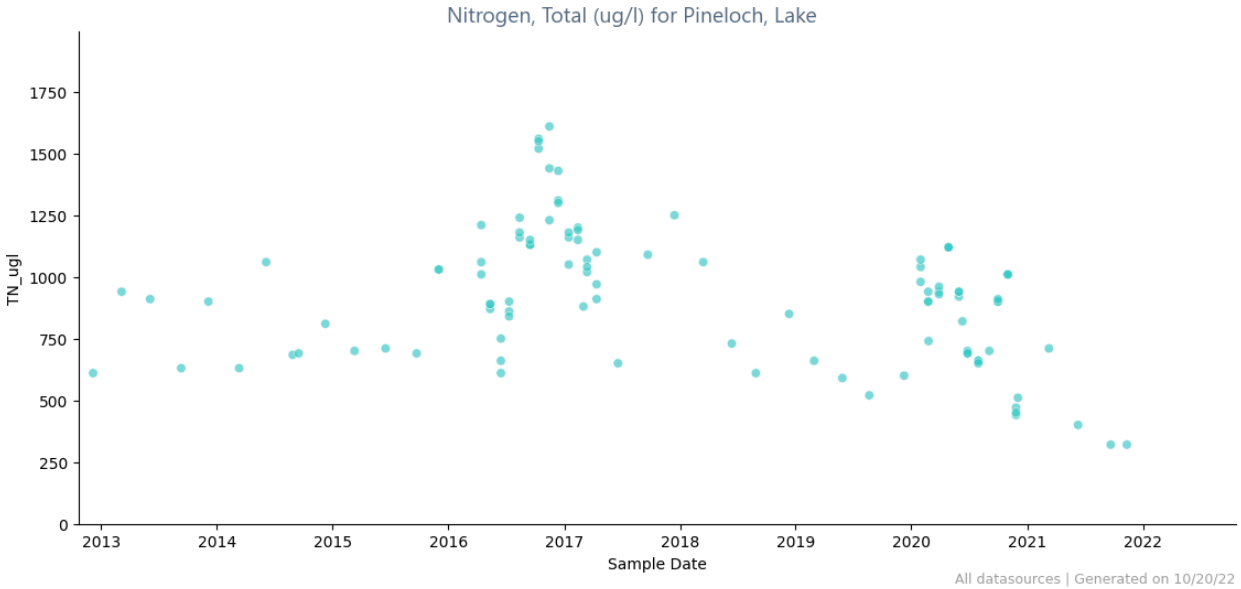


Figure 1. Total Nitrogen (TN) in Lake Pineloch from 2012 to 2021.

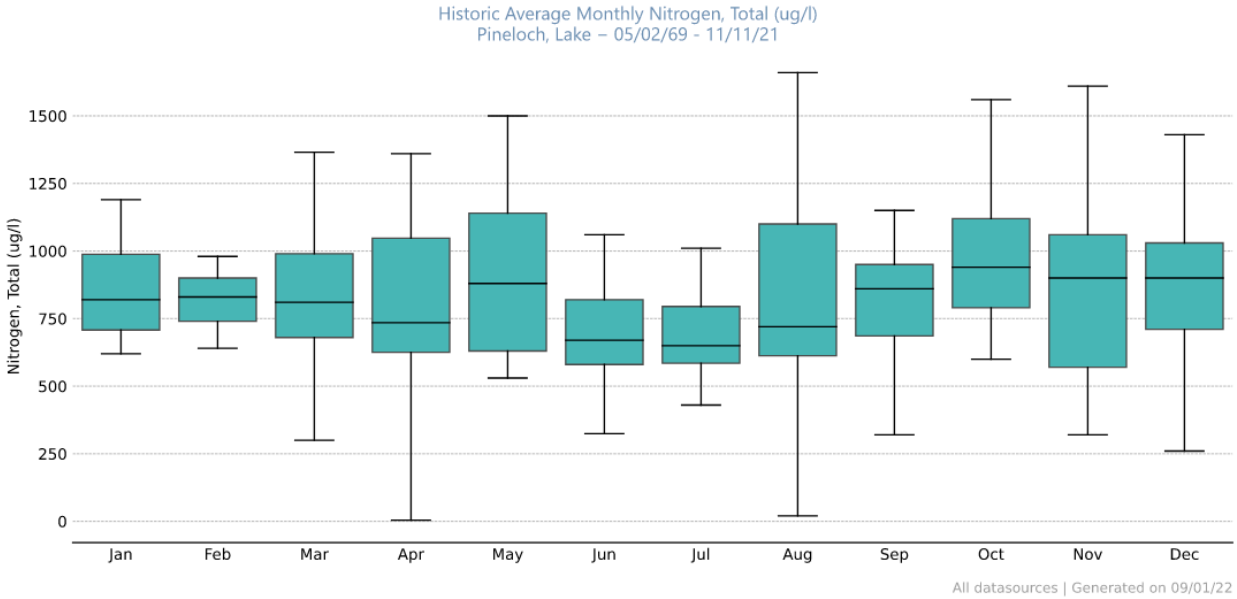


Figure 2. Historic average monthly Total Nitrogen (TN) in Lake Pineloch from 1969 to 2021.

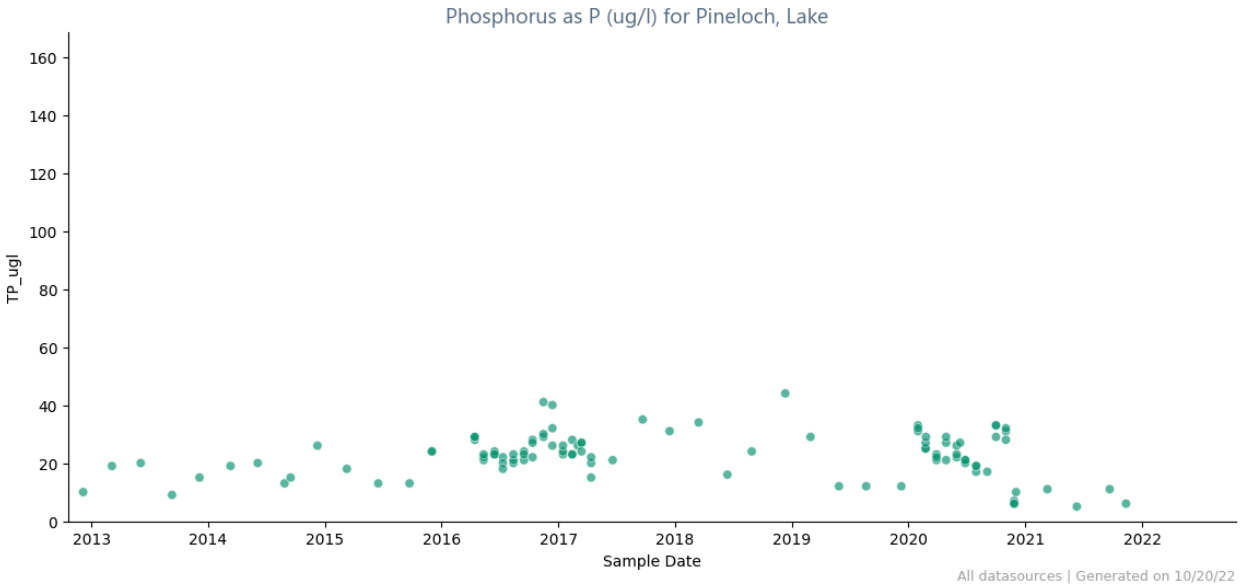


Figure 3. Total Phosphorus (TP) in Lake Pineloch from 2012 to 2021.

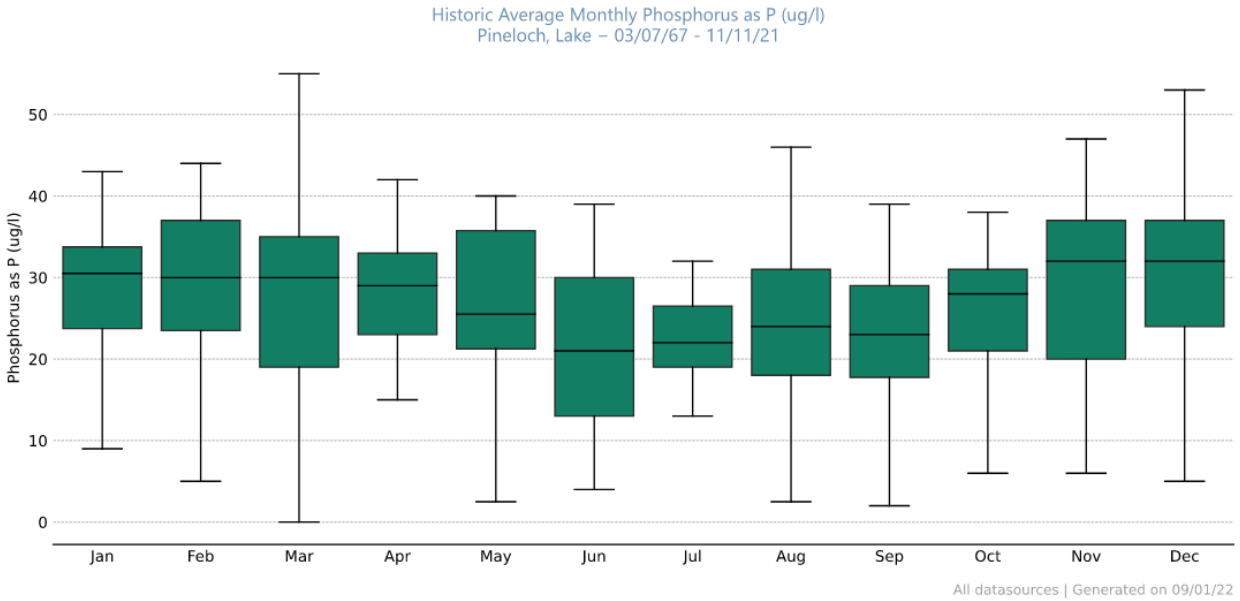


Figure 4. Historic average monthly Total Phosphorus (TP) in Lake Pineloch from 1967 to 2021.

A.8.g.1. Indicate the source and purpose of the historical data:

The source of the data was
1. Lake Pineloch Hydrologic / Nutrient Budget and Water Quality Management Plan performed by Environmental Research & Design, Inc. February 2008.
2. Orange County Water Atlas: https://orange.wateratlas.usf.edu/

The purpose of the historical data was to evaluate nutrient loadings to the lake.

A.8.h. The following have relevance to the monitoring objectives of the project (e.g., BMAPs, TMDLs, nutrient criteria):

A.8.h.1. Regulatory water quality standards: Lake Pineloch is located within the jurisdiction of the St. Johns River Water Management District (SJRWMD), within County Commission District 3, within the Boggy Creek Watershed, and within the County's Three Points Maintenance District. Based on the trophic state index (TSI), Lake Pineloch was previously listed as impaired and placed on the Verified List for this parameter with the nutrient pollutants listed as the causative source. The Florida Department of Environmental Protection delisted the lake as of August 2018 and is requesting the United States Environmental Protection Agency to remove the TSI parameter from the 303(d) List per Rule 62-303.720(2)(L), F.A.C., because it is no longer assessed to determine impairment.

A.8.h.2. Loading concentrations:
Per the 2008 Lake Pineloch Hydrologic / Nutrient Budget and Water Quality Management Plan, approximately 308.4 lb/yr of TN, 24.5 lb/yr of TP, and 69,291 lb/yr of Total Suspended Solids are discharged directly to Lake Pineloch via the stormwater system which ultimately outfalls to the lake from Keystone Drive.

***A.8.i. The specific sample compositing scheme for this project is as follows:** Composite autosampling will be performed for eight (8) sampling events. The autosamplers will be programmed to collect sufficient aliquots over the course of a qualifying rain event. Individual aliquots will be combined in an intermediate composite container to obtain a representative sample matrix from the storm event hydrograph. The intermediate container will be hand-agitated to ensure proper mixing and individual samples will be collected per appropriate FDEP SOPs.

The purge water sampling will consist of three (3) grab samples. Two (2) samples of the purge water and one (1) sample from the spray water. These samples will be analyzed separately to evaluate if the water quality characteristics of the purge water change throughout the purge event.

The sediment and organic matter pile will be divided into four (4) approximate equal quadrants with approximate equal volume samples collected from the middle of each quadrant (with respect to depth as well as area). Additionally, a sample will be collected from the top center of the pile and a final sample will be collected from the bottom center of the pile. These samples will be composited together in a decontaminated secondary container and submitted to the laboratory as a single sample for analysis.

***A.8.j. The number of sampling events planned is:**
Composite autosampling will be performed for up to eight (8) sampling events.

Sediment sampling will occur on an approximate monthly basis for up to eight (8) events and coordinated during County NSBB maintenance events.

Three (3) NSBB liquid purge water samples will be collected for up to eight (8) events and coordinated during County NSBB maintenance events.

Flow monitoring will occur throughout the eight (8) month period.

***A.8.k. The specific "triggering" basis for each sampling event (e.g., rainfall or flow) is:**
The autosamplers will be triggered based on reported qualifying rainfall volume from a rain gauge. A qualifying rainfall event is defined as having an approximate total rainfall amount between 0.2 and 1.5 inches. A rainfall event with approximate total rainfall either less than 0.2 inches or greater than approximately 1.5 inches that triggers the autosampler may be declared a false alarm. It is noted that, due to the time and budget constraints of this project, a determination in the field will be made as to the acceptability of qualifying rainfall events (i.e., rain events that are slightly over 1.5 inches may be determined a qualifying event). It is assumed that several false alarms may occur where the samplers are triggered, but the rainfall event does not meet the threshold criteria. Proper decontamination procedures will be followed after each triggering event, qualifying or false alarm.

***A.8.l. The expected length of the project is:** Installation of the autosamplers is expected to take one (1) week, being active by October 2022. Monitoring is expected to last up to 12 months, October 2022 – October 2023**.**

A.9. FIELD MEASUREMENTS AND LABORATORY ANALYTES

The following lists the analytes or parameters to be collected for lab analysis and/or measured in the field at each sampling location. Field measurements include water quality measurements such as pH, specific conductance, dissolved oxygen and turbidity, and physical measurements such as rainfall, flow and water level.

Field measurements include pH, specific conductance, turbidity, and dissolved oxygen. Additionally, rainfall, weather conditions, and flow (measured within the NSBB and UFF) will be documented.

A.9.a. The field-testing measurements to be measured at each sampling location are (list measurements at specific locations respectively, if applicable): N/A

***A.9.b. Composite samples will be collected for laboratory analysis for the following analytes at the indicated sampling locations (list composite analytes at specific locations respectively, if applicable):**
The following analytes will be tested for composite autosampling events as well as NSBB liquid purge water sampling events. The sampling schedule and associated laboratory analysis methods is included as Attachment B.

Alkalinity
Total Nitrogen (TN)
Total Phosphorous (TP)
Orthophosphate (OP)
Ammonia (NH3)
Nitrate + Nitrite (NOx)
Particulate Nitrogen
Particulate phosphorous
Total Organic Carbon (TOC)
Total Solids (TS)
Total Suspended Solids (TSS)

Sample Matrix	Analyte	Method	MDL	Holding Time	Units
water	Alkalinity	SM 2320B	5	14 days	mg/L
water	Total Nitrogen (TN)	TKN+Nox	0.2	28 days	mg/L
water	Total Phosphorus (TP)	EPA 365.4	0.07	28 days	mg/L
water	Orthophosphate (OP)	365.1	0.0038	48 hours	mg/L
water	Ammonia (NH3)	350.1	0.035	28 days	mg/L
water	Nitrate + Nitrite (NOx)	353.2	0.015	28 days	mg/L
water	Particulate Nitrogen	EPA 351.2	0.2	28 days	mg/L
water	Particulate Phosphorus	EPA 365.4	0.07	28 days	mg/L
water	Total Organic Carbon (TOC)	SM 5310 B	1	28 days	mg/L
water	Total Solids (TS)	SM 2540B	5	7 days	mg/L
water	Total Suspended Solids (TSS)	SM 2540D	1	7 days	mg/L

Per DEP SOP requirements, composite samples will not be collected for orthophosphate, fecal coliform or oil & grease (if applicable to this project).Additionally, per DEP SOP FS2000 General Aqueous Sampling, dissolved metals and VOCs shouldn't be sampled using autosamplers.

***A.9.c. Grab samples will be collected for laboratory analysis for the following analytes at the indicated sampling locations (list grab sample analytes at specific locations respectively, if applicable):**

The sampling schedule and associated laboratory analysis methods are included as Attachment B.

Solids Sediment Sampling from NSBB
Nutrients: Total Nitrogen, Total Phosphorus
Metals (total and dissolved): N/A
Wet Chemistry: N/A
Microbiology: N/A
Other: Bulk Density, Moisture Content

Liquid Purge Water Sampling from NSBB – Three (3) samples will be collected for each maintenance event. Two (2) samples will be of the purge water and the third sample will be of the spray water to account for potential loading associated with the spray water. The same water quality parameters listed in Section A.9.b will be assessed for NSBB Liquid Purge Water sampling.

Sample Matrix	Analyte	Method	MDL	Holding Time	Units
solid	Total Nitrogen (TN)	EPA 351.2	11	28 days	mg/Kg
solid	Total Phosphorus (TP)	EPA 365.4	5.2	28 days	mg/Kg

A.10. MONITORING DELIVERABLES

All monitoring-related deliverables are listed in this section and will be included in the final report. See Data Validation and Usability (part D, below) for additional information that may be included in the final report.

***A.10.a. The information to be included in each deliverable is listed below:**

Lab and field data shall be submitted as an electronic data deliverable (EDD) at the end of the project. EDDs shall also be provided by the laboratory for QA/QC following each sampling event.

B. DATA GENERATION AND ACQUISITION

B.1. SAMPLE COLLECTION AND DOCUMENTATION PROCEDURES

Sample collection, equipment preparation, decontamination, and documentation procedures for this project will conform to the requirements and criteria in the following DEP SOPs (DEP-SOP-001/01, dated January 2017.):

FA 1000, Administrative Procedures
FC 1000, Decontamination Procedures
FD 1000, Documentation Procedures
FQ 1000, Field Quality Control
FS 1000, General Sampling Procedures
FS 2000, General Aqueous Sampling
FS 2100, Surface Water Sampling
FS 4000, Sediment Sampling

B.1.a. The following additional sampling procedures will be used for the analytes listed below: N/A

B.1.b. Copies of the additional sampling procedures are attached to this QA plan. N/A

B.1.c. The web page links for the additional sampling procedures described above are as follows: N/A

B.2. SAMPLE COLLECTION EQUIPMENT AND DEVICES

Sampling equipment types and materials of construction used for this project will conform to requirements in DEP SOP FS 1000, Tables FS 1000-1, FS 1000-2 and FS 1000-3.

Composite autosamplers will be calibrated for volume collection according to the manufacturer's instructions.

B.2.a. The following equipment types to be used for sample collection do not conform to DEP SOP requirements: N/A

***B.2.b. The following equipment will be used to collect grab samples for this project:**

- Unpreserved sample bottle appropriate for the analysis will be utilized to collect grab samples.
- Unpreserved sample bottle appropriate for the analysis will be utilized to collect grab samples from the NSBB liquid purge water.
- An intermediate, decontaminated container will be utilized to combine and homogenize organic matter and sediment samples from the NSBB.
- A decontaminated mixing apparatus to mix and homogenize the NSBB sediment samples.

***B.2.c. The following equipment will be used to collect composite samples for this project:**

- ISCO 6712 portable autosampler, or equivalent, and accessories (intake line, intake nozzle, sequential bottles / intermediate composite sample container, etc.).
- Unpreserved sample bottles appropriate for the analysis.
- A peristaltic pump with decontaminated suction hose will be utilized to collect samples from the autosampler jars into the sample containers.

B.3. SAMPLE COMPOSITING PROCEDURES

The compositing procedures, compositing technique and compositing equipment to be used for this project (if applicable) are described below. Composite samples will be subdivided into respective sample containers for laboratory analyses as appropriate.

***B.3.a. The following compositing procedure will be used to collect the composite sample(s)**:

The compositing procedure will follow Section 1.3 (Composite Samples) of FS2000, General Aqueous Sampling for aqueous samples and Section 4.1 (Procedures for Compositing) of FS4000, Sediment Sampling for sediment samples.

- Aqueous Sampling
  - Flow proportional samples will be collected automatically with an autosampler and a compatible flow measuring device.
  - A constant sample volume per flow (e.g., a 200 mL sample collected for every 500 gallons of flow) will be collected at time intervals proportional to flow. This method provides representative samples of the water passing through the NSBB and UFF. Individual aliquots will be collected throughout the storm's hydrograph to obtain a representative sample of the entire event.
  - Single (bulk) composite samples will be subdivided into multiple sample containers for laboratory analyses.
- Sediment Sampling
  - Sediment samples will be collected from a pile by hand.
  - The debris pile will be divided into 4 quadrants, where an equal volume sample will be collected from the approximate center of the quadrant (both related to the geometric center and related to center of depth).
  - Two additional equal volume samples will be collected from the center of the debris pile, one from the top of the debris pile and the other from the bottom of the debris pile.
  - All six samples will be composited together in a decontaminated secondary container where the final sample will be collected and sent to the laboratory.

***B.3.b. The following procedures will be used to mix and homogenize the composite sample(s) to ensure that representative subsamples are obtained and includes the procedure for distributing the homogeneous composite sample(s) into individual sample containers for laboratory analysis:**

Composite Autosampling

An unpreserved container within the autosampler will be used to obtain bulk samples. The bulk sample within the container will be hand-agitated and then transferred to individual sample containers via a peristaltic pump. The bulk container must be appropriately cleaned and decontaminated prior to collecting samples per FC 1000, Cleaning / Decontamination Procedures. Preservatives will be added to the individual sample containers as appropriate.

Composite Sediment Sampling
The collected vegetation and organic matter (gross solids) will be dumped at the right-of-way along Keystone Drive. Geosyntec will aggregate, mix, and homogenize the material and collect a representative sample. Mixing equipment (e.g., intermediate container, mixing apparatus, etc.) will be decontaminated per FC 1000, Cleaning / Decontamination Procedures. Six (6) gross solids samples will be collected and composited into a single sample during each of the four (4) events as described in section A.8.i and B.3.a.

B.4. SAMPLE CONTAINERS AND SAMPLE COLLECTION VOLUMES

The analyzing lab(s) will ensure correct container selection, if the containers are provided by the lab (otherwise, the Contractor will ensure correct container selection), and the Contractor will request additional numbers of containers from the lab for field-QC blanks (required), and duplicates or split samples (if required by the grant agreement).

Sample containers will be constructed of appropriate material, and sample container types used for the project analytes and will conform to the requirements in DEP SOP Table FS 1000-4 (DEP SOP FS 1000).

B.4.a. The following container type/analyte combinations will used for the project and do not meet the requirements of Table FS 1000-4, or, are not listed in Table FS 1000-4: N/A

B.5. SAMPLE PRESERVATION AND HOLDING TIMES

Sample preservation and holding times for all project samples and analytes will conform to DEP SOP Table FS 1000-4.

B.5.a. The following are sample preservation and holding time requirements for analytes not listed in table FS 1000-4: N/A

Refrigerated autosamplers will be used to preserve the composite samples at ≤6°C until the field crew arrives to the site. For a composite sample to be split into separate aliquots for preservation and/or analysis, the samples will be maintained at ≤6°C until collection, splitting, and preservation is complete. The interior of the refrigerated autosampler should be cleaned on a monthly basis and the temperature should be checked against a certified thermometer or equivalent on an annual basis.

For the purposes of this project, the autosampler being used is not a refrigerated unit. Field crews will mobilize when notified of a sampling event within four (4) hours of sampling notification. Once field crews collect samples, they will be preserved according to DEP SOP FS 1000 and delivered to the analytical laboratory. The active sampling window for this project is from Monday mornings to noon on Fridays. Sampling events that occur after noon on a Friday could not be collected and delivered to the analytical laboratory during normal business hours, without violating analyte hold times. Rainfall events on nights that occur Monday – Thursday will be collected, preserved according to FS 1000, and delivered to the analytical laboratory the following morning.

Potential sampling events that would result in analytes being out of hold time will not be collected to avoid qualified data that may not be representative / accurate. Judgement will be used by field crews to determine if a sampling event can be completed and have samples delivered to the analytical laboratory within analyte hold times.

The Contractor and subcontractor laboratory will qualify any samples not conforming to preservation or holding-time requirements specified in this section (B.5.), and the data qualifier codes from the DEP QA rule Table 1 (62-160.700, F.A.C.) will be used to qualify all applicable sample results for preservation and/or holding time failures.

Analytical results from autosampler composite samples will be qualified with the "Q" data qualifier code if laboratory analysis does not begin within 48 hours of the end of the composite period for orthophosphate, or 8 hours for fecal coliform.

Analytical results from autosampler composite samples collected for orthophosphorus will be qualified with the "Y" data qualifier code due to the inability to filter the orthophosphate samples within 15 minutes of collection of the composite aliquots.

Sample analytical results for other short-hold analytes will be qualified if the compositing and retrieval schedule precludes analysis within the holding times listed in this section (B.5.).

B.6. FIELD-TESTING METHODS

B.6.a. The following DEP SOPs will be used to perform the calibration and verification of meters and to perform field-testing measurements *(DEP SOPs are required if any of the tests below will be performed for this project)***:** Enter NA if no field tests will be performed.

☒*FT 1000, General Field Testing & Measurement*
☒*FT 1100, Field Measurement of pH*
☒*FT 1200, Field Measurement of Specific Conductance*
☒*FT 1400, Field Measurement of Temperature*
☒*FT 1500, Field Measurement of Dissolved Oxygen*
☒*FT 1600, Field Measurement of Turbidity*
☒*FT 1800, Field Measurement of Flow*

B.6.b. The calibration verification acceptance criteria in the DEP SOPs will be met for all applicable sample meter measurements *(DEP SOP criteria are required for any of the tests selected above)***.** FT1800, Field Measurement of Flow & FT1900, Continuous Monitoring with Installed Meters.

B.6.c. The following non-DEP SOP procedures for field-testing instrument calibration and measurements will be used for (check applicable boxes):

☒Rainfall
☐Flow (if DEP SOP FT 1800 is not applicable to test instrument)
☒Water level
☐Additional tests as indicated: List all non-DEP SOP procedures.

B.6.d. The following calibration acceptance criteria for the non-DEP procedures listed above will be met for all measurements: Calibration acceptance criteria in accordance with FT1800, Field Measurement of Flow, will be met for all measurements.

B.6.e. The instrument manufacturer's instructions, and procedures for calibration and measurements will be followed for the indicated non-DEP SOP field tests:
Manufacturer instructions and procedures for calibration and measurements will be followed for field measurement of flow and rainfall.

B.6.f. Copies of the following non-DEP SOP field-testing procedures are attached to this QA plan *(copies of manufacturer instructions are not required)***.** Enter NA if only DEP SOP procedures will be used.

OR

B.6.g. Web page links for the indicated non-DEP SOP field-testing procedures are listed below *(links to manufacturer instructions are not required)***:**
Autosampler: https://www.teledyneisco.com/en-us/Water_/Sampler%20Documents/Manuals/6712%20Portable%20Sampler%20User%20Manual.pdf

Rain Gauge: https://www.teledyneisco.com/en-us/Water_/Flow%20Meter%20Documents/Manuals/674%20Rain%20Gauge%20User%20Manual.pdf

350 Area Velocity Sensor: https://www.teledyneisco.com/water-and-wastewater/manuals

B.7. FIELD-TESTING EQUIPMENT

The following field-testing meters and equipment will be employed on the project to perform the procedures listed in section B.6., above, using the minimum reporting increments for each meter or equipment type as indicated (0.1 pH units, 1 µS/cm, 0.1 mg/L, etc.):
Autosampler: (4) ISCO 6712 Full-Size Portable Sampler or equivalent.
Rain Gauge: (1) ISCO Rain Gauge or equivalent.
Area Velocity Sensor: (2) ISCO 350 and 750 Area Velocity Sensor
Telemetry: (1) LTE Modem

B.8. FIELD QUALITY CONTROL REQUIREMENTS

Blanks for sampling procedures will be collected for applicable project analytes according to requirements in DEP SOP FQ 1000.

Prior to field deployment of monitoring equipment, equipment blanks will be collected from a representative sample setup according to the requirements in *DEP SOP FS 2100*. The autosampler assemblies will replicate field conditions (i.e., an autosampler will be used to pump deionized water into a glass autosampler jar, then a peristaltic pump will be used to pump the water out of the autosampler jar and into sample containers).

The following additional field-QC measures (per the QA Requirements attached to the grant agreement and/or as proposed by the Contractor) will be performed for this project:
A duplicate sample will be collected for each of the composite autosampling events (8 duplicates samples total).

A duplicate sample will be collected for each of the sediment sampling events (8 duplicate samples total).

A duplicate sample will be collected for each of the NSBB liquid purge water sampling events (8 duplicate samples total).

B.9. FIELD DOCUMENTATION REQUIREMENTS

Documentation for field activities for this project will meet the applicable requirements of the QA Rule (Chapter 62-160, F.A.C.), DEP SOP FD 1000.

B.9.a. The following field documentation will be generated for the project in addition to that required in the above references, and for activities not addressed in the references: N/A

The field quality manual cited below for the field organization named in section A.4., above includes information specific to the named field organization for sample collection, field-testing measurements, field quality control procedures, field documentation and preventive maintenance procedures for equipment & meters.

B.9.b. For the topics listed above that are not discussed in the field quality manual cited below, information is provided or cited here: N/A

B.9.c The following field quality manual is incorporated into this QA plan by reference: FD2000, Documentation of Cleaned Equipment, Sample Containers, Reagents and Supplies. FD3000, Documentation of Equipment Maintenance. FD4000, Documentation for Calibration of Field-Testing Instruments and Field Analyses. FD5000, Documentation of Sample Collection, Preservation and Transport. FD5100, Documentation Specific to Aqueous Chemistry Sampling. FD 6000, Quality Control Documentation.

B.10. LABORATORY ANALYSES

Laboratory analyses for this project will meet requirements specified for laboratories in the QA rule (Chapter 62-160, F.A.C.) and the 2003 NELAC standards.

The laboratory performing sample analyses for this project is accredited by the Florida DOH Environmental Laboratory Certification Program, according to rule 64E-1, F.A.C., and is certified in the non-potable water matrix for the analytes and laboratory test methods indicated in this QA plan.

The certified test methods used by the laboratory are approved at 40 CFR Part 136.3 (Tables IA, IB and IH), and are listed in the laboratory's Quality Manual cited below.

***B.10.a Enter the DOH certification number for any laboratories analyzing samples for the project:** SRL: Certification # E83484. A copy of SRL's laboratory certification is provided as Attachment D.

***B.10.b. Are any of the laboratory test methods not approved at 40 CFR Part 136.3? No. If yes, list and describe the methods, and attach copies of the methods to this document or list web links here:**

The laboratory quality manual cited below for this project contains information on the following topics:

- *Laboratory MDL and PQL (or other appropriate limits of detection and quantitation) for each laboratory analyte listed for the project.*
- *Calibration procedures for all test methods used for this project, including calibration and verification frequencies and calibration verification acceptance criteria for all analytical instrumentation and support equipment.*
- *Types and frequency of laboratory QC sample analysis.*
- *Procedures, formulas and equations for calculating QC statistics.*
- *Acceptance criteria for lab QC sample results.*
- *Corrective action procedures for lab calibration and QC failures.*
- *Preventive maintenance for equipment & instrumentation.*

B.10.b.1. For the topics listed above that are not discussed in the laboratory quality manual cited below, information or web links about the topics is provided or cited here: N/A

***B.10.b.2. The following laboratory quality manual is incorporated into this QA plan by reference:** SRL, Laboratory Quality Manual rev. 13. Revision Date: March 5, 2019. A copy of SRL's laboratory quality manual is provided as Attachment E.

B.11. LABORATORY DOCUMENTATION REQUIREMENTS

Documentation for all laboratory activities associated with this project will meet the applicable requirements of the QA Rule (Chapter 62-160, F.A.C.), the DOH Certification Rule (Chapter 64E-1, F.A.C.), the 2003 NELAC standards and the QA Requirements attached to the Agreement.

The following lists and describes laboratory documentation that will be generated for this project in addition to that required in the above references, and for activities not addressed in the above references: N/A

B.12 MODIFICATIONS TO CITED REFERENCES

Modifications to the procedures, techniques, criteria, SOPs, etc. contained in the references cited in this part (B.) of the QA plan are detailed as follows: N/A

B.13 ADDITIONAL QA REQUIREMENTS

The field and laboratory organizations working on this project, as named in section A.4., above will satisfy all field and laboratory QA Requirements specifically addressed in sections B.1. - B.12., above.

C. ASSESSMENT AND OVERSIGHT

The Contractor will submit a Planning Review Audit report to the DEP grant manager according to the QA Requirements attached to the grant agreement.

N/A

The Contractor will provide Statements of Usability as described in the QA Requirements attached to the grant agreement. Such reports will explicitly list and describe the items evaluated.

N/A

The reports for planning review audits and statements of data usability as described above will include the dates of the audits or usability evaluations and the names of the personnel who performed these assessments of the project work.

Planning review audit findings and data usability evaluations will be documented by the following in addition to or instead of reports: Check all to be used, or enter NA if none.

☒**Checklists**
☒**Spreadsheets**
☐**Other** Please explain.

D. DATA VALIDATION AND USABILITY

D.1. EVALUATION OF DATA

The Contractor will support any conclusions derived from the project monitoring data with appropriate evaluation and analysis of the data. The project monitoring data will be evaluated for use as intended for this Agreement, including any decisions to be made based on the data, according to the following:

***D.1.a. Calculations or data treatments to be used for this project include the following:** Percent removal calculations, statistical analyses, and graphical representations of data will be performed during this project.

***D.1.b. The following statistical analyses of the data are planned:** Relative percent difference (RPD) will be calculated for duplicate field samples. Precision will be evaluated for duplicate samples and considered acceptable for a RPD < 20%.

***D.1.c. The data will be evaluated as described below to establish that the monitoring design was appropriate and representative of BMP performance:** To assess the effectiveness of the NSBB and UFF, each of the primary nutrient removal pathways, discussed previously, will be explicitly evaluated. To accomplish this, the flow monitoring in combination with autosampling, liquid purge water, and sediment sampling will be performed.

***D.1.d. The data will be evaluated for comparability to data generated from other projects, retrieved from other databases, literature data, etc., as described below:** Results of this project will be compared against typical nutrient mass removal efficiencies for second generation baffle boxes (source: Oldcastle Infrastructure). Typical values are given below.
Total Phosphorus: 34%
Total Nitrogen: 39%

***D.1.e. The results of data evaluation and any related decisions will be reported to and reviewed by the Contractor's internal project management staff as follows:** Sample results will be forwarded to the project management staff upon completion of analysis. Results will be assessed for reasonableness using standard QA techniques to identify outliers,

etc. Data will be assembled into data sets during the monitoring period and reviewed to identify any trends or outliers as they become evident. Results will be summarized and included in the final report.

D.2. DATA QUALITY ACCEPTANCE CRITERIA

The following data quality evaluation procedures and criteria will be used by the Contractor to accept data reported from field measurements and laboratory analysis performed for this project, and all data for this project will meet the applicable requirements of the QA Rule.

Laboratory and field data will be qualified with appropriate codes from Table 1 in the QA Rule (Chapter 62-160, F.A.C.) when QC failures occur.

The DEP document "Process for Assessing Data Usability" (DEP-EA-001/07) will be used as a guide to help determine the quality and usability of the data generated for this project.

D.2.a. The following additional procedures and criteria will be used to validate the monitoring data generated for this project: N/A

***D.2.b. The results of data validation will be documented as follows and will include appropriate statements concerning the usability of the data and discussion of any resolution of data validation issues pertinent to the data quality objectives of the monitoring project:**
As part of the final report, the contractor shall provide statements about data usability as necessary.

The results of the project data validation procedure will be included in the relevant report deliverables.

D.3. DATA STORAGE

***D.3.a. Data produced for this monitoring project will be tabulated and stored using the following formats as described below:**

☐**As required in the grant Agreement**
☒**Spreadsheets in** Data will be entered into Microsoft Excel for analysis and interpretation.
☐**Data base in** enter format.
☒**Reports in** A Final Report summarizing the results of the project will be prepared.
☐**Other** Please specify.

***D.3.b. Data entries into spreadsheets, data bases, reports, or other format will be checked and otherwise evaluated as part of the quality control for the stored or tabulated data content using the following procedures:**

The Contractor will perform QA checks of the reports generated in the field and by the laboratory by having the Contractor's QA Officer review and comment on the data, which will be documented in the project file.

Attachment A: Sampling Location Map

Figure 1

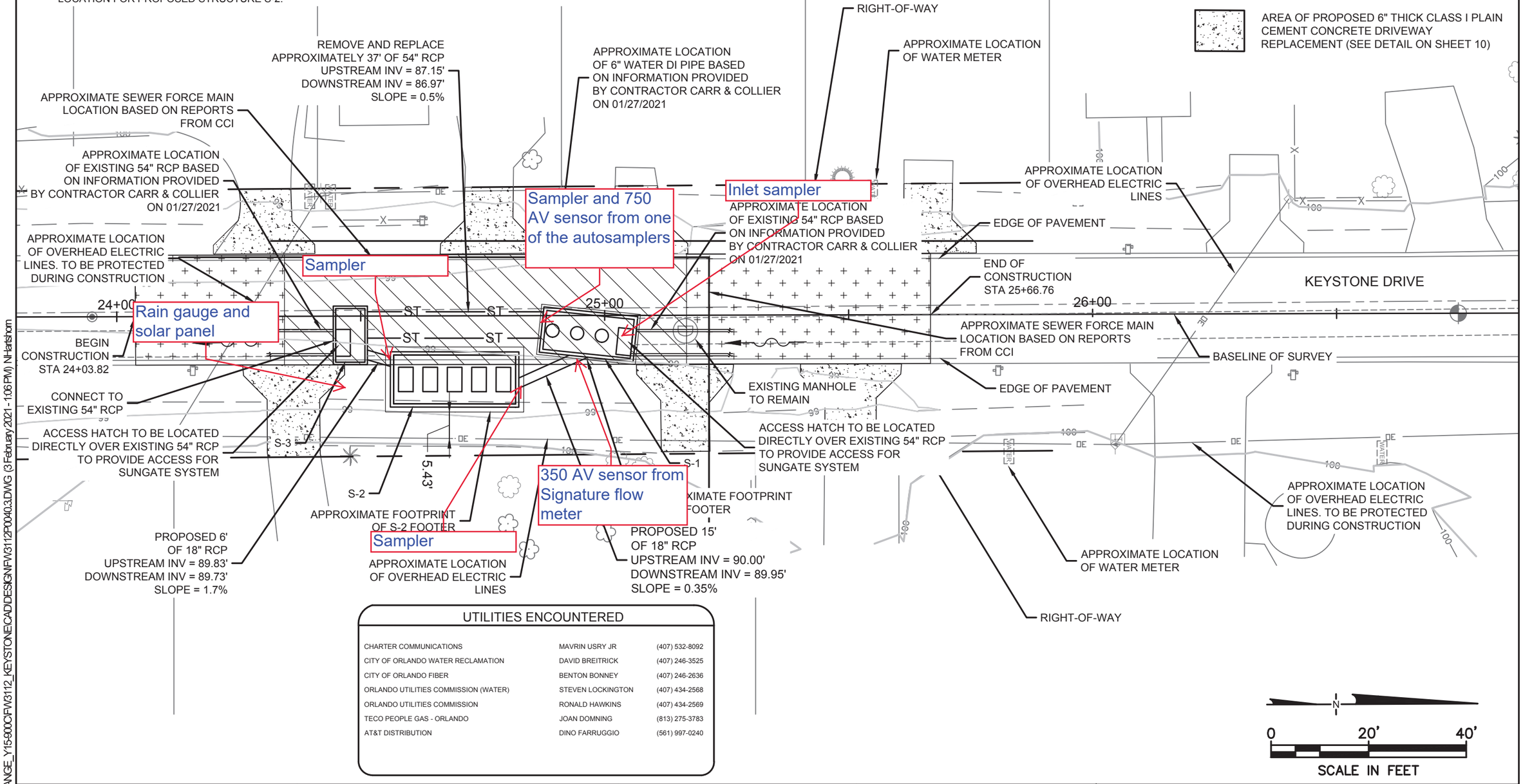
NOTE:
1. SEE SHEET 9 FOR STRUCTURE DETAILS.
2. CONTRACTOR TO RESTORE ANY DAMAGED OR REMOVED PUBLIC OR PRIVATE PROPERTY (INCLUDING BUT NOT LIMITED TO DRIVEWAYS, MAILBOXES, ETC.) LOCATED WITHIN LIMITS OF CONCRETE DRIVEWAY REPLACEMENT AND ANY OTHER AREAS AS A RESULT OF THIS CONSTRUCTION PROJECT.
3. CONTRACTOR IS TO AVOID OVERHEAD UTILITIES DURING CONSTRUCTION OPERATIONS.
4. CONTRACTOR IS TO PERFORM TEMPORARY SHORING DURING EXCAVATION ACTIVITIES.
5. CONTRACTOR IS TO MAINTAIN UNINTERRUPTED ACCESS TO ALL DRIVEWAYS AND SIDE STREETS AT ALL TIMES AND IS TO NOTIFY PROPERTY OWNERS FIVE DAYS PRIOR TO STARTING CONSTRUCTION.
6. REFER TO UTILITY PROTECTION SHEET (SHEET 16) FOR ADDITIONAL INFORMATION.
7. CONTRACTOR SHALL MAINTAIN POSITIVE CONVEYANCE TO THE SOUTH BETWEEN DRIVEWAYS IN THE SWALE AREA AT LOCATION FOR PROPOSED STRUCTURE S-2.

LEGEND

AREA OF FULL DEPTH PAVEMENT REPLACEMENT (SEE DETAIL ON SHEET 10)

AREA OF MILLING & RESURFACING (SEE DETAIL ON SHEET 10)

AREA OF PROPOSED 6" THICK CLASS I PLAIN CEMENT CONCRETE DRIVEWAY REPLACEMENT (SEE DETAIL ON SHEET 10)



UTILITIES ENCOUNTERED

CHARTER COMMUNICATIONS	MAVRIN USRY JR	(407) 532-8092
CITY OF ORLANDO WATER RECLAMATION	DAVID BREITRICK	(407) 246-3525
CITY OF ORLANDO FIBER	BENTON BONNEY	(407) 246-2636
ORLANDO UTILITIES COMMISSION (WATER)	STEVEN LOCKINGTON	(407) 434-2568
ORLANDO UTILITIES COMMISSION	RONALD HAWKINS	(407) 434-2569
TECO PEOPLE GAS - ORLANDO	JOAN DOMNING	(813) 275-3783
AT&T DISTRIBUTION	DINO FARRUGGIO	(561) 997-0240

N

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SCALE IN FEET

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REVISIONS		
DATE	BY	DESCRIPTION
01-28-2021	NAH	UPDATED LOCATIONS OF STRUCTURES S-1, S-2, AND S-3
02-03-2021	NAH	UPDATED LOCATIONS OF STRUCTURES S-1, S-2, AND S-3

KEYSTONE DRIVE
BAFFLE BOX DESIGN

ORANGE COUNTY GOVERNMENT FLORIDA

Geosyntec consultants
3504 LAKE LYNDA DRIVE
SUITE 155
ORLANDO, FL 32817
Mark W. Ellard, PE
FL PE# 48073
AUTHORIZATION NUMBER 4321

PROPOSED SITE PLAN

SHEET NO. 5

Attachment B: Water Quality Sampling Schedule

Water Quality Analysis				
Analyte	**Composite Sampling (32 samples + 8 duplicates)**	**Purge Water (24 samples + 8 duplicates)**	**Equipment Blank (assume 3 blanks)**	**Total**
Alkalinity	40	32	3	**75**
Total nitrogen	40	32	3	**75**
Total phoshorus	40	32	3	**75**
Orthophosphate	40	32	3	**75**
Ammonia	40	32	3	**75**
Nitrate + Nitrite	40	32	3	**75**
Particulate nitrogen	40	32	3	**75**
Particulate phosphorus	40	32	3	**75**
Total organic carbon	40	32	3	**75**
Total solids	40	32	3	**75**
Total suspended solids	40	32	3	**75**

Solids Analysis	
Analyte	**Cleaning events (8 samples + 8 duplicates)**
Moisture content	16
Bulk density	16
Total nitrogen	16
Total phosphorus	16

Attachment C: Historic Water Quality Data

2.3 Water Quality Characteristics of Lake Pineloch

2.3.1 Historical Water Quality

Relatively extensive historical water quality monitoring has been conducted in Lake Pineloch by both the City of Orlando (City) and the Orange County Environmental Protection Division (OCEPD). Water quality monitoring is conducted by the City at a single location near the geographic center of the lake. This monitoring was initiated during 1990, with one monitoring event conducted during the initial year. Two separate monitoring events were conducted during 1991, with monitoring conducted on approximately a quarterly basis from 1992 to the present. Surface water monitoring by OCEPD was initiated Lake Pineloch during 1989 at a single site located near the geographic center of the lake. Routine surface water monitoring has been conducted by OCEPD on approximately a quarterly basis from 1989 to the present. Vertical field profiles of pH, temperature, and dissolved oxygen are conducted at specified intervals within the water column by both the City and OCEPD during each monitoring event.

A complete listing of historical water quality data collected in Lake Pineloch by the City and OCEPD is given in Appendix B. In general, the laboratory parameters analyzed on Lake Pineloch samples are relatively similar for both the City and OCEPD. Each of the two agencies collects samples at a standard depth of 0.5 m and conducts laboratory analyses for general parameters (alkalinity, pH, TSS, VSS, TDS, and color), nutrients, fecal coliform bacteria, and chlorophyll-a. Trophic state index (TSI) values are also calculated for significant trophic state indicators.

A historical data set for Lake Pineloch was developed by ERD using the City of Orlando water quality data. Although data has been collected by both OCEPD and the City, the City water quality data are utilized for evaluation of historical water quality characteristics due to the slightly larger available data set and higher degree of completion for laboratory analyses of individual parameters. It was decided not to combine the two data sets together to eliminate potential variability which may be caused by differences in collection and analysis techniques between the two agencies.

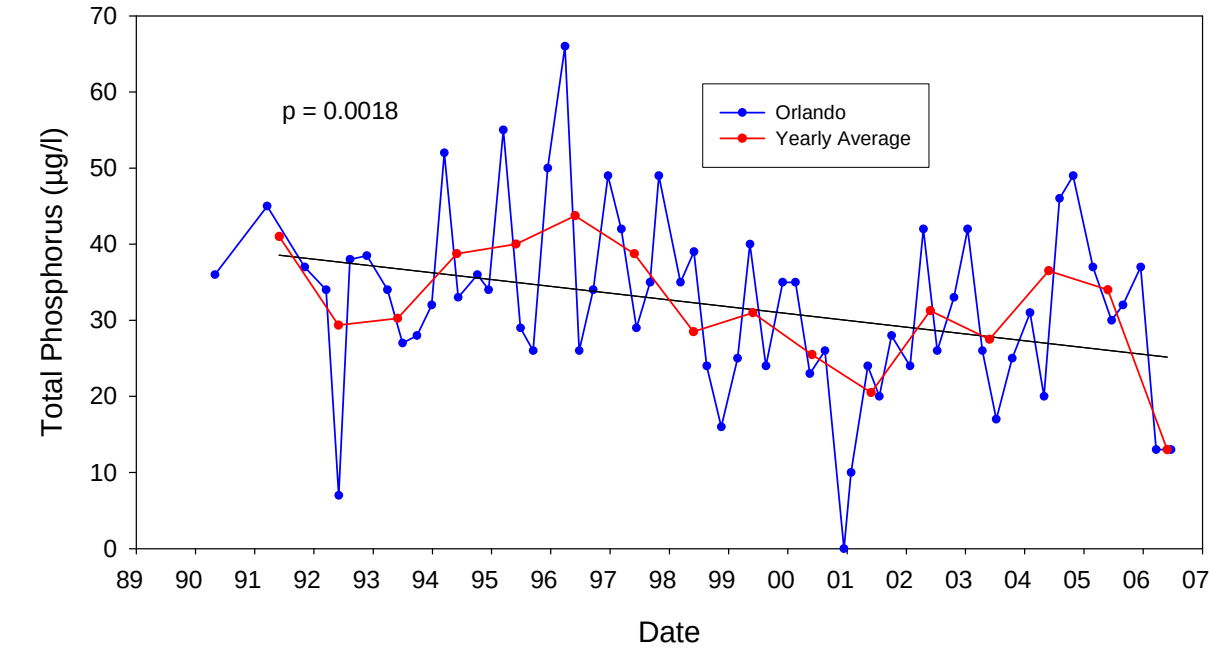
Historical water quality characteristics in Lake Pineloch were evaluated by ERD based upon an examination of the results of individual monitoring events as well as mean annual concentrations for total phosphorus, total nitrogen, chlorophyll-a, Secchi disk depth, TN/TP ratio, and TSI. A summary of historical trends in total phosphorus and total nitrogen in Lake Pineloch from 1990-2006 is given in Figure 2-13. Mean annual average values for these parameters are also superimposed over the historical data to provide a less cluttered view of potential water quality trends within the lake. A trend line is also provided to assist in identifying significant water quality trends. This line is obtained using linear regression techniques. The calculated probability value (p value) is also provided which indicates the level of significance associated with each regression model. A model which is significant at a 95% confidence level would be associated with a p value of 0.05. However, lakes exhibit normal seasonal cyclic variations in water quality which can reduce the statistical significance of the regression model. For evaluating water quality trends in lakes, a p value of 0.2 or less is generally considered to indicate a significant statistical trend, while p values greater than 0.2 suggest an insignificant trend.

Measured total phosphorus concentrations in Lake Pineloch from 1990-2006 ranged from 7-66 μg/l, with mean annual concentrations ranging from approximately 20-45 μg/l. A peak in total phosphorus concentrations appears to have occurred during 1996, followed by a gradual decline in phosphorus concentrations until 2001. Since that time, total phosphorus concentrations in Lake Pineloch do not appear to exhibit a detectable trend. A general trend of decreasing phosphorus concentrations has been observed in Lake Pineloch over the period of record. Based on the calculated p value of 0.0018, this trend is statistically significant. However, this trend is fueled by the substantially elevated total phosphorus concentrations measured in the lake from 1994-1997. If the data are evaluated over the past 10 years, a slight upward trend is apparent.

A summary of measured total nitrogen concentrations in Lake Pineloch is also provided in Figure 2-13. Measured concentrations of total nitrogen have ranged from approximately 400-1620 μg/l, although the majority of values appear to be in the range of 400-1000 μg/l. In contrast to the trends exhibited by total phosphorus, total nitrogen does not appear to exhibit a trend of either increasing or decreasing concentrations within the lake. The calculated p value confirms the lack of a significant trend.

Variations in measured concentrations of chlorophyll-a and Secchi disk depth in Lake Pineloch from 1990-2006 are illustrated on Figure 2-14. Measured chlorophyll-a concentrations in the lake have ranged from 2.6-42.5 mg/m^3 over the monitoring period, although the majority of values appear to range from approximately 5-20 mg/m^3. Mean annual concentrations of chlorophyll-a in Lake Pineloch exhibit a trend similar to that observed for total phosphorus, with a peak in concentration during 1996, followed by a steady decline through the early-2000s. More recent chlorophyll-a concentrations in the lake have been highly variable. The calculated p value indicates a significant downward trend, although this is influenced by a few elevated values during the 1990s.

Variability in measured Secchi disk depths in Lake Pineloch are also illustrated on Figure 2-14. Measurements have ranged from 0.62-3.23 m, although the majority of the measured values appear to fall in the range of 1-2 m. A peak in measured Secchi disk depth was observed during the early-1990s, with no discernable trend of increasing or decreasing Secchi disk depth apparent from approximately 1995 to the present. The trend line for this parameter is insignificant.



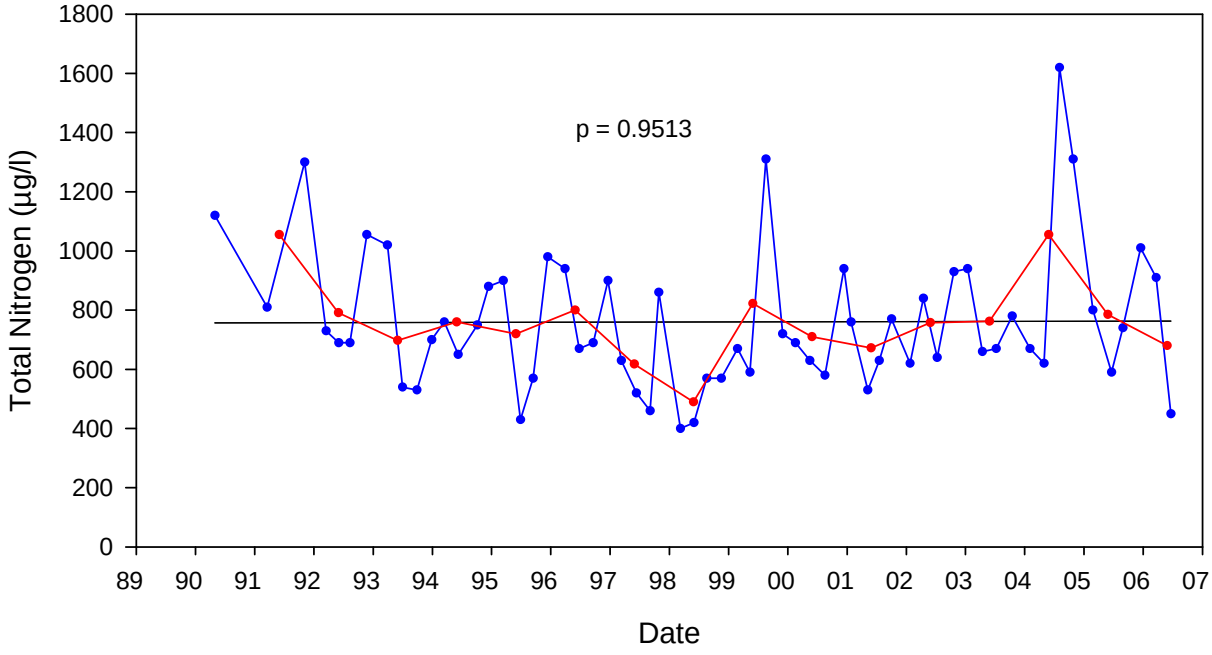


Figure 2-13. Summary of Trends in Total Phosphorus and Total Nitrogen in Lake Pineloch from 1990-2006.

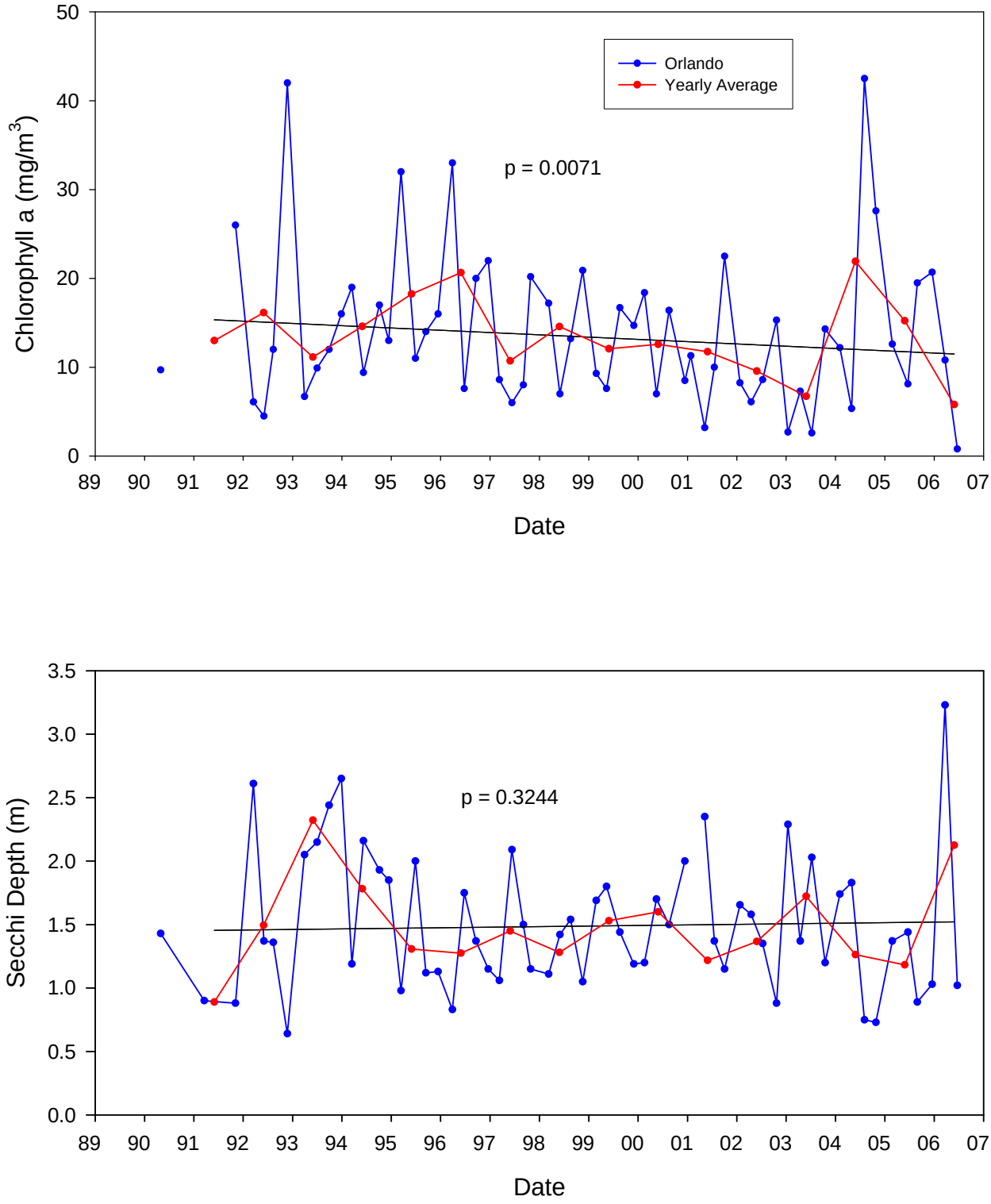


Figure 2-14. Summary of Trends in Chlorophyll-a and Secchi Disk Depth in Lake Pineloch from 1990-2006.

Nutrient limitation in a waterbody is often evaluated using the total nitrogen/total phosphorus (TN/TP) ratio. The calculated TN/TP ratio is a numerical ratio of the measured water column concentrations of total nitrogen and total phosphorus. This ratio is useful in evaluating the relative significance of nitrogen and phosphorus in regulating primary productivity (algal growth) in a waterbody. Measured TN/TP ratios less than 10 are considered to indicate nitrogen-limited conditions, suggesting that phosphorus is relatively abundant and nitrogen is the element which regulates primary productivity and the growth of algae within the lake system. Calculated TN/TP ratios between 10-30 indicate nutrient-balanced conditions, with both nitrogen and phosphorus considered important for limiting aquatic growth. Calculated TN/TP ratios in excess of 30 indicate phosphorus-limited conditions, which suggests that nitrogen is abundant within the system and algal growth is limited by the availability of phosphorus. This is the typical situation observed in many lakes in the Central Florida area. This condition indicates that inputs of phosphorus into the lake system should be controlled to regulate the growth of algal biomass within the lake.

A summary of mean annual total nitrogen/total phosphorus (TN/TP) ratios in Lake Pineloch from 1990-2006 is given in Figure 2-15. Based on the mean annual TN/TP ratios indicated on Figure 2-15, it appears Lake Pineloch exists in either a nutrient-balanced or phosphorus-limited condition much of the time. The data appear to suggest that Lake Pineloch is becoming more phosphorus-limited since the mid- to late-1990s. A trend line for changes in TN/TP ratios is also shown on Figure 2-15 which indicates a general trend toward increasing phosphorus limitation within the lake. The p value of 0.1993 suggests that the trend is marginally significant.

TSI is a summary statistic which incorporates measured concentrations of significant parameters in lake systems, including total phosphorus, total nitrogen, Secchi disk depth, and chlorophyll-a. Since this index summarizes information obtained from several separate measured parameters, it is often considered the best overall indicator of the health and productivity of a lake system. Carlson (1977) developed a logarithmic scale, ranging from 0-100, to categorize the trophic status of a waterbody. Calculated TSI values less than 50 indicate oligotrophic conditions, representing lakes with low nutrient loadings and good to excellent water quality characteristics. Calculated TSI values from 50-59 indicate mesotrophic or fair water quality characteristics. Calculated TSI values between 60-69 indicate eutrophic or poor water quality characteristics, with hypereutrophic conditions indicated by TSI values of 70 or more.

Individual TSI values were calculated for each monitoring event based on measured concentrations of chlorophyll-a and nutrients. The Secchi disk depth is not included by ERD as part of the TSI calculation due to the relatively subjective nature of this measurement, variability in measurement techniques, and statistical irregularities which often arise when evaluating this parameter. If phosphorus-limited conditions were present at the time of the monitoring event, indicated by TN/TP ratios >30, the TSI value was calculated using the following relationships:

$$TSI\ (chl\text{-}a) = 16.8 + 14.4 \ln chl\text{-}a\ (mg/m^3)$$

$$TSI\ (TP) = 23.6 \ln TP\ (\mu g/l) - 23.8$$

$$TSI\ (Avg.) = \tfrac{1}{2}\ [TSI\ (chl\text{-}a) + TSI\ (TP)]$$

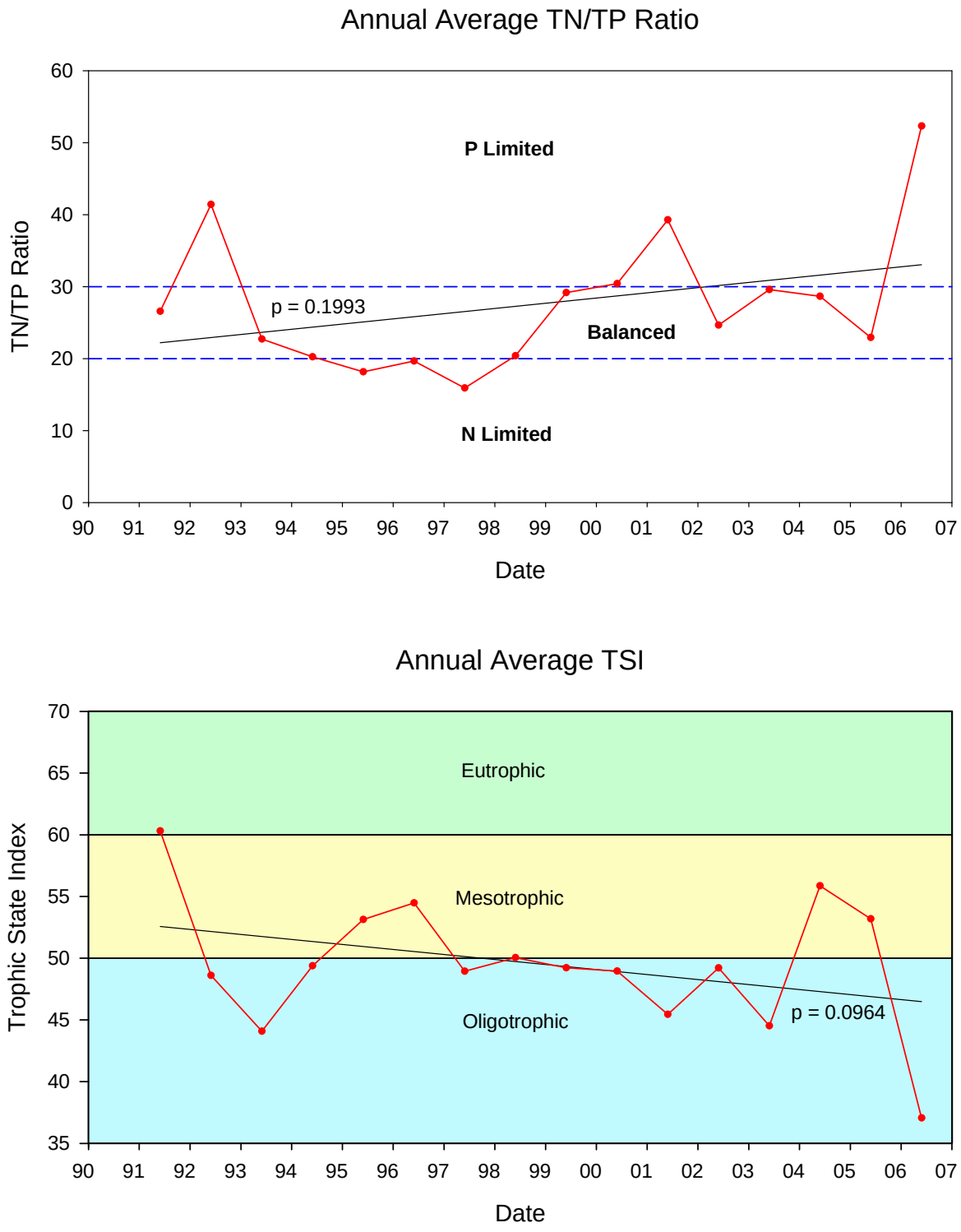


Figure 2-15. Summary of Trends in TN/TP Ratio and TSI Values in Lake Pineloch from 1990-2006.

If nutrient-balanced conditions occurred at the time of the monitoring event, the TSI value was calculated based on the following relationships involving chlorophyll-a, total nitrogen, and total phosphorus:

$$TSI\ (chl\text{-}a) = 16.8 + 14.4 \ln chl\text{-}a\ (mg/m^3)$$

$$TSI(TN) = 56 + 19.8 \ln TN\ (\mu g/l)$$

$$TSI\ (TP) = 18.6 \ln TP\ (\mu g/l) - 18.4$$

$$TSI\ (Avg.) = \tfrac{1}{2} \left\{ [TSI\ (chl\text{-}a)] + \{0.5\ [TSI\ (TP) + TSI\ (TN)]\} \right\}$$

Mean annual TSI values in Lake Pineloch from 1990-2006 are also summarized on Figure 2-15. Mean annual TSI conditions in Lake Pineloch have ranged from borderline mesotrophic-eutrophic to highly oligotrophic conditions. It appears that water quality within the lake has been relatively stable since the mid-1990s to the present, with borderline mesotrophic-oligotrophic conditions generally observed within the lake. The data appear to suggest a trend of decreasing TSI value over time. However, this trend appears to be impacted by the elevated TSI value measured during 1991 and the low value measured during 2006. If these values were removed from the data, the trend would be relatively constant.

Additional evaluations were performed by ERD to examine seasonal variations in water quality in Lake Pineloch. For this evaluation, mean monthly concentrations were calculated for total phosphorus, total nitrogen, chlorophyll-a, and TN/TP ratios over the period of record from 1991-2006 using the City data. A comparison of mean monthly concentrations of total phosphorus in Lake Pineloch from 1991-2006 is given in Figure 2-16. In general, it appears that mean monthly phosphorus concentrations in Lake Pineloch are lowest during June-July and highest in value during the fall, winter, and spring months. Since the fall, winter, and spring months are generally characterized by low rainfall and reduced runoff inputs, the increases in phosphorus concentrations observed during this period suggests that phosphorus sources in addition to stormwater runoff are impacting water quality in Lake Pineloch. The trend of monthly phosphorus concentrations in Lake Pineloch is very similar to the trend of monthly phosphorus concentrations in Lake Holden (ERD, 2004). The general pattern of monthly phosphorus concentrations exhibited in Figure 2-16 suggests that significant internal recycling may be occurring in Lake Pineloch. During late-spring through early-fall, lakes in Central Florida typically become stratified, with anoxic conditions developing in lower portions of the lake. These anoxic conditions accelerate the release of phosphorus from the bottom sediments which begin to accumulate in the lower isolated portions of the waterbody. When water temperatures cool during late-fall and winter, the water column begins to circulate, and accumulated phosphorus concentrations in lower layers of the lake are distributed throughout the entire water column, resulting in increases in phosphorus levels within the lake. The trend exhibited by total phosphorus for Lake Pineloch suggests that significant internal recycling, fueled by upwelling of high phosphorus water during circulating events, may be occurring within the lake.

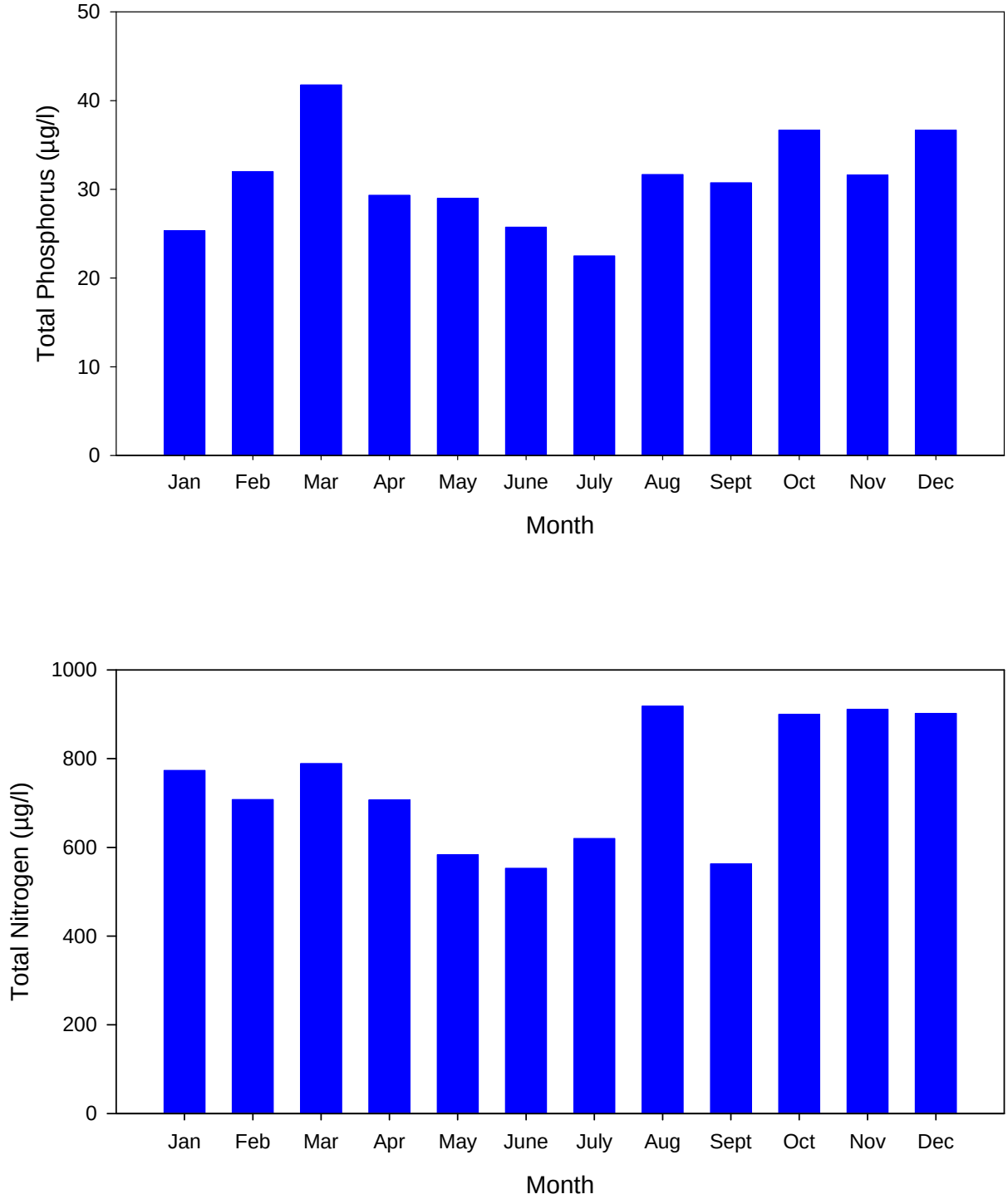


Figure 2-16. Mean Monthly Concentrations of Total Phosphorus and Total Nitrogen in Lake Pineloch from 1991-2006.

Average monthly concentrations of total nitrogen in Lake Pineloch from 1991-2006 are also included on Figure 2-16. Similar to the trends observed for total phosphorus, total nitrogen concentrations in Lake Pineloch also appear to be greatest during the fall, winter, and spring months. Nitrogen can also be released from anoxic bottom sediments, primarily in the form of ammonia, which may be partially responsible for the patterns of total nitrogen indicated on Figure 2-16.

A comparison of mean monthly concentrations of chlorophyll-a in Lake Pineloch from 1991-2006 is given in Figure 2-17. The monthly chlorophyll-a concentrations within the lake appear to exhibit a pattern similar to that observed for total phosphorus, with the most elevated concentrations observed during fall, winter, and spring conditions, and lower concentrations observed during June-July.

Average monthly TN/TP ratios in Lake Pineloch from 1991-2006 are also illustrated on Figure 2-17. As indicated previously, Lake Pineloch exhibits either balanced or phosphorus-limited conditions throughout the year.

A summary of historical water quality characteristics of Lake Pineloch from 1991-2006 is given in Table 2-8 for significant water quality parameters based upon the City of Orlando data set. In general, measured values for pH, alkalinity, conductivity, BOD, and TSS are similar to values commonly observed in urban lakes. Measured values of total nitrogen, total phosphorus, chlorophyll-a, and Secchi disk depth appear to be better than average for urban lakes.

TABLE 2-8

SUMMARY OF HISTORICAL WATER QUALITY CHARACTERISTICS OF LAKE PINELOCH FROM 1991-2006[1]

PARAMETER	UNITS	MEAN VALUE	RANGE OF VALUES	NUMBER OF SAMPLES
pH	s.u.	8.16	6.55 - 9.73	61
Alkalinity	mg/l	49.0	22.0 - 71.0	61
Conductivity	µmho/cm	202	153 - 362	52
Total N	µg/l	760	400 - 1620	61
Total P	µg/l	32	7 - 66	60
BOD	mg/l	3.7	1.5 - 7.5	17
TSS	mg/l	4.9	< 1 - 14.0	61
Chlorophyll-a	mg/m^3	13.8	0.8 – 42.5	60
Secchi Disk	m	1.51	0.64 – 3.23	60
TSI	--	50	37 – 69	61

1. City of Orlando data

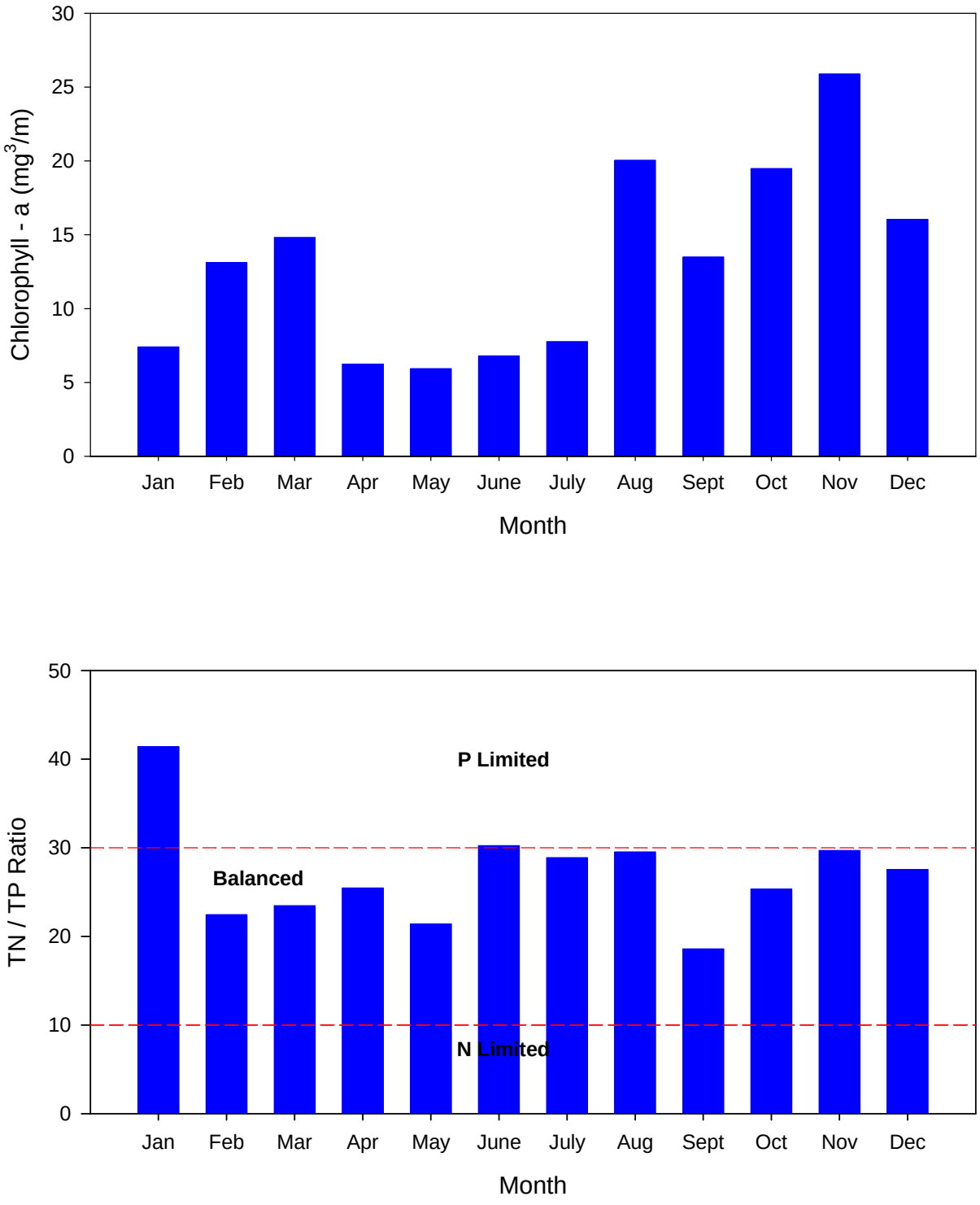


Figure 2-17. Mean Monthly Concentrations of Chlorophyll-a and TN/TP Ratio in Lake Pineloch from 1991-2006.

In addition to the surface water monitoring described previously, both the City of Orlando and Orange County collect vertical field profiles during each monitoring event. These vertical profiles typically include measurements of pH, temperature, dissolved oxygen, and conductivity at intervals of 0.5 m or 1 m from the water surface to the lake bottom. In general, the vertical field profiles for Lake Pineloch are similar to profiles commonly observed in eutrophic lakes. A detailed discussion of these issues is given in a subsequent section which discusses the vertical field profiles collected by ERD. However, a brief analysis is provided here of general trends in dissolved oxygen concentrations within the lake.

A graphical summary of mean dissolved oxygen concentrations in Lake Pineloch as a function of water depth and time of year is given in Figure 2-18. The information summarized in this figure is based upon the City of Orlando data collected from 1991-2006. In general, adequate dissolved oxygen levels are maintained in Lake Pineloch within the upper 3 m of the water column throughout the year. Dissolved oxygen concentrations in this zone typically equal or exceed the saturation value for oxygen based upon water temperature. Significant decreases in dissolved oxygen concentrations occur at a depth of 4 m, with an even greater depletion in dissolved oxygen observed at a depth of 5 m. Dissolved oxygen concentrations at a depth of 5 m decrease below 2 mg/l periodically throughout the summer months. A dissolved oxygen concentration of 2 mg/l or less in the overlying water column is often used to indicate the likelihood of anoxic conditions within the bottom sediments. Anoxic conditions appear to be maintained within Lake Pineloch at water depths of 6 m or more over the period from March-September based on the historical data. The lake appears to become more well mixed with more uniform dissolved oxygen concentrations from November-February.

2.3.2 Current Water Quality Characteristics

2.3.2.1 Monitoring Activities

A monthly surface water quality monitoring program was conducted in Lake Pineloch by ERD from March-October 2006 at fixed monitoring locations within the lake. The initial monitoring event during March 2006 was conducted near the geographic center of the lake. Beginning with the second event, two separate sites were monitored which correspond with the deep areas in the central and southeastern lobes. Approximate locations of the surface water monitoring sites in Lake Pineloch are indicated on Figure 2-19. The water quality monitoring sites were selected to allow evaluation of vertical water quality in the deepest areas of the lake, as well as provide general information on ambient water quality characteristics. Water quality monitoring was conducted on approximately a monthly basis, with a total of eight monitoring events conducted during the 8-month monitoring program.

Sample collection procedures generally followed methods outlined in DEP-SOP-001/01 titled “Department of Environmental Protection Standard Operating Procedures for Field Activities” dated February 1, 2004. Surface water samples were collected using a battery-powered peristaltic pump constructed of plastic and stainless steel. Two separate samples were collected at each site during each monitoring event. The first sample was collected at a depth equal to 50% of the Secchi disk depth at the time of sample collection. The second sample was collected at a depth of 0.5 m above the sediment/water interface. Each of the collected samples was preserved as appropriate for the parameter to be analyzed, stored on ice, and returned to the ERD Laboratory for chemical analyses. A listing of laboratory measurements performed on the collected samples is given in Table 2-9, along with a summary of analytical methods and laboratory detection limits.

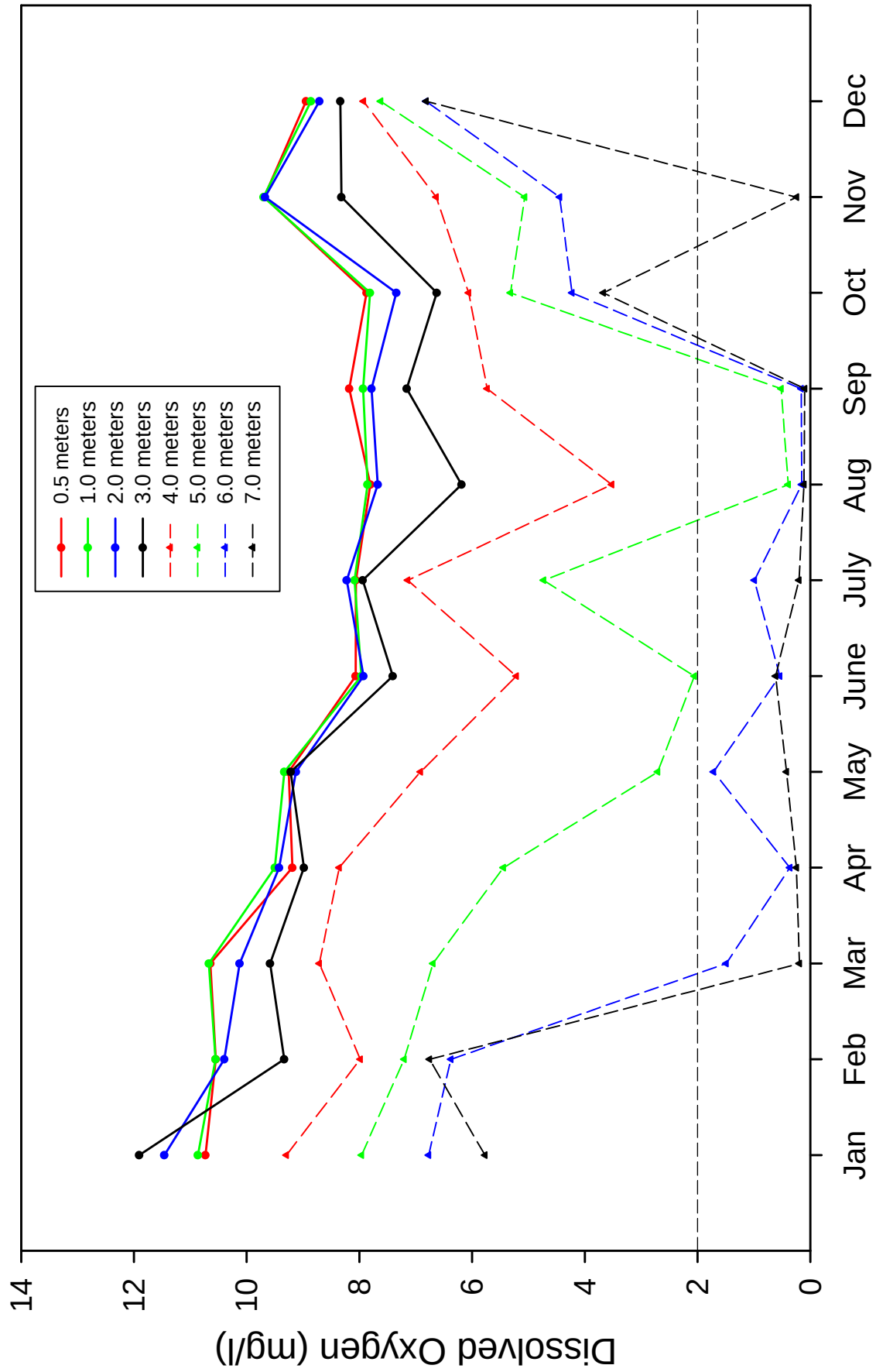


Figure 2-18. Mean Dissolved Oxygen Concentrations in Lake Pineloch from 1991-2006.

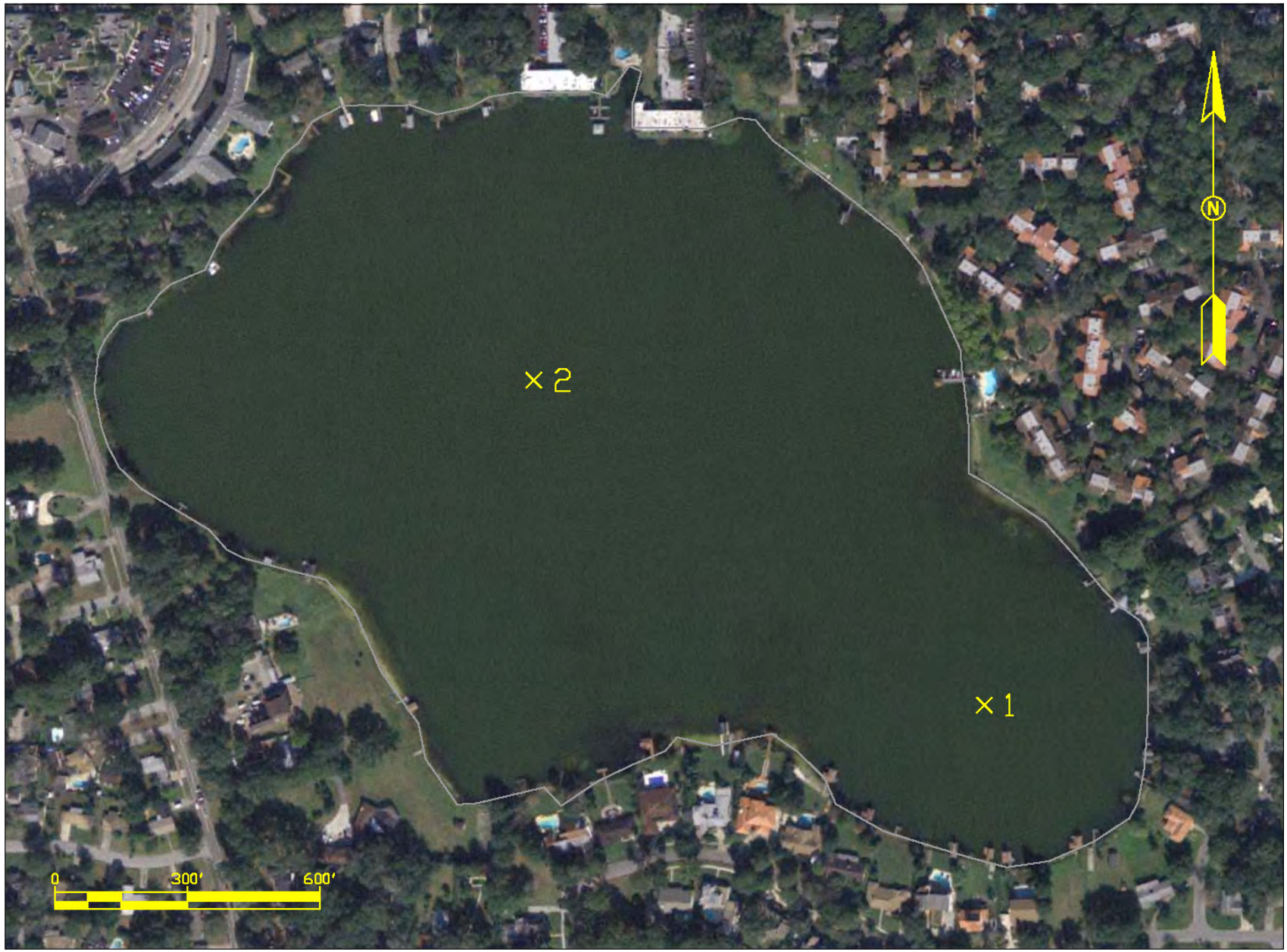


Figure 2-19. Surface Water Monitoring Sites in Lake Pineloch Used by ERD.

TABLE 2-9

ANALYTICAL METHODS AND DETECTION LIMITS FOR LABORATORY ANALYSES CONDUCTED BY ENVIRONMENTAL RESEARCH AND DESIGN, INC.

MEASUREMENT PARAMETER		METHOD	METHOD DETECTION LIMITS (MDLs)[1]
General Parameters	Hydrogen Ion (pH)	EPA-83[2], Sec. 150.1/Manf. Spec.[3]	N/A
	Alkalinity	EPA-83, Sec. 310.1	0.6 mg/l
	TSS	EPA-83, Sec. 160.2	0.7 mg/l
	Color	EPA-83, Sec. 110.3	1 Pt-Co Unit
	Specific Conductivity	EPA-83, Sec. 120.1/Manf. Spec.	0.3 μmho/cm
	Turbidity	EPA-83, Sec. 180.1	0.1 NTU
Nutrients	Ammonia-N (NH_3-N)	EPA-83, Sec. 350.1	0.005 mg/l
	Nitrate + Nitrite (NO_x-N)	EPA-83, Sec. 353.2	0.005 mg/l
	Organic Nitrogen	Alkaline Persulfate Digestion[4]	0.025 mg/l
	Orthophosphorus	EPA-83, Sec. 365.1	0.001 mg/l
	Total Phosphorus	Alkaline Persulfate Digestion[4]	0.001 mg/l
Biological Parameters	Chlorophyll-a	SM-19, Sec. 10200 H.3	0.08 mg/m^3

1. MDLs are calculated based on the EPA method of determining detection limits.
2. Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020, Revised March 1983.
3. Subject to manufacturer's specifications for test equipment used.
4. FDEP-approved method.

During each monitoring event, vertical profiles of pH, temperature, conductivity, dissolved oxygen, ORP, and turbidity were conducted at each site. Field measurements were collected at water depths of 0.25 m and at 0.5 m, and at 0.5 m intervals to the bottom at each site. All field measurements were performed using Hydrolab Data Sonde H2O and Data Sonde 4a units. A measurement of Secchi disk depth was also performed at each site.

2.3.2.2 Field Profiles

A complete listing of vertical field profiles collected in Lake Pineloch from April-October 2006 is given in Appendix C. A compilation of vertical depth profiles collected at Sites 1 and 2 during the routine monitoring program is given in Figures 2-20 and 2-21, respectively. The vertical profiles indicated on Figures 2-20 and 2-21 represent the seven monitoring events which were conducted at each of the two surface water monitoring sites indicated on Figure 2-19. Vertical field profiles for the initial monitoring event, conducted in March 2006 near the geographic center of the lake, are included in Appendix C but are not presented on Figures 2-20 or 2-21.

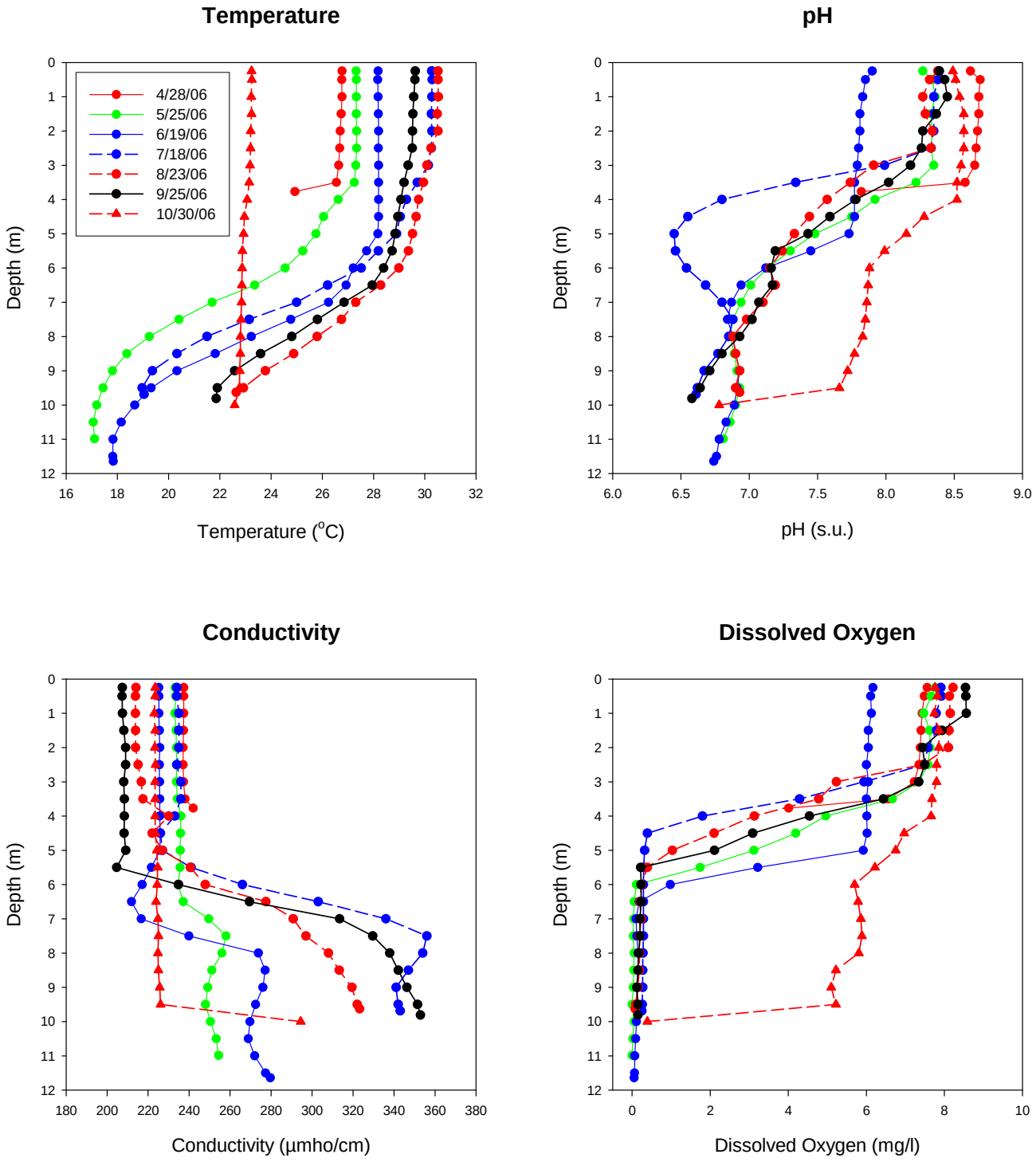


Figure 2-20. Vertical Field Profiles of Temperature, pH, Conductivity, and Dissolved Oxygen at Site 1 in Lake Pineloch from April-October 2006.

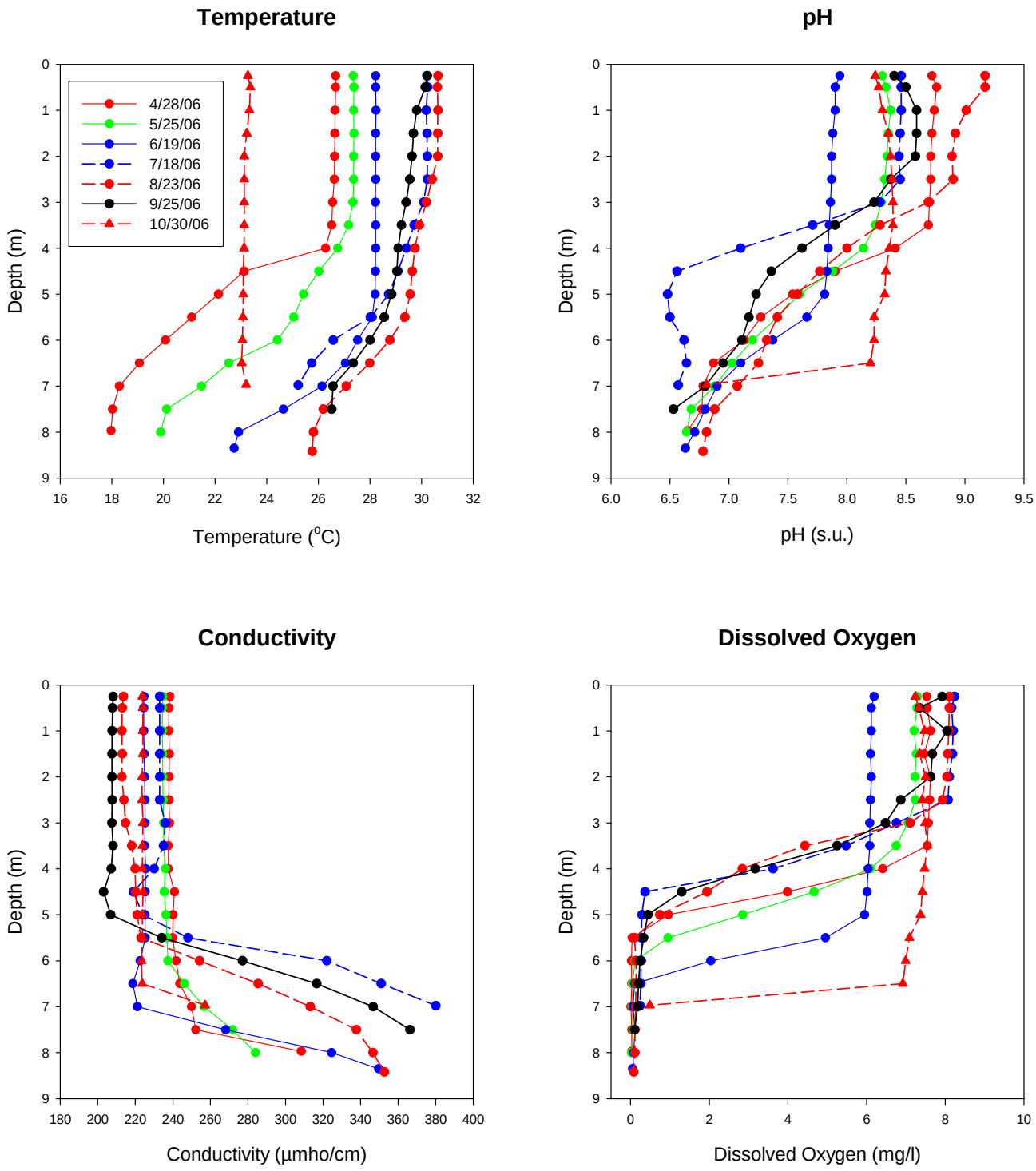


Figure 2-21. Vertical Field Profiles of Temperature, pH, Conductivity, and Dissolved Oxygen at Site 2 in Lake Pineloch from April-October 2006.

In general, significant thermal stratification was observed at Site 1 during six of the seven monitoring events at this site. Typical temperature differences at this time between top and bottom measurements range from approximately 8-10^{o}C for most events. However, a relatively isograde temperature profile was observed during late-October when uniform mixing of lakes is relatively common in the Central Florida area. A similar pattern was observed at Site 2, although the degree of thermal stratification appears to be less at this site than observed at Site 1. Site 2 is more centrally located than Site 1 and may be more impacted by daily mixing from wind activity. Isograde temperature profiles were also observed at this site during late-October similar to Site 1. Thermocline depths at Sites 1 and 2 ranged from approximately 4-6 m during the monitoring program.

Field measured surface pH values in Lake Pineloch ranged from approximately 7.7-9.0 during the field monitoring program. Relatively isograde pH conditions were observed during most monitoring events within the top 3 m of the water column. However, after this depth, a gradual decrease in pH was observed during most events, reaching bottom pH values ranging from approximately 6.5-6.7.

Specific conductivity values in Lake Pineloch were found to be relatively uniform within the top 5m of the water column at each site, with measured values ranging from approximately 200-240 μmho/cm. However, substantial increases in specific conductivity were observed during a majority of the monitoring events at water depths in excess of 5 m. Increases in specific conductivity of approximately 50-75% were observed during most events. These types of conductivity profiles often indicate significant internal recycling in anoxic lower portions of the water column.

Relatively uniform dissolved oxygen profiles were observed at each of the two monitoring sites to a water depth of approximately 3 m. Measured dissolved oxygen concentrations in these upper portions of the water column range from 6-8 mg/l. However, below this depth, dissolved oxygen concentrations were observed to decrease rapidly, approaching anoxic conditions at water depths ranging from 4.5-6.5 m. These profiles suggest that areas of Lake Pineloch deeper than approximately 4-5 m maintain anoxic conditions throughout much of the year. During the well mixed conditions observed during October 2006, dissolved oxygen extended to near the sediment/water interface at each of the two monitoring sites. This event was also characterized by a substantially lower increase in conductivity in bottom portions of the water column than observed during events where anoxic conditions were observed. The presence of anoxic conditions in lower portions of the water column is verified by the measurements of oxidation-reduction potential (ORP) included in Appendix C. In general, measured ORP values less than 200 mv suggests the presence of anoxic conditions. This condition was observed in lower portions of the water column during virtually all monitoring events.

Measured Secchi disk depths during each of the field monitoring events are also included in Appendix C. In general, Secchi disk depths ranged from approximately 0.7-3.27 m during the monitoring program, with a mean of 1.57 m at Site 1 and 1.50 m at Site 2. Secchi disk depths of approximately 3 m or more were observed in Lake Pineloch during June but decreased rapidly to approximately 1.1 m during July. A trend of gradually decreasing Secchi disk depths was observed throughout the remainder of the monitoring program, reaching approximately 0.7 m during October.

2.3.2.3 Water Quality Characteristics

A complete listing of the results of laboratory analyses conducted on the monthly surface water samples collected from Lake Pineloch is given in Appendix D.1. As discussed previously, the initial surface water monitoring event was conducted near the geographic center of the lake on March 29, 2006. After that event, the locations of the monitoring sites were modified to the locations indicated on Figure 2-19, with the monitoring location in the south lobe referred to as Site 1 and the more centrally located site identified as Site 2. The results of the initial surface water monitoring event are included in Appendix D.1 but are not considered as part of the discussion of water quality characteristics provided in this section.

A summary of water quality characteristics at the two monitoring sites in Lake Pineloch from April-October 2007 is given in Table 2-10. In general, water quality characteristics of the surface samples collected at the two sites appear to be relatively similar. Surface water at each of the two sites appears to be moderately buffered, with mean alkalinity values ranging from 58.1-58.2 mg/l and a relatively low degree in variability in measured values during the monitoring program. Surface water samples are also characterized by relatively low levels of TSS and turbidity, with mean TSS concentrations ranging from 3.8-4.0 mg/l and a mean turbidity of 2.8 NTU measured at each site.

TABLE 2-10

SUMMARY OF WATER QUALITY CHARACTERISTICS OF LAKE PINELOCH FROM APRIL-OCTOBER 2006 (n = 7 samples)

PARAMETER	UNITS	SITE 1				SITE 2			
		Top		Bottom		Top		Bottom	
		Mean	Range	Mean	Range	Mean	Range	Mean	Range
Alkalinity	mg/l	58.1	51.2-64.2	91.7	63.4-137	58.2	52.6-65.0	97.7	66.0-136
NH_3	µg/l	43	<5-135	2178	<5-4611	48	<5-182	2086	193-3978
NO_x	µg/l	7	<5-25	<5	<5-6	29	<5-187	<5	<5-5
Diss. Org. N	µg/l	399	238-580	612	166-1898	338	186-453	567	195-2017
Particulate N	µg/l	199	73-455	960	176-4073	219	96-465	894	222-3039
Total N	µg/l	647	504-830	3753	545-8321	634	507-835	3550	890-7684
SRP	µg/l	1	<1-4	9	<1-42	2	<1-6	1	<1-5
Diss. Org. P	µg/l	7	2-20	32	6-74	4	2-7	16	2-61
Particulate P	µg/l	10	3-17	126	14-667	14	10-23	83	20-238
Total P	µg/l	19	13-27	167	20-730	20	15-29	100	30-261
TSS	mg/l	3.8	2.2-5.1	48.9	3.2-304	4.0	2.9-5.1	11.0	5.1-16.8
Turbidity	NTU	2.8	1.2-3.6	59.8	3.1-26.0	2.8	0.9-3.8	32.7	3.5-66.2
Chlorophyll-a	mg/m^3	13.6	3.7-27.4	--	--	12.9	4.3-27.4	--	--
Secchi Disk	m	1.57	0.7-3.27	--	--	1.50	0.75-2.96	--	--

In general, each of the two sites is characterized by relatively low levels of inorganic nitrogen species. Inorganic species of ammonia and NO_x comprise only 8-12% of the total nitrogen measured at the two monitoring sites. The most dominant nitrogen species is dissolved organic nitrogen which comprises 53-62% of the total nitrogen measured. Particulate nitrogen comprises approximately 31-35% of the total nitrogen at the two monitoring sites.

In general, relatively low levels were observed for many of the measured phosphorus species in Lake Pineloch. Measured concentrations of SRP ranged from 1-2 μg/l at each site, with dissolved organic phosphorus concentrations ranging from 4-7 μg/l. The dominant phosphorus species at each of the two sites appears to be particulate phosphorus which comprises approximately 53-70% of the phosphorus measured at each site. The majority of this particulate phosphorus is probably incorporated into algal biomass. In general, a relatively low degree of variability was observed in measured phosphorus concentrations between the individual monitoring dates.

Measured concentrations of chlorophyll-a at the two monitoring sites ranged from low to moderately high in value during the monitoring program. Mean measured chlorophyll-a concentrations at the two sites ranged from 12.9-13.6 mg/m^3, reflecting values slightly lower than commonly observed in urban lake systems.

Water quality characteristics of bottom samples are also summarized in Table 2-10. As discussed previously, these samples were collected approximately 0.5 m from the water/sediment interface at each site during each monitoring event. In general, measured concentrations for virtually every parameter are substantially greater in water samples collected near the lake bottom than in samples collected near the water surface. Increases in concentration near the lake bottom are particularly apparent for alkalinity, ammonia, particulate nitrogen, total nitrogen, particulate phosphorus, total phosphorus, TSS, and turbidity.

A comparison of variability in measured concentrations of total nitrogen and total phosphorus in Lake Pineloch from April-October 2006 is given in Figure 2-22. In general, a relatively low degree of variability was observed in total phosphorus concentrations collected near the water surface at monitoring sites 1 and 2. In contrast, samples collected near the lake bottom are characterized by substantially elevated and highly variable concentrations between the monitoring events. This variability is particularly apparent at Site 1 which is located near the deepest part of the lake. The rapid change in concentrations observed in bottom samples collected at both sites suggests that the lake may experience periods of phosphorus enrichment in lower portions of the water column which is then redistributed into the main portion of the lake as a result of a destratifying event.

A similar pattern is apparent in measured concentrations of total nitrogen. In general, a relatively low degree of variability was observed in surface concentrations of total nitrogen. However, in deeper portions of the lake, nitrogen concentrations can accumulate to concentrations approximately 10 times greater than concentrations measured near the lake surface. These concentrations also appear to be variable throughout the year, with periods of nutrient enrichment followed by periods of circulation and redistribution of nitrogen throughout the entire water column of the lake.

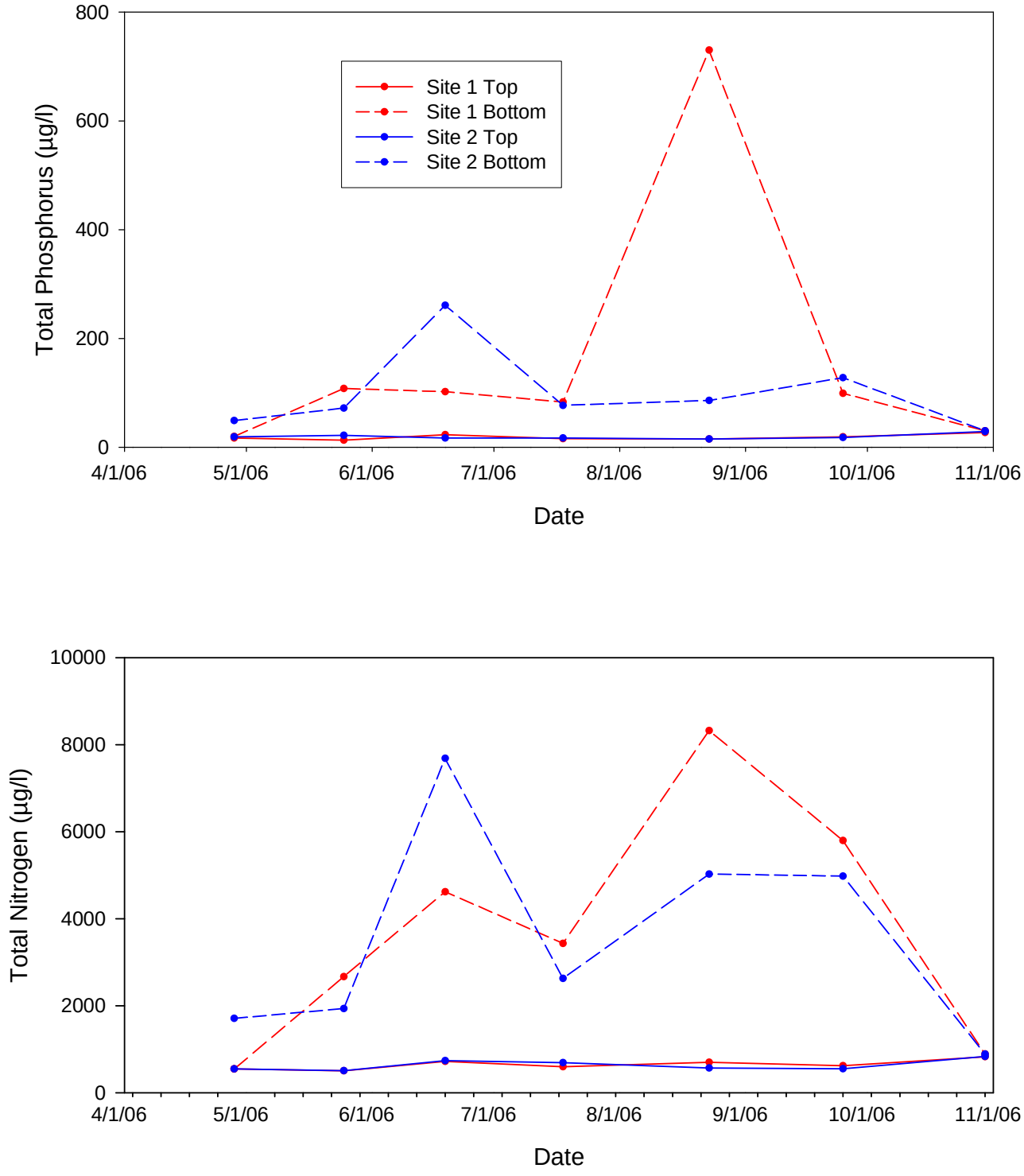


Figure 2-22. Variability in Measured Concentrations of Total Nitrogen and Total Phosphorus in Lake Pineloch from April-October 2006.

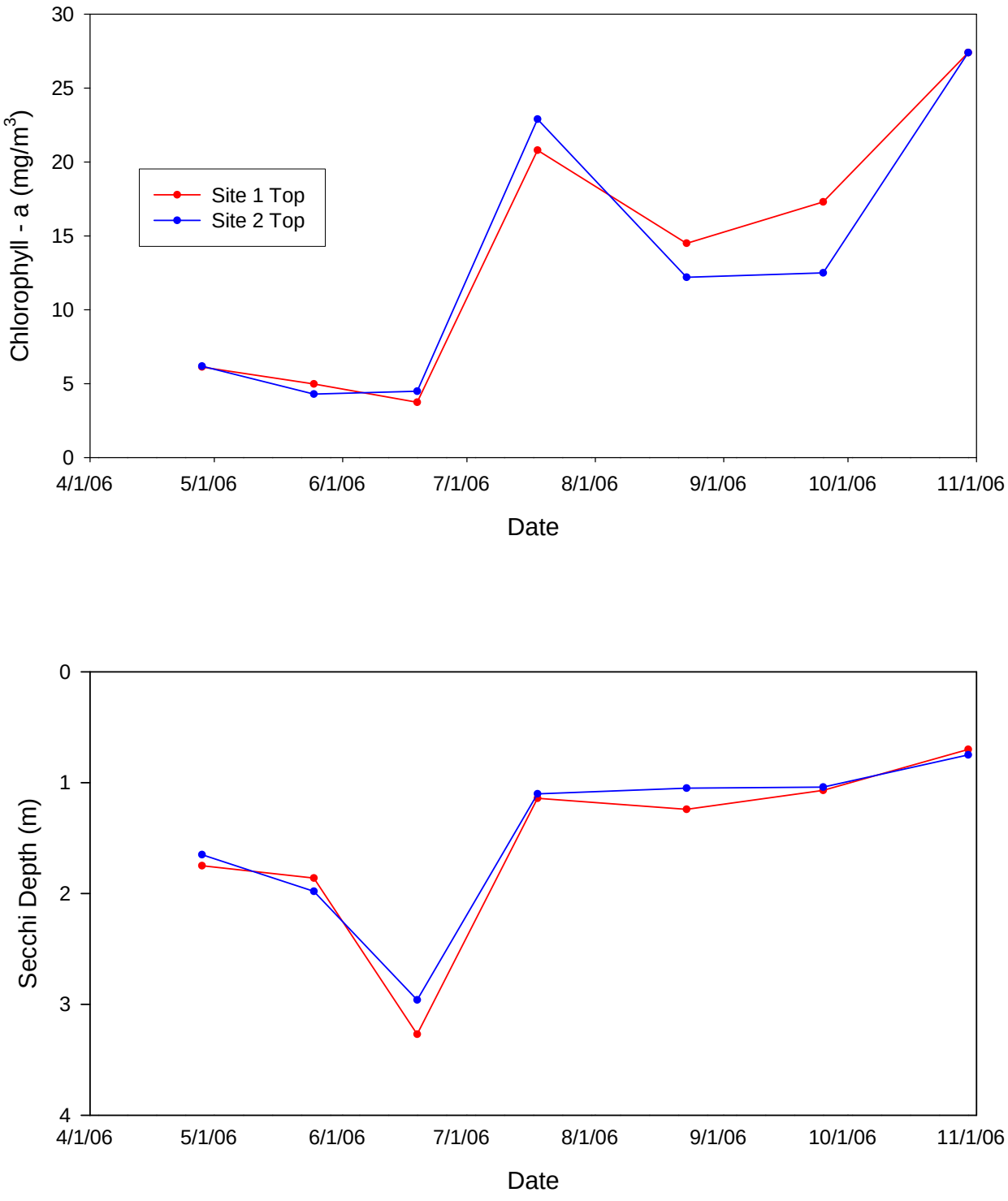


Figure 2-23. Variability in Chlorophyll-a and Secchi Disk Depth in Lake Pineloch from April-October 2006.

Variability in chlorophyll-a and Secchi disk depth in Lake Pineloch from April-October 2006 is illustrated on Figure 2-23. During the period from April-June 2006, Lake Pineloch was characterized by low levels of chlorophyll-a and excellent water quality, with Secchi disk depths ranging from approximately 1.7-3.3 m. However, during this period many areas of the lake became choked with excessive growth from submerged macrophytes, including hydrilla. During July 2006, a noticeable change in water quality in Lake Pineloch was observed during the monthly monitoring event. Water clarity had decreased to approximately 1 m, the lake experienced a 4- to 5-fold increase in concentrations of chlorophyll-a, and the water column exhibited a brown color with visible particulate turbidity. The vast majority of the previously observed submerged vegetation was now absent. The elevated levels of chlorophyll-a and poor water column clarity remained throughout the reminder of the monitoring program conducted by ERD.

Variability in TN/TP ratios in Lake Pineloch from April-October 2006 are illustrated on Figure 2-24. During the monitoring program conducted by ERD, Lake Pineloch maintained either phosphorus-limited or borderline nutrient-balanced conditions at each of the two monitoring sites. This behavior suggests that the most effective method of improving water quality in Lake Pineloch is to reduce phosphorus inputs into the lake.

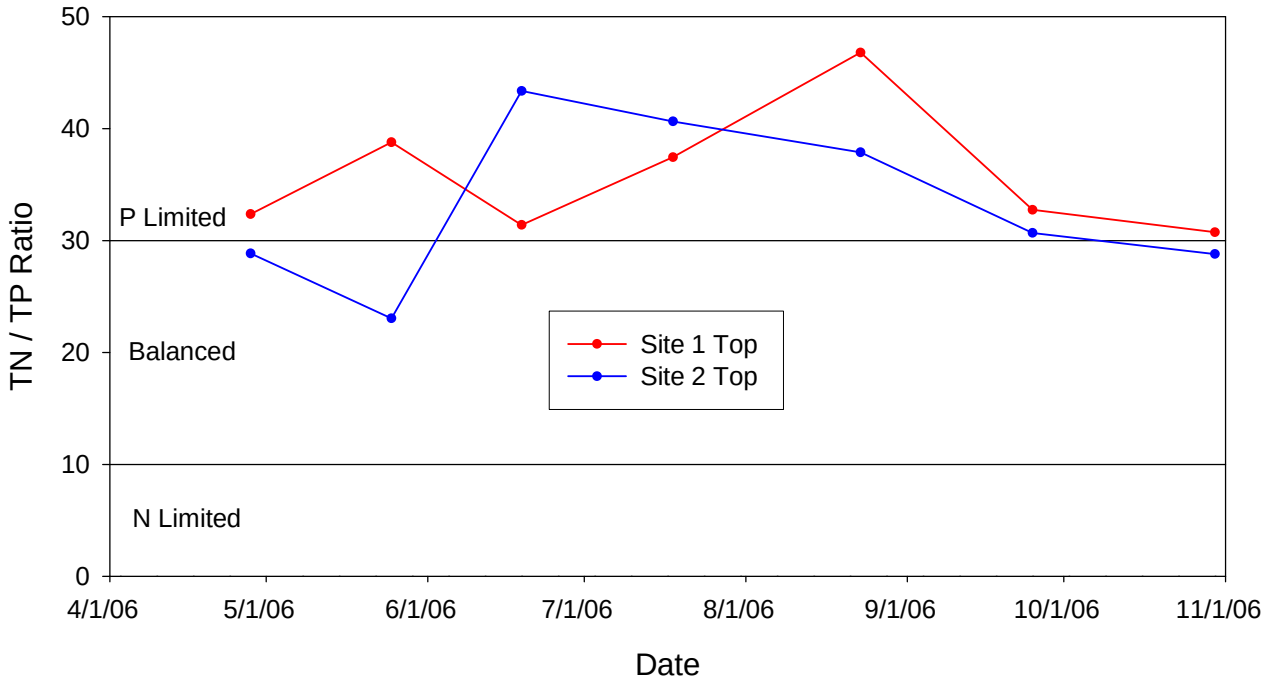


Figure 2-24. Variability in TN/TP Ratios in Lake Pineloch from April-October 2006.

In addition to the monitoring efforts described previously, supplemental surface water monitoring was conducted during the August and September 2006 monitoring events to evaluate vertical variability in water quality within the lake. During these events, individual water samples were collected at 1 m intervals, beginning at a depth of 1 m below the water surface at each site. Each of these samples was then evaluated for the same parameters which were included in the previously described monitoring program. A complete listing of the results of this monitoring effort is given in Appendix D.2.

Vertical variability in measured concentrations of alkalinity and ammonia in Lake Pineloch from August-September 2006 is illustrated on Figure 2-25. In general, upper portions of the water column in Lake Pineloch are relatively poorly buffered, with measured alkalinities ranging from approximately 50-60 mg/l. However, at water depths in excess of 5 m, alkalinity within the lake appears to increase rapidly, reaching concentrations ranging from 116-137 mg/l above the water/sediment interface. This increase in alkalinity is unusual for an urban lake, since most eutrophic lakes exhibit a measurable decrease in alkalinity with increasing water depth. The elevated alkalinity measurements observed in the bottom layers of Lake Pineloch suggest possible influence from high alkalinity groundwater sources.

Ammonia concentrations in Lake Pineloch are generally low in value in upper portions of the water column to a depth of approximately 4 m. Typical concentrations in this area are approximately 15-30 μg/l. However, below this depth, measured concentrations of ammonia increased rapidly with increasing water depth, reaching equilibrium concentrations ranging from approximately 3700-4600 μg/l above the water/sediment interface. This represents a large pool of readily available nitrogen which can be circulated into the overlying water column as a result of significant circulation events. Depending on the relative volume of the hypolimnion layer, the mass of ammonia contained in these lower layers may pose potential toxicity concerns if suddenly dispersed into the epilimnion, particularly under high pH conditions.

A graphical summary of vertical variability in total phosphorus and total nitrogen in Lake Pineloch during August and September 2006 is given on Figure 2-26. In general, phosphorus concentrations are relatively uniform within the water column to a depth of approximately 4 m during each of the two monitoring events. A gradual increase in total phosphorus concentrations begins to occur at a depth of 4 m, with an approximate doubling of phosphorus concentrations between 4-6 m. However, at depths in excess of 6 m, phosphorus concentrations begin to increase rapidly, particularly during the August event. Total phosphorus concentrations near the lake bottom ranged from 730-860 μg/l at the two monitoring sites. A less significant degree of increase is apparent during the September event which suggests that the elevated concentrations measured during the August event have been circulated into upper portions of the water column by a significant circulating event.

A similar pattern is apparent for measured concentrations of total nitrogen in Lake Pineloch. Relatively uniform concentrations were observed at each of the two monitoring sites to a depth of approximately 5 m. Total nitrogen concentrations begin to increase rapidly at this depth, reaching concentrations near the water/sediment interface ranging from 4979-8321 μg/l. As seen in Appendix D.2, the vast majority of this increase is due to substantial increases in ammonia in deeper portions of the lake.

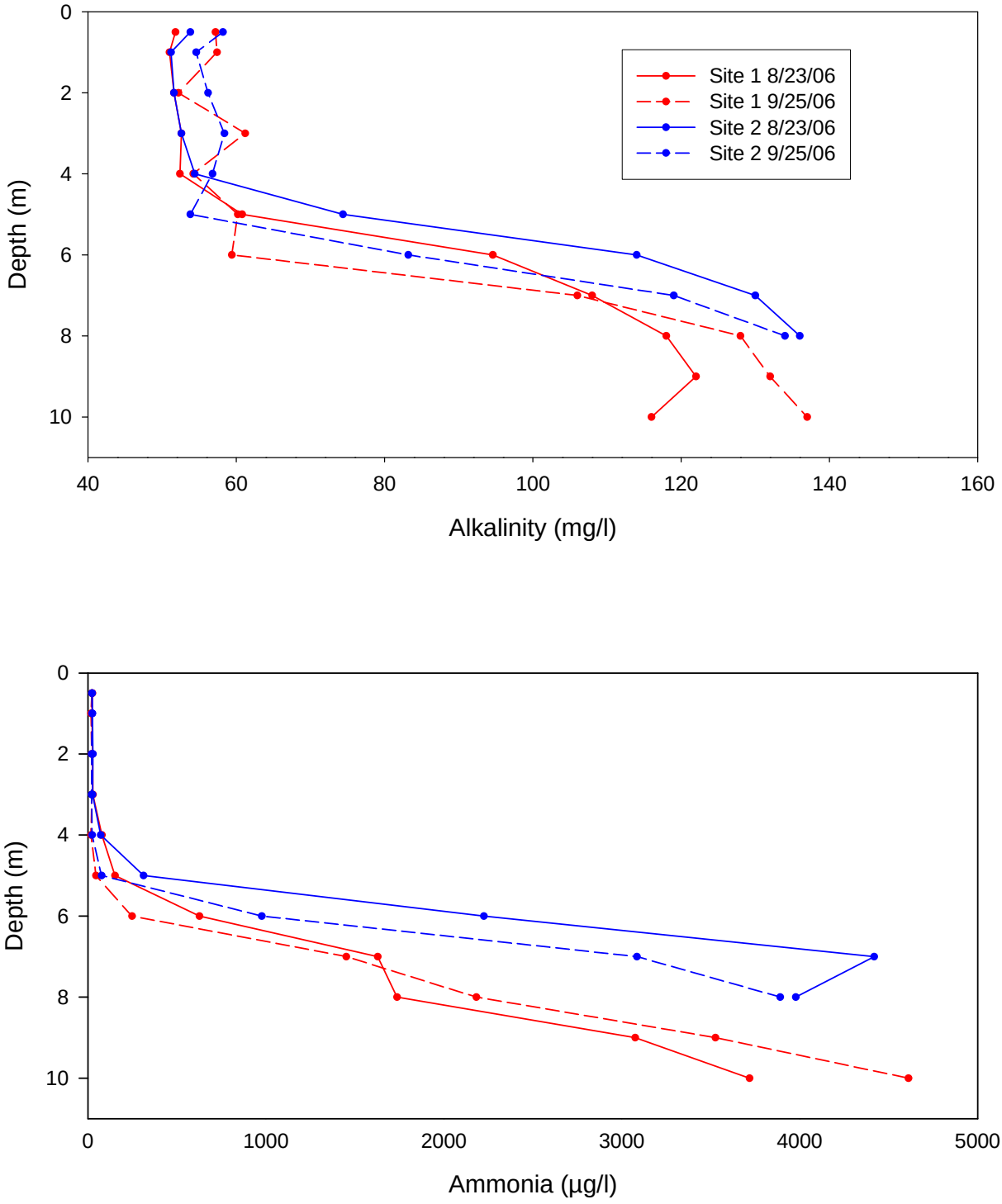


Figure 2-25. Vertical Variability in Alkalinity and Ammonia in Lake Pineloch During August-September 2006.

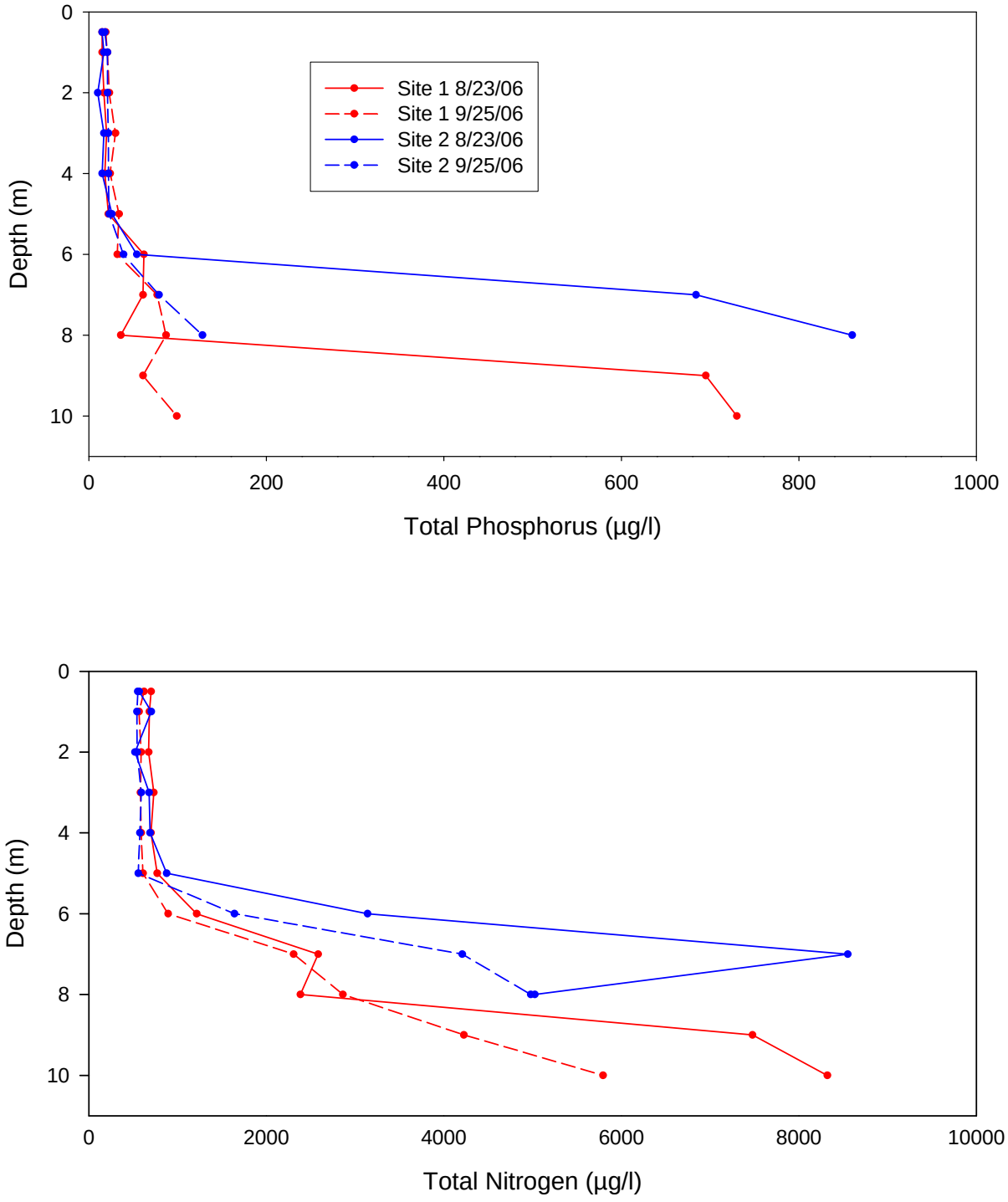


Figure 2-26. Vertical Variability in Total Phosphorus and Total Nitrogen in Lake Pineloch During August-September 2006.

2.3.2.4 Summary

In general, Lake Pineloch exhibits dynamic and somewhat unusual water quality characteristics. Upper portions of the water column appear to be relatively well mixed during much of the year to water depths of 4 m or more. Water quality in these upper layers of the lake typically ranges from moderately good to poor. Historical water quality monitoring conducted within this upper zone suggests that Lake Pineloch should be classified as a borderline oligotrophic/mesotrophic lake, which is clearly an incorrect conclusion. Both historical and current monitoring data suggests that Lake Pineloch becomes highly stratified, both physically and chemically, during at least portions of the year. These lower portions of the water column are often anoxic and create conditions favorable for release of large amounts of ammonia, total nitrogen, and total phosphorus from the sediments into the lower hypolimnetic layer. Periodic episodes of circulation cause these accumulated nutrients to be redistributed into other portions of the water column. This type of behavior is characteristic of eutrophic and hypereutrophic systems.

The accumulated sediments in Lake Pineloch appear to exhibit a significant oxygen demand which is sufficient to rapidly create anoxic conditions in lower layers of the lake throughout most of the year. These sediments contain a substantial amount of accumulated organic matter which is continuing to decompose, creating the observed oxygen demand. The anoxic conditions created within this zone create ideal conditions for sediment release of nutrients, particularly ammonia and phosphorus. As a result, it appears that Lake Pineloch is impacted by both external and internal nutrient sources.

Attachment D: Southern Research Laboratories, Certifications

State of Florida
Department of Health, Bureau of Public Health Laboratories
This is to certify that

E83484

SOUTHERN RESEARCH LABORATORIES, INC.
279 DOUGLAS AVE, SUITE 1110
ALTAMONTE SPRINGS, FL 32714

has complied with Florida Administrative Code 64E-1,
for the examination of environmental samples in the following categories

NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - VOLATILE ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - VOLATILE ORGANICS

Continued certification is contingent upon successful on-going compliance with the NELAC Standards and FAC Rule 64E-1 regulations. Specific methods and analytes certified are cited on the Laboratory Scope of Accreditation for this laboratory and are on file at the Bureau of Public Health Laboratories, P. O. Box 210, Jacksonville, Florida 32231. Clients and customers are urged to verify with this agency the laboratory's certification status in Florida for particular methods and analytes.

Date Issued: July 01, 2022 Expiration Date: June 30, 2023

Susanne Crowe, MHA
Interim Chief Bureau of Public Health Laboratories
DH Form 1697, 7/04
NON-TRANSFERABLE E83484-41-07/01/2022
Supersedes all previously issued certificates

Attachment E: Southern Research Laboratories, Quality Manual

1 SECTION 1.0
POLICY STATEMENT

1.1 OBJECTIVES

The objective of this laboratory, Southern Research Laboratories, Inc. (SRL), and its quality program is to ensure that all data generated by it are scientifically valid and of known acceptable accuracy.

This objective includes meeting the requirements of the National Environmental Laboratory Accreditation Program (NELAP) standards, as adopted by the Florida Department of Health Laboratory Certification Program.

This document is the Quality Manual for SRL and it will be communicated to, understood, and implemented by all laboratory personnel.

1.2 SCOPE

The quality manual strives to provide an overview of the laboratory's quality system and is not intended to include material that is already specified in an operational or technical SOP, published method, manual, or document.

Although every effort is made to ensure that the quality manual is current, published laboratory SOPs and analytical methods take precedence.

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1.3 ETHICS AND LEGAL RESPONSIBILITY

The laboratory has a policy and procedure addressing ethics and data integrity.

The employees and management of this laboratory are ethically and legally responsible in providing accountability for the quality and integrity of the laboratory services they provide.

This responsibility requires that employees properly document pertinent laboratory functions and that data produced by them are of known, documented quality.

The employees are charged with striving to maintain and improve their technical knowledge and professional competence. This responsibility requires that employees become familiar with the tools and information necessary for the performance of their assigned duties.

The employee is required to maintain a cooperative, professional working relationship with colleagues and clients.

Potential punishments and penalties for improper, unethical or illegal actions include, but are not limited to, written reprimands, demotion with salary reduction, dismissal, and/or legal action.

All employees are required to read, understand and sign a statement of compliance, attesting to their commitment to honesty and integrity in performance of their duties. This documentation is maintained in their personnel file.

1.4 COMMITMENTS

The management and the employees of SRL are committed to generating data that meets NELAP standards, to accepted laboratory practices, and to the highest quality of testing services. The management is committed to sound and useful Quality Assurance/Quality Control management practices.

The management is committed to ensuring that these practices and standards are adhered to and documented.

The management is committed to providing a clear description of every aspect involved in producing, reporting and maintaining the data in this manual and other laboratory documents. These documents shall be available to, understood and implemented by all laboratory personnel concerned.

This Manual and other laboratory documents shall be maintained current under the responsibility of the Quality Assurance Officer.

The management is committed to facilitating effective communication among clients, laboratory staff, management, FDEP and FDOH.

The management is committed to assisting clients to keep projects on schedule, and within reasonable costs for required data. The management is committed to assisting employees maintain and improve their technical knowledge and professional competence.

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1.5 MANAGEMENT QUALITY SYSTEM REVIEW

The laboratory has a procedure addressing management review of the laboratory quality system. Refer to the relevant SRL SOP.

To insure continued suitability and effectiveness of all procedures used in the Laboratory, an annual review of the laboratory quality system and procedures are conducted.

Review of quality system documents will occur 12 months from the last review or revision of a particular document.

Concerns and issues that could impact data quality may be addressed more frequently.

Any changes to equipment and/or methodology will be reviewed and changes to test SOP’s will be made as required.

The goal is to ensure the procedures used are dynamic and changing for the better and all changes are properly documented.

Reviews and modifications made by contractors or by staff will be maintained as a record of modifications (tracked changes or summary) and effective dates documented.

2 SECTION 2.0
ORGANIZATION AND PERSONNEL REVIEW

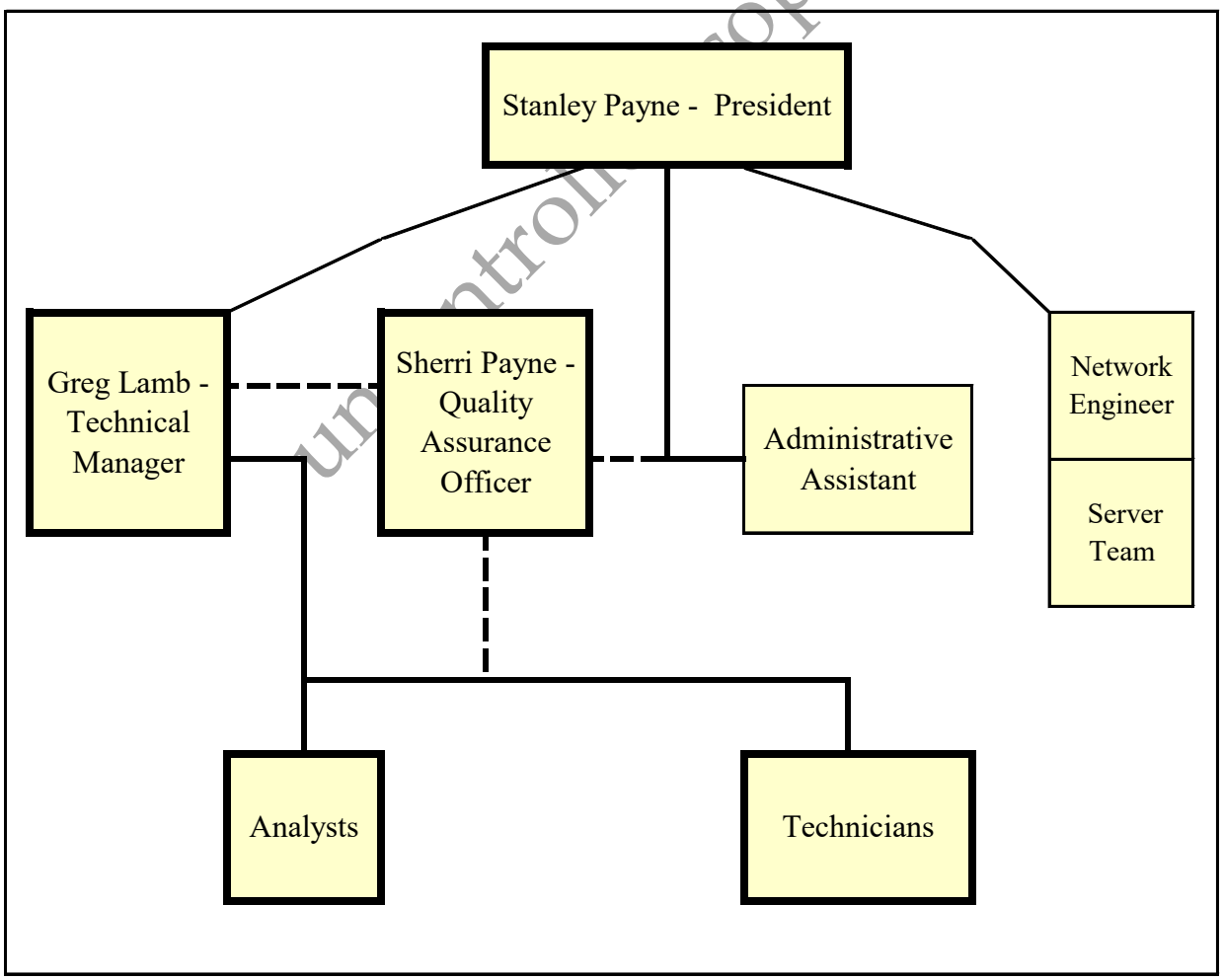
2.1 RELATIONSHIP OF MANAGEMENT, OPERATIONS AND QUALITY SYSTEM

The organization chart is shown in Figure 2-1. It defines the relationship between management, operations, and the Quality System.

2.2 ORGANIZATION & MANAGEMENT STRUCTURE

The organizational chart shows lines of direct authority (solid lines), lines of responsibility and interaction (dotted lines) and personnel MOST responsible for the implementation of the Quality Manual, SOPs, and the quality program (bold boxes).

Figure 2-1: Structure



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2.3 JOB DESCRIPTION OF KEY PERSONNEL

The following identifies key personnel by title and describes their responsibilities:

- The *President* has the overall responsibility for the laboratory, and its policies, commitments, and objectives.
- The *Laboratory Technical Manager* has the overall responsibility for laboratory technical activities. This includes implementing policies and procedures, checking laboratory documentation for completeness, assuring adherence to SOPs, evaluating new methods and technologies, updating and maintaining SOPs, reviewing raw data for calculation, interpretation, or clerical errors and enforcing corrective actions with the Quality Assurance Officer.
- The *Quality Assurance Officer* (QAO) evaluates the integrity of the Quality program and has overall responsibility for determining policies and procedures, conducting or assigning personnel to perform internal audits or audits of suspect data, directing subcontractors, reviewing analytical results, enforcing corrective actions with the Technical Director, maintaining the Quality Manual, and reviewing the overall quality of the data produced by SRL.
- *Administrative Assistant/Accounting* personnel assists in all organizational functions including client contact, report review for clerical errors, invoicing, accounts payable, accounts billable, subcontractor contacts, software/hardware administration, and employee time management, order supplies, data and report management
- The *Network Engineer* establishes and maintains the software and computer hardware necessary to laboratory operations, software verification, the electronic data security system, the electronic archived information, and audits to these systems.
- *Analysts* are responsible for the analysis of samples or sample extracts, interpretation, calculation and evaluation of raw data, performance of method quality checks, the execution of corrective actions, routine equipment maintenance, calibration, organization and storage of raw data, maintenance of current analytical standards and routine replacement parts, trouble shooting, high pressure gas upkeep, maintaining appropriate logs, reporting problems, etc. to supervisor, ordering analytical supplies, and entering QA data and check sample results.
- *Technicians* extract and prepare samples for analysis, compose method quality checks as required, field sample, log-in, prepare sample kits, prep bottles, wash glassware, clean refrigerators, dispose of outdated samples, maintain inventories, maintain appropriate logs of samples, kits, and reports drop-off and pick-up, and perform general laboratory maintenance.

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2.4 JOB TRAINING

SRL screens and trains all personnel for their assigned job functions.

The screening includes reviewing initial education and training, and requiring a demonstration of capability. The laboratory has a procedure addressing training.

New Hires will be required to perform a Demonstrations of Capability (DOC)

2.5 QUALIFICATIONS

All personnel in Technical Manager and QAO positions have requisite experience in Organic analysis of at least 4 years. SRL requires the Technical Manager to have a Bachelor's degree in chemical, environmental, biological, physical science or engineering.

All other personnel must have the necessary education, training, technical knowledge, and/or experience in any combination that assures their ability to perform their assigned functions.

2.6 DEMONSTRATION OF CAPABILITY (DOC)

Demonstration of Capability are a procedure to establish the ability of the analyst to perform analyses with acceptable accuracy and precision.

Refer to section 10.1 of this manual.

The laboratory has a procedure addressing this; Refer to the relevant SRL SOP Proficiency testing and demonstrations of capability.

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2.7 APPROVED SIGNATORIES (Signatory Authorities)

The normal signatory for analytical reports is the QAO. The signatory for overview of raw data to report format is the Technical Manager. However, the QAO, Technical Manager, the Vice President or the President may sign raw data and reports. The President or Vice President only may sign contracts, insurance, and payroll. Fully trained technicians, the QAO, Technical Manager, or the Administrative Assistant may sign chain-of-custodies and perform log-in procedures.

2.8 LABORATORY CLOSURE PLAN

The plan refers to procedures undertaken to fulfill administrative, regulatory, data, and laboratory requirements as a result of facility closure. Ultimate responsibility for meeting all requirements rests with the laboratory ownership.

To facilitate planning for closure of the facility, the QAO will provide clients with information on the projected date of closure in order to identify the need to develop plans for closing out data analysis, report preparation, and storage of records completed within 5 years of the last analysis. The QAO or technical Manager will develop a client-specific checklist to ensure that all resources are identified for transfer to the client or another facility.

2.9 LONG TERM STORAGE OF LABORATORY RECORDS

The laboratory has a policy and procedure addressing records retention.

Laboratory records will be retained in accordance with laboratory policy and any client-specified requirements to ensure protections of confidentiality.

If the data is subject to any other U.S. federal or state, country, or local laws, regulations, policies or other requirements, the strictest of any applicable laws, regulations, policies or other requirements for record retention the most stringent requirements will be followed.

3 SECTION 3.0
FACILITIES AND EQUIPMENT OPERATIONS

3.1 FACILITIES

SRL is committed to establishing and maintaining a facility with work/equipment areas, power distribution, lighting, air conditioning, and computer access that facilitate proper performance of the analyses.

SRL shall provide effective separation between areas with incompatible activities, such as extractions and volatile organic analysis.

3.2 WORK AREAS

Work areas shall include sample receipt, sample storage, chemical storage, waste storage, sample prep, analysis/test equipment areas, data handling, and data storage.

Work areas will be kept unencumbered and clean to help ensure safety and to ensure contamination does not adversely affect data quality.

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3.3 EQUIPMENT SUMMARY

The laboratory has a procedure addressing equipment maintenance, verification and calibration.

Table 3-1 at the end of this section is a list of the analytical and support equipment.

3.4 SUPPLIES AND SERVICES

The laboratory has procedures addressing supply and vendor management.

Supplies and Services affecting the quality of environmental tests will be purchased only from reputable vendors with established credentials. A list of vendors will be maintained at the laboratory with contact information. Critical laboratory standards used for Chemical analysis will be purchased only from established vendors that are ISO9001 compliant or equivalent. The vendors will provide Certificates of Analysis for all standard materials and MSDS as requested.

3.5 PURCHASE & RECEIPT

The laboratory has procedures addressing supply and vendor management. Refer to the relevant SRL SOP.

An organized system of purchase and receipt will be maintained that clearly indicate purchase date, receipt date and notes on condition as appropriate.

Any item of suspect condition or handling will not be stored or used until it can be established that quality has not been affected.

3.6 QUALITY REVIEW

All documents from purchases of supplies or services that affect the quality of environmental data will be reviewed and maintained by the Lab. These may include: certificates of analysis, equipment specifications, refrigerator/freezer maintenance records etc.

Refer to laboratory procedures addressing management review. Refer to the relevant SRL SOPs.

Table 3-1: Equipment List (In use)

Instrument	Manufacturer	Model Number	No. of Instruments in Lab
Purge and Trap	EST	Encon	1
Purge and Trap	EST	ENCON Evolution	1
Autosampler	EST	Centurion	1
Autosampler	EST	Archon	1
GC – Mass Spectrophotometer	Agilent Technologies	HP 5890/5972A	1
GC – Mass Spectrophotometer	Agilent Technologies	HP 6890/5973	3
GC – Halls/PID	Hewlett Packard (GC) – OI Analytical (detectors)	HP 5890/ OI 4430/OI 5220	1
GC – Halls/PID	Tracor	540 GC	1
Autosampler	Hewlett Packard	7673	3
GC – ECD/FID	Hewlett Packard	5890	2
GC – FID	Hewlett Packard	5890	1
Turbidimeter	HF Scientific	DRT-15C	1
Conductivity Meter	Oaktron	CON 5	1
Analytical Balance	Ohaus	CS Series	1
Analytical Balance	Mettler Instruments	AE100	1
pH/Temperature Meter	Corning	313	1
Convention Oven	Precision Scientific	4EG	1
Convention Oven	VWR Scientific	1300 U	2
Extractor	Lab Line Instruments	6000	1
Vacuum System	GAST	DOA-P184-AA	1
Water Bath	Thermolyne	2200	1
Sonicator	VWR Scientific	Aquasonic 75T	1
Sonifier	Branson Ultrasonics Corp.	250/450	1
Refrigerators	various	various	6
Freezer	Beckman	NA	1
Ultrapure water system	Millipore	Milli-Q	1
Computers	various	various	>11
Milli-Q Water System	Millipore	NA	1

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4 SECTION 4.0
EQUIPMENT MAINTENANCE

4.1 GENERAL MAINTENANCE

The laboratory has procedures that address equipment maintenance and calibration. Refer to the relevant SRL SOPs.

The laboratory maintains all equipment and reference materials required for the performance of tests, and equipment and software used for testing capable of achieving the accuracy required to comply with specifications relevant to the environmental tests concerned.

The laboratory uses maintenance plans and calibration programs for verifying that equipment complies with relevant specifications, key quantities or values unless otherwise specified in a particular method of analysis. The laboratory checks or calibrates all equipment before use including analytical support equipment; a record of calibrations are maintained, as appropriate to the nature of calibration-i.e. DOC, Initial, Continuing, Certification, etc. Refer to section 10 of this manual.

Storage, use, maintenance and disposal of equipment and reagents is as recommended in the manuals or as relevant to use and regulation; records are maintained at the facility;

Maintenance records are maintained in instrument logbooks. Items are labelled or moved for repair.

Retired or broken equipment that is removed from use is clearly labelled until it can be moved or disposed of.

Defective equipment or materials are isolated and clearly marked.

All activities from instrument to reagent are traceable, can be validated, and checked as is technically and economically practicable.

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4.2 ROUTINE AND PREVENTATIVE MAINTENANCE

The laboratory has procedures that address equipment maintenance and calibration. Refer to the relevant SRL SOPs.

Table 4-1 lists the routine maintenance and frequency of maintenance on SRL's analytical equipment.

All maintenance, repairs, modifications and updates are recorded in an instrument logbook (laboratory notebook) and include a description of the problem, repairs performed, date and the initials of the analyst.

Preventative maintenance is performed as analytical data and corrective action indicate. It is included in Table 13-1.

Refer to section 10.0 of this manual for more detailed information on verification and calibration of equipment and test methods.

4.3 ANALYTICAL SUPPORT EQUIPMENT

The laboratory has procedures addressing equipment maintenance and calibration. Refer to the relevant SRL SOPs.

Refer to section 10.0 of this manual for more detailed information on certification and calibration of support equipment.

4.4 CERTIFICATIONS/ INSPECTIONS / MAINTENANCE

Implementation and expiry dates are indicated or inferred on the certificate, letter of inspection, proof of maintenance, date of calibration, etc.

Additional tracking is duplicitous and therefore not utilized at this facility.

4.5 INSTRUMENT UPDATES

As new technology improves detectors, integration software, injection ports, etc., SRL will continue to keep abreast of these changes. When data quality and cost factors indicate, analytical instruments and equipment will be updated or purchased new to keep up with the "best available technology".

4.6 COMPUTER SOFTWARE VALIDATION

The laboratory has procedures that address system management. Refer to the relevant SRL SOPs.

Computer software utilized in the laboratory is commercial off-the-shelf software.

Computer software developed by the laboratory will be documented in sufficient detail and suitably validated as being adequate for use according to the SRL's Proof of Concept.

The laboratory procedure for software development and validation or any records of validation for in-house developed software will be documented in accordance to SRL's Proof of concept in compliance with NELAC 5.5.4.7.2(a).

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Table 4-1A: Routine and Preventative Maintenance

Instrument	Maintenance Task	Frequency
GC-FID (PAHs & FL-PRO)	Check hydrogen, air, nitrogen & helium. Replace injector needle wash solvents and empty waste vials. Change injector septum. Change injector liner. Remove first 6 to 12” of column. Clean injection port seal (bottom of injector). Replace injection port seal. Clean jet. Change column. Replace injector needle.	Daily As needed As needed As needed As needed As needed As needed As needed As needed As needed

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Table 4-1B: Routine and Preventative Maintenance (continued)

Instrument	Maintenance Task	Frequency
Purge & Trap, GC/MS(VOAs)	Check helium, DI water & waste container.	Daily
	Purge methanol/water mix and bake trap (do not desorb).	As needed for VOC contamination
	Calibrate autosampler gripper/movement.	Weekly
	Clean 25 ml syringe in autosampler.	Monthly
	Clean sparge tube.	Weekly
	Change trap in purge & trap.	When only brominated components show low recovery
	Replace transfer lines in purge & trap.	As needed
	Check rough pump oil.	Weekly
	Change column.	As needed
	Replace MS filament.	As needed
	Clean MS source, and replace parts	As needed
GC/MS (PAH)	Check helium	Daily
	Calibrate autosampler movement.	As Needed
	Check rough pump oil.	Weekly
	Replace injector needle wash solvents and empty waste vials.	As needed
	Change injector septum.	As needed
	Change injector liner.	As needed
	Remove first 6 to 12” of column.	As needed
	Clean injection port seal (bottom of injector).	As needed
	Replace injection port seal.	As needed
	Change column.	As needed
	Replace injector needle.	As needed
	Replace MS filament.	As needed
	Clean MS source, and replace parts	As needed

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Table 4-1C : Routine and Preventative Maintenance (continued)

Balances	Check with class S weights. Check, clean and calibrate.	Before each use Balance calibration is checked prior to use in proper range standard calibration masses. Calibration check is noted in balance logbook for that day. Annually, by service provider
Ovens	Check with NBS-calibrated thermometer.	Annually Thermometers are installed in all ovens and baths.
Refrigerators and Freezers	Check and record temperature. Check with NBS-calibrated thermometer.	Daily The thermometers in fridges and freezers are Hi/Lo thermometers. Annually
Thermometers	Check and record temperature. Check with NBS-calibrated thermometer.	Annually NIST/DKD certified thermometer is being used to calibrate thermometers. HB Instrument Certified Thermometer Part # 08008-48 Serial #N08158

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5 SECTION 5.0
CAPABILITIES

5.1 SAMPLING CAPABILITIES

SRL has the capacity to sample many different kinds of matrices for numerous analytes. Table 5-1 lists these matrices.

5.2 FIELD MEASUREMENT CAPABILITIES

Table 5-2 states the field test methods SRL is able to perform.

5.3 ANALYTICAL CAPABILITIES

SRL specializes in analysis of samples for organic analytes. Table 5-3 asserts SRL's analytical capabilities.

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Table 5-1: Sampling Capabilities

Parameter Groups	Volatile Organics	Extractable Organics	Metals	Inorganic Anions	Physical Properties	Organics	Biotoxicity	Microbiology	Radionuclides
Aqueous Sample Sources									
Surface Water	X	X	X	X	X	X		X	X
Wastewater	X	X	X	X	X	X		X	X
Stormwater Runoff	X	X	X	X	X	X		X	X
Groundwater	X	X	X	X	X	X		X	X
Air strippers/Treatment Systems	X	X	X	X	X	X		X	X
Wells with in-place Plumbing	X	X	X	X	X	X		X	X
Temporary Well Points	X	X	X	X	X	X		X	X
Potable Wells	X	X	X	X	X	X		X	X
Drinking Water Supply Systems	X	X	X	X	X	X		X	X
Non-Aqueous Sample Sources									
Sediment	X	X	X	X	X	X			
Soil	X	X	X	X	X	X			
Domestic Waste Sludge	X	X	X	X	X	X			
Liquid Hazardous Waste	X	X	X	X	X	X			
Hazardous Waste Sludge	X	X	X	X	X	X			

Note: "X" indicates SRL has the capacity to sample the parameter group in the indicated matrix.

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Table 5-2: Field Test Capabilities

Test Method	Matrix	Analyte
360.1	water	Dissolved Oxygen
150.1	water	pH
4500-Cl G	water	Residual Chlorine
120.1	water	Specific Conductivity
170.1	water	Temperature
180.1	water	Turbidity
field method	water	Ferrous Iron

Table 5-3: Analytical Capabilities

Parameter Group	Method Name	Method Number	Matrix
Volatile Organics	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	8260 Certified	Aqueous & Non-aqueous
	1,4 Dioxane by Gas Chromatography/Mass Spectrometry (GC/MS-SIM)	8260-SIM Certified	Aqueous
Extractable Organics	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	8270-SIM Certified Method	Aqueous & Non-aqueous
	FDEP Method for Determination of Petroleum Range Organics	FL-PRO Certified	Aqueous & Non-aqueous
Sample Prep Methods	Separatory Funnel Liquid-Liquid Extraction	3510 Certified	Aqueous
	Sonication Extraction	3550C Certified	Non-aqueous
	Purge - and - Trap	5030 Certified	Aqueous, Low Level Soil, & Waste
	Purge - and - Trap	5035 Certified	Aqueous, Low Level Soil, & Waste

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6 SECTION 6.0
CLIENT AND PROJECT PROVISIONS

6.1 CLIENT CONFIDENTIALITY AND PROPRIETARY RIGHTS

All sample data records and documents generated by SRL are confidential between the client and SRL.

Written permission must be received by SRL from the client to allow another party to view or obtain records, reports, invoices, proposals, complications of (client's) data, sampling or analysis notes and other documents *specifically* relating to the client's samples. However, all records and documents generated by SRL may be subject to disclosure to the State of Florida solely for the purposes of auditing SRL's analytical and quality systems.

6.2 CLIENT MANAGEMENT AND CONTACTS

In general, client/project management is carried out by SRL client management, including the Technical Manager, the QAO, and their administrative assistants. Clients do not generally speak with the technical staff so that undue pressure or bias is not placed on them.

The SRL management is responsible for advising technical staff on relevant information received from the client, such as known heavy contamination present in the samples, requested due dates, etc.

This information should be written on the Chain of Custody or Sample Receipt Checklist.

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6.3 PROJECT ACCEPTANCE AND REVIEW PROCESS

All scheduled projects, identified from kit requests and/or client communications, as well as walk-in projects, are reviewed by SRL client management prior to approval for receipt by the laboratory. They ensure the appropriate facilities and resources are available to complete the work in a timely manner with the correct level of quality control. This may involve discussions with technical staff and/or subcontracting laboratories.

As per NELAC 5.4.2.3(i) [TNI V1M2, 4.2.8.4(j)] – The laboratory's mechanism for ensuring that the laboratory reviews all new work to ensure that it has the appropriate facilities and resources before commencing such work is as per a management review.

SRL management will do an analysis of its best operating scenario capacity to make realistic predictions about the ability to handle future scopes of work.

This will be amended as new equipment comes on line or equipment is retired.

At least once per annum, as needed, an analysis will be discussed at the Management review at a convened team meeting or as appropriate to the scope of work. Only new contracts that are accepted and outside of the current scope of work will documented and maintained.

If the SRL client management personnel are not available when an unscheduled project arrives at the laboratory, the samples will not be logged in, but will be held until proper approval is obtained.

6.4 DESIGN CONTROL

Before accepting any project, an analysis by SRL management of capabilities of the laboratory and current backlog will be assessed.

6.5 QUALITY PLANNING

All projects will be reviewed to insure that client needs and expectations are well defined.

Kit requests will be reviewed for completeness and any discrepancies on the Chain of Custodies will be discussed and documented before sample analysis will begin

6.6 COMPLAINTS

The laboratory has a procedure addressing the management of client complaints. Refer to the relevant SRL SOPs.

Client complaints may be handled directly by staff as appropriate but final responsibility lies with the Quality Assurance Officer.

A complaint is documented and placed in the clients file.

A copy is place in a general laboratory complaint file to track types of complaints, so that any trends can be quickly assessed; refer to corrective and preventative actions for further information.

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7 SECTION 7.0
ANALYTICAL SUBCONTRACTING

7.1 ANALYTICAL SUBCONTRACTING

The laboratory has a procedure addressing subcontracted analysis. Refer to the relevant SRL SOPs.

It is the intent of SRL to only subcontract work that is not currently done in-house by Certified Analysis. It may also be required to subcontract work due to capacity or instrument problems. In all cases only NELAP accredited laboratories will be used for subcontract work.

7.2 CLIENT NOTIFICATION OF SUBCONTRACTED ANALYSIS

The Client is notified before the acceptance of any work, which analyses are not currently performed by SRL Inc and will be subcontracted. Approval in writing will be obtained if possible. SRL will be responsible for all subcontracted data and for payment to all subcontractors.

At any point it becomes clear that work done by SRL will need to be subcontracted for any reason, the client will be notified before any subcontracting agreement is entered. Approval in writing will be obtained.

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7.3 IDENTIFICATION OF SUBCONTRACTOR DATA

The subcontracting labs Lab Code will be clearly marked on all final reports on each sample and analysis where the subcontracting lab provides data.

7.4 SUBCONTRACTOR REGISTRY

The laboratory has a procedure addressing subcontracted analysis. Refer to the relevant SRL SOPs.

A list of all Subcontracting labs will be maintained along with evidence of certification compliance. It will be reviewed annually or as a new subcontractor is added.

8 SECTION 8.0

SAMPLE PREPARATION FOR SAMPLE COLLECTION

The laboratory has a procedure addressing all phases of sample management. Refer to the relevant SRL SOPs.

8.1 SUPPLING SAMPLE KITS

Client kit requests may be taken over the phone, by fax or by e-mail. Figure 8-1 shows the SRL kit request form to be completed when the request is taken.

8.2 CONTAINERS PREP

The types of containers used by SRL are in compliance with EPA protocols for the test methods requested. The sampling container types, preservation techniques and holding times for water and soil/sediment samples are taken from *40 CFR, Chapter 1, Part 136, Tables II,* and *62-160.700 F.A.C., Tables 4 and 5.*

All sampling containers are commercially purchased. Sample containers are not reused. Volatile vials are purchased precleaned to Level 2 and are pre-preserved at SRL.

Containers for other organics are tested for the analytes of concern by filling a random container from the lot (all with the same lot number, as purchased from the distributor) with analyte-free water. The water is allowed to remain in contact with the container for 48 hours and then analyzed for the analytes of concern.

If all analytes are below MDLs, the container's lot number is logged on the container log sheet with "approved for use" and a sticker with the log number and date of analysis is placed on each container. If all analytes are not below MDLs, the complete lot of containers is returned to the distributor.

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8.3 KIT PREP

The laboratory has a procedure addressing sample management. Refer to the relevant SRL SOPs.

All containers for requested kits have labels with SRL's name, the client's name, project name and number (if provided by the client), analyses, and container description.

Blanks are left on the labels after "Date", "Time" and "Sample ID" to prompt samplers to fill in this information.

All kits are packed into coolers, with enough coolers provided so that enough space is left in each to provide room for sufficient ice for each cooler to keep all containers, once full, cold.

Each kit has chain-of-custodies (COC), copies of the kit requests, return labels, custody seals (for the coolers) and sharpie pens provided in zip-lock bags to protect the paperwork from melting ice. Custody seals for each container can be provided upon request from the client.

Bubble wrap packing is used around each glass bottles (40 ml vials are paired) to protect from breakage in transit. Bubble wrap sheets are used as additional packing in coolers to be shipped. Each cooler has a signed and dated custody seal placed on it once it is ready for shipment or delivery.

8.4 PRESERVATIVES

All preservatives are added to sample containers before shipment.

Each container label states the preservative used and the analyses requested and appropriate for that container.

On request, SRL will provide to clients an appropriate amount of preservative for field use.

8.5 SHIPPING

All kits are shipped by common carrier, local carrier, or delivered by SRL personnel.

The manner of shipment is noted on the kit request form, and tracking numbers, where utilized, are also recorded.

8.6 CHAIN OF CUSTODY (COC)

The chain of custody is a form that documents that the sample integrity from the point of collection to the laboratory has been documented.

All samples received by the laboratory must include documentation of Chain of Custody.

Once samples are logged in to the lab, the COC is maintained by the laboratory and sample related information documented as appropriate to the method and relevant laboratory procedures.

Current SRL policy is that samples used for evidentiary purposes will not be accepted for analysis. Therefore an SOP for carrying out legal chain of custody is not in effect.

If the lab changes policy, then prior to that time an SOP will be drafted, approved and placed into effect.

Regular sample acceptance and COC refer to SRL SOP for Sample Management.

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Figure 8-1: Kit Request Form *(For reference only- Refer to the relevant SRL SOP)*

SOUTHERN RESEARCH LABORATORIES, INC.

3477 Parkway Center Court
Orlando, Florida 32808
(407) 522-7100
1 (888) 420-TEST

Fax completed form to: (407) 522-7043

SAMPLE KIT/CONTAINER REQUEST FORM

Today's DATE & TIME*: | Date kit/containers needed:

Company Name: | Person requesting the kit:

Address to send kit to:

City: State: Zip:

Phone Number: Fax Number:

Project Name: Project Number:

Project type (FDEP Haz Waste, preapproval, FDOT, county, etc.) Quote/PO Number:

Number of Samples	Sample Matrix	EPA TEST METHODS OR PARAMETERS									

*= Afternoon requests are shipped FED EX (second day) on the next morning or delivered the following day (local).

SRL pays the complete cost of shipping (FED EX second day) of this TO your office or site UNLESS OVERNIGHT DELIVERY IS NEEDED by Priority FED EX.

These sample kits have been requested by your firm, and are assigned exclusively to you for the specified project. Please return any unused kits or containers to SRL to avoid sampling kit/container charges.

Containers in this kit may contain preservatives as required. DO NOT rinse containers containing preservatives prior to filling with sample. When filling preserved containers, do not inhale vapors that may develop from reactions between the samples and the preservatives. See CAUTIONS below. All hazardous by-tykes materials are NOT addressed here. For more information contact your firm's safety professional.

Each cooler contains a temperature blank (container filled with water) to check the ambient temperature in the cooler upon receipt at the lab. Please do not remove the container(s) from the cooler(s).

It is your responsibility to assure the samples are sufficiently packed on the return trip to prevent breakage and to ensure required temperatures are maintained until receipt at the lab.

CAUTIONS: HCl - Hydrochloric Acid; strong acid, avoid skin and eye contact. ZnAc - Zinc Acetate; avoid skin and eye contact.
HNO - Nitric Acid; strong acid, strong oxidizer, avoid skin and eye contact. NaOH - Sodium Hydroxide; strong caustic; avoid skin and eye contact.
H_2SO_4 - Sulfuric Acid; strong acid, avoid skin and eye contact. H_3PO_4 - Phosphoric Acid; strong acid, avoid skin and eye contact.

IF CONTACT IS MADE WITH THESE MATERIALS, FLUSH IMMEDIATELY WITH WATER. For more information or assistance, CONTACT YOUR FIRM'S SAFETY PROFESSIONAL.

FOR LAB USE ONLY Number of Disposable Boilers Sent:_____ Number of Teflon Boilers Sent:_____

SRL kit reference no.:_____ Kit prepared by:_____ Kit checked by:_____ Kit sent:_____ Delivered/Provided/Shipper:_____ Cooler(s) Sent:_____ Returned:_____

Figure 8-2: Kit Prep Reference Sheet *(For reference only- Refer to the relevant SRL SOP)*
Inserted

Sample Kit Prep Reference Sheet

Parameter Group	Matrix	Bottle Type / Container *size determined by specific client request or most appropriate for use	Preservation *NP for no preservative	Holding Time
8260	SW, GW, WW, S, SED, HW*	2 x 40ml Vial Soils plus 1 x 40ml Vial with 5ml MeOH, Soil Plunger & Stir Bar	Cool <6 Soils 5ml DI & a 5ml MeOH	7 Days Soil Volatiles Frozen within 48 Hours of Collection - 14 Days Analysis
EDB (8260 SIM)	SW, GW, WW	Glass*	Cool <6	7 Days
8270	SW, GW, WW, S, SED, HW*	Glass, 1L Amber or Glass Widemouth	Cool <6	7 Days to Extract 40 days to Analyte
FI-Pro	SW, GW, WW, S, SED	Glass, 1L Amber & 2 or 4oz Glaswidemouth	Cool <6	7 Days to Extract 40 days to Analyte
SIM PAH	SW, GW, WW, S, SED, HW*	Glass, 1L Amber or 2 oz (Amber) Glass Widemouth	Cool <6	7 Days to Extract 40 days to Analyte
Alkalinity	SW, GW, WW	HDPE*	Cool <6	14 Days
Ammonia	SW, GW, WW	HDPE*	H^2SO^4 & Cool<6	28 Days
BOD	SW, GW, WW	HDPE*	Cool <6	48 Hours
Chloride	SW, GW, WW	HDPE*	Cool <6	28 Days
Metals except Hg & Cr+6	SW, GW, WW, S, SED, HW*	HDPE*	HNO^3 & Cool<6	6 Months
Metals-Mercury	SW, GW, WW, S, SED, HW*	HDPE, 2 or 4 oz Glass	HNO^3 & Cool<6	28 Days
Oil & Grease by HEM	SW, GW, WW	Glass, 1L Amber	H^2SO^4 or HCl	28 Days
PCBs (8082 3510)	SW, GW, WW, S, SED, HW*	Glass*	Cool <6	14 Days to Extraction
pH	SW, GW, WW, S, SED, HW*	HDPE or Glass*	None	ASAP
Purgeable Halocarbons and/or Aromatics	SW, GW, WW, S, SED, HW*	2 or 3 x 40ml Vial	Cool <6	7 Days Unpreserved Analysis
Purgeable Halocarbons and/or Aromatics	SW, GW, WW, S, SED, HW*	2 or 3 x 40ml Vial	Clorinated $Na^2S^2O^3$ or HCL or $NaHSO^4$ pH<2, Cool <6	14 Days Preserved Analysis
Semi Volatile Organics GC GCMS	SW, GW, WW, S, SED, HW*	Glass, 1L Amber or 2 oz (Amber) Glass Widemouth	Cool <6	7 Days to Extract 40 days to Analyte

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9 SECTION 9.0

SAMPLE MANAGEMENT

SAMPLE RECEIPT, STORAGE AND FINAL DISPOSITION

The laboratory has a procedure addressing all phases of sample management. Refer to the relevant SRL SOPs.

9.1 SAMPLE RECEIPT

Samples are received at SRL directly from field personnel that collected the samples, from shippers such as Federal Express, or are picked up from client offices or field sites.

These samples are examined and compared to Chain of Custody and other documentation provided with them.

The condition of the samples is noted, including their temperature, container conditions, and general appearance.

The pH of acid and base preserved samples is checked and noted.

A Sample Receipt Checklist is filled out for each project each day (Figure 9-1).

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9.2 SAMPLE INSPECTION & ACCEPTANCE

Samples are accepted for analysis by SRL unless a major deficiency or discrepancy is noted.

Major deficiencies and discrepancies include:

a) Temperature of the cooler is above 6˚ (unless cooling is not necessary for the analysis requested,
b) Custody seal on cooler (if present) is damaged,
c) No Chain of Custody is included with the samples,
d) Sample containers are broken,
e) Equipment or trip blanks show obvious contamination,
f) Acid or base-preserved samples are NOT in the correct pH range,
g) Volatiles organic sample vials contain bubbles larger than 1/16-inch (small bubbles are usually due to icing the warm samples),
h) Custody tape on containers are damaged,
i) Hold times have expired for the specific analysis,
j) The information of the COC differs significantly from the information on the containers' labels
k) Containers recorded on the COC are missing.

The Sample Receipt Checklist has all areas highlighted that are considered a major discrepancy.

9.3 DISCREPANCY REVIEW & CLIENT NOTIFICATION

QAO or Technical Manager must then examine samples and documentation with discrepancies.

The client is then contacted concerning the discrepancies to decide if they still want the samples analyzed, and what the possible effects of the discrepancies may be on the analysis.

The client's decision is recorded on the Sample Receipt Checklist and the COC, and the samples are logged-in, returned to the client or disposed of.

A copy of the Sample Receipt Checklist, documenting any deficiencies and discrepancies, is included with the final report.

9.4 SAMPLE LOG-IN, HANDLING & PREP

After the samples have been received, they are logged into the Log-in spreadsheet.

Samples received together from the same client and project are grouped together and given a SRL number, while each individual sample in the group is identified by the SRL number, a dash and a unique (sequential) number.

The log-in spreadsheet does not list each individual sample but listed the total number of samples, the SRL number, the client, the project name, the received date, the samples' matrices, and the analyses to be performed.

Once the samples have been given an SRL number, a brightly-colored label with the number is attached to the COC and to the sample containers kept in-house or to the bags or trays volatile organic samples are placed in.

Each sample is given its unique sequential number on the COC.

The samples analyzed in-house are placed in refrigerators (one for extractables and one for volatile organics) and the samples to be subcontracted are placed in a small refrigerator in the login area or in shipping cooler(s) with ice, storage room is a problem.

The COC is photocopied, and a copy is provided for each analysis that SRL performs, and is highlighted for those samples/analyses.

These copies are placed on the extraction clipboard, the volatile clipboard, or the 8011 folder, as appropriate.

A copy is also provided for samples to be subcontracted.

The original COC is placed in a manila folder, which is labeled with the SRL number, the client name and the project name. This folder is then kept in a central area.

The analysts and/or technicians must be made aware of samples with short hold times, so that they can be processed immediately.

Each sample may have several containers. These containers are identified by their intended analyses, such as volatiles, FL-PROs, PAHs, etc.

If the analysis requires two containers, such as volatiles or EDBs, then the first vial opened is considered "A". If it becomes necessary to open the second vial, a "B" is written on the container so that a distinction can be made between the analyses' containers. If a third container is provided for that same analyses, then the third container would be labeled with a "C" when/if it was opened.

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9.5 SUBSAMPLING

When subsamples are necessary, soil and sediment samples are first homogenized.

This is done by placing the entire sample from the container into a clean stainless steel or glass mixing pan.

The sample is quartered and each quarter is independently mixed with a stainless steel spoon or spatula. The quarters are then mixed together very thoroughly.

If areas of color variations are noted, the complete sample must be mixed again until none are detected.

Aliquots of sample are then placed in the appropriate sample containers.

Water subsamples are divided into appropriate sample containers after a thorough mixing (by shaking or inverting the original container).

9.6 SAMPLE STORAGE

Volatile organic samples, including samples for EPA Method 8011, are stored in a single-door refrigerator kept near the analysis area, and away from extraction areas using methylene chloride.

Soil samples collected into pre-weighed vials containing water, are frozen in a single door freezer, if not analyzed within 48 hrs from the time of collection.

Extractable organic samples are stored in a three-door refrigerator kept in the extraction room. This includes aqueous and non-aqueous samples.

Samples under suspicion of having very high concentrations of analytes should be double bagged and sealed in zip-lock bags before being placed in the refrigerators.

Samples to be subcontracted that are to be shipped the same day as receipted are kept in a small refrigerator in the login area or in an iced cooler, if storage room is a problem.

Samples (in-house) are kept in these refrigerators until they are used completely or until at least one week past the hold time. They are then properly disposed of.

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9.7 SAMPLE IDENTIFICATION AND TRACEABILITY

The laboratory has a sample management procedure addressing sample identification and traceability of samples. Refer to the relevant SRL SOPs.

9.8 SAMPLE DISPOSAL

The laboratory has a sample management procedure addressing disposal. Refer to the relevant SRL SOPs.

Waste disposal drums are kept for disposal of the extracted aqueous samples (taken directly from the separatory funnels or vials, and for unused (duplicate) volatile organic samples.

The empty sample containers are discarded in the trash.

Non-aqueous and waste samples are returned to the clients if they contain high levels of contaminants.

Other non-aqueous and waste samples are placed in a drum for proper disposal by a hazardous waste contractor.

9.9 LABORATORY WASTE DISPOSAL

The laboratory has a sample management procedure addressing disposal. Refer to the relevant SRL SOPs.

Laboratory wastes are collected in beakers during sample or standard preparation, and then poured into 55-gallon drums for proper disposal by a hazardous waste contractor.

Sample extracts and standards in 2-milliliter vials are placed in 4-liter glass bottles, including vial.

When the bottles are full they are placed in a “lab-pack” drum for proper disposal by a hazardous waste contractor.

Hazardous waste manifests for sample and laboratory waste disposal are kept by the Technical Manager.

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Figure 9-1 : Front of the **Sample Receipt Checklist** *(For reference only- Refer to the relevant SRL SOP)*

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Sample Receipt Checklist

Cooler Check

Cooler ID	Ice Present?		Temprature	Custody Tape Present?		Custody Tape Intact?		Tracking Number
	YES	No		YES	NO	YES	NO	

Note:If the temprature is above 6 deg C and/or the Custody seal is damaged then identify the containers in the effected cooler(s) on the back of this form.

Shipping Method _____ Date/Time of Receipt _____

Acid preserved samples PH check all OK? Yes No NA
If no, list on back of this form.

Base preserved samples PH check all OK? Yes No NA
If no, list on back of this form.

Any volatile samples w/bubble > 1/16 inch? Yes No NA
If yes, list on back of this form.

Custody tape on containers? Yes No NA
If yes, is it intact? Yes No
If not intact, fill out on back of form.

Condition of containers
Loose caps? Yes No
Are all bottles full and/or
adequate for requested analysis? Yes No
Broken containers? Yes No
If yes list on back of this form.

Record Lot numbers/dates of all containers on the back of this form

Chain of Custody included? Yes No
If yes, verify receipt of all containers listed.
Document discrepencies on the back of this form

Ser/Num Thermometer _____
PH Strips Lot number _____

Coolers unpacked/checked by: _____
Date: _____

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10 SECTION 10.0
CALIBRATION & VERIFICATION

10.1 DEMONSTRATION OF CAPABILITY

A new analyst will perform an initial demonstration of capability (IDOC) prior to using any test method for the analysis of client samples.

An IDOC will also be performed whenever a new instrument is implemented.

The IDOC will be performed in a clean and applicable matrix.

Four replicate samples of each matrix (standard laboratory blank water or soil) are spiked with a known concentration of each analyte of interest at 10-50 times the method detection limits for the analytes.

The concentrations for each analyte are then experimentally determined using the standard operating procedures for the analytical method.

The mean recovery and standard deviation of the found concentrations for the replicates is then calculated for each analyte, and these are then compared to the corresponding acceptance criteria for accuracy and precision established by the lab from historical data.

Acceptance criteria established by the lab may not exceed 70 – 130%

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10.2 STANDARD SOURCES, PREPARATION, STORAGE AND TRACEABILITY

The laboratory has a procedure for standard and reagent traceability. Refer to the relevant SRL SOPs.

Reagents, solvents, and stock standards received by SRL are logged into a laboratory notebook, which notes the date received, manufacturer, traceability (lot number), storage area and the expiration date.

Received dates are written on the solvent, reagent or standard containers. The containers are also dated upon opening.

Preparation of laboratory standards used for calibration and/or quality control is documented in permanent laboratory notebooks.

Each secondary or working standard is given an individual standard number, and the sources, lot numbers, preparation amounts and solvents, dates, and personnel preparing them is noted in the log book.

Each calibration with working standards is verified against a QC (second source) standard, and both primary and QC standards are certified.

Working standards are used until the areas of standard components fall 10% to 20% below “normal” values for those components.

Storage of standards are noted in the SOP for standard and reagent traceability

10.3 INSTRUMENT CALIBRATIONS

All calibrations are checked by the analyst. Details of calibration are detailed in the following sections.

10.3.1 CALIBRATION FOR VOLATILE ORGANICS – PURGE AND TRAP/GC/PID/ELCD

The laboratory has a procedure for this method.

10.3.2 CALIBRATION FOR VOLATILE ORGANICS – PURGE AND TRAP/GC/MS

The laboratory has a procedure for this method.

10.3.3 CALIBRATION FOR PAHS – EXTRACTION/GC/FID

The laboratory has a procedure for methods.

10.3.4 CALIBRATION FOR PAHS – EXTRACTION/GC/MS

The laboratory has a procedure for methods.

10.3.5 CALIBRATION FOR FL-PRO – EXTRACTION/GC/FID

The laboratory has a procedure for this method.

10.4 CALIBRATION OF ANALYTICAL SUPPORT EQUIPMENT

The laboratory has procedures addressing equipment maintenance and calibration. Refer to the relevant SRL SOPs.

10.4.1 CALIBRATION OF ANALYTICAL BALANCE

The analytical balance is checked prior to use, using certified Class S weights; the daily calibration check is recorded in the balance calibration logbook or sheet (Figure 10-1)

The balances are calibrated and certified by using certified Class S weights; calibration checks are documented annually.

10.4.2 THERMOMETERS

Thermometers are calibrated and certified by using an NBS-calibrated thermometer; calibration checks are documented annually (Figure 10-2)

10.4.3 GLASSWARE CALIBRATION

Class A glassware is in use; therefore no calibration methods are required.

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10.4.4 GLASSWARE CLEANING

Procedures for cleaning extractable organics glassware and other labware are shown in Figure 10-3.

Volatile purge tubes are rinsed with tap water several times, rinsed with nanograde methanol, rinsed with deionized water and heated to 110˚ F for at least one hour.

If heavy contaminants are obvious, the purge tubes are soaked in Liquinox and water and scrubbed with a brush before the rinsing and heating procedure.

10.4.5 FIELD METER CALIBRATIONS

The laboratory has procedures addressing field instrument calibration for measuring pH.

Field meters are calibrates according to manufacture instructions, using a 2-point calibration. If the meter can only be calibrated with a single point, then the standard that is closest in range to the samples will be used.

10.5 CERTIFICATIONS/ INSPECTIONS/ MAINTENANCE/ CALIBRATIONS

Implementation and expiry dates are indicated or inferred on the certificate, letter of inspection, proof of maintenance, date of calibration, etc. Additional tracking is duplicitous and therefore not utilized at this facility.

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Figure 10-1: Balance Calibration Logbook or Sheet *(For reference only- Refer to the relevant SRL SOP)*

Figure 10-2: NBS-Calibrated Thermometer; Calibration Checks

(For reference only- Refer to the relevant SRL SOP)

Figure 10-1 *(Refer to 10.4.1)*

Thermometer Calibration Log

Calibration Thermometer #

Annual calibration check of certified & calibrated thermometers

Thermometer #	Time	Calibration Thermometer Temp 1	Test Thermometer Temp 1	Time	Calibration Thermometer Temp 2	Test Thermometer Temp 2	Initials	Month	Day	Year

Figure 10-2 *(Refer to 10.4.3)*

Scale/ Weight Calibration Check Log

Certified Standard Weight #

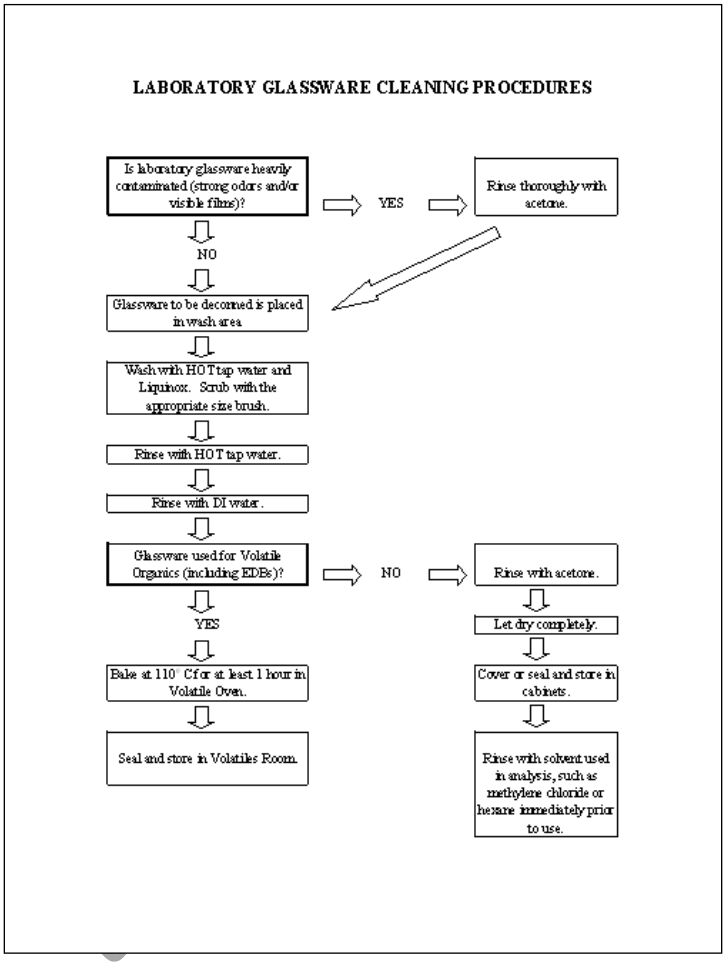
Certified Standard Weight #

Annual calibration check of certified & calibrated weights & scales

Scale/Device #	Time	Standard Weight 1	Test Weight 1	Time	Standard Weight 2	Test Weight 2	Initials	Month	Day	Year

Figure 10-3: Laboratory glassware and labware cleaning flowchart

(For reference only- Refer to the relevant SRL SOP)



11 SECTION 11.0
QUALITY CONTROL REQUIREMENTS

11.1 QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)

The Quality Control (QC) requirements are listed below. Quality Assurance Targets (QATs) for each QC requirement are defined in terms of accuracy (A) and Precision (P).

Accuracy is defined as the measure of central tendency and is measured using the percent recovery of a known standard or spike.

It is calculated:

$$\% \text{ Recovery} = \frac{\text{conc. of spiked sample} - \text{conc. of unspiked sample}}{\text{expected concentration}} \times 100$$

Precision is defined as the dispersion of the values. It is measured using the relative percent difference (RPD) of duplicate samples or duplicate spikes.

It is calculated:

$$\text{RPD} = \frac{|\text{conc. of spike A} - \text{conc. Of spike B}|}{\text{conc. of spike A} + \text{conc. of spike B}} \times 100$$

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11.2 FIELD REQUIREMENTS

In rare cases where SRL personnel perform field activities, appropriate FDEP SOPs for these activities are followed.

11.3 LABORATORY REQUIREMENTS

Quality requirements include quality control measures performed during the analyses, method evaluations, and method detection/practical quantitation limits. Refer to the relevant SRL SOPs.

11.4 METHOD EVALUATION

The laboratory has a procedure for proficiency testing. Refer to the relevant SRL SOPs.

Method evaluations include the Demonstration of Capability (DOC) as discussed in the sections of this manual addressing calibration and Proficiency Testing (PT) Study Samples.

SRL participates in two PT studies per year (where available) for each field of testing for which it maintains accreditation.

These studies are approximately six months apart.

The PT samples are handled in the same manner as real environmental samples, using the same staff, equipment, and methods.

The results for these PT study samples are returned as per current regulation/ instruction.

The results, including acceptable/not acceptable status, are reported directly from the PT Provider to FDOH.

11.5 QUALITY CONTROL

Quality control checks are assessed and evaluated on an on-going basis.

The quality control acceptance criteria are used to determine the validity of the data.

Quality control measures include method blanks, QA standards (second source), matrix spikes, matrix spike duplicates and surrogate addition.

Blank sand is used as “similar” matrix for analysis of soil blanks.

Refer to the method of analysis and type, for the frequency, QAT, and range of the quality control checks.

Table 11-1 is provided merely as a reference for generic anticipated control checks, the method takes precedence.

11.6 CONTROL LIMITS

Control limits for surrogates and QC spikes will be those standard limits listed in the appropriate method(s). Any exceptions will be addressed in the SRL method SOPs.

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11.7 METHOD DETECTION LIMITS AND PRACTICAL QUANTITATION LIMITS

The Method Detection Limit (MDL) is defined as the minimum concentration of an analyte that can be measured by the test method with confidence of its presence in the sample matrix. MDLs are determined by the method.

MDLs are determined for each analyte of each test method in each matrix and updated on a yearly basis.

Practical Quantitation Limit is defined as the lowest level of concentration that can be reliably achieved with specified limit of precision and accuracy during routine laboratory operating conditions.

SRL sets its PQLs approximately to 4 times higher than the MDL. Refer to the relevant SRL SOP relevant to the method of analysis.

In addition to the MDL studies, performed as required, LOD verification and LOQ verification will be performed as per NELAC CH5, Appendix C & D. Criteria for LOQ will be set to standard method limits (typically 70-130) unless specifically addressed in the Method SOP.

11.8 DATA ACQUISTITION REQUIREMENTS

Requirements for data acquisition include retention time studies for each test on each instrument.

These will be performed when a major change occurs in the system, such as new equipment installed, column changes, etc.

Table 11-1: Quality Control Checks *Key to Table: A = Accuracy, P = Precision*

FOR REFERENCE ONLY; refer to relevant Method to Analysis Type.

Analysis Group	QC Check	Frequency Performed	Quality Assur. Targets	Range
Extract-ables -PAHs, FL-PRO	Method Blank	Every 20 samples & every 12 hours		
	Continuing Calibration Std.	At run start & every 12 hrs.	A	mid
	Matrix Spike	Every 20 samples	A	low-mid
	Matrix Spike Duplicate	Every 20 samples	A, P	low-mid
	QC Standard	Every multilevel initial calibration	A	low-mid
		5% of samples		
	PQL Check Standard		A	low
	Surrogates	Every sample and standard	A	mid
	Performance Eval. Samples	At least twice annually	A	low-high
Volatiles - GC	Method Blank	Daily		
	Reagent Blank	As needed		
	Continuing Calibration Std.	Daily	A	mid
	Matrix Spike	Every 20 samples or daily	A	low-mid
	Matrix Spike Duplicate	Every 20 samples or daily	A, P	low-mid
	QC Standard	Every multilevel initial calib.	A	low-mid
	PQL Check Standard	5% of samples	A	low
	Surrogates	Every sample and standard	A	mid
	Performance Eval. Samples	At least twice annually	A	low-high
Volatiles - MS	BFB	Every 12 hours		
	Method Blank	Every 12 hours		
	Reagent Blank	As needed		
	Continuing Calibration Std.	Every 12 hours	A	mid
	Matrix Spike	Every 20 samples or daily	A	low-mid
	Matrix Spike Duplicate	Every 20 samples or daily	A, P	low-mid
	QC Standard	Every multilevel initial calib.	A	low-mid
	PQL Check Standard	5% of samples	A	low
	Surrogates/Internal Stds.	Every sample and standard	A	mid
	Performance Eval. Samples	At least twice annually	A	low-high
Extractables - PAHs - MS	DFTPP	Every 12 hours		
	Method Blank	Every 12 hours		
	Reagent Blank	As needed		
	Continuing Calibration Std.	Every 12 hours		
	Matrix Spike	Every 20 samples or daily	A	mid
	Matrix Spike Duplicate	Every 20 samples or daily	A	low-mid
	QC Standard	Every multilevel initial calib.	A, P	low-mid
	PQL Check Standard	5% of samples	A	low-mid
	Surrogates/Internal Stds.	Every sample and standard	A	low
	Performance Eval. Samples	At least twice annually	A	mid
			A	low-high

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12 SECTION 12.0
DATA VALIDATION AND USABILITY

12.1 DATA REDUCTION

Data is done by the computer, using Agilent ChemStation or other Instrument software as appropriate. The sample data is calculated with a calibration curve using the appropriate techniques. The current chromatogram /curves are kept in a 3-ring binder, near each instrument, along with the most recent retention time study. Specific information about data reduction techniques for the different methods can be found in the method SOPs.

12.2 DATA REVIEW

There is a laboratory procedure that addresses data review and reporting. Refer to the relevant SRL SOP relevant to the method of analysis.

Review of data begins at the level of the technicians and analysts.

All analysts are required to examine all chromatograms and visually compare it to the data generated by the acquisition software.

Analysts are also expected to search for historical data on the projects, and use relevant historical data to determine first run dilutions of samples.

Once the run (batch) has been completed and review by the analyst, the raw chromatograms, the quality control sample data associated with the batch, and a copy of the extraction and run logs are place in a folder and labeled with date, analysis and SRL sample numbers.

Review of the data continues with a designated reviewer, who reviews the data and inputs results to the draft reports.

This review process includes examining data to ensure that results are consistent with project expectations. Anomalous or suspect data is checked, and comments are added if necessary.

Field duplicates and laboratory duplicates are spot checked to ensure consistency of results. Equipment blanks, trip blanks and method blanks are checked for signs of obvious contamination.

Once all data in a run (batch) has been reviewed it will be recorded on reports. The data file will indicate if the data has been amended or revised.

12.3 DATA PACKETS

Data folders permit historical reconstruction of laboratory activities and traceability of data that produced. It clearly identifies the following. Data folders maintained onsite and filed by date of analysis.

1. Chain of Custody including
    a. Sample receipt
    b. Sample preparation
    c. Sample analysis

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2. Analyst
3. Equipment
4. Methods
5. Calibration and Quality Control Criteria met/ quantified
6. Calculations, Manual Integration, Corrections and Raw Data
7. Results
8. Review
9. Signatures (if not electronically notated)
10. Data Report(s)

12.4 MANUAL INTEGRATIONS & MANUAL CALCULATIONS

The laboratory has a procedure addressing manual integrations and calculations. Refer to the relevant SRL SOP.

12.5 ESTIMATING UNCERTAINTIES OF MEASUREMENT

The laboratory has procedures for estimating measures of uncertainty. Refer to the relevant SRL SOP.

Information on uncertainty of measurements is provided to document that a reasonable attempt to make identification has been made including knowledge of instrument performance, method limitations and scope of measurement.

Validation data is provided as required, appropriate and needed to qualify numerical results with values outside the working range of a specific method, client or reporting requirement.

The Laboratory Control Standard (LCS) quality control acceptance criteria for each analytical method may be used as the estimated uncertainty for a particular method and will be made available to clients upon request.

Blank sand is used as “similar” matrix for analysis of LCS.

All essential information associated with the analysis is included in the data packet, including integrations and calculations recorded at the time they occur.

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12.6 DATA VALIDATION, QUALITY ASSESSMENT & RECONCILIATION

The laboratory has a procedure addressing data review and reporting. Refer to the relevant SRL SOPs.

A systematic review of data is conducted at multiple levels.

Analysts verify that the quality control measures meet acceptance criteria, starting with the method blank, continuing calibration standard and surrogates.

QC measures are checked by the relevant management, with the final validation of data done by the QAO. The QAO spot checks calculations, logs, corrective actions, the history of samples, the interrelationship of some parameters, the nature of sample in relation to the results, etc.

Corrective actions are taken and documented, as necessary.

All essential information associated with the analysis is included in the data packet, including notation of amendments or revisions.

12.7 TRANSCRIPTION AND CALCULATION ERRORS.

In addition to the checks listed above, any new spreadsheet calculations that will be used in the laboratory will be reviewed by management to insure accuracy.

12.8 REPORTING ANALYTICAL DATA RESULTS

The laboratory has a procedure addressing data review and reporting. Refer to the relevant SRL SOPs.

Client reports are finalized by the QAO, who approves the report prior to delivery to the client.

The QAO signs the final reports, which are sent with the project invoice, and the quality assurance report, if requested, to the client.

Quality control reports are generated by the analysts, checked by the Technical Manager, and checked by the QAO.

These QC reports contain the method blank for the sample batch, the QC standard results and calculated accuracy, the matrix spike and spike duplicate results with calculated accuracy and precision, and the relevant control limits for precision and accuracy. Amendments or revisions are noted. More than one QC report may be generated for a project if the number of samples warrants it.

A QC report is generated for each analysis SRL completes on the samples of that project.

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12.9 SUPPLEMENTAL INFORMATION FOR REPORTS

Any departure that could possibly affect data quality will be clearly noted in the data package.

12.9.1 PERMITTING DEPARTURES FROM DOCUMENTED POLICIES

Any departure that could possibly affect data quality will be clearly noted in the data package and available for review. Clients will be notified of any departure from procedure that may affect the quality of the data provided, including, but not limited to, a designation on the final client report.

12.9.2 NOTIFICATION PROTOCOLS FOR DATA OUTSIDE OF ACCEPTANCE LIMITS

Notification of data outside of acceptance limits always includes the Technical Manager of the appropriate laboratory section.

The QAO determines further notification and the manner it is expressed.

12.9.3 REPORTING EXCEPTIONS AND DATA QUALIFIERS

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred.

If re-analysis is not viable or desirable, then results may be qualified qualifying permitted departures from specifications.

Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

Any exceptions to QA are reported on the pages of the report, in memos to the client (and included with the final report), or in letters accompanying the report.

Failures of QC measures are similarly reported. Results may be qualified on reports as follows: *Below for reference only, refer to relevant SRL SOP*

I - Value reported is less than the Practical Quantitation Limit and greater than the Method Detection Limit.

J - Estimated value.

O - Sampled, but analysis lost or not performed.

Q - Sample held beyond normal holding time

U - Component was analyzed for but not detected.

Y - The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.

V - Analyte was detected in both sample and method blank.

Significant deviation from standard practices of the laboratory are immediately reported to the client and documented on the draft and final reports.

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12.10 CHANGES TO PERFORM A TEST METHOD

If for any reason it is necessary to make changes to the written methodology (SOP) to perform an environmental test, changes must be approved by SRL Management and documented in the raw data file along with reasons for the change.

Changes may include but are not limited to: change in equipment, i.e. rented or loaner equipment, different standards or calibration procedures, operating conditions, any change to extraction procedure or apparatus, etc.

12.10.1 CLIENT NOTIFICATION OF CHANGE TO THE APPROVED TEST METHOD

As appropriate to the nature of the change, the client shall be notified of any change to the approved test method that could in any way impact data quality.

This will be determined by SRL management and notification will take place in writing on the final report, at minimum.

If possible client approval will be obtained before making any change to written test method.

12.10.2 PERMANENT CHANGES

Any change to Test method with substantial positive benefits, will be evaluated for update and inclusion into appropriate SOPs as a permanent change.

It is the desire of SRL to continue to improve techniques and procedures towards the goal of producing quality data for our clients.

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12.11 CLIENT REPORTING

Final Client Reporting Files contain the final data reported to the client, invoicing documentation and reference to the applicable analytical data folders.

Client data is managed with a Client SRL lab reference number which is designated to the final client data report and cross referenced to the analytical data folder for the calendar dates of analysis. The data folders contains all information pertaining to the days analysis including sample preparation, QC checks, raw data and any data calculations and corrections related to analysis. Analysis may occur in batch runs in accordance to methods and instrumentation utilized and therefore data folders may be comprised of more than one client's sample analysis.

12.12 ELECTRONIC TRANSMISSION OF RESULTS

At client's request reports of analysis may be transmitted electronically, all transmissions will be documented.

The facility utilizes practices to ensure the protection of confidential information including procedures for the electronic transmission reports. Electronic transmission is controlled by the server team at the facility as per client agreement.

13 SECTION 13.0
CORRECTIVE AND PREVENTATIVE ACTION (CAPA) PLANS

13.1 DEFINITION

The laboratory has a procedure addressing Corrective Actions and their review. Refer to the relevant SRL SOPs.

Corrective action is the action or actions taken to define, eliminate, and/or remedy data that is outside of acceptable control limits or associated with quality control measures that are outside of control limits.

Corrective action can also be the action taken to remedy other types of problems found in the laboratory system.

As appropriate, causal analysis will be included as required.

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13.2 INITIATION

Corrective actions can be initiated by the analyst, the supervisor, the Technical Manager, the QAO, the client, PT sample results, audit findings, or agency requests.

13.3 ACCEPTANCE CRITERIA & CORRECTIVE ACTION

Table 13-1 defines known corrective actions needed to remedy quality control measures that fall outside acceptable criteria.

The table includes the relevant analysis groups, the quality control checks used in the analyses, the acceptance criteria of the quality control checks, the corrective actions to be taken, the parties responsible to take corrective action, and the notification protocols to use when corrective action is needed.

13.4 IMPLEMENTING & REVIEW OF CORRECTIVE ACTIONS

Corrective actions will be implemented at the discretion of, and by the authority of the Technical manager and/or Lab Director.

If the reason for nonconformance is obvious or easily corrected, corrective action will be taken at the bench.

Review and evaluation of corrective actions fall under management review. Refer to the relevant SRL SOPs.

13.5 ROOT CAUSE ANALYSIS

The laboratory has a procedure addressing Corrective Actions. Refer to the relevant SRL SOPs.

An investigation into the root cause of the nonconformance may be performed to determine if the cause can be corrected.

Results and conclusions may be noted on a report or relevant location for review and for the purpose of monitoring outcomes.

13.6 PREVENTIVE ACTION

The laboratory has a procedure addressing Corrective Actions. Refer to the relevant SRL SOPs.

Repeated nonconformance or corrective actions will be reviewed for the purpose of monitoring and identifying trends for the design and implementation of preventative actions.

It is also the responsibility of all Lab personnel to identify opportunities for improvement to procedures, equipment and documentation practices.

Preventive actions focus on but are not limited to, equipment maintenance and needs for equipment upgrades.

If preventive action is required, it will be at the authority of the Technical Manager to approve and implement modifications to the quality manual, procedures and policy.

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Table 13-1 : Corrective Actions

Key Notification Protocols: 1= Notify supervisor. 2= Notify client. 3= Notify field personnel. 4= Initiate actions to correct situation. 5=Assess results of corrective action.

Analysis Group	QC Check	Acceptance Criteria	Corrective Action	Responsible Parties	Notification Protocols
Extractables - PAHs, FL-PROs **There is an SOP for the method which specifies values*	Field Blank	< MDL.	Reanalyze associated samples; qualify reported results; determine cause of contamination.	Analyst, Supervisor.	1, 2, 3, 4
	Method Blank	< MDL.	Reanalyze associated samples; check blank water source; clean instrument; perform corrective maintenance; re-extract associated samples; prepare fresh standards and recalibrate.	Analyst.	1, 2, 4
	Reagent Blank	< MDL.	Reanalyze associated samples; check reagent source; clean instrument; perform corrective maintenance; re-extract associated samples; prepare fresh standards and recalibrate.	Analyst.	1, 2, 4
	Calibration Curve	Linear regression correlation coefficient out of range	Perform corrective maintenance; recalibrate; prepare fresh standards and recalibrate; determine cause of failure.	Analyst.	1, 5
	Continuing Calibration Std.	percentage of initial calibration out of range	Perform corrective maintenance; prepare fresh standards; recalibrate.	Analyst.	1, 5
	Matrix Spike	Within accuracy control limits.	Reanalyze associated samples; re-extract associated samples; qualify reported results.	Analyst, Supervisor.	1, 2, 3, 4
	Matrix Spike Duplicate	Within precision control limits.	Reanalyze associated samples; re-extract associated samples; qualify reported results.	Analyst, Supervisor.	1, 2, 3, 4
	QC Standard	Percentage of true value out of range.	Prepare fresh standards and recalibrate; check calculations; perform corrective maintenance; re-extract associated samples; qualify reported results.	Analyst.	4
	PQL Check Std.	percentage of true value out of range	Determine cause of failure; check blank water/reagent source; clean instrument.	Analyst.	1, 4
	Surrogates	Within accuracy control limits.	Check calculations; determine cause of failure; re-extract associated samples; qualify reported results.	Analyst.	1, 2, 4
	Performance Eval. Samples	Meets acceptable criteria.	Determine cause of failure!	QAO.	4, 5

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Table 13-1 Corrective Actions (continued)

Analysis Group	QC Check	Acceptance Criteria	Corrective Action	Responsible Parties	Notification Protocols
Extractables - PAHs –MS **There is an SOP for the method which specifies values*	DFTPP	Passes mass intensity criteria.	Instrument is retuned, and BFB is rerun.	Analyst, Supervisor.	1, 4
	Trip Blank & Equipment Blank	< MDL.	Reanalyze associated samples; determine cause of contamination; check blank water source; qualify reported results.	Analyst, Supervisor	1, 2, 3, 4
	Method Blank	< MDL.	Reanalyze associated samples; check blank water source; clean instrument; prepare fresh standards and recalibrate.	Analyst.	1, 2, 4
	Calibration Curve	RSD percentage or linear regression correlation coefficient is out of range; SPCCs meet min. RFs.	Prepare fresh standards and recalibrate; determine cause of failure.	Analyst.	1, 5
	Continuing Calibration Std.	CCCs RSD percentage of initial calibration is out of range and SPCCs meet min. RFs	Perform corrective maintenance; prepare fresh standards; recalibrate.	Analyst.	1, 5
	Matrix Spike	Within accuracy control limits.	Determine cause of failure; qualify reported results.	Analyst, Supervisor.	1, 2, 3, 4
	Matrix Spike Duplicate	Within precision control limits.	Determine cause of failure; qualify reported results.	Analyst, Supervisor.	1, 2, 3, 4
	QC Standard	percentage of true value out of range.	Prepare fresh standards; check calculations; perform corrective maintenance; recalibrate; qualify reported results. Determine cause of failure; check blank water/reagent source; clean instrument; prepare fresh standards and recalibrate.	Analyst.	4
	PQL Check Std.	percentage of true value out of range	Prepare fresh standards; reanalyze sample.	Analyst.	1, 4
	Internal standards	Within accuracy control limits	Reanalyze sample; determine cause of failure; qualify reported results.	Analyst.	1, 4
	Surrogates	Within accuracy control limits.	Determine cause of failure!	Analyst.	1, 2, 4
	Performance Eval. Samples	Meets acceptable criteria.		AO.	4, 5

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Table 13-1 Corrective Actions (continued)

Analysis Group	QC Check	Acceptance Criteria	Corrective Action	Responsible Parties	Notification Protocols
Volatiles – MS **There is an SOP for the method which specifies values*	BFB	Passes mass intensity criteria.	Instrument is retuned, and BFB is rerun.	Analyst, Supervisor.	1, 4
	Trip Blank & Equipment Blank	< MDL.	Reanalyze associated samples; determine cause of contamination; check blank water source; qualify reported results.	Analyst, Supervisor	1, 2, 3, 4
	Method Blank	< MDL.	Reanalyze associated samples; check blank water source; clean instrument; prepare fresh standards and recalibrate.	Analyst.	1, 2, 4
	Calibration Curve	RSD percentage or linear regression correlation coefficient is out of range and SPCCs meet min. RFs.	Prepare fresh standards and recalibrate; determine cause of failure.	Analyst.	1, 5
	Continuing Calibration Std.	CCCs RSD percentage is out of range of initial calibration and SPCCs meet min. RFs	Perform corrective maintenance; prepare fresh standards; recalibrate.	Analyst.	1, 5
	Matrix Spike	Within accuracy control limits.	Determine cause of failure; qualify reported results.		
	Matrix Spike Duplicate	Within precision control limits.	Determine cause of failure; qualify reported results.	Analyst, Supervisor.	1, 2, 3, 4
	QC Standard	Percentage of true value out of range.	Prepare fresh standards; check calculations; perform corrective maintenance; recalibrate; qualify reported results.	Analyst, Supervisor.	1, 2, 3, 4
	PQL Check Std.	Percentage of true value out of range.	Determine cause of failure; check blank water/reagent source; clean instrument; prepare fresh standards and recalibrate.	Analyst.	4
	Internal standards	Within accuracy control limits	Prepare fresh standards; reanalyze sample.	Analyst.	1, 4
	Surrogates	Within accuracy control limits.	Reanalyze sample; determine cause of failure; qualify reported results.	Analyst.	1, 4
	Performance Eval. Samples	Meets acceptable criteria.	Determine cause of failure!	Analyst. AO.	1, 2, 4 4, 5

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14 SECTION 14.0
AUDITS AND ASSESSMENT

14.1 INTERNAL AUDITS & QUALITY ASSURANCE REVIEWS

The laboratory has a procedure addressing internal technical and performance audits, including all areas of laboratory operations. The annual management review meetings cover the review and audit of all internal laboratory operations including but not limited to (e.g., reporting, quality assurance, IT, purchasing, subcontracting, etc.). Refer to the relevant SRL SOPs.

Internal laboratory audits will be conducted annually and completed within +/- 90 days of the last annual review date.. The audit can either consist of a technical audit or a performance audit. These are described in the sections below.

External system audits are conducted on SRL by the FDOH, annually, or as required.

SRL will submit to any audit requested by clients or agencies.

All operations are reviewed annually or as per the relevant SOPs and discussed at the at the Annual Management Review and relevant Team Meetings conducted as appropriate for Quality System review, trainings, findings, corrective actions, planning and other areas related to laboratory operations.

Review of the audits is documented in the Management File.

Policies and Procedures include but are not limited to the following:

1. Internal Audit
2. Management Review
3. Data Review and Reporting
4. Management Review
5. Systems Management Policy (IT)
6. Vendor Management
7. Subcontracted Analysis
8. Supply Management
9. Sample Management
10. Document Control
11. Records Retention
12. Equipment Maintenance and Calibration Policy
13. Standard and Reagent Traceability
14. Complaints Management Policy
15. Corrective Actions

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14.2 TECHNICAL AUDITS

A technical audit consists of tracking of a random sample through the laboratory, including all associated documentation, such as Chain of Custody, log-in procedures, methods use, calibrations, instrument maintenance, raw data, quality control samples, data calculations, sample and waste disposal, and file storage.

A checklist is used to document the annual internal technical audit. The checklist is an excerpt from the FDEP Quality Manual and can be referenced in Revision 01/01/2014, Page 35, Figure 4.10 for Typical Audit Checklists for Central Chemistry Laboratory Audits. The checklist is utilized and maintained as a separate attachment

Refer to Appendix E titled “SRL Internal Technical Audit”. This checklist has been in use by SRL prior to 2010 and was reflected in previous Quality Manuals section 12.2.2 Figure 12-1. No modifications have been made to the Technical Audit Checklist since implementation.

14.3 PERFORMANCE AUDITS / EVALUATIONS

The QAO provides a commercially-supplied, double blind QC sample of all parameters analyzed by SRL to the Technical Manager also known as a performance evaluation (PE) sample.

This sample is treated as a regular sample, logged in, and analyzed.

Results are reported to the commercial supplier who then reports the acceptability to the QAO.

Deficiencies and their related corrective actions are documented, if necessary, and stored with in the final report file.

Successful performance of PE sufficiently demonstrates capability for the analyst for both instrument and method analyzing the sample. Therefore additional performance evaluation and proficiency testing for instrument and method are not required.

Analysts that do not perform PEs will be required to complete a performance evaluation.

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14.4 PROFICIENCY TESTING

SRL performs proficiency testing twice a year, as discussed above.

Results are provided by the supplier directly to FDOH.

Deficiencies and their related corrective actions are documented, if necessary, and provided to FDOH.

14.5 DATA INTEGRITY TRAINING

All employees will be subject to data integrity training at the point of hire and reviewed thereafter. Employees will sign a Data Integrity agreement that will be kept in each employee file.

Periodic management review of data integrity will be conducted by selecting a data package at random and performing a data integrity check. Items check for include, but are not limited to, time clocks, data manipulations, use of appropriate standards etc. Review will be conducted annually.

Any discrepancies or findings will be documented and stored in the employee file.

14.6 OTHER TRAINING

The laboratory has a procedure addressing the training of personnel; also refer to section Organization and Personnel Review of this manual. Refer to the relevant SRL SOPs.

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15 SECTION 15.0
DOCUMENT MANAGEMENT SYSTEM

The laboratory has procedures addressing document control, integrity, records retention, and making revisions. Refer to the relevant SRL SOPs.

The document management system establishes and maintains the procedures for controlling the identification, collection, indexing, access, filing, storage, maintenance and disposal of quality and technical records related to facility operations.

Records may be generated in either hard copy or electronic media; both are generated, maintained and duplicated appropriate to operational necessity.

The document management system is comprised of the following below.

15.1 DOCUMENT INTEGRITY

The laboratory has a procedure addressing document integrity. Refer to the relevant SRL SOPs.

Documents that are part of the laboratory quality system will indicate the time period that the document is in force and any revisions (i.e. issuance, effectiveness, approved implementation).

A master list of active SOPs is maintained to ensure that policies and correlating resources removed from use are protected from unintended use.

Discontinued or obsolete resources are removed from active access and filed in an archive.

15.2 DOCUMENT CONTROL

The laboratory has a procedure addressing document control. Refer to the relevant SRL SOPs.

All records, both electronic and paper based, are stored in a retrievable manner, preserved from damage and deterioration, and confidentiality maintained as per professional agreements.

Electronically stored media is access protected and back-up cycles maintained as per facility policy.

Due to facility size, internal transfer of documentation is not tracked, due to redundancy, as all staff have authorization for the provision of analytical and client services.

Any external transfer of client documentation or review of management controlled documentation is authorized, documented and maintained by management in a manner suitable to the event.

Access to the facility is restricted, and includes computer log in and server access controlled by the server team at the facility.

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15.3 REGULATED METHODS AND LABORATORY SOPs

Laboratory SOPs are the procedures utilized by the lab in the receipt of samples, analysis of samples and the reporting of results; not limited to the QA/QC procedures for analytical and operational requirements specific to the instrumentation and media accepted for analysis.

Testing methods provided by federal, state or local agencies are not specific to laboratory operations.

Laboratory SOPs are designed specific to laboratory capacity to meet the regulatory requirements of analysis standards. As these documents are overviews of test methods, laboratory SOPs address the specific requirements relevant to laboratory operating conditions and instrumentation and are not deviations from the official test method requirements.

The official test method will be referenced in SOPs; but not replicated or imbedded in laboratory SOPs. A file of test methods are maintained as part of the regulatory files and assessable by all staff.

Updates to testing methods may not require changes to laboratory SOPs, and therefore a revision of prescribed methods do not impact SOP implementation or revision in the facility.

For methods discontinued after March 2010; date of discontinuation will be the date of effectiveness for the new method.

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15.4 DOCUMENTATION OF DEPARTURES FROM LABORATORY SOPs

Significant departures from documented procedures and policy are noted, filed and reported as appropriate.

External influences to facility operations such as analysis utilizing regulated testing methods require documentation specific to the method.

Departures from existing method and SOPs, such as QA/QC departures are notated and summarized in raw data files or final client reporting as appropriate.

Client may request alterations to reporting limits, analytic analysis for non-specified analytes or requested deviations from procedure for sample screening and reporting. Substantial requests deviating from a regulated method will be documented in the client file.

Official notification to laboratory management regarding updates to or modifications of official test methods will be communicated to staff and documented. Any requisite training (as appropriate) will be documented as appropriate.

Clients will be notified by the laboratory of substantial changes to laboratory SOPs that deviate from testing methods that impact analytical outcomes; either in writing or orally as appropriate to the nature and extent of the event.. Notification will be documented.

Notification of changes to test methods by regulatory agencies to the client is not the responsibility of the laboratory.

15.5 DOCUMENT MANAGEMENT OF LABORATORY SOPs

A hard copy is filed in the SOPs regulatory folder, most current version maintained on top.

An electronic version is saved on the shared server in the designated folder; the published version is maintained in a non-editable format which is accessible by all staff for use.

Previous and tracked-changes versions are kept in the electronic archive.

Management review will occur periodically to ensure that SOPs are reflective of current practice and are being maintained as per policy, at minimum annually. Review will be conducted annually.

Archives are updated, current documents reviewed for relevance and any migration of changes summarily documented and notated.

15.5.1 SOP NOMENCLATURE AND TRACKING OF REVISIONS, UPDATES AND REVIEW

Tracked changes are utilized to document updates and revisions to SOPs.

Nomenclature of electronic documents is updated to indicate version and date of finalized revision for approval.

Standardized naming of SOP documentation is as follows;

SOPs will be named in a standard format electronically: SRL-SOP-title-Rev# or Date revised

Information on first page of guideline includes

Name/Title

Initial/ Creation Date

Revision Date/ Version

Revision Effective Date/ Implementation

Client Notification- if necessary

Version updates result when there are any significant changes to procedure. A significant change is defined as any modification to analysis, data outcomes, and changes in procedure that influence management of sample, instrumentation, documentation and reporting.

Grammar correction, page layout, or cosmetic changes to SOPs layout are not defined as substantive changes.

All modifications, substantive and non-substantive will be maintained electronically, however version control, distribution and use of SOPs and client notification are limited to substantive changes to analytical procedure that impact data outputs.

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15.6 DOCUMENT CLASSIFICATION

Laboratory documents are comprised of Administrative, Analytical and Client Reporting. These documents are sub-categorized and filed according to frequency of use, access, and oversight and information management needs.

Management files contain documentation maintained solely by management which are accessible only by authorized staff. Records include administrative files such as human resource records, client information, and reports from internal and external audits, management reviews including records of corrective and preventive actions.

Regulatory files consist of documentation that is accessible to all laboratory personnel and stored in a central location. Regulatory files are comprised of both administrative and analytical documentation. These files include official testing methods, SOPs, and other documentation in current use in the Laboratory.

Regulatory files contain overall training and staff compliance documentation. Personnel files contain employment agreements, benefits, on boarding, etc related to HR management and not openly accessible by general staff.

Additional files are created and maintained to manage documentation appropriate to operational access such as logbooks, notebooks, client reports, etc.

Refer to Tables 15-1 & 15-2 for an outline of administrative and analytical documents and their classifications.

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15.7 DOCUMENT FILING

Documentation is filed either in hard and/or soft (electronic) format at the site as appropriate and relevant to the resource materials.

An index of documents and their classification/ designation help to ensure traceability of analytical activities.

Laboratory essential documents are consolidated and managed primarily by the facility management (responsibility can be delegated) and are maintained as regulatory files which are stored on the server or in a central location that is accessible by all personnel.

Other documents are filed as per the operational requirements for the laboratory, such as client reports, calibration data, logbooks, etc.

Hard and soft files are labeled and stored as appropriate to contents; folders, reports, logbooks, etc. and labeled in a manner indicative of its components.

Binders and file folders used for serial documentation must indicate the start/end of a succession of documents or chronology (i.e. 2009-2010, 2010-current). Electronically this would include folder and sub folder nomenclature.

15.8 RECORDS MANAGEMENT

Laboratory logbooks, instrument logbooks, standards logbooks, records for data reduction, validation and reporting documents, data packets, COAs, MSDS, etc are maintained on site, secured, stored, and reviewed as per practicable to laboratory operations.

15.9 FILE MANAGEMENT

Files are managed and organized in a retrievable manner. File management is organized based on how information is to be retrieved; alphabetically, numerically, subject or date; as relevant to the materials and operations of the facility. Filing in the facility is managed in a manner appropriate for each component of operations.

Laboratory operations generate both hard and soft documents; as a result cross referencing between types of data may be necessary (computer generated raw data, calibration information, calculations, etc) and is considered when creating files.

Management and archiving is dependent on the operational needs for retrieval of source document(s) for documenting traceability of analytical activities.

Folders should be named as per file component and associated resources maintained within.

15.10 PAPER BASED DOCUMENTS (HARD)

Management of paper based documents is dependent on the operational access needs of the material(s);

Paper files are maintained onsite and generally include the data packets for client analysis.

All file folders, file cabinets and storage areas are labeled to identify contents of storage facilities and containers.

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15.11 ELECTRONIC DOCUMENTS (SOFT) – CREATION & MANAGEMENT

All electronic resources are maintained on the server (shared drive); the server is the filing cabinet for the electronic documents. The folders (and sub folders) are the drawers of the computer's filing cabinet.

Management only accessible folders are also managed on the shared drive; however these may be password protected or access restricted from non-authorized users; as relevant to the facility and resource.

Facility documents are maintained on the server.

Electronic files are organized on the server using a central filing system theme.

Plain language is used to name each folder or a key of organizational abbreviations created to manage folder identification. The filing system is utilized so that anyone without training should be able to navigate through the folders and documents to find materials.

For instance, a folder called "Quality Management System" might contain sub folders called "Testing Methods", "Quality Manual" and "SOPs". The goal is to have every document in a folder rather than having multiple orphan documents in a single drive.

Who can create folders is controlled by the server team at the facility to avoid loss of control over document nomenclature, version control or archiving management.

The server is backed-up on separate and redundant sources controlled by the server team at the facility.

15.12 ELECTRONIC FILE NOMENCLATURE

15.12.1 FOLDERS & SUBFOLDERS

Give folders logical, specific names and do not use spaces in file names, rather use an underscore to separate designations if needed; i.e Reports_2009

Reports_2010

Reports_2011

This assists sorting and viewing applications on operating systems to consolidate related items and maintain consistent nomenclature and avoids the creation of duplicitous files.

15.12.2 DOCUMENTS

For documents more specific titles are needed.

Keep document names under 27 characters and include dates in names if possible.

The goal when naming documents is to be able to tell what the file is about without having to open it and look. i.e. SRL_SOP_Manual Integrations_v1_May2010

The best time to file a document is when you first create it. So get in the habit of using the "Save As" dialogue box to file your document, name it, and saving it in the right place in the first place.

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15.13 RAW DATA

Raw data and instrumentation may have a separate electronic storage as appropriate for operations as all platforms may not be integrateable to the shared server operating system.

Hard copies of quality control checks, results reporting and other items generated by instrumentation and analysis should be generated and placed in the data folder and stored as per method and pertinent SOPs requirements.

15.14 SOURCE DOCUMENTS

Source documents are materials that have real-time entries made to an original document sourced or generated at the time of sample collection/ preparation, analysis or review.

As a result notations and amendments to documents by hand can occur. All amendments are to be clearly marked, initialed and dated as relevant to the document source.

Corrections to a copy of an original document must be crossed out with a single line so that the original notation can still be observed, the reason for correction indicated, dated and initialed by the individual making the change.

These documents are usually maintained as a component of the data packet or relevant file for data review, calibration, verification, maintenance, audits, etc.

15.15 HANDWRITTEN MODIFICATIONS AND CORRECTIONS

Source documentation may be in hard or electronic form.

Forms may be completed in duplicate or triplicate. Originals, logbooks, and other documentation may require handwritten notations or corrections on the original or copy.

Any notations or modifications to source documentation must be dated and initialed by the individual making the entry/modification.

Corrections should be “crossed” out by a single line across the error to ensure that the original entry is clearly discernible. A reason (if practicable due to space) indicated for the correction.

15.16 REVISION HISTORY

Changes to documents that may require a history of revision and approval include but may not be limited to quality system documents such as standard operating procedures, facility manuals, methods and forms. Changes to such documents are maintained in computerized systems primarily as a word documents with tracked changes.

Materials that require maintenance of a revision history for regulatory or legal purposes will include the capacity to demonstrate that the designated personnel had access to pertinent background information in which to base a review and approval of modifications for implementation.

These may include a tracked changes version of the original document that identifies altered or new text, a summary of changes or a generated compare between the original and revised document; these are maintained or generated electronically as relevant to the modifications and resource.

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15.17 TRACKING CHANGES ON ELECTRONIC FILES

Tracked changes must be utilized to document updates to electronic documents.

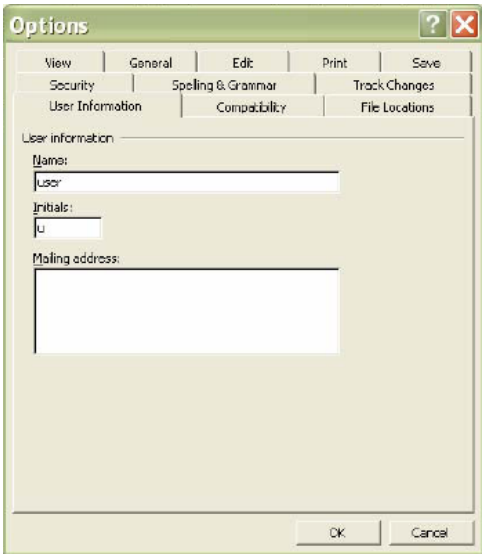
All editable electronic files should be saved with tracked changes **on**.

Nomenclature of electronic documents under revision must be updated to indicate version and date of modification. This ensures edits or modifications do not overwrite the original file.

Access to editable (word & excel) documents whose content must be controlled should be limited (i.e. SOP, Testing Methods, Policies, Standards, Forms, etc).

These documents should be in PDF format or document password protected from over writing and editing when in general use.

15.17.1 UPDATING USER INFORMATION



All computer users must have their initials updated in the computers “User information”

This permits tracking of any changes made to the document and by whom.

Open “Tools”, choose “Options”, choose “User Information” tab and update user name and initials.

The revised document with tracked changes must be saved indicating tracked changes.

Save as *Document_v1_tracked changes_01012011*

Approved revision is then saved as *Document_v2_01012011*

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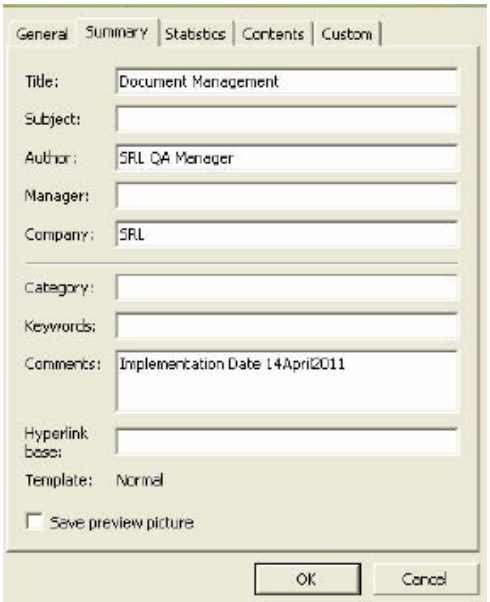
15.17.2 UPDATING DOCUMENT PROPERTIES INFORMATION

Open approved revision of document and “Accept” tracked changes.

Remove/clear any comments and confirm document appearance is as desired.

Save document



1. Open file properties, chose “Summary” tab and ensure information is updated for current file.
2. Implementation date should be recorded in the “Comments” section.

15.18 IMPLEMENTATION AND DISCONTINUATION DATES

Quality system documents include SOPs, forms, manuals, calibrations, certifications, logbooks and the quality manual. Where appropriate these documents must all indicate at minimum a title/label, pagination and a revision/creation date.

When a document is removed from use as a result of an update or revision, the discontinuation date of the older document is the same as the implementation date of the new document.

Rather than creating an additional information stream, discontinuation of a document is indicated by the implementation date of the updated document (i.e. discontinuation of version 2 is documented by the implementation date of version 3). Therefore no additional indexing files or actions are created to further record discontinuation dates.

Due to the size of the facility, site personnel are notified of the implementation of updated documentation verbally, and notification and training only documented as relevant to the nature and extent of the change.

Current versions of in use documents are maintained in an electronic format on the facility server.

It is the responsibility of personnel to familiarize themselves with laboratory resources and stay apprised of facility procedures implemented by the facility. It is the responsibility of the individual staff member to remove all previous versions of a document from their personal use regardless of whether they are utilizing hard or soft copy materials.

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15.19 CONFIDENTIAL DOCUMENTS

Materials and resources generated as a result of analysis and client services are maintained at the facility until archiving and destruction of client information/ work product, client confidential information or other proprietary information is necessitated.

15.20 COMMUNICATIONS

Communications that require tracking are confirmed in an email, printed to a PDF document and saved appropriate to its purpose. (i.e., staff file, client folder, etc.) This permits documentation of date, content and recipient. When possible a read receipt is utilized. Emails may also be archived on the server as a record of the communication.

All regulatory communications are maintained for tracking purposes.

15.21 DATA STORAGE

All hard copies of the raw data and chromatograms, calculations and QC measures are stored in the data packet or data folder.

These folders are then filed in storage drawers by run date and stored on site.

Copies of reports are kept in project files, stored individually by SRL number.

These files include transmittal verifications, copies of the invoice, copies of any subcontractor data, copies of the kit request, copies of QC reports, client complaint forms, and any other relevant information.

These files are stored by SRL number in storage drawers, on site.

The computer files containing the chromatographic data, the reports and QC data are stored on the laboratory network server.

The network server is back-upped using multiple hard drives.

The server is backed up to a redundant drive every night which is kept on-site.

Every 6 months the drive is secured and stored off-site and a new one used for back up.

15.22 DATA SECURITY

The facility utilizes practices to ensure the protection of confidential client information including procedures for protecting the electronic storage of client information and data.

Electronic storage is controlled by the server team at the facility.

Hard copy items are segregated by facility staff for destruction and maintained on site until periodic shredding of relevant documentation is conducted.

15.23 RECORDS RETENTION

The laboratory has a procedure addressing records retention. Refer to the relevant SRL SOPs.

Retention times of all records are 5 years unless otherwise specified.

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15.24 ARCHIVING

Materials and resources generated in electronic and hard copy are maintained on the facility server or on site as space permits and are archived when removed from general use.

15.24.1 ARCHIVING- ELECTRONIC (SOFT)

An archive folder is used to assure against unintended use of revised or discontinued documents that may need to be maintained for reference or regulatory purposes.

An archive folder is the relevant subfolder to keep previous versions or discontinued resources on file, but out of current circulation. Any item in the archive should not be edited as it is an invalid/obsolete file and only the most current revision/version utilized for update and/or review.

Electronic documents will be removed from points of use to the relevant archive folders on the facility server. Archives should only maintain the last revision of the file, unless maintenance of additional resources is deemed necessary by the facility.

Current versions of in use documents are maintained electronically on the facility server. It is the responsibility of personnel to familiarize themselves with distributed resources and stay apprised of current procedures implemented by the facility.

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15.24.2 ARCHIVING- PAPER (HARD)

Paper files, client folders, data packets and other items generated in hard copy are maintained on site at the facility as space permits.

Previous versions and discontinued documents are maintained as appropriate to the source.

Archived materials that are removed permanently from use will indicate pending destruction on the file or the first page of the archived document as relevant.

15.25 RECORDS TRANSFER

Transfer of Records may occur at client request, a change of ownership or laboratory closure.

The laboratory has a server management procedure. Any transfer of records will be documented.

15.26 RECORDS TRANSFER DUE TO CHANGE OF OWNERSHIP

Clients will be notified and client data will be made available; all other records will be transferred to the new owner as appropriate. The transfer will be documented.

15.27 RECORDS TRANSFER DUE TO OUT OF BUSINESS

When the owner plans or identifies a date for the closure of the laboratory all clients will be notified by the QAO in writing and an action plan for the release of client data established. Any remaining records will be placed in storage for 5 years from date of creation. The transfer will be documented.

All appropriate regulatory and state legal requirements concerning laboratory closure and records retention will be followed.

Refer to Section 2.8 Laboratory Closure Plan in this manual.

15.28 DOCUMENT DESTRUCTION

Files are generally maintained for 5 years and then destroyed unless otherwise modified by a documented client or regulator agreement/requirement.

To ensure the protection of confidential or proprietary information, documents that contain any information that could reasonably link materials to a client will be destroyed by shredding.

Documents are destroyed as per current policy by the facility.

The destruction of confidential information is overseen by management.

Facility materials that do not contain any client information nor could reasonably link materials to a client or individual may be disposed of as municipal trash or recycled.

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Table 15-1 Administrative Documents Summary

Administrative documents are comprised of human resource, client and legal documentation and include the following

Administrative Document	File Type
Staff employment records	Management
Performance Reviews	Management
Disciplinary Action	Management
Job Description	Staff
Staff Qualifications (Resume)	Staff
Professional In Housetraining Records	Staff
Client Contract Agreements	Management_Client
Subcontractor Agreements	Management_Client
Client Approvals	Management_Client
Client Complaints	Management_Client
Corrective and Preventative Actions	Management_Client
Internal Audits Reports	Management
External Audits Reports, Responses & Communications	Management
Laboratory Insurance & Certifications	Management
Software and Hardware specifications	Management

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Table 15-2 Analytical Documents Summary

Analytical documentation is a combination of operational and client data maintained in both regulatory and data files. Analytical documentation maintained as part of the laboratory essential documents are not duplicated in the data folders and include the following

Analytical Document	**File Type**
Laboratory Essential Documents	
Laboratory SOPs	Regulatory
Testing methods	Regulatory
Guidance Policy documents (NELAC)	Regulatory
Quality Manual	Regulatory
Instrument Demonstration of Capability	Regulatory
Equipment & Instrument Calibrations/ Maintenance	Files* Balance, Fridge, Thermometer, Volumetric Syringes
Temperature Logs	On Fridges: Archive File Folder
Hazardous Waste & Destruction Manifests	Regulatory
Instrument & Equipment Reference Manuals	Regulatory
Staff Qualifications & Agreements	Staff
MSDA/COAs	Files*
Standards Preparation	Logbooks*
Performance Evaluations (PEs)	Data_File
Instrument Initial Calibration Curves	By Instrument-Data Folder
Instrument Logbook (Run/Sequence)	By Instrument-Logbook
Instrument Maintenance Logbook	By Instrument-Logbook
Client Data Folder	File Cabinets; Date
Instrument Tune check	Client Data Folder
Continuing Calibration Check	Client Data Folder
Extraction/ Weight Data	Client Data Folder
Raw Data	Client Data Folder
Manual Integrations	Client Data Folder
Out of Range results/ Qualifications	Client Data Folder
QC Sample Check (QAT)	Client Data Folder
Results Reports	Final Client Report

*Laboratory notebooks, instrument and equipment logbooks, standards logbooks, temperature logs, and records for chain of custody, data reduction, validation, storage and reporting not maintained electronically or within the data folders are analytical documents whose creation and maintenance are managed appropriate to operational access.

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16 SECTION 16.0
QUALITY MANUAL SUMMARY OF CHANGES

Revision	Date	Modification Summary
5	8/23/2014	Modifications as preparation for 2014 Nelac Audit;
6	5/05/2015	Modifications as a result of 2014 Nelac Audit;
7	5/21/2015	Modifications as a result of 2014 Nelac Audit; Sections 11 updated to more clearly specify that all review and audits cover all aspects of laboratory operations and SOPs updated to clarify that these are covered in the Annual Management Review Meeting and documented in the management file. 11.4 & 14.3 QM updated for NELAC 2.5 11.4 & 14.3 QM, NELAC 2.7.4 14.1 QM & SOP, NELAC 5.4.13.1 The Quality Manual will be updated to reflect that the annual management review will be conducted in January of each New Year.1.5, 14.5, 15.5 QM & SOP Management Review. SOP Sample Management Sections 2 & 3, NELAC 5.5.4.1.1, 5.5.4.1.1(a) SOP Sample Management Section 9, NELAC 5.5.4.1.1(b), 5.5.4.1.2(b) QM Table 4-1C, NELAC 5.4.12.1.5(b), 5.5.5.2.1(d) QM 15.4 SOP DM&R Sections 6.6, 6.6.4.1 & Checklist, NELAC 5.4.12.2.3 QM 14.5, NELAC 5.0 QM Table 14.5 & SOP Data Integrity & Training, NELAC 5.4.2.6 QM 6.3, NELAC 5.4.2.3(i) QM 4.6, NELAC 5.5.4.7.2(a) QM 13.1 SOP CAPA name change to Corrective Actions, Section B&C & Section 6, NELAC 5.4.10.1, 5.4.10.2, NELAC 5.4.12.1.1 QM & New SOP-Memo, NELAC 5.4.12 QM 10.4.4, NELAC 5.5.5.2 QM 11.5, Appendix D.1.1.1(c) to NELAC Chapter 5 QM 12.5, Appendix D.1.1.2.1(c) to NELAC Chapter 5 Dates corrected from 2016 to 2015.

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8	08/26/2016	Modifications as preparation for 2016 Nelac Audit; Removal all of references to numerical values, quantitative and qualitative criteria that may conflict with analytical Methods and SRL SOPs. All sections have been updated to include a sentence that the laboratory has a procedure addressing the relevant topic. Figure 8-2 added; Figures 10-1 & 10-2 Added, 10-1 reissued as 10-3. Pagination and TOC updated to reflect positional shifts.
9	11/18/2016	Modifications as a result of 2016 Nelac Audit; Reviewed to ensure that all numerical values, quantitative and qualitative criteria that may conflict with analytical Methods and SRL SOPs were removed. Found error in section 11 incorrectly referencing a table for a section; reference removed. The Quality Manual sections 1.5, 14.5, 15.5 QM updated to reflect modification to review cycle. Sections 11 & 14 updated to more clearly specify where audits are reviewed, and SOPs for Internal Audit & Management Review updated to more clearly specify that all review and audits covering all aspects of laboratory operations are conducted at the Annual Management Review Meeting and documented in the management file. Section 11.2 & 11.6 updated. All sections that have SRL SOPs or actions contained therein, have been updated to include a sentence that says to refer to the relevant SRL SOP or the relevant analytical method. Tables and figures that contain information that may be updated or over-ridden by updates to the SRL SOPs or relevant analytical method have been updated with a sentence that says the resource is for reference purposes only and to refer to the relevant SRL SOP or the relevant analytical method. Where appropriate a sentence has been updated to defer source to relevant analytical method and/or SRL SOP. Figure 12.9.3 added to TOC as a reference source for coding reporting exceptions. Administrative errors corrected with the following, Title pages of QM have removed signature lines and other dates. Header of Title page & TOC reflect version number and date, subsequent pages do not have version date, to minimize transcription errors. Reference section deleted. Section 16 added to document revisions made to quality manual in summary, listed to 2014 version of the QM to present. Pagination and TOC updated to reflect positional shifts.
10	02/08/2017	Modifications to MDL section update on LOD & LOQ; Audit Checklist ;

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		Methods SOPs modified; results from Management meeting 02/08/2017 let to minor QM updates. Updated ample Prep Sheet added to Appendices.
11	02/05/2018	Annual Review Conducted; Minor formatting correction to pg 55 section 15.5.1 for typographical error to ensure clarity, QM version date not modified due to no other changes to document.
12	12/12/2018	Edits to Section 10 to be consistent with method SOPs regarding Initial/Demonstrations of Capability. Removed old reference. Edits to Section 12 to remove old and inaccurate info regarding Initial Calibrations and how results are calculated. Edits to Table 3-1 Equipment List to bring up to date. Edits to Table 5-1 to update sampling capabilities Edit to Figure 9-1 Sample Receipt Checklist
13	03/05/2019	Correction to Header revision number error (Laboratory Quality Manual Revision 11_12December2018), header should have been Laboratory Quality Manual Revision 12_12December2018. Header corrected to Laboratory Quality Manual Revision 13_05March2019 TOC updated & signed

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APPENDIX B

Sampling Reports

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP Monitoring
Baffle Box Cleaning Event One

Prepared for
Geosyntec Consultants, Inc. Orlando, Florida

Prepared by
BFA Environmental Consultants, Inc. 1230 Hillcrest Street
Orlando, Florida 32803

BFA Project # 2020-23.A5
November 15, 2022

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. — 279 Douglas Ave., Suite #1110, Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 — Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Page of
City, State, Zip: Orlando Florida 32817	Project Name: Keystone Drive BMP Monitoring
Phone: 407-321-7030 Fax:	Project Location: 2801 Keystone Dr, Orlando, FL

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA Environmental

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	TSS	T.N.Nitrogen Total Phosphorus Ammonia	Orthophosphate	Alkalinity/TS	Particulate Nitrogen Particulate Phosphorus	TOC	Bulk Density	Moisture Content	Total Nitrogen Total Phosphorus
							I	S	I	I	S	H			
SWG	11/15/22	1020	G	SW	7		✓	✓	✓	✓	✓	✓			
PWG1		1208	G	SW	7		✓	✓	✓	✓	✓	✓			
PWG2		1237	G	SW	7		✓	✓	✓	✓	✓	✓			
PW DUP		1208	G	SW	7		✓	✓	✓	✓	✓	✓			
SC		1308	C	SE	2								✓	✓	✓
SC DUP		1308	C	SE	2								✓	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	FEDEX KIT	11-14-22	9.00			
Returned: / /	Via:		11/15/22	1441	Heben Sanna	11-15-22	14:40

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 426, 419

Sampling Kit No.: 7387

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange County EPD

YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: YSI Pro DSS 21H102270 RQ- Project: Keystone BMP

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 10/27/22

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	11/15/22	548	24.4	760.6	8.42	8.50	101.8			(P) / F	(L) / F
ICV	P. Barnes	11/15/22	1522	24.6	760.1	8.27	8.56	103.5			(P) / F	(L) / F
CCV											P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	11/15/22	610	2GA843	01/24	1413	1469	(P) / F	(L) / F
ICV	P. Barnes	11/15/22	1542	2GA843	01/24	1413	1420	(P) / F	(L) / F
CCV								P / F	L / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	11/15/22	556	7239	12/26	7.01	24.6	7.03	-26.1	(P) / F	(L) / F
Calibr.	P. Barnes	11/15/22	552	5984	12/25	4.01	24.4	4.01	149.5	(P) / F	(L) / F
Calibr.	P. Barnes	11/15/22	602	A208	8/23	10.01	24.5	9.96	-194.6	(P) / F	(L) / F
ICV	P. Barnes	"	1525	5984	12/25	4.01	24.1	4.04	145.6	(P) / F	(L) / F
CCV		"	1534	7239	12/26	7.01	24.1	7.03	-26.2	(P) / F	(L) / F
CCV		"	1540	A208	03/23	10.01	24.1	9.96	-194.5	(P) / F	(L) / F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Field Notes and Measurement Sheets

Geosyntec consultants

NSBB Cleaning Event Field Sampling Form

Project Name:	Keystone Drive BMP	**Date:**	11/15/2022
Location:	2801 Keystone Dr, Orlando, FL 32806	**Arrival Time:**	8:02
Sampling Staff:	P. Barnes (BFA)	**Departure Time:**	13:56

Sample	Sample ID	Time collected
Purge water grab 1	PWG1	12:08
Purge water grab 2	PWG2	12:37
Spray water grab	SWG	10:20
Sediment composite	SC	13:08

Field Measurements

Sample ID	Temp	DO (mg/L)	Conductivity	pH	Turbidity
PWG1	26.6	5.48	333	7.42	64.9
PWG2	26.1	5.17	331	7.25	58.4
SWG	24.4	7.51	630	8.09	3.78

Notes and Observations

Arrived onsite at 8:02. Old Castle installed sungates and water level was several inches above the gates. Water level was too high (too much pressure/head) for water to be successfully pumped out of the boxes. Old Castle used truck to suck sediment and water until the truck was full. BFA sampled water during decanting and then collected sediment samples.

Site Photos

Outflow Sungate Installation

Inflow Sungate Installation

Pump Setup (1)

Pump Setup (2)

Inflow Baffle Box View

Vac Truck Operation

Manhole with screen/cage and debris

Vac Truck Operation

Section of Nutrient Removing Filtration System

Water sampling during decanting

Water sampling

Sediment sampling

Keystone Drive BMP Monitoring
Baffle Box Cleaning Event Two

Prepared for
Geosyntec Consultants, Inc. Orlando, Florida

Prepared by
BFA Environmental Consultants, Inc. 1230 Hillcrest Street
Orlando, Florida 32803

BFA Project # 2020-23.A5
February 23, 2023

Chain of Custody

Chain of Custody

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando Florida 32817
Phone:	407-321-7030 Fax:

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: Keystone Drive BMP Monitoring

Project Location: 2801 Keystone Dr. Orlando, FL

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

!	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	Total Nitrogen (Ammonia + Nitrate + Nitrite)	Orthophosphate	Alkalinity	Particulate Nitrogen	Particulate Phos	TOC	Bulk Density	Moisture Content	Total Nitrogen / Total Phosphorus
	SWG	2/23/23	952	G	SW	7		✓	✓	✓	✓	✓	✓	✓			
	PWG1		1130	G	SW	7		✓	✓	✓	✓	✓	✓	✓			
	PWG2		1218	G	SW	7		✓	✓	✓	✓	✓	✓	✓			
	PW DUP		1130	G	SW	7		✓	✓	✓	✓	✓	✓	✓			
	SC		1437	C	SE	2									✓	✓	✓
	SC DUP		1438	C	SE	2									✓	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible] KIT	2-17-23	10:54			
Returned: / /	Via:		2/23/23	1520	Helen Grace	2/23/23	15:20

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): X301

Sampling Kit No.: 9477

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange County EPD

YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: YSI Pro DSS 21K102290 RQ- Project: Keystone BMP

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 2/21/2023

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	2/23/23	722	25.1	764.0	8.26	8.21	99.4	–	–	(P) / F	(L) F
ICV											P / F	L / F
CCV	P. Barnes	2/23/23	1916	29.3	763.6	7.97	8.14	103.2	–	–	(P) / F	(L) F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	2/23/23	739	7671	04/27	1413	1413	(P) F	(L) F
ICV								P / F	L / F
CCV	P. Barnes	2/23/23	1925	7671	04/27	1413	1436	(P) F	(L) F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	2/23/23	729	A2291	10/24	7.00	25.6	6.98	-26.6	(P) F	(L) F
Calibr.	P. Barnes	2/23/23	724	A2250	09/26	4.01	25.6	4.03	142.9	(P) F	(L) F
Calibr.	P. Barnes	2/23/23	731	A2298A	10/23	10.01	25.7	9.98	-198.6	(P) F	(L) F
ICV	P. Barnes	2/23/23	1918	A2250	09/26	4.01	25.2	4.03	142.8	(P) F	(L) F
CCV	P. Barnes	2/23/23	1920	A2291	10/24	7.00	24.9	6.98	-26.3	(P) F	(L) F
CCV	P. Barnes	2/23/23	1924	A2298A	10/23	10.01	25.0	9.96	-199.5	(P) F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / **NA** (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Field Notes and Measurement Sheets

Geosyntec
consultants

NSBB Cleaning Event Field Sampling Form

Project Name:	Keystone Drive BMP	**Date:**	2/23/23
Location:	2801 Keystone Dr, Orlando, FL 32806	**Arrival Time:**	926
Sampling Staff:	P. Barnes (BFA)	**Departure Time:**	1412

Sample	Sample ID	Time collected
Purge water grab 1	PWG1	1130
Purge water grab 2	PWG2	1214
Spray water grab	SWG	952
Sediment composite	SC	1438

Field Measurements					
Sample ID	Temp	DO (mg/L)	Conductivity	pH	Turbidity
PWG1	26.3	6.43	670	7.33	592
PWG2	26.6	5.66	622	7.29	773
SWG	23.9	8.20	576	7.80	5.07

Notes and Observations

Arrived onsite at 9:26. Kelly mentioned area where sun gates are installed at the inflow was full of rocks that had to be removed. As a result, pumping was slightly delayed. Took first purge water sample after 1st chamber was cleared. Took the 2nd sample after the next chamber was cleared. Sediment was taken to 3909 Summerlin Ave and sampled there.

Site Photos

Pump Setup

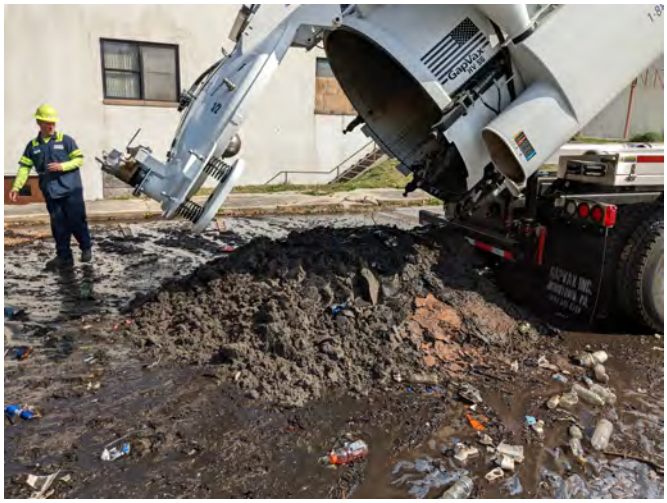
Box with Inflow Sungate

Vac Truck Operation

Manhole with screen/cage being cleaned

Purge Water Sampling

Section of Nutrient Removing Filtration System



Dumping of sediment for sampling

Composited sediment to be sampled

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP Monitoring
Baffle Box Cleaning Event Three

Prepared for
Geosyntec Consultants, Inc. Orlando, Florida

Prepared by
BFA Environmental Consultants, Inc. 1230 Hillcrest Street
Orlando, Florida 32803

BFA Project # 2020-23.A5
May 10, 2023

Chain of Custody

Chain of Custody

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando, Florida 32817
Phone:	407-321-7030
Fax:	

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: OC Keystone Drive BMP Monitoring

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BF-A

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	TN Nitrogen Phosphorus Ammonia Nitrate+Nitrite (NO3)	Orthophosphate	Alkalinity TS	Particulate Nitrogen Particulate Phos	TOC	Bulk Density	Moisture Content	Total Nitrogen Total Phosphorus
SW G	5/9/23	955	G	SW	7		✓	✓	✓	✓	✓	✓			
PW G1	"	1115	G	SW	7		✓	✓	✓	✓	✓	✓			
PW G2	"	1155	G	SW	7		✓	✓	✓	✓	✓	✓			
PW DUP	"	1155	G	SW	7		✓	✓	✓	✓	✓	✓			
SC	"	1426	C	SE	2								✓	✓	✓
SC DUP	↓	1426	C	SE	2								✓	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	KEBLUKIT	5-2-23	16:30			
Returned: / /	Via:	PAB	5/9/23	15:15	Helen Turner	5/9/23	15:15

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 04 X273

Sampling Kit No.: 9563

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify: _____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange County EPD

YSI Calibrations

Cyclone Instruments
718 W. Princeton Street
Orlando, FL 32804
(407) 246-7276

CALIBRATION CERTIFICATE

YSI Model 556

SERVICE DATE: 5/8/23 **TECHNICIAN:** Peter Dayh

SERIAL #:

1110K100957	1110K100958	1110K100959
15K101830	15B10434539	17A105698

Calibration Standards Used:
Hanna Instruments
Accuracy +/- 1% @ 25 C*

Temperature **Response** 22.44 C*

Conductivity 4.49 mS / 1413 *uS* **Response** 1415
LOT #7671 Expiration date: 04/2027

pH 4 **Response** 4.06
pH 7 **Response** 7.01
pH 10 **Response** _____
LOT #7747 Expiration date: 05/2027

Dissolved Oxygen 100% **Response** 99.6
ORP **Response** _____

The calibration results were obtained by following the manufactures standard Calibration Procedures.
All measurement standards are calibrated at scheduled intervals as prescribed by the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) or are measured against certified standards which are traceable to the National Institute of Standards and Technology, formerly the National Bureau of Standards (NBS).

Cyclone Instruments & Equipment

718 W. Princeton Street, Suite A
Orlando, FL 32804
(407) 246-7276

CALIBRATION CERTIFICATE

Hanna Turbidity Meter
Model HI 98703

SERVICE DATE: 5/8/23 **TECHNICIAN:** Tyler Cupp

SERIAL #: E0028887 07350005101 4420076101 442041101

Hanna Instruments
Calibration Standards
Lot # CX0232/25 Expiration 12/2025
Accuracy +/- .1% @ 25 C*

Standard	Response
< 0.1 NTU	.07
15 NTU	15.0

The calibration results were obtained by following the manufactures standard Calibration Procedures. All measurement standards are calibrated at scheduled intervals as prescribed by the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) or are measured against certified standards which are traceable to the National Institute of Standards and Technology, formerly the National Bureau of Standards (NBS).

Field Notes and Measurement Sheets

Geosyntec consultants

NSBB Cleaning Event Field Sampling Form

Project Name:	Keystone Drive NSBB-UFF Performance Metrics Monitoring	**Date:**	5/9/23
Location:	2801 Keystone Dr, Orlando, FL 32806	**Arrival Time:**	856
Sampling Staff:	Patrick Barnes	**Departure Time:**	1407

Sample	Sample ID	Time collected
Purge water grab 1	PWG1	1115
Purge water grab 2	PWG2	1155
Spray water grab	SWG	955
Sediment composite	SC	1426

Field Measurements					
Sample ID	Temp	DO (mg/L)	Conductivity	pH	Turbidity
PWG1	29.53	4.74	360	7.35	501
PWG2	29.28	3.75	354	7.36	564
SWG	25.46	6.68	675	7.69	17.0

Notes and Observations

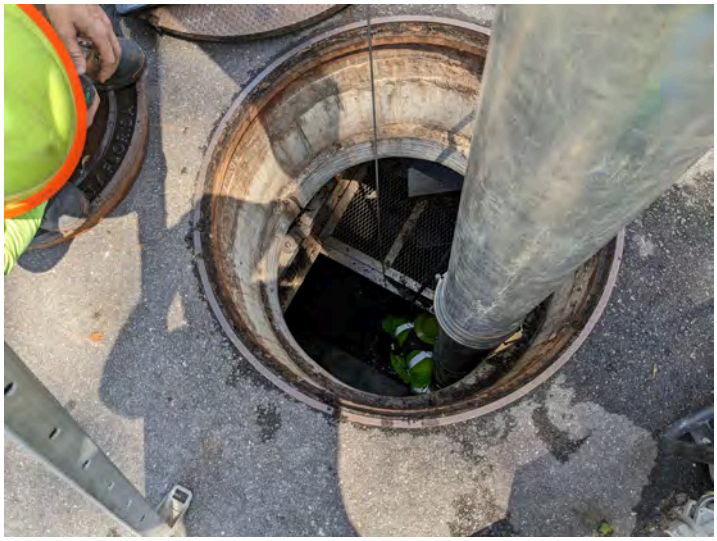
Arrived onsite at 856. Took first purge water sample after 1st chamber was cleared (baffle inflow). Took 2nd sample after the next chamber was cleared. Sampled sediment at 3909 Summerlin Ave.

Site Photos

Box with Inflow Sungate

Pump operation prior to cleaning

Vac Truck Operation



Manhole with screen/cage being cleaned

Section of Nutrient Removing Filtration System

Outflow Sungate Removal

Dumping of sediment for sampling

Sediment captured during cleaning to be sampled

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP Monitoring
Baffle Box Cleaning Event Four

Prepared for
Geosyntec Consultants, Inc. Orlando, Florida

Prepared by
BFA Environmental Consultants, Inc.

1230 Hillcrest Street
Orlando, Florida 32803

BFA Project # 2020-23.A5
October 20, 2023

Chain of Custody

Chain of Custody

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando, Florida 32817
Phone:	407-321-7030
Fax:	

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: Keystone Drive BMP Monitoring

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	Total Nitrogen (Ammonia + Nitrate + Nitrite)	Orthophosphate	Alkalinity/TS	Particulate Nitrogen (Calculate Phosphorus)	TOC	Bulk Density	Moisture Content	Total Nitrogen Total Phosphorus
1	SWG	10/9/23	1106	G	SW	7		✓	✓	✓	✓	✓	✓			
2	PWG1		1152	G	SW	7		✓	✓	✓	✓	✓	✓			
3	PWG2		1250	G	SW	7		✓	✓	✓	✓	✓	✓			
4	PW DUP		1258	G	SW	7		✓	✓	✓	✓	✓	✓			
5	SC		1540	C	SE	2								✓	✓	✓
6	SC DUP		1540	C	SE	2								✓	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	SRL KIT	10-4-23	9:52			
Returned: / /	Via:		10-9-23	16:25	Helen Swan	10-9-23	16:25

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): X950, X307

Sampling Kit No.: 9759

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange County EPD

YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K102270 RQ- Project: Keystone DS1

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 9/28/23

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	10/9/23	800	23.4	757.2	8.57	8.46	99.4	–	–	(P) F	(L) F
ICV											P / F	L / F
CCV	P. Barnes	10/9/23	1706	25.8	755.8	8.11	7.25	100.0	–	–	(P) F	(L) F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	10/9/23	812	8807	03/28	1413	1404	(P) F	(L) F
ICV								P / F	L / F
CCV	P. Barnes	10/9/23	1715	8807	03/28	1413	1411	(P) F	(L) F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	10/9/23	801	A3135	05/25	7.00	23.8	7.07	-45.4	(P) F	(L) F
Calibr.				A3142	05/27	4.01	23.9	4.08	179.3	(P) F	(L) F
Calibr.				A3122A	05/24	10.01	23.8	10.07	-215.5	(P) F	(L) F
ICV		10/9/23 10/10	1712	A3135	05/25	7.00	24.5	7.15	-49.7	(P) F	(L) F
CCV				A3142	05/27	4.01	24.4	4.13	121.9	(P) F	(L) F
CCV				A3122A	05/24	10.01	24.5	10.06	-215.5	(P) F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Field Notes and Measurement Sheets

Geosyntec consultants

NSBB Cleaning Event Field Sampling Form

Project Name:	Keystone Dr. BMP Monitoring	**Date:**	10/9/23
Location:	2801 Keystone Dr. Orlando, FL	**Arrival Time:**	10:35
Sampling Staff:	Patrick Barnes Makese Powe	**Departure Time:**	15:55

Sample	Sample ID	Time collected
Purge water grab 1	PWG1	11:52
Purge water grab 2	PWG2	12:50
Spray water grab	SWG	1106
Sediment composite	SC	15:40

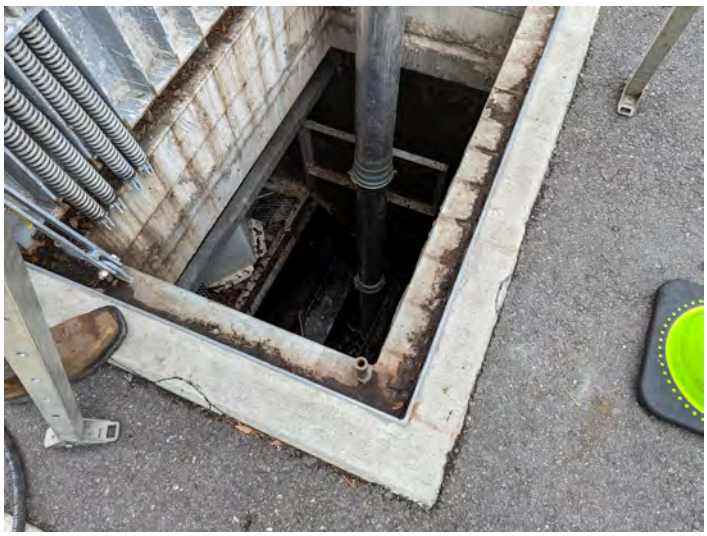
Field Measurements

Sample ID	Temp	DO (mg/L)	Conductivity	pH	Turbidity
PWG1	25.4	4.73	416.5	7.26	696
PWG2	26.3	3.72	369.4	7.48	499
SWG	23.8	6.01	658	7.44	8.50

Notes and Observations

Purge water duplicate taken at 12:50pm.
Sediment composite duplicate taken at 15:40.

Site Photos



Box with Inflow Sungate

Pump operation prior to cleaning

Vac Truck Operation

Manhole with screen/cage being cleaned

Section of Nutrient Removing Filtration System

Dumping of Sediment for Sampling

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP Monitoring
Baffle Box Cleaning Event Five - 3/27-3/28/2024

Prepared for
Geosyntec Consultants, Inc. Orlando, Florida

Prepared by
BFA Environmental Consultants, Inc.

1230 Hillcrest Street
Orlando, Florida 32803

BFA Project # 2020-23.A5
April 2, 2023

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Page of
City, State, Zip: Orlando Florida 32817	Project Name: OC Keystone Baffle Box
Phone: 407-321-7030 Fax:	Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	TN Nitrogen, Ammonia, Nitrate-Nitrite (NOx)	Orthophosphate	Alkalinity/TS	Particulate Nitrogen, Particulate Phosphorus	TOC			
PWG 1	3/27/24	1104	G	SW	7		✓	✓	✓	✓	✓	✓			
PWG 2	"	1210	G	SW	7		✓	✓	✓	✓	✓	✓			
DUP	"	1106	G	SW	7		✓	✓	✓	✓	✓	✓			
SWG	"	1235	G	SW	7		✓	✓	✓	✓	✓	✓			

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	3/28/24	9:50	[illegible]	2/28/24	1515
Returned: / /	Via:	[illegible]	3/27/24	14:08	[illegible]	3/27/24	14:08

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 05, Teal Blue cooler

Sampling Kit No.: 9937

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitric Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7030 Fax:	

Page of

Project Name: OC Keystone Baffle Box

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

Analyses Requested

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Bulk Density	Moisture content	Total Nitrogen & Total Phosphorus
SC	3/28/24	1015	C	SE	2	✓	✓	✓
SC DUP	3/28/24	1018	C	SE	2	✓	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	FEDEX KIT	32724	14:10		3/27/24	14:10
Returned: / /	Via:		3/29/24	11:10		3/28/24	11:10

Additional Comments:

Cooler No.(s) / Temperature(s) (°C):

Sampling Kit No.: 4937

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange County EPD

YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K102270 RQ- Project: Keystone

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 3/26/24

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P.Barnes	3/27/24	815	24.4	756.1	8.42	8.58	102.2	—	—	(P) / F	(L) F
ICV	P.Barnes	3/27/24	1621	27	757.7	7.97	8.11	102.0	—	—	(P) F	(L) F
CCV											P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P.Barnes	3/27/24	827	9278	08/28	1413	1428	(P) / F	(L) F
ICV	P.Barnes	3/27/24	1630	9278	08/28	1413	1416	(P) / F	(L) F
CCV								P / F	L / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P.Barnes	3/27/24	816	A3332	11/25	7.00	25.1	7.01	-18.2	(P) / F	(L) F
Calibr.				A3324A	11/27	4.01	25.2	4.00	159.2	(P) / F	(L) F
Calibr.				A3316	11/24	10.01	25.2	9.98	-190.7	(P) / F	(L) / F
ICV	P.Barnes	3/27/24	1623	A3332	11/25	7.00	25.4	7.04	-19.8	(P) / F	(L) F
CCV				A3324A	11/27	4.01	25.5	4.06	154.0	(P) / F	(L) / F
CCV				A3316	11/24	10.01	25.5	9.97	-190.4	(P) / F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / **NA** (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Field Notes and Measurement Sheets

Geosyntec consultants

NSBB Cleaning Event Field Sampling Form

Project Name:	Keystone Drive BMP Monitoring	**Date:**	3/27/2024-3/28/2024
Location:	2801 Keystone Drive, Orlando, FL 32806	**Arrival Time:**	12:45 (3/27/24), 9:58 (3/28/24)
Sampling Staff:	Patrick Barnes	**Departure Time:**	16:00 (3/27/24), 10:30 (3/28/24)

Sample	Sample ID	Time collected
Purge water grab 1	PWG1	11:04 (3/27/24)
Purge water grab 2	PWG2	12:10 (3/27/24)
Spray water grab	SWG	12:35 (3/27/24)
Sediment composite	SC	10:15 (3/28/24)

Field Measurements					
Sample ID	Temp	DO (mg/L)	Conductivity	pH	Turbidity
PWG1	24.5	5.20	216.3	7.42	70.3
PWG2	24.5	5.82	169.8	7.32	19.4
SWG	27.5	6.85	674	7.64	28.4

Notes and Observations

- Purge water Duplicate collected at 11:06 on 3/27/2024
- Sediment duplicate collected at 10:18 on 3/28/2024
- Oldcastle had difficulty with pumps,; used vac truck to pull water from baffle box then made trips to end of Keystone to purge; BFA sampled purge water during two of these purging events; There was an issue with sun gates so water level would not drop initially; after removing then reinstalling sun gates, Oldcastle was able to pump down the water level and then clean the system; Sediment samples were collected the next day on 3/28/2024.

Site Photos

Box with Inflow Sungate

Vac Truck Operation

Purge Water Sampling

Vac Truck Operation

Geosyntec consultants

NSBB Cleaning Event Field Sampling Form

Project Name:	Keystone Drive NSBB-UFF Performance Metrics Monitoring	**Date:**	4/8/25
Location:	2801 Keystone Dr, Orlando, FL 32806	**Arrival Time:**	12:50 pm
Sampling Staff:	Kevin Tyrc	**Departure Time:**	6:10

Sample	**Sample ID**	**Time collected**
Purge water grab 1	PWG1	1:40
Purge water grab 2	PWG2 + Dup	1:50
Spray water grab	SWG	1:55
Sediment composite	SC	6:00

Field Measurements

Sample ID	Temp	DO (mg/L)	Conductivity	pH	Turbidity
PWG1	24.4	74.2	428.2	8.15	over
PWG2	24.8	73.4	420.7	8.17	over
SWG	25.4	~~103.8~~ KF 8.50	310.9	8.03	

Notes and Observations

Oldcastle unable to clean all three chambers on this day. Will return within the next few weeks to finish cleaning chambers 2 and 3.

Geosyntec Consultants
Water Quality Instrument Calibration Form

Project/Site: Keystone Project #: ~~FW65~~ FW9650 Field Personnel: Kevin Tyre

Water Quality Meter - Model/Serial #: Turbidimeter - Model/Serial #

Dissolved Oxygen	DEP SOP FT 1500	Date	Time	Temp (°C)	Saturation % ~~(mg/L)~~	Reading (mg/L)	Reading (%)	Pass or Fail
						Acceptance Criteria: +/-0.3mg/L		
(CAL) ICV CCV		4/8/25	1:00pm	22.5	100		99.3	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

0.1 - 10 NTU Std ___NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%	
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

Specific Conductance	DEP SOP FT 1200	Date	Time	Standard 45 ~~(mS/cm)~~	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail
						Acceptance Criteria: +/- 5%		
(CAL) ICV CCV		4/8/25	1:02	1,000	24B1006	42 8/25	1,000	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

11 - 40 NTU Std 20 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%	
(CAL) ICV CCV	4/8/25	20.9	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

pH	DEP SOP FT 1100	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail
						Acceptance Criteria: +/-0.2 SU		
(CAL) ICV CCV		4/8/25	1:07	4	4GD0076	4/26	4.00	(P) F
(CAL) ICV CCV		4/8/25	1:11	7	4GC0526	3/26	7.01	(P) F
(CAL) ICV CCV		4/8/25	1:14	10	3GF1084	6/25	10.03	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

41 - 100 NTU Std 100 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%	
(CAL) ICV CCV	4/8/25	107	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail
						Geosyntec Acceptance Criteria: +/- 5%		
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

>100 NTU Std 800 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%	
(CAL) ICV CCV	4/8/25	853	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

Specific Conductance Probe Cleaned? Yes No Disolved Oxygen membrane Changed? Yes No

1. See Table FS 2200-2 on the back of this form

CAL - Initial Calibration

ICV - Initial Calibration Verification

CCV - Continuing Calibration Verification

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings < 0.1 mS/cm then one standard of 0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed (i.e pH > 7)

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Comments: _____

Geosyntec consultants

Geosyntec consultants

NSBB Cleaning Event Field Sampling Form

Project Name:	Keystone Drive NSBB-UFF Performance Metrics Monitoring	**Date:**	06/25/24
Location:	2801 Keystone Dr, Orlando, FL 32806	**Arrival Time:**	10:25
Sampling Staff:	Jacob Kent Kenneth Hamilton	**Departure Time:**	14:38

Sample	Sample ID	Time collected
Purge water grab 1	PWG1	11:47
Purge water grab 2	PWG2	1256
Spray water grab	SWG	10:38
Sediment composite	SC	~~10:38~~ 1415

Field Measurements °C			uS/cm		NTU
Sample ID	Temp	DO (mg/L)	Conductivity	pH	Turbidity
PWG1	29.0	5.06	300.8	7.37	959
PWG2	28.4	4.80	261.7	7.54	over range
SWG	29.7	7.57	675 ~~uS/cm~~	8.09	5.44

Notes and Observations

Form FD9000-8 CALIBRATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Geosyntec Consultants
Water Quality Instrument Calibration Form

Project/Site: _____ Project #: _____ Field Personnel: _____

Water Quality Meter - Model/Serial#: _____ Turbidimeter - Model/Serial#: _____

Dissolved Oxygen	DEP SOP FT 1500	Date	Time	Temp (°C)	Saturation (mg/L)[1]	Reading (mg/L)	Reading (%)	Pass or Fail
						Acceptance Criteria: +/-0.3 mg/L		
(CAL) ICV CCV		06/24/24	1726	24.5	8.25	8.25	99.3	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

Specific Conductance	DEP SOP FT 1200	Date	Time	Standard (mS/cm)	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail
							Acceptance Criteria: +/- 5%	
(CAL) ICV CCV		06/24/24	1723	1.413	46D0056	04/2025	1.414	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

pH	DEP SOP FT 1100	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail
							Acceptance Criteria: +/- 0.2 SU	
(CAL) ICV CCV		06/24/24	1710	7.00 ~~4660526~~	4BL0526	03/2026	7.01	(P) F
CAL ICV CCV		06/24/24	1713	10.00	4GL0600	03/2024	10.02	(P) F
CAL ICV CCV		06/24/24	1715	4.00	4GD0076	03/2024	4.00	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail
						Geosyntec Acceptance Criteria: +/- 5%		
(CAL) ICV CCV		06/24/24	1700	21.7	3054	08/2023	232.9	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen Membrane Changed? Yes No

0.1 - 10 NTU Std ____NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%	
CAL ICV CCV	~~06/24/24~~		P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

11 - 40 NTU Std 20 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%	
(CAL) ICV CCV	06/24/24	19.6	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

41 - 100 NTU Std ____NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%	
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

>100 NTU Std ____NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%	
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

1. **See Table FS 2200-2 on the back of this form**

CAL - Initial Calibration

ICV - Initial Calibration Verification

CCV - Continuing Calibration Verification

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed (i.e. pH > 7)

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Comments: _____

Geosyntec consultants

Geosyntec consultants

NSBB Cleaning Event Field Sampling Form

Project Name:	Keystone Drive NSBB-UFF Performance Metrics Monitoring	**Date:**	9/3/24
Location:	2801 Keystone Dr, Orlando, FL 32806	**Arrival Time:**	10:00
Sampling Staff:	Kevin Tyre	**Departure Time:**	5:20

Sample	Sample ID	Time collected
Purge water grab 1	PWG1	1:30
Purge water grab 2	PWG2	1:40
Spray water grab	SWG	2:00
Sediment composite	SC	5:00

Field Measurements

Sample ID	Temp °C	DO (mg/L)	Conductivity	pH	Turbidity
PWG1	30.2	6.10	189.1 uS/cm	7.71	62.8 ntu
PWG2	30.6	5.46	188.6	7.73	69.1 ntu
SWG	30.7	7.14	620	8.05	6.41 ntu

Notes and Observations

Pumpout Turbidity: 6.11 NTU

Dup = PWG1

SC Dup = SC

Water level high. Unable to pump down water inside BMP. Partial cleaning completed.

Form FD9000-8 CALIBRATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Geosyntec Consultants
Water Quality Instrument Calibration Form

Project/Site: Keystone Y2 | Project #: | Field Personnel: Kevin Tyre

Water Quality Meter - Model/Serial#:

Turbidimeter - Model/Serial#:

Dissolved Oxygen	DEP SOP FT 1500	Date	Time	Temp (°C)	Saturation (mg/L)[1]	Reading (mg/L)	Reading (%)	Pass or Fail
						Acceptance Criteria: +/-0.3 mg/L		
(CAL) ICV CCV		9/3/24	10:40	26.8			106	P (F)
CAL ICV CCV		9/3/24	10:41	26.8			99.6	P F
CAL ICV CCV								P F
CAL ICV CCV								P F

Specific Conductance	DEP SOP FT 1200	Date	Time	Standard (mS/cm)	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail
						Acceptance Criteria: +/- 5%		
CAL ICV CCV		9/3/24	10:58	~~1000~~ 1.0 KT	24B100642	2025-08	1.030	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

pH	DEP SOP FT 1100	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail
						Acceptance Criteria: +/- 0.2 SU		
(CAL) ICV CCV		9/3/24	10:45	4.0	4GD0076	2026-04	4.01	(P) F
CAL ICV CCV		9/3/24	10:49	7.0	4GC0526	2026-03	7.00	(P) F
CAL ICV CCV		9/3/24	10:52	10.0	3GF1088	2025-06	10.01	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail
						Geosyntec Acceptance Criteria: +/- 5%		
CAL ICV CCV		9/3/24	10:55	240.0	4GD1712	Jan-25	240.0	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

Specific Conductance Probe Cleaned? Yes No

Dissolved Oxygen Membrane Changed? Yes No

0.1 - 10 NTU Std ____NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%	
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

11 - 40 NTU Std 20 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%	
(CAL) ICV CCV	9/3/24	4.49	P (F)
(CAL) ICV CCV	9/3/24	2.21	P (F)
(CAL) ICV CCV	9/3/24	19.1	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

41 - 100 NTU Std 100 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%	
(CAL) ICV CCV	9/3/24	99.4	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

>100 NTU Std 800 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%	
(CAL) ICV CCV	9/3/24	769	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

1. **See Table FS 2200-2 on the back of this form**

CAL - Initial Calibration

ICV - Initial Calibration Verification

CCV - Continuing Calibration Verification

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed (i.e. pH > 7)

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Comments:

Geosyntec consultants

Geosyntec consultants

NSBB Cleaning Event Field Sampling Form KT

Project Name:	Keystone Drive NSBB-UFF Performance Metrics Monitoring	**Date:**	12/~~10~~12/24
Location:	2801 Keystone Dr, Orlando, FL 32806	**Arrival Time:**	10:00 am
Sampling Staff:	Kevin Tyre Emma Ahearn	**Departure Time:**	6:30 pm

Sample	Sample ID	Time collected
Purge water grab 1	PWG1 + Dup	5:27 pm
Purge water grab 2	PWG2	5:39 pm
Spray water grab	SWG	5:34 pm
Sediment composite	SC	6:20 pm

Field Measurements

Sample ID	Temp	DO (mg/L)	Conductivity	pH	Turbidity
PWG1	19.7	7.24	300.1	6.96	90.0
PWG2	19.2	6.65	291.4	7.32	83.6
SWG	17.6	9.05	671.0	7.67	7.76

Notes and Observations

Pumpout water Turbidity = 3.91 NTU

Geosyntec Consultants
Water Quality Instrument Calibration Form

Project/Site: Keystone Dr Project #: FW Field Personnel:

Water Quality Meter - Model/Serial #: Turbidimeter - Model/Serial #

Dissolved Oxygen	DEP SOP FT 1500	Date	Time	Temp (°C)	Saturation (mg/L)[1]	Reading (mg/L)	Reading (%)	Pass or Fail
						Acceptance Criteria: +/-0.3mg/L		
(CAL) ICV CCV		12/10/24	10:04	22.1	100%	100.1 %		P F
CAL ICV CCV		12/12/24	10:07	19.4	[illegible]	98.9%		P F
CAL ICV CCV					100%			P F
CAL ICV CCV								P F

Specific Conductance	DEP SOP FT 1200	Date	Time	Standard uS/cm	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail
						Acceptance Criteria: +/- 5%		
(CAL) ICV CCV		12/10/24	10:10	1000	24B1006	2 8/25	1000	P F
CAL ICV CCV		12/12/24	10:10	1000	24B10064	8/28/25	1000	P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

pH	DEP SOP FT 1100	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail
						Acceptance Criteria: +/-0.2 SU		
(CAL) ICV CCV		12/10/24	10:16	4	4GD0076	04-2026	4.0	P F
(CAL) ICV CCV		12/10/24	10:19	7	4GC0526	03-2026	7.01	P F
(CAL) ICV CCV		12/10/24	10:22	10	3GF1088	06-2025	10.03	P F
CAL ICV CCV		12/12/24	10:18	4	4GD0076	04-2026	4.00	P F
CAL ICV CCV		12/12/24	10:21	7	4GC0526	03-2026	7.00	P F
CAL ICV CCV		12/12/24	10:25	10	3GF1088	06-2025	10.27	P F

ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail
						Geosyntec Acceptance Criteria: +/- 5%		
(CAL) ICV CCV		12/10/24	10:27	22.9	4GD1716	01-2025	240	P F
CAL ICV CCV		12/12/24	10:41	13.4	4GD1716	01-2025	[illegible]	P F
CAL ICV CCV							239.4	P F
CAL ICV CCV								P F

Specific Conductance Probe Cleaned? Yes No Disolved Oxygen membrane Changed? Yes No

0.1 - 10 NTU Std ____NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%	
(CAL) ICV CCV	12/12/24	9.75	P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

11 - 40 NTU Std 20 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%	
(CAL) ICV CCV	12/10/24	20.7	P F
(CAL) ICV CCV	12/12/24	20.2	P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

41 - 100 NTU Std 100 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%	
(CAL) ICV CCV	12/10/24	99.4	P F
(CAL) ICV CCV	12/12/24	99.4	P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

>100 NTU Std 800 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%	
(CAL) ICV CCV	12/10/24	805	P F
(CAL) ICV CCV	12/12/24	801	P F
CAL ICV CCV			P F
CAL ICV CCV			P F

1. See Table FS 2200-2 on the back of this form

CAL - Initial Calibration

ICV - Initial Calibration Verification

CCV - Continuing Calibration Verification

Comments:

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings < 0.1 mS/cm then one standard of 0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings: always start with pH 7; add a third calibration point if needed (i.e. pH > 7)

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec consultants

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP
Sampling Event – 3/13/2023

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A5

March 23, 2023

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Page of
City, State, Zip: Orlando Florida 32817	Project Name: Keystone Drive BMP Autosampler
Phone: 407-321-7030 Fax:	Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)									Analyses Requested									
						I	S	S	S	H	I	I			Alkalinity	Total Solids	T Nitrogen NO3	T Phosphorus	Ammonia	Particulate Nitrogen Field Filtered	Particulate Phosphorus Field Filtered	TOC	TSS	Orthophosphate Field Filtered
Baffle Out	3/13/23	1541	C	SW	3			✓			✓													
Upflow Out	3/13/23	1622	C	SW	3			✓			✓													

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible] KIT	12-6-22	15:19			
Returned: / /	Via:		3/14/23	855	Helen Jurn	3-14-23	8:55

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): X412

Sampling Kit No.: 9407

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify: _____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: _____ RQ- _____ Project: Keystone/Pond 63 45

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 2/23/2023

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	3/13/23	1406	23.0	755.4	8.57	8.35	92.3	—	—	(P) / F	(L) / F
ICV											P / F	L / F
CCV	P. Barnes	3/13/23	1700	24.9	754.4	8.26	8.41	101.1	—	—	(P) / F	(L) / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	3/13/23	1421	7671	04/27	1413	1437	(P) / F	(L) / F
ICV								P / F	L / F
CCV	P. Barnes	3/13/23	1713	7671	04/27	1413	1461	(P) / F	(L) / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	3/13/23	1413	AZ291	10/24	7.00	23.7	6.90	-21.8	(P) / F	(L) / F
Calibr.	P. Barnes	↓	1413	AZ250	09/26	4.01	23.8	3.91	148.9	(P) / F	(L) / F
Calibr.	P. Barnes	↓	1413	AZ298	10/23	10.01	24.0	9.91	-193.9	(P) / F	(L) / F
ICV	P. Barnes	3/13/23	1701	AZ250	09/26	4.01	23.9	4.01	143.3	(P) / F	(L) / F
CCV	P. Barnes	↓	↓	AZ291	10/24	7.00	23.9	6.93	-23.5	(P) / F	(L) / F
CCV	P. Barnes	↓	↓	AZ298	10/23	10.01	24.0	9.92	-194.7	(P) / F	(L) / F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)

If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____

If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Field Notes and Measurement Sheets

Keystone Dr Sampling – 3/13/2023
Notes: Baffle in sample container was empty; Upflow in sample container was empty. Insufficient sample volume to collect for all analytes.

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	-	-	-	-	-	-
Baffle Out	15:41	25.0	405.4	6.33	4.45	8.41
Upflow In	-	-	-	-	-	-
Upflow Out	16:22	25.5	232.2	6.46	14.0	5.11

Site Photos

Baffle Box Samplers

Baffle Out container before removal

Baffle Box sampler housing

Rain Gauge

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP
Sampling Event – 4/10/2023

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A6

April 10, 2023

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Page of
City, State, Zip: Orlando Florida 32817	Project Name: Keystone BMP Project
Phone: 407-321-7030 Fax:	Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes IBFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

Analyses Requested

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	T N Tkn, T (Ammonia, NOx)	Alkalinity/Total Solids	TSS	Orthophosphate	TOC	Part. water nitrogen & Phosphorus			
Baffle Out	4/10/23	1500	C	SW	7	✓	✓	✓	✓	✓	✓			
Upflow Out	4/10/23	1539	C	SW	7	✓	✓	✓	✓	✓	✓			

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	SRL Kit	3/7/23	921			
Returned: / /	Via:		4/10/23	1635	Helen Sun	4/10/23	16:35

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 14

Sampling Kit No.: 9505 Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: _____ RQ- _____ Project: Keystone Dr BMP

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 3/13/22

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P.Barnes	4/10/23	1400	25.1	761.5	8.26	8.4	101.8	–	–	P / F	L / F
ICV											P / F	L / F
CCV	P.Barnes	4/10/23	1856	24.2	762.4	8.42	8.62	102.5	–	–	P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P.Barnes	4/10/23	1915	7691	4/27	1413	1463	P / F	L / F
ICV								P / F	L / F
CCV	P.Barnes	4/10/23	1900	7691	4/27	1413	1464	P / F	L / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
				2291							
Calibr.	P.Barnes	4/10/23	1401	A[illegible]	10/24	7.00	26.1	7.02	-28.9	P / F	L / F
Calibr.	↓	↓	1406	A2250	9/26	4.01	26.2	4.04	142.5	P / F	L / F
Calibr.	↓	↓	1410	A2298	10/23	10.01	26.3	9.99	-200.1	P / F	L / F
ICV	P.Barnes	4/10/23	1857	A2291	10/24	7.00	26.1	7.06	-31.1	P / F	L / F
CCV	↓	↓	↓	A2250	9/26	4.01	26.5	4.11	139.0	P / F	L / F
CCV	↓	↓	↓	A2298	10/23	10.01	26.6	9.96	-198.6	P / F	L / F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Field Notes and Measurement Sheets

Keystone Dr Sampling – 4/10/2023
Notes: Baffle out sample container was empty; Operated manually to obtain sample at 15:00.

Baffle in container was empty. Attempted to run manually but couldn't collect sample.

Upflow in sample container was empty. Attempted to run manually; sampler would start then stop immediately with a 'power failed' message. Would only purge suction line but would stop when trying to pump.

Upflow out sample tubing came out of container. Repositioned tubing and pump manually to collect sample at 15:39.

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	-	-	-	-	-	-
Baffle Out	15:00	24.3	372.7	6.71	16.0	5.17
Upflow In	-	-	-	-	-	-
Upflow Out	15:39	24.5	335.9	6.84	17.0	5.73

Site Photos

Baffle Box Samplers

Baffle Out sampler before container removal

Baffle out container

Upflow out container

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP
Sampling Event – 11/16/2023

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A5

November 16, 2023

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7030 Fax:	

Page of

Project Name: OC Keystone Drive BMP Autosampler Event

Project Location:

Sampled by [Print Name(s)] / Affiliation: Makese Powe / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)									Analyses Requested: TOC	Alkalinity Total Solids	T. Nitrogen Ammonia T. Phosphates	Particulate (Field Filtered) Nitrogen	Particulate Phosphorus (Field Filtered)	Orthophosphate	TSS		
1	Baffle In	11/16/23	1200	C	SW	7										✓	✓	✓	✓	✓	✓	✓		
2	Baffle Out	11/16/23	1230	C	SW	7										✓	✓	✓	✓	✓	✓	✓		
	~~Upflow In~~	~~11/16/23~~	M.P. 11/16/23																					
3	Upflow Out	11/16/23	1315	C	SW	7										✓	✓	✓	✓	✓	✓	✓		

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	~~SRI KIT~~	10-24-23	10:10			
Returned: / /	Via:		11-16-23	16:15	Helen Jun	11/16/23	16:15

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 4273

Sampling Kit No.: 9789

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K102270 RQ- Project: KEYSTONE

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification _____

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	M. POWE	11/16/23	927	25.1	758	8.263	8.24	100.5	—	—	(P) / F	(L) / F
ICV											P / F	L / F
CCV	M. POWE	11/16/23	1701	23.8	755.6	8.37	8.52	100.9	—	—	(P) / F	(L) F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	M. POWE	11/16/23	944	8807	03/28	1413	1419	(P) F	(L) F
ICV								P / F	L / F
CCV	M. POWE	11/16/23	1720	8807	03/28	1413	1410	(P) F	(L) F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	M. POWE	11/16/23	936	A3135	05/25	7.00	25.4	7.01	-44.9	(P) F	(L) F
Calibr.	↓	↓	↓	A3142	05/27	4.01	25.4	4.04	113.7	(P) F	(L) F
Calibr.	↓	↓	↓	A3122A	05/24	10.01	25.4	9.89	-219.8	(P) F	(L) F
ICV	M. POWE	11/16/23	1710	A3135	05/25	7.00	25.5	6.91	-50.0	(P) F	(L) F
CCV	↓	↓	↓	A3142	05/27	4.01	25.7	4.03	114.5	(P) F	(L) F
CCV	↓	↓	↓	A3122A	05/24	10.01	25.8	9.84	-217.6	(P) F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / **NA** (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS: ORP Pre: 223.7 mV @ 25.5 °C 223 mV @ 25 °C
ORP Post: 226.1 mV @ 26.1 °C 223 mV @ 25 °C

Form effective August 1, 2018

Field Notes and Measurement Sheets

Keystone Dr Sampling – 11/16/2023
Notes: Upflow in sample container was empty; No sample taken for Upflow In due to issue with stormwater collection

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	12:00	22.1	68.9	7.18	12.4	8.15
Baffle Out	12:30	22.6	97.4	6.86	13.7	7.33
Upflow In	-	-	-	-	-	-
Upflow Out	13:15	22.2	41.8	6.34	12.8	7.48

Site Photos

Baffle Box Samplers

Baffle Out sampler before container removal

Baffle In container

Baffle Out container

Upflow Out container

Keystone Drive BMP
Sampling Event 4 – 1/10/2024

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc. 1230
Hillcrest Street
Orlando, Florida 32803

BFA Project # 2020-23.A5
January 16, 2024

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7030 Fax:	

Page of

Project Name: OC Keystone BMP Monitoring

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Analyses Requested: TOC	Alkalinity, Total Solids	T.N. Inorg. Ammonia T. Phosphorus	Particulate Nitrogen	Particulate Phosphorus	Orthophosphate	TSS		
Upflow In	1/10/24	8:50	C	SW	7	✓	✓	✓	✓	✓	✓	✓		
Upflow Out	1/10/24	9:25	C	SW	7	✓	✓	✓	✓	✓	✓	✓		
Baffle Out	1/10/24	9:50	C	SW	7	✓	✓	✓	✓	✓	✓	✓		
Baffle In	1/10/24	10:05	C	SW	7	✓	✓	✓	✓	✓	✓	✓		

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	12.21.23	10:15			
Returned: / /	Via:		1/10/24	1330	Helen Turner	1-10-24	13:30

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 153

Sampling Kit No.: 4861

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K102270 RQ- Project: Keystone & Lake Condy

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 12/26/23

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	1/10/24	746	22.1	757.7	8.74	8.91	99.7	—	—	(P) F	(L) F
ICV	P. Barnes	1/10/24	1514	23.2	757.5	8.58	8.61	102.6	—	—	(P) F	(L) F
CCV											P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	1/10/24	759	8807	3/28	1413	1413	(P) F	(L) F
ICV								P / F	L / F
CCV	P. Barnes	1/10/24	1513	8807	3/28	1413	1408	(P) F	(L) F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	1/10/24	741	A3135	5/25	7.00	22.8	7.08	-51.5	(P) F	(L) F
Calibr.				A3142	5/27	4.01	22.8	4.07	119.3	(P) F	(L) F
Calibr.				A3122A	5/24	10.01	22.9	10.05	-218.3	(P) F	(L) F
ICV	P Barnes	1/10/24	1505	A3135	5/25	7.00	23.0	7.01	160.9	(P) F	(L) F
CCV				A3142	5/27	4.01	22.7	4.04	119	(P) F	(L) F
CCV				A3122A	5/24	10.01	23.2	10.00	-215.2	(P) F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Field Notes and Measurement Sheets

Keystone Dr Sampling – 1/10/2024
Notes: All samplers collected successfully.
*** Duplicate taken at Upflow In**

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	10:05	15.7	183.4	6.69	4.9	6.90
Baffle Out	9:50	16.3	186.5	6.51	5.1	5.71
Upflow In*	8:50	16.9	198.6	6.29	7.5	4.54
Upflow Out	9:25	16.3	163.3	6.49	2.70	5.20

Site Photos

Upflow Samplers

Upflow In Sample Container

Upflow Out sample container

Baffle Box Samplers

Baffle Out container

Baffle In container

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP
Sampling Event – 3/6/2024

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A6

March 7, 2024

Chain of Custody

Chain of Custody

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando, Florida 32817
Phone:	407-321-7030
Fax:	

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: OC Keystone BMP Monitoring

Project Location:

Sampled by [Print Name(s)] / Affiliation: Malcolm Powe / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Alkalinity Total Solids (TS)	TSS	TOC	Nitrogen, Ammonia T. Phosphorous	Particulate Nitrogen	Particulate Phosphorous	Orthophosphate			Analyses Requested
Baffle In	3/6/24	1111	C	SW	7		✓	✓	✓	✓	✓	✓	✓			
Baffle Out	3/6/24	1154	C	SW	7		✓	✓	✓	✓	✓	✓	✓			
Upflow In	3/6/24	1230	C	SW	7		✓	✓	✓	✓	✓	✓	✓			
Upflow Out	3/6/24	1254	C	SW	7		✓	✓	✓	✓	✓	✓	✓			
DUP	3/6/24	1135	C	SW	7		✓	✓	✓	✓	✓	✓	✓			

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:		1-25-24	17:43			
Returned: / /	Via:		3/6/24	1447		3/6/24	14:47

Additional Comments:

Cooler No.(s)/ Temperature(s) (°C): 08

Sampling Kit No: 4892 Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K102270 RQ- Project: Keystone / Gandy

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 2/21/2024

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	M. Powe	3/6/24	918	25.1	756.0	8.26	8.33	99.3	—	—	(P) / F	(L) F
ICV	M. Powe	3/6/24	1734	25.6	754.3	8.26	8.50	106.8	—	—	(P) / F	(L) F
CCV											P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	M. Powe	3/6/24	927	9278	08/28	1413	1460	(P) / F	(L) / F
ICV	M. Powe	3/6/24	1745	9278	08/28	1413	1458	(P) / F	(L) / F
CCV								P / F	L / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	M. Powe	3/6/24	922	A3135	5/25	7.00	25.1	7.08	-15.7	(P) / F	(L) F
Calibr.	"			A3324A	11/27	4.01	25.1	4.09	159.0	(P) / F	(L) / F
Calibr.				A3122A	5/24	10.01	25.2	9.99	-185.9	(P) / F	(L) F
ICV	M. Powe	3/6/24	1736	A3135	5/25	7.00	25.4	7.15	-19.6	(P) / F	(L) / F
CCV				A3324A	11/27	4.01	25.2	4.15	155.7	(P) / F	(L) / F
CCV				A3122A	5/24	10.01	25.4	10.04	-188.8	(P) / F	(L) / F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 170.2, slope from 4 to 7 174.7 (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS: ORP Pre: 218.3 mV @ 25.3 °C, 223 mV @ 25 °C
ORP Post: 217.0 mV @ 25.5 °C, 223 mV @ 25 °C

Field Notes and Measurement Sheets

Keystone Dr Sampling – 3/6/2024
Notes: All samples collected successfully.
***Duplicate taken at Baffle In.**

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In*	11:11	23.6	199.9	6.72	5.81	3.79
Baffle Out	11:54	24.8	144.5	6.74	7.02	3.08
Upflow In	12:30	24.8	175.1	6.76	9.71	2.82
Upflow Out	12:54	25.1	143.1	6.95	5.11	3.10

Site Photos

Upflow Samplers

Upflow In Sample Container

Upflow Out Container

Baffle Box Samplers

Baffle In Sample Container

Baffle Out Sample Container

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP
Sampling Event – 4/3/2024

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A6

April 4, 2024

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Page of
City, State, Zip: Orlando Florida 32817	Project Name: Keystone Drive BMP Autosampler
Phone: 407-321-7030 Fax:	Project Location:

Sampled by [Print Name(s)] / Affiliation: Makese Powe / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: ToC	Alkalinity Total Solids	T Nitrogen, Ammonia T. Phosphorus	Particulate Nitrogen	Particulate Phosphorus	Orthophosphate	TSS		
Upflow In	4/3/24	1835	C	SW	7		✓	✓	✓	✓	✓	✓	✓		
Upflow Out	4/3/24	1856	C	SW	7		✓	✓	✓	✓	✓	✓	✓		
Baffle In	4/3/24	1925	C	SW	7		✓	✓	✓	✓	✓	✓	✓		
Baffle Out	4/3/24	1943	C	SW	7		✓	✓	✓	✓	✓	✓	✓		
Duplicate	4/3/24	1959	C	SW	7		✓	✓	✓	✓	✓	✓	✓		

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	3.21.24	10:45		3/21/24	10:45
Returned: / /	Via:		4.4.24	0912		4.4.24	0912

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): Teal

Sampling Kit No.: 9970

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K102270 RQ- Project: Keystone

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 3/28/24

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	M. Powe	4/3/24	1646	26.1	750.4	8.11	8.19	101.1	—	—	(P) / F	(L) / F
ICV	M. Powe	4/3/24	2053	21.5	751.9	8.74	9.02	102.2	—	—	(P) / F	(L) / F
CCV											P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	M. Powe	4/3/24	1655	9278	08/28	1413	1411	(P) / F	(L) / F
ICV	M. Powe	4/3/24	2106	9278	08/28	1413	1415	(P) / F	(L) / F
CCV								P / F	L / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	M. Powe	4/3/24	1649	A3332	11/25	7.00	25.4	7.04	-19.5	(P) / F	(L) / F
Calibr.				A3324A	11/27	4.01	25.4	4.05	154.8	(P) / F	(L) / F
Calibr.				A3316	11/24	10.01	25.6	9.96	-189.8	(P) / F	(L) / F
ICV	M. Powe	4/3/24	2059	A3332	11/25	7.00	24.7	7.04	-19.6	(P) / F	(L) / F
CCV				A3324A	11/27	4.01	25.3	4.04	154.9	(P) / F	(L) / F
CCV				A3316	11/24	10.01	25.5	9.98	-191.1	(P) / F	(L) / F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 170.3 slope from 4 to 7 174.3 (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / **NA** (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS: ORP Pre: 219.2 mV @ 25.8°C. 223 mV @ 25°C
ORP Post: 219.1 mV @ 25.8°C

Form effective August 1, 2018

Field Notes and Measurement Sheets

Keystone Dr Sampling – 4/3/2024
Notes: All samples collected successfully.
***Duplicate taken at Baffle Out.**

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	19:25	23.1	284.7	6.76	4.55	4.85
Baffle Out*	19:43	22.9	283.5	6.74	4.94	3.97
Upflow In	18:35	23.9	333.2	6.66	7.91	4.11
Upflow Out	18:56	22.2	273.7	6.89	3.04	5.80

Site Photos

Upflow Samplers

Upflow In Sample Container

Upflow Out Container

Baffle Box Samplers

Baffle In Sample Container

Baffle Out Sample Container

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP
Sampling Event – 5/14/2024

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A6

May 23, 2024

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7030 Fax:	

Page of

Project Name: OC Keystone Drive BMP

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)									Analyses Requested: TOC	Alkalinity	Total Solids	T Nitrogen Ammonia	T Phosphorus	Particulate Nitrogen	Particulate Phosphorus	Orthophosphate	TSS	
Upflow In	5/14/24	1450	C	SW	7										✓	✓	✓	✓	✓	✓	✓	✓	✓	
Upflow Out	5/14/24	1508	C	SW	7										✓	✓	✓	✓	✓	✓	✓	✓	✓	
Baffle In	5/14/24	1540	C	SW	7										✓	✓	✓	✓	✓	✓	✓	✓	✓	
Baffle Out	5/14/24	1552	C	SW	7										✓	✓	✓	✓	✓	✓	✓	✓	✓	
Dup	5/14/24	1525	C	SW	7										✓	✓	✓	✓	✓	✓	✓	✓	✓	

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	12823	10:30		12823	10:30
Returned: / /	Via:		5/15/24	925		5/15/24	9:25

Additional Comments:

Cooler No.(s) / Temperature(s) (°C):

Sampling Kit No.: 7839

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K102270 RQ- Project: Geosyntec Keystone

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification _____

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	5/14/24	1352	25.6	755.6	8.11	8.14	99.5	—	—	(P) / F	(L) / F
ICV	P. Barnes	5/14/24	1644	28.7	754.2	7.69	7.56	97.8	—	—	(P) / F	(L) / F
CCV											P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	5/14/24	1354	9278	8/28	1413	1458	(P) F	(L) F
ICV	P. Barnes	5/14/24	1645	9278	8/28	1413	1402	(P) F	(L) F
CCV								P / F	L / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	pH probe malfunctioned therefore					7.				P / F	L / F
Calibr.	pH not measured					4.				P / F	L / F
Calibr.						10.				P / F	L / F
ICV										P / F	L / F
CCV										P / F	L / F
CCV										P / F	L / F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES (NO) **NA** (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS: pH probe malfunctioned; as a result pH measurements not taken; new probe has been ordered to replace broken one.

Field Notes and Measurement Sheets

Keystone Dr Sampling – 5/14/2024
Notes: All samples collected successfully.
***Duplicate taken at Upflow Out.**
pH probe was not operational. As a result, pH was not recorded.

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	15:40	28.3	170	-	16.7	4.86
Baffle Out	15:52	27.4	187	-	9.02	3.37
Upflow In	14:50	30.6	193	-	36.1	5.89
Upflow Out*	15:08	29.1	153	-	8.66	4.52

Site Photos

Upflow Samplers

Baffle Box Samplers

Upflow In (left), Upflow Out (right) containers

Baffle In (left), Baffle Out (right) containers

Solar Panel and Rain Gauge

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP
Sampling Event – 6/7/2024

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A6

June 12, 2024

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin Company: Geosyntec Consultants, Inc. Address: 3504 Lake Lynda Drive, Suite 155 City, State, Zip: Orlando Florida 32817 Phone: 407-321-7030 Fax:	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714 Main (407) 522-7100 Fax: (407) 522-7043	Page of Project Name: OC Keystone Drive Project Location: 2801 Keystone Dr, Orlando, FL 32806.

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)									Analyses Requested									
															TPC	Alkalinity Total Solids	T N, Nitrogen, Ammonia T Phosphorus	Particulate Nitrogen	Particulate Phosphorus	Ortho phosphate	TSS			
Upflow In	6/7/24	804	C	SW	7										✓	✓	✓	✓	✓	✓	✓			
Upflow Out	1	816	C	SW	7										✓	✓	✓	✓	✓	✓	✓			
Baffle In	1	855	C	SW	7										✓	✓	✓	✓	✓	✓	✓			
Baffle Out	1	905	C	SW	7										✓	✓	✓	✓	✓	✓	✓			
Dup	1	824	C	SW	7										✓	✓	✓	✓	✓	✓	✓			

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	BRUNKIT	5/27/24	13:50		5/27/24	1350
Returned: / /	Via:		6/7/24	950		6.7.24	9:50

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 08

Sampling Kit No.: 10051

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K102270 RQ- Project: Geosonics Kenilworth

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 5/20/24

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	6/7/24	652	24.6	755.2	8.26	8.26	99.3	—	—	(P) / F	L / F
ICV	P. Barnes		1023	25.2	756.2	8.26	8.23	99.8	—	—	(P) / F	L / F
CCV											P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	6/2/24	655	9650	01/29	1413	1413	(P) / F	(L) F
ICV			1032	9650	01/29	1413	1413	(P) / F	(L) F
CCV								P / F	L / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	6/2/24	653	A3332	11/25	7.00	25.0	7.02	-13.5	(P) / F	(L) F
Calibr.				A4102	04/28	4.01	25.2	4.01	160.5	(P) / F	(L) F
Calibr.				A3316	11/24	10.01	25.2	10.01	-186.7	(P) / F	(L) F
ICV				A4109	04/26	7.00	25.3	7.05	-14.8	(P) / F	(L) F
CCV				A4102	04/28	4.01	25.3	4.01	160.8	(P) / F	(L) F
CCV				A3316	11/24	10.01	25.4	10.02	-187.2	(P) / F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 193.2, slope from 4 to 7 194 (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) **NA** (not surf. water project)

If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____

If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Field Notes and Measurement Sheets

Keystone Dr Sampling – 6/7/2024
Notes: All samples collected successfully.
***Duplicate taken at Upflow In.**

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	8:55	27.3	98.0	6.79	12.0	1.86
Baffle Out	9:05	27.0	142	6.89	13.7	1.99
Upflow In*	8:04	27.5	95.4	6.76	15.8	2.43
Upflow Out	8:16	26.8	163	7.11	28.0	2.40

Site Photos

Upflow Samplers

Baffle Box Samplers

Upflow In (left), Upflow Out (right) containers

Baffle In (left), Baffle Out (right) containers

Solar Panel and Rain Gauge

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP
Sampling Event – 6/19/2024

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A6

June 19, 2024

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7030 Fax:	

Page of

Project Name: Keystone Drive BMP Autosampling

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TOC	Alkalinity, Total Solids	TKN, Ammonia, TPhosphorus	Particulate Nitrogen	Particulate Phosphorus	Orthophosphate	TSS
Upflow In		1448	C	SW	7		✓	✓	✓	✓	✓	✓	✓
Upflow Out		1500	C	SW	7		✓	✓	✓	✓	✓	✓	✓
Baffle In		1535	C	SW	7		✓	✓	✓	✓	✓	✓	✓
Baffle Out		1600	C	SW	7		✓	✓	✓	✓	✓	✓	✓
DUP		1506	C	SW	7		✓	✓	✓	✓	—	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	FEDEX	6-14-24	12:35		6-14-24	1235
Returned: / /	Via:		6/19/24	1630	Helen	6.19.24	16:30
Additional Comments:							

Cooler No.(s) / Temperature(s) (°C): X875

Sampling Kit No.: 10073 Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page. [ ]

Meter ID: 21K102270 RQ- [ ] Project: Big Econ Keystone

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 5/20/24

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Barometer mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	6/19/24	741	24.0	759.5	8.42	8.33	99.2	–	–	(P) / F	(L) / F
ICV	P. Barnes		1116	26.5	~~760.0~~ 960.0	7.97	8.05	100.1	–	–	(P) F	(L) F
CCV											P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	6/19/24	801	9650	01/29	1413	1413	(P) / F	(L) F
ICV	P. Barnes		1131	9650	01/29	1413	1421	(P) F	(L) F
CCV								P / F	L / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	6/19/24	748	A4109	04/26	7.00	24.9	7.02	-13.5	(P) / F	(L) F
Calibr.				A4102	04/28	4.01	24.8	4.01	160.5	(P) F	(L) F
Calibr.				A3310	11/24	10.01	25.0	10.01	-186.4	(P) / F	(L) F
ICV	P. Barnes	6/19/24	1120	A4109	04/26	7.00	25.6	7.04	-14.6	(P) / F	(L) F
CCV				A4102	04/28	4.01	25.6	4.01	160.7	(P) / F	(L) / F
CCV				A3310	11/24	10.01		10.03		P / F	L / F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 192.9, slope from 4 to 7 174 (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / **NA** (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS: ORP Pre 219.0 mV @ 25.2°C, 223 mV @ 25°C; calibrated
ORP- Post: 221.3 mV @ 25.7°C, 223 mV @ 25°C

Field Notes and Measurement Sheets

Keystone Dr Sampling – 6/19/2024
Notes: All samples collected successfully.
***Duplicate taken at Upflow Out.**

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	15:35	26.7	34.5	7.40	13.3	7.68
Baffle Out	16:00	26.9	36.6	7.23	6.33	7.76
Upflow In	14:48	27.2	41.7	7.84	4.33	7.84
Upflow Out*	15:00	27.3	37.7	7.23	6.97	6.72

Site Photos

Upflow Samplers

Baffle Box Samplers

Upflow In (left), Upflow Out (right) containers

Baffle In (left), Baffle Out (right) containers

Solar Panel and Rain Gauge

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP
Sampling Event – 7/16/2024

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A6

July 16, 2024

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7030 Fax:	

Page of

Project Name: OC Keystone Drive Yr 2

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: Total Nitrogen	Total Phosphorus (low level)	TSS
Upflow In	7/16/24	1030	C	SW	2		✓	✓	✓
Upflow Out	1	1040	C	SW	2		✓	✓	✓
Baffle In	1	1050	C	SW	2		✓	✓	✓
Baffle Out	1	1100	C	SW	2		✓	✓	✓
DUP	1	1055	C	SW	2		✓	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	FEDEX	7-10-24	1435		7/10/24	1435
Returned: / /	Via:		7/16/24	1130	Helen Jun	7-16-24	11:30
Additional Comments:							

Cooler No.(s) / Temperature(s) (°C): X453

Sampling Kit No.: 10104

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K10227D RQ- Project: Keystone

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 5/20/24

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P.Barnes	7/16/24	926	24.5	760.6	8.26	8.37	100.5	—	—	(P) / F	(L) / F
ICV	P.Barnes	7/16/24	1206	27.6	760.5	7.97	8.17	103.4	—	—	(P) / F	(L) / F
CCV											P / F	L / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P.Barnes	7/16/24	942	9650	01/29	1413	1438	(P) F	(L) F
ICV			1217	9650	01/29	1413	14116	(P) F	(L) F
CCV								P / F	L / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV -13.4	Pass / Fail	Lab / Field
Calibr.	P.Barnes	7/16/24	929	A4109	04/26	7.00	24.9	7.02	~~169.7~~ 165.7	(P) / F	(L) F
Calibr.				A4102	04/28	4.01	25.0	4.00	161.3	(P) / F	(L) F
Calibr.				A4120	04/25	10.01	25.1	10.00	-185.4	(P) / F	(L) / F
ICV			1210	A4109	04/26	7.00	25.2	7.03	-13.8	(P) / F	(L) F
CCV				A4102	04/28	4.01	25.2	3.99	161.9	(P) / F	(L) F
CCV				A4120	04/25	10.01	25.2	9.98	-184.7	(P) / F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 172, slope from 4 to 7 174.7 (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) **NA** (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Field Notes and Measurement Sheets

Keystone Dr Sampling – 7/16/2024
Notes: All samples collected successfully.
***Duplicate taken at Baffle In.**

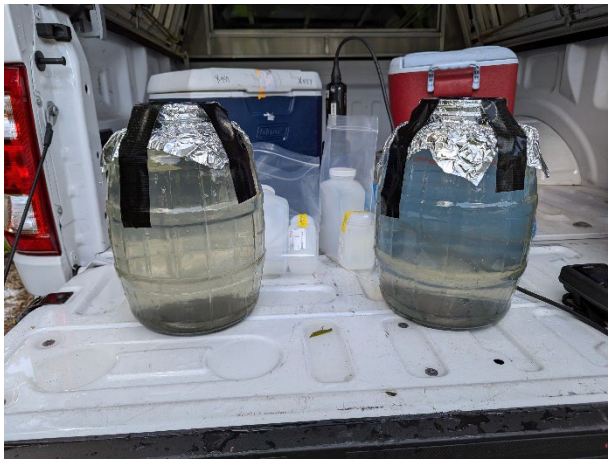
Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In*	10:50	27.7	69.2	6.85	4.98	3.36
Baffle Out	11:00	27.6	69.1	6.67	4.92	2.41
Upflow In	10:30	27.7	97.6	6.78	7.28	1.94
Upflow Out	10:40	28.0	80.3	6.79	7.90	2.49

Site Photos

Upflow Samplers

Baffle Box Samplers

Upflow In (left), Upflow Out (right) containers



Baffle In (left), Baffle Out (right) containers

Solar Panel and Rain Gauge

Keystone Drive BMP (Year 2)
Sampling Event – 1/21/2025

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A10

January 21, 2025

Chain of Custody

Chain of Custody

2501033

Page 1 of 4

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: Keystone Year 2
City, State, Zip: Orlando Florida 32817	Project Location: Orange County, FL
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Makese Powe / BFA

Sampler(s) Signature(s):

Project Number: FW-7915

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: T. Nitrogen T. Phosphorus (4)	Analyses Requested: TSS							
1	Upflow In	01/21/25	1300	C	SW	2		✓	✓							2501033-001
2	Upflow Out	"	1315	C	SW	2		✓	✓							-002
3	Baffle Out	"	1221	C	SW	2		✓	✓							-003
4	Dup	"	1235	C	SW	2		✓	✓							-004

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	11-18-24	10:30			
Returned: / /	Via:		01-21-25	1417		1-21-25	14:17

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 05 2.3°C

Sampling Kit No.: 10242

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 24610034 8 RQ- Project: Keystone

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 12/17/2024

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	M. Powe	01/21/25	959	21.3	766.2	8.91	9.01	101.5	—	—	(P) F	(L) F
ICV											P / F	L / F
CCV	M. Powe	01/21/25	1613	20.9	762.0	8.91	9.12	102.1	—	—	(P) F	(L) F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	M. Powe	01/21/25	10:14	0131	05/29	1413	1435	(P) F	(L) F
ICV								P / F	L / F
CCV	M. Powe	01/21/25	1625	0131	05/29	1413	1432	(P) F	(L) F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	M. Powe	01/21/25	1002	A4183A	07/26	7.00	21.9	7.11	-19.8	(P) F	(L) F
Calibr.				A4135	07/28	4.01	21.8	4.07	154.3	(P) F	(L) F
Calibr.				A4120	04/25	10.01	21.8	10.05	-190.8	(P) F	(L) F
ICV	M. Powe	01/21/25	1616	A4183A	07/26	7.00	22.0	7.16	-24.6	(P) F	(L) F
CCV				A4135	07/28	4.01	22.2	4.09	149.5	(P) F	(L) F
CCV				A4120	04/25	10.01	22.3	10.11	-192.0	(P) F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 171, slope from 4 to 7 174.1 (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / **NA** (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

07380028111 **Hanna HI 98703 Turbidimeter Calibration Record**

Instrument Serial No. ~~60037541~~

Date (mm/dd/yy)	Time (hh:mm)	Origin	Lot No.	Expiration Date (mm/dd/yy)	Standard Value	Instrument Response	Calibrated (Y/N)	Sampler Initials
12/16/24	754	Hanna	7799	08/2026	<0.1	0.07	Y	PB
			7798	02/2026	15	14.6	Y	PB
			7794	02/2026	100	97.5	Y	PB
12/17/24	1727	Hanna	7799	08/2026	<0.1	0.07	N	PB
			7798	02/2026	15	15	N	PB
			7794	02/2026	100	106	N	PB
01/21/25	953	Hanna	7799	08/2026	<0.1	0.08	N	MP
			7798	02/2026	15	14.9	N	MP
			7794	02/2026	100	99.8	N	MP
	1608	Hanna	7799	08/2026	<0.1	0.07	N	MP
			7798	02/2026	15	15	N	MP
			7794	02/2026	100	100	N	MP

Acceptance Criteria:

- Standard Value = 0.1-10 NTU: within 10% of the standard
- Standard Value = 11-40 NTU: within 8% of the standard;
- Standard Value = 41-100 NTU: within 6.5% of the standard; and
- Standard Value > 100 NTU: within 5% of the standard.

Field Notes and Measurement Sheets

Keystone Dr Sampling – 1/21/2025
Notes: Baffle In sampler container was empty. Remaining samples collected successfully.
***Duplicate taken at Baffle Out.**

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	-	-	-	-	-	-
Baffle Out*	12:21	17.9	161.9	6.94	7.98	4.20
Upflow In	13:00	16.7	163.9	6.81	24.5	6.54
Upflow Out	13:15	16.5	228.5	7.00	7.76	6.69

Site Photos

Upflow Samplers

Baffle Box Samplers

Upflow In (left), Upflow Out (right) containers

Baffle In (left), Baffle Out (right) containers

Solar Panel and Rain Gauge

Keystone Drive BMP (Year 2)
Sampling Event – 2/24/2025

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A10

February 24, 2025

Chain of Custody

Chain of Custody

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando Florida 32817
Phone:	407-321-7030
Fax:	

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: OC Keystone Yr 2

Project Location: Orange County, FL

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

Analyses Requested

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program
____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	T Nitrogen	T Phosphorus	155
Upflow In	2/24/25	1120	C	SW	2	✓	✓	
Upflow Out		1036	C	SW	2	✓	✓	
Baffle In		1210	C	SW	2	✓	✓	
Baffle Out		1145	C	SW	2	✓	✓	
DUP		1126	C	SW	2	✓	✓	

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	2-25-24	10:55		2/25/24	1053
Returned: / /	Via:		2/27/25	1245		2.24.25	1245

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 20.08

Sampling Kit No.: 10121

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21K102270 RQ- Project: Keystone, YS 2

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 12/16/2024

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	2/24/25	902	23.2	959.0	8.58	8.50	98.4	–	–	(P) / F	(L) / F
ICV						~~8.74~~	~~8.82~~	~~100.8~~ pass	–	–	(P) / F	(L) / F
CCV	P. Barnes	2/24/25	1320	21.7	957.9	8.74	8.82	100.2	–	–	(P) / F	(L) / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	2/24/25	907	0131	05/29	1413	1413	(P) / F	(L) / F
ICV								P / F	L / F
CCV	P. Barnes	2/24/25	1335	0131	05/29	1413	1351	(P) / F	(L) / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	2/24/25		A4183A	07/26	7.00	23.5	7.03	-15.9	(P) / F	(L) / F
Calibr.				A4185	07/28	4.01	23.4	4.01	156.6	(P) / F	(L) / F
Calibr.				A4178	06/25	10.01	23.4	10.07	-189.3	(P) / F	(L) / F
ICV	P. Barnes	2/24/25		A4183A	07/26	7.00	23.4	7.11	-20.2	(P) / F	(L) / F
CCV				A4185	07/28	4.01	23.7	4.07	153.3	(P) / F	(L) / F
CCV				A4178	06/25	10.01	23.8	10.04	-188.1	(P) / F	(L) / F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Form effective August 1, 2018

0738002811 **Hanna HI 98703 Turbidimeter Calibration Record**

Instrument Serial No. ~~60037541~~

Date (mm/dd/yy)	Time (hh:mm)	Origin	Lot No.	Expiration Date (mm/dd/yy)	Standard Value	Instrument Response	Calibrated (Y/N)	Sampler Initials
12/16/24	754	Hanna	7799	08/2026	<0.1	0.07	Y	PB
			7798	02/2026	15	14.6	Y	PB
			7794	02/2026	100	97.5	Y	PB
12/17/24	1727	Hanna	7799	08/2026	<0.1	0.07	N	PB
			7798	02/2026	15	15	N	PB
			7794	02/2026	100	100	N	PB
01/21/25	953	Hanna	7799	08/2026	<0.1	0.08	N	MP
			7798	02/2026	15	14.9	N	MP
			7794	02/2026	100	99.8	N	MP
	1608	Hanna	7799	08/2026	<0.1	0.07	N	MP
			7798	02/2026	15	15	N	MP
			7794	02/2026	100	100	N	MP
01/29/25	919	hanna	7799	8/2026	<0.1	0.05	N	EH
			7798	2/2026	15	14.8	N	EH
			7794	2/2026	100	99.4	N	EH
01/29/25	1230	hanna	7799	8/2026	<0.1	0.07	N	EH
			7798	2/2026	15	14.9	N	EH
			7794	2/2026	100	99.3	N	EH
2/24/25	940	Hanna	7799	8/26	<0.1	0.06	N	PB
			7798	2/26	15	14.9	N	PB
			7794	2/26	100	99	N	PB
	1322	Hanna	7799	8/26	<0.1	0.07	N	PB
			7798	2/26	15	14.9	N	PB
			7794	2/26	100	99.3	N	PB

Acceptance Criteria:

- Standard Value = 0.1-10 NTU: within 10% of the standard
- Standard Value = 11-40 NTU: within 8% of the standard;
- Standard Value = 41-100 NTU: within 6.5% of the standard; and
- Standard Value > 100 NTU: within 5% of the standard.

Field Notes and Measurement Sheets

Keystone Dr Sampling – 2/24/2025
Notes: Upflow out had low volume (~400 mL)
***Duplicate taken at Upflow In.**

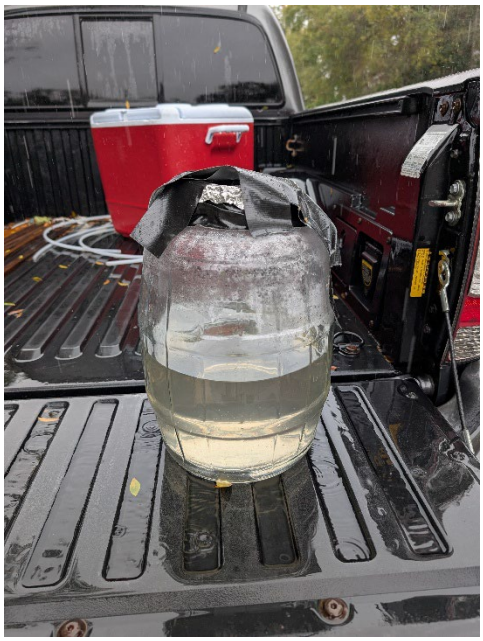
Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	12:10	20.0	275	6.78	5.85	3.75
Baffle Out	11:45	20.7	278	6.65	7.58	2.83
Upflow In*	11:20	20.7	285	6.73	10.1	2.64
Upflow Out	10:36	19.9	242	7.41	8.23	8.18

Site Photos

Upflow Out Volume

Upflow In Volume

Baffle Out Volume



Baffle In Volume

Solar Panel and Rain Gauge

Keystone Drive BMP (Year 2)
Sampling Event 5 – 3/05/2025

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A10

March 5, 2025

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7030 Fax:	

Page of

Project Name: Keystone Year 2 Stormwater

Project Location: Orange County, FL.

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

Analyses Requested

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	T Nitrogen	T Phosphorus 365
Upflow In	3/5/25	1525	C	SW	2	✓	✓
Upflow out	3/5/25	1527	C	SW	2	✓	✓
Baffle In	3/5/25	1538	C	SW	2	✓	✓
Baffle out	3/5/25	1542	C	SW	2	✓	✓
DUP	3/5/25	1532	C	SW	2	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	3/4/25	11:10		3/4/25	11:10
Returned: / /	Via:		3/5/25	16:15		3/5/25	16:15

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 05

Sampling Kit No.: 10349

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21A02270 RQ- Project: Keystone Yr 2

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 12/16/2024

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	3/5/25	1429	25.1	752.7	8.26	8.29	98.8	–	–	(P) F	(L) F
ICV											P / F	L / F
CCV	P. Barnes	3/5/25	1654	22.7	752.2	8.57	8.58	99.5	–	–	(P) F	(L) F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	3/5/25	1432	0131	05/29	1413	1414	(P) F	(L) F
ICV								P / F	L / F
CCV	P. Barnes	3/5/25	1655	0131	05/29	1413	1371	(P) F	(L) F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	3/5/25	1434	A4183A	07/26	7.00	25.2	7.02	-15.5	(P) F	(L) F
Calibr.				A4185	07/28	4.01	25.3	3.98	159.1	(P) F	(L) F
Calibr.				A4178	06/25	10.01	25.3	9.99	-175.9	(P) F	(L) F
ICV	P. Barnes	3/5/25	1658	A4183A	07/26	7.00	25.2	7.02	-15.4	(P) F	(L) F
CCV				A4185	07/28	4.01	25.4	4.04	156.2	(P) F	(L) F
CCV				A4178	06/25	10.01	25.5	9.99	-176.5	(P) F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / **NA** (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Hanna HI 98703 Turbidimeter Calibration Record

Instrument Serial No. 60037541

Date (mm/dd/yy)	Time (hh:mm)	Origin	Lot No.	Expiration Date (mm/dd/yy)	Standard Value	Instrument Response	Calibrated (Y/N)	Sampler Initials
3/5/25	1443	Hanna	7798	08/2026	<0.1	0.05	Y	PB
			7798	02/2026	15	14.9	Y	PB
			7794	02/2026	100	98.9	Y	PB
3/5/25	1654	Hanna	7799	08/2026	<0.1	0.07	N	PB
			7798	02/2026	15	15.0	N	PB
			7794	02/2026	100	99.3	N	PB

Acceptance Criteria:

- Standard Value = 0.1-10 NTU: within 10% of the standard
- Standard Value = 11-40 NTU: within 8% of the standard;
- Standard Value = 41-100 NTU: within 6.5% of the standard; and
- Standard Value > 100 NTU: within 5% of the standard.

Field Notes and Measurement Sheets

Keystone Dr Sampling – 3/5/2025
***Duplicate taken at Upflow Out.**

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	15:38	22.3	255	6.61	1.59	4.49
Baffle Out	15:42	21.5	205	6.57	2.55	4.10
Upflow In	15:25	22.9	241	6.81	5.60	5.47
Upflow Out*	15:32	22.3	203	6.77	3.12	4.45

Site Photos

Upflow Samplers

Baffle Box Samplers

Upflow In (left), Upflow Out (right) containers

Baffle In (left), Baffle Out (right) containers

Solar Panel and Rain Gauge

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP (Year 2)
Sampling Event 6 – 4/02/2025

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A10

April 2, 2025

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7030 Fax:	

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Project Name: OC Keystone Drive Yr 2

Project Location: Orange County, FL

Sampled by [Print Name(s)] / Affiliation: Patrik Barnes / BFA Environmental

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	Analyses Requested: T Nitrogen	Analyses Requested: T Phosphorus
Inflow In	4/2/25	1002	C	SW	2		✓	✓	
Baffle In	4/2/25	1025	C	SW	2		✓	✓	
Baffle Out	4/2/25	1034	C	SW	2		✓	✓	
DUP	4/2/25	1040	C	SW	2		✓	✓	

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turkett	3/27/25	14:50	PAD	3/27/25	1450
Returned: / /	Via:	PAD	4/2/25	1135	Helen Turkett	4.2.25	11:35

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 04

Sampling Kit No.: 10378

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify: _____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 24022976 RQ- Project: Keystone #2

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 3/19/25

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	4/2/25	902	25.6	761.8	8.11	8.17	99.9	–	–	(P) F	(L) F
ICV											P / F	L / F
CCV	P. Barnes	4/2/25	1201	25.4	761.9	8.26	8.19	99.7	–	–	(P) F	(L) F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	4/2/25	0905	0131	01/29	1413	1413	(P) F	(L) F
ICV								P / F	L / F
CCV	P. Barnes	4/2/25	1202	0131	01/29	1413	1401	(P) F	(L) F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	4/2/25	1908	A4183A	07/26	7.00	26.8	7.07	-14.1	(P) F	(L) F
Calibr.				A4185	07/28	4.01	26.5	4.04	160.3	(P) F	(L) F
Calibr.				A4178	06/25	10.01	26.6	10.01	-184.3	(P) F	(L) F
ICV	P. Barnes	4/2/25	1204	A4183A	07/26	7.00	27.6	7.02	-11.2	(P) F	(L) F
CCV				A4185	07/28	4.01	27.0	4.03	161.9	(P) F	(L) F
CCV				A4178	06/25	10.01	27.0	10.03	-185.4	(P) F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Hanna HI 98703 Turbidimeter Calibration Record

Instrument Serial No. 60037541

Date (mm/dd/yy)	Time (hh:mm)	Origin	Lot No.	Expiration Date (mm/dd/yy)	Standard Value	Instrument Response	Calibrated (Y/N)	Sampler Initials
3/3/25	1443	Hanna	7799	08/2026	<0.1	0.05	Y	PB
			7798	02/2026	15	14.9	Y	PB
			7794	02/2026	100	98.9	Y	PB
3/5/25	1654	Hanna	7799	08/2026	<0.1	0.07	N	PB
			7798	02/2026	15	15.0	N	PB
			7794	02/2026	100	99.3	N	PB
3/10/25	1122	Hanna	7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.9	N	PB
			7794	02/2026	100	98.7	N	PB
	1652	Hanna	7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.9	N	PB
			7794	02/2026	100	99.1	N	PB
3/19/25	746	Hanna	7799	08/2026	<0.1	0.07	N	PB
			7798	02/2026	15	14.9	N	PB
			7794	02/2026	100	98.8	N	PB
	1230	Hanna	7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.8	N	PB
			7794	02/2026	100	98.6	N	PB
4/2/25	0911	Hanna	7799	08/2026	<0.1	0.05	N	PB
			7798	02/2026	15	14.8	N	PB
			7794	02/2026	100	98.5	N	PB
	1218		7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.9	N	PB
			7794	02/2026	100	98.9	N	PB

Acceptance Criteria:

- Standard Value = 0.1-10 NTU: within 10% of the standard
- Standard Value = 11-40 NTU: within 8% of the standard;
- Standard Value = 41-100 NTU: within 6.5% of the standard; and
- Standard Value > 100 NTU: within 5% of the standard.

Field Notes and Measurement Sheets

Keystone Dr Sampling – 4/2/2025
***Duplicate taken at Baffle Out.**

Sample not collected at Upflow out due to insufficient volume. Water was run through both Upflow samplers to clear any possible sediment. Both pumps appeared to be working normally at the Upflow samplers after purging.

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	10:25	24.6	1.5	6.60	822	6.51
Baffle Out	10:34	24.1	41.7	6.37	5.89	5.50
Upflow In	10:02	24.2	45.5	6.45	19.9	2.23
Upflow Out	-	-	-	-	-	-

Site Photos

Upflow Samplers

Baffle Box Samplers

Upflow In (left), Upflow Out (right) containers

Baffle In (left), Baffle Out (right) containers

Solar Panel and Rain Gauge

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

Keystone Drive BMP (Year 2)
Sampling Event 7 – 4/07/2025

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A10

April 7, 2025

Chain of Custody

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714	Page of
Company: Geosyntec Consultants, Inc.		Project Name: OC Keystone Drive Yr 2
Address: 3504 Lake Lynda Drive, Suite 155		Project Location: Orange County, FL
City, State, Zip: Orlando Florida 32817		
Phone: 407-321-7030 Fax:	Main (407) 522-7100 Fax: (407) 522-7043	

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA Environmental

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

Analyses Requested

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	TSS	TN Nitrogen TP Phosphorus
Upflow In	4/7/25	1535	C	SW	2	✓	✓
Upflow out	"	1542	C	SW	2	✓	✓
Baffle In	"	1555	C	SW	2	✓	✓
Baffle out	"	1600	C	SW	2	✓	✓
DUP	"	1540	C	SW	2	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	4-4-25	1600		4/4/25	1600
Returned: / /	Via:		4/7/25	1640		4/7/25	1640

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 20.20

Sampling Kit No.: 10388 Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify: _____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 21102270 RQ- Project: Keystone Yr 2

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 3/19/25

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	P. Barnes	4/2/25	1443	28.9	154.6	7.69	7.54	99.7	–	–	(P) / F	(L) / F
ICV											P / F	L / F
CCV	F. Barnes	4/7/25	1729	28.9	753.2	7.69	7.64	98.8	–	–	(P) / F	(L) / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	P. Barnes	4/7/25	1447	0131	01/29	1413	1440	(P) F	(L) F
ICV								P / F	L / F
CCV	P Barnes	4/7/25	1730	0131	01/29	1413	1409	(P) / F	(L) F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	P. Barnes	4/7/25	1450	A4183A	07/26	7.00	28.2	7.02	-11.2	(P) F	(L) F
Calibr.				A4185	07/26	4.01	28.3	3.99	164.7	(P) / F	(L) F
Calibr.				A4178	06/25	10.01	28.3	9.97	-182.7	(P) / F	(L) F
ICV	P. Barnes		1732	A4183A	07/26	7.00	28.5	9.01	-11.0	(P) / F	(L) F
CCV				A4185	07/26	4.01	28.6	4.03	162.7	(P) / F	(L) F
CCV				A4178	06/25	10.01	28.5	9.97	-182.9	(P) / F	(L) F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 _____, slope from 4 to 7 _____ (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤ 4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS:

Hanna HI 98703 Turbidimeter Calibration Record

Instrument Serial No. 60037541

Date (mm/dd/yy)	Time (hh:mm)	Origin	Lot No.	Expiration Date (mm/dd/yy)	Standard Value	Instrument Response	Calibrated (Y/N)	Sampler Initials
4/7/25	1452	Hanna	7799	08/2026	<0.1	0.06	Y	PB
			7798	02/2026	15	14.8	Y	PB
			7794	02/2026	100	98.8	Y	PB
			7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.9	N	PB
			7794	02/2026	100	99.0	N	PB

Acceptance Criteria:

- Standard Value = 0.1-10 NTU: within 10% of the standard
- Standard Value = 11-40 NTU: within 8% of the standard;
- Standard Value = 41-100 NTU: within 6.5% of the standard; and
- Standard Value > 100 NTU: within 5% of the standard.

Field Notes and Measurement Sheets

Keystone Dr Sampling – 4/7/2025
***Duplicate taken at Upflow In.**

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	15:55	27.1	160	6.57	4.47	4.85
Baffle Out	16:00	26.4	177	6.33	2.53	4.20
Upflow In*	15:35	26.5	270	6.46	8.54	6.34
Upflow Out	15:42	27.0	182	6.55	4.09	5.97

Site Photos

Upflow Samplers

Baffle Box Samplers

Upflow In (left), Upflow Out (right) containers

Baffle In (left), Baffle Out (right) containers

Solar Panel and Rain Gauge

Keystone Drive BMP (Year 2)
Sampling Event 8 – 5/09/2025

Prepared for

Geosyntec Consultants, Inc.

Orlando, Florida

Prepared by

BFA Environmental Consultants, Inc.

1230 Hillcrest Street

Orlando, Florida 32803

BFA Project # 2020-23.A10

May 14, 2025

Chain of Custody

Chain of Custody

2505017

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Project Manager: Mike Hardie	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone Yr 2
City, State, Zip: Orlando Florida 32817	Project Location:
Phone: 407-321-7850 Fax:	

Sampled by [Print Name(s)] / Affiliation: Makese Powe / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	Analyses Requested: T Nitrogen T Phosphorus	
1	Upflow In	5/9/25	1010	C	SW	2		✓	✓	2505017-001
2	Upflow Out	5/9/25	1100	C	SW	2		✓	✓	-002
3	Baffle In	5/9/25	1107	C	SW	2		✓	✓	-003
4	Baffle Out	5/9/25	1033	C	SW	2		✓	✓	-004
5	Duplicate	5/9/25	1045	C	SW	2		✓	✓	-005

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:		5.6.25	10:30			
Returned: / /	Via:		5925	12 00	Helen Jun	5.9.25	12:00

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): (120) 4.9 °C

Sampling Kit No.: 10427

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Orange CountyEPD
YSI Calibrations

CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there are qualified data on this page.

Meter ID: 24G100390 RQ- Project: KEYSTONE

Notes: (1) Always wait for meter to stabilize before recording any readings.
(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).
(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Temperature (Quarterly) FT 1400 Date of Last Temperature Verification 5/7/2025

DO DEP SOP FT 1500	Name	Date	Time CT-ET	Temp °C	Baro-meter mmHg	D.O. Chart mg/L	Meter D.O. mg/L	% DO	Probe Charge	Probe Gain	Pass / Fail	Lab / Field
Calibr.	M. Powe	5/9/25	841	27.7	758.1	7.83	8.02	102.0	—	—	(P) / F	(L) / F
ICV											P / F	L / F
CCV	M. Powe	5/9/25	1520	29.7	756.6	7.56	7.76	102.3	—	—	(P) / F	(L) / F
CCV											P / F	L / F

DO Acceptance criteria from Table ± 0.3 mg/L. **Rapid-Pulse Sensors:** DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.
Optical: DO gain range 0.85 to 1.15 (Pro DSS 0.75 to 1.50); DO charge N/A. **Steady-state & Galvanic Sensors:** DO Gain & Charge N/A.

Spec. Cond. FT 1200	Name	Date	Time CT-ET	Lot #	Expir. Date	Standard µmhos/cm	Meter Reading µmhos/cm	Pass / Fail	Lab / Field
Calibr.	M. Powe	5/9/25	858	0402	07/2029	1413	1453	(P) / F	(L) / F
ICV								P / F	L / F
CCV	M. Powe	5/9/25	1533	0402	07/2029	1413	1431	(P) / F	(L) / F
CCV								P / F	L / F

Conductivity Acceptance criteria ± 5%

pH DEP SOP FT 1100	Name	Date	Time CT-ET	Lot #	Expir. Date	pH Buffer SU	Temp °C	Meter reading SU	mV	Pass / Fail	Lab / Field
Calibr.	M. Powe	5/9/25	847	A4183A	07/2026	7.00	27.7	7.18	-35.8	(P) / F	(L) / F
Calibr.			1	A4185	07/2028	4.01	27.7	4.16	140.0	(P) / F	(L) / F
Calibr.			1	A4178	06/2025	10.01	27.7	10.02	-202.2	(P) / F	(L) / F
ICV	M. Powe	5/9/25	1530	A4183A	07/2026	7.00	28.4	7.12	-32.9	(P) / F	(L) / F
CCV			1	A5078B	04/2029	4.01	28.2	4.11	143.0	(P) / F	(L) / F
CCV			1	A4178	06/2025	10.01	28.2	10.02	-202.5	(P) / F	(L) / F

pH Acceptance criteria ± 0.2 SU; mV pH 7 Range 0 ± 50; mV pH 4 Range +180 ± 50; mV pH 10 Range -180 ± 50;
If mV are recorded: slope from 7 to 10 166.4, slope from 4 to 7 175.8 (both must be between 165 and 180 mV)

Does meter have a depth sensor that will be used to measure total depth & sample depth? YES / (NO) / NA (not surf. water project)
If **YES**, complete daily Calibr. & ICV below and list date of last quarterly depth verification: _____
If **NO**, what will be used? (circle one) **Secchi Disk Line / Sonar** Unique ID: _____; Date of last verification: _____

Depth Sensor (Daily Calibration & ICV)	Name	Date	Time CT-ET	Calibrated Value (0.00 or Offset), meters	ICV Value, meters	Pass / Fail	Lab / Field
Pressure mode in air						P / F	L / F

Report two decimal places. Round numbers ≤4 down, ≥ 5 up. ICV acceptance criteria ± 5 % or ± 0.05m, whichever is greater.

COMMENTS: ORP Pre: Reading 207.2 mV @ 27.7; Chart 220mV
ORP Post: Reading 207.0 mV @ 28.4; Chart 220mV

Hanna HI 98703 Turbidimeter Calibration Record

Instrument Serial No. 60037541

Date (mm/dd/yy)	Time (hh:mm)	Origin	Lot No.	Expiration Date (mm/dd/yy)	Standard Value	Instrument Response	Calibrated (Y/N)	Sampler Initials
4/7/25	1452	Hanna	7799	08/2026	<0.1	0.06	Y	PB
			7798	02/2026	15	14.8	Y	PB
			7794	02/2026	100	98.8	Y	PB
			7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.9	N	PB
			7794	02/2026	100	99.0	N	PB
4/9/25	858	Hanna	7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.8	N	PB
			7794	02/2026	100	98.9	N	PB
	1210	Hanna	7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.9	N	PB
			7794	02/2026	100	99.0	N	PB
5/8/25	0805	Hanna	7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.9	N	PB
			7794	02/2026	100	98.9	N	PB
	1203	Hanna	7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.9	N	PB
			7794	02/2026	100	98.9	N	PB
5/9/25	0633	Hanna	7799	08/2026	<0.1	0.06	N	PB
			7798	02/2026	15	14.8	N	PB
			7794	02/2026	100	98.8	N	PB
5/9/25	907	Hanna	7799	08/2026	<0.1	0.09	N	MP
			7798	02/2026	15	15.2	N	MP
			7794	02/2026	100	101	N	MP
	1536	Hanna	7799	08/2026	<0.1	0.08	N	MP
			7798	02/2026	15	15.1	N	MP
			7794	02/2026	100	101	N	MP

Acceptance Criteria:

- Standard Value = 0.1-10 NTU: within 10% of the standard
- Standard Value = 11-40 NTU: within 8% of the standard;
- Standard Value = 41-100 NTU: within 6.5% of the standard; and
- Standard Value > 100 NTU: within 5% of the standard.

Field Notes and Measurement Sheets

Keystone Dr Sampling – 5/9/2025
***Duplicate taken at Baffle Out.**

The Upflow Out sample collected just enough volume for the lab to test.

Sample ID	Sample Time	Temperature (°C)	Conductivity (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Baffle In	11:07	25.7	43.6	6.84	8.04	5.77
Baffle Out*	10:33	25.1	75.3	6.88	12.2	2.38
Upflow In	10:10	25.8	36.3	7.15	30.2	6.50
Upflow Out	11:00	-	-	-	-	-

Site Photos

Upflow Samplers

Baffle Box Samplers

Upflow In (left), Upflow Out (right) containers

Baffle In (left), Baffle Out (right) containers

Solar Panel and Rain Gauge

APPENDIX C

Oldcastle Maintenance Records

CERTIFICATE
OF COMPLIANCE

JOB NUMBER S027879

This certifies stormwater treatment unit service and maintenance was performed at

ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION

3165 MCCRORY PL STE 200

Orlando, Fl 32803 3727

This service is in compliance with the contract between
Oldcastle Infrastructure Service and Maintenance

ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION

OLDCASTLE INFRASTRUCTURE SERVICE AND MAINTENANCE

August 1, 2022
Service Date

Tracinda Knopp
Tracinda Knopp, Admin Operations Supervisor

Oldcastle Service and Maintenance

A Division o Oldcastle Infrastructure Inc.

MAINTENANCE RECORD

CONTACT INFORMATION	
Job No.: S027879	Company: Orange County Environmental Protection Division 3165 MCCRORY PL STE 200 ORLANDO, FL 32803 3727
Contact: Mike	
Phone: : 407.321.7030	

SITE INFORMATION	
Project Name: Orange County Environmental Protection	Site Address: 3165 MCCRORY PL STE 200 ORLANDO, FL 32803 3727
Contact: Mike	
Phone: 407.321.7030	Alternate Contact: Mitchell Katz - mitchell.katz@ocfl.net

Treatment System and Quantity:Quarterly Hydrovactor cleaning for up to 8 events per interval which includes the following scope of work:Install the Sun gates prior to servicing oVac truck can be used to accomplish this task •Vac out debris from the NSBB basket system oSample the debris,Dewater both the NSBB and NRFS to determine baseline volume oEstimated

SERVICE INFORMATION

Standard Maintenance

Date of Service: 8/1/2022	By: Kelly Sloan

☒ **Inspection** ☐ **Remove Debris** ☐ **Repair/Replace Parts** ☒ **See Tank Report** ☒ **Photos Taken**
☒ **Vacuum** ☐ **Remove Silt** ☐ **Replace Absorbent** (#'s 4)

Comments: **Cleaning or NRF system in place of NSBB cleaning. Incoming chamber of NRF completely impacted. 8”-12” on top of NRF media. Installed sun gates and pumped water down. 27” of sediment and organics going under NRF panels 10ft. Cleaned and jetted under NRF panels. Raked and removed sediment from top of NRF. Installed green board on weir wall with metal brackets and wedge bolts. Also sikaflexed around green board. Removed sun gates.**

>>Estimated Volume Removed 135.0 cu.ft. 40% Organics 50% Sediments 10% Trash/Debris.

Client Copy

DRAINAGE PROTECTION SYSTEMS

TANK REPORT

COMPANY NAME	Keystone Drive		
SITE ADDRESS	3165 MCCRORY PL STE 200		
DATE	8/1/2022	JOB NUMBER	S027879
SERVICE BY	Kelly Sloan Rob Ailstock		

SYSTEM	NRF system				
			WATER CLARITY	Murky	
VOLUME REMOVED	135 cu. ft.	ORGANICS	90%	TRASH/DEBRIS	10%

CHAMBER	1			
SURFACE DEBRIS	Moderate			
HYDROCARBONS	Moderate			
SILT LEVEL	27”			
WATER LEVEL	High			

INSPECTION OF TANK	Complete
REMOVAL OF FLOATING TRASH/DEBRIS	Complete
MEASURMENT OF SILT/WATER/HYDROCARBON LEVELS	Complete
DISPOSAL OF REMOVED CONTAMINANTS	Complete
PUMP OUT OF EXCESSIVE CONTAMINANTS NEEDED	No

COMMENTS

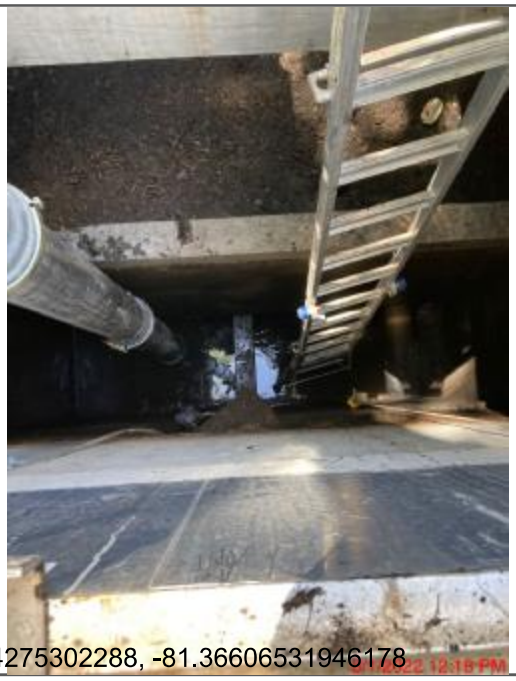
NRF cleaning see maintenance report for further details.

SERVICE PICTURES

Welded sun gate

Top of NRF before

Front of NRF before



Front of NRF after

SERVICE PICTURES

NRF left side after

NRF right side after

Top of NRF clean

Green board installed

Job #S027879

8/1/2022

CERTIFICATE
OF COMPLIANCE

JOB NUMBER S027879

This certifies stormwater treatment unit service and maintenance was performed at

KEYSTONE DRIVE

3165 MCCRORY PL STE 200

Orlando, Fl 32803 3727

This service is in compliance with the contract between
Oldcastle Infrastructure Service and Maintenance

ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION

OLDCASTLE INFRASTRUCTURE SERVICE AND MAINTENANCE

November 15, 2022
Service Date

Tracinda Knopp
Tracinda Knopp, Admin Operations Supervisor

Oldcastle Service and Maintenance

A Division o Oldcastle Infrastructure Inc.

MAINTENANCE RECORD

CONTACT INFORMATION	
Job No.: S027879	Company: ,
Contact: Mike	
Phone: : 407.321.7030	

SITE INFORMATION	
Project Name: Keystone Drive	Site Address: 3165 MCCRORY PL STE 200 ORLANDO, FL 32803 3727
Contact: Mike	
Phone: 407.321.7030	Alternate Contact: Mitchell Katz - mitchell.katz@ocfl.net
Treatment System and Quantity: Quarterly Hydrovactor cleaning for up to 8 events per interval which includes the following	

SERVICE INFORMATION

Standard Maintenance

Date of Service: 11/15/2022	By: Kelly Sloan, Jason Anderson,

Service Type:	Services Rendered:	Additional Reporting:
Standard Maint.	**Vacuum/Waste Disp.** **Photos Taken**	**See Reports**

SERVICE COMMENTS

NOTES	Installed inflow and outflow sun gates. Pumped water with 6” pump for an extended period of time and water never receded. Water levels in system and head pressure was to high and water kept coming over top of the sungates not allowing dewatering of the system. We cleaned what we could out of the NSBB baffles and screen system
NOTES	We filled the truck with 30,000 lbs of water and sediment. Decanted to allow for material testing. Dumped sediment onto visqueeninto truck. Final weight of wet sediment left in truck after dewatering was 8,000 lbs. to allow for samples to be taken then vacuumed sediment back into truck.

Estimated Volume Removed:	Percent Organics:	Percent Sediments:	Percent Trash/Debris:
67.5 cubic feet	**20%**	**70%**	**10%**

Customer Signature: _____

Client Copy

SERVICE PICTURES

Pumping and water coming over sungate

CERTIFICATE
OF COMPLIANCE

JOB NUMBER S027879

This certifies stormwater treatment unit service and maintenance was performed at

ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION

3165 MCCRORY PL STE 200

Orlando, Fl 32803 3727

This service is in compliance with the contract between
Oldcastle Infrastructure Service and Maintenance

ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION

OLDCASTLE INFRASTRUCTURE SERVICE AND MAINTENANCE

February 23, 2023
Service Date

Tracinda Knopp
Tracinda Knopp, Admin Ops. Supervisor

DRAINAGE PROTECTION SYSTEMS

TANK REPORT

COMPANY NAME	3165 McCrory PL STE 200		
SITE ADDRESS	407.321.7030		
DATE	2/23/2023	JOB NUMBER	S027879
SERVICE BY	Kelly Sloan Jason Rob		

SYSTEM	12x24 NSBB + NRFS				
			WATER CLARITY	Murky	
VOLUME REMOVED	210 cu. ft.	ORGANICS	90%	TRASH/DEBRIS	10%

CHAMBER	1	2	3	
SURFACE DEBRIS	Minimal	Minimal	Minimal	
HYDROCARBONS	Minimal	Minimal	Minimal	
SILT LEVEL	3.25’	2.5’	4”	
WATER LEVEL	High	High	High	

INSPECTION OF TANK	Complete
REMOVAL OF FLOATING TRASH/DEBRIS	Complete
MEASURMENT OF SILT/WATER/HYDROCARBON LEVELS	Complete
DISPOSAL OF REMOVED CONTAMINANTS	Complete
PUMP OUT OF EXCESSIVE CONTAMINANTS NEEDED	No

COMMENTS

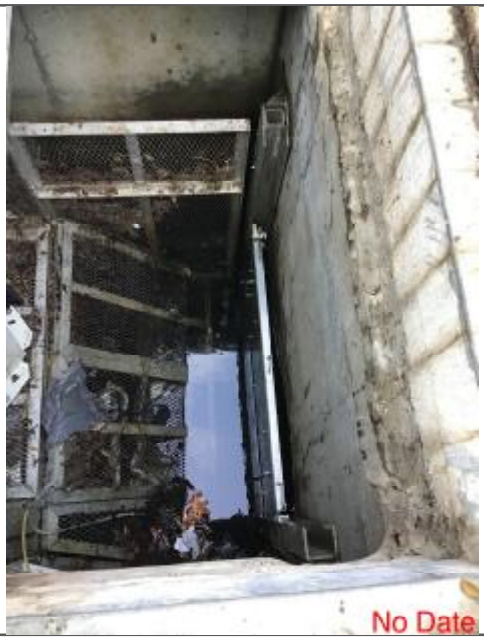
Installed sun gates. Dewatered both NSBB and NRFS. Cleaned screened cage system and baffles. Pressure washed skimmer tracks.
Wet Weight- 30,980 lbs
Dry Weight- 12,820 lbs

Oldcastle Stormwater Solutions™

DRAINAGE PROTECTION SYSTEMS

SERVICE PICTURES

Pumping water



Sun gates installed

First chamber before

First chamber during

DRAINAGE PROTECTION SYSTEMS

SERVICE PICTURES

Second chamber before

Second chamber during

Third Chamber during

NRFS dewatered

Job #S027879

2/23/2023

DRAINAGE PROTECTION SYSTEMS

SERVICE PICTURES

Top of NRFS

After

After

After

Job #S027879

2/23/2023

CERTIFICATE
OF COMPLIANCE

JOB NUMBER S027879

This certifies stormwater treatment unit service and maintenance was performed at

ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION

3165 MCCRORY PL STE 200

Orlando, Fl 32803 3727

This service is in compliance with the contract between
Oldcastle Infrastructure Service and Maintenance

ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION

OLDCASTLE INFRASTRUCTURE SERVICE AND MAINTENANCE

May 9, 2023
Service Date

Tracinda Knopp
Tracinda Knopp, Process Supervisor

Oldcastle Service and Maintenance

A Division o Oldcastle Infrastructure Inc.

MAINTENANCE RECORD

CONTACT INFORMATION	
Job No.: S027879	Company: Orange County Environmental Protection Division 3165 MCCRORY PL STE 200 Orlando, FL 32803
Contact: Mike	
Phone: : 407.321.7030	

SITE INFORMATION	
Project Name: Orange County Environmental Protection	Site Address: 3165 MCCRORY PL STE 200 ORLANDO, FL 32803 3727
Contact: Mike	
Phone: 407.321.7030	Alternate Contact: Mitchell Katz - mitchell.katz@ocfl.net

Treatment System and Quantity: Quarterly Hydrovactor cleaning for up to 8 events per interval which includes the following

SERVICE INFORMATION

Standard Maintenance

Date of Service: 5/9/2023	By: Kelly Sloan,

Service Type:	Services Rendered:	Additional Reporting:
Standard Maint.	**Vacuum/Waste Disp.** **Photos Taken**	**See Reports**

SERVICE COMMENTS

DET/RET - DETENTION/RETENTION SYSTEM	>>Detention/Retention System Maintenance Included inspection, removal and disposal of trash, debris, evaluated overall condition.
NOTES	Installed Sungates. Dewatered System. Cleaned baffles, cage, and washed off monitoring equipment. Large monitoring ring on the outflow pipe in baffle box was laying down in pipe, we removed the ring. Also dewatered the NRFS, very small amount of sediment on top of media. 6" in first chamber of NRFS.
NOTES	Wet weight: 4,740 lbs Dry weight: 1,230 lbs

Consumable Materials

22" Pouches	CPZ Pouches	Mulch Cu. Ft.	Matala
0			

Estimated Volume Removed:	Percent Organics:	Percent Sediments:	Percent Trash/Debris:
27.0 cubic feet	**60%**	**30%**	**10%**

Customer Signature: _____

Client Copy

DRAINAGE PROTECTION SYSTEMS

TANK REPORT

COMPANY NAME	3165 MCCRORY PL STE 200		
SITE ADDRESS	407.321.7030		
DATE	5/9/2023	JOB NUMBER	S027879
SERVICE BY	Kelly Sloan Jason Anderson		

SYSTEM	Keystone Dr				
			WATER CLARITY	Murky	
VOLUME REMOVED	27 cu. ft.	ORGANICS	80%	TRASH/DEBRIS	20%

CHAMBER	1	2	3	
SURFACE DEBRIS	Minimal	Minimal	Minimal	
HYDROCARBONS	Minimal	Minimal	Minimal	
SILT LEVEL	4”	2”	2”	
WATER LEVEL	High	High	High	

INSPECTION OF TANK	Complete
REMOVAL OF FLOATING TRASH/DEBRIS	Complete
MEASURMENT OF SILT/WATER/HYDROCARBON LEVELS	Complete
DISPOSAL OF REMOVED CONTAMINANTS	Complete
PUMP OUT OF EXCESSIVE CONTAMINANTS NEEDED	No

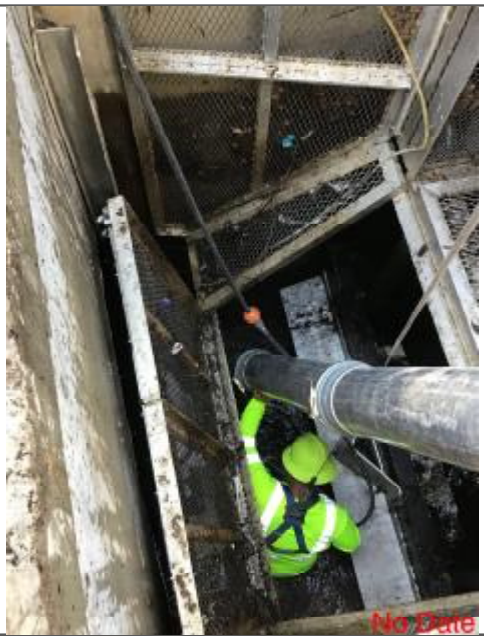
COMMENTS

Installed Sungates. Dewatered System. Cleaned baffles, cage, and washed off monitoring equipment. Large monitoring ring on the outflow pipe in baffle box was laying down in pipe, we removed the ring. Also dewatered the NRFS, very small amount of sediment on top of media. 6” in first chamber of NRFS.
Wet weight: 4,740 lbs
Dry weight: 1,230 lbs

Oldcastle Stormwater Solutions™

SERVICE PICTURES

First chamber before

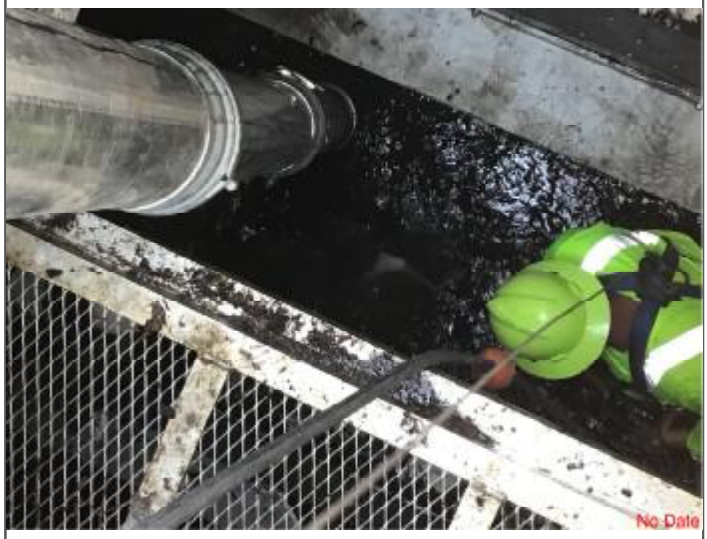


First chamber clean

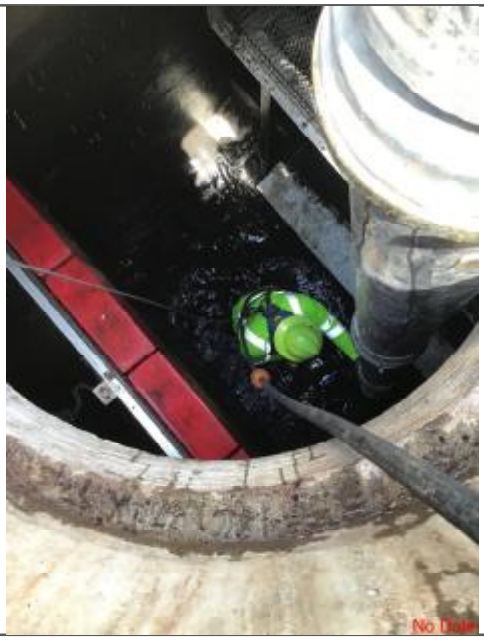
Cage clean

DRAINAGE PROTECTION SYSTEMS

SERVICE PICTURES



Second chamber



Third chamber

Top of NRFS

Job #S027879

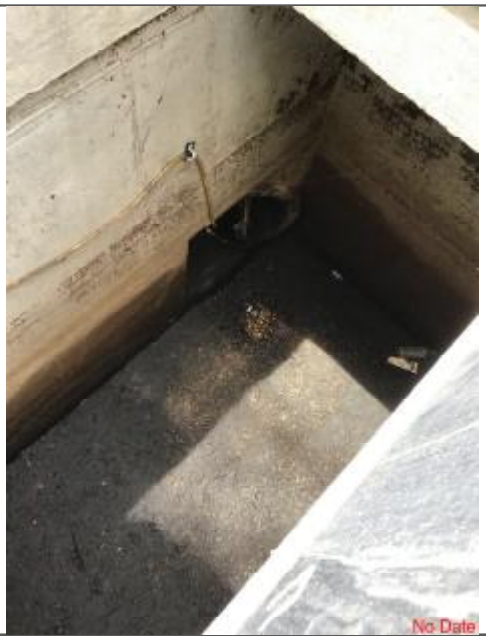
5/9/2023

DRAINAGE PROTECTION SYSTEMS

SERVICE PICTURES

NRFS

Incoming chamber NRFS



Outflow pipe NRFS

Job #S027879

5/9/2023

CERTIFICATE
OF COMPLIANCE

JOB NUMBER S027879

This certifies stormwater treatment unit service and maintenance was performed at

KEYSTONE DRIVE
3165 MCCRORY PL STE 200
Orlando, Fl 32803 3727

This service is in compliance with the contract between
Oldcastle Maintenance and Service Florida

ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION

OLDCASTLE INFRASTRUCTURE SERVICE AND MAINTENANCE

October 9, 2023
Service Date

Tracinda Knopp
Tracinda Knopp, Process Supervisor

Oldcastle Maintenance and Service Florida

A Division of Oldcastle Infrastructure Inc.

MAINTENANCE RECORD

CONTACT INFORMATION	
Job No.: S027879	Company: Orange County Environmental Protection Division 3165 MCCRORY PL STE 200 Orlando, FL 32803
Contact: Mike	
Phone: : 407.321.7030	

SITE INFORMATION		
Project Name: Keystone Drive	Site Address: 3165 MCCRORY PL STE 200 ORLANDO, FL 32803 3727	**Map Page#**
Contact: Mike		
Phone: 407.321.7030	Alternate Contact: Mitchell Katz - mitchell.katz@ocfl.net	

Treatment System and Quantity: Quarterly Hydrovactor cleaning for up to 8 events per interval which includes the following scope of work:Install the Sun gates prior to servicing oVac truck can be used to accomplish this task •Vac out debris from the NSBB basket system oSample the debris,Dewater both the NSBB and NRFS to determine baseline volume oEstimated

SERVICE INFORMATION

Standard Maintenance

Date of Service: 10/9/2023	By:	Time In: 8:00AM	Departure: 3:00PM

☐ **Inspection** ☐ **Remove Debris** ☐ **Repair/Replace Parts** ☐ **See Tank Report**
☐ **Vacuum** ☐ **Remove Silt** ☐ **Replace Absorbent** ☐ **Photos Taken** (#'s 11)

Quantity of Pouches Replaced

22"	Other (specify)	Critical Notes
0		

Comments:

Items Not Serviced	Reason	Previous Services					
		Date	20"	22"	36"	40"	Other
		05/09/23		**0**			
		02/23/23		**0**			
		11/15/22		**0**			

Repair/Replacement Items	Reason

Estimated Volume Removed:	Percent Organics:	Percent Sediments:	Percent Trash/Debris:
60.0 cubic feet	**30%**	**60%**	**10%**

Customer Signature: _____

Office Copy

DRAINAGE PROTECTION SYSTEMS

TANK REPORT

COMPANY NAME	3165 MCCRORY PL STE 200		
SITE ADDRESS	407.321.7030		
DATE	10/9/2023	JOB NUMBER	S027879
SERVICE BY			

SYSTEM	Keystone Dr NSBB + NRFS				
			WATER CLARITY	Clear	
VOLUME REMOVED	60 cu. ft.	ORGANICS	90%	TRASH/DEBRIS	10%

CHAMBER	1	2	3	
SURFACE DEBRIS	Moderate	Minimal	Minimal	
HYDROCARBONS	Minimal	Minimal	Minimal	
SILT LEVEL	24”	13”	2”	
WATER LEVEL	High	High	High	

INSPECTION OF TANK	Complete
REMOVAL OF FLOATING TRASH/DEBRIS	Complete
MEASURMENT OF SILT/WATER/HYDROCARBON LEVELS	Complete
DISPOSAL OF REMOVED CONTAMINANTS	Complete
PUMP OUT OF EXCESSIVE CONTAMINANTS NEEDED	No

COMMENTS

Installed sun gates, dewater NSBB +NRFS, clean debris rack, remove sediment from baffle box chambers, clean floating skimmer tracks, remove floatables from NRFS. Install flow meter for NRFS.

Wet removal weight: 6,850 lbs
Dry removal weight: 5,974 lbs

Oldcastle Stormwater Solutions™

DRAINAGE PROTECTION SYSTEMS

SERVICE PICTURES

Sungate installed

Debris rack clean

First chamber before

First chamber after

DRAINAGE PROTECTION SYSTEMS

SERVICE PICTURES

Second chamber before

Second chamber after

Third chamber before

Third chamber after

Job #S027879

10/9/2023

DRAINAGE PROTECTION SYSTEMS

SERVICE PICTURES

First chamber NRFS before

First chamber NRFS after

Removal photo

Job #S027879

10/9/2023

CERTIFICATE
OF COMPLIANCE

JOB NUMBER S027879

This certifies stormwater treatment unit service and maintenance was performed at

KEYSTONE DRIVE

3165 MCCRORY PL STE 200

Orlando, Fl 32803 3727

This service is in compliance with the contract between
Oldcastle Maintenance and Service Florida

ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION

OLDCASTLE INFRASTRUCTURE SERVICE AND MAINTENANCE

March 27, 2024
Service Date

Marlen Garcia
Marlen Garcia, Admin Assistant

Oldcastle Maintenance and Service Florida

A Division o Oldcastle Infrastructure Inc.

MAINTENANCE RECORD

CONTACT INFORMATION	
Job No.: S027879	Company: Orange County Environmental Protection Division
Contact: Mike	3165 MCCRORY PL STE 200
Phone: : 407.321.7030	Orlando, FL 32803

SITE INFORMATION	
Project Name: Keystone Drive	Site Address: 3165 MCCRORY PL STE 200 ORLANDO, FL 32803 3727
Contact: Mike	
Phone: 407.321.7030	Alternate Contact: Mitchell Katz - mitchell.katz@ocfl.net

Treatment System and Quantity: Quarterly Hydrovactor cleaning for up to 8 events per interval which includes the following

SERVICE INFORMATION

Standard Maintenance

Date of Service: 3/27/2024 | By: Julio Pineda, Richard Bisby,

Service Type:	Services Rendered:	Additional Reporting:
	Vacuum/Waste Disp. **Photos Taken**	

SERVICE COMMENTS

Consumable Materials

22" Pouches	CPZ Pouches	Mulch Cu. Ft.	Matala
0			

Estimated Volume Removed:	Percent Organics:	Percent Sediments:	Percent Trash/Debris:
60.00 cubic feet	**20%**	**10%**	**10%**

Customer Signature: _____

Client Copy

DRAINAGE PROTECTION SYSTEMS

TANK REPORT

COMPANY NAME	Keystone Drive		
SITE ADDRESS	3165 MCCRORY PL STE 200		
DATE	3/26/2024	JOB NUMBER	S027879
SERVICE BY	Julio pineda Richard Bisby		

SYSTEM	NSBB				
			WATER CLARITY	Clear	
VOLUME REMOVED	60 cu. ft.	ORGANICS	90%	TRASH/DEBRIS	10%

CHAMBER	1	2	3	
SURFACE DEBRIS	Moderate	Minimal	Minimal	
HYDROCARBONS	Minimal	Minimal	Minimal	
SILT LEVEL	24 "	13 "	2 "	
WATER LEVEL	High	High	High	

INSPECTION OF TANK	Complete
REMOVAL OF FLOATING TRASH/DEBRIS	Complete
MEASURMENT OF SILT/WATER/HYDROCARBON LEVELS	Complete
DISPOSAL OF REMOVED CONTAMINANTS	Complete
PUMP OUT OF EXCESSIVE CONTAMINANTS NEEDED	No

COMMENTS

See the maintenance records pictures

Wet weight removed: 6,160 lbs

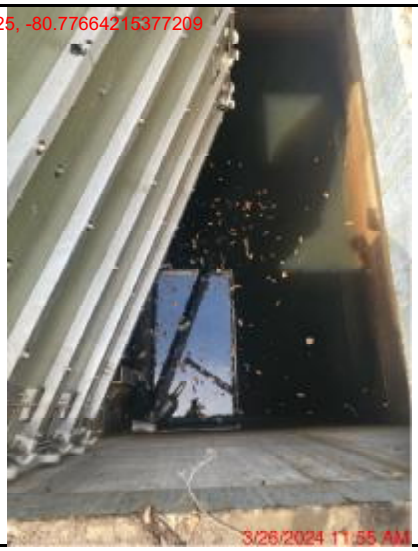
Oldcastle Stormwater Solutions™

Oldcastle Maintenance & Infrastructure Services

Service Pictures

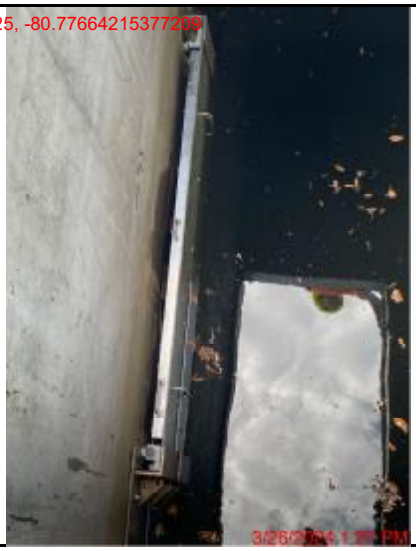
Job Number	S027879	Site Name	Keystone Drive	Date	3/26/2024

28.35552978515625, -80.77664215377209



Unit #: Inlet **Description:** NSBB

28.35552978515625, -80.77664215377209



Unit #: **Description:**

28.35552978515625, -80.77664215377209

Unit #: **Description:**

28.35552978515625, -80.77664215377209

Unit #: **Description:**

28.35552978515625, -80.77664215377209

Unit #: **Description:**

28.35552978515625, -80.77664215377209

Unit #: **Description:**

309947

SHELLEY'S SEPTIC TANKS, INC.

DBA SHELLEY'S ENVIRONMENTAL SYSTEMS

P.O. Box 249/6505 • West Jones Avenue • Zellwood FL 32798-0249

INCOMING 3RD PARTY LOAD MANIFEST

Date: 4/11/25

Transporter Name: OLD CASTLE

LIQUID

Source:	Address:	Type: Check all that apply				Volume
		Residential	Commercial	Food Service	Port-A-Potty	

CAKE

Customer	Weights				Volume
	Gross	Empty	Net		

SAND AND GRIT

Customer	Weights				Volume
	Gross	Empty	Net		4.35

Driver (Signature): _____ Operator Name: MBS

Truck/Trailer: _____ Operator (Signature): MBS

Time: 10:51 AM Material Accepted: S+G

Orange County EPD
Lake Management Section
General BMP Inspection Sheet

Site Name KEYSTONE DR. NSBB CLEANING

Site Address 2801 KEYSTONE DR, ORLANDO FL 32806

Inspector Name JAKE JACOBSON Date 4/24/25

Type of Inspection: ☒ Inspection ☒ Cleaning ☐ Complaint ☐ Storm

BMP Type: HDS - BAFFLE BOX

Site/Structure Condition; Depth of Sediment/Debris: 2801 KEYSTONE DR, CONDITION 75% OF SUMP CHAMBER 2 / 10% CHAMBER 3 36" APPROX CHAMBER 2 / AVERAGE OF 5" CHAMBER 3

List any damage to property, infrastructure, or site: NO DAMAGE TO PROPERTY / STRUCTURE / SITE.

Method/Location of disposal: SHELLY'S SEPTIC & ENVIRONMENTAL

Hours spent at unit location: 9:00AM ONSITE 5:00 PM OFFSITE 8HRS

Liquids Removed (Gal) APPROX 100 Solids Removed (cubic yards) APPROX 3.7 YD^3

Recommend Cleaning? ☒ YES ☐ NO — COMPLETE

Immediate Attention Required? ☐ YES ☒ NO

Any indications of illicit discharge or illegal dumping such as odor, discoloration, sheen, or other signs? ☐ YES ☒ NO

If yes, describe and immediately notify the appropriate County personnel.

SHELLEY'S SEPTIC TANKS, INC.

DBA SHELLEY'S ENVIRONMENTAL SYSTEMS

P.O. Box 249/6505 • West Jones Avenue • Zellwood FL 32798-0249

INCOMING 3RD PARTY LOAD MANIFEST

Date: 4/24/25

Transporter Name: OLDCASTLE INFRASTRUCTURE

LIQUID

Source:	Address:	Type: Check all that apply				Volume
		Residential	Commercial	Food Service	Port-A-Potty	

CAKE

Customer	Weights				Volume
	Gross	Empty	Net		

SAND AND GRIT

Customer	Weights				Volume
	Gross	Empty	Net		4.73

Driver (Signature): _____ Operator Name: MWS

Truck/Trailer: _____ Operator (Signature): MWS

Time: 4:03 PM Material Accepted: SIG

SHELLEY'S ENVIROMENTAL SYSTEMS
P.O. BOX 249/6505 WEST JONES AVENUE
ZELLWOOD, FL 32798-0249
RMF PERMIT #FLA 016177

PART B

Ticket:	116877
Date/Time	4/24/2025 5:00:48 PM
Truck Number:	
Driver:	Ben
Ticket #	310328
Customer	Old Castle Infrastructure
Bin #	
Tank #	
Total Weight	63480
Tare Weight	54020
Load Weight	9460
Net Gallons	
Net Tons	4.73
Employee	Rob
Load Type	Incoming
Product	~~Gate~~ STG

SHELLEY'S ENVIROMENTAL SYSTEMS

SHELLEY'S ENVIROMENTAL SYSTEMS
P.O. BOX 249/6505 WEST JONES AVENUE
ZELLWOOD, FL 32798-0249
RMF PERMIT #FLA 016177
PART B

Ticket:	109689
Date/Time	6/26/2024 11:08:09 A
Truck Number:	
Driver:	Marrio
Ticket #	303206
Customer	Old Castle Infrastructure
Bin #	
Tank #	
Total Weight	60040
Tare Weight	55800
Load Weight	4240
Net Gallons	
Net Tons	2.12
Employee	Rob
Load Type	Incoming
Product	~~Cake~~ ST-6

SHELLEY'S ENVIROMENTAL SYSTEMS

...NTAL SYSTEMS
... WEST JONES AVENUE
..., FL 32798-0249
...ERMIT #FLA 016177

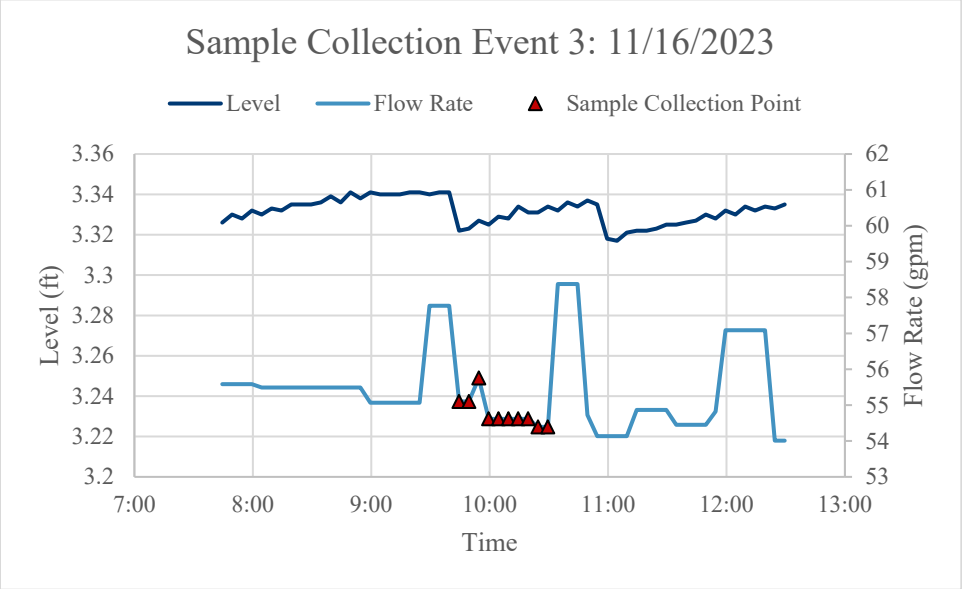
ART B	
Ticket:	110992
Date/Time	9/4/2024 12:53:32 PM
Truck Number:	
Driver:	Marrio
Ticket #	304474
Customer	Old Castle Infrastructure
Bin #	
Tank #	
Total Weight	63940
Tare Weight	58220
Load Weight	5720
Net Gallons	
Net Tons	2.86
Employee	Rob
Load Type	Incoming
Product	[redacted]

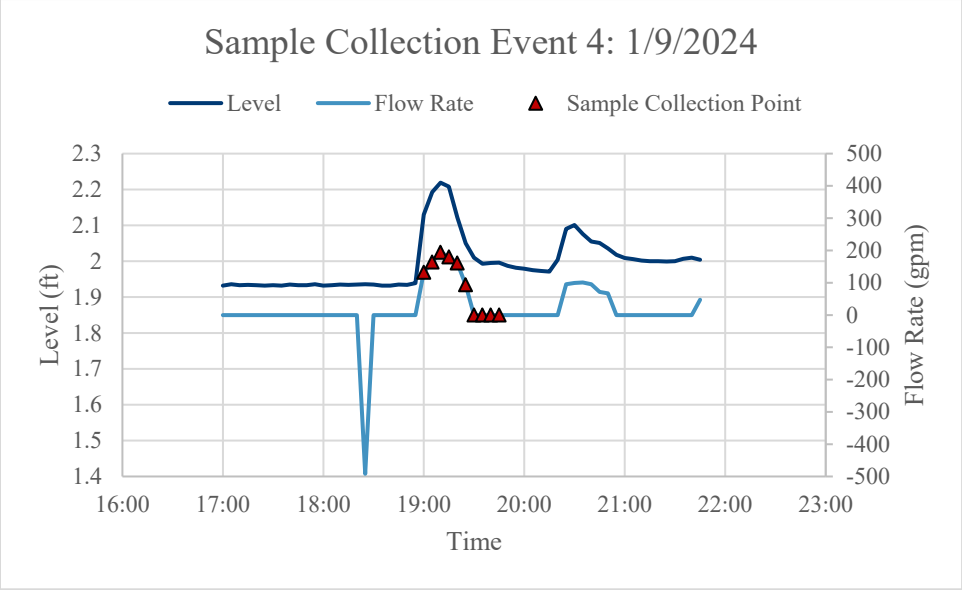
S+C

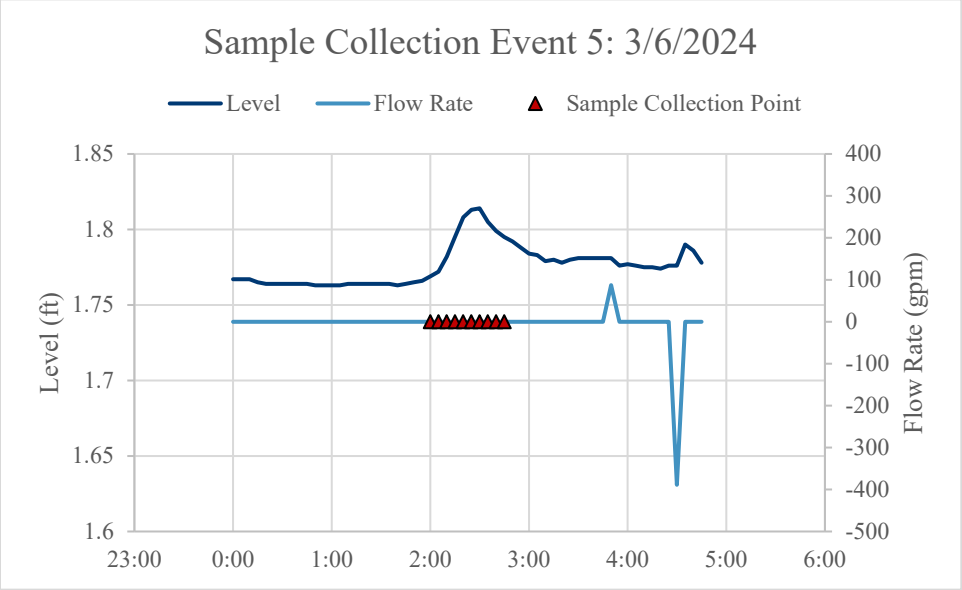
APPENDIX D

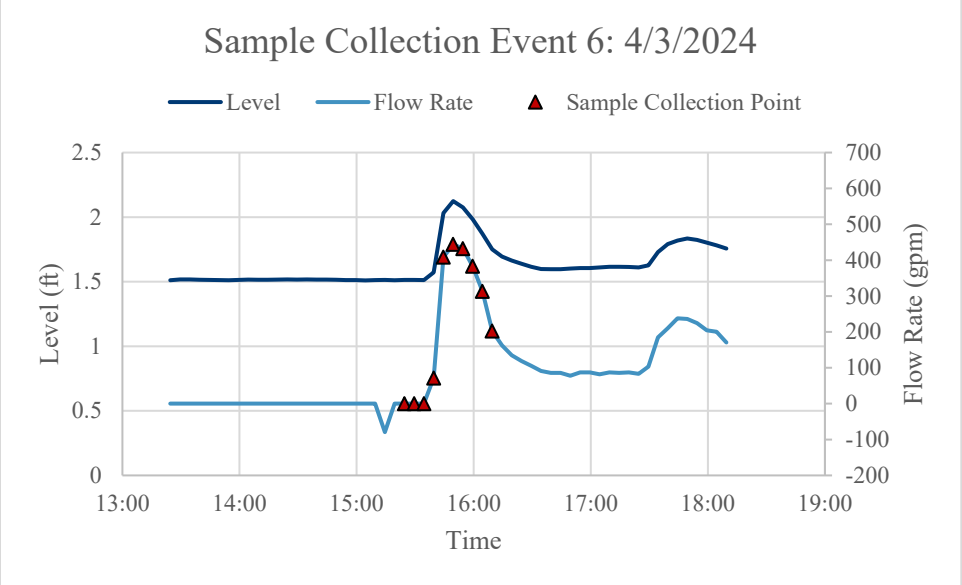
Sample Event Hydrographs

The data from the sensor at the off-line UFF location gives a better representation in water level data. This is because the sensor at the NSBB location is in the effluent pipe, which is behind the overflow barrier. Unless noted otherwise, the following sample event hydrographs are from the off-line UFF location. Note that sample collection times for sample events 1 & 2 were not captured by the signature flow meter.

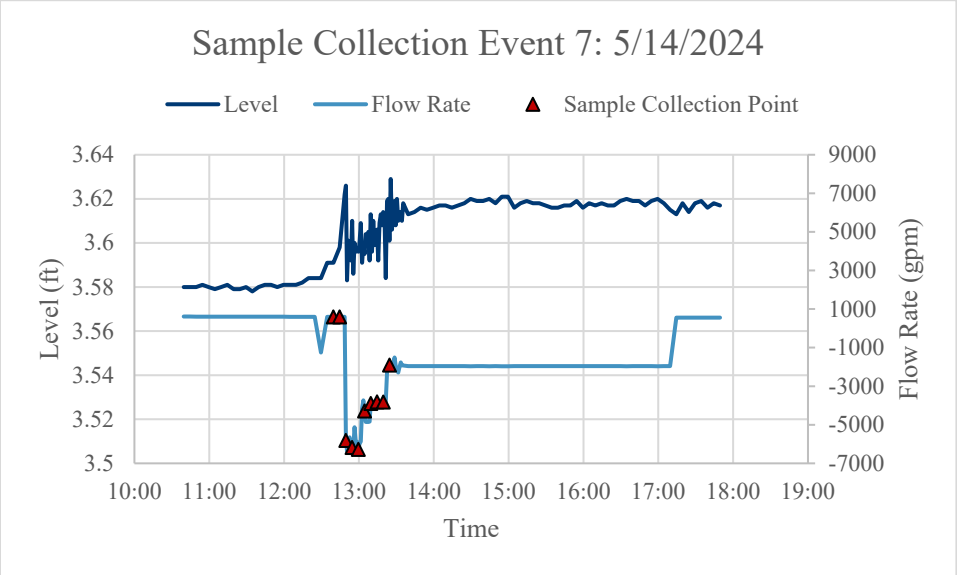


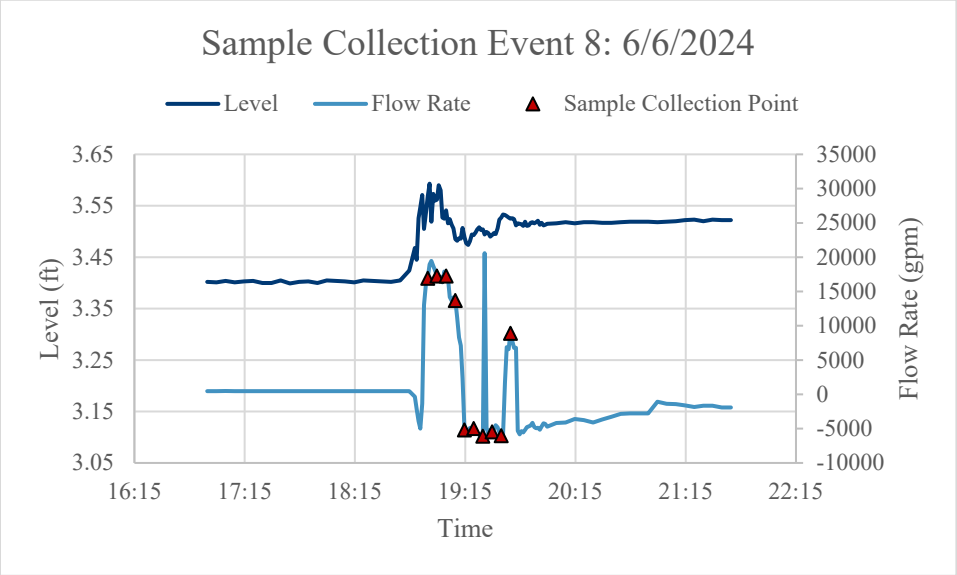



Sample Collection Event 5: 3/6/2024
Level
Flow Rate
Sample Collection Point
Level (ft)
Flow Rate (gpm)
1.85
1.8
1.75
1.7
1.65
1.6
400
300
200
100
0
-100
-200
-300
-400
-500
23:00
0:00
1:00
2:00
3:00
4:00
5:00
6:00

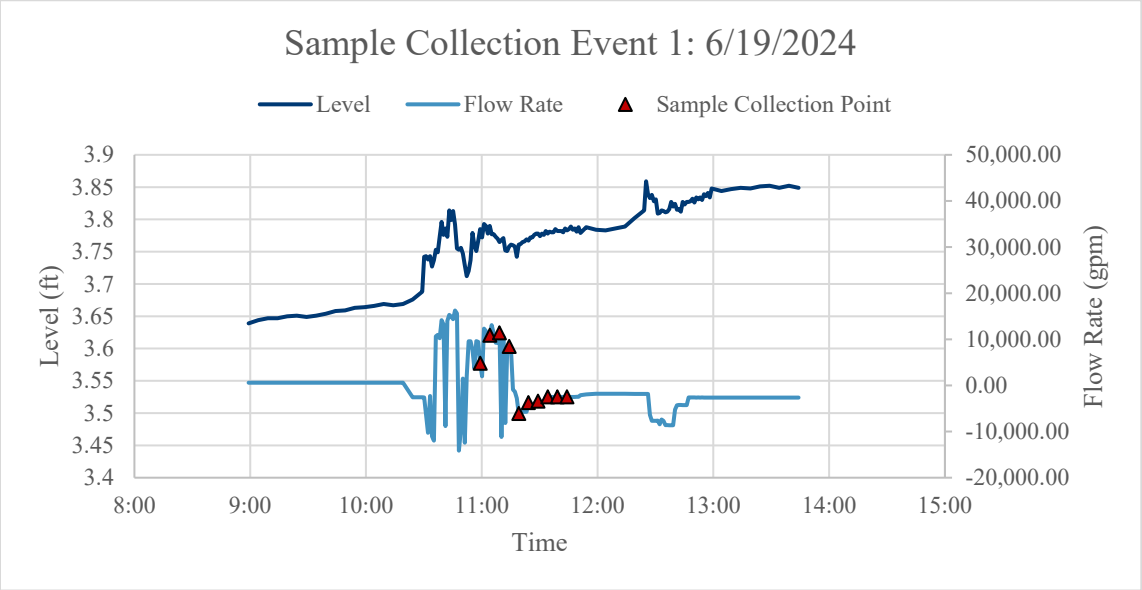

Sample Collection Event 6: 4/3/2024
Level
Flow Rate
Sample Collection Point
Level (ft)
Flow Rate (gpm)
2.5
2
1.5
1
0.5
0
700
600
500
400
300
200
100
0
-100
-200
13:00
14:00
15:00
16:00
17:00
18:00
19:00
Time

Due to an error with the sensor at the off-line UFF location, the data in the following hydrographs for sample events 7 & 8 is from the sensor at the NSBB location.

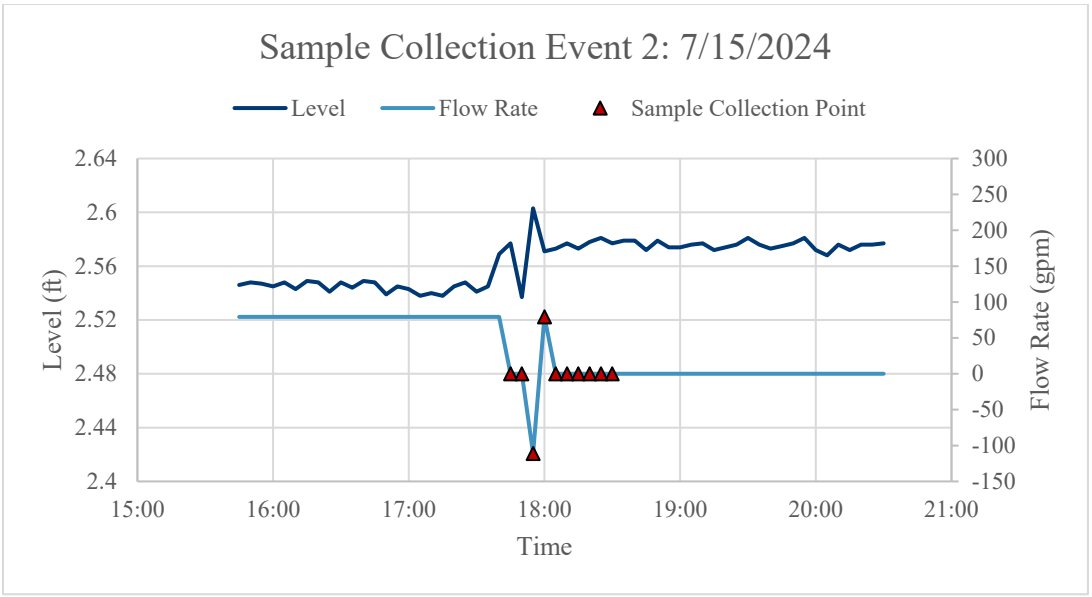


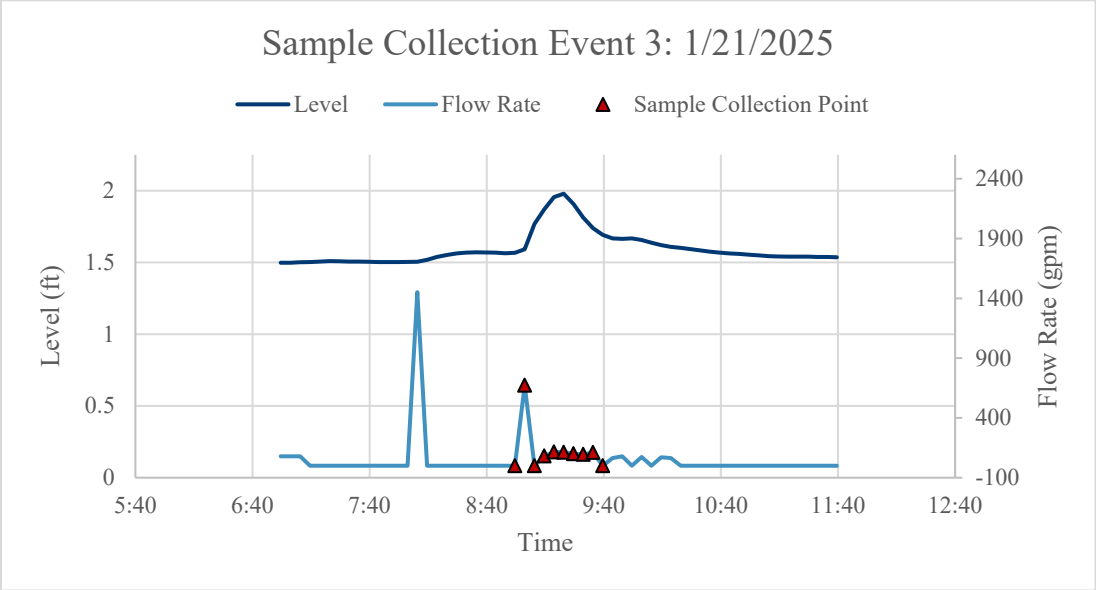


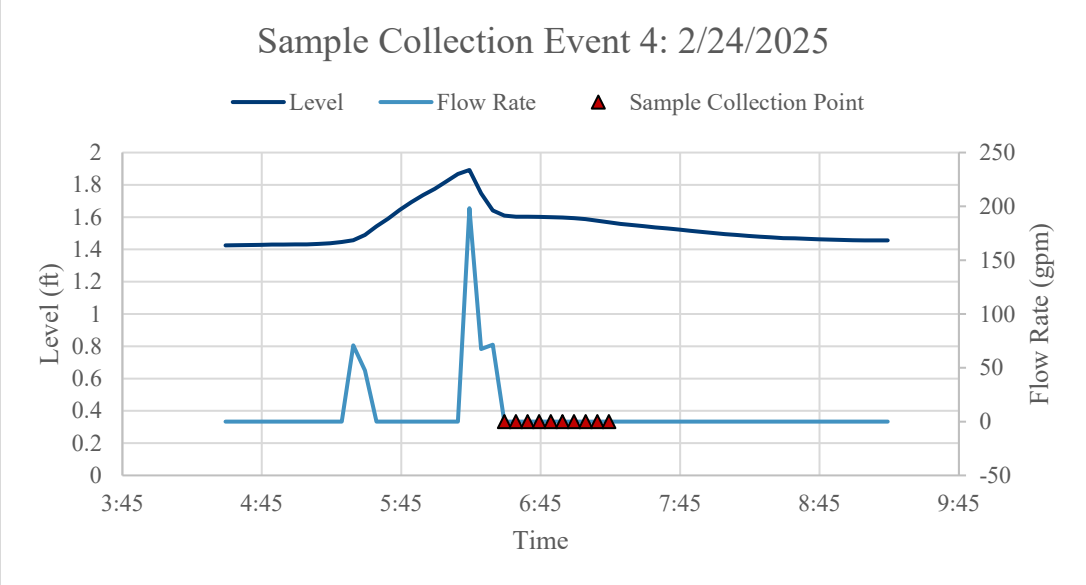
The following hydrographs are from the second study.

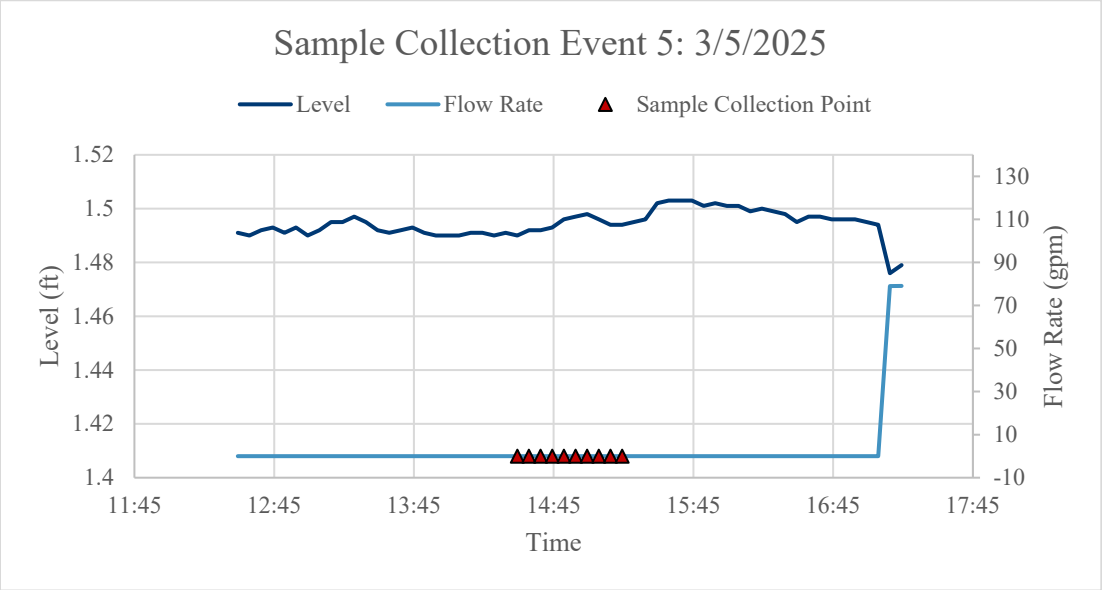


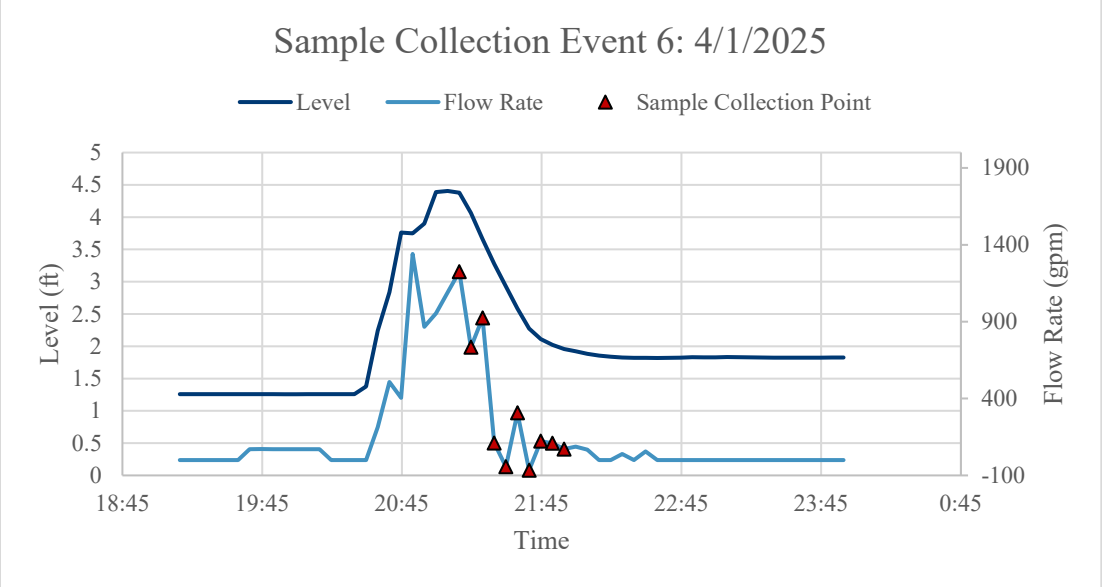
Note: The data in this hydrograph is from the NSBB A/V sensor

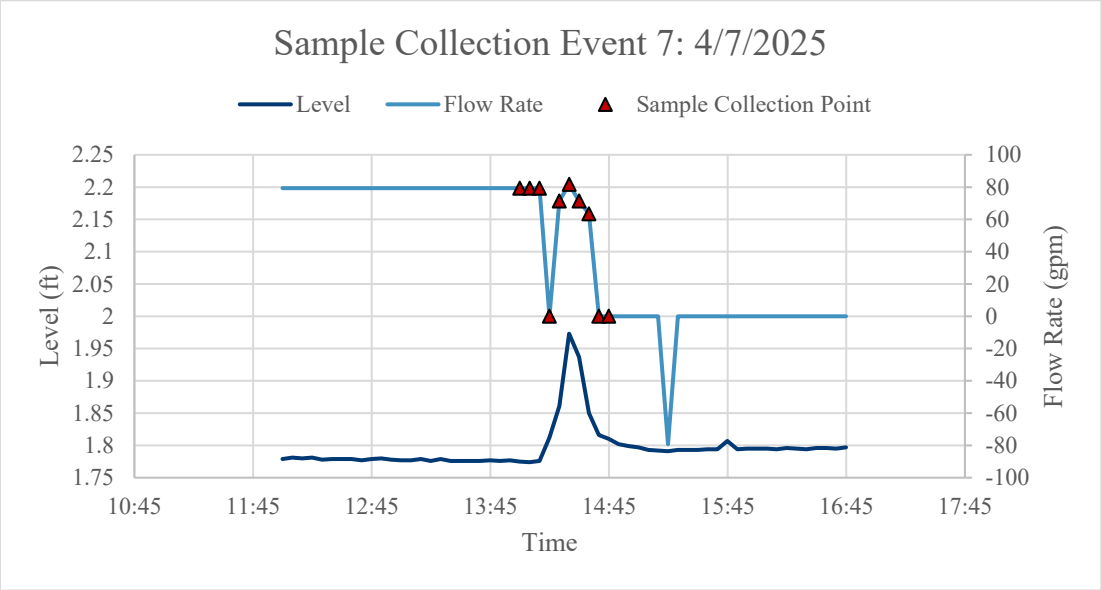



Sample Collection Event 3: 1/21/2025
Level
Flow Rate
Sample Collection Point
Level (ft)
Flow Rate (gpm)
Time
2
1.5
1
0.5
0
2400
1900
1400
900
400
-100
5:40
6:40
7:40
8:40
9:40
10:40
11:40
12:40


Sample Collection Event 4: 2/24/2025
Level
Flow Rate
Sample Collection Point
Level (ft)
Flow Rate (gpm)
Time
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
250
200
150
100
50
0
-50
3:45
4:45
5:45
6:45
7:45
8:45
9:45


Sample Collection Event 5: 3/5/2025
Level
Flow Rate
Sample Collection Point
1.52
1.5
1.48
1.46
1.44
1.42
1.4
Level (ft)
130
110
90
70
50
30
10
-10
Flow Rate (gpm)
11:45
12:45
13:45
14:45
15:45
16:45
17:45
Time


Sample Collection Event 6: 4/1/2025
Level
Flow Rate
Sample Collection Point
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Level (ft)
1900
1400
900
400
-100
Flow Rate (gpm)
18:45
19:45
20:45
21:45
22:45
23:45
0:45
Time


Sample Collection Event 7: 4/7/2025
Level
Flow Rate
Sample Collection Point
Level (ft)
Flow Rate (gpm)
Time
2.25
2.2
2.15
2.1
2.05
2
1.95
1.9
1.85
1.8
1.75
100
80
60
40
20
0
-20
-40
-60
-80
-100
10:45
11:45
12:45
13:45
14:45
15:45
16:45
17:45

APPENDIX E

Quality Assurance Results

Geosyntec consultants

Sampling Event	Date Collected	Sample	Units	Ammonia	Nitrate / Nitrite	Nitrate/Nitrite (Dissolved)	Ortho phosphate	Phosphorus	Phosphorus (Dissolved)	Total Alkalinity
4	1/10/2024	sample	mg/L	0.15	2.7	2.6	0.0072	0.06	0.024	57.9
		duplicate	mg/L	0.035	2.5	2.3	0.0087	0.061	0.02	58.5
		RPD	**%**	76.67%	7.41%	11.54%	20.83%	1.67%	16.67%	1.04%
5	3/6/2024	sample	mg/L	0.035	0.015	0.015	0.14	0.27	0.22	41.6
		duplicate	mg/L	0.035	0.015	0.015	0.14	0.27	0.21	41.3
		RPD	**%**	0.00%	0.00%	0.00%	0.00%	0.00%	4.55%	0.72%
6	4/3/2024	sample	mg/L	0.47	2	2.1	0.038	0.14	0.058	85.4
		duplicate	mg/L	0.44	2	2	0.029	0.14	0.057	86.1
		RPD	**%**	6.38%	0.00%	4.76%	23.68%	0.00%	1.72%	0.82%
7	5/14/2024	sample	mg/L	0.5	0.015	0.017	0.205	0.31	0.26	56
		duplicate	mg/L	0.45	0.015	0.019	0.222	0.32	0.28	57
		RPD	**%**	10.00%	0.00%	11.76%	8.29%	3.23%	7.69%	1.79%
8	6/7/2024	sample	mg/L	0.15	0.42	0.47	0.115	0.42	0.25	30
		duplicate	mg/L	0.19	0.44	0.49	0.127	0.4	0.24	28.9
		RPD	**%**	26.67%	4.76%	4.26%	10.43%	4.76%	4.00%	3.67%

Geosyntec consultants

Sampling Event	Date Collected	Sample	Units	Total Kjeldahl Nitrogen	Total Kjeldahl Nitrogen (Dissolved)	Total Nitrogen	Total Nitrogen (Dissolved)	Total Suspended Solids	Total Solids	Total Organic Carbon
4	1/10/2024	sample	mg/L	0.59	0.36	3.3	3	8.1	138	6.9
		duplicate	mg/L	0.63	0.3	3.2	2.6	11	194	6.9
		RPD	**%**	6.78%	16.67%	3.03%	13.33%	35.80%	40.58%	0.00%
5	3/6/2024	sample	mg/L	0.74	0.73	0.74	0.73	9.2	80	10.3
		duplicate	mg/L	0.74	0.63	0.74	0.63	8.4	176	10.5
		RPD	**%**	0.00%	13.70%	0.00%	13.70%	8.70%	120.00%	1.94%
6	4/3/2024	sample	mg/L	1.2	0.77	3.1	2.9	11	165	12.8
		duplicate	mg/L	1.2	0.86	3.1	2.9	11.5	250	12.5
		RPD	**%**	0.00%	11.69%	0.00%	0.00%	4.55%	51.52%	2.34%
7	5/14/2024	sample	mg/L	0.94	0.77	0.95	0.79	5.4	124	23
		duplicate	mg/L	0.9	0.77	0.92	0.79	5.2	126	21.1
		RPD	**%**	4.26%	0.00%	3.16%	0.00%	3.70%	1.61%	8.26%
8	6/7/2024	sample	mg/L	2.4	1.5	2.8	2	18	122	29.3
		duplicate	mg/L	2.3	1.5	2.8	2	25	132	29.3
		RPD	**%**	4.17%	0.00%	0.00%	0.00%	38.89%	8.20%	0.00%

Geosyntec consultants

Sampling Event	Date Collected	Sample	Units	Nitrate/Nitrite	Phosphorus	Total Kjeldahl Nitrogen	Total Nitrogen	Total Suspended Solids
1	6/19/2024	sample	mg/L	0.055	0.055	0.2	0.23	9.5
		duplicate	mg/L	0.062	0.055	0.2	0.23	10
		RPD	**%**	13%	0%	0%	0%	5%
2	7/16/2024	sample	mg/L	0.11	0.077	0.38	0.49	6.5
		duplicate	mg/L	0.11	0.077	0.38	0.48	5.6
		RPD	**%**	0%	0%	0%	2%	14%
3	1/21/2025	sample	mg/L	0.77	0.12	0.94	1.7	11.1
		duplicate	mg/L	0.97	0.12	0.95	1.9	11.4
		RPD	**%**	26%	0%	1%	12%	3%
4	2/24/2025	sample	mg/L	0.015	0.23	1.2	1.2	14.8
		duplicate	mg/L	0.015	0.23	1.2	1.2	9.2
		RPD	**%**	0%	0%	0%	0%	38%
5	3/5/2025	sample	mg/L	0.21	0.1	0.63	0.84	3.73
		duplicate	mg/L	0.21	0.1	0.78	0.98	2.92
		RPD	**%**	0%	0%	24%	17%	22%
6	4/2/2025	sample	mg/L	0.16	0.16	0.55	0.71	74.7
		duplicate	mg/L	0.16	0.15	0.6	0.76	80.8
		RPD	**%**	0%	6%	9%	7%	8%
7	4/7/2025	sample	mg/L	0.14	0.38	1.8	1.9	15
		duplicate	mg/L	0.14	0.38	1.6	1.7	16.2
		RPD	**%**	0%	0%	11%	11%	8%

APPENDIX F

SRL Laboratory Reports

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 03/13/23
Contact Name: **Mike Hardin**	Date Received: 03/14/23
Project Name: Keystone Drive BMP Autosampler	Time Received: 08:55
Project Number: NA	Date Reported : 03/28/23
Phone Number: (407) 321-7030	Date Emailed : 03/28/23
Fax Number: NA	SRL Work Order # 23-03014

SRL WO #	Clients #	Matrix	Analysis Requested
2303014-001	Baffle Out	Liquid	Total Nitrogen/T Phosphorus/ Ammonia/TOC
2303014-001	Upflow Out	Liquid	Total Nitrogen/T Phosphorus/ Ammonia/TOC

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

This report, which includes the attached Chain-of-Custody, shall not be reproduced except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-03014
Received Date : 03/14/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name

Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2303014-001
Date Collected : 03/13/23
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/22/23	03/22/23
Nitrate/Nitrite as N		**0.82**		mg/L	1	0.015	0.050	EPA 353.2	03/18/23	03/18/23
Phosphorus	7723-14-0	**0.47**		mg/L	1	0.0028	0.0040	EPA 365.3	03/23/23	03/24/23
Total Kjeldahl Nitrogen	7727-37-9	**1.6**		mg/L	1	0.20	0.50	EPA 351.2	03/24/23	03/27/23
Total Nitrogen	17778-88-0	**2.4**		mg/L	1	0.20	0.50	CALC	03/27/23	03/27/23
Total Organic Carbon		**23.2**		mg/L	1	0.50	1.0	SM 5310B	03/24/23	03/24/23

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2303014-001
Date Collected : 03/13/23
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.66**		mg/L	1	0.035	0.050	EPA 350.1	03/22/23	03/22/23
Nitrate/Nitrite as N		**0.019**	I	mg/L	1	0.015	0.050	EPA 353.2	03/18/23	03/18/23
Phosphorus	7723-14-0	**0.40**		mg/L	1	0.0028	0.0040	EPA 365.3	03/23/23	03/24/23
Total Kjeldahl Nitrogen	7727-37-9	**1.7**		mg/L	1	0.20	0.50	EPA 351.2	03/24/23	03/27/23
Total Nitrogen	17778-88-0	**1.8**		mg/L	1	0.20	0.50	CALC	03/27/23	03/27/23
Total Organic Carbon		**21.1**		mg/L	1	0.50	1.0	SM 5310B	03/24/23	03/24/23

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-03014
Received Date : 03/14/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name

Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/22/23	03/22/23
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/18/23	03/18/23
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	03/23/23	03/24/23
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	03/24/23	03/27/23
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	03/24/23	03/24/23

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-03014
Received Date : 03/14/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name

Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	95/99/98	90-110	80-120		1	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	98/89/76	90-110	80-120	QM-07	7	0-20
Total Kjeldahl Nitrogen	100/96/96	90-110	90-110		1	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	99/100/98	90-110	80-120		1	0-20
Nitrogen, Ammonia (as N)	100/103/102	90-110	90-110		0	0-20
Nitrogen, Ammonia (as N)	99/103/105	90-110	90-110		2	0-20

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-03014
Received Date : 03/14/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name

Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2303014

2

Page of

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando Florida 32817
Phone:	407-321-7030 Fax:

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Project Name: Keystone Drive BMP Autosampler

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Preservatives (see codes): I S S S H I I

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Alkalinity & Total Solids	TN Nitrogen, TP Phosphorus, Ammonia	Particulate Nitrogen, Particulate Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus	TOC	TSS	Orthophosphate, Total Nitrate			
1	Baffle Out	3/13/23	1541	C	SW	3		✓			✓					2303014-001
2	Upflow Out	3/13/23	1622	C	SW	3		✓			✓					-002

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turnkit	12-6-22	15:19			
Returned: / /	Via:		3/14/23	855	Helen Turn	3-14-23	8:55

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): X412 Client Cooler 2.1°C

Sampling Kit No.: 9407

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 04/10/23
Contact Name: **Mike Hardin**	Date Received: 04/10/23
Project Name: Keystone Drive BMP Monitoring	Time Received: 16:35
Project Number: FW7915	Date Reported : 04/27/23
Phone Number: (407) 321-7030	Date Emailed : 04/27/23
Fax Number: NA	SRL Work Order # 23-04019

SRL WO #	Clients #	Matrix	Analysis Requested
2304019-001	Baffle Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2304019-002	Upflow Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-04019
Received Date : 04/10/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2304019-001
Date Collected : 04/10/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**1.1**		mg/L	1	0.035	0.050	EPA 350.1	04/18/23	04/18/23
Nitrate/Nitrite as N		**0.056**		mg/L	1	0.015	0.050	EPA 353.2	04/14/23	04/14/23
Nitrate/Nitrite as N (Dissolved)		**0.052**		mg/L	1	0.015	0.050	EPA 353.2	04/15/23	04/15/23
Orthophosphate as P	1426-54-42	**0.14**		mg/L	1	0.0038	0.0040	EPA 365.1	04/11/23	04/11/23
Phosphorus	7723-14-0	**0.20**		mg/L	1	0.0028	0.0040	EPA 365.3	04/18/23	04/19/23
Phosphorus (Dissolved)	7723-14-0	**0.16**		mg/L	1	0.0028	0.0040	EPA 365.3	04/18/23	04/19/23
Total Alkalinity as CaC03	471-34-1	**119**		mg/L	1	5.0	5.0	SM 2320B	04/11/23	04/11/23
Total Kjeldahl Nitrogen	7727-37-9	**1.2**		mg/L	1	0.20	0.50	EPA 351.2	04/19/23	04/24/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.2**		mg/L	1	0.20	0.50	EPA 351.2	04/25/23	04/26/23
Total Nitrogen	17778-88-0	**1.3**		mg/L	1	0.20	0.50	CALC	04/24/23	04/24/23
Total Nitrogen (Dissolved)	17778-88-0	**1.3**		mg/L	1	0.20	0.50	CALC	04/26/23	04/26/23
Total Suspended Solids		**6.0**		mg/L	1	2.0	2.0	M-2540D-201	04/12/23	04/12/23
Total Solids		**231**		mg/L	1	5.0	5.0	SM 2540B	04/11/23	04/11/23
Total Organic Carbon		**16.1**		mg/L	1	0.50	1.0	SM 5310B	04/12/23	04/12/23

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2304019-002
Date Collected : 04/10/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**2.0**		mg/L	1	0.035	0.050	EPA 350.1	04/19/23	04/19/23
Nitrate/Nitrite as N		**0.072**		mg/L	1	0.015	0.050	EPA 353.2	04/14/23	04/14/23
Nitrate/Nitrite as N (Dissolved)		**0.079**		mg/L	1	0.015	0.050	EPA 353.2	04/15/23	04/15/23
Orthophosphate as P	1426-54-42	**0.022**		mg/L	1	0.0038	0.0040	EPA 365.1	04/11/23	04/11/23
Phosphorus	7723-14-0	**0.18**		mg/L	1	0.0028	0.0040	EPA 365.3	04/18/23	04/19/23
Phosphorus (Dissolved)	7723-14-0	**0.050**		mg/L	1	0.0028	0.0040	EPA 365.3	04/18/23	04/19/23
Total Alkalinity as CaC03	471-34-1	**128**		mg/L	1	5.0	5.0	SM 2320B	04/11/23	04/11/23
Total Kjeldahl Nitrogen	7727-37-9	**1.9**		mg/L	1	0.20	0.50	EPA 351.2	04/19/23	04/24/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**2.1**		mg/L	1	0.20	0.50	EPA 351.2	04/25/23	04/26/23
Total Nitrogen	17778-88-0	**2.0**		mg/L	1	0.20	0.50	CALC	04/24/23	04/24/23
Total Nitrogen (Dissolved)	17778-88-0	**2.2**		mg/L	1	0.20	0.50	CALC	04/26/23	04/26/23
Total Suspended Solids		**38.8**		mg/L	1	2.0	2.0	M-2540D-201	04/12/23	04/12/23
Total Solids		**269**		mg/L	1	5.0	5.0	SM 2540B	04/11/23	04/11/23
Total Organic Carbon		**17.2**		mg/L	1	0.50	1.0	SM 5310B	04/12/23	04/12/23

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-04019
Received Date : 04/10/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	04/18/23	04/18/23
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	04/19/23	04/19/23
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	04/14/23	04/14/23
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	04/15/23	04/15/23
Orthophosphate as P	1426-54-42	0.0040	U	mg/L	1	0.0038	0.0040	EPA 365.1	04/11/23	04/11/23
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	04/18/23	04/19/23
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	04/18/23	04/19/23
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	04/11/23	04/11/23
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	04/19/23	04/24/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	04/25/23	04/26/23
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	04/12/23	04/12/23
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	04/11/23	04/11/23
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	04/12/23	04/12/23

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-04019
Received Date : 04/10/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	101/86/85	90-110	90-110	QM-07	1	0-20
Nitrate/Nitrite as N (Dissolved)	96/62/64	90-110	90-110	QM-07	3	0-20
Total Kjeldahl Nitrogen	95/91/91	90-110	90-110		0	0-20
Total Kjeldahl Nitrogen (Dissolved)	93/94/96	90-110	90-110		2	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/LCSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	96/95/91	90-110	90-110		3	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	108/106/106	90-110	80-120		0	0-20
Phosphorus	100/106/105	90-110	80-120		1	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	107/108/107	90-110	90-110		1	0-20
Nitrogen, Ammonia (as N)	105/108/107	90-110	90-110		1	0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Suspended Solids	105/104	90-110	1		0-10

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	93	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	233	233	0		0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Solids	103/101	90-110	2		0-10

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-04019
Received Date : 04/10/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	98/102/101	90-110	80-120		1	0-20
Total Organic Carbon	99/103/102	90-110	80-120		1	0-20

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-04019
Received Date : 04/10/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2304019

2

Page of

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando Florida 32817
Phone:	407-321-7030
Fax:	

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Project Name: Keystone BMP Project

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patino-Barnes IBFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	T. Nitrogen, T Alkalinity Ammonia, NOx (water)	Alkalinity (Bicarbonate)	TSS	Orthophosphate	TOC	Particulate Nitrogen P. Phosphorus				
1	Baffle Out	4/10/23	1500	C	SW	7		✓	✓	✓	✓	✓	✓				2304019-001
2	Upflow Out	4/10/23	1539	C	SW	7		✓	✓	✓	✓	✓	✓				-002

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	~~SRL~~ ~~SRL~~	3-17-23	9:24			
Returned: / /	Via:	PNO	4/10/23	1635		4/10/23	16:35

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 14 X412 2.7°C

Sampling Kit No.: 9505

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil ~~SW = Surface Water~~ W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = ~~Other~~(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 11/16/23
Contact Name: **Mike Hardin**	Date Received: 11/16/23
Project Name: Keystone Drive BMP Autosampler	Time Received: 16:15
Project Number: FW7915	Date Reported : 12/08/23
Phone Number: (407) 321-7030	Date Emailed : 12/08/23
Fax Number: NA	SRL Work Order # 23-11028

SRL WO #	Clients #	Matrix	Analysis Requested
2311028-001	Baffle In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2311028-002	Baffle Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2311028-003	Upflow Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-11028
Received Date : 11/16/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Baffle In**
SRL (Lab) ID# : 2311028-001
Date Collected : 11/16/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	11/18/23	11/18/23
Nitrate/Nitrite as N		**0.13**		mg/L	1	0.015	0.050	EPA 353.2	11/28/23	11/28/23
Nitrate/Nitrite as N (Dissolved)		**0.10**		mg/L	1	0.015	0.050	EPA 353.2	11/21/23	11/21/23
Orthophosphate as P	1426-54-42	**0.086**		mg/L	1	0.0038	0.0040	EPA 365.1	11/17/23	11/17/23
Phosphorus	7723-14-0	**0.12**		mg/L	1	0.0028	0.0040	EPA 365.3	11/29/23	11/30/23
Phosphorus (Dissolved)	7723-14-0	**0.20**		mg/L	1	0.0028	0.0040	EPA 365.3	11/29/23	11/30/23
Total Alkalinity as CaC03	471-34-1	**23.7**		mg/L	1	5.0	5.0	SM 2320B	11/26/23	11/26/23
Total Kjeldahl Nitrogen	7727-37-9	**0.35**	I	mg/L	1	0.20	0.50	EPA 351.2	11/21/23	11/29/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.57**		mg/L	1	0.20	0.50	EPA 351.2	11/22/23	11/29/23
Total Nitrogen	17778-88-0	**0.48**	I	mg/L	1	0.20	0.50	CALC	11/30/23	11/30/23
Total Nitrogen (Dissolved)	17778-88-0	**0.68**		mg/L	1	0.20	0.50	CALC	11/30/23	11/30/23
Total Suspended Solids		**16.8**		mg/L	1	2.0	2.0	M-2540D-201	11/20/23	11/20/23
Total Solids		**52.0**		mg/L	1	5.0	5.0	SM 2540B	11/19/23	11/19/23
Total Organic Carbon		**10.6**		mg/L	1	0.50	1.0	SM 5310B	11/20/23	11/20/23

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2311028-002
Date Collected : 11/16/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.063**		mg/L	1	0.035	0.050	EPA 350.1	11/18/23	11/18/23
Nitrate/Nitrite as N		**0.23**		mg/L	1	0.015	0.050	EPA 353.2	11/25/23	11/25/23
Nitrate/Nitrite as N (Dissolved)		**0.26**		mg/L	1	0.015	0.050	EPA 353.2	11/21/23	11/21/23
Orthophosphate as P	1426-54-42	**0.074**		mg/L	1	0.0038	0.0040	EPA 365.1	11/17/23	11/17/23
Phosphorus	7723-14-0	**0.15**		mg/L	1	0.0028	0.0040	EPA 365.3	11/29/23	11/30/23
Phosphorus (Dissolved)	7723-14-0	**0.11**		mg/L	1	0.0028	0.0040	EPA 365.3	11/29/23	11/30/23
Total Alkalinity as CaC03	471-34-1	**34.5**		mg/L	1	5.0	5.0	SM 2320B	11/26/23	11/26/23
Total Kjeldahl Nitrogen	7727-37-9	**0.66**		mg/L	1	0.20	0.50	EPA 351.2	11/21/23	11/29/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.36**	I	mg/L	1	0.20	0.50	EPA 351.2	11/22/23	11/29/23
Total Nitrogen	17778-88-0	**0.89**		mg/L	1	0.20	0.50	CALC	11/30/23	11/30/23
Total Nitrogen (Dissolved)	17778-88-0	**0.62**		mg/L	1	0.20	0.50	CALC	11/30/23	11/30/23
Total Suspended Solids		**12.2**		mg/L	1	2.0	2.0	M-2540D-201	11/20/23	11/20/23
Total Solids		**46.0**		mg/L	1	5.0	5.0	SM 2540B	11/19/23	11/19/23
Total Organic Carbon		**10.0**		mg/L	1	0.50	1.0	SM 5310B	11/20/23	11/20/23

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-11028
Received Date : 11/16/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2311028-003
Date Collected : 11/16/23
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.080**		mg/L	1	0.035	0.050	EPA 350.1	11/18/23	11/18/23
Nitrate/Nitrite as N		**0.086**		mg/L	1	0.015	0.050	EPA 353.2	11/25/23	11/25/23
Nitrate/Nitrite as N (Dissolved)		**0.078**		mg/L	1	0.015	0.050	EPA 353.2	11/21/23	11/21/23
Orthophosphate as P	1426-54-42	**0.088**		mg/L	1	0.0038	0.0040	EPA 365.1	11/17/23	11/17/23
Phosphorus	7723-14-0	**0.12**		mg/L	1	0.0028	0.0040	EPA 365.3	11/29/23	11/30/23
Phosphorus (Dissolved)	7723-14-0	**0.12**		mg/L	1	0.0028	0.0040	EPA 365.3	11/29/23	11/30/23
Total Alkalinity as CaC03	471-34-1	**34.7**		mg/L	1	5.0	5.0	SM 2320B	11/26/23	11/26/23
Total Kjeldahl Nitrogen	7727-37-9	**0.35**	I	mg/L	1	0.20	0.50	EPA 351.2	11/21/23	11/29/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.25**	I	mg/L	1	0.20	0.50	EPA 351.2	11/22/23	11/29/23
Total Nitrogen	17778-88-0	**0.44**	I	mg/L	1	0.20	0.50	CALC	11/30/23	11/30/23
Total Nitrogen (Dissolved)	17778-88-0	**0.33**	I	mg/L	1	0.20	0.50	CALC	11/30/23	11/30/23
Total Suspended Solids		**9.2**		mg/L	1	1.0	1.0	M-2540D-201	11/20/23	11/20/23
Total Solids		**32.0**		mg/L	1	5.0	5.0	SM 2540B	11/19/23	11/19/23
Total Organic Carbon		**13.5**		mg/L	1	0.50	1.0	SM 5310B	11/20/23	11/20/23

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	11/18/23	11/18/23
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	11/25/23	11/25/23
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	11/28/23	11/28/23
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	11/21/23	11/21/23
Orthophosphate as P	1426-54-42	0.0038	U	mg/L	1	0.0038	0.0040	EPA 365.1	11/17/23	11/17/23
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	11/29/23	11/30/23
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	11/29/23	11/30/23
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	11/26/23	11/26/23
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	11/21/23	11/29/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	11/22/23	11/29/23
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	11/20/23	11/20/23
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	11/19/23	11/19/23
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	11/20/23	11/20/23

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-11028
Received Date : 11/16/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	100/78/89	90-110	90-110	QM-07	7	0-20
Nitrate/Nitrite as N	103/91/94	90-110	90-110		2	0-20
Nitrate/Nitrite as N (Dissolved)	110/63/71	90-110	90-110	QM-07	11	0-20
Total Kjeldahl Nitrogen	96/97/97	90-110	90-110		0	0-20
Total Kjeldahl Nitrogen (Dissolved)	92/88/93	90-110	90-110	QM-07	5	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/LCSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	98/99/98	90-110	90-110		0	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	105/104/106	90-110	80-120		1	0-20
Phosphorus	104/106/104	90-110	80-120		2	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	110/108/109	90-110	90-110		0	0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Suspended Solids	99/99	90-110	0		0-10

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	99	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	645	641	1		0-20

	% Recovery LCS	Acceptable Limits
Total Solids	109	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	52.0	56.0	7		0-10

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Received Date : 11/16/23

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Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	104/105/104	90-110	80-120		1	0-20

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-11028
Received Date : 11/16/23

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Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2311028
3

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando, Florida 32817
Phone:	407-321-7030
Fax:	

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: OC Keystone Drive BMP Autosampler Event

Project Location:

Project Number:

Sampled by [Print Name(s)] / Affiliation: Makese Powe / BFA

Sampler(s) Signature(s):

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TOC	Alkalinity Total Solids	T-Nitrogen Ammonia T-Phosphorus	Particulate (Field Filtered)	Nitrogen Particulate (Field Filtered)	Phosphorus (Field Filtered)	Orthophosphate (Field Filtered)	TSS			
1	Baffle In	11/16/23	1200	C	SW	7		✓	✓	✓	✓	✓	✓	✓	✓			2311028-001
2	Baffle Out	11/16/23	1230	C	SW	7		✓	✓	✓	✓	✓	✓	✓	✓			-002
	~~Upflow In~~	~~11/16/23~~	M.P. 11/16/23															
3	Upflow Out	11/16/23	1315	C	SW	7		✓	✓	✓	✓	✓	✓	✓	✓			-003

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	~~BRUKIT~~	10-24-23	10:10			
Returned: / /	Via:		11-16-23	16:15	Helen Jun	11/16/23	16:15

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 4273 Cooler 2.5 °C

Sampling Kit No.: 9789

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 01/10/24
Contact Name: **Mike Hardin**	Date Received: 01/10/24
Project Name: Keystone Drive BMP Autosampler	Time Received: 13:30
Project Number: FW7915	Date Reported : 02/01/24
Phone Number: (407) 321-7030	Date Emailed : 02/01/24
Fax Number: NA	SRL Work Order # 24-01018

SRL WO #	Clients #	Matrix	Analysis Requested
2401018-001	Upflow In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2401018-002	Upflow Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2401018-003	Baffle Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2401018-004	Baffle In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2401018-005	Dup	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-01018
Received Date : 01/10/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow In**
SRL (Lab) ID# : 2401018-001
Date Collected : 01/10/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.15**		mg/L	1	0.035	0.050	EPA 350.1	01/17/24	01/17/24
Nitrate/Nitrite as N		**2.7**		mg/L	1	0.015	0.050	EPA 353.2	01/26/24	01/26/24
Nitrate/Nitrite as N (Dissolved)		**2.6**		mg/L	1	0.015	0.050	EPA 353.2	01/26/24	01/26/24
Orthophosphate as P	1426-54-42	**0.0072**		mg/L	1	0.0038	0.0040	EPA 365.1	01/11/24	01/11/24
Phosphorus	7723-14-0	**0.060**		mg/L	1	0.0028	0.0040	EPA 365.3	01/13/24	01/15/24
Phosphorus (Dissolved)	7723-14-0	**0.024**		mg/L	1	0.0028	0.0040	EPA 365.3	01/20/24	01/24/24
Total Alkalinity as CaC03	471-34-1	**57.9**		mg/L	1	5.0	5.0	SM 2320B	01/14/24	01/14/24
Total Kjeldahl Nitrogen	7727-37-9	**0.59**		mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/15/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.36**	I	mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/18/24
Total Nitrogen	17778-88-0	**3.3**		mg/L	1	0.20	0.50	CALC	01/16/24	01/16/24
Total Nitrogen (Dissolved)	17778-88-0	**3.0**		mg/L	1	0.20	0.50	CALC	01/30/24	01/30/24
Total Suspended Solids		**8.1**		mg/L	1	1.2	1.2	M-2540D-201	01/15/24	01/15/24
Total Solids		**138**		mg/L	1	10.0	10.0	SM 2540B	01/12/24	01/12/24
Total Organic Carbon		**6.9**		mg/L	1	0.50	1.0	SM 5310B	01/16/24	01/16/24

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2401018-002
Date Collected : 01/10/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.082**		mg/L	1	0.035	0.050	EPA 350.1	01/17/24	01/17/24
Nitrate/Nitrite as N		**0.69**		mg/L	1	0.015	0.050	EPA 353.2	01/13/24	01/13/24
Nitrate/Nitrite as N (Dissolved)		**0.65**		mg/L	1	0.015	0.050	EPA 353.2	01/12/24	01/12/24
Orthophosphate as P	1426-54-42	**0.0093**		mg/L	1	0.0038	0.0040	EPA 365.1	01/11/24	01/11/24
Phosphorus	7723-14-0	**0.053**		mg/L	1	0.0028	0.0040	EPA 365.3	01/13/24	01/15/24
Phosphorus (Dissolved)	7723-14-0	**0.025**		mg/L	1	0.0028	0.0040	EPA 365.3	01/20/24	01/24/24
Total Alkalinity as CaC03	471-34-1	**56.8**		mg/L	1	5.0	5.0	SM 2320B	01/14/24	01/14/24
Total Kjeldahl Nitrogen	7727-37-9	**0.51**		mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/15/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.40**	I	mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/18/24
Total Nitrogen	17778-88-0	**1.2**		mg/L	1	0.20	0.50	CALC	01/16/24	01/16/24
Total Nitrogen (Dissolved)	17778-88-0	**1.0**		mg/L	1	0.20	0.50	CALC	01/19/24	01/19/24
Total Suspended Solids		**4.5**		mg/L	1	2.0	2.0	M-2540D-201	01/15/24	01/15/24
Total Solids		**138**		mg/L	1	10.0	10.0	SM 2540B	01/12/24	01/12/24
Total Organic Carbon		**6.3**		mg/L	1	0.50	1.0	SM 5310B	01/16/24	01/16/24

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-01018
Received Date : 01/10/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2401018-003
Date Collected : 01/10/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.11**		mg/L	1	0.035	0.050	EPA 350.1	01/17/24	01/17/24
Nitrate/Nitrite as N		**2.6**		mg/L	1	0.015	0.050	EPA 353.2	01/13/24	01/13/24
Nitrate/Nitrite as N (Dissolved)		**2.3**		mg/L	1	0.015	0.050	EPA 353.2	01/12/24	01/12/24
Orthophosphate as P	1426-54-42	0.0038	U	mg/L	1	0.0038	0.0040	EPA 365.1	01/11/24	01/11/24
Phosphorus	7723-14-0	**0.051**		mg/L	1	0.0028	0.0040	EPA 365.3	01/13/24	01/15/24
Phosphorus (Dissolved)	7723-14-0	**0.0073**		mg/L	1	0.0028	0.0040	EPA 365.3	01/20/24	01/24/24
Total Alkalinity as CaC03	471-34-1	**55.5**		mg/L	1	5.0	5.0	SM 2320B	01/14/24	01/14/24
Total Kjeldahl Nitrogen	7727-37-9	**0.59**		mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/15/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.33**	I	mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/18/24
Total Nitrogen	17778-88-0	**3.2**		mg/L	1	0.20	0.50	CALC	01/16/24	01/16/24
Total Nitrogen (Dissolved)	17778-88-0	**2.7**		mg/L	1	0.20	0.50	CALC	01/19/24	01/19/24
Total Suspended Solids		**7.0**		mg/L	1	3.3	3.3	M-2540D-201	01/15/24	01/15/24
Total Solids		**158**		mg/L	1	10.0	10.0	SM 2540B	01/12/24	01/12/24
Total Organic Carbon		**9.1**		mg/L	1	0.50	1.0	SM 5310B	01/16/24	01/16/24

Client ID # : **Baffle In**
SRL (Lab) ID# : 2401018-004
Date Collected : 01/10/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.044**	I	mg/L	1	0.035	0.050	EPA 350.1	01/17/24	01/17/24
Nitrate/Nitrite as N		**2.9**		mg/L	1	0.015	0.050	EPA 353.2	01/13/24	01/13/24
Nitrate/Nitrite as N (Dissolved)		**2.6**		mg/L	1	0.015	0.050	EPA 353.2	01/12/24	01/12/24
Orthophosphate as P	1426-54-42	**0.017**		mg/L	1	0.0038	0.0040	EPA 365.1	01/11/24	01/11/24
Phosphorus	7723-14-0	**0.055**		mg/L	1	0.0028	0.0040	EPA 365.3	01/13/24	01/15/24
Phosphorus (Dissolved)	7723-14-0	**0.028**		mg/L	1	0.0028	0.0040	EPA 365.3	01/20/24	01/24/24
Total Alkalinity as CaC03	471-34-1	**55.3**		mg/L	1	5.0	5.0	SM 2320B	01/14/24	01/14/24
Total Kjeldahl Nitrogen	7727-37-9	**0.57**		mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/15/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.27**	I	mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/18/24
Total Nitrogen	17778-88-0	**3.4**		mg/L	1	0.20	0.50	CALC	01/16/24	01/16/24
Total Nitrogen (Dissolved)	17778-88-0	**2.9**		mg/L	1	0.20	0.50	CALC	01/19/24	01/19/24
Total Suspended Solids		**6.6**		mg/L	1	1.0	1.0	M-2540D-201	01/15/24	01/15/24
Total Solids		**144**		mg/L	1	10.0	10.0	SM 2540B	01/12/24	01/12/24
Total Organic Carbon		**5.1**		mg/L	1	0.50	1.0	SM 5310B	01/16/24	01/16/24

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-01018
Received Date : 01/10/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Dup**
SRL (Lab) ID# : 2401018-005
Date Collected : 01/10/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	01/16/24	01/16/24
Nitrate/Nitrite as N		**2.5**		mg/L	1	0.015	0.050	EPA 353.2	01/13/24	01/13/24
Nitrate/Nitrite as N (Dissolved)		**2.3**		mg/L	1	0.015	0.050	EPA 353.2	01/12/24	01/12/24
Orthophosphate as P	1426-54-42	**0.0087**		mg/L	1	0.0038	0.0040	EPA 365.1	01/11/24	01/11/24
Phosphorus	7723-14-0	**0.061**		mg/L	1	0.0028	0.0040	EPA 365.3	01/13/24	01/15/24
Phosphorus (Dissolved)	7723-14-0	**0.020**		mg/L	1	0.0028	0.0040	EPA 365.3	01/20/24	01/24/24
Total Alkalinity as CaC03	471-34-1	**58.5**		mg/L	1	5.0	5.0	SM 2320B	01/14/24	01/14/24
Total Kjeldahl Nitrogen	7727-37-9	**0.63**		mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/15/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.30**	I	mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/18/24
Total Nitrogen	17778-88-0	**3.2**		mg/L	1	0.20	0.50	CALC	01/16/24	01/16/24
Total Nitrogen (Dissolved)	17778-88-0	**2.6**		mg/L	1	0.20	0.50	CALC	01/19/24	01/19/24
Total Suspended Solids		**11.0**		mg/L	1	1.0	1.0	M-2540D-201	01/15/24	01/15/24
Total Solids		**194**		mg/L	1	5.0	5.0	SM 2540B	01/12/24	01/12/24
Total Organic Carbon		**6.9**		mg/L	1	0.50	1.0	SM 5310B	01/16/24	01/16/24

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	01/16/24	01/16/24
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	01/17/24	01/17/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	01/13/24	01/13/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	01/26/24	01/26/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	01/12/24	01/12/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	01/26/24	01/26/24
Orthophosphate as P	1426-54-42	0.0038	U	mg/L	1	0.0038	0.0040	EPA 365.1	01/11/24	01/11/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	01/13/24	01/15/24
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	01/20/24	01/24/24
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	01/14/24	01/14/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/15/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	01/14/24	01/18/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	01/15/24	01/15/24
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	01/12/24	01/12/24
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	01/16/24	01/16/24

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-01018
Received Date : 01/10/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	92/71/86	90-110	90-110	QM-07	17	0-20
Nitrate/Nitrite as N	106/87/85	90-110	90-110	QM-07	1	0-20
Nitrate/Nitrite as N (Dissolved)	105/89/87	90-110	90-110	QM-07	1	0-20
Total Kjeldahl Nitrogen	97/95/94	90-110	90-110		0	0-20
Total Kjeldahl Nitrogen (Dissolved)	97/96/96	90-110	90-110		0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/LCSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	98/56/56	90-110	90-110	QM-07	0	0-20
Orthophosphate as P	98/80/83	90-110	90-110	QM-07	4	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	100/99/98	90-110	80-120		1	0-20
Phosphorus	96/93/97	90-110	80-120		3	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	104/99/93	90-110	90-110		7	0-20
Nitrogen, Ammonia (as N)	108/78/76	90-110	90-110	QM-07	0	0-20
Nitrogen, Ammonia (as N)	107/105/104	90-110	90-110		1	0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Suspended Solids	98/96	90-110	2		0-10

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	95	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	35.0	35.2	1		0-20

	% Recovery LCS	Acceptable Limits
Total Solids	103	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	76.0	82.0	8		0-10

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-01018
Received Date : 01/10/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	96/94/96	90-110	80-120		2	0-20

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-01018
Received Date : 01/10/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2401018
5

Page 1 of 1

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando Florida 32817
Phone:	407-321-7030
Fax:	

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Project Name: OC Keystone BMP Monitoring

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	TOC	Alkalinity, Total as $CaCO_3$	TN Nitrogen, Ammonia T. Phosphorus	Particulate Nitrogen	Particulate Phosphorus	Dr Orthophosphate	TSS			
1	Upflow In	1/10/24	8:50	C	SW	7										2401018-001
2	Upflow Out	1/10/24	9:25	C	SW	7										-002
3	Baffle Out	1/10/24	9:50	C	SW	7										-003
4	Baffle In	1/10/24	10:05	C	SW	7										-004
5	Dup	1-10-24	8:58	C	SW	7										-005

Preservatives (see codes)

Analyses Requested

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turner	12-21-23	10:15			
Returned: / /	Via:		1/10/24	1330	Helen Turner	1-10-24	13:30

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 153 2.7 °C

Sampling Kit No.: 9861

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitric Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 03/06/24
Contact Name: **Mike Hardin**	Date Received: 03/06/24
Project Name: Keystone Drive BMP	Time Received: 14:47
Project Number: FW7915	Date Reported : 04/05/24
Phone Number: (407) 321-7030	Date Emailed : 04/05/24
Fax Number: NA	SRL Work Order # 24-03011

SRL WO #	Clients #	Matrix	Analysis Requested
2403011-001	Baffle In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2403011-002	Baffle Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2403011-003	Upflow In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2403011-004	Upflow Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2403011-005	Dup	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03011
Received Date : 03/06/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Baffle In**
SRL (Lab) ID# : 2403011-001
Date Collected : 03/06/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/09/24	03/09/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Orthophosphate as P	1426-54-42	**0.14**		mg/L	1	0.0038	0.0040	EPA 365.1	03/07/24	03/07/24
Phosphorus	7723-14-0	**0.27**		mg/L	1	0.0028	0.0040	EPA 365.3	03/11/24	03/15/24
Phosphorus (Dissolved)	7723-14-0	**0.22**		mg/L	1	0.0028	0.0040	EPA 365.3	03/14/24	03/15/24
Total Alkalinity as CaC03	471-34-1	**41.6**		mg/L	1	5.0	5.0	SM 2320B	03/12/24	03/12/24
Total Kjeldahl Nitrogen	7727-37-9	**0.74**		mg/L	1	0.20	0.50	EPA 351.2	03/19/24	03/20/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.73**		mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Nitrogen	17778-88-0	**0.74**		mg/L	1	0.20	0.50	CALC	03/28/24	03/28/24
Total Nitrogen (Dissolved)	17778-88-0	**0.73**		mg/L	1	0.20	0.50	CALC	04/05/24	04/05/24
Total Suspended Solids		**9.2**		mg/L	1	3.4	3.4	M-2540D-201	03/11/24	03/11/24
Total Solids		**80.0**		mg/L	1	10.0	10.0	SM 2540B	03/11/24	03/11/24
Total Organic Carbon		**10.3**		mg/L	1	0.50	1.0	SM 5310B	03/14/24	03/14/24

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2403011-002
Date Collected : 03/06/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/09/24	03/09/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Orthophosphate as P	1426-54-42	**0.073**		mg/L	1	0.0038	0.0040	EPA 365.1	03/07/24	03/07/24
Phosphorus	7723-14-0	**0.26**		mg/L	1	0.0028	0.0040	EPA 365.3	03/11/24	03/15/24
Phosphorus (Dissolved)	7723-14-0	**0.21**		mg/L	1	0.0028	0.0040	EPA 365.3	03/14/24	03/15/24
Total Alkalinity as CaC03	471-34-1	**45.2**		mg/L	1	5.0	5.0	SM 2320B	03/12/24	03/12/24
Total Kjeldahl Nitrogen	7727-37-9	**0.95**		mg/L	1	0.20	0.50	EPA 351.2	03/19/24	03/20/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.95**		mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Nitrogen	17778-88-0	**0.95**		mg/L	1	0.20	0.50	CALC	03/28/24	03/28/24
Total Nitrogen (Dissolved)	17778-88-0	**0.95**		mg/L	1	0.20	0.50	CALC	04/05/24	04/05/24
Total Suspended Solids		**21.0**		mg/L	1	10.0	10.0	M-2540D-201	03/11/24	03/11/24
Total Solids		**152**		mg/L	1	10.0	10.0	SM 2540B	03/11/24	03/11/24
Total Organic Carbon		**20.8**		mg/L	1	0.50	1.0	SM 5310B	03/14/24	03/14/24

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03011
Received Date : 03/06/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow In**
SRL (Lab) ID# : 2403011-003
Date Collected : 03/06/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/09/24	03/09/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Orthophosphate as P	1426-54-42	**0.19**		mg/L	1	0.0038	0.0040	EPA 365.1	03/07/24	03/07/24
Phosphorus	7723-14-0	**0.42**		mg/L	1	0.0028	0.0040	EPA 365.3	03/11/24	03/15/24
Phosphorus (Dissolved)	7723-14-0	**0.36**		mg/L	1	0.0028	0.0040	EPA 365.3	03/14/24	03/15/24
Total Alkalinity as CaC03	471-34-1	**70.0**		mg/L	1	5.0	5.0	SM 2320B	03/12/24	03/12/24
Total Kjeldahl Nitrogen	7727-37-9	**1.2**		mg/L	1	0.20	0.50	EPA 351.2	03/19/24	03/20/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.0**		mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Nitrogen	17778-88-0	**1.2**		mg/L	1	0.20	0.50	CALC	03/28/24	03/28/24
Total Nitrogen (Dissolved)	17778-88-0	**1.0**		mg/L	1	0.20	0.50	CALC	04/05/24	04/05/24
Total Suspended Solids		**10.8**		mg/L	1	4.0	4.0	M-2540D-201	03/11/24	03/11/24
Total Solids		**124**		mg/L	1	10.0	10.0	SM 2540B	03/11/24	03/11/24
Total Organic Carbon		**23.3**		mg/L	1	0.50	1.0	SM 5310B	03/14/24	03/14/24

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2403011-004
Date Collected : 03/06/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/09/24	03/09/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Orthophosphate as P	1426-54-42	**0.095**		mg/L	1	0.0038	0.0040	EPA 365.1	03/07/24	03/07/24
Phosphorus	7723-14-0	**0.23**		mg/L	1	0.0028	0.0040	EPA 365.3	03/11/24	03/15/24
Phosphorus (Dissolved)	7723-14-0	**0.16**		mg/L	1	0.0028	0.0040	EPA 365.3	03/14/24	03/15/24
Total Alkalinity as CaC03	471-34-1	**54.4**		mg/L	1	5.0	5.0	SM 2320B	03/12/24	03/12/24
Total Kjeldahl Nitrogen	7727-37-9	**0.58**		mg/L	1	0.20	0.50	EPA 351.2	03/19/24	03/20/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.44**	I	mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Nitrogen	17778-88-0	**0.58**		mg/L	1	0.20	0.50	CALC	03/28/24	03/28/24
Total Nitrogen (Dissolved)	17778-88-0	**0.44**	I	mg/L	1	0.20	0.50	CALC	04/05/24	04/05/24
Total Suspended Solids		**7.7**		mg/L	1	2.9	2.9	M-2540D-201	03/11/24	03/11/24
Total Solids		**92.0**		mg/L	1	10.0	10.0	SM 2540B	03/11/24	03/11/24
Total Organic Carbon		**10.9**		mg/L	1	0.50	1.0	SM 5310B	03/14/24	03/14/24

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03011
Received Date : 03/06/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Dup**
SRL (Lab) ID# : 2403011-005
Date Collected : 03/06/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/09/24	03/09/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Orthophosphate as P	1426-54-42	**0.14**		mg/L	1	0.0038	0.0040	EPA 365.1	03/07/24	03/07/24
Phosphorus	7723-14-0	**0.27**		mg/L	1	0.0028	0.0040	EPA 365.3	03/11/24	03/15/24
Phosphorus (Dissolved)	7723-14-0	**0.21**		mg/L	1	0.0028	0.0040	EPA 365.3	03/14/24	03/15/24
Total Alkalinity as CaC03	471-34-1	**41.3**		mg/L	1	5.0	5.0	SM 2320B	03/12/24	03/12/24
Total Kjeldahl Nitrogen	7727-37-9	**0.74**		mg/L	1	0.20	0.50	EPA 351.2	03/19/24	03/20/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.63**		mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Nitrogen	17778-88-0	**0.74**		mg/L	1	0.20	0.50	CALC	03/28/24	03/28/24
Total Nitrogen (Dissolved)	17778-88-0	**0.63**		mg/L	1	0.20	0.50	CALC	04/05/24	04/05/24
Total Suspended Solids		**8.4**		mg/L	1	3.5	3.5	M-2540D-201	03/11/24	03/11/24
Total Solids		**176**		mg/L	1	5.0	5.0	SM 2540B	03/11/24	03/11/24
Total Organic Carbon		**10.5**		mg/L	1	0.50	1.0	SM 5310B	03/14/24	03/14/24

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/09/24	03/09/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/09/24	03/09/24
Orthophosphate as P	1426-54-42	0.0038	U	mg/L	1	0.0038	0.0040	EPA 365.1	03/07/24	03/07/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	03/11/24	03/15/24
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	03/14/24	03/15/24
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	03/12/24	03/12/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	03/19/24	03/20/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	03/11/24	03/11/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	03/12/24	03/12/24
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	03/11/24	03/11/24
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	03/14/24	03/14/24

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03011
Received Date : 03/06/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	106/49/53	90-110	90-110	QM-07	9	0-20
Nitrate/Nitrite as N	106/86/96	90-110	90-110	QM-07	6	0-20
Nitrate/Nitrite as N (Dissolved)	102/82/84	90-110	90-110	QM-07	2	0-20
Total Kjeldahl Nitrogen	104/100/98	90-110	90-110		2	0-20
Total Kjeldahl Nitrogen (Dissolved)	93/95/96	90-110	90-110		1	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/LCSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	94/85/102	90-110	90-110	QM-07	7	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	98/104/102	90-110	80-120		1	0-20
Phosphorus	95/100/100	90-110	80-120		0	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	107/96/102	90-110	90-110		6	0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Suspended Solids	94/92	90-110	2		0-10
Total Suspended Solids	96/96	90-110	1		0-10
Total Suspended Solids	95/96	90-110	1		0-10

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	94	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	208	206	1		0-20

	% Recovery LCS	Acceptable Limits
Total Solids	108	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	1650	1620	2		0-10

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03011
Received Date : 03/06/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	96/95/95	90-110	80-120		0	0-20

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03011
Received Date : 03/06/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2403011
5

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando, Florida, 32817
Phone:	407-321-7030
Fax:	

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: OC Keystone BMP Monitoring

Project Location:

Sampled by [Print Name(s)] / Affiliation: Malhese Powe / BFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Alkalinity Total Solids (TS)	TSS	TOC	Nitrogen, Ammonia T. Phosphorus	Particulate Nitrogen	Particulate Phosphorus	Orthophosphate			Analyses Requested
1	Baffle In	3/6/24	1111	C	SW	7	✓	✓	✓	✓	✓	✓	✓			2403011-001
2	Baffle Out	3/6/24	1154	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-002
3	Upflow In	3/6/24	1230	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-003
4	Upflow Out	3/6/24	1254	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-004
5	DUP	3/6/24	1135	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-005

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:		1-25-24	17:43			
Returned: / /	Via:		3/6/24	1447	Helen Turner	3/6/24	14:47

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 08 Stock 1.5 °C

Sampling Kit No.: 9892

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitric Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 04/03/24
Contact Name: **Mike Hardin**	Date Received: 04/04/24
Project Name: Keystone Drive BMP Autosampler	Time Received: 9:12
Project Number: FW7915	Date Reported : 05/02/24
Phone Number: (407) 321-7030	Date Emailed : 05/02/24
Fax Number: NA	SRL Work Order # 24-04010

SRL WO #	Clients #	Matrix	Analysis Requested
2404010-001	Upflow In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2404010-002	Upflow Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2404010-003	Baffle In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2404010-004	Baffle Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2404010-005	Dup	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-04010
Received Date : 04/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow In**
SRL (Lab) ID# : 2404010-001
Date Collected : 04/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.50**		mg/L	1	0.035	0.050	EPA 350.1	04/09/24	04/09/24
Nitrate/Nitrite as N		**1.9**		mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Nitrate/Nitrite as N (Dissolved)		**2.0**		mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Orthophosphate as P	1426-54-42	**0.115**		mg/L	1	0.0038	0.0040	EPA 365.1	04/05/24	04/05/24
Phosphorus	7723-14-0	**0.19**		mg/L	1	0.0028	0.0040	EPA 365.3	04/10/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	**0.15**		mg/L	1	0.0028	0.0040	EPA 365.3	04/11/24	04/17/24
Total Alkalinity as CaC03	471-34-1	**85.3**		mg/L	1	5.0	5.0	SM 2320B	04/14/24	04/14/24
Total Kjeldahl Nitrogen	7727-37-9	**1.1**		mg/L	1	0.20	0.50	EPA 351.2	04/13/24	04/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.0**		mg/L	1	0.20	0.50	EPA 351.2	04/29/24	04/29/24
Total Nitrogen	17778-88-0	**3.1**		mg/L	1	0.20	0.50	CALC	04/18/24	04/18/24
Total Nitrogen (Dissolved)	17778-88-0	**3.0**		mg/L	1	0.20	0.50	CALC	05/01/24	05/01/24
Total Suspended Solids		**10.0**		mg/L	1	1.0	1.0	M-2540D-201	04/09/24	04/09/24
Total Solids		**200**		mg/L	1	25.0	25.0	SM 2540B	04/05/24	04/05/24
Total Organic Carbon		**10.8**		mg/L	1	0.50	1.0	SM 5310B	04/09/24	04/09/24

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2404010-002
Date Collected : 04/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.84**		mg/L	1	0.035	0.050	EPA 350.1	04/09/24	04/09/24
Nitrate/Nitrite as N		**1.2**		mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Nitrate/Nitrite as N (Dissolved)		**1.2**		mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Orthophosphate as P	1426-54-42	**0.10**		mg/L	1	0.0038	0.0040	EPA 365.1	04/05/24	04/05/24
Phosphorus	7723-14-0	**0.13**		mg/L	1	0.0028	0.0040	EPA 365.3	04/10/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	**0.10**		mg/L	1	0.0028	0.0040	EPA 365.3	04/11/24	04/17/24
Total Alkalinity as CaC03	471-34-1	**88.4**		mg/L	1	5.0	5.0	SM 2320B	04/14/24	04/14/24
Total Kjeldahl Nitrogen	7727-37-9	**1.0**		mg/L	1	0.20	0.50	EPA 351.2	04/13/24	04/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.95**		mg/L	1	0.20	0.50	EPA 351.2	04/29/24	04/29/24
Total Nitrogen	17778-88-0	**2.2**		mg/L	1	0.20	0.50	CALC	04/18/24	04/18/24
Total Nitrogen (Dissolved)	17778-88-0	**2.2**		mg/L	1	0.20	0.50	CALC	05/01/24	05/01/24
Total Suspended Solids		**3.5**		mg/L	1	1.0	1.0	M-2540D-201	04/09/24	04/09/24
Total Solids		**185**		mg/L	1	25.0	25.0	SM 2540B	04/05/24	04/05/24
Total Organic Carbon		**6.9**		mg/L	1	0.50	1.0	SM 5310B	04/09/24	04/09/24

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-04010
Received Date : 04/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Baffle In**
SRL (Lab) ID# : 2404010-003
Date Collected : 04/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.40**		mg/L	1	0.035	0.050	EPA 350.1	04/09/24	04/09/24
Nitrate/Nitrite as N		**2.2**		mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Nitrate/Nitrite as N (Dissolved)		**2.2**		mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Orthophosphate as P	1426-54-42	**0.098**		mg/L	1	0.0038	0.0040	EPA 365.1	04/05/24	04/05/24
Phosphorus	7723-14-0	**0.15**		mg/L	1	0.0028	0.0040	EPA 365.3	04/10/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	**0.11**		mg/L	1	0.0028	0.0040	EPA 365.3	04/11/24	04/17/24
Total Alkalinity as CaC03	471-34-1	**84.3**		mg/L	1	5.0	5.0	SM 2320B	04/14/24	04/14/24
Total Kjeldahl Nitrogen	7727-37-9	**0.86**		mg/L	1	0.20	0.50	EPA 351.2	04/13/24	04/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.62**		mg/L	1	0.20	0.50	EPA 351.2	04/29/24	04/29/24
Total Nitrogen	17778-88-0	**3.0**		mg/L	1	0.20	0.50	CALC	04/18/24	04/18/24
Total Nitrogen (Dissolved)	17778-88-0	**2.8**		mg/L	1	0.20	0.50	CALC	05/01/24	05/01/24
Total Suspended Solids		**4.5**		mg/L	1	1.0	1.0	M-2540D-201	04/09/24	04/09/24
Total Solids		**185**		mg/L	1	25.0	25.0	SM 2540B	04/05/24	04/05/24
Total Organic Carbon		**8.5**		mg/L	1	0.50	1.0	SM 5310B	04/09/24	04/09/24

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2404010-004
Date Collected : 04/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.47**		mg/L	1	0.035	0.050	EPA 350.1	04/09/24	04/09/24
Nitrate/Nitrite as N		**2.0**		mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Nitrate/Nitrite as N (Dissolved)		**2.1**		mg/L	1	0.015	0.050	EPA 353.2	04/06/24	04/06/24
Orthophosphate as P	1426-54-42	**0.038**		mg/L	1	0.0038	0.0040	EPA 365.1	04/05/24	04/05/24
Phosphorus	7723-14-0	**0.14**		mg/L	1	0.0028	0.0040	EPA 365.3	04/10/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	**0.058**		mg/L	1	0.0028	0.0040	EPA 365.3	04/11/24	04/17/24
Total Alkalinity as CaC03	471-34-1	**85.4**		mg/L	1	5.0	5.0	SM 2320B	04/14/24	04/14/24
Total Kjeldahl Nitrogen	7727-37-9	**1.2**		mg/L	1	0.20	0.50	EPA 351.2	04/13/24	04/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.77**		mg/L	1	0.20	0.50	EPA 351.2	04/29/24	04/29/24
Total Nitrogen	17778-88-0	**3.1**		mg/L	1	0.20	0.50	CALC	04/18/24	04/18/24
Total Nitrogen (Dissolved)	17778-88-0	**2.9**		mg/L	1	0.20	0.50	CALC	05/01/24	05/01/24
Total Suspended Solids		**11.0**		mg/L	1	1.0	1.0	M-2540D-201	04/09/24	04/09/24
Total Solids		**165**		mg/L	1	25.0	25.0	SM 2540B	04/05/24	04/05/24
Total Organic Carbon		**12.8**		mg/L	1	0.50	1.0	SM 5310B	04/09/24	04/09/24

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-04010
Received Date : 04/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Dup**
SRL (Lab) ID# : 2404010-005
Date Collected : 04/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.44**		mg/L	1	0.035	0.050	EPA 350.1	04/09/24	04/09/24
Nitrate/Nitrite as N		**2.0**		mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Nitrate/Nitrite as N (Dissolved)		**2.0**		mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Orthophosphate as P	1426-54-42	**0.029**		mg/L	1	0.0038	0.0040	EPA 365.1	04/05/24	04/05/24
Phosphorus	7723-14-0	**0.14**		mg/L	1	0.0028	0.0040	EPA 365.3	04/10/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	**0.057**		mg/L	1	0.0028	0.0040	EPA 365.3	04/11/24	04/17/24
Total Alkalinity as CaC03	471-34-1	**86.1**		mg/L	1	5.0	5.0	SM 2320B	04/14/24	04/14/24
Total Kjeldahl Nitrogen	7727-37-9	**1.2**		mg/L	1	0.20	0.50	EPA 351.2	04/13/24	04/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.86**		mg/L	1	0.20	0.50	EPA 351.2	04/29/24	04/29/24
Total Nitrogen	17778-88-0	**3.1**		mg/L	1	0.20	0.50	CALC	04/18/24	04/18/24
Total Nitrogen (Dissolved)	17778-88-0	**2.9**		mg/L	1	0.20	0.50	CALC	05/01/24	05/01/24
Total Suspended Solids		**11.5**		mg/L	1	1.0	1.0	M-2540D-201	04/09/24	04/09/24
Total Solids		**250**		mg/L	1	25.0	25.0	SM 2540B	04/05/24	04/05/24
Total Organic Carbon		**12.5**		mg/L	1	0.50	1.0	SM 5310B	04/09/24	04/09/24

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	04/09/24	04/09/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	04/05/24	04/05/24
Orthophosphate as P	1426-54-42	0.0038	U	mg/L	1	0.0038	0.0040	EPA 365.1	04/05/24	04/05/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	04/10/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	04/11/24	04/17/24
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	04/14/24	04/14/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	04/13/24	04/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	04/29/24	04/29/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	04/09/24	04/09/24
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	04/05/24	04/05/24
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	04/09/24	04/09/24

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-04010
Received Date : 04/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	99/96/96	90-110	90-110		0	0-20
Nitrate/Nitrite as N (Dissolved)	101/90/84	90-110	90-110	QM-07	3	0-20
Total Kjeldahl Nitrogen	92/104/104	90-110	90-110		0	0-20
Total Kjeldahl Nitrogen (Dissolved)	95/94/95	90-110	90-110		1	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	100/77/80	90-110	90-110	QM-07	2	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	100/95/96	90-110	80-120		0	0-20
Phosphorus	95/102/99	90-110	80-120		2	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	104/104/106	90-110	90-110		2	0-20

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	95	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	48.6	48.1	1		0-20

	% Recovery LCS	Acceptable Limits
Total Solids	105	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	470	490	4		0-10

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	86	80-120

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-04010
Received Date : 04/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	97/94/93	90-110	80-120		1	0-20

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-04010
Received Date : 04/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2404010

5

Page of

Project Manager: Mike Hardie	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7030 Fax:	Main (407) 522-7100 Fax: (407) 522-7043

Project Name: Keystone Drive BMP Autosampler

Project Location:

Sampled by [Print Name(s)] / Affiliation: Makese Powe / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	ToC	Alkalinity Total Solids	T Nitrogen, Ammonia T. Phosphorus	Particulate Nitrogen	Particulate Phosphorus	Orthophosphate	TSS			
	Preservatives (see codes)															
	Analyses Requested															
1	Upflow In	4/3/24	1835	C	SW	7	✓	✓	✓	✓	✓	✓	✓			2404010-001
2	Upflow Out	4/3/24	1856	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-002
3	Baffle In	4/3/24	1925	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-003
4	Baffle Out	4/3/24	1943	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-004
5	Duplicate	4/3/24	1959	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-005

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turner	3.21.24	10:45		3/21/24	10:45
Returned: / /	Via:		4.4.24	0912		4.4.24	0912

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): Teal 2.1 °C

Sampling Kit No.: 9970

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 05/14/24
Contact Name: **Mike Hardin**	Date Received: 05/15/24
Project Name: Keystone Drive BMP Autosampler	Time Received: 9:25
Project Number: FW7915	Date Reported : 06/07/24
Phone Number: (407) 321-7030	Date Emailed : 06/07/24
Fax Number: NA	SRL Work Order # 24-05027

SRL WO #	Clients #	Matrix	Analysis Requested
2405027-001	Upflow In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2405027-002	Upflow Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2405027-003	Baffle In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2405027-004	Baffle Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2405027-005	Dup	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-05027
Received Date : 05/15/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow In**
SRL (Lab) ID# : 2405027-001
Date Collected : 5/14/2024
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.29**		mg/L	1	0.035	0.050	EPA 350.1	05/17/24	05/17/24
Nitrate/Nitrite as N		**0.76**		mg/L	1	0.015	0.050	EPA 353.2	05/23/24	05/23/24
Nitrate/Nitrite as N (Dissolved)		**0.74**		mg/L	1	0.015	0.050	EPA 353.2	05/20/24	05/20/24
Orthophosphate as P	1426-54-42	**0.113**		mg/L	1	0.0038	0.0040	EPA 365.1	05/15/24	05/15/24
Phosphorus	7723-14-0	**0.28**		mg/L	1	0.0028	0.0040	EPA 365.3	05/17/24	05/22/24
Phosphorus (Dissolved)	7723-14-0	**0.18**		mg/L	1	0.0028	0.0040	EPA 365.3	06/01/24	06/02/24
Total Alkalinity as CaC03	471-34-1	**66.0**		mg/L	1	5.0	5.0	SM 2320B	05/16/24	05/16/24
Total Kjeldahl Nitrogen	7727-37-9	**1.6**		mg/L	1	0.20	0.50	EPA 351.2	05/17/24	05/21/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.1**		mg/L	1	0.20	0.50	EPA 351.2	05/19/24	05/20/24
Total Nitrogen	17778-88-0	**2.3**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Nitrogen (Dissolved)	17778-88-0	**1.8**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Suspended Solids		**29.2**		mg/L	1	1.0	1.0	M-2540D-201	05/16/24	05/16/24
Total Solids		**244**		mg/L	1	25.0	25.0	SM 2540B	05/16/24	05/16/24
Total Organic Carbon		**34.7**		mg/L	1	0.50	1.0	SM 5310B	05/21/24	05/21/24

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2405027-002
Date Collected : 05/14/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.50**		mg/L	1	0.035	0.050	EPA 350.1	05/17/24	05/17/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	05/23/24	05/23/24
Nitrate/Nitrite as N (Dissolved)		**0.017**	I	mg/L	1	0.015	0.050	EPA 353.2	05/20/24	05/20/24
Orthophosphate as P	1426-54-42	**0.205**		mg/L	1	0.0038	0.0040	EPA 365.1	05/15/24	05/15/24
Phosphorus	7723-14-0	**0.31**		mg/L	1	0.0028	0.0040	EPA 365.3	05/17/24	05/22/24
Phosphorus (Dissolved)	7723-14-0	**0.26**		mg/L	1	0.0028	0.0040	EPA 365.3	06/01/24	06/02/24
Total Alkalinity as CaC03	471-34-1	**56.0**		mg/L	1	5.0	5.0	SM 2320B	05/16/24	05/16/24
Total Kjeldahl Nitrogen	7727-37-9	**0.94**		mg/L	1	0.20	0.50	EPA 351.2	05/17/24	05/21/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.77**		mg/L	1	0.20	0.50	EPA 351.2	05/19/24	05/20/24
Total Nitrogen	17778-88-0	**0.95**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Nitrogen (Dissolved)	17778-88-0	**0.79**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Suspended Solids		**5.4**		mg/L	1	1.0	1.0	M-2540D-201	05/16/24	05/16/24
Total Solids		**124**		mg/L	1	25.0	25.0	SM 2540B	05/16/24	05/16/24
Total Organic Carbon		**23.0**		mg/L	1	0.50	1.0	SM 5310B	05/21/24	05/21/24

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-05027
Received Date : 05/15/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Baffle In**
SRL (Lab) ID# : 2405027-003
Date Collected : 05/14/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.19**		mg/L	1	0.035	0.050	EPA 350.1	05/17/24	05/17/24
Nitrate/Nitrite as N		**0.57**		mg/L	1	0.015	0.050	EPA 353.2	05/23/24	05/23/24
Nitrate/Nitrite as N (Dissolved)		**0.57**		mg/L	1	0.015	0.050	EPA 353.2	05/20/24	05/20/24
Orthophosphate as P	1426-54-42	**0.115**		mg/L	1	0.0038	0.0040	EPA 365.1	05/15/24	05/15/24
Phosphorus	7723-14-0	**0.27**		mg/L	1	0.0028	0.0040	EPA 365.3	05/17/24	05/22/24
Phosphorus (Dissolved)	7723-14-0	**0.18**		mg/L	1	0.0028	0.0040	EPA 365.3	06/01/24	06/02/24
Total Alkalinity as CaC03	471-34-1	**60.0**		mg/L	1	5.0	5.0	SM 2320B	05/16/24	05/16/24
Total Kjeldahl Nitrogen	7727-37-9	**1.3**		mg/L	1	0.20	0.50	EPA 351.2	05/17/24	05/21/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.1**		mg/L	1	0.20	0.50	EPA 351.2	05/19/24	05/20/24
Total Nitrogen	17778-88-0	**1.9**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Nitrogen (Dissolved)	17778-88-0	**1.7**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Suspended Solids		**6.4**		mg/L	1	1.0	1.0	M-2540D-201	05/16/24	05/16/24
Total Solids		**154**		mg/L	1	25.0	25.0	SM 2540B	05/16/24	05/16/24
Total Organic Carbon		**22.3**		mg/L	1	0.50	1.0	SM 5310B	05/22/24	05/22/24

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2405027-004
Date Collected : 05/14/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.13**		mg/L	1	0.035	0.050	EPA 350.1	05/17/24	05/17/24
Nitrate/Nitrite as N		**0.44**		mg/L	1	0.015	0.050	EPA 353.2	05/23/24	05/23/24
Nitrate/Nitrite as N (Dissolved)		**0.47**		mg/L	1	0.015	0.050	EPA 353.2	05/20/24	05/20/24
Orthophosphate as P	1426-54-42	**0.136**		mg/L	1	0.0038	0.0040	EPA 365.1	05/15/24	05/15/24
Phosphorus	7723-14-0	**0.27**		mg/L	1	0.0028	0.0040	EPA 365.3	05/17/24	05/22/24
Phosphorus (Dissolved)	7723-14-0	**0.16**		mg/L	1	0.0028	0.0040	EPA 365.3	06/01/24	06/02/24
Total Alkalinity as CaC03	471-34-1	**65.0**		mg/L	1	5.0	5.0	SM 2320B	05/16/24	05/16/24
Total Kjeldahl Nitrogen	7727-37-9	**1.2**		mg/L	1	0.20	0.50	EPA 351.2	05/17/24	05/21/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.83**		mg/L	1	0.20	0.50	EPA 351.2	05/19/24	05/20/24
Total Nitrogen	17778-88-0	**1.6**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Nitrogen (Dissolved)	17778-88-0	**1.3**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Suspended Solids		**5.8**		mg/L	1	1.0	1.0	M-2540D-201	05/16/24	05/16/24
Total Solids		**159**		mg/L	1	25.0	25.0	SM 2540B	05/16/24	05/16/24
Total Organic Carbon		**22.7**		mg/L	1	0.50	1.0	SM 5310B	05/22/24	05/22/24

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-05027
Received Date : 05/15/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Dup**
SRL (Lab) ID# : 2405027-005
Date Collected : 05/14/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.45**		mg/L	1	0.035	0.050	EPA 350.1	05/17/24	05/17/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	05/23/24	05/23/24
Nitrate/Nitrite as N (Dissolved)		**0.019**	I	mg/L	1	0.015	0.050	EPA 353.2	05/20/24	05/20/24
Orthophosphate as P	1426-54-42	**0.222**		mg/L	1	0.0038	0.0040	EPA 365.1	05/15/24	05/15/24
Phosphorus	7723-14-0	**0.32**		mg/L	1	0.0028	0.0040	EPA 365.3	05/17/24	05/22/24
Phosphorus (Dissolved)	7723-14-0	**0.28**		mg/L	1	0.0028	0.0040	EPA 365.3	06/01/24	06/02/24
Total Alkalinity as CaC03	471-34-1	**57.0**		mg/L	1	5.0	5.0	SM 2320B	05/16/24	05/16/24
Total Kjeldahl Nitrogen	7727-37-9	**0.90**		mg/L	1	0.20	0.50	EPA 351.2	05/17/24	05/21/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.77**		mg/L	1	0.20	0.50	EPA 351.2	05/19/24	05/20/24
Total Nitrogen	17778-88-0	**0.92**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Nitrogen (Dissolved)	17778-88-0	**0.79**		mg/L	1	0.20	0.50	CALC	05/27/24	05/27/24
Total Suspended Solids		**5.2**		mg/L	1	1.0	1.0	M-2540D-201	05/16/24	05/16/24
Total Solids		**126**		mg/L	1	25.0	25.0	SM 2540B	05/16/24	05/16/24
Total Organic Carbon		**21.1**		mg/L	1	0.50	1.0	SM 5310B	05/22/24	05/22/24

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	05/17/24	05/17/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	05/23/24	05/23/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	05/20/24	05/20/24
Orthophosphate as P	1426-54-42	0.0038	U	mg/L	1	0.0038	0.0040	EPA 365.1	05/15/24	05/15/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	05/17/24	05/22/24
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	06/01/24	06/02/24
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	05/16/24	05/16/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	05/17/24	05/21/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	05/19/24	05/20/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	05/16/24	05/16/24
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	05/16/24	05/16/24
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	05/22/24	05/22/24

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-05027
Received Date : 05/15/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	98/68/82	90-110	90-110	QM-07	12	0-20
Nitrate/Nitrite as N (Dissolved)	96/50/71	90-110	90-110	QM-07	20	0-20
Total Kjeldahl Nitrogen	97/98/98	90-110	90-110		0	0-20
Total Kjeldahl Nitrogen (Dissolved)	101/101/103	90-110	90-110		1	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	110/74/94	90-110	90-110	QM-07	7	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	94/107/102	90-110	80-120		2	0-20
Phosphorus	103/97/96	90-110	80-120		1	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	105/104/102	90-110	90-110		2	0-20

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	102	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	66.0	65.0	2		0-20

	% Recovery LCS	Acceptable Limits
Total Solids	99	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	127	126	1		0-10

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	81	80-120

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NELAP Certified
FDOH Cert # : E83484
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Received Date : 05/15/24

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Geosyntec Consultants, Inc.
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Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	101/100/100	90-110	80-120		0	0-20

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-05027
Received Date : 05/15/24

Mike Hardin
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Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

2405027
5

Chain of Custody

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Page of
City, State, Zip: Orlando Florida 32817	Project Name: OC Keystone Drive BMP
Phone: 407-321-7030 Fax:	Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number: FW-7915

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	TOC	Alkalinity Total Solids	T Nitrogen Ammonia T Phosphorus Nitrogen	Particulate Nitrogen	Particulate Phosphorus	Orthophosphate	TSS			
	Preservatives (see codes)															
	Analyses Requested															
1	Upflow In	5/14/24	1450	C	SW	7	✓	⊘	✓	✓	✓	✓	✓			2405027-001
2	Upflow Out	5/14/24	1508	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-002
3	Baffle In	5/14/24	1540	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-003
4	Baffle Out	5/14/24	1552	C	SW	7	✓	✓	⊘	✓	✓	✓	✓			-004
5	Dup	5/14/24	1525	C	SW	7	✓	✓	✓	✓	✓	✓	✓			-005

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	12823	10:30		12823	10 30
Returned: / /	Via:		5/15/24	925		5/15/24	9:25

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 1273 0.8 °C

Sampling Kit No.: 9839

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 06/07/24
Contact Name: **Mike Hardin**	Date Received: 06/07/24
Project Name: Keystone Drive BMP Autosampler	Time Received: 9:50
Project Number: FW7915	Date Reported : 06/27/24
Phone Number: (407) 321-7030	Date Emailed : 06/27/24
Fax Number: NA	SRL Work Order # 24-06009

SRL WO #	Clients #	Matrix	Analysis Requested
2406009-001	Upflow In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2406009-002	Upflow Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2406009-003	Baffle In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2406009-004	Baffle Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2406009-005	Dup	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06009
Received Date : 06/07/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow In**
SRL (Lab) ID# : 2406009-001
Date Collected : 6/7/2024
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.15**		mg/L	1	0.035	0.050	EPA 350.1	06/13/24	06/13/24
Nitrate/Nitrite as N		**0.42**		mg/L	1	0.015	0.050	EPA 353.2	06/16/24	06/16/24
Nitrate/Nitrite as N (Dissolved)		**0.47**		mg/L	1	0.015	0.050	EPA 353.2	06/09/24	06/09/24
Orthophosphate as P	1426-54-42	**0.115**		mg/L	1	0.0038	0.0040	EPA 365.1	06/07/24	06/07/24
Phosphorus	7723-14-0	**0.42**		mg/L	1	0.0028	0.0040	EPA 365.3	06/14/24	06/20/24
Phosphorus (Dissolved)	7723-14-0	**0.25**		mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**30.0**		mg/L	1	5.0	5.0	SM 2320B	06/07/24	06/07/24
Total Kjeldahl Nitrogen	7727-37-9	**2.4**		mg/L	1	0.20	0.50	EPA 351.2	06/17/24	06/17/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.5**		mg/L	1	0.20	0.50	EPA 351.2	06/13/24	06/13/24
Total Nitrogen	17778-88-0	**2.8**		mg/L	1	0.20	0.50	CALC	06/17/24	06/17/24
Total Nitrogen (Dissolved)	17778-88-0	**2.0**		mg/L	1	0.20	0.50	CALC	06/19/24	06/19/24
Total Suspended Solids		**18.0**		mg/L	1	1.0	1.0	M-2540D-201	06/10/24	06/10/24
Total Solids		**122**		mg/L	1	25.0	25.0	SM 2540B	06/10/24	06/10/24
Total Organic Carbon		**29.3**		mg/L	1	0.50	1.0	SM 5310B	06/10/24	06/10/24

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2406009-002
Date Collected : 6/7/2024
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	06/13/24	06/13/24
Nitrate/Nitrite as N		**0.10**		mg/L	1	0.015	0.050	EPA 353.2	06/16/24	06/16/24
Nitrate/Nitrite as N (Dissolved)		**0.096**		mg/L	1	0.015	0.050	EPA 353.2	06/09/24	06/09/24
Orthophosphate as P	1426-54-42	**0.033**		mg/L	1	0.0038	0.0040	EPA 365.1	06/07/24	06/07/24
Phosphorus	7723-14-0	**0.25**		mg/L	1	0.0028	0.0040	EPA 365.3	06/14/24	06/20/24
Phosphorus (Dissolved)	7723-14-0	**0.13**		mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**46.1**		mg/L	1	5.0	5.0	SM 2320B	06/07/24	06/07/24
Total Kjeldahl Nitrogen	7727-37-9	**2.0**		mg/L	1	0.20	0.50	EPA 351.2	06/17/24	06/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.3**		mg/L	1	0.20	0.50	EPA 351.2	06/13/24	06/13/24
Total Nitrogen	17778-88-0	**2.1**		mg/L	1	0.20	0.50	CALC	06/18/24	06/18/24
Total Nitrogen (Dissolved)	17778-88-0	**1.4**		mg/L	1	0.20	0.50	CALC	06/19/24	06/19/24
Total Suspended Solids		**108**		mg/L	1	1.0	1.0	M-2540D-201	06/10/24	06/10/24
Total Solids		**182**		mg/L	1	25.0	25.0	SM 2540B	06/10/24	06/10/24
Total Organic Carbon		**29.1**		mg/L	1	0.50	1.0	SM 5310B	06/10/24	06/10/24

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06009
Received Date : 06/07/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Baffle In**
SRL (Lab) ID# : 2406009-003
Date Collected : 6/7/2024
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.14**		mg/L	1	0.035	0.050	EPA 350.1	06/13/24	06/13/24
Nitrate/Nitrite as N		**0.54**		mg/L	1	0.015	0.050	EPA 353.2	06/16/24	06/16/24
Nitrate/Nitrite as N (Dissolved)		**0.54**		mg/L	1	0.015	0.050	EPA 353.2	06/09/24	06/09/24
Orthophosphate as P	1426-54-42	**0.196**		mg/L	1	0.0038	0.0040	EPA 365.1	06/07/24	06/07/24
Phosphorus	7723-14-0	**0.38**		mg/L	1	0.0028	0.0040	EPA 365.3	06/14/24	06/20/24
Phosphorus (Dissolved)	7723-14-0	**0.31**		mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**34.3**		mg/L	1	5.0	5.0	SM 2320B	06/07/24	06/07/24
Total Kjeldahl Nitrogen	7727-37-9	**2.2**		mg/L	1	0.20	0.50	EPA 351.2	06/17/24	06/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**2.0**		mg/L	1	0.20	0.50	EPA 351.2	06/13/24	06/13/24
Total Nitrogen	17778-88-0	**2.8**		mg/L	1	0.20	0.50	CALC	06/18/24	06/18/24
Total Nitrogen (Dissolved)	17778-88-0	**2.5**		mg/L	1	0.20	0.50	CALC	06/19/24	06/19/24
Total Suspended Solids		**18.5**		mg/L	1	1.0	1.0	M-2540D-201	06/10/24	06/10/24
Total Solids		**130**		mg/L	1	25.0	25.0	SM 2540B	06/10/24	06/10/24
Total Organic Carbon		**24.4**		mg/L	1	0.50	1.0	SM 5310B	06/10/24	06/10/24

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2406009-004
Date Collected : 6/7/2024
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.13**		mg/L	1	0.035	0.050	EPA 350.1	06/13/24	06/13/24
Nitrate/Nitrite as N		**0.034**	I	mg/L	1	0.015	0.050	EPA 353.2	06/16/24	06/16/24
Nitrate/Nitrite as N (Dissolved)		**0.021**	I	mg/L	1	0.015	0.050	EPA 353.2	06/09/24	06/09/24
Orthophosphate as P	1426-54-42	**0.082**		mg/L	1	0.0038	0.0040	EPA 365.1	06/07/24	06/07/24
Phosphorus	7723-14-0	**0.31**		mg/L	1	0.0028	0.0040	EPA 365.3	06/14/24	06/20/24
Phosphorus (Dissolved)	7723-14-0	**0.15**		mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**51.5**		mg/L	1	5.0	5.0	SM 2320B	06/07/24	06/07/24
Total Kjeldahl Nitrogen	7727-37-9	**2.0**		mg/L	1	0.20	0.50	EPA 351.2	06/17/24	06/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.2**		mg/L	1	0.20	0.50	EPA 351.2	06/13/24	06/13/24
Total Nitrogen	17778-88-0	**2.1**		mg/L	1	0.20	0.50	CALC	06/18/24	06/18/24
Total Nitrogen (Dissolved)	17778-88-0	**1.2**		mg/L	1	0.20	0.50	CALC	06/19/24	06/19/24
Total Suspended Solids		**15.5**		mg/L	1	1.0	1.0	M-2540D-201	06/10/24	06/10/24
Total Solids		**148**		mg/L	1	25.0	25.0	SM 2540B	06/10/24	06/10/24
Total Organic Carbon		**28.5**		mg/L	1	0.50	1.0	SM 5310B	06/10/24	06/10/24

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06009
Received Date : 06/07/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Dup**
SRL (Lab) ID# : 2406009-005
Date Collected : 6/7/2024
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.19**		mg/L	1	0.035	0.050	EPA 350.1	06/13/24	06/13/24
Nitrate/Nitrite as N		**0.44**		mg/L	1	0.015	0.050	EPA 353.2	06/16/24	06/16/24
Nitrate/Nitrite as N (Dissolved)		**0.49**		mg/L	1	0.015	0.050	EPA 353.2	06/09/24	06/09/24
Orthophosphate as P	1426-54-42	**0.127**		mg/L	1	0.0038	0.0040	EPA 365.1	06/14/24	06/20/24
Phosphorus	7723-14-0	**0.40**		mg/L	1	0.0028	0.0040	EPA 365.3	06/07/24	06/07/24
Phosphorus (Dissolved)	7723-14-0	**0.24**		mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**28.9**		mg/L	1	5.0	5.0	SM 2320B	06/07/24	06/07/24
Total Kjeldahl Nitrogen	7727-37-9	**2.3**		mg/L	1	0.20	0.50	EPA 351.2	06/17/24	06/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.5**		mg/L	1	0.20	0.50	EPA 351.2	06/13/24	06/13/24
Total Nitrogen	17778-88-0	**2.8**		mg/L	1	0.20	0.50	CALC	06/18/24	06/18/24
Total Nitrogen (Dissolved)	17778-88-0	**2.0**		mg/L	1	0.20	0.50	CALC	06/19/24	06/19/24
Total Suspended Solids		**25.0**		mg/L	1	1.0	1.0	M-2540D-201	06/10/24	06/10/24
Total Solids		**132**		mg/L	1	25.0	25.0	SM 2540B	06/10/24	06/10/24
Total Organic Carbon		**29.3**		mg/L	1	0.50	1.0	SM 5310B	06/10/24	06/10/24

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	06/13/24	06/13/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	06/15/24	06/15/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	06/16/24	06/16/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	06/09/24	06/09/24
Orthophosphate as P	1426-54-42	0.0038	U	mg/L	1	0.0038	0.0040	EPA 365.1	06/14/24	06/20/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	06/07/24	06/07/24
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	06/07/24	06/07/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/17/24	06/17/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/17/24	06/18/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/13/24	06/13/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	06/10/24	06/10/24
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	06/10/24	06/10/24
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	06/10/24	06/10/24

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06009
Received Date : 06/07/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	107/77/84	90-110	90-110	QM-07	6	0-20
Nitrate/Nitrite as N	101/79/76	90-110	90-110	QM-07	3	0-20
Nitrate/Nitrite as N (Dissolved)	104/99/93	90-110	90-110		5	0-20
Total Kjeldahl Nitrogen	102/100/106	90-110	90-110		3	0-20
Total Kjeldahl Nitrogen	101/101/94	90-110	90-110		7	0-20
Total Kjeldahl Nitrogen (Dissolved)	102/102/98	90-110	90-110		4	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	90/80/90	90-110	90-110	QM-07	4	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	93/98/99	90-110	80-120		1	0-20
Phosphorus	96/94/94	90-110	80-120		0	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	103/104/110	90-110	90-110		5	0-20
Nitrogen, Ammonia (as N)	103/106/107	90-110	90-110		1	0-20

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	109	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	30.0	28.9	4		0-20

	% Recovery LCS	Acceptable Limits
Total Solids	97	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	158	148	7		0-10

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06009
Received Date : 06/07/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	97/93/94	90-110	80-120		1	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	81	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	23.5	25.0	6		0-10

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Received Date : 06/07/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2406009

5

Page of

Project Manager: Mike Hardie	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone Drive
City, State, Zip: Orlando Florida 32817	Project Location: 2801 Keystone Dr, Orlando, FL 32806
Phone: 407-321-7030 Fax:	
Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA	Project Number:
Sampler(s) Signature(s):	REQUESTED DUE DATE:
	Facility ID#:
	Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	TDC	Alkalinity	Total Solids	T Nitrogen, Ammonia, T Phosphorus	Particulate Nitrogen	Particulate Phosphorus	Orthophosphate	TSS			Analyses Requested / Preservatives (see codes)
1	Upflow In	6/7/24	804	C	SW	7	✓	✓	✓	✓	✓	✓	✓	✓			2406009-001
2	Upflow Out		816	C	SW	7	✓	✓	✓	✓	✓	✓	✓	✓			-002
3	Baffle In		855	C	SW	7	✓	✓	✓	✓	✓	✓	✓	✓			-003
4	Baffle Out		905	C	SW	7	✓	✓	✓	✓	✓	✓	✓	✓			-004
5	Dup		824	C	SW	7	✓	✓	✓	✓	✓	✓	✓	✓			-005

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Yura	5/27/24	13:50	Patrick	5/27/24	1350
Returned: / /	Via:	Patrick	6/7/24	950	Helen Yura	6.7.24	9:50

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 08 1.5 OC

Sampling Kit No.: 10051

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 06/19/24
Contact Name: **Mike Hardin**	Date Received: 06/19/24
Project Name: Keystone Drive BMP Autosampler	Time Received: 16:30
Project Number: FW7915	Date Reported : 07/14/24
Phone Number: (407) 321-7030	Date Emailed : 07/14/24
Fax Number: NA	SRL Work Order # 24-06038

SRL WO #	Clients #	Matrix	Analysis Requested
2406038-001	Upflow In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2406038-002	Upflow Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2406038-003	Baffle In	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2406038-004	Baffle Out	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2406038-005	Dup	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

This report, which includes the attached Chain-of-Custody, shall not be reproduced except in full, without written approval of the laboratory.

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06038
Received Date : 06/19/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow In**
SRL (Lab) ID# : 2406038-001
Date Collected : 6/19/2024
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	06/24/24	06/24/24
Nitrate/Nitrite as N		**0.079**		mg/L	1	0.015	0.050	EPA 353.2	06/22/24	06/22/24
Nitrate/Nitrite as N (Dissolved)		**0.075**		mg/L	1	0.015	0.050	EPA 353.2	06/21/24	06/21/24
Orthophosphate as P	1426-54-42	**0.040**		mg/L	1	0.0038	0.0040	EPA 365.1	06/20/24	06/20/24
Phosphorus	7723-14-0	**0.069**		mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Phosphorus (Dissolved)	7723-14-0	**0.053**		mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**12.2**		mg/L	1	5.0	5.0	SM 2320B	06/20/24	06/20/24
Total Kjeldahl Nitrogen	7727-37-9	**0.22**	I	mg/L	1	0.20	0.50	EPA 351.2	06/27/24	06/28/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.34**	I	mg/L	1	0.20	0.50	EPA 351.2	06/24/24	06/24/24
Total Nitrogen	17778-88-0	**0.30**	I	mg/L	1	0.20	0.50	CALC	06/28/24	06/28/24
Total Nitrogen (Dissolved)	17778-88-0	**0.42**	I	mg/L	1	0.20	0.50	CALC	06/30/24	06/30/24
Total Suspended Solids		**4.5**		mg/L	1	1.0	1.0	M-2540D-201	06/20/24	06/20/24
Total Solids		**20.0**		mg/L	1	5.0	10.0	SM 2540B	06/25/24	06/25/24
Total Organic Carbon		**2.3**		mg/L	1	0.50	1.0	SM 5310B	06/25/24	06/25/24

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2406038-002
Date Collected : 6/19/2024
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	06/24/24	06/24/24
Nitrate/Nitrite as N		**0.055**		mg/L	1	0.015	0.050	EPA 353.2	06/28/24	06/28/24
Nitrate/Nitrite as N (Dissolved)		**0.066**		mg/L	1	0.015	0.050	EPA 353.2	06/21/24	06/21/24
Orthophosphate as P	1426-54-42	**0.022**		mg/L	1	0.0038	0.0040	EPA 365.1	06/20/24	06/20/24
Phosphorus	7723-14-0	**0.055**		mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Phosphorus (Dissolved)	7723-14-0	**0.041**		mg/L	1	0.0028	0.0040	EPA 365.3	6//21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**13.2**		mg/L	1	5.0	5.0	SM 2320B	06/20/24	06/20/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/27/24	06/28/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/24/24	06/24/24
Total Nitrogen	17778-88-0	**0.23**	I	mg/L	1	0.20	0.50	CALC	06/30/24	06/30/24
Total Nitrogen (Dissolved)	17778-88-0	**0.24**	I	mg/L	1	0.20	0.50	CALC	06/30/24	06/30/24
Total Suspended Solids		**9.5**		mg/L	1	1.0	1.0	M-2540D-201	06/20/24	06/20/24
Total Solids		**22.0**		mg/L	1	5.0	10.0	SM 2540B	06/25/24	06/25/24
Total Organic Carbon		**5.4**		mg/L	1	0.50	1.0	SM 5310B	06/25/24	06/25/24

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06038
Received Date : 06/19/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Baffle In**
SRL (Lab) ID# : 2406038-003
Date Collected : 6/19/2024
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	06/24/24	06/24/24
Nitrate/Nitrite as N		**0.071**		mg/L	1	0.015	0.050	EPA 353.2	06/28/24	06/28/24
Nitrate/Nitrite as N (Dissolved)		**0.078**		mg/L	1	0.015	0.050	EPA 353.2	06/21/24	06/21/24
Orthophosphate as P	1426-54-42	**0.041**		mg/L	1	0.0038	0.0040	EPA 365.1	06/20/24	06/20/24
Phosphorus	7723-14-0	**0.13**		mg/L	1	0.0028	0.0040	EPA 365.3	06/27/24	07/02/24
Phosphorus (Dissolved)	7723-14-0	**0.034**		mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**13.2**		mg/L	1	5.0	5.0	SM 2320B	06/20/24	06/20/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/27/24	06/28/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/24/24	06/24/24
Total Nitrogen	17778-88-0	**0.22**	I	mg/L	1	0.20	0.50	CALC	06/30/24	06/30/24
Total Nitrogen (Dissolved)	17778-88-0	**0.25**	I	mg/L	1	0.20	0.50	CALC	06/30/24	06/30/24
Total Suspended Solids		**18.7**		mg/L	1	1.0	1.0	M-2540D-201	06/20/24	06/20/24
Total Solids		**40.0**		mg/L	1	5.0	10.0	SM 2540B	06/25/24	06/25/24
Total Organic Carbon		**4.5**		mg/L	1	0.50	1.0	SM 5310B	06/26/24	06/26/24

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2406038-004
Date Collected : 6/19/2024
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	06/24/24	06/24/24
Nitrate/Nitrite as N		**0.072**		mg/L	1	0.015	0.050	EPA 353.2	06/28/24	06/28/24
Nitrate/Nitrite as N (Dissolved)		**0.078**		mg/L	1	0.015	0.050	EPA 353.2	06/21/24	06/21/24
Orthophosphate as P	1426-54-42	**0.026**		mg/L	1	0.0038	0.0040	EPA 365.1	06/20/24	06/20/24
Phosphorus	7723-14-0	**0.071**		mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Phosphorus (Dissolved)	7723-14-0	**0.034**		mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**12.2**		mg/L	1	5.0	5.0	SM 2320B	06/20/24	06/20/24
Total Kjeldahl Nitrogen	7727-37-9	**0.22**	I	mg/L	1	0.20	0.50	EPA 351.2	06/27/24	06/28/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.20**	I	mg/L	1	0.20	0.50	EPA 351.2	06/24/24	06/24/24
Total Nitrogen	17778-88-0	**0.29**	I	mg/L	1	0.20	0.50	CALC	06/30/24	06/30/24
Total Nitrogen (Dissolved)	17778-88-0	**0.28**	I	mg/L	1	0.20	0.50	CALC	06/30/24	06/30/24
Total Suspended Solids		**7.8**		mg/L	1	1.0	1.0	M-2540D-201	06/20/24	06/20/24
Total Solids		**18.0**		mg/L	1	5.0	10.0	SM 2540B	06/25/24	06/25/24
Total Organic Carbon		**7.2**		mg/L	1	0.50	1.0	SM 5310B	06/26/24	06/26/24

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06038
Received Date : 06/19/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Dup**
SRL (Lab) ID# : 2406038-005
Date Collected : 6/19/2024
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	06/24/24	06/24/24
Nitrate/Nitrite as N		**0.062**		mg/L	1	0.015	0.050	EPA 353.2	06/28/24	06/28/24
Nitrate/Nitrite as N (Dissolved)		**0.071**		mg/L	1	0.015	0.050	EPA 353.2	06/21/24	06/21/24
Orthophosphate as P	1426-54-42	**0.030**		mg/L	1	0.0038	0.0040	EPA 365.1	06/20/24	06/20/24
Phosphorus	7723-14-0	**0.055**		mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Phosphorus (Dissolved)	7723-14-0	**0.037**		mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	**11.2**		mg/L	1	5.0	5.0	SM 2320B	06/20/24	06/20/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/27/24	06/28/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/24/24	06/24/24
Total Nitrogen	17778-88-0	**0.23**	I	mg/L	1	0.20	0.50	CALC	06/30/24	06/30/24
Total Nitrogen (Dissolved)	17778-88-0	**0.24**	I	mg/L	1	0.20	0.50	CALC	06/30/24	06/30/24
Total Suspended Solids		**10.0**		mg/L	1	1.0	1.0	M-2540D-201	06/20/24	06/20/24
Total Solids		**14.0**		mg/L	1	5.0	10.0	SM 2540B	06/25/24	06/25/24
Total Organic Carbon		**5.4**		mg/L	1	0.50	1.0	SM 5310B	06/26/24	06/26/24

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	06/24/24	06/24/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	06/22/24	06/22/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	06/28/24	06/28/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	06/21/24	06/21/24
Orthophosphate as P	1426-54-42	0.0038	U	mg/L	1	0.0038	0.0040	EPA 365.1	06/20/24	06/20/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	06/27/24	07/02/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	06/21/24	06/22/24
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	06/20/24	06/20/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/27/24	06/28/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	06/24/24	06/24/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	06/20/24	06/20/24
Total Solids		5.0	U	mg/L	1	5.0	10.0	SM 2540B	06/25/24	06/25/24
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	06/24/24	06/24/24
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	06/26/24	06/26/24

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06038
Received Date : 06/19/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	103/81/77	90-110	90-110	QM-07	2	0-20
Nitrate/Nitrite as N	99/81/85	90-110	90-110	QM-07	5	0-20
Nitrate/Nitrite as N (Dissolved)	104/98/101	90-110	90-110		2	0-20
Total Kjeldahl Nitrogen	106/104/104	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen (Dissolved)	106/107/107	90-110	90-110		0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	105/70/70	90-110	75-115	QM-07	0	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	93/98/99	90-110	80-120		1	0-20
Phosphorus	92/92/92	90-110	80-120		0	0-20
Phosphorus	97/83/100	90-110	80-120		16	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	106/105/104	90-110	90-110		0	0-20

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	104	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	12.2	11.2	9		0-20

	% Recovery LCS	Acceptable Limits
Total Solids	100	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	40.0	40.0	0		0-10

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06038
Received Date : 06/19/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	94/92/93	90-110	80-120		1	0-20
Total Organic Carbon	98/97/98	90-110	80-120		1	0-20
Total Organic Carbon	98/99/99	90-110	80-120		1	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	85	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	9.2	10.0	8		0-10

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NELAP Certified
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SRL Lab Ref # : 24-06038
Received Date : 06/19/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Autosampler
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2406038

5

Page of

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: Keystone Drive BMP Autosampling
City, State, Zip: Orlando Florida 32817	Project Location:
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	TOC	Alkalinity (Total Solids)	TKN (Total Nitrogen, Ammonia) TP (Total Phosphorus)	Particulate Nitrogen	Particulate Phosphorus	Orthophosphate	TSS			
1	Upflow In	6/19/24	1448	C	SW	7		✓	✓	✓	✓	✓	✓	✓			2406038-001
2	Upflow Out		1500	C	SW	7		✓	✓	✓	✓	✓	✓	✓			-002
3	Baffle In		1535	C	SW	7		✓	✓	✓	✓	✓	✓	✓			-003
4	Baffle Out		1600	C	SW	7		✓	✓	✓	✓	✓	✓	✓			-004
5	DUP		1505	C	SW	7		✓	✓	✓	✓	✓	✓	✓			-005

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Jarvis	6-14-24	12:35	[signature]	6-14-24	1235
Returned: / /	Via:	[signature]	6/19/24	1630	Helen Jarvis	6-19-24	16:30

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): X895 1.6 oC

Sampling Kit No.: 10073

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 07/16/24
Contact Name: **Mike Hardin**	Date Received: 07/16/24
Project Name: OC Keystone Drive Yr 2	Time Received: 11:30
Project Number: FW7915	Date Reported : 08/05/24
Phone Number: (407) 321-7030	Date Emailed : 08/05/24
Fax Number: NA	SRL Work Order # 24-07022

SRL WO #	Clients #	Matrix	Analysis Requested
2407022-001	Upflow In	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2407022-002	Upflow Out	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2407022-003	Baffle In	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2407022-004	Baffle Out	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2407022-005	Dup	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

This report, which includes the attached Chain-of-Custody, shall not be reproduced except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-07022
Received Date : 07/16/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow In**
SRL (Lab) ID# : 2407022-001
Date Collected : 07/16/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.83**		mg/L	1	0.20	0.50	EPA 351.2	07/18/24	07/19/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	07/17/24	07/17/24
Total Nitrogen	17778-88-0	**0.83**		mg/L	1	0.20	0.50	CALC	07/24/24	07/24/24
Phosphorus	7723-14-0	**0.11**		mg/L	1	0.0028	0.0040	EPA 365.3	07/25/24	07/26/24
Total Suspended Solids		**12.0**		mg/L	1	1.0	1.0	M-2540D-201	07/17/24	07/17/24

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2407022-002
Date Collected : 07/16/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.52**		mg/L	1	0.20	0.50	EPA 351.2	07/18/24	07/19/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	07/17/24	07/17/24
Total Nitrogen	17778-88-0	**0.52**		mg/L	1	0.20	0.50	CALC	07/24/24	07/24/24
Phosphorus	7723-14-0	**0.11**		mg/L	1	0.0028	0.0040	EPA 365.3	07/25/24	07/26/24
Total Suspended Solids		**12.0**		mg/L	1	1.0	1.0	M-2540D-201	07/17/24	07/17/24

Client ID # : **Baffle In**
SRL (Lab) ID# : 2407022-003
Date Collected : 07/16/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.38**	I	mg/L	1	0.20	0.50	EPA 351.2	07/18/24	07/19/24
Nitrate/Nitrite as N		**0.11**		mg/L	1	0.015	0.050	EPA 353.2	07/17/24	07/17/24
Total Nitrogen	17778-88-0	**0.49**	I	mg/L	1	0.20	0.50	CALC	07/24/24	07/24/24
Phosphorus	7723-14-0	**0.077**		mg/L	1	0.0028	0.0040	EPA 365.3	07/25/24	07/26/24
Total Suspended Solids		**6.5**		mg/L	1	1.0	1.0	M-2540D-201	07/17/24	07/17/24

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2407022-004
Date Collected : 07/16/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.56**		mg/L	1	0.20	0.50	EPA 351.2	07/18/24	07/19/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	07/24/24	07/24/24
Total Nitrogen	17778-88-0	**0.56**		mg/L	1	0.20	0.50	CALC	07/25/24	07/25/24
Phosphorus	7723-14-0	**0.080**		mg/L	1	0.0028	0.0040	EPA 365.3	07/25/24	07/26/24
Total Suspended Solids		**4.4**		mg/L	1	1.0	1.0	M-2540D-201	07/17/24	07/17/24

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-07022
Received Date : 07/16/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Dup**
SRL (Lab) ID# : 2407022-005
Date Collected : 07/16/24
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.38**	I	mg/L	1	0.20	0.50	EPA 351.2	07/18/24	07/19/24
Nitrate/Nitrite as N		**0.11**		mg/L	1	0.015	0.050	EPA 353.2	07/24/24	07/24/24
Total Nitrogen	17778-88-0	**0.48**	I	mg/L	1	0.20	0.50	CALC	07/25/24	07/25/24
Phosphorus	7723-14-0	**0.077**		mg/L	1	0.0028	0.0040	EPA 365.3	07/25/24	07/26/24
Total Suspended Solids		**5.6**		mg/L	1	1.0	1.0	M-2540D-201	07/17/24	07/17/24

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-07022
Received Date : 07/16/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	07/17/24	07/17/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	07/24/24	07/24/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	07/19/24	07/19/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	07/25/24	07/26/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	07/17/24	07/17/24

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-07022
Received Date : 07/16/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	107/100/101	mg/L	90-110	90-110		1	0-20
Nitrate/Nitrite as N	104/96/92	mg/L	90-110	90-110		5	0-20
Total Kjeldahl Nitrogen	95/94/96	mg/L	90-110	90-110		2	0-20
Total Kjeldahl Nitrogen	93/97/97	mg/L	90-110	90-110		0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	94/97/86	90-110	80-120		9	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	97	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	4.8	4.4	9		0-20

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-07022
Received Date : 07/16/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

Chain of Custody

2407022

Page 5 of

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone Drive Yr 2
City, State, Zip: Orlando Florida 32817	Project Location:
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

Analyses Requested

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Total Nitrogen	Total Phosphorus (low level)	TSS							
1	Upflow In	7/16/24	1030	C	SW	2	✓	✓	✓							2407022-001
2	Upflow out		1040	C	SW	2	✓	✓	✓							-002
3	Baffle In		1050	C	SW	2	✓	✓	✓							-003
4	Baffle out		1100	C	SW	2	✓	✓	✓							-004
5	DUP		1055	C	SW	2	✓	✓	✓							-005

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turn	7-10-24	1435		7/10/24	1435
Returned: / /	Via:		7/16/24	1130	Helen Turn	7-16-24	1130

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): X453 3.2°C

Sampling Kit No.: 10104

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

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Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 01/21/25
Contact Name: **Mike Hardin**	Date Received: 01/21/25
Project Name: OC Keystone Drive Yr 2	Time Received: 14:07
Project Number: FW7915	Date Reported : 02/06/25
Phone Number: (407) 321-7030	Date Emailed : 02/06/25
Fax Number: NA	SRL Work Order # 25-01033

SRL WO #	Clients #	Matrix	Analysis Requested
2501033-001	Upflow In	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2501033-002	Baffle In	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2501033-003	Baffle Out	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2501033-004	Dup	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-01033
Received Date : 01/21/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow In**
SRL (Lab) ID# : 2501033-001
Date Collected : 01/21/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**1.3**		mg/L	1	0.20	0.50	EPA 351.2	02/01/25	02/02/25
Nitrate/Nitrite as N		**1.2**		mg/L	1	0.015	0.050	EPA 353.2	01/23/25	01/23/25
Total Nitrogen	17778-88-0	**2.5**		mg/L	1	0.20	0.50	CALC	02/03/25	02/03/25
Phosphorus	7723-14-0	**0.17**		mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		**38.0**		mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

Client ID # : **Baffle In**
SRL (Lab) ID# : 2501033-002
Date Collected : 01/21/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.74**		mg/L	1	0.20	0.50	EPA 351.2	02/01/25	02/02/25
Nitrate/Nitrite as N		**1.0**		mg/L	1	0.015	0.050	EPA 353.2	01/24/25	01/24/25
Total Nitrogen	17778-88-0	**1.7**		mg/L	1	0.20	0.50	CALC	02/03/25	02/03/25
Phosphorus	7723-14-0	**0.072**		mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		**8.4**		mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2501033-003
Date Collected : 01/21/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.94**		mg/L	1	0.20	0.50	EPA 351.2	02/01/25	02/02/25
Nitrate/Nitrite as N		**0.77**		mg/L	1	0.015	0.050	EPA 353.2	01/23/25	01/23/25
Total Nitrogen	17778-88-0	**1.7**		mg/L	1	0.20	0.50	CALC	02/03/25	02/03/25
Phosphorus	7723-14-0	**0.12**		mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		**11.1**		mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

Client ID # : **Dup**
SRL (Lab) ID# : 2501033-004
Date Collected : 01/21/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.95**		mg/L	1	0.20	0.50	EPA 351.2	02/01/25	02/02/25
Nitrate/Nitrite as N		**0.97**		mg/L	1	0.015	0.050	EPA 353.2	01/24/25	01/24/25
Total Nitrogen	17778-88-0	**1.9**		mg/L	1	0.20	0.50	CALC	02/03/25	02/03/25
Phosphorus	7723-14-0	**0.12**		mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		**11.4**		mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-01033
Received Date : 01/21/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	01/23/25	01/23/25
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	01/24/25	01/24/25
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	02/03/25	02/03/25
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

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NELAP Certified
FDOH Cert # : E83484
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Received Date : 01/21/25

Mike Hardin
Geosyntec Consultants, Inc.
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Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	93/89/92	90-110	90-110	QM-07	1	0-20
Nitrate/Nitrite as N	104/105/103	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen	95/95/95	90-110	90-110		0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	101/105/105	90-110	80-120		0	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	88	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	39.2	38.0	3		0-20

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-01033
Received Date : 01/21/25

Mike Hardin
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3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2501033

Page 1 of 4

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: Keystone Year 2
City, State, Zip: Orlando Florida 32817	Project Location: Orange County, FL
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Makese Powe / BFA

Sampler(s) Signature(s):

Project Number: FW-7915

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: T. Nitrogen T. Phosphorus (4)	Analyses Requested: TSS							
1	Upflow In	01/21/25	1300	C	SW	2		✓	✓							2501033-001
2	Upflow Out	"	1315	C	SW	2		✓	✓							-002
3	Baffle Out	"	1221	C	SW	2		✓	✓							-003
4	Dup	"	1235	C	SW	2		✓	✓							-004

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	11-18-24	10:30			
Returned: / /	Via:		01-21-25	1417		1-21-25	14:17

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 05 2.3°C

Sampling Kit No.: 10242

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 01/21/25
Contact Name: **Mike Hardin**	Date Received: 01/21/25
Project Name: OC Keystone Drive Yr 2	Time Received: 14:07
Project Number: FW7915	Date Reported : 02/06/25
Phone Number: (407) 321-7030	Date Emailed : 02/06/25
Fax Number: NA	SRL Work Order # 25-01033

SRL WO #	Clients #	Matrix	Analysis Requested
2501033-001	Upflow In	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2501033-002	Upflow Out	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2501033-003	Baffle Out	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2501033-004	Dup	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-01033
Received Date : 01/21/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Upflow In**
SRL (Lab) ID# : 2501033-001
Date Collected : 01/21/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**1.3**		mg/L	1	0.20	0.50	EPA 351.2	02/01/25	02/02/25
Nitrate/Nitrite as N		**1.2**		mg/L	1	0.015	0.050	EPA 353.2	01/23/25	01/23/25
Total Nitrogen	17778-88-0	**2.5**		mg/L	1	0.20	0.50	CALC	02/03/25	02/03/25
Phosphorus	7723-14-0	**0.17**		mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		**38.0**		mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

Client ID # : **Upflow Out**
SRL (Lab) ID# : 2501033-002
Date Collected : 01/21/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.74**		mg/L	1	0.20	0.50	EPA 351.2	02/01/25	02/02/25
Nitrate/Nitrite as N		**1.0**		mg/L	1	0.015	0.050	EPA 353.2	01/24/25	01/24/25
Total Nitrogen	17778-88-0	**1.7**		mg/L	1	0.20	0.50	CALC	02/03/25	02/03/25
Phosphorus	7723-14-0	**0.072**		mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		**8.4**		mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

Client ID # : **Baffle Out**
SRL (Lab) ID# : 2501033-003
Date Collected : 01/21/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.94**		mg/L	1	0.20	0.50	EPA 351.2	02/01/25	02/02/25
Nitrate/Nitrite as N		**0.77**		mg/L	1	0.015	0.050	EPA 353.2	01/23/25	01/23/25
Total Nitrogen	17778-88-0	**1.7**		mg/L	1	0.20	0.50	CALC	02/03/25	02/03/25
Phosphorus	7723-14-0	**0.12**		mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		**11.1**		mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

Client ID # : **Dup**
SRL (Lab) ID# : 2501033-004
Date Collected : 01/21/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.95**		mg/L	1	0.20	0.50	EPA 351.2	02/01/25	02/02/25
Nitrate/Nitrite as N		**0.97**		mg/L	1	0.015	0.050	EPA 353.2	01/24/25	01/24/25
Total Nitrogen	17778-88-0	**1.9**		mg/L	1	0.20	0.50	CALC	02/03/25	02/03/25
Phosphorus	7723-14-0	**0.12**		mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		**11.4**		mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-01033
Received Date : 01/21/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	01/23/25	01/23/25
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	01/24/25	01/24/25
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	02/03/25	02/03/25
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	01/25/25	01/27/25
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	01/24/25	01/24/25

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
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Received Date : 01/21/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	93/89/92	90-110	90-110	QM-07	1	0-20
Nitrate/Nitrite as N	104/105/103	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen	95/95/95	90-110	90-110		0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	101/105/105	90-110	80-120		0	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	88	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	39.2	38.0	3		0-20

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-01033
Received Date : 01/21/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2501033

Page 1 of 4

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: Keystone Year 2
City, State, Zip: Orlando Florida 32817	Project Location: Orange County, FL
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Makese Powe / BFA

Sampler(s) Signature(s):

Project Number: FW-7915

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: T. Nitrogen T. Phosphorus (4)	Analyses Requested: TSS							
1	Upflow In	01/21/25	1300	C	SW	2		✓	✓							2501033-001
2	Upflow Out	"	1315	C	SW	2		✓	✓							-002
3	Baffle Out	"	1221	C	SW	2		✓	✓							-003
4	Dup	"	1235	C	SW	2		✓	✓							-004

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	11-18-24	10:30			
Returned: / /	Via:		01-21-25	1417		1-21-25	14:17

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 05 2.3°C

Sampling Kit No.: 10242

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 02/24/25
Contact Name: **Mike Hardin**	Date Received: 02/24/25
Project Name: OC Keystone Yr 2	Time Received: 12:45
Project Number: FW7915	Date Reported : 03/14/25
Phone Number: (407) 321-7030	Date Emailed : 03/14/25
Fax Number: NA	SRL Work Order # 25-02044

SRL WO #	Clients #	Matrix	Analysis Requested
2502044-001	Upflow In	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2502044-002	Upflow Out	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2502044-003	Baffle In	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2502044-004	Baffle Out	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2502044-005	Dup	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS

Saul Roa
Technical Manager
Southern Research Laboratories, Inc.

This report, which includes the attached Chain-of-Custody, shall not be reproduced except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-02044
Received Date : 02/24/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Client ID # : Upflow In
SRL (Lab) ID# : 2502044-001
Date Collected : 02/24/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**1.2**		mg/L	1	Reported : 03/	0.50	EPA 351.2	02/27/25	03/12/25
Nitrate/Nitrite as N		0.015	U	mg/L	1	Emailed : 03/	0.050	EPA 353.2	02/26/25	02/26/25
Total Nitrogen	17778-88-0	**1.2**		mg/L	1	0.20	0.50	CALC	03/12/25	03/12/25
Phosphorus	7723-14-0	**0.23**		mg/L	1	0.0028	0.0040	EPA 365.3	03/01/25	03/03/25
Total Suspended Solids		**14.8**		mg/L	1	1.0	1.0	SM-2540D-2011	02/26/25	02/26/25

Client ID # : Upflow Out
SRL (Lab) ID# : 2502044-002
Date Collected : 02/24/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**1.2**		mg/L	1	0.20	0.50	EPA 351.2	02/27/25	03/12/25
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	02/26/25	02/26/25
Total Nitrogen		**1.3**		mg/L	1	0.20	0.50	CALC	03/12/25	03/12/25
Phosphorus	7723-14-0	**0.35**		mg/L	1	0.0028	0.0040	EPA 365.3	03/01/25	03/03/25
Total Suspended Solids		**11.4**		mg/L	1	1.0	1.0	SM-2540D-2011	02/26/25	02/26/25

Client ID # : Baffle In
SRL (Lab) ID# : 2502044-003
Date Collected : 02/24/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**1.0**		mg/L	1	0.20	0.50	EPA 351.2	02/27/25	03/12/25
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	02/26/25	02/26/25
Total Nitrogen		**1.0**		mg/L	1	0.20	0.50	CALC	03/12/25	03/12/25
Phosphorus	7723-14-0	**0.20**		mg/L	1	0.0028	0.0040	EPA 365.3	03/01/25	03/03/25
Total Suspended Solids		**6.8**		mg/L	1	1.0	1.0	SM-2540D-2011	02/26/25	02/26/25

Client ID # : Baffle Out
SRL (Lab) ID# : 2502044-004
Date Collected : 02/24/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**1.2**		mg/L	1	0.20	0.50	EPA 351.2	02/27/25	03/12/25
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	02/26/25	02/26/25
Total Nitrogen		**1.2**		mg/L	1	0.20	0.50	CALC	03/12/25	03/12/25
Phosphorus	7723-14-0	**0.21**		mg/L	1	0.0028	0.0040	EPA 365.3	03/01/25	03/03/25
Total Suspended Solids		**7.0**		mg/L	1	1.0	1.0	SM-2540D-2011	02/26/25	02/26/25

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-02044
Received Date : 02/24/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Dup**
SRL (Lab) ID# : 2502044-005
Date Collected : 02/24/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**1.2**		mg/L	1	Reported : 03/	0.50	EPA 351.2	02/27/25	03/12/25
Nitrate/Nitrite as N		0.015	U	mg/L	1	Emailed : 03/	0.050	EPA 353.2	02/26/25	02/26/25
Total Nitrogen		**1.2**		mg/L	1	0.20	0.50	CALC	03/12/25	03/12/25
Phosphorus	7723-14-0	**0.23**		mg/L	1	0.0028	0.0040	EPA 365.3	03/01/25	03/03/25
Total Suspended Solids		**9.2**		mg/L	1	1.0	1.0	M-2540D-201	02/26/25	02/26/25

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	02/26/25	02/26/25
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	02/26/25	03/13/25
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	03/01/25	03/03/25
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	02/26/25	02/26/25

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an MBE Environmental Laboratory
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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-02044
Received Date : 02/24/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	98/94/93	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen	99/99/99	90-110	90-110		0	0-20
Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)					Date Reported : 03/14/25 Date Emailed : 03/14/25	

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	99/99/100	90-110	80-120		1	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	90	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	15.0	14.8	1		0-10

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Received Date : 02/24/25

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3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
OC Keystone Drive Yr 2
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Chain of Custody

2502044
-5

Page of

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone Yr 2
City, State, Zip: Orlando Florida 32817	Project Location: Orange County, FL
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

Analyses Requested

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	T Nitrogen T Phosphorus	TSS							
1	Upflow In	2/24/25	1120	C	SW	2	✓	✓							2502044-001
2	Upflow Out		1036	C	SW	2	✓	✓		Low Volumn					-002
3	Baffle In		1210	C	SW	2	✓	✓							-003
4	Baffle Out		1145	C	SW	2	✓	✓							-004
5	DUP		1126	C	SW	2	✓	✓							-005

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turner	2-25-24	10:55		2/25/24	1055
Returned: / /	Via:		2/24/25	1245	Helen Turner	2-24-25	1245

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 20,08 33 oc

Sampling Kit No.: 10121

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.
WWW.SRLAB.COM

Thank you Mike Hardin for the opportunity to be of service to you and your company, We Sincerely Appreciate Your Business.

SRL certifies these Laboratory Results were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically call noted in the report. Results relate only to the samples as received.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Year 2 Stormwater

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **03/05/25 16:15**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2503007**

Item#	Lab Sample ID	Client Sample ID	Collected Date	Collected Time	Sample Matrix	Analysis Requested
1	2503007-001	Upflow In	03/05/25	15:25	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
2	2503007-002	Upflow Out	03/05/25	15:28	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
3	2503007-003	Baffle In	03/05/25	15:38	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
4	2503007-004	Baffle Out	03/05/25	15:42	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
5	2503007-005	Dup	03/05/25	15:32	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N

Saul Roa
Technical Manager - SRL

This report, which includes the attached Chain-Of-Custody, shall not be reported except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Year 2 Stormwater

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **03/05/25 16:15**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2503007**

********** Analytical Results **********

Client Sample ID: **Upflow In**
Lab Sample ID: **2503007-001**
Date Collected: **03/05/2025 15:25**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	***0.15***	mg/L	1	0.0028	0.004	EPA 365.3	03/20/25 12:42	AMD1	1084352	-
Nitrate-Nitrite (N) (1820)	***0.43***	mg/L	1	0.015	0.05	EPA 353.2	03/08/25 15:47	KW1	1082385	-
Nitrogen- Total (FL-INORG-002)	***1.4***	mg/L	1	0.2	0.5	SM18 Total N	03/22/25 22:11	RRB	1086037	-
Nitrogen- Total Kjeldahl (1795)	***0.93***	mg/L	1	0.2	0.5	EPA 351.2	03/22/25 17:13	CMB	1084311	-
Residues- Nonfilterable (TSS) (1960)	***6.89***	mg/L	1	1	1	SM 2540D	03/06/25 14:45	SRR	03062514MB	-

Client Sample ID: **Upflow Out**
Lab Sample ID: **2503007-002**
Date Collected: **03/05/25 15:28**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	***0.1***	mg/L	1	0.0028	0.004	EPA 365.3	03/20/25 12:46	AMD1	1084352	-
Nitrate-Nitrite (N) (1820)	***0.21***	mg/L	1	0.015	0.05	EPA 353.2	03/08/25 15:49	KW1	1082385	-
Nitrogen- Total (FL-INORG-002)	***0.84***	mg/L	1	0.2	0.5	SM18 Total N	03/22/25 22:11	RRB	1086037	-
Nitrogen- Total Kjeldahl (1795)	***0.63***	mg/L	1	0.2	0.5	EPA 351.2	03/22/25 17:14	CMB	1084311	-
Residues- Nonfilterable (TSS) (1960)	***3.73***	mg/L	1	1	1	SM 2540D	03/06/25 14:52	SRR	03062514MB	-

Client Sample ID: **Baffle In**
Lab Sample ID: **2503007-003**
Date Collected: **03/05/25 15:38**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	***0.11***	mg/L	1	0.0028	0.004	EPA 365.3	03/20/25 12:47	AMD1	1084352	-
Nitrate-Nitrite (N) (1820)	***0.89***	mg/L	1	0.015	0.05	EPA 353.2	03/08/25 15:50	KW1	1082385	-
Nitrogen- Total (FL-INORG-002)	***1.7***	mg/L	1	0.2	0.5	SM18 Total N	03/22/25 22:11	RRB	1086037	-
Nitrogen- Total Kjeldahl (1795)	***0.83***	mg/L	1	0.2	0.5	EPA 351.2	03/22/25 17:19	CMB	1084311	-
Residues- Nonfilterable (TSS) (1960)	***2.92***	mg/L	1	1	1	SM 2540D	03/06/25 14:56	SRR	03062514MB	-

Client Sample ID: **Baffle Out**
Lab Sample ID: **2503007-004**
Date Collected: **03/05/25 15:42**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	***0.083***	mg/L	1	0.0028	0.004	EPA 365.3	03/20/25 12:48	AMD1	1084352	-
Nitrate-Nitrite (N) (1820)	0.015 U	mg/L	1	0.015	0.05	EPA 353.2	03/08/25 15:51	KW1	1082385	-
Nitrogen- Total (FL-INORG-002)	***0.77***	mg/L	1	0.2	0.5	SM18 Total N	03/22/25 22:11	RRB	1086037	-
Nitrogen- Total Kjeldahl (1795)	***0.77***	mg/L	1	0.2	0.5	EPA 351.2	03/22/25 17:20	CMB	1084311	-
Residues- Nonfilterable (TSS) (1960)	***1.85***	mg/L	1	1	1	SM 2540D	03/06/25 15:02	SRR	03062514MB	-

Client Sample ID: **Dup**
Lab Sample ID: **2503007-005**
Date Collected: **03/05/25 15:32**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	***0.1***	mg/L	1	0.0028	0.004	EPA 365.3	03/20/25 12:50	AMD1	1084352	-
Nitrate-Nitrite (N) (1820)	***0.21***	mg/L	1	0.015	0.05	EPA 353.2	03/08/25 15:53	KW1	1082385	-
Nitrogen- Total (FL-INORG-002)	***0.98***	mg/L	1	0.2	0.5	SM18 Total N	03/22/25 22:11	RRB	1086037	-
Nitrogen- Total Kjeldahl (1795)	***0.78***	mg/L	1	0.2	0.5	EPA 351.2	03/22/25 17:21	CMB	1084311	-
Residues- Nonfilterable (TSS) (1960)	***2.92***	mg/L	1	1	1	SM 2540D	03/06/25 15:07	SRR	03062514MB	-

********** Detection Summary : **********

Client Sample ID: **Upflow In**
Lab Sample ID: **2503007-001**
Date Collected: **03/05/2025 15:25**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.93**	mg/L	1	0.2	0.5	03/22/25 17:13	CMB	1084311	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.43**	mg/L	1	0.015	0.05	03/08/25 15:47	KW1	1082385	EPA 353.2 (Nitrate-Nitrite (N))

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ANALYTICAL REPORT

For Project:
OC Keystone Year 2 Stormwater

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **03/05/25 16:15**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2503007**

Client Sample ID: **Upflow In** Date Collected: **03/05/2025 15:25** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-001** Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Phosphorus (7723140)	**0.15**	mg/L	1	0.0028	0.004	03/20/25 12:42	AMD1	1084352	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**6.89**	mg/L	1	1	1	03/06/25 14:45	SRR	03062514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1.4**	mg/L	1	0.2	0.5	03/22/25 22:11	RRB	1086037	SM18 Total N

Client Sample ID: **Upflow Out** Date Collected: **03/05/25 15:28** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-002** Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.63**	mg/L	1	0.2	0.5	03/22/25 17:14	CMB	1084311	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.21**	mg/L	1	0.015	0.05	03/08/25 15:49	KW1	1082385	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.1**	mg/L	1	0.0028	0.004	03/20/25 12:46	AMD1	1084352	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**3.73**	mg/L	1	1	1	03/06/25 14:52	SRR	03062514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**0.84**	mg/L	1	0.2	0.5	03/22/25 22:11	RRB	1086037	SM18 Total N

Client Sample ID: **Baffle In** Date Collected: **03/05/25 15:38** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-003** Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.83**	mg/L	1	0.2	0.5	03/22/25 17:19	CMB	1084311	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.89**	mg/L	1	0.015	0.05	03/08/25 15:50	KW1	1082385	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.11**	mg/L	1	0.0028	0.004	03/20/25 12:47	AMD1	1084352	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**2.92**	mg/L	1	1	1	03/06/25 14:56	SRR	03062514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1.7**	mg/L	1	0.2	0.5	03/22/25 22:11	RRB	1086037	SM18 Total N

Client Sample ID: **Baffle Out** Date Collected: **03/05/25 15:42** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-004** Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.77**	mg/L	1	0.2	0.5	03/22/25 17:20	CMB	1084311	EPA 351.2
Phosphorus (7723140)	**0.083**	mg/L	1	0.0028	0.004	03/20/25 12:48	AMD1	1084352	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**1.85**	mg/L	1	1	1	03/06/25 15:02	SRR	03062514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**0.77**	mg/L	1	0.2	0.5	03/22/25 22:11	RRB	1086037	SM18 Total N

Client Sample ID: **Dup** Date Collected: **03/05/25 15:32** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-005** Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.78**	mg/L	1	0.2	0.5	03/22/25 17:21	CMB	1084311	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.21**	mg/L	1	0.015	0.05	03/08/25 15:53	KW1	1082385	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.1**	mg/L	1	0.0028	0.004	03/20/25 12:50	AMD1	1084352	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**2.92**	mg/L	1	1	1	03/06/25 15:07	SRR	03062514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**0.98**	mg/L	1	0.2	0.5	03/22/25 22:11	RRB	1086037	SM18 Total N

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ANALYTICAL REPORT

For Project:
OC Keystone Year 2 Stormwater

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **03/05/25 16:15**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2503007**

********** Quality Control : **********

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **2503007-006 MB** Sampled: 03/15/25 10:35 Analyzed: 03/22/25 16:56 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-006** Prep: 03/15/25 10:35

EPA 351.2

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrogen- Total Kjeldahl (1795)	0.2 U	mg/L	1	0.2	0.5	CMB	1084311	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **2503007-008 LCS** Sampled: 03/15/25 10:35 Analyzed: 03/22/25 16:57 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-007** Prep: 03/15/25 10:35

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	18.8	20	mg/L	1	0.2	0.5	94	CMB	1084311	90-110	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35941584001** Sampled: 03/07/25 12:15 Analyzed: 03/22/25 17:27 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-008** Prep: 03/15/25 10:35

EPA 351.2

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrogen- Total Kjeldahl (1795)	**0.94**	mg/L	1	0.2	0.5	CMB	1084311	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35941584001 MS** Sampled: 03/07/25 12:15 Analyzed: 03/22/25 17:30 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-009** Prep: 03/15/25 10:35

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	19.7	20	mg/L	1	0.2	0.5	94	0.94	CMB	1084311	90-110	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35941584001 MSD** Sampled: 03/07/25 12:15 Analyzed: 03/22/25 17:29 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-010** Prep: 03/15/25 10:35

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	19.7	20	mg/L	1	0.2	0.5	0	94	0.94	CMB	1084311	90-110	

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **2503007-011 MB** Sampled: 03/08/25 15:11 Analyzed: 03/08/25 15:11 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-011** Prep: 03/08/25 15:11

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrate-Nitrite (N) (1820)	0.015 U	mg/L	1	0.015	0.05	KW1	1082385	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **2503007-013 LCS** Sampled: 03/08/25 15:11 Analyzed: 03/08/25 15:12 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-012** Prep: 03/08/25 15:12

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ANALYTICAL REPORT

For Project:
OC Keystone Year 2 Stormwater

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **03/05/25 16:15**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2503007**

********** Quality Control : **********

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **2503007-013 LCS** Sampled: 03/08/25 15:11 Analyzed: 03/08/25 15:12 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-012** Prep: 03/08/25 15:12

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	1.9	2	mg/L	1	0.015	0.05	95	KW1	1082385	90-110	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35941162013** Sampled: 03/05/25 05:57 Analyzed: 03/08/25 15:34 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-013** Prep: 03/08/25 15:34

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrate-Nitrite (N) (1820)	**1**	mg/L	1	0.015	0.05	KW1	1082385	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35941162013 MS** Sampled: 03/05/25 05:57 Analyzed: 03/08/25 15:37 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-014** Prep: 03/08/25 15:37

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	2.3	2	mg/L	1	0.015	0.05	61	1	KW1	1082385	90-110	QM-07

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35941162013 MSD** Sampled: 03/05/25 05:57 Analyzed: 03/08/25 15:35 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-015** Prep: 03/08/25 15:35

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	2.4	2	mg/L	1	0.015	0.05	6	68	1	KW1	1082385	90-110	QM-07

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **2503007-016 MB** Sampled: 03/06/25 14:36 Analyzed: 03/06/25 14:36 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-016** Prep: 03/06/25 14:36

SM 2540D

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Residues- Nonfilterable (TSS) (1960)	1 U	mg/L	1	1	1	SRR	03062514MB	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **2503007-018 LCS** Sampled: 03/06/25 14:36 Analyzed: 03/06/25 14:39 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-017** Prep: 03/06/25 14:36

SM 2540D

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Residues- Nonfilterable (TSS) (1960)	89.2	100	mg/L	1	1	1	89	SRR	03062514MB	80-120	

QC — Classical Chemistry Parameters

Client Sample ID: **Upflow In DUP** Sampled: 03/05/2025 15:25 Analyzed: 03/06/25 15:14 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-018** Prep: 03/06/25 14:36

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ANALYTICAL REPORT

For Project:
OC Keystone Year 2 Stormwater

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FDOH # : **E83484**
Lab Received Date : **03/05/25 16:15**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2503007**

********** Quality Control : **********

QC — Classical Chemistry Parameters

Client Sample ID: **Upflow In DUP** Sampled: 03/05/2025 15:25 Analyzed: 03/06/25 15:14 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-018** Prep: 03/06/25 14:36

SM 2540D

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	%RPD	Source	By	Batch	Notes
Residues- Nonfilterable (TSS) (1960)	**6.5**	mg/L	1	1	1	6	6.89	SRR	03062514MB	-

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **2503007-019 MB** Sampled: 03/15/25 18:25 Analyzed: 03/20/25 12:36 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-019** Prep: 03/15/25 18:25

EPA 365.3

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Phosphorus (7723140)	0.003 U	mg/L	1	0.0028	0.004	AMD1	1084352	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **2503007-021 LCS** Sampled: 03/15/25 18:25 Analyzed: 03/20/25 12:37 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-020** Prep: 03/15/25 18:25

EPA 365.3

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Phosphorus (7723140)	0.098	0.1	mg/L	1	0.0028	0.004	98	AMD1	1084352	90-110	

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **Upflow In MS** Sampled: 03/05/2025 15:25 Analyzed: 03/20/25 12:45 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-021** Prep: 03/15/25 18:25

EPA 365.3

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	0.25	0.1	mg/L	1	0.0028	0.004	95	0.15	AMD1	1084352	80-120	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **Upflow In MSD** Sampled: 03/05/25 15:25 Analyzed: 03/20/25 12:43 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2503007-022** Prep: 03/15/25 18:25

EPA 365.3

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	0.25	0.1	mg/L	1	0.0028	0.004	2	100	0.15	AMD1	1084352	80-120	

This report, which includes the attached Chain-Of-Custody, shall not be reported except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Year 2 Stormwater

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **03/05/25 16:15**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2503007**

**********Data Qualifiers Codes**********

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for.

Lab Qualifier	Description
B-01	The sample dilutions set-up for the analysis did not meet the oxygen depletion criteria of at least 2 mg/l dissolved oxygen depletion. Therefore the reported result is an estimated value only.
B-04	The average DO uptake of the seeded controls does not meet the method required 0.6 - 1.0 mg/L.
B-06	Sample is supersaturated with DO. Initial DO exceeds the method required maximum initial DO of 9 mg/L.
B-07	LCS exceeded control limits. The test can not be repeated due to method constraints. Considered to be an estimated value.
D	Data reported from a dilution and or multiple dilutions. D2= 1/2, D5= 1/5, D10= 1/10, D20= 1/20, D50= 1/50, D100= 1/100
I, J	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J-01	Result may be biased high due to positive results in the associated method blank at a concentration above
L	Off-scale high. Actual value is known to be greater than value given.
LP-02	Less than 1000 ml of sample filtered and residue range of 2.5 insufficient sample, analysis cannot be repeated.
M	Presence of material is verified but not quantified; the actual value is less than the value given. The estimated concentration is greater than the MDL.
N	Presumptive evidence of presence of material.
O	Sampled, but analysis lost or not performed.
PS	PS = Parent Sample. The PS sample was used as the parent sample for the analysis batch to make a Matrix Spike (MS), Matrix Spike Duplicated (MSD) and / or Laboratory Duplicate (DUP).
Q	Sample held beyond the accepted holding time. Use this code if result derived from a sample prepared or analyzed after the approved holding time.
QB-01	The method blank had a positive result for the analyte; however, the concentration in the method blank is less than 10% of the sample result. There is minimal impact to the data.
QB-02	The method blank contains analyte at a concentration above the MDL and/or greater than one-half the MRL. The analyte was not detected in the sample.
QL-02	The associated laboratory control sample exhibited high bias; since the result is ND, there is no impact.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte present in the sample.
QM-07	Spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM-11	Precision between duplicate matrix spikes of the same sample was outside acceptance limits.
QM-12	Precision between duplicate samples was outside acceptance limits.
QM-S	Surrogate recovery exceeded acceptance criteria due to the presence of a coeluting compound.
QR-04	Duplicate precision outside acceptance limits due to low analyte concentration.
QS-03	Surrogate recovery outside acceptance limits
QS-4	Surrogate recovery not calculated. Surrogate diluted out of the calibrtion range.
QS-6	Surrogate recovery exceeded accepance criteria due to coelution. Matrix effect confirmed.
QV-01	The associated continuing calibration verification standard exhibited high bias; since the result is ND, there is no impact.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
T	Value reported is less than the laboratory method detection limit. The value is reported for informational purposes only and shall not be used in statistical analysis.
U	Indicates the compound was analyzed for but not detected above the method detection limt.
V	Indicates the analyte was detected in both the sample and method blank.
V1	Common Laboratory Contaminant
Y	The laboratory analysis was performed on an improperly preserved sample. The result may not be accurate.

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Chain of Custody

2503007

Page 1 of 5

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: Keystone Year 2 Stormwater
City, State, Zip: Orlando Florida 32817	Project Location: Orange County, FL.
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BRA

Sampler(s) Signature(s):

Project Number: FW9650

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: T Nitrogen, T Phosphorus	Analyses Requested: TSS
1	Upflow In	3/5/25	1525	C	SW	2		✓	✓
2	Upflow out	3/5/25	1526	C	SW	2		✓	✓
3	Baffle In	3/5/25	1538	C	SW	2		✓	✓
4	Baffle out	3/5/25	1542	C	SW	2		✓	✓
5	DUP	3/5/25	1532	C	SW	2		✓	✓

1	2503007-001				
2	-002				
3	-003				
4	-004				
5	-005				

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turnbull	3/4/25	11:10	Patrick Barnes	3/4/25	11:10
Returned: / /	Via:	Patrick Barnes	3/5/25	16:15	Helen Turnbull	3/5/25	16:15

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 05 2.9c

Sampling Kit No.: 10349

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.
WWW.SRLAB.COM

Thank you Mike Hardin for the opportunity to be of service to you and your company, We Sincerely Appreciate Your Business.

SRL certifies these Laboratory Results were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically call noted in the report. Results relate only to the samples as received.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/02/25 11:35**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2504003**

Item#	Lab Sample ID	Client Sample ID	Collected Date	Collected Time	Sample Matrix	Analysis Requested
1	2504003-001	Upflow In	04/02/25	10:02	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
2	2504003-002	Baffle In	04/02/25	10:25	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
3	2504003-003	Baffle Out	04/02/25	10:34	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
4	2504003-004	Dup	04/02/25	10:40	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N

Saul Roa
Technical Manager- SRL

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Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/02/25 11:35**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
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State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2504003**

********** Analytical Results **********

Client Sample ID: **Upflow In**
Lab Sample ID: **2504003-001**
Date Collected: **04/02/2025 10:02**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	***0.26***	mg/L	1	0.0028	0.004	EPA 365.3	04/04/25 15:15	AMD	1088919	-
Nitrate-Nitrite (N) (1820)	0.015 U	mg/L	1	0.015	0.05	EPA 353.2	04/03/25 10:07	CMB	1088804	-
Nitrogen- Total (FL-INORG-002)	***1.2***	mg/L	1	0.2	0.5	SM18 Total N	04/07/25 16:59	ACC	1089770	-
Nitrogen- Total Kjeldahl (1795)	***1.2***	mg/L	1	0.2	0.5	EPA 351.2	04/07/25 14:49	AGS	1089478	-
Residues- Nonfilterable (TSS) (1960)	***237***	mg/L	1	1	1	SM 2540D	04/03/25 10:34	JIN	MB04032510	-

Client Sample ID: **Baffle In**
Lab Sample ID: **2504003-002**
Date Collected: **04/02/25 10:25**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	***0.19***	mg/L	1	0.0028	0.004	EPA 365.3	04/04/25 15:16	AMD	1088919	-
Nitrate-Nitrite (N) (1820)	***0.14***	mg/L	1	0.015	0.05	EPA 353.2	04/03/25 10:08	CMB	1088804	-
Nitrogen- Total (FL-INORG-002)	***0.9***	mg/L	1	0.2	0.5	SM18 Total N	04/07/25 16:59	ACC	1089770	-
Nitrogen- Total Kjeldahl (1795)	***0.76***	mg/L	1	0.2	0.5	EPA 351.2	04/07/25 14:50	AGS	1089478	-
Residues- Nonfilterable (TSS) (1960)	***185***	mg/L	1	1	1	SM 2540D	04/03/25 10:36	JIN	MB04032510	-

Client Sample ID: **Baffle Out**
Lab Sample ID: **2504003-003**
Date Collected: **04/02/25 10:34**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	***0.16***	mg/L	1	0.0028	0.004	EPA 365.3	04/04/25 15:18	AMD	1088919	-
Nitrate-Nitrite (N) (1820)	***0.16***	mg/L	1	0.015	0.05	EPA 353.2	04/03/25 10:10	CMB	1088804	-
Nitrogen- Total (FL-INORG-002)	***0.71***	mg/L	1	0.2	0.5	SM18 Total N	04/07/25 16:59	ACC	1089770	-
Nitrogen- Total Kjeldahl (1795)	***0.55***	mg/L	1	0.2	0.5	EPA 351.2	04/07/25 14:52	AGS	1089478	-
Residues- Nonfilterable (TSS) (1960)	***74.7***	mg/L	1	1	1	SM 2540D	04/03/25 10:38	JIN	MB04032510	-

Client Sample ID: **Dup**
Lab Sample ID: **2504003-004**
Date Collected: **04/02/25 10:40**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	***0.15***	mg/L	1	0.0028	0.004	EPA 365.3	04/04/25 15:19	AMD	1088919	-
Nitrate-Nitrite (N) (1820)	***0.16***	mg/L	1	0.015	0.05	EPA 353.2	04/03/25 10:11	CMB	1088804	-
Nitrogen- Total (FL-INORG-002)	***0.76***	mg/L	1	0.2	0.5	SM18 Total N	04/07/25 16:59	ACC	1089770	-
Nitrogen- Total Kjeldahl (1795)	***0.6***	mg/L	1	0.2	0.5	EPA 351.2	04/07/25 14:53	AGS	1089478	-
Residues- Nonfilterable (TSS) (1960)	***80.8***	mg/L	1	1	1	SM 2540D	04/03/25 10:40	JIN	MB04032510	-

********** Detection Summary : **********

Client Sample ID: **Upflow In**
Lab Sample ID: **2504003-001**
Date Collected: **04/02/2025 10:02**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**1.2**	mg/L	1	0.2	0.5	04/07/25 14:49	AGS	1089478	EPA 351.2
Phosphorus (7723140)	**0.26**	mg/L	1	0.0028	0.004	04/04/25 15:15	AMD	1088919	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**237**	mg/L	1	1	1	04/03/25 10:34	JIN	MB04032510	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1.2**	mg/L	1	0.2	0.5	04/07/25 16:59	ACC	1089770	SM18 Total N

Client Sample ID: **Baffle In**
Lab Sample ID: **2504003-002**
Date Collected: **04/02/25 10:25**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Fresh**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.76**	mg/L	1	0.2	0.5	04/07/25 14:50	AGS	1089478	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.14**	mg/L	1	0.015	0.05	04/03/25 10:08	CMB	1088804	EPA 353.2 (Nitrate-Nitrite (N))

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Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/02/25 11:35**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2504003**

Client Sample ID: **Baffle In** | Date Collected: **04/02/25 10:25** | Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-002** | Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Phosphorus (7723140)	**0.19**	mg/L	1	0.0028	0.004	04/04/25 15:16	AMD	1088919	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**185**	mg/L	1	1	1	04/03/25 10:36	JIN	MB04032510	SM 2540D
Nitrogen- Total (FL-INORG-002)	**0.9**	mg/L	1	0.2	0.5	04/07/25 16:59	ACC	1089770	SM18 Total N

Client Sample ID: **Baffle Out** | Date Collected: **04/02/25 10:34** | Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-003** | Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.55**	mg/L	1	0.2	0.5	04/07/25 14:52	AGS	1089478	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.16**	mg/L	1	0.015	0.05	04/03/25 10:10	CMB	1088804	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.16**	mg/L	1	0.0028	0.004	04/04/25 15:18	AMD	1088919	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**74.7**	mg/L	1	1	1	04/03/25 10:38	JIN	MB04032510	SM 2540D
Nitrogen- Total (FL-INORG-002)	**0.71**	mg/L	1	0.2	0.5	04/07/25 16:59	ACC	1089770	SM18 Total N

Client Sample ID: **Dup** | Date Collected: **04/02/25 10:40** | Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-004** | Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.6**	mg/L	1	0.2	0.5	04/07/25 14:53	AGS	1089478	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.16**	mg/L	1	0.015	0.05	04/03/25 10:11	CMB	1088804	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.15**	mg/L	1	0.0028	0.004	04/04/25 15:19	AMD	1088919	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**80.8**	mg/L	1	1	1	04/03/25 10:40	JIN	MB04032510	SM 2540D
Nitrogen- Total (FL-INORG-002)	**0.76**	mg/L	1	0.2	0.5	04/07/25 16:59	ACC	1089770	SM18 Total N

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Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/02/25 11:35**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2504003**

********** Quality Control : **********

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 04/03/25 10:30 Analyzed: 04/03/25 10:30 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-005** Prep: 04/03/25 10:30

SM 2540D

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Residues- Nonfilterable (TSS) (1960)	1 U	mg/L	1	1	1	JIN	MB04032510	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 04/03/25 10:30 Analyzed: 04/03/25 10:36 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-006** Prep: 04/03/25 10:30

SM 2540D

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Residues- Nonfilterable (TSS) (1960)	98	100	mg/L	1	1	1	98	JIN	MB04032510	80-120	

QC — Classical Chemistry Parameters

Client Sample ID: **Upflow In DUP-1** Sampled: 04/02/2025 10:02 Analyzed: 04/03/25 10:44 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-007** Prep: 04/03/25 10:30

SM 2540D

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	%RPD	Source	By	Batch	Notes
Residues- Nonfilterable (TSS) (1960)	**255**	mg/L	1	1	1	7	237	JIN	MB04032510	-

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 04/06/25 18:10 Analyzed: 04/07/25 14:26 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-008** Prep: 04/06/25 18:10

EPA 351.2

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrogen- Total Kjeldahl (1795)	0.2 U	mg/L	1	0.2	0.5	AGS	1089478	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 04/06/25 18:10 Analyzed: 04/07/25 14:27 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-009** Prep: 04/06/25 18:10

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	20.4	20	mg/L	1	0.2	0.5	102	AGS	1089478	90-110	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35946638005** Sampled: 04/03/25 08:00 Analyzed: 04/07/25 14:56 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-010** Prep: 04/06/25 18:10

EPA 351.2

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrogen- Total Kjeldahl (1795)	**0.55**	mg/L	1	0.2	0.5	AGS	1089478	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35946638005 MS** Sampled: 04/03/25 08:00 Analyzed: 04/07/25 14:48 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-011** Prep: 04/06/25 18:10

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Altamonte Springs, Florida 32714
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ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/02/25 11:35**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2504003**

********** Quality Control : **********

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35946638005 MS** Sampled: 04/03/25 08:00 Analyzed: 04/07/25 14:48 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-011** Prep: 04/06/25 18:10

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	20.3	20	mg/L	1	0.2	0.5	99	0.55	AGS	1089478	90-110	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35946638005 MSD** Sampled: 04/03/25 08:00 Analyzed: 04/07/25 14:57 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-012** Prep: 04/06/25 18:10

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	20.2	20	mg/L	1	0.2	0.5	1	98	0.55	AGS	1089478	90-110	

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 04/03/25 10:07 Analyzed: 04/03/25 09:29 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-013** Prep: 04/03/25 09:29

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrate-Nitrite (N) (1820)	0.015 U	mg/L	1	0.015	0.05	CMB	1088804	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 04/03/25 10:07 Analyzed: 04/03/25 09:31 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-014** Prep: 04/03/25 09:31

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	2	2	mg/L	1	0.015	0.05	100	CMB	1088804	90-110	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35946446001** Sampled: 04/02/25 08:00 Analyzed: 04/03/25 09:32 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-015** Prep: 04/03/25 09:32

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrate-Nitrite (N) (1820)	**0.86**	mg/L	1	0.015	0.05	CMB	1088804	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35946446001 MS** Sampled: 04/02/25 08:00 Analyzed: 04/03/25 09:35 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-016** Prep: 04/03/25 09:35

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	2.7	2	mg/L	1	0.015	0.05	93	0.86	CMB	1088804	90-110	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35946446001 MSD** Sampled: 04/02/25 08:00 Analyzed: 04/03/25 09:33 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-017** Prep: 04/03/25 09:33

This report, which includes the attached Chain-Of-Custody, shall not be reported except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/02/25 11:35**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2504003**

********** Quality Control : **********

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35946446001 MSD** Sampled: 04/02/25 08:00 Analyzed: 04/03/25 09:33 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-017** Prep: 04/03/25 09:33

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	2.8	2	mg/L	1	0.015	0.05	2	95	0.86	CMB	1088804	90-110	

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 04/03/25 16:30 Analyzed: 04/04/25 14:12 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-018** Prep: 04/03/25 16:30

EPA 365.3

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Phosphorus (7723140)	0.01 U	mg/L	1	0.0028	0.004	AMD	1088919	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 04/03/25 16:30 Analyzed: 04/04/25 14:16 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-019** Prep: 04/03/25 16:30

EPA 365.3

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Phosphorus (7723140)	0.098	0.1	mg/L	1	0.0028	0.004	98	AMD	1088919	90-110	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35945496008** Sampled: 03/26/25 08:57 Analyzed: 04/04/25 14:17 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-020** Prep: 04/03/25 16:30

EPA 365.3

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Phosphorus (7723140)	**0.059**	mg/L	1	0.0028	0.004	AMD	1088919	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35945496008 MS** Sampled: 03/26/25 08:57 Analyzed: 04/04/25 14:20 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-021** Prep: 04/03/25 16:30

EPA 365.3

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	0.16	0.1	mg/L	1	0.0028	0.004	100	0.059	AMD	1088919	80-120	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35945496008 MSD** Sampled: 03/26/25 08:57 Analyzed: 04/04/25 14:19 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2504003-022** Prep: 04/03/25 16:30

EPA 365.3

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	0.16	0.1	mg/L	1	0.0028	0.004	0	100	0.059	AMD	1088919	80-120	

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Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/02/25 11:35**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **FW9650**
Lab Reporting Batch ID: **2504003**

**********Data Qualifiers Codes**********

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for.

Lab Qualifier	Description
B-01	The sample dilutions set-up for the analysis did not meet the oxygen depletion criteria of at least 2 mg/l dissolved oxygen depletion. Therefore the reported result is an estimated value only.
B-04	The average DO uptake of the seeded controls does not meet the method required 0.6 - 1.0 mg/L.
B-06	Sample is supersaturated with DO. Initial DO exceeds the method required maximum initial DO of 9 mg/L.
B-07	LCS exceeded control limits. The test can not be repeated due to method constraints. Considered to be an estimated value.
D	Data reported from a dilution and or multiple dilutions. D2= 1/2, D5= 1/5, D10= 1/10, D20= 1/20, D50= 1/50, D100= 1/100
I, J	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J-01	Result may be biased high due to positive results in the associated method blank at a concentration above
L	Off-scale high. Actual value is known to be greater than value given.
LP-02	Less than 1000 ml of sample filtered and residue range of 2.5 insufficient sample, analysis cannot be repeated.
M	Presence of material is verified but not quantified; the actual value is less than the value given. The estimated concentration is greater than the MDL.
N	Presumptive evidence of presence of material.
O	Sampled, but analysis lost or not performed.
PS	PS = Parent Sample. The PS sample was used as the parent sample for the analysis batch to make a Matrix Spike (MS), Matrix Spike Duplicated (MSD) and / or Laboratory Duplicate (DUP).
Q	Sample held beyond the accepted holding time. Use this code if result derived from a sample prepared or analyzed after the approved holding time.
QB-01	The method blank had a positive result for the analyte; however, the concentration in the method blank is less than 10% of the sample result. There is minimal impact to the data.
QB-02	The method blank contains analyte at a concentration above the MDL and/or greater than one-half the MRL. The analyte was not detected in the sample.
QL-02	The associated laboratory control sample exhibited high bias; since the result is ND, there is no impact.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte present in the sample.
QM-07	Spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM-11	Precision between duplicate matrix spikes of the same sample was outside acceptance limits.
QM-12	Precision between duplicate samples was outside acceptance limits.
QM-S	Surrogate recovery exceeded acceptance criteria due to the presence of a coeluting compound.
QR-04	Duplicate precision outside acceptance limits due to low analyte concentration.
QS-03	Surrogate recovery outside acceptance limits
QS-4	Surrogate recovery not calculated. Surrogate diluted out of the calibrtion range.
QS-6	Surrogate recovery exceeded accepance criteria due to coelution. Matrix effect confirmed.
QV-01	The associated continuing calibration verification standard exhibited high bias; since the result is ND, there is no impact.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
T	Value reported is less than the laboratory method detection limit. The value is reported for informational purposes only and shall not be used in statistical analysis.
U	Indicates the compound was analyzed for but not detected above the method detection limt.
V	Indicates the analyte was detected in both the sample and method blank.
V1	Common Laboratory Contaminant
Y	The laboratory analysis was performed on an improperly preserved sample. The result may not be accurate.

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Chain of Custody

2504003
4

Page of

Project Manager: Mike Hardie	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone Drive Yr 2
City, State, Zip: Orlando Florida 32817	Project Location: Orange County, FL
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Patrik Barnes / BFA Environmental

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	Analyses Requested: T Nitrogen	Analyses Requested: T Phosphorus
1	Upflow In	4/2/25	1002	C	SW	2		✓	✓	
2	Baffle In	4/2/25	1025	C	SW	2		✓	✓	
3	Baffle Out	4/2/25	1034	C	SW	2		✓	✓	
4	DUP	4/2/25	1040	C	SW	2		✓	✓	

2504003-001
-002
-003
-004

Shipment Method:

Out: / / Via:

Returned: / / Via:

Additional Comments:

Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Helen Turner	3/27/25	14:50		3/27/25	1450
	4/2/25	1135	Helen Turner	4.2.25	11:35

Cooler No.(s) / Temperature(s) (°C): 04 3.7 bz

Sampling Kit No.: 10378

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.
WWW.SRLAB.COM

Thank you Mike Hardin for the opportunity to be of service to you and your company, We Sincerely Appreciate Your Business.

SRL certifies these Laboratory Results were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically call noted in the report. Results relate only to the samples as received.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/07/25 16:40**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2504014**

Item#	Lab Sample ID	Client Sample ID	Collected Date	Collected Time	Sample Matrix	Analysis Requested
1	2504014-001	Upflow In	04/07/25	15:35	AQUEOUS-Groundwater	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
2	2504014-002	Upflow Out	04/07/25	15:42	AQUEOUS-Groundwater	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
3	2504014-003	Baffle In	04/07/25	15:55	AQUEOUS-Groundwater	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
4	2504014-004	Baffle Out	04/07/25	16:00	AQUEOUS-Groundwater	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N
5	2504014-005	Dup	04/07/25	15:40	AQUEOUS-Groundwater	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.3,SM 2540D,SM18 Total N

Saul Roa
Technical Manager - SRL

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Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/07/25 16:40**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location:**Orange County, FL.**
Client's Phone:**407-321-7030**
Client's Project Number:**NA**
Lab Reporting Batch ID:**2504014**

********** Analytical Results **********

Client Sample ID: **Upflow In**
Lab Sample ID: **2504014-001**
Date Collected: **04/07/2025 15:35**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Groundwater**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.38*	mg/L	1	0.0028	0.004	EPA 365.3	04/15/25 11:35	AMD	1090937	-
Nitrate-Nitrite (N) (1820)	*0.14*	mg/L	1	0.015	0.05	EPA 353.2	04/10/25 10:06	CMB	1090509	-
Nitrogen- Total (FL-INORG-002)	*1.9*	mg/L	1	0.2	0.5	SM18 Total N	04/10/25 16:42	ACC	1090785	-
Nitrogen- Total Kjeldahl (1795)	*1.8*	mg/L	1	0.2	0.5	EPA 351.2	04/10/25 12:34	AGS	1090408	-
Residues- Nonfilterable (TSS) (1960)	*15*	mg/L	1	1	1	SM 2540D	04/10/25 15:13	JIN	04102514MB	-

Client Sample ID: **Upflow Out**
Lab Sample ID: **2504014-002**
Date Collected: **04/07/25 15:42**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Groundwater**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.16*	mg/L	1	0.0028	0.004	EPA 365.3	04/15/25 11:36	AMD	1090937	-
Nitrate-Nitrite (N) (1820)	*0.21*	mg/L	1	0.015	0.05	EPA 353.2	04/10/25 10:07	CMB	1090509	-
Nitrogen- Total (FL-INORG-002)	*1*	mg/L	1	0.2	0.5	SM18 Total N	04/10/25 16:42	ACC	1090785	-
Nitrogen- Total Kjeldahl (1795)	*0.81*	mg/L	1	0.2	0.5	EPA 351.2	04/10/25 12:35	AGS	1090408	-
Residues- Nonfilterable (TSS) (1960)	*2.9*	mg/L	1	1	1	SM 2540D	04/10/25 15:16	JIN	04102514MB	-

Client Sample ID: **Baffle In**
Lab Sample ID: **2504014-003**
Date Collected: **04/07/25 15:55**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Groundwater**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.19*	mg/L	1	0.0028	0.004	EPA 365.3	04/15/25 11:37	AMD	1090937	-
Nitrate-Nitrite (N) (1820)	*0.57*	mg/L	1	0.015	0.05	EPA 353.2	04/10/25 10:09	CMB	1090509	-
Nitrogen- Total (FL-INORG-002)	*1.5*	mg/L	1	0.2	0.5	SM18 Total N	04/10/25 16:42	ACC	1090785	-
Nitrogen- Total Kjeldahl (1795)	*0.88*	mg/L	1	0.2	0.5	EPA 351.2	04/10/25 12:37	AGS	1090408	-
Residues- Nonfilterable (TSS) (1960)	*1.07*	mg/L	1	1	1	SM 2540D	04/10/25 15:20	JIN	04102514MB	-

Client Sample ID: **Baffle Out**
Lab Sample ID: **2504014-004**
Date Collected: **04/07/25 16:00**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Groundwater**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.16*	mg/L	1	0.0028	0.004	EPA 365.3	04/15/25 11:38	AMD	1090937	-
Nitrate-Nitrite (N) (1820)	*0.33*	mg/L	1	0.015	0.05	EPA 353.2	04/10/25 10:13	CMB	1090509	-
Nitrogen- Total (FL-INORG-002)	*0.99*	mg/L	1	0.2	0.5	SM18 Total N	04/10/25 16:42	ACC	1090785	-
Nitrogen- Total Kjeldahl (1795)	*0.65*	mg/L	1	0.2	0.5	EPA 351.2	04/10/25 12:38	AGS	1090408	-
Residues- Nonfilterable (TSS) (1960)	*2.8*	mg/L	1	1	1	SM 2540D	04/10/25 15:22	JIN	04102514MB	-

Client Sample ID: **Dup**
Lab Sample ID: **2504014-005**
Date Collected: **04/07/25 15:40**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Groundwater**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.38*	mg/L	1	0.0028	0.004	EPA 365.3	04/15/25 11:40	AMD	1090937	-
Nitrate-Nitrite (N) (1820)	*0.14*	mg/L	1	0.015	0.05	EPA 353.2	04/10/25 10:14	CMB	1090509	-
Nitrogen- Total (FL-INORG-002)	*1.7*	mg/L	1	0.2	0.5	SM18 Total N	04/10/25 16:42	ACC	1090785	-
Nitrogen- Total Kjeldahl (1795)	*1.6*	mg/L	1	0.2	0.5	EPA 351.2	04/10/25 12:39	AGS	1090408	-
Residues- Nonfilterable (TSS) (1960)	*16.2*	mg/L	1	1	1	SM 2540D	04/10/25 15:27	JIN	04102514MB	-

********** Detection Summary : **********

Client Sample ID: **Upflow In**
Lab Sample ID: **2504014-001**
Date Collected:**04/07/2025 15:35**
Collected By: **Patrick Barnes**
Matrix ID : **AQUEOUS-Groundwater**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**1.8**	mg/L	1	0.2	0.5	04/10/25 12:3	AGS	1090408	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.14**	mg/L	1	0.015	0.05	04/10/25 10:0	CMB	1090509	EPA 353.2 (Nitrate-Nitrite (N)

This report, which includes the attached Chain-Of-Custody, shall not be reported except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/07/25 16:40**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip: **32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2504014**

Client Sample ID: **Upflow In** | Date Collected: **04/07/2025 15:35** | Matrix ID : **AQUEOUS-Groundwater**
Lab Sample ID: **2504014-001** | Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Phosphorus (7723140)	**0.38**	mg/L	1	0.0028	0.004	04/15/25 11:35	AMD	1090937	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**15**	mg/L	1	1	1	04/10/25 15:13	JIN	04102514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1.9**	mg/L	1	0.2	0.5	04/10/25 16:42	ACC	1090785	SM18 Total N

Client Sample ID: **Upflow Out** | Date Collected: **04/07/25 15:42** | Matrix ID : **AQUEOUS-Groundwater**
Lab Sample ID: **2504014-002** | Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.81**	mg/L	1	0.2	0.5	04/10/25 12:35	AGS	1090408	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.21**	mg/L	1	0.015	0.05	04/10/25 10:07	CMB	1090509	EPA 353.2 (Nitrate-Nitrite (N)
Phosphorus (7723140)	**0.16**	mg/L	1	0.0028	0.004	04/15/25 11:36	AMD	1090937	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**2.9**	mg/L	1	1	1	04/10/25 15:16	JIN	04102514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1**	mg/L	1	0.2	0.5	04/10/25 16:42	ACC	1090785	SM18 Total N

Client Sample ID: **Baffle In** | Date Collected: **04/07/25 15:55** | Matrix ID : **AQUEOUS-Groundwater**
Lab Sample ID: **2504014-003** | Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.88**	mg/L	1	0.2	0.5	04/10/25 12:37	AGS	1090408	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.57**	mg/L	1	0.015	0.05	04/10/25 10:09	CMB	1090509	EPA 353.2 (Nitrate-Nitrite (N)
Phosphorus (7723140)	**0.19**	mg/L	1	0.0028	0.004	04/15/25 11:37	AMD	1090937	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**1.07**	mg/L	1	1	1	04/10/25 15:20	JIN	04102514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1.5**	mg/L	1	0.2	0.5	04/10/25 16:42	ACC	1090785	SM18 Total N

Client Sample ID: **Baffle Out** | Date Collected: **04/07/25 16:00** | Matrix ID : **AQUEOUS-Groundwater**
Lab Sample ID: **2504014-004** | Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.65**	mg/L	1	0.2	0.5	04/10/25 12:38	AGS	1090408	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.33**	mg/L	1	0.015	0.05	04/10/25 10:13	CMB	1090509	EPA 353.2 (Nitrate-Nitrite (N)
Phosphorus (7723140)	**0.16**	mg/L	1	0.0028	0.004	04/15/25 11:38	AMD	1090937	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**2.8**	mg/L	1	1	1	04/10/25 15:22	JIN	04102514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**0.99**	mg/L	1	0.2	0.5	04/10/25 16:42	ACC	1090785	SM18 Total N

Client Sample ID: **Dup** | Date Collected: **04/07/25 15:40** | Matrix ID : **AQUEOUS-Groundwater**
Lab Sample ID: **2504014-005** | Collected By: **Patrick Barnes**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**1.6**	mg/L	1	0.2	0.5	04/10/25 12:39	AGS	1090408	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.14**	mg/L	1	0.015	0.05	04/10/25 10:14	CMB	1090509	EPA 353.2 (Nitrate-Nitrite (N)
Phosphorus (7723140)	**0.38**	mg/L	1	0.0028	0.004	04/15/25 11:40	AMD	1090937	EPA 365.3
Residues- Nonfilterable (TSS) (1960)	**16.2**	mg/L	1	1	1	04/10/25 15:27	JIN	04102514MB	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1.7**	mg/L	1	0.2	0.5	04/10/25 16:42	ACC	1090785	SM18 Total N

This report, which includes the attached Chain-Of-Custody, shall not be reported except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/07/25 16:40**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip: **32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2504014**

********** Quality Control : **********

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **2504014-006 MB** Sampled: 04/10/25 14:53 Analyzed: 04/10/25 14:53 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-006** Prep: 04/10/25 14:53

SM 2540D

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Residues- Nonfilterable (TSS) (1960)	1 U	mg/L	1	1	1	JIN	04102514MB	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **2504014-008 LCS** Sampled: 04/10/25 14:53 Analyzed: 04/10/25 14:55 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-007** Prep: 04/10/25 14:53

SM 2540D

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Residues- Nonfilterable (TSS) (1960)	90.8	100	mg/L	1	1	1	91	JIN	04102514MB	80-120	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **2504020-2PS** Sampled: 04/08/25 13:50 Analyzed: 04/10/25 16:07 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-008** Prep: 04/10/25 14:53

SM 2540D

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Residues- Nonfilterable (TSS) (1960)	**442**	mg/L	1	1	1	JIN	04102514MB	-

QC — Classical Chemistry Parameters

Client Sample ID: **2504020-2PS DUP** Sampled: 04/10/25 14:53 Analyzed: 04/10/25 16:24 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-009** Prep: 04/10/25 14:53

SM 2540D

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	%RPD	Source	By	Batch	Notes
Residues- Nonfilterable (TSS) (1960)	**436**	mg/L	1	1	1	1	442	JIN	04102514MB	-

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **2504014-010 MB** Sampled: 04/09/25 16:43 Analyzed: 04/10/25 12:13 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-010** Prep: 04/09/25 16:43

EPA 351.2

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrogen- Total Kjeldahl (1795)	0.2U	mg/L	1	0.2	0.5	AGS	1090408	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **2504014-012 LCS** Sampled: 04/09/25 16:43 Analyzed: 04/10/25 12:14 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-011** Prep: 04/09/25 16:43

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	19	20	mg/L	1	0.2	0.5	95	AGS	1090408	90-110	

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Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/07/25 16:40**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip: **32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2504014**

********** Quality Control : **********

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35947570001** Sampled: 04/08/25 10:00 Analyzed: 04/10/25 12:18 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-012** Prep: 04/09/25 16:43

EPA 351.2

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrogen- Total Kjeldahl (1795)	**1.7**	mg/L	1	0.2	0.5	AGS	1090408	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35947570001 MS** Sampled: 04/08/25 10:00 Analyzed: 04/10/25 12:20 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-013** Prep: 04/09/25 16:43

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	21.1	20	mg/L	1	0.2	0.5	97	1.7	AGS	1090408	90-110	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35947570001 MSD** Sampled: 04/08/25 10:00 Analyzed: 04/10/25 12:19 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-014** Prep: 04/09/25 16:43

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	20.9	20	mg/L	1	0.2	0.5	1	96	1.7	AGS	1090408	90-110	

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **2504014-015 MB** Sampled: 04/10/25 10:06 Analyzed: 04/10/25 09:46 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-015** Prep: 04/10/25 09:46

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrate-Nitrite (N) (1820)	0.015U	mg/L	1	0.015	0.05	CMB	1090509	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **2504014-017 LCS** Sampled: 04/10/25 10:06 Analyzed: 04/10/25 09:47 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-016** Prep: 04/10/25 09:47

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	1.9	2	mg/L	1	0.015	0.05	95	CMB	1090509	90-110	

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **Baffle In MS** Sampled: 04/07/25 15:55 Analyzed: 04/10/25 10:12 Matrix ID : **AQUEOUS-Groundwater**
Lab Sample ID: **2504014-017** Prep: 04/10/25 10:12

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	2.3	2	mg/L	1	0.015	0.05	86	0.57	CMB	1090509	90-110	QM-07

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Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/07/25 16:40**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip: **32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2504014**

********** Quality Control : **********

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **Baffle In MSD** Sampled: 04/07/25 15:55 Analyzed: 04/10/25 10:10 Matrix ID : **AQUEOUS-Groundwater**
Lab Sample ID: **2504014-018** Prep: 04/10/25 10:10

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	2.3	2	mg/L	1	0.015	0.05	0	85	0.57	CMB	1090509	90-110	QM-07

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **2504014-019 MB** Sampled: 04/11/25 12:50 Analyzed: 04/15/25 11:13 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-019** Prep: 04/11/25 12:50

EPA 365.3

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Phosphorus (7723140)	0.0028U	mg/L	1	0.0028	0.004	AMD	1090937	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **2504014-021 LCS** Sampled: 04/11/25 12:50 Analyzed: 04/15/25 11:14 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-020** Prep: 04/11/25 12:50

EPA 365.3

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Phosphorus (7723140)	0.1	0.1	mg/L	1	0.0028	0.004	100	AMD	1090937	90-110	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35947767001** Sampled: 04/08/25 11:03 Analyzed: 04/15/25 11:17 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-021** Prep: 04/11/25 12:50

EPA 365.3

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Phosphorus (7723140)	**0.058**	mg/L	1	0.0028	0.004	AMD	1090937	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35947767001 MS** Sampled: 04/08/25 11:03 Analyzed: 04/15/25 11:19 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-022** Prep: 04/11/25 12:50

EPA 365.3

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	0.16	0.1	mg/L	1	0.0028	0.004	104	0.058	AMD	1090937	80-120	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35947767001 MSD** Sampled: 04/08/25 11:03 Analyzed: 04/15/25 11:18 Matrix ID : **AQUEOUS-Other**
Lab Sample ID: **2504014-023** Prep: 04/11/25 12:50

EPA 365.3

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	0.17	0.1	mg/L	1	0.0028	0.004	5	112	0.058	AMD	1090937	80-120	

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Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Drive Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **04/07/25 16:40**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location:**Orange County, FL.**
Client's Phone:**407-321-7030**
Client's Project Number:**NA**
Lab Reporting Batch ID:**2504014**

**********Data Qualifiers Codes**********

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for.

Lab Qualifier	Description
B-01	The sample dilutions set-up for the analysis did not meet the oxygen depletion criteria of at least 2 mg/l dissolved oxygen depletion. Therefore the reported result is an estimated value only.
B-04	The average DO uptake of the seeded controls does not meet the method required 0.6 - 1.0 mg/L.
B-06	Sample is supersaturated with DO. Initial DO exceeds the method required maximum initial DO of 9 mg/L.
B-07	LCS exceeded control limits. The test can not be repeated due to method constraints. Considered to be an estimated value.
D	Data reported from a dilution and or multiple dilutions. D2= 1/2, D5= 1/5, D10= 1/10, D20= 1/20, D50= 1/50, D100= 1/100
I, J	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J-01	Result may be biased high due to positive results in the associated method blank at a concentration above
L	Off-scale high. Actual value is known to be greater than value given.
LP-02	Less than 1000 ml of sample filtered and residue range of 2.5 insufficient sample, analysis cannot be repeated.
M	Presence of material is verified but not quantified; the actual value is less than the value given. The estimated concentration is greater than the MDL.
N	Presumptive evidence of presence of material.
O	Sampled, but analysis lost or not performed.
PS	PS = Parent Sample. The PS sample was used as the parent sample for the analysis batch to make a Matrix Spike (MS), Matrix Spike Duplicated (MSD) and / or Laboratory Duplicate (DUP).
Q	Sample held beyond the accepted holding time. Use this code if result derived from a sample prepared or analyzed after the approved holding time.
QB-01	The method blank had a positive result for the analyte; however, the concentration in the method blank is less than 10% of the sample result. There is minimal impact to the data.
QB-02	The method blank contains analyte at a concentration above the MDL and/or greater than one-half the MRL. The analyte was not detected in the sample.
QL-02	The associated laboratory control sample exhibited high bias; since the result is ND, there is no impact.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte present in the sample.
QM-07	Spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM-11	Precision between duplicate matrix spikes of the same sample was outside acceptance limits.
QM-12	Precision between duplicate samples was outside acceptance limits.
QM-S	Surrogate recovery exceeded acceptance criteria due to the presence of a coeluting compound.
QR-04	Duplicate precision outside acceptance limits due to low analyte concentration.
QS-03	Surrogate recovery outside acceptance limits
QS-4	Surrogate recovery not calculated. Surrogate diluted out of the calibrtion range.
QS-6	Surrogate recovery exceeded accepance criteria due to coelution. Matrix effect confirmed.
QV-01	The associated continuing calibration verification standard exhibited high bias; since the result is ND, there is no impact.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
T	Value reported is less than the laboratory method detection limit. The value is reported for informational purposes only and shall not be used in statistical analysis.
U	Indicates the compound was analyzed for but not detected above the method detection limt.
V	Indicates the analyte was detected in both the sample and method blank.
V1	Common Laboratory Contaminant
Y	The laboratory analysis was performed on an improperly preserved sample. The result may not be accurate.

This report, which includes the attached Chain-Of-Custody, shall not be reported except in full, without written approval of the laboratory.

Chain of Custody

2504014
-5

Project Manager: Mike Hardie Company: Geosyntec Consultants, Inc. Address: 3504 Lake Lynda Drive, Suite 155 City, State, Zip: Orlando Florida 32817 Phone: 407 321-7038 Fax:	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714 Main (407) 522-7100 Fax: (407) 522-7043	Page of Project Name: OC Keystone Drive Yr 2 Project Location: Orange County, FL

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA Environmental

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	Analyses Requested: TN Nitrogen TP Phosphorus	
1	Upflow In	4/7/25	1535	C	SW	2		✓	✓	2504014-001
2	Upflow out		1542	C	SW	2		✓	✓	-002
3	Baffle In		1555	C	SW	2		✓	✓	-003
4	Baffle out		1600	C	SW	2		✓	✓	-004
5	DUP		1540	C	SW	2		✓	✓	-005

Shipment Method		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Ellen Durkit	4-4-25	16:00		4/4/25	1600
Returned: / /	Via:		4/7/25	1640	Ellen Durkit	4/7/25	16:40

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 20.20 4.3 oc

Sampling Kit No.: 10388

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.
WWW.SRLAB.COM

Thank you Mike Hardin for the opportunity to be of service to you and your company, We Sincerely Appreciate Your Business.

SRL certifies these Laboratory Results were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically call noted in the report. Results relate only to the samples as received.

Southern Research Laboratories, Inc
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Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

Item#	Lab Sample ID	Client Sample ID	Collected Date	Collected Time	Sample Matrix	Analysis Requested
1	2505017-001	Upflow In	05/09/25	10:10	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.4,SM 2540D,SM18 Total N
2	2505017-002	Upflow Out	05/09/25	11:00	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.4,SM 2540D,SM18 Total N
3	2505017-003	Baffle In	05/09/25	11:07	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.4,SM 2540D,SM18 Total N
4	2505017-004	Baffle Out	05/09/25	10:33	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.4,SM 2540D,SM18 Total N
5	2505017-005	Duplicate	05/09/25	10:45	AQUEOUS-Fresh	EPA 351.2,EPA 353.2 (Nitrate-Nitrite (N)),EPA 365.4,SM 2540D,SM18 Total N

Saul Roa
Technical Manager / Quality Assurance Officer - SRL

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Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

********** Analytical Results **********

Client Sample ID: **Upflow In**
Lab Sample ID: **2505017-001**
Date Collected: **05/09/2025 10:10**
Collected By: **Makese Powe**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.13*	mg/L	1	0.07	0.1	EPA 365.4	05/16/25 13:14	CLL	1098433	-
Nitrate-Nitrite (N) (1820)	*0.02 I*	mg/L	1	0.015	0.05	EPA 353.2	05/14/25 22:26	HDV	1098462	-
Nitrogen- Total (FL-INORG-002)	*1*	mg/L	1	0.2	0.5	SM18 Total N	05/17/25 22:10	TLK	1099184	-
Nitrogen- Total Kjeldahl (1795)	*1*	mg/L	1	0.2	0.5	EPA 351.2	05/16/25 13:14	CLL	1098431	-
Residues- Nonfilterable (TSS) (1960)	*40.8*	mg/L	1	1	1	SM 2540D	05/14/25 13:07	JIN	MB05142512	-

Client Sample ID: **Upflow Out**
Lab Sample ID: **2505017-002**
Date Collected: **05/09/25 11:00**
Collected By: **Makese Powe**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.17*	mg/L	1	0.07	0.1	EPA 365.4	05/16/25 13:16	CLL	1098433	-
Nitrate-Nitrite (N) (1820)	*0.1*	mg/L	1	0.015	0.05	EPA 353.2	05/14/25 22:27	HDV	1098462	-
Nitrogen- Total (FL-INORG-002)	*2*	mg/L	1	0.2	0.5	SM18 Total N	05/17/25 22:10	TLK	1099184	-
Nitrogen- Total Kjeldahl (1795)	*1.9*	mg/L	1	0.2	0.5	EPA 351.2	05/16/25 13:16	CLL	1098431	-
Residues- Nonfilterable (TSS) (1960)	*154*	mg/L	1	1	1	SM 2540D	05/14/25 13:10	JIN	MB05142512	-

Client Sample ID: **Baffle In**
Lab Sample ID: **2505017-003**
Date Collected: **05/09/25 11:07**
Collected By: **Makese Powe**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.11*	mg/L	1	0.07	0.1	EPA 365.4	05/16/25 13:17	CLL	1098433	-
Nitrate-Nitrite (N) (1820)	*0.2*	mg/L	1	0.015	0.05	EPA 353.2	05/14/25 22:29	HDV	1098462	-
Nitrogen- Total (FL-INORG-002)	*1*	mg/L	1	0.2	0.5	SM18 Total N	05/17/25 22:10	TLK	1099184	-
Nitrogen- Total Kjeldahl (1795)	*0.85*	mg/L	1	0.2	0.5	EPA 351.2	05/16/25 13:17	CLL	1098431	-
Residues- Nonfilterable (TSS) (1960)	*8.4*	mg/L	1	1	1	SM 2540D	05/14/25 13:12	JIN	MB05142512	-

Client Sample ID: **Baffle Out**
Lab Sample ID: **2505017-004**
Date Collected: **05/09/25 10:33**
Collected By: **Makese Powe**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.14*	mg/L	1	0.07	0.1	EPA 365.4	05/16/25 13:19	CLL	1098433	-
Nitrate-Nitrite (N) (1820)	*0.02 I*	mg/L	1	0.015	0.05	EPA 353.2	05/14/25 22:33	HDV	1098462	-
Nitrogen- Total (FL-INORG-002)	*2.4*	mg/L	1	0.2	0.5	SM18 Total N	05/17/25 22:10	TLK	1099184	-
Nitrogen- Total Kjeldahl (1795)	*2.4*	mg/L	1	0.2	0.5	EPA 351.2	05/16/25 13:19	CLL	1098431	-
Residues- Nonfilterable (TSS) (1960)	*20*	mg/L	1	1	1	SM 2540D	05/14/25 13:15	JIN	MB05142512	-

Client Sample ID: **Duplicate**
Lab Sample ID: **2505017-005**
Date Collected: **05/09/25 10:45**
Collected By: **Makese Powe**
Matrix ID : **AQUEOUS-Fresh**

Classical Chemistry Parameters

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	Method	Analyzed Date	By	Batch	Notes
Phosphorus (7723140)	*0.14*	mg/L	1	0.07	0.1	EPA 365.4	05/21/25 23:42	CLL	1098724	-
Nitrate-Nitrite (N) (1820)	*0.02 I*	mg/L	1	0.015	0.05	EPA 353.2	05/14/25 22:35	HDV	1098462	-
Nitrogen- Total (FL-INORG-002)	*1*	mg/L	1	0.2	0.5	SM18 Total N	05/22/25 17:33	ACC	1100578	-
Nitrogen- Total Kjeldahl (1795)	*1*	mg/L	1	0.2	0.5	EPA 351.2	05/21/25 23:42	CLL	1098723	-
Residues- Nonfilterable (TSS) (1960)	*26.6*	mg/L	1	1	1	SM 2540D	05/14/25 13:19	JIN	MB05142512	-

********** Detection Summary : **********

Client Sample ID: **Upflow In**
Lab Sample ID: **2505017-001**
Date Collected: **05/09/2025 10:10**
Collected By: **Makese Powe**
Matrix ID : **AQUEOUS-Fresh**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**1**	mg/L	1	0.2	0.5	05/16/25 13:14	CLL	1098431	EPA 351.2

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Southern Research Laboratories, Inc
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(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

Client Sample ID: **Upflow In** Date Collected: **05/09/2025 10:10** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-001** Collected By: **Makese Powe**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**1**	mg/L	1	0.2	0.5	05/16/25 13:14	CLL	1098431	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.02 I**	mg/L	1	0.015	0.05	05/14/25 22:26	HDV	1098462	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.13**	mg/L	1	0.07	0.1	05/16/25 13:14	CLL	1098433	EPA 365.4
Residues- Nonfilterable (TSS) (1960)	**40.8**	mg/L	1	1	1	05/14/25 13:07	JIN	MB05142512	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1**	mg/L	1	0.2	0.5	05/17/25 22:10	TLK	1099184	SM18 Total N

Client Sample ID: **Upflow Out** Date Collected: **05/09/25 11:00** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-002** Collected By: **Makese Powe**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**1.9**	mg/L	1	0.2	0.5	05/16/25 13:16	CLL	1098431	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.1**	mg/L	1	0.015	0.05	05/14/25 22:27	HDV	1098462	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.17**	mg/L	1	0.07	0.1	05/16/25 13:16	CLL	1098433	EPA 365.4
Residues- Nonfilterable (TSS) (1960)	**154**	mg/L	1	1	1	05/14/25 13:10	JIN	MB05142512	SM 2540D
Nitrogen- Total (FL-INORG-002)	**2**	mg/L	1	0.2	0.5	05/17/25 22:10	TLK	1099184	SM18 Total N

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Altamonte Springs, Florida 32714
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ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

Client Sample ID: **Baffle In** Date Collected: **05/09/25 11:07** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-003** Collected By: **Makese Powe**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**0.85**	mg/L	1	0.2	0.5	05/16/25 13:17	CLL	1098431	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.2**	mg/L	1	0.015	0.05	05/14/25 22:29	HDV	1098462	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.11**	mg/L	1	0.07	0.1	05/16/25 13:17	CLL	1098433	EPA 365.4
Residues- Nonfilterable (TSS) (1960)	**8.4**	mg/L	1	1	1	05/14/25 13:12	JIN	MB05142512	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1**	mg/L	1	0.2	0.5	05/17/25 22:10	TLK	1099184	SM18 Total N

Client Sample ID: **Baffle Out** Date Collected: **05/09/25 10:33** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-004** Collected By: **Makese Powe**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**2.4**	mg/L	1	0.2	0.5	05/16/25 13:19	CLL	1098431	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.02 I**	mg/L	1	0.015	0.05	05/14/25 22:33	HDV	1098462	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.14**	mg/L	1	0.07	0.1	05/16/25 13:19	CLL	1098433	EPA 365.4
Residues- Nonfilterable (TSS) (1960)	**20**	mg/L	1	1	1	05/14/25 13:15	JIN	MB05142512	SM 2540D
Nitrogen- Total (FL-INORG-002)	**2.4**	mg/L	1	0.2	0.5	05/17/25 22:10	TLK	1099184	SM18 Total N

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Southern Research Laboratories, Inc
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ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

Client Sample ID: **Duplicate** Date Collected: **05/09/25 10:45** Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-005** Collected By: **Makese Powe**

Analyte Name (Analyte ID)	Results/Qualifier	Units	DF	MDL	PQL	Date Analyzed	By	Batch ID	Method
Nitrogen- Total Kjeldahl (1795)	**1**	mg/L	1	0.2	0.5	05/21/25 23:42	CLL	1098723	EPA 351.2
Nitrate-Nitrite (N) (1820)	**0.02 I**	mg/L	1	0.015	0.05	05/14/25 22:35	HDV	1098462	EPA 353.2 (Nitrate-Nitrite (N))
Phosphorus (7723140)	**0.14**	mg/L	1	0.07	0.1	05/21/25 23:42	CLL	1098724	EPA 365.4
Residues- Nonfilterable (TSS) (1960)	**26.6**	mg/L	1	1	1	05/14/25 13:19	JIN	MB05142512	SM 2540D
Nitrogen- Total (FL-INORG-002)	**1**	mg/L	1	0.2	0.5	05/22/25 17:33	ACC	1100578	SM18 Total N

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Altamonte Springs, Florida 32714
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ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

********** Quality Control : **********

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 05/14/25 12:14 Analyzed: 05/14/25 12:14 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-006** Prep: 05/14/25 12:14

SM 2540D

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Residues- Nonfilterable (TSS) (1960)	1 U	mg/L	1	1	1	JIN	MB05142512	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 05/14/25 12:14 Analyzed: 05/14/25 12:16 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-007** Prep: 05/14/25 12:14

SM 2540D

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Residues- Nonfilterable (TSS) (1960)	106	100	mg/L	1	1	1	106	JIN	MB05142512	80-120	

QC — Classical Chemistry Parameters

Client Sample ID: **Baffle Out DUP-1** Sampled: 05/09/25 10:33 Analyzed: 05/14/25 13:40 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-008** Prep: 05/14/25 12:14

SM 2540D

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	%RPD	Source	By	Batch	Notes
Residues- Nonfilterable (TSS) (1960)	**21.3**	mg/L	1	1	1	6	20	JIN	MB05142512	-

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 05/15/25 11:35 Analyzed: 05/16/25 12:40 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-009** Prep: 05/15/25 11:35

EPA 351.2

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrogen- Total Kjeldahl (1795)	0.2 U	mg/L	1	0.2	0.5	CLL	1098431	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 05/15/25 11:35 Analyzed: 05/16/25 12:41 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-010** Prep: 05/15/25 11:35

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	19.1	20	mg/L	1	0.2	0.5	96	CLL	1098431	90-110	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35954824001** Sampled: 05/12/25 10:00 Analyzed: 05/16/25 12:56 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-011** Prep: 05/15/25 11:35

EPA 351.2

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrogen- Total Kjeldahl (1795)	**0.91**	mg/L	1	0.2	0.5	CLL	1098431	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35954824001 MS** Sampled: 05/12/25 10:00 Analyzed: 05/16/25 12:59 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-012** Prep: 05/15/25 11:35

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ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

********** Quality Control : **********

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35954824001 MS** Sampled: 05/12/25 10:00 Analyzed: 05/16/25 12:59 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-012** Prep: 05/15/25 11:35

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	20.2	20	mg/L	1	0.2	0.5	96	0.91	CLL	1098431	90-110	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35954824001 MSD** Sampled: 05/12/25 10:00 Analyzed: 05/16/25 12:57 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-013** Prep: 05/15/25 11:35

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	20.6	20	mg/L	1	0.2	0.5	2	98	0.91	CLL	1098431	90-110	

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 05/15/25 16:57 Analyzed: 05/21/25 23:37 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-014** Prep: 05/15/25 16:57

EPA 351.2

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrogen- Total Kjeldahl (1795)	0.2 U	mg/L	1	0.2	0.5	CLL	1098723	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 05/15/25 16:57 Analyzed: 05/21/25 23:38 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-015** Prep: 05/15/25 16:57

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	19.1	20	mg/L	1	0.2	0.5	96	CLL	1098723	90-110	

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **Duplicate MS** Sampled: 05/09/25 10:45 Analyzed: 05/21/25 23:48 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-016** Prep: 05/15/25 16:57

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	20.9	20	mg/L	1	0.2	0.5	99	1	CLL	1098723	90-110	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **Duplicate MSD** Sampled: 05/09/25 10:45 Analyzed: 05/21/25 23:43 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-017** Prep: 05/15/25 16:57

EPA 351.2

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Nitrogen- Total Kjeldahl (1795)	20.8	20	mg/L	1	0.2	0.5	0	99	1	CLL	1098723	90-110	

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 05/14/25 21:59 Analyzed: 05/14/25 21:59 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-018** Prep: 05/14/25 21:59

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Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

********** Quality Control : **********

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 05/14/25 21:59 Analyzed: 05/14/25 21:59 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-018** Prep: 05/14/25 21:59

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrate-Nitrite (N) (1820)	0.015 U	mg/L	1	0.015	0.05	HDV	1098462	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 05/14/25 21:59 Analyzed: 05/14/25 22:00 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-019** Prep: 05/14/25 22:00

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	1.9	2	mg/L	1	0.015	0.05	95	HDV	1098462	90-110	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35954807005** Sampled: 05/12/25 12:12 Analyzed: 05/14/25 22:20 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-020** Prep: 05/14/25 22:20

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Nitrate-Nitrite (N) (1820)	**0.39**	mg/L	1	0.015	0.05	HDV	1098462	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35954807005 MS** Sampled: 05/12/25 12:12 Analyzed: 05/14/25 22:23 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-021** Prep: 05/14/25 22:23

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	2.2	2	mg/L	1	0.015	0.05	90	0.39	HDV	1098462	90-110	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35954807005 MSD** Sampled: 05/12/25 12:12 Analyzed: 05/14/25 22:22 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-022** Prep: 05/14/25 22:22

EPA 353.2 (Nitrate-Nitrite (N))

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Nitrate-Nitrite (N) (1820)	2.2	2	mg/L	1	0.015	0.05	0	90	0.39	HDV	1098462	90-110	

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 05/15/25 11:35 Analyzed: 05/16/25 13:14 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-023** Prep: 05/15/25 11:35

EPA 365.4

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Phosphorus (7723140)	0.07 U	mg/L	1	0.07	0.1	CLL	1098433	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 05/15/25 11:35 Analyzed: 05/16/25 13:14 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-024** Prep: 05/15/25 11:35

This report, which includes the attached Chain-Of-Custody, shall not be reported except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

********** Quality Control : **********

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 05/15/25 11:35 Analyzed: 05/16/25 13:14 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-024** Prep: 05/15/25 11:35

EPA 365.4

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Phosphorus (7723140)	3.9	4	mg/L	1	0.07	0.1	98	CLL	1098433	80-120	

QC Batch Parent Sample(PS) — Classical Chemistry Parameters

Client Sample ID: **35955358004** Sampled: 05/14/25 09:00 Analyzed: 05/16/25 13:14 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-025** Prep: 05/15/25 11:35

EPA 365.4

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Phosphorus (7723140)	**1.1**	mg/L	1	0.07	0.1	CLL	1098433	-

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **35955358004 MS** Sampled: 05/14/25 09:00 Analyzed: 05/16/25 13:14 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-026** Prep: 05/15/25 11:35

EPA 365.4

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	5.8	4	mg/L	1	0.07	0.1	117	1.1	CLL	1098433	80-120	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **35955358004 MSD** Sampled: 05/14/25 09:00 Analyzed: 05/16/25 13:14 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-027** Prep: 05/15/25 11:35

EPA 365.4

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	5.1	4	mg/L	1	0.07	0.1	13	100	1.1	CLL	1098433	80-120	

Method Blank(MB) — Classical Chemistry Parameters

Client Sample ID: **Method Blank-1** Sampled: 05/15/25 16:57 Analyzed: 05/22/25 00:56 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-028** Prep: 05/15/25 16:57

EPA 365.4

Analyte Name (Analyte ID)	Results/Qual	Units	DF	MDL	PQL	By	Batch	Notes
Phosphorus (7723140)	0.07 U	mg/L	1	0.07	0.1	CLL	1098724	-

Laboratory Control Standard(LCS) — Classical Chemistry Parameters

Client Sample ID: **LCS-1** Sampled: 05/15/25 16:57 Analyzed: 05/22/25 01:55 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-029** Prep: 05/15/25 16:57

EPA 365.4

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	By	Batch	%Limits	Notes
Phosphorus (7723140)	3.7	4	mg/L	1	0.07	0.1	92	CLL	1098724	80-120	

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **Duplicate MS** Sampled: 05/09/25 10:45 Analyzed: 05/22/25 01:58 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-030** Prep: 05/15/25 16:57

This report, which includes the attached Chain-Of-Custody, shall not be reported except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

********** Quality Control : **********

Matrix Spike(MS) — Classical Chemistry Parameters

Client Sample ID: **Duplicate MS** Sampled: 05/09/25 10:45 Analyzed: 05/22/25 01:58 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-030** Prep: 05/15/25 16:57

EPA 365.4

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	3.7	4	mg/L	1	0.07	0.1	89	0.14	CLL	1098724	80-120	

Matrix Spike Dup(MSD) — Classical Chemistry Parameters

Client Sample ID: **Duplicate MSD** Sampled: 05/09/25 10:45 Analyzed: 05/22/25 01:57 Matrix ID : **AQUEOUS-Fresh**
Lab Sample ID: **2505017-031** Prep: 05/15/25 16:57

EPA 365.4

Analyte Name (Analyte ID)	Result	SPK	Units	DF	MDL	PQL	%RPD	%Rec	Source	By	Batch	%Limits	Notes
Phosphorus (7723140)	3.7	4	mg/L	1	0.07	0.1	0	89	0.14	CLL	1098724	80-120	

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Southern Research Laboratories, Inc
279 Douglas Ave, Suite 1110
Altamonte Springs, Florida 32714
(407) 522-7100 / Fax (407) 522-7043

ANALYTICAL REPORT

For Project:
OC Keystone Yr 2

NELAP Certified
FDOH # : **E83484**
Lab Received Date : **05/09/25 12:00**

Company Name: **Geosyntec Consultants, Inc.**
Client's Name: **Mike Hardin**
Client's Address: **3504 Lake Lynda Drive, Suite 155**
City: **Orlando**
State: **FL** Zip:**32817**

Facility ID: **NA**
Project Location: **Orange County, FL.**
Client's Phone: **407-321-7030**
Client's Project Number: **NA**
Lab Reporting Batch ID: **2505017**

**********Data Qualifiers Codes**********

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for.

Lab Qualifier	Description
B-01	The sample dilutions set-up for the analysis did not meet the oxygen depletion criteria of at least 2 mg/l dissolved oxygen depletion. Therefore the reported result is an estimated value only.
B-04	The average DO uptake of the seeded controls does not meet the method required 0.6 - 1.0 mg/L.
B-06	Sample is supersaturated with DO. Initial DO exceeds the method required maximum initial DO of 9 mg/L.
B-07	LCS exceeded control limits. The test can not be repeated due to method constraints. Considered to be an estimated value.
D	Data reported from a dilution and or multiple dilutions. D2= 1/2, D5= 1/5, D10= 1/10, D20= 1/20, D50= 1/50, D100= 1/100
I, J	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J-01	Result may be biased high due to positive results in the associated method blank at a concentration above
L	Off-scale high. Actual value is known to be greater than value given.
LP-02	Less than 1000 ml of sample filtered and residue range of 2.5 insufficient sample, analysis cannot be repeated.
M	Presence of material is verified but not quantified; the actual value is less than the value given. The estimated concentration is greater than the MDL.
N	Presumptive evidence of presence of material.
O	Sampled, but analysis lost or not performed.
PS	PS = Parent Sample. The PS sample was used as the parent sample for the analysis batch to make a Matrix Spike (MS), Matrix Spike Duplicated (MSD) and / or Laboratory Duplicate (DUP).
Q	Sample held beyond the accepted holding time. Use this code if result derived from a sample prepared or analyzed after the approved holding time.
QB-01	The method blank had a positive result for the analyte; however, the concentration in the method blank is less than 10% of the sample result. There is minimal impact to the data.
QB-02	The method blank contains analyte at a concentration above the MDL and/or greater than one-half the MRL. The analyte was not detected in the sample.
QL-02	The associated laboratory control sample exhibited high bias; since the result is ND, there is no impact.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte present in the sample.
QM-07	Spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM-11	Precision between duplicate matrix spikes of the same sample was outside acceptance limits.
QM-12	Precision between duplicate samples was outside acceptance limits.
QM-S	Surrogate recovery exceeded acceptance criteria due to the presence of a coeluting compound.
QR-04	Duplicate precision outside acceptance limits due to low analyte concentration.
QS-03	Surrogate recovery outside acceptance limits
QS-4	Surrogate recovery not calculated. Surrogate diluted out of the calibrtion range.
QS-6	Surrogate recovery exceeded accepance criteria due to coelution. Matrix effect confirmed.
QV-01	The associated continuing calibration verification standard exhibited high bias; since the result is ND, there is no impact.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
T	Value reported is less than the laboratory method detection limit. The value is reported for informational purposes only and shall not be used in statistical analysis.
U	Indicates the compound was analyzed for but not detected above the method detection limt.
V	Indicates the analyte was detected in both the sample and method blank.
V1	Common Laboratory Contaminant
Y	The laboratory analysis was performed on an improperly preserved sample. The result may not be accurate.

This report, which includes the attached Chain-Of-Custody, shall not be reported except in full, without written approval of the laboratory.

Chain of Custody

2505017

5

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosynteс Consultants, Inc	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	
City, State, Zip: Orlando Florida 32817	
Phone: 407-321-7080 Fax:	

Page of

Project Name: OC Keystone Yr 2

Project Location:

Sampled by [Print Name(s)] / Affiliation: Makese Powe / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	Analyses Requested: T Nitrogen T Phosphorus
1	Upflow In	5/9/25	1010	C	SW	2		✓	✓
2	Upflow Out	5/9/25	1100	C	SW	2		✓	✓
3	Baffle In	5/9/25	1107	C	SW	2		✓	✓
4	Baffle Out	5/9/25	1033	C	SW	2		✓	✓
5	Duplicate	5/9/25	1045	C	SW	2		✓	✓

1	2505017-001
2	-002
3	-003
4	-004
5	-005

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	5.6.25	10:30			
Returned: / /	Via:		5925	1200	Helen Jun	5.9.25	12:00

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 120 4.9 °C

Sampling Kit No.: 10427

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

November 29, 2022
File No. 20-61-5709

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 11/15/22
2801 Keystone Drive
Orlando, Florida

Dear Ms. Payne,

As requested, we have completed loose bulk density testing of sediment samples delivered to our laboratory by your representative. The loose bulk density of the sediment was determined by dropping the "as-received" sample into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of the sediment samples were used to determine the loose bulk density presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
SC	122.6	21.2	101.2
SC DUP	125.7	19.8	104.9

We appreciate the opportunity to be of assistance to you during this phase of the project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

KEITH B. WARREN LICENSE No. 73870 STATE OF FLORIDA PROFESSIONAL ENGINEER

Keith B. Warren, P.E.
Senior Engineer
FL License No. 73870

11/29/22

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 11/15/22
Contact Name: **Mike Hardin**	Date Received: 11/15/22
Project Name: Keystone Drive BMP Monitoring	Time Received: 14:40
Project Number: FW7915	Date Reported : 12/22/22
Phone Number: (407) 321-7030	Date Emailed : 12/22/22
Fax Number:	SRL Work Order # 22-11026

SRL WO #	Clients #	Matrix	Analysis Requested
2211026-001	SWG	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2211026-002	PWG1	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2211026-003	PWG2	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2211026-004	PWDUP	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2211026-005	SC	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus
2211026-006	SCDUP	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

This report, which includes the attached Chain-of-Custody, shall not be reproduced except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
2251 Lynx Lane, Suite 1
Orlando, Florida 32804 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 22-11026
Received Date : 11/15/22

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
Orange County, FL.

Classical Chemistry Parameters

Client ID # : **SWG**
SRL (Lab) ID# : 2211026-001
Date Collected : 11/15/22
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.34**		mg/L	1	0.035	0.050	EPA 350.1	11/21/22	11/21/22
Nitrate/Nitrite as N		**0.40**		mg/L	1	0.015	0.050	EPA 353.2	11/18/22	11/18/22
Nitrate/Nitrite as N (Dissolved)		**0.55**		mg/L	1	0.015	0.050	EPA 353.2	11/18/22	11/18/22
Orthophosphate as P	1426-54-42	**0.0045**		mg/L	1	0.0038	0.0040	EPA 365.1	11/16/22	11/16/22
Phosphorus	7723-14-0	**0.0091**		mg/L	1	0.0028	0.0040	EPA 365.3	11/17/22	11/21/22
Phosphorus (Dissolved)	7723-14-0	0.070	U	mg/L	1	0.070	0.10	EPA 365.4	11/20/22	11/27/22
Total Alkalinity as CaC03	471-34-1	**70.6**		mg/L	1	5.0	5.0	EPA 310.2	11/20/22	11/20/22
Total Kjeldahl Nitrogen	7727-37-9	**0.58**		mg/L	1	0.20	0.50	EPA 351.2	11/17/22	12/02/22
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.61**		mg/L	1	0.20	0.50	EPA 351.2	11/20/22	11/27/22
Total Nitrogen	17778-88-0	**0.98**		mg/L	1	0.20	0.50	CALC	12/05/22	12/05/22
Total Nitrogen (Dissolved)	17778-88-0	**1.2**		mg/L	1	0.20	0.50	CALC	12/21/22	12/21/22
Total Suspended Solids		**1.9**		mg/L	1	1.0	1.0	M-2540D-201	11/20/22	11/20/22
Total Solids		**387**		mg/L	1	5.0	5.0	SM 2540B	11/18/22	11/18/22
Total Organic Carbon		**10.6**		mg/L	1	0.50	1.0	SM 5310B	11/22/22	11/22/22

Client ID # : **PWG1**
SRL (Lab) ID# : 2211026-002
Date Collected : 11/15/22
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.37**		mg/L	1	0.035	0.050	EPA 350.1	11/21/22	11/21/22
Nitrate/Nitrite as N		**2.7**		mg/L	1	0.015	0.050	EPA 353.2	11/18/22	11/18/22
Nitrate/Nitrite as N (Dissolved)		**3.6**		mg/L	1	0.015	0.050	EPA 353.2	11/18/22	11/18/22
Orthophosphate as P	1426-54-42	**0.010**		mg/L	1	0.0038	0.0040	EPA 365.1	11/17/22	11/17/22
Phosphorus	7723-14-0	**0.29**		mg/L	1	0.0028	0.0040	EPA 365.3	11/17/22	11/21/22
Phosphorus (Dissolved)	7723-14-0	0.070	U	mg/L	1	0.070	0.10	EPA 365.4	11/20/22	11/27/22
Total Alkalinity as CaC03	471-34-1	**116**		mg/L	1	5.0	5.0	EPA 310.2	11/20/22	11/20/22
Total Kjeldahl Nitrogen	7727-37-9	**1.6**		mg/L	1	0.20	0.50	EPA 351.2	11/17/22	12/02/22
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.67**		mg/L	1	0.20	0.50	EPA 351.2	11/20/22	11/27/22
Total Nitrogen	17778-88-0	**4.3**		mg/L	1	0.20	0.50	CALC	12/05/22	12/05/22
Total Nitrogen (Dissolved)	17778-88-0	**4.3**		mg/L	1	0.20	0.50	CALC	12/21/22	12/21/22
Total Suspended Solids		**37.6**		mg/L	1	1.6	1.6	M-2540D-201	11/20/22	11/20/22
Total Solids		**282**		mg/L	1	5.0	5.0	SM 2540B	11/18/22	11/18/22
Total Organic Carbon		**18.8**		mg/L	1	0.50	1.0	SM 5310B	11/22/22	11/22/22

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
2251 Lynx Lane, Suite 1
Orlando, Florida 32804 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 22-11026
Received Date : 11/15/22

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
Orange County, FL.

Classical Chemistry Parameters

Client ID # : **PWG2**
SRL (Lab) ID# : 2211026-003
Date Collected : 11/15/22
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.34**		mg/L	1	0.035	0.050	EPA 350.1	11/21/22	11/21/22
Nitrate/Nitrite as N		**2.6**		mg/L	1	0.015	0.050	EPA 353.2	11/18/22	11/18/22
Nitrate/Nitrite as N (Dissolved)		**3.6**		mg/L	1	0.015	0.050	EPA 353.2	11/18/22	11/18/22
Orthophosphate as P	1426-54-42	**0.0084**		mg/L	1	0.0038	0.0040	EPA 365.1	11/17/22	11/17/22
Phosphorus	7723-14-0	**0.014**		mg/L	1	0.0028	0.0040	EPA 365.3	11/22/22	12/09/22
Phosphorus (Dissolved)	7723-14-0	0.070	U	mg/L	1	0.070	0.10	EPA 365.4	11/20/22	11/27/22
Total Alkalinity as CaC03	471-34-1	**118**		mg/L	1	5.0	5.0	EPA 310.2	11/20/22	11/20/22
Total Kjeldahl Nitrogen	7727-37-9	**0.66**		mg/L	1	0.20	0.50	EPA 351.2	11/17/22	12/02/22
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.63**		mg/L	1	0.20	0.50	EPA 351.2	11/20/22	11/27/22
Total Nitrogen	17778-88-0	**3.3**		mg/L	1	0.20	0.50	CALC	12/05/22	12/05/22
Total Nitrogen (Dissolved)	17778-88-0	**4.2**		mg/L	1	0.20	0.50	CALC	12/21/22	12/21/22
Total Suspended Solids		**44.5**		mg/L	1	5.0	5.0	M-2540D-201	11/21/22	11/21/22
Total Solids		**320**		mg/L	1	5.0	5.0	SM 2540B	11/18/22	11/18/22
Total Organic Carbon		**17.0**		mg/L	1	0.50	1.0	SM 5310B	11/22/22	11/22/22

Client ID # : **PWDUP**
SRL (Lab) ID# : 2211026-004
Date Collected : 11/15/22
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.35**		mg/L	1	0.035	0.050	EPA 350.1	11/21/22	11/21/22
Nitrate/Nitrite as N		**2.6**		mg/L	1	0.015	0.050	EPA 353.2	11/18/22	11/18/22
Nitrate/Nitrite as N (Dissolved)		**3.6**		mg/L	1	0.015	0.050	EPA 353.2	11/18/22	11/18/22
Orthophosphate as P	1426-54-42	**0.0090**		mg/L	1	0.0038	0.0040	EPA 365.1	11/17/22	11/17/22
Phosphorus	7723-14-0	**0.039**		mg/L	1	0.0028	0.0040	EPA 365.3	11/22/22	12/09/22
Phosphorus (Dissolved)	7723-14-0	0.070	U	mg/L	1	0.070	0.10	EPA 365.4	11/20/22	11/27/22
Total Alkalinity as CaC03	471-34-1	**117**		mg/L	1	5.0	5.0	EPA 310.2	11/20/22	11/20/22
Total Kjeldahl Nitrogen	7727-37-9	**0.69**		mg/L	1	0.20	0.50	EPA 351.2	11/17/22	12/02/22
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.63**		mg/L	1	0.20	0.50	EPA 351.2	11/20/22	11/27/22
Total Nitrogen	17778-88-0	**3.3**		mg/L	1	0.20	0.50	CALC	12/05/22	12/05/22
Total Nitrogen (Dissolved)	17778-88-0	**4.2**		mg/L	1	0.20	0.50	CALC	12/21/22	12/21/22
Total Suspended Solids		**60.0**		mg/L	1	5.0	5.0	M-2540D-201	11/21/22	11/21/22
Total Solids		**316**		mg/L	1	5.0	5.0	SM 2540B	11/18/22	11/18/22
Total Organic Carbon		**17.9**		mg/L	1	0.50	1.0	SM 5310B	11/22/22	11/22/22

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
2251 Lynx Lane, Suite 1
Orlando, Florida 32804 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 22-11026
Received Date : 11/15/22

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
Orange County, FL.

Classical Chemistry Parameters

Client ID # : **SC**
SRL (Lab) ID# : 2211026-005
Date Collected : 11/15/22
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.31	U	mg/kg dry	1	0.31	0.62	EPA 353.2	11/19/22	11/19/22
Phosphorus	7723-14-0	**86.3**		mg/kg dry	1	32.1	37.0	EPA 365.4	11/20/22	11/27/22
Total Kjeldahl Nitrogen	7727-37-9	**129**		mg/kg dry	1	67.9	123	EPA 351.2	11/20/22	11/27/22
Total Nitrogen	17778-88-0	**129**		mg/kg dry	1	13.6	24.8	CALC	12/05/22	12/05/22
Percent Moisture		**19.3%**				0.10	0.10		11/18/22	11/18/22

Client ID # : **SCDUP**
SRL (Lab) ID# : 2211026-006
Date Collected : 11/15/22
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.30	U	mg/kg dry	1	0.30	0.59	EPA 353.2	11/19/22	11/19/22
Phosphorus	7723-14-0	**119**		mg/kg dry	1	30.9	35.7	EPA 365.4	11/20/22	11/27/22
Total Kjeldahl Nitrogen	7727-37-9	**128**		mg/kg dry	1	65.4	119	EPA 351.2	11/20/22	11/27/22
Total Nitrogen	17778-88-0	**128**		mg/kg dry	1	13.1	23.9	CALC	12/05/22	12/05/22
Percent Moisture		**16.2%**				0.10	0.10		11/18/22	11/18/22

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an MBE Environmental Laboratory
2251 Lynx Lane, Suite 1
Orlando, Florida 32804 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 22-11026
Received Date : 11/15/22

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
Orange County, FL.

Classical Chemistry Parameters

Client ID # : Blanks
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	11/21/22	11/21/22
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	11/18/22	11/18/22
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	12/16/22	12/16/22
Orthophosphate as P	1426-54-42	0.0040	U	mg/L	1	0.0038	0.0040	EPA 365.1	11/16/22	11/16/22
Orthophosphate as P	1426-54-42	0.0040	U	mg/L	1	0.0038	0.0040	EPA 365.1	11/17/22	11/17/22
Orthophosphate as P	1426-54-42	0.0040	U	mg/L	1	0.0038	0.0040	EPA 365.1	11/17/22	11/17/22
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	11/17/22	11/21/22
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	11/22/22	12/09/22
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.4	11/20/22	11/27/22
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	11/20/22	11/20/22
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	11/17/22	12/02/22
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	11/20/22	11/27/22
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	11/20/22	11/20/22
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	11/21/22	11/21/22
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	11/18/22	11/18/22
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	11/22/22	11/22/22

Client ID # : Blanks
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.25	U	mg/kg wet	1	0.25	0.50	EPA 353.2	11/19/22	11/19/22
Total Kjeldahl Nitrogen	7727-37-9	47.1	U	mg/kg wet	1	47.1	85.7	EPA 351.2	11/20/22	11/27/22
Phosphorus	7723-14-0	22.3	U	mg/kg wet	1	22.3	25.7	EPA 365.4	11/20/22	11/27/22

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
2251 Lynx Lane, Suite 1
Orlando, Florida 32804 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 22-11026
Received Date : 11/15/22

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
Orange County, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	102/98/98	mg/L	90-110	80-120		0	0-20
Nitrate/Nitrite as N	92/79/80	mg/L	90-110	90-110	QM-07	1	0-20
Nitrate/Nitrite as N (Dissolved)	97/96/97	mg/L	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen	96/94/95	mg/Kg	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen	97/99/98	mg/L	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen (Dissolved)	100/97/97	mg/L	90-110	90-110		0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/LCSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	96/93/95	90-110	90-110		1	0-10
Orthophosphate as P	96/93/90	90-110	90-110		0	0-10
Orthophosphate as P	99/90/90	90-110	90-110		0	0-10

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	104/97/99		90-110	80-120		2	0-20
Phosphorus	93/100/100		90-110	80-120		0	0-20
Phosphorus	97/96/97		90-110	80-120		1	0-20
Phosphorus	94/101/111	mg/Kg	90-110	80-120		9	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	103/89/90	90-110	90-110	QM-07	0	0-20
Nitrogen, Ammonia (as N)	103/102/102	90-110	90-110		0	0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Suspended Solids	92/91	90-110	1		0-10
Total Suspended Solids	94/92	90-110	2		0-10

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	103	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	103	106	3		0-20

	% Recovery LCS	Acceptable Limits
Total Solids	102	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	263	270	3		0-10

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
2251 Lynx Lane, Suite 1
Orlando, Florida 32804 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 22-11026
Received Date : 11/15/22

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
Orange County, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	99/97/97	90-110	80-120		0	0-20

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an MBE Environmental Laboratory
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Orlando, Florida 32804 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 22-11026
Received Date : 11/15/22

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
Orange County, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2211026
8

Page of

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando Florida 32817
Phone:	407-321-7090 Fax:

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Project Name: Keystone Drive BMP Monitoring

Project Location: 2801 Keystone Dr, Orlando, FL

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA Environmental

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	Total Nitrogen Total Phosphorus Ammonia	Orthophosphate	Alkalinity/TS	Particulate Nitrogen Particulate Phosphorus	TOC	Bulk Density	Moisture Content	Total Nitrogen Total Phosphorus
							I S I I S H									
1	SWG	11/15/22	1020	G	SW	7		✓	✓	✓	✓	✓	✓			
2	PWG1		1208	G	SW	7		✓	✓	✓	✓	✓	✓			
3	PWG2		1237	G	SW	7		✓	✓	✓	✓	✓	✓			
4	PW DUP		1208	G	SW	7		✓	✓	✓	✓	✓	✓	ID on container		
5	SC		1308	C	SE	2							✓	✓	✓	✓
6	SC DUP		1308	C	SE	2							✓	✓	✓	✓

1	2211026-001
2	-002
3	-003
4	PWG-DUP -004
5	-005
6	-006

Shipment Method		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Sarna (FEDEX KIT)	11-14-22	9:00			
Returned: / /	Via:		11/15/22	1441	Helen Sarna	11-15-22	14:41

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 426 419

Sampling Kit No.: 9387

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

March 6, 2023
File No. 20-61-5709

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 2/23/23
2801 Keystone Drive
Orlando, Florida

Dear Ms. Payne,

As requested, we have completed loose bulk density testing of sediment samples delivered to our laboratory by your representative. The loose bulk density of the sediment was determined by dropping the "as-received" sample into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of the sediment samples were used to determine the loose bulk density presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
SC	118.2	25.5	94.2
SC DUP	111.3	21.8	91.4

We appreciate the opportunity to be of assistance to you during this phase of the project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

KEITH B. WARREN LICENSE No. 73870 STATE OF FLORIDA PROFESSIONAL ENGINEER

Keith B. Warren, P.E.
Senior Engineer
FL License No. 73870

3/6/23

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 02/23/23
Contact Name: **Mike Hardin**	Date Received: 02/23/23
Project Name: Keystone Drive BMP Monitoring	Time Received: 15:20
Project Number: FW7915	Date Reported : 03/28/23
Phone Number: (407) 321-7030	Date Emailed : 03/28/23
Fax Number:	SRL Work Order # 23-02041

SRL WO #	Clients #	Matrix	Analysis Requested
2302041-001	SWG	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2302041-002	PWG1	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2302041-003	PWG2	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2302041-004	PWDUP	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2302041-005	SC	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus
2302041-006	SCDUP	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

This report, which includes the attached Chain-of-Custody, shall not be reproduced except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-02041
Received Date : 02/23/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SWG**
SRL (Lab) ID# : 2302041-001
Date Collected : 02/23/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.19**		mg/L	1	0.035	0.050	EPA 350.1	02/28/23	02/28/23
Nitrate/Nitrite as N		**0.33**		mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Nitrate/Nitrite as N (Dissolved)		**0.35**		mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Orthophosphate as P	1426-54-42	**0.078**		mg/L	1	0.0038	0.0040	EPA 365.1	02/25/23	02/25/23
Phosphorus	7723-14-0	**0.11**		mg/L	1	0.0028	0.0040	EPA 365.3	03/02/23	03/03/23
Phosphorus (Dissolved)	7723-14-0	**0.077**		mg/L	1	0.0028	0.0040	EPA 365.3	03/09/23	03/11/23
Total Alkalinity as CaC03	471-34-1	**120**		mg/L	1	5.0	5.0	SM 2320B	02/25/23	02/25/23
Total Kjeldahl Nitrogen	7727-37-9	**0.37**	I	mg/L	1	0.20	0.50	EPA 351.2	02/27/23	03/04/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.49**	I	mg/L	1	0.20	0.50	EPA 351.2	02/26/23	03/01/23
Total Nitrogen	17778-88-0	**0.70**		mg/L	1	0.20	0.50	CALC	03/06/23	03/06/23
Total Nitrogen (Dissolved)	17778-88-0	**0.84**		mg/L	1	0.20	0.50	CALC	03/09/23	03/09/23
Total Suspended Solids		**2.5**		mg/L	1	1.0	1.0	M-2540D-201	03/01/23	03/01/23
Total Solids		**362**		mg/L	1	5.0	5.0	SM 2540B	03/02/23	03/02/23
Total Organic Carbon		**3.7**		mg/L	1	0.50	1.0	SM 5310B	02/24/23	02/24/23

Client ID # : **PWG1**
SRL (Lab) ID# : 2302041-002
Date Collected : 02/23/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**5.3**		mg/L	1	0.035	0.050	EPA 350.1	02/28/23	02/28/23
Nitrate/Nitrite as N		**1.3**		mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Nitrate/Nitrite as N (Dissolved)		**1.3**		mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Orthophosphate as P	1426-54-42	**0.013**		mg/L	1	0.0038	0.0040	EPA 365.1	02/25/23	02/25/23
Phosphorus	7723-14-0	**1.8**		mg/L	5	0.014	0.020	EPA 365.3	03/02/23	03/03/23
Phosphorus (Dissolved)	7723-14-0	**0.034**		mg/L	1	0.0028	0.0040	EPA 365.3	03/09/23	03/11/23
Total Alkalinity as CaC03	471-34-1	**315**		mg/L	1	5.0	5.0	SM 2320B	02/26/23	02/26/23
Total Kjeldahl Nitrogen	7727-37-9	**9.8**		mg/L	1	0.20	0.50	EPA 351.2	02/27/23	03/04/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**4.7**		mg/L	1	0.20	0.50	EPA 351.2	02/26/23	03/01/23
Total Nitrogen	17778-88-0	**11.2**		mg/L	1	0.20	0.50	CALC	03/06/23	03/06/23
Total Nitrogen (Dissolved)	17778-88-0	**6.1**		mg/L	1	0.20	0.50	CALC	03/09/23	03/09/23
Total Suspended Solids		**501**		mg/L	1	14.3	14.3	M-2540D-201	03/02/23	03/02/23
Total Solids		**1130**		mg/L	1	5.0	5.0	SM 2540B	03/02/23	03/02/23
Total Organic Carbon		**15.6**		mg/L	1	0.50	1.0	SM 5310B	02/24/23	02/24/23

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-02041
Received Date : 02/23/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **PWG2**
SRL (Lab) ID# : 2302041-003
Date Collected : 02/23/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**6.4**		mg/L	1	0.035	0.050	EPA 350.1	02/28/23	02/28/23
Nitrate/Nitrite as N		**0.74**		mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Nitrate/Nitrite as N (Dissolved)		**0.74**		mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Orthophosphate as P	1426-54-42	**0.022**		mg/L	1	0.0038	0.0040	EPA 365.1	02/25/23	02/25/23
Phosphorus	7723-14-0	**2.4**		mg/L	5	0.014	0.020	EPA 365.3	03/02/23	03/03/23
Phosphorus (Dissolved)	7723-14-0	**0.052**		mg/L	1	0.070	0.10	EPA 365.3	03/09/23	03/11/23
Total Alkalinity as CaC03	471-34-1	**303**		mg/L	1	5.0	5.0	SM 2320B	03/02/23	03/02/23
Total Kjeldahl Nitrogen	7727-37-9	**12.1**		mg/L	1	0.20	0.50	EPA 351.2	02/27/23	03/04/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**6.1**		mg/L	1	0.20	0.50	EPA 351.2	02/26/23	03/01/23
Total Nitrogen	17778-88-0	**12.8**		mg/L	1	0.20	0.50	CALC	03/06/23	03/06/23
Total Nitrogen (Dissolved)	17778-88-0	**6.9**		mg/L	1	0.20	0.50	CALC	03/09/23	03/09/23
Total Suspended Solids		**366**		mg/L	1	20.0	20.0	M-2540D-201	03/02/23	03/02/23
Total Solids		**780**		mg/L	1	5.0	5.0	SM 2540B	03/02/23	03/02/23
Total Organic Carbon		**20.4**		mg/L	1	0.50	1.0	SM 5310B	02/24/23	02/24/23

Client ID # : **PWDUP**
SRL (Lab) ID# : 2302041-004
Date Collected : 02/23/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**5.4**		mg/L	1	0.035	0.050	EPA 350.1	02/28/23	02/28/23
Nitrate/Nitrite as N		**1.0**		mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Nitrate/Nitrite as N (Dissolved)		**1.0**		mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Orthophosphate as P	1426-54-42	**0.013**		mg/L	1	0.0038	0.0040	EPA 365.1	02/25/23	02/25/23
Phosphorus	7723-14-0	**1.7**		mg/L	5	0.014	0.020	EPA 365.3	03/02/23	03/03/23
Phosphorus (Dissolved)	7723-14-0	**0.041**		mg/L	1	0.070	0.10	EPA 365.3	03/09/23	03/11/23
Total Alkalinity as CaC03	471-34-1	**322**		mg/L	1	5.0	5.0	SM 2320B	03/02/23	03/02/23
Total Kjeldahl Nitrogen	7727-37-9	**10.1**		mg/L	1	0.20	0.50	EPA 351.2	02/27/23	03/04/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**4.7**		mg/L	1	0.20	0.50	EPA 351.2	02/26/23	03/01/23
Total Nitrogen	17778-88-0	**11.2**		mg/L	1	0.20	0.50	CALC	03/06/23	03/06/23
Total Nitrogen (Dissolved)	17778-88-0	**5.8**		mg/L	1	0.20	0.50	CALC	03/09/23	03/09/23
Total Suspended Solids		**518**		mg/L	1	12.5	12.5	M-2540D-201	03/02/23	03/02/23
Total Solids		**950**		mg/L	1	5.0	5.0	SM 2540B	03/02/23	03/02/23
Total Organic Carbon		**15.5**		mg/L	1	0.50	1.0	SM 5310B	02/24/23	02/24/23

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-02041
Received Date : 02/23/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SC**
SRL (Lab) ID# : 2302041-005
Date Collected : 02/23/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.31	U	mg/kg dry	1	0.31	0.63	EPA 353.2	03/03/23	03/03/23
Phosphorus	7723-14-0	**179**		mg/kg dry	1	32.5	37.5	EPA 365.4	03/02/23	03/03/23
Total Kjeldahl Nitrogen	7727-37-9	**234**		mg/kg dry	1	68.8	125	EPA 351.2	03/02/23	03/03/23
Total Nitrogen	17778-88-0	**234**		mg/kg dry	1	13.9	25.2	CALC	03/09/23	03/09/23
Percent Moisture		**20.8%**				0.10	0.10		02/28/23	02/28/23

Client ID # : **SCDUP**
SRL (Lab) ID# : 2302041-006
Date Collected : 02/23/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.32	U	mg/kg dry	1	0.32	0.64	EPA 353.2	03/03/23	03/03/23
Phosphorus	7723-14-0	**78.3**		mg/kg dry	1	33.0	38.1	EPA 365.4	03/02/23	03/03/23
Total Kjeldahl Nitrogen	7727-37-9	**87.4**	I	mg/kg dry	1	69.8	127	EPA 351.2	03/02/23	03/03/23
Total Nitrogen	17778-88-0	**87.4**		mg/kg dry	1	14.1	25.6	CALC	03/09/23	03/09/23
Percent Moisture		**21.7%**				0.10	0.10		02/28/23	02/28/23

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-02041
Received Date : 02/23/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	02/28/23	02/28/23
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	02/25/23	02/25/23
Orthophosphate as P	1426-54-42	0.0040	U	mg/L	1	0.0038	0.0040	EPA 365.1	02/25/23	02/25/23
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	03/02/23	03/03/23
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	03/09/23	03/11/23
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	02/25/23	02/25/23
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	03/02/23	03/02/23
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	02/27/23	03/04/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	02/26/23	03/01/23
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	03/01/23	03/01/23
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	03/02/23	03/02/23
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	03/02/23	03/02/23
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	02/24/23	02/24/23

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.25	U	mg/kg wet	1	0.25	0.50	EPA 353.2	03/03/23	03/03/23
Total Kjeldahl Nitrogen	7727-37-9	48.8	U	mg/kg wet	1	48.8	88.7	EPA 351.2	03/02/23	03/03/23
Phosphorus	7723-14-0	23.0	U	mg/kg wet	1	23.0	26.6	EPA 365.4	03/02/23	03/03/23

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

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Received Date : 02/23/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	104/101/101	mg/Kg	90-110	80-120		0	0-20
Nitrate/Nitrite as N	92/94/95	mg/L	90-110	90-110		1	0-20
Nitrate/Nitrite as N (Dissolved)	97/74/77	mg/L	90-110	90-110	QM-07	4	0-20
Total Kjeldahl Nitrogen	99/96/95	mg/Kg	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen	98/99/98	mg/L	90-110	90-110		0	0-20
Total Kjeldahl Nitrogen (Dissolved)	95/94/96	mg/L	90-110	90-110		2	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/LCSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	97/94/94	90-110	90-110		0	0-20

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	98/102/113		90-110	80-120		6	0-20
Phosphorus	104/86/94		90-110	80-120		1	0-20
Phosphorus	102/98/92	mg/Kg	90-110	80-120		5	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	102/99/99	90-110	90-110		0	0-20
Nitrogen, Ammonia (as N)		90-110	90-110			0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Suspended Solids	94/95	90-110	1		0-10
Total Suspended Solids	97/97	90-110	0		0-10

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	95	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	120	120	0		0-20

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	92	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	303	300	1		0-20

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-02041
Received Date : 02/23/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	105/106/105	90-110	80-120		1	0-20

	% Recovery LCS	Acceptable Limits
Total Solids	104	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	3680	4000	9		0-10

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Received Date : 02/23/23

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Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2302041

Page 6 of

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: Keystone Drive BMP Monitoring
City, State, Zip: Orlando Florida 32817	Project Location: 2801 Keystone Dr. Orlando, FL
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	T Nitrogen T Phosphorus Ammonia Nitrate + Nitrite (Nox)	Orthophosphate	Alkalinity /TS	Particulate Nitrogen Particulate Phos	TOC	Bulk Density	moisture content	Total Nitrogen Total Phosphorus	
1	SWG	2/23/23	952	G	SW	7		✓	✓	✓	✓	✓	✓				2302041-001
2	PWG1		1130	G	SW	7		✓	✓	✓	✓	✓	✓				-002
3	PWG2		1218	G	SW	7		✓	✓	✓	✓	✓	✓				-003
4	PW DUP		1130	G	SW	7		✓	✓	✓	✓	✓	✓				-004
5	SC		1438	C	SE	2								✓	✓	✓	-005
6	SC DUP		1438	C	SE	2								✓	✓	✓	-006

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Summit	2-17-23	10:54			
Returned: / /	Via:	PAB	2/23/23	1520	Helen Summit	2/23/23	15:20

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): (X301) ICED 2.1 °C

Sampling Kit No.: 9477

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

June 1, 2023
File No. 20-61-5709

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 5/9/23
Keystone Drive BMP Monitoring
Orlando, Florida

Dear Ms. Payne,

As requested, we have completed loose bulk density testing of sediment samples delivered to our laboratory by your representative. The loose bulk density of the sediment was determined by dropping the "as-received" sample into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of the sediment samples were used to determine the loose bulk density presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
SC	112.6	32.0	85.2
SC DUP	112.2	32.0	85.0

We appreciate the opportunity to be of assistance to you during this phase of the project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

Keith Warren

Keith B. Warren, P.E.
Senior Engineer
FL License No. 73870

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 05/09/23
Contact Name: **Mike Hardin**	Date Received: 05/09/23
Project Name: Keystone Drive BMP Monitoring	Time Received: 15:15
Project Number: FW7915	Date Reported : 06/07/23
Phone Number: (407) 321-7030	Date Emailed : 06/07/23
Fax Number: NA	SRL Work Order # 23-05019

SRL WO #	Clients #	Matrix	Analysis Requested
2305019-001	SWG	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2305019-002	PWG1	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2305019-003	PWG2	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2305019-004	PWDUP	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2305019-005	SC	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus
2305019-006	SCDUP	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-05019
Received Date : 05/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SWG**
SRL (Lab) ID# : 2305019-001
Date Collected : 05/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.39**		mg/L	1	0.035	0.050	EPA 350.1	05/15/23	05/15/23
Nitrate/Nitrite as N		**0.32**		mg/L	1	0.015	0.050	EPA 353.2	05/18/23	05/18/23
Nitrate/Nitrite as N (Dissolved)		**0.38**		mg/L	1	0.015	0.050	EPA 353.2	05/16/23	05/16/23
Orthophosphate as P	1426-54-42	**0.013**		mg/L	1	0.0038	0.0040	EPA 365.1	05/10/23	05/10/23
Phosphorus	7723-14-0	**0.024**		mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Phosphorus (Dissolved)	7723-14-0	**0.015**		mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Total Alkalinity as CaC03	471-34-1	**64.0**		mg/L	1	5.0	5.0	SM 2320B	05/10/23	05/10/23
Total Kjeldahl Nitrogen	7727-37-9	**0.60**		mg/L	1	0.20	0.50	EPA 351.2	05/17/23	05/19/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.56**		mg/L	1	0.20	0.50	EPA 351.2	05/13/23	05/16/23
Total Nitrogen	17778-88-0	**0.92**		mg/L	1	0.20	0.50	CALC	05/19/23	05/19/23
Total Nitrogen (Dissolved)	17778-88-0	**0.93**		mg/L	1	0.20	0.50	CALC	05/19/23	05/19/23
Total Suspended Solids		**13.6**		mg/L	1	1.0	1.0	M-2540D-201	05/10/23	05/10/23
Total Solids		**3300**		mg/L	1	250	250	SM 2540B	05/11/23	05/11/23
Total Organic Carbon		**3.5**		mg/L	1	0.50	1.0	SM 5310B	05/12/23	05/12/23

Client ID # : **PWG1**
SRL (Lab) ID# : 2305019-002
Date Collected : 05/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**3.0**		mg/L	50	1.7	2.5	EPA 350.1	05/15/23	05/15/23
Nitrate/Nitrite as N		**0.88**		mg/L	1	0.015	0.050	EPA 353.2	05/16/23	05/16/23
Nitrate/Nitrite as N (Dissolved)		**0.88**		mg/L	1	0.015	0.050	EPA 353.2	05/18/23	05/18/23
Orthophosphate as P	1426-54-42	**0.061**		mg/L	1	0.0038	0.0040	EPA 365.1	05/10/23	05/10/23
Phosphorus	7723-14-0	**1.5**		mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Phosphorus (Dissolved)	7723-14-0	**0.15**		mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Total Alkalinity as CaC03	471-34-1	**132**		mg/L	1	5.0	5.0	SM 2320B	05/10/23	05/10/23
Total Kjeldahl Nitrogen	7727-37-9	**10.2**		mg/L	1	0.40	1.0	EPA 351.2	05/24/23	05/25/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**6.7**		mg/L	1	0.40	1.0	EPA 351.2	05/26/23	05/28/23
Total Nitrogen	17778-88-0	**9.9**		mg/L	1	0.20	0.50	CALC	05/19/23	05/19/23
Total Nitrogen (Dissolved)	17778-88-0	**7.6**		mg/L	1	0.20	0.50	CALC	06/01/23	06/01/23
Total Suspended Solids		**360**		mg/L	1	20.0	20.0	M-2540D-201	05/11/23	05/11/23
Total Solids		**1050**		mg/L	1	250	250	SM 2540B	05/11/23	05/11/23
Total Organic Carbon		**11.0**		mg/L	4	2.0	4.0	SM 5310B	05/12/23	05/12/23

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-05019
Received Date : 05/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **PWG2**
SRL (Lab) ID# : 2305019-003
Date Collected : 05/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**3.8**		mg/L	50	1.7	2.5	EPA 350.1	05/15/23	05/15/23
Nitrate/Nitrite as N		**0.75**		mg/L	1	0.015	0.050	EPA 353.2	05/16/23	05/16/23
Nitrate/Nitrite as N (Dissolved)		**0.74**		mg/L	1	0.015	0.050	EPA 353.2	05/18/23	05/18/23
Orthophosphate as P	1426-54-42	**0.057**		mg/L	1	0.0038	0.0040	EPA 365.1	05/10/23	05/10/23
Phosphorus	7723-14-0	**1.5**		mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Phosphorus (Dissolved)	7723-14-0	**0.11**		mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Total Alkalinity as CaC03	471-34-1	**132**		mg/L	1	5.0	5.0	SM 2320B	05/10/23	05/10/23
Total Kjeldahl Nitrogen	7727-37-9	**8.0**		mg/L	1	0.40	1.0	EPA 351.2	05/24/23	05/25/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**7.0**		mg/L	1	0.40	1.0	EPA 351.2	05/26/23	05/28/23
Total Nitrogen	17778-88-0	**8.8**		mg/L	1	0.20	0.50	CALC	05/25/23	05/25/23
Total Nitrogen (Dissolved)	17778-88-0	**7.7**		mg/L	1	0.20	0.50	CALC	06/01/23	06/01/23
Total Suspended Solids		**350**		mg/L	1	20.0	20.0	M-2540D-201	05/11/23	05/11/23
Total Solids		**2850**		mg/L	1	250	250	SM 2540B	05/11/23	05/11/23
Total Organic Carbon		**11.8**		mg/L	4	2.0	4.0	SM 5310B	05/12/23	05/12/23

Client ID # : **PWDUP**
SRL (Lab) ID# : 2305019-004
Date Collected : 05/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**3.9**		mg/L	50	1.7	2.5	EPA 350.1	05/15/23	05/15/23
Nitrate/Nitrite as N		**0.75**		mg/L	1	0.015	0.050	EPA 353.2	05/16/23	05/16/23
Nitrate/Nitrite as N (Dissolved)		**0.75**		mg/L	1	0.015	0.050	EPA 353.2	05/18/23	05/18/23
Orthophosphate as P	1426-54-42	**0.052**		mg/L	1	0.0038	0.0040	EPA 365.1	05/10/23	05/10/23
Phosphorus	7723-14-0	**1.5**		mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Phosphorus (Dissolved)	7723-14-0	**0.066**		mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Total Alkalinity as CaC03	471-34-1	**130**		mg/L	1	5.0	5.0	SM 2320B	05/10/23	05/10/23
Total Kjeldahl Nitrogen	7727-37-9	**8.8**		mg/L	1	0.40	1.0	EPA 351.2	05/17/23	05/19/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**8.4**		mg/L	1	0.40	1.0	EPA 351.2	05/17/23	05/21/23
Total Nitrogen	17778-88-0	**9.6**		mg/L	1	0.20	0.50	CALC	05/19/23	05/19/23
Total Nitrogen (Dissolved)	17778-88-0	**9.1**		mg/L	1	0.20	0.50	CALC	05/23/23	05/23/23
Total Suspended Solids		**350**		mg/L	1	20.0	20.0	M-2540D-201	05/11/23	05/11/23
Total Solids		**1600**		mg/L	1	250	250	SM 2540B	05/11/23	05/11/23
Total Organic Carbon		**10.7**		mg/L	4	2.0	4.0	SM 5310B	05/12/23	05/12/23

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-05019
Received Date : 05/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SC**
SRL (Lab) ID# : 2305019-005
Date Collected : 05/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.33	U	mg/kg dry	1	0.33	0.66	EPA 353.2	05/10/23	05/11/23
Phosphorus	7723-14-0	19.2	U	mg/kg dry	1	19.2	22.1	EPA 365.4	05/13/23	05/15/23
Total Kjeldahl Nitrogen	7727-37-9	**81.1**		mg/kg dry	1	40.5	73.7	EPA 351.2	05/13/23	05/15/23
Total Nitrogen	17778-88-0	**81.1**		mg/kg dry	1	14.6	26.5	CALC	05/17/23	05/17/23
Percent Moisture		**24.6%**				0.10	0.10		05/16/23	05/16/23

Client ID # : **SCDUP**
SRL (Lab) ID# : 2305019-006
Date Collected : 05/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.33	U	mg/kg dry	1	0.33	0.66	EPA 353.2	05/10/23	05/11/23
Phosphorus	7723-14-0	22.2	U	mg/kg dry	1	22.2	25.6	EPA 365.4	05/13/23	05/15/23
Total Kjeldahl Nitrogen	7727-37-9	**107**		mg/kg dry	1	46.9	85.3	EPA 351.2	05/13/23	05/15/23
Total Nitrogen	17778-88-0	**107**		mg/kg dry	1	14.3	26.0	CALC	05/17/23	05/17/23
Percent Moisture		**23.1%**				0.10	0.10		05/16/23	05/16/23

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-05019
Received Date : 05/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	05/15/23	05/15/23
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	05/16/23	05/16/23
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	05/18/23	05/18/23
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2		
Orthophosphate as P	1426-54-42	0.0040	U	mg/L	1	0.0038	0.0040	EPA 365.1	05/10/23	05/10/23
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	05/11/23	05/13/23
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	05/10/23	05/10/23
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	05/17/23	05/19/23
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	05/24/23	05/25/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	05/13/23	05/16/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	05/17/23	05/21/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	05/26/23	05/28/23
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	05/10/23	05/10/23
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	05/11/23	05/11/23
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	05/11/23	05/11/23
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	05/12/23	05/12/23

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.25	U	mg/kg wet	1	0.25	0.50	EPA 353.2	05/10/23	05/11/23
Total Kjeldahl Nitrogen	7727-37-9	45.6	U	mg/kg wet	1	45.6	83.0	EPA 351.2	05/13/23	05/15/23
Phosphorus	7723-14-0	21.6	U	mg/kg wet	1	21.6	24.9	EPA 365.4	05/13/23	05/15/23

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
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Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	104/90/90	mg/Kg	90-110	80-120		1	0-20
Nitrate/Nitrite as N	103/98/101	mg/L	90-110	90-110		2	0-20
Nitrate/Nitrite as N (Dissolved)	95/90/90	mg/L	90-110	90-110		0	0-20
Total Kjeldahl Nitrogen	93/82/97	mg/Kg	90-110	90-110	QM-07	3	0-20
Total Kjeldahl Nitrogen	99/97/96	mg/L	90-110	90-110		0	0-20
Total Kjeldahl Nitrogen	95/102/101	mg/L	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen (Dissolved)	97/99/98	mg/L	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen (Dissolved)	91/92/92	mg/L	90-110	90-110		0	0-20
Total Kjeldahl Nitrogen (Dissolved)	100/86/87	mg/L	90-110	90-110	QM-07	0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	102/99/96	90-110	90-110		2	0-20

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	100/107/107		90-110	80-120		0	0-20
Phosphorus	102/100/94		90-110	80-120		1	0-20
Phosphorus	95/137/143	mg/Kg	90-110	80-120	QM-07	1	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	106/103/102	90-110	90-110		1	0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Suspended Solids	103/102	90-110	1		0-10
Total Suspended Solids	97/100	90-110	3		0-10

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	94	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	326	322	1		0-20
Total Alkalinity as CaC03 (DUP)	154	153	0		0-20

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an MBE Environmental Laboratory
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Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	92/87/90	90-110	80-120		2	0-20

	% Recovery LCS	Acceptable Limits
Total Solids	102	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	1200	1650	32	J(D6)	0-10
Total Solids (DUP)	6650	8850	28	J(D6)	0-10

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Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

J(D6) Estimated Value. The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits

Chain of Custody

2305019

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Page of

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone Drive BMP Monitoring
City, State, Zip: Orlando Florida 32817	Project Location:
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BGA

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	TSS	T Nitrogen (Phosphorus Nitrate + Nitrite / NO3)	Orthophosphate	Alkalinity/TS	Particulate Nitrogen Particulate Mass	TOC	Bulk Density	moisture content	Total Nitrogen Total Phosphorus	Analyses Requested
1	SW G	5/9/23	955	G	SW	7	✓	✓	✓	✓	✓	✓				2305019-001
2	PWG1		1115	G	SW	7	✓	✓	✓	✓	✓	✓				-002
3	PWG2		1155	G	SW	7	✓	✓	✓	✓	✓	✓				-003
4	PW DUP		1135	G	SW	7	✓	✓	✓	✓	✓	✓				-004
5	SC		1426	C	SE	2						✓	✓	✓	✓	-005
6	SC DUP		1426	C	SE	2							✓	✓	✓	-006

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	FEDEX KIT	5-2-23	16:20			
Returned: / /	Via:		5/9/23	15:15		5/9/23	15:15

Additional Comments:

Cooler No.(s) / ~~Temperature(s) (°C)~~: 04 X273 3.7 °C 3.5 °C

Sampling Kit No.: 9563

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Ardaman & Associates, Inc. Consolidated

Orlando Branch
Florida Registration No. 5950
8008 South Orange Avenue
Orlando, FL 32809
Phone: 407-855-3860

Report Date: 11/07/23

Client:
Southern Research Laboratories
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Project:
20-5709
Various - Bulk Density Determination
2251 Lynx Lane - Suite 1
Orlando, FL 32804

Table of Contents

Title	Description
Summary of Laboratory Testing	Samples 5 SC & 6 SC DUP (Sampled 10/9/23)
Summary Data Report	Chain of Custody Form

This item has been digitally signed and sealed by Senior Project Manager Daniel J. Dunham P.E. on Nov 07, 2023 using a Digital Signature.

Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF THE CLIENT, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

November 7, 2023
File No. 20-61-5709

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 10/9/23
Keystone Drive BMP Monitoring
Orlando, Florida

Dear Ms. Payne,

As requested, loose bulk density testing was performed on sediment samples delivered to our laboratory on 10/17/23 by your representative. The loose bulk density of the sediment was determined by dropping the "as-received" sample into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of the sediment samples were used to calculate the loose bulk density presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
5 SC	96.8	57.8	61.3
6 SC DUP	98.3	53.1	64.2

A copy of the Chain of Custody form is attached.

We appreciate the opportunity to be of assistance to you during this phase of the project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

DANIEL J. DUNHAM LICENSE NO. 36782 STATE OF FLORIDA PROFESSIONAL ENGINEER

11/7/23

Dan Dunham, P.E.
Senior Engineer
FL License No. 36782

Chain of Custody

Project Manager:	Sherri Payne
Company:	Southern Research Laboratories
Address:	279 Douglas Avenue Suite 1110
City, State, Zip:	Altamonte Springs FL. 32714
Phone:	407-522-7100 Fax:

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: Keystone Drive BMP Monitoring

Project Location:

Sampled by [Print Name(s)] / Affiliation:

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	Nitrate/Nitrite	Total Phosphorus	Ortho-phosphate	Total Kjeldahl Nitrogen	TSS	Bulk Density	Moisture Content	Total Metals
1	SWG	10/9/23	1106	G	SW	7		✓	✓	✓	✓	✓	✓			
2	PWG1		1152	G	SW	7		✓	✓	✓	✓	✓	✓			
3	PWG2		1250	G	SW	7		✓	✓	✓	✓	✓	✓			
4	PW DUP		1258	G	SW	7		✓	✓	✓	✓	✓	✓			
5	SC		1540	C	SE	2								✓	✓	✓
6	SC DUP		1540	C	SE	2								✓	✓	✓

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turn	10-4-23	9:52			
Returned: / /	Via:		10-9-23	16:25	Helen Turn	10-9-23	16:25

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): X950, X307

Sampling Kit No.: 9759

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitric Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 10/09/23
Contact Name: **Mike Hardin**	Date Received: 10/09/23
Project Name: Keystone Drive BMP Monitoring	Time Received: 16:25
Project Number: FW7915	Date Reported : 10/30/23
Phone Number: (407) 321-7030	Date Emailed : 10/30/23
Fax Number: NA	SRL Work Order # 23-10015

SRL WO #	Clients #	Matrix	Analysis Requested
2310015-001	SWG	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2310015-002	PWG1	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2310015-003	PWG2	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2310015-004	PWDUP	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2310015-005	SC	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus
2310015-006	SCDUP	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

This report, which includes the attached Chain-of-Custody, shall not be reproduced except in full, without written approval of the laboratory.

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-10015
Received Date : 10/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SWG**
SRL (Lab) ID# : 2310015-001
Date Collected : 10/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	10/17/23	10/17/23
Nitrate/Nitrite as N		**0.19**		mg/L	1	0.015	0.050	EPA 353.2	10/13/23	10/13/23
Nitrate/Nitrite as N (Dissolved)		**0.21**		mg/L	1	0.015	0.050	EPA 353.2	10/12/23	10/12/23
Orthophosphate as P	1426-54-42	**0.0061**		mg/L	1	0.0038	0.0040	EPA 365.1	10/11/23	10/11/23
Phosphorus	7723-14-0	**0.020**		mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Phosphorus (Dissolved)	7723-14-0	**0.0088**		mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Total Alkalinity as CaC03	471-34-1	**92.0**		mg/L	1	5.0	5.0	SM 2320B	10/10/23	10/10/23
Total Kjeldahl Nitrogen	7727-37-9	**0.29**	I	mg/L	1	0.20	0.50	EPA 351.2	10/16/23	10/17/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.28**	I	mg/L	1	0.20	0.50	EPA 351.2	10/18/23	10/19/23
Total Nitrogen	17778-88-0	**0.49**	I	mg/L	1	0.20	0.50	CALC	10/17/23	10/17/23
Total Nitrogen (Dissolved)	17778-88-0	**0.49**	I	mg/L	1	0.20	0.50	CALC	10/19/23	10/19/23
Total Suspended Solids		**4.1**		mg/L	1	1.0	1.0	M-2540D-201	10/10/23	10/10/23
Total Solids		**540**		mg/L	1	100	100	SM 2540B	10/11/23	10/11/23
Total Organic Carbon		**3.4**		mg/L	1	0.50	1.0	SM 5310B	10/12/23	10/12/23

Client ID # : **PWG1**
SRL (Lab) ID# : 2310015-002
Date Collected : 10/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**1.9**		mg/L	1	0.035	0.050	EPA 350.1	10/17/23	10/17/23
Nitrate/Nitrite as N		**3.3**		mg/L	1	0.015	0.050	EPA 353.2	10/13/23	10/13/23
Nitrate/Nitrite as N (Dissolved)		**4.2**		mg/L	1	0.015	0.050	EPA 353.2	10/12/23	10/12/23
Orthophosphate as P	1426-54-42	**0.032**		mg/L	1	0.0038	0.0040	EPA 365.1	10/11/23	10/11/23
Phosphorus	7723-14-0	**1.5**		mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Phosphorus (Dissolved)	7723-14-0	**0.045**		mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Total Alkalinity as CaC03	471-34-1	**187**		mg/L	1	5.0	5.0	SM 2320B	10/10/23	10/10/23
Total Kjeldahl Nitrogen	7727-37-9	**14.4**		mg/L	1	0.40	1.0	EPA 351.2	10/16/23	10/17/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.7**		mg/L	1	0.40	1.0	EPA 351.2	10/18/23	10/19/23
Total Nitrogen	17778-88-0	**17.7**		mg/L	1	0.20	0.50	CALC	10/17/23	10/17/23
Total Nitrogen (Dissolved)	17778-88-0	**5.9**		mg/L	1	0.20	0.50	CALC	10/19/23	10/19/23
Total Suspended Solids		**312**		mg/L	1	12.5	12.5	M-2540D-201	10/10/23	10/10/23
Total Solids		**1250**		mg/L	1	250	250	SM 2540B	10/11/23	10/11/23
Total Organic Carbon		**12.0**		mg/L	4	2.0	4.0	SM 5310B	10/12/23	10/12/23

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-10015
Received Date : 10/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **PWG2**
SRL (Lab) ID# : 2310015-003
Date Collected : 10/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**1.4**		mg/L	1	0.035	0.050	EPA 350.1	10/17/23	10/17/23
Nitrate/Nitrite as N		**3.5**		mg/L	1	0.015	0.050	EPA 353.2	10/13/23	10/13/23
Nitrate/Nitrite as N (Dissolved)		**4.2**		mg/L	1	0.015	0.050	EPA 353.2	10/12/23	10/12/23
Orthophosphate as P	1426-54-42	**0.044**		mg/L	1	0.0038	0.0040	EPA 365.1	10/11/23	10/11/23
Phosphorus	7723-14-0	**1.3**		mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Phosphorus (Dissolved)	7723-14-0	**0.12**		mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Total Alkalinity as CaC03	471-34-1	**131**		mg/L	1	5.0	5.0	SM 2320B	10/10/23	10/10/23
Total Kjeldahl Nitrogen	7727-37-9	**12.5**		mg/L	1	0.40	1.0	EPA 351.2	10/16/23	10/17/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.6**		mg/L	1	0.40	1.0	EPA 351.2	10/18/23	10/19/23
Total Nitrogen	17778-88-0	**15.9**		mg/L	1	0.20	0.50	CALC	10/17/23	10/17/23
Total Nitrogen (Dissolved)	17778-88-0	**5.9**		mg/L	1	0.20	0.50	CALC	10/19/23	10/19/23
Total Suspended Solids		**297**		mg/L	1	16.7	16.7	M-2540D-201	10/10/23	10/10/23
Total Solids		**1050**		mg/L	1	250	250	SM 2540B	10/11/23	10/11/23
Total Organic Carbon		**9.5**		mg/L	4	2.0	4.0	SM 5310B	10/12/23	10/12/23

Client ID # : **PWDUP**
SRL (Lab) ID# : 2310015-004
Date Collected : 10/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**1.4**		mg/L	1	0.035	0.050	EPA 350.1	10/17/23	10/17/23
Nitrate/Nitrite as N		**3.4**		mg/L	1	0.015	0.050	EPA 353.2	10/13/23	10/13/23
Nitrate/Nitrite as N (Dissolved)		**4.2**		mg/L	1	0.015	0.050	EPA 353.2	10/12/23	10/12/23
Orthophosphate as P	1426-54-42	**0.052**		mg/L	1	0.0038	0.0040	EPA 365.1	10/11/23	10/11/23
Phosphorus	7723-14-0	**1.3**		mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Phosphorus (Dissolved)	7723-14-0	**0.17**		mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Total Alkalinity as CaC03	471-34-1	**135**		mg/L	1	5.0	5.0	SM 2320B	10/10/23	10/10/23
Total Kjeldahl Nitrogen	7727-37-9	**6.2**		mg/L	1	0.40	1.0	EPA 351.2	10/16/23	10/17/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**1.7**		mg/L	1	0.40	1.0	EPA 351.2	10/18/23	10/19/23
Total Nitrogen	17778-88-0	**9.6**		mg/L	1	0.20	0.50	CALC	10/17/23	10/17/23
Total Nitrogen (Dissolved)	17778-88-0	**5.9**		mg/L	1	0.20	0.50	CALC	10/19/23	10/19/23
Total Suspended Solids		**303**		mg/L	1	16.7	16.7	M-2540D-201	10/10/23	10/10/23
Total Solids		**1200**		mg/L	1	250	250	SM 2540B	10/11/23	10/11/23
Total Organic Carbon		**10.1**		mg/L	4	2.0	4.0	SM 5310B	10/12/23	10/12/23

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-10015
Received Date : 10/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SC**
SRL (Lab) ID# : 2310015-005
Date Collected : 10/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.34	U	mg/kg dry	1	0.34	0.69	EPA 353.2	10/12/23	10/12/23
Phosphorus	7723-14-0	**51.1**		mg/kg dry	1	26.4	30.4	EPA 365.4	10/24/23	10/25/23
Total Kjeldahl Nitrogen	7727-37-9	**671**		mg/kg dry	1	44.7	81.3	EPA 351.2	10/19/23	10/20/23
Total Nitrogen	17778-88-0	**671**		mg/kg dry	1	15.3	27.8	CALC	10/20/23	10/20/23
Percent Moisture		**28.0%**				0.10	0.10		10/17/23	10/17/23

Client ID # : **SCDUP**
SRL (Lab) ID# : 2310015-006
Date Collected : 10/09/23
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.36	U	mg/kg dry	1	0.36	0.72	EPA 353.2	10/12/23	10/12/23
Phosphorus	7723-14-0	**55.8**		mg/kg dry	1	31.3	36.1	EPA 365.4	10/24/23	10/25/23
Total Kjeldahl Nitrogen	7727-37-9	**401**		mg/kg dry	1	66.8	122.0	EPA 351.2	10/19/23	10/20/23
Total Nitrogen	17778-88-0	**401**		mg/kg dry	1	15.8	28.7	CALC	10/20/23	10/20/23
Percent Moisture		**30.4%**				0.10	0.10		10/17/23	10/17/23

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-10015
Received Date : 10/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	10/17/23	10/17/23
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	10/13/23	10/13/23
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	10/12/23	10/12/23
Orthophosphate as P	1426-54-42	0.0040	U	mg/L	1	0.0038	0.0040	EPA 365.1	10/11/23	10/11/23
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	10/13/23	10/19/23
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	10/10/23	10/10/23
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	10/16/23	10/17/23
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	10/18/23	10/19/23
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	10/10/23	10/10/23
Total Solids		5.0	U	mg/L	1	10.0	10.0	SM 2540B	10/11/23	10/11/23
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	10/12/23	10/12/23

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.25	U	mg/kg wet	1	0.25	0.50	EPA 353.2	10/12/23	10/12/23
Total Kjeldahl Nitrogen	7727-37-9	49.5	U	mg/kg wet	1	49.5	89.0	EPA 351.2	10/19/23	10/20/23
Phosphorus	7723-14-0	23.7	U	mg/kg wet	1	23.7	27.4	EPA 365.4	10/24/23	10/25/23

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-10015
Received Date : 10/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	103/90/99	mg/Kg	90-110	80-120		10	0-20
Nitrate/Nitrite as N	95/80/83	mg/L	90-110	90-110	QM-07	2	0-20
Nitrate/Nitrite as N (Dissolved)	105/93/95	mg/L	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen	96/85/82	mg/Kg	90-110	90-110	QM-07	1	0-20
Total Kjeldahl Nitrogen	98/104/103	mg/L	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen (Dissolved)	93/92/93	mg/L	90-110	90-110		1	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	98/100/99	90-110	90-110		1	0-20

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	101/99/99		90-110	80-120		0	0-20
Phosphorus	103/101/105		90-110	80-120		2	0-20
Phosphorus	94/156/137	mg/Kg	90-110	80-120	QM-07	1	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	108/124/104	90-110	90-110	QM-07	5	0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Suspended Solids	98/98	90-110	0		0-10

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	94	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	133	132	1		0-20
Total Alkalinity as CaC03 (DUP)	92.0	93.2	1		0-20

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 23-10015
Received Date : 10/09/23

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	98/107/107	90-110	80-120		1	0-20

	% Recovery LCS	Acceptable Limits
Total Solids	102	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	540	540	0		0-10

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FDOH Cert # : E83484
SRL Lab Ref # : 23-10015
Received Date : 10/09/23

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Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2310015
6

Page of

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando Florida 32817
Phone:	407-321-7030 Fax:

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Project Name: Keystone Drive BMP Monitoring

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Analyses Requested: TSS	T Nitrogen, T Phosphorus, Nitrate+Nitrite (NA)	Orthophosphate	Alkalinity, TS	Estimate Nitrogen, Estimate Phosphorus	TOC	Bulk Density	Moisture content	Total Nitrogen, Total Phosphorus
1	SWG	10/9/23	1106	G	SW	7	✓	✓	✓	✓	✓	✓			
2	PWG1		1152	G	SW	7	✓	✓	✓	✓	✓	✓			
3	PWG2		1250	G	SW	7	✓	✓	✓	✓	✓	✓			
4	PW DUP		1258	G	SW	7	✓	✓	✓	✓	✓	✓			
5	SC		1540	C	SE	2							✓	✓	✓
6	SC DUP		1540	C	SE	2							✓	✓	✓

	Sample Identification	Project Number
1	SWG	2310015-001
2	PWG1	-002
3	PWG2	-003
4	PW DUP	-004
5	SC	-005
6	SC DUP	-006

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[illegible]	10-4-23	9:52			
Returned: / /	Via:		10-9-23	16:25	Helen Lunn	10-9-23	16:25

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): X950, 2.3°C X307 2.2°C

Sampling Kit No.: 9759

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitric Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 03/27/24
Contact Name: **Mike Hardin**	Date Received: 03/27/24
Project Name: Keystone Drive Baffle Box	Time Received: 14:08
Project Number: FW7915	Date Reported : 05/01/24
Phone Number: (407) 321-7030	Date Emailed : 05/01/24
Fax Number: NA	SRL Work Order # 24-03062

SRL WO #	Clients #	Matrix	Analysis Requested
2403062-001	PWG1	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2403062-002	PWG2	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2403062-003	DUP	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus
2403062-004	SWG	Liquid	Alkalinity/Total Nitrogen/Ammonia/ Total Phosphorus/Orthophosphate/ TOC/TSS/TS/Particulate Nitrogen/ Particulate Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

This report, which includes the attached Chain-of-Custody, shall not be reproduced except in full, without written approval of the laboratory.

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03062
Received Date : 03/27/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive Baffle Box
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **PWG1**
SRL (Lab) ID# : 2403062-001
Date Collected : 03/27/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.53**		mg/L	1	0.035	0.050	EPA 350.1	03/29/24	03/29/24
Nitrate/Nitrite as N		**0.64**		mg/L	1	0.015	0.050	EPA 353.2	04/18/24	04/18/24
Nitrate/Nitrite as N (Dissolved)		**0.98**		mg/L	1	0.015	0.050	EPA 353.2	04/18/24	04/18/24
Orthophosphate as P	1426-54-42	**0.104**		mg/L	1	0.0038	0.0040	EPA 365.1	03/28/24	03/28/24
Phosphorus	7723-14-0	**0.23**		mg/L	1	0.0028	0.0040	EPA 365.3	04/03/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	**0.089**		mg/L	1	0.0028	0.0040	EPA 365.3	04/04/24	04/11/24
Total Alkalinity as CaC03	471-34-1	**66.5**		mg/L	1	5.0	5.0	SM 2320B	03/28/24	03/28/24
Total Kjeldahl Nitrogen	7727-37-9	**0.82**		mg/L	1	0.20	0.50	EPA 351.2	04/06/24	04/10/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.77**		mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Nitrogen	17778-88-0	**1.5**		mg/L	1	0.20	0.50	CALC	04/11/24	04/11/24
Total Nitrogen (Dissolved)	17778-88-0	**1.7**		mg/L	1	0.20	0.50	CALC	04/23/24	04/23/24
Total Suspended Solids		**62.0**		mg/L	1	1.0	1.0	SM-2540D-2011	04/02/24	04/02/24
Total Solids		**134**		mg/L	1	10.0	10.0	SM 2540B	03/29/24	03/29/24
Total Organic Carbon		**5.0**		mg/L	1	0.50	1.0	SM 5310B	04/03/24	04/03/24

Client ID # : **PWG2**
SRL (Lab) ID# : 2403062-002
Date Collected : 03/27/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.51**		mg/L	1	0.035	0.050	EPA 350.1	03/29/24	03/29/24
Nitrate/Nitrite as N		**0.69**		mg/L	1	0.015	0.050	EPA 353.2	04/02/24	04/02/24
Nitrate/Nitrite as N (Dissolved)		**0.67**		mg/L	1	0.015	0.050	EPA 353.2	03/28/24	03/28/24
Orthophosphate as P	1426-54-42	**0.063**		mg/L	1	0.0038	0.0040	EPA 365.1	03/28/24	03/28/24
Phosphorus	7723-14-0	**0.18**		mg/L	1	0.0028	0.0040	EPA 365.3	04/03/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	**0.14**		mg/L	1	0.0028	0.0040	EPA 365.3	04/04/24	04/11/24
Total Alkalinity as CaC03	471-34-1	**57.5**		mg/L	1	5.0	5.0	SM 2320B	03/28/24	03/28/24
Total Kjeldahl Nitrogen	7727-37-9	**0.65**		mg/L	1	0.20	0.50	EPA 351.2	04/05/24	04/11/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.63**		mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Nitrogen	17778-88-0	**1.3**		mg/L	1	0.20	0.50	CALC	04/11/24	04/11/24
Total Nitrogen (Dissolved)	17778-88-0	**1.3**		mg/L	1	0.20	0.50	CALC	04/05/24	04/05/24
Total Suspended Solids		**22.5**		mg/L	1	1.0	1.0	SM-2540D-2011	04/02/24	04/02/24
Total Solids		**96.0**		mg/L	1	10.0	10.0	SM 2540B	03/29/24	03/29/24
Total Organic Carbon		**4.9**		mg/L	1	0.50	1.0	SM 5310B	04/03/24	04/03/24

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03062
Received Date : 03/27/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive Baffle Box
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **DUP**
SRL (Lab) ID# : 2403062-003
Date Collected : 03/27/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	**0.64**		mg/L	1	0.035	0.050	EPA 350.1	03/29/24	03/29/24
Nitrate/Nitrite as N		**0.63**		mg/L	1	0.015	0.050	EPA 353.2	04/18/24	04/18/24
Nitrate/Nitrite as N (Dissolved)		**96.00**		mg/L	1	0.015	0.050	EPA 353.2	04/18/24	04/18/24
Orthophosphate as P	1426-54-42	**0.054**		mg/L	1	0.0038	0.0040	EPA 365.1	03/28/24	03/28/24
Phosphorus	7723-14-0	**3.5**		mg/L	1	0.0028	0.0040	EPA 365.3	04/03/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	**0.088**		mg/L	1	0.0028	0.0040	EPA 365.3	04/04/24	04/11/24
Total Alkalinity as CaC03	471-34-1	**68.5**		mg/L	1	5.0	5.0	SM 2320B	03/28/24	03/28/24
Total Kjeldahl Nitrogen	7727-37-9	**11.3**		mg/L	1	0.20	0.50	EPA 351.2	04/06/24	04/10/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.76**		mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Nitrogen	17778-88-0	**11.9**		mg/L	1	0.20	0.50	CALC	04/11/24	04/11/24
Total Nitrogen (Dissolved)	17778-88-0	**1.7**		mg/L	1	0.20	0.50	CALC	04/05/24	04/05/24
Total Suspended Solids		**116**		mg/L	1	1.0	1.0	M-2540D-201	04/02/24	04/02/24
Total Solids		**140**		mg/L	1	10.0	10.0	SM 2540B	03/29/24	03/29/24
Total Organic Carbon		**5.2**		mg/L	1	0.50	1.0	SM 5310B	04/03/24	04/03/24

Client ID # : **SWG**
SRL (Lab) ID# : 2403062-004
Date Collected : 03/27/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/29/24	03/29/24
Nitrate/Nitrite as N		**0.25**		mg/L	1	0.015	0.050	EPA 353.2	04/02/24	04/02/24
Nitrate/Nitrite as N (Dissolved)		**0.23**		mg/L	1	0.015	0.050	EPA 353.2	03/28/24	03/28/24
Orthophosphate as P	1426-54-42	**0.004**	I	mg/L	1	0.0038	0.0040	EPA 365.1	03/28/24	03/28/24
Phosphorus	7723-14-0	**0.017**		mg/L	1	0.0028	0.0040	EPA 365.3	04/03/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	**0.0086**		mg/L	1	0.0028	0.0040	EPA 365.3	04/04/24	04/11/24
Total Alkalinity as CaC03	471-34-1	**73.6**		mg/L	1	5.0	5.0	SM 2320B	03/28/24	03/28/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	04/06/24	04/10/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	**0.21**	I	mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Nitrogen	17778-88-0	**0.25**	I	mg/L	1	0.20	0.50	CALC	04/11/24	04/11/24
Total Nitrogen (Dissolved)	17778-88-0	**0.44**	I	mg/L	1	0.20	0.50	CALC	04/05/24	04/05/24
Total Suspended Solids		**11.0**		mg/L	1	1.0	1.0	M-2540D-201	04/02/24	04/02/24
Total Solids		**448**		mg/L	1	10.0	10.0	SM 2540B	03/29/24	03/29/24
Total Organic Carbon		**3.4**		mg/L	1	0.50	1.0	SM 5310B	04/03/24	04/03/24

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03062
Received Date : 03/27/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive Baffle Box
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Ammonia as N	7664-41-7	0.035	U	mg/L	1	0.035	0.050	EPA 350.1	03/29/24	03/29/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	04/02/24	04/02/24
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	04/18/24	04/18/24
Nitrate/Nitrite as N (Dissolved)		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	03/28/24	03/28/24
Orthophosphate as P	1426-54-42	0.0038	U	mg/L	1	0.0038	0.0040	EPA 365.1	03/28/24	03/28/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	04/03/24	04/11/24
Phosphorus (Dissolved)	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	04/04/24	04/11/24
Total Alkalinity as CaC03	471-34-1	5.0	U	mg/L	1	5.0	5.0	EPA 310.2	03/28/24	03/28/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	04/06/24	04/10/24
Total Kjeldahl Nitrogen (Dissolved)	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	04/02/24	04/03/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	04/02/24	04/02/24
Total Solids		10.0	U	mg/L	1	10.0	10.0	SM 2540B	03/29/24	03/29/24
Total Organic Carbon		0.50	U	mg/L	1	0.50	1.0	SM 5310B	04/03/24	04/03/24

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SRL Lab Ref # : 24-03062
Received Date : 03/27/24

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Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive Baffle Box
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	102/93/96	90-110	90-110		3	0-20
Nitrate/Nitrite as N (Dissolved)	101/85/92	90-110	90-110	QM-07	5	0-20
Total Kjeldahl Nitrogen	90/93/95	90-110	90-110		1	0-20
Total Kjeldahl Nitrogen (Dissolved)	93/95/96	90-110	90-110		1	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Orthophosphate as P	90/113	90-110	90-125		NA	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus (Dissolved)	97/88/0	90-110	80-120	QM-07	67	0-20
Phosphorus	93/90/93	90-110	80-120	QM-R1	3	0-20

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrogen, Ammonia (as N)	106/108/108	90-110	90-110		0	0-20

	% Recovery LCS/LCSD	Acceptable Limits	RPD	Notes	RPD Limit
Total Suspended Solids	116/116	80-120	0		0-10

	% Recovery LCS	Acceptable Limits
Total Alkalinity as CaC03	103	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Alkalinity as CaC03 (DUP)	68.5	67.5	1.5		0-20

	% Recovery LCS	Acceptable Limits
Total Solids	95.4	90-110

	Result	DUP Result	RPD	Notes	RPD Limit
Total Solids (DUP)	134	132	1.5		0-10

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03062
Received Date : 03/27/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive Baffle Box
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Total Organic Carbon	95/97/98	90-110	80-120		1	0-20

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NELAP Certified
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Received Date : 03/27/24

Mike Hardin
Geosyntec Consultants, Inc.
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Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive Baffle Box
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

QM-R1 Estimated Value. RPD value was outside control limits

Chain of Custody

2403062
4

Project Manager:	Mike Hardin
Company:	Geosyntec Consultants, Inc.
Address:	3504 Lake Lynda Drive, Suite 155
City, State, Zip:	Orlando Florida 32817
Phone:	407-321-7030 Fax:

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page 4 of

Project Name: OC Keystone Baffle Box

Project Location:

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s):

Preservatives (see codes)

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	TSS	T Nitrogen + Ammonia Nitrate+Nitrite (wo N)	Orthophosphate	Alkalinity / TS	Particulate Nitrogen Particulate Phosphorus	TOC				
1	PWG 1	3/27/24	1104	G	SW	7	✓	✓	✓	✓	✓	✓				2403062-001
2	PWG 2		1210	G	SW	7	✓	✓	✓	✓	✓	✓				-002
3	DUP		1106	G	SW	7	✓	✓	✓	✓	✓	✓				-003
4	SWG		1235	G	SW	7	✓	✓	✓	✓	✓	✓				-004

Analyses Requested

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Allen Burkett	2/28/24	9:50		2/28/24	1515
Returned: / /	Via:		3/27/24	14:08		3/27/24	14:08
			1.3 DU				

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 05, Ten Blue cooler

Sampling Kit No.: 9937

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitric Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 03/28/24
Contact Name: **Mike Hardin**	Date Received: 03/28/24
Project Name: Keystone Drive BMP Monitoring	Time Received: 11:10
Project Number: FW7915	Date Reported : 04/19/24
Phone Number: (407) 321-7030	Date Emailed : 04/19/24
Fax Number: NA	SRL Work Order # 24-03065

SRL WO #	Clients #	Matrix	Analysis Requested
2403065-001	SC	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus
2403065-002	SCDUP	Sediment	Bulk Density/Moisture Content/ Total Nitrogen/T Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03065
Received Date : 03/28/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SC**
SRL (Lab) ID# : 2403065-001
Date Collected : 03/28/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		**0.70**		mg/kg dry	1	0.32	0.65	EPA 353.2	03/29/24	03/29/24
Phosphorus	7723-14-0	**82.0**		mg/kg dry	1	15.8	18.2	EPA 365.4	04/18/24	04/18/24
Total Kjeldahl Nitrogen	7727-37-9	**136**		mg/kg dry	1	30.8	56.0	EPA 351.2	04/02/24	04/09/24
Total Nitrogen	17778-88-0	**137**		mg/kg dry	1	14.3	25.9	CALC	04/11/24	04/11/24
Percent Moisture		**22.9%**				0.10	0.10		04/03/24	04/03/24

Client ID # : **SCDUP**
SRL (Lab) ID# : 2403065-002
Date Collected : 03/28/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		**0.74**		mg/kg dry	1	0.32	0.63	EPA 353.2	03/29/24	03/29/24
Phosphorus	7723-14-0	**154**		mg/kg dry	1	10.8	12.4	EPA 365.4	04/18/24	04/18/24
Total Kjeldahl Nitrogen	7727-37-9	**197**		mg/kg dry	1	33.4	60.7	EPA 351.2	04/02/24	04/09/24
Total Nitrogen	17778-88-0	**198**		mg/kg dry	1	14.0	25.5	CALC	04/11/24	04/11/24
Percent Moisture		**21.5%**				0.10	0.10		04/03/24	04/03/24

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03065
Received Date : 03/28/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.25	U	mg/kg wet	1	0.25	0.50	EPA 353.2	03/29/24	03/29/24
Total Kjeldahl Nitrogen	7727-37-9	53.7	U	mg/kg wet	1	53.7	97.6	EPA 351.2	04/02/24	04/09/24
Phosphorus	7723-14-0	12.0	U	mg/kg wet	1	12.0	13.9	EPA 365.4	04/18/24	04/18/24

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03065
Received Date : 03/28/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	102/93/94	90-110	80-120		1	0-20
Total Kjeldahl Nitrogen	97/86/86	90-110	90-110	QM-07	2	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD	LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	91/91/91	90-110	80-120		1	0-20

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-03065
Received Date : 03/28/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2403065
2

Page 2 of

Project Manager: Mike Hardie	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone Baffle Box
City, State, Zip: Orlando Florida 32817	Project Location:
Phone: 407-321-7090 Fax:	

Sampled by [Print Name(s)] / Affiliation: Patrick Barnes / BFA

Sampler(s) Signature(s): Patrick Barnes

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: Bulk Density	Moisture content	Total Nitrogen Total phosphorus	
SC	3/28/24	1015	C	SE	2		✓	✓	✓	2403065-001
SC DUP	3/28/24	1018	C	SE	2		✓	✓	✓	-002

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turn FED EX KIT	32724	14:10	Patrick Barnes	3/27/24	14:10
Returned: / /	Via:	Patrick Barnes	3/29/24	11:10	Helen Turn	32824	11:10

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 05 2.9 oc

Sampling Kit No.: 9937

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitric Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Ardaman & Associates, Inc. **Consolidated**

Report Date: 04/23/24

Orlando Branch
Florida Registration No. 5950
8008 South Orange Avenue
Orlando, FL 32809
Phone: 407-855-3860

Client:
Southern Research Laboratories
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL 32714

Project:
20-5709
Various - Bulk Density Determination
2251 Lynx Lane - Suite 1
Orlando, FL 32804

Table of Contents

Title	Description
Summary of Laboratory Testing	Samples SC & SC DUP (Sampled 3/27/24)
Summary of Laboratory Testing	Chain of Custody Form

Distribution List

Name	Company
Payne, Sherri	Southern Research Laboratories

This item has been digitally signed and sealed by Senior Project Manager Dan Dunham on Apr 23, 2024 using a Digital Signature.

Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

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Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

April 23, 2024
File No. 20-61-5709

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 03/28/24
OC Keystone Baffle Box

Dear Ms. Payne,

As requested, loose bulk density testing was performed on a sediment sample delivered to our laboratory on 04/08/24 by your representative. The loose bulk density of the sediment was determined by dropping the "as-received" sample into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of the sediment sample was used to calculate the loose bulk densities presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
SC	107.9	39.0	77.6
SC DUP	106.3	38.0	77.0

A copy of the Chain of Custody form is attached.

We appreciate the opportunity to be of assistance to you during this phase of the project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

Dan Dunham

Dan Dunham, P.E.
Senior Engineer
FL License No. 36782

8008 S. Orange Avenue (32809), Post Office Box 593003, Orlando, Florida 32859-3003 Phone (407) 855-3860 FAX (407) 859-8
Florida: Bartow, Cocoa, Fort Myers, Miami, Orlando, Port St. Lucie, Sarasota, Tallahassee, Tampa, West Palm Beach
Louisiana: Alexandria, Baton Rouge, Monroe, New Orleans and Shreveport

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 06/25/24
Contact Name: **Mike Hardin**	Date Received: 06/25/24
Project Name: Keystone Drive BMP Monitoring	Time Received: 15:25
Project Number: FW7915	Date Reported : 07/16/24
Phone Number: (407) 321-7030	Date Emailed : 07/16/24
Fax Number: NA	SRL Work Order # 24-06049

SRL WO #	Clients #	Matrix	Analysis Requested
2406049-001	SWG	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2406049-002	PWG1	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2406049-003	PWG2	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2406049-004	SC	Sediment	Bulk Density/Moisture Content/ Total Nitrogen (TKN+NOX)/ Total Phosphorus
2406049-005	DUP	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2406049-006	SC2	Sediment	Bulk Density/Moisture Content/ Total Nitrogen (TKN+NOX)/ Total Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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an MBE Environmental Laboratory
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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06049
Received Date : 06/25/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SWG**
SRL (Lab) ID# : 2406049-001
Date Collected : 06/25/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.34**	I	mg/L	1	0.20	0.50	EPA 351.2	07/01/24	07/05/24
Nitrate/Nitrite as N		**1.0**		mg/L	1	0.015	0.050	EPA 353.2	06/29/24	06/29/24
Total Nitrogen	17778-88-0	**1.4**		mg/L	1	0.20	0.50	CALC	07/05/24	07/05/24
Phosphorus	7723-14-0	**0.0078**		mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Total Suspended Solids		**2.0**		mg/L	1	1.0	1.0	M-2540D-201	07/01/24	07/01/24

Client ID # : **PWG1**
SRL (Lab) ID# : 2406049-002
Date Collected : 06/25/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**10.2**		mg/L	1	0.20	0.50	EPA 351.2	07/01/24	07/05/24
Nitrate/Nitrite as N		**0.087**		mg/L	1	0.015	0.050	EPA 353.2	06/29/24	06/29/24
Total Nitrogen	17778-88-0	**10.3**		mg/L	1	0.40	1.0	CALC	07/05/24	07/05/24
Phosphorus	7723-14-0	**1.6**		mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Total Suspended Solids		**414**		mg/L	1	1.0	1.0	M-2540D-201	07/01/24	07/01/24

Client ID # : **PWG2**
SRL (Lab) ID# : 2406049-003
Date Collected : 06/25/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**15.6**		mg/L	1	0.20	0.50	EPA 351.2	07/01/24	07/05/24
Nitrate/Nitrite as N		**0.13**		mg/L	1	0.015	0.050	EPA 353.2	06/29/24	06/29/24
Total Nitrogen	17778-88-0	**15.7**		mg/L	1	0.40	1.0	CALC	07/05/24	07/05/24
Phosphorus	7723-14-0	**2.5**		mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Total Suspended Solids		**712**		mg/L	1	1.0	1.0	M-2540D-201	07/01/24	07/01/24

Client ID # : **SC**
SRL (Lab) ID# : 2406049-004
Date Collected : 06/25/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.40	U	mg/kg dry	1	0.40	0.80	EPA 353.2	07/03/24	07/03/24
Phosphorus	7723-14-0	26.7	U	mg/kg dry	1	26.7	30.8	EPA 365.4	06/30/24	07/01/24
Total Kjeldahl Nitrogen	7727-37-9	**104**		mg/kg dry	1	56.5	103	EPA 351.2	06/30/24	07/03/24
Total Nitrogen	17778-88-0	**104**		mg/kg dry	1	17.8	32.2	CALC	07/11/24	07/11/24
Percent Moisture		**38.0%**				0.10	0.10		07/09/24	07/09/24

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06049
Received Date : 06/25/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **DUP**
SRL (Lab) ID# : 2406049-005
Date Collected : 06/25/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**9.9**		mg/L	1	0.20	0.50	EPA 351.2	07/01/24	07/05/24
Nitrate/Nitrite as N		**0.085**		mg/L	1	0.015	0.050	EPA 353.2	06/29/24	06/29/24
Total Nitrogen	17778-88-0	**10**		mg/L	1	0.40	1.0	CALC	07/09/24	07/09/24
Phosphorus	7723-14-0	**1.6**		mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Total Suspended Solids		**436**		mg/L	1	1.0	1.0	M-2540D-201	07/01/24	07/01/24

Client ID # : **SC2**
SRL (Lab) ID# : 2406049-006
Date Collected : 06/25/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.43	U	mg/kg dry	1	0.43	0.85	EPA 353.2	07/03/24	07/03/24
Phosphorus	7723-14-0	**485**		mg/kg dry	1	17.9	20.7	EPA 365.4	06/30/24	07/01/24
Total Kjeldahl Nitrogen	7727-37-9	**1500**		mg/kg dry	1	37.9	69.0	EPA 351.2	06/30/24	07/01/24
Total Nitrogen	17778-88-0	**1500**		mg/kg dry	1	18.9	34.3	CALC	07/11/24	07/11/24
Percent Moisture		**41.7%**				0.10	0.10		07/09/24	07/09/24

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06049
Received Date : 06/25/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	06/29/24	06/29/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	07/01/24	07/05/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	07/05/24	07/06/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	07/01/24	07/01/24

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.25	U	mg/kg wet	1	0.25	0.50	EPA 353.2	07/03/24	07/03/24
Total Kjeldahl Nitrogen	7727-37-9	49.5	U	mg/kg wet	1	49.5	89.0	EPA 351.2	06/30/24	07/01/24
Phosphorus	7723-14-0	23.7	U	mg/kg wet	1	23.7	27.4	EPA 365.4	06/30/24	07/01/24

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-06049
Received Date : 06/25/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	106/85/85	mg/Kg	90-110	80-120		1	0-20
Nitrate/Nitrite as N	102/66/77	mg/L	90-110	90-110	QM-07	15	0-20
Total Kjeldahl Nitrogen	106/99/155	mg/Kg	90-110	90-110	QM-07 J(R1)	30	0-20
Total Kjeldahl Nitrogen	106/107/108	mg/L	90-110	90-110		1	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	93/96/96		90-110	80-120		0	0-20
Phosphorus	106/124/140	mg/Kg	90-110	80-120	QM-07 L	6	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	95	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	9.6	10.5	9		0-10

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Received Date : 06/25/24

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Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW7915
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

J-(R1) Estimated Value. RPD value was outside control limits

Chain of Custody

2406049

Page 6 of

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone Drive BMP
City, State, Zip: Orlando Florida 32817	Project Location:
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Jacob Kent / Kenneth Hamilton

Sampler(s) Signature(s): Kenneth Hamilton

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ✓ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	TP	TKN + TN/NOX	Bulk Density	Moisture Content					
1	SWG	06/25/24	1038	G	SW	2		✓	✓	✓							2406049-001
2	PWG 1	06/25/24	1147	G	SW	2		✓	✓	✓							-002
3	PWG 2	06/25/24	1256	G	SW	2		✓	✓	✓							-003
4	SC	06/25/24	1415	G	SE	2			X	X	✓	✓					-004
5	Dup	06/25/24	1150	G	SW	2		✓	✓	✓							-005
6	SC2	06/25/24	1422	G	SE	1			X	X	✓	✓					-006

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Sun	6.17.24	17:15	Kenneth Hamilton	6.17.24	17:15
Returned: / /	Via:	Kenneth Hamilton	6.25.24	1525	Helen Sun	6.25.24	1525

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): 505, 21 (3.2°, 2.1°)

Sampling Kit No.: 10079

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 09/03/24
Contact Name: **Mike Hardin**	Date Received: 09/04/24
Project Name: Keystone Drive BMP Monitoring	Time Received: 10:00
Project Number: FW9650	Date Reported : 09/24/24
Phone Number: (407) 321-7030	Date Emailed : 09/24/24
Fax Number: NA	SRL Work Order # 24-09001

SRL WO #	Clients #	Matrix	Analysis Requested
2409001-001	PWG1	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2409001-002	PWG2	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2409001-003	SWG	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2409001-004	SC	Sediment	Bulk Density/Moisture Content/ Total Nitrogen (TKN+NOX)/ Total Phosphorus
2409001-005	DUP	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2409001-006	SC Dup	Sediment	Bulk Density/Moisture Content/ Total Nitrogen (TKN+NOX)/ Total Phosphorus

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

This report, which includes the attached Chain-of-Custody, shall not be reproduced except in full, without written approval of the laboratory.

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-09001
Received Date : 09/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : PWG1
SRL (Lab) ID# : 2409001-001
Date Collected : 09/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**2.0**		mg/L	1	0.20	0.50	EPA 351.2	09/12/24	09/12/24
Nitrate/Nitrite as N		**1.8**		mg/L	1	0.015	0.050	EPA 353.2	09/07/24	09/07/24
Total Nitrogen	17778-88-0	**3.8**		mg/L	1	0.20	0.50	CALC	09/13/24	09/13/24
Phosphorus	7723-14-0	**0.30**		mg/L	1	0.0028	0.0040	EPA 365.3	09/10/24	09/18/24
Total Suspended Solids		**73.6**		mg/L	1	1.0	1.0	M-2540D-201	09/09/24	09/09/24

Client ID # : PWG2
SRL (Lab) ID# : 2409001-002
Date Collected : 09/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**1.8**		mg/L	1	0.20	0.50	EPA 351.2	09/12/24	09/12/24
Nitrate/Nitrite as N		**1.9**		mg/L	1	0.015	0.050	EPA 353.2	09/07/24	09/07/24
Total Nitrogen	17778-88-0	**3.6**		mg/L	1	0.40	1.0	CALC	09/13/24	09/13/24
Phosphorus	7723-14-0	**0.27**		mg/L	1	0.0028	0.0040	EPA 365.3	09/10/24	09/18/24
Total Suspended Solids		**60.4**		mg/L	1	1.0	1.0	M-2540D-201	09/09/24	09/09/24

Client ID # : SWG
SRL (Lab) ID# : 2409001-003
Date Collected : 09/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.24**	I	mg/L	1	0.20	0.50	EPA 351.2	09/12/24	09/12/24
Nitrate/Nitrite as N		**1.0**		mg/L	1	0.015	0.050	EPA 353.2	09/07/24	09/07/24
Total Nitrogen	17778-88-0	**1.3**		mg/L	1	0.40	1.0	CALC	09/13/24	09/13/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	09/10/24	09/18/24
Total Suspended Solids		**1.5**		mg/L	1	1.0	1.0	M-2540D-201	09/09/24	09/09/24

Client ID # : SC
SRL (Lab) ID# : 2409001-004
Date Collected : 09/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.29	U	mg/kg dry	1	29.0	0.58	EPA 353.2	09/07/24	09/07/24
Phosphorus	7723-14-0	**270**		mg/kg dry	1	18.0	20.7	EPA 365.4	09/12/24	09/19/24
Total Kjeldahl Nitrogen	7727-37-9	**120**		mg/kg dry	1	56.5	103	EPA 351.2	09/12/24	09/19/24
Total Nitrogen	17778-88-0	**120**		mg/kg dry	1	12.7	23.0	CALC	09/19/24	09/19/24
Percent Moisture		**13.2%**				0.10	0.10		09/12/24	09/12/24

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279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-09001
Received Date : 09/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **DUP**
SRL (Lab) ID# : 2409001-005
Date Collected : 09/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**1.7**		mg/L	1	0.20	0.50	EPA 351.2	09/12/24	09/12/24
Nitrate/Nitrite as N		**1.9**		mg/L	1	0.015	0.050	EPA 353.2	09/07/24	09/07/24
Total Nitrogen	17778-88-0	**3.6**		mg/L	1	0.40	1.0	CALC	09/13/24	09/13/24
Phosphorus	7723-14-0	**0.28**		mg/L	1	0.0028	0.0040	EPA 365.3	09/10/24	09/18/24
Total Suspended Solids		**56.4**		mg/L	1	1.0	1.0	M-2540D-201	09/09/24	09/09/24

Client ID # : **SC Dup**
SRL (Lab) ID# : 2409001-006
Date Collected : 09/03/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.28	U	mg/kg dry	1	0.28	0.55	EPA 353.2	09/07/24	09/07/24
Phosphorus	7723-14-0	**151**		mg/kg dry	1	11.2	12.9	EPA 365.4	09/12/24	09/19/24
Total Kjeldahl Nitrogen	7727-37-9	**145**		mg/kg dry	1	23.6	43.0	EPA 351.2	09/12/24	09/19/24
Total Nitrogen	17778-88-0	**145**		mg/kg dry	1	12.1	22.0	CALC	09/19/24	09/19/24
Percent Moisture		**9.1%**				0.10	0.10		09/12/24	09/12/24

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Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-09001
Received Date : 09/04/24

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Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : Blanks					Dilution				Date	Date
Analtye	CAS Number	Results	Flag	Units	Factor	MDL	PQL	Method	Prepared	Analyzed
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	09/12/24	09/12/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	09/07/24	09/07/24
Phosphorus	7723-14-0	0.0028	U	mg/L	1	0.0028	0.0040	EPA 365.3	09/10/24	09/18/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	09/09/24	09/09/24

Client ID # : Blanks					Dilution				Date	Date
Analtye	CAS Number	Results	Flag	Units	Factor	MDL	PQL	Method	Prepared	Analyzed
Nitrate/Nitrite as N		0.25	U	mg/kg wet	1	0.25	0.50	EPA 353.2	09/07/24	09/07/24
Total Kjeldahl Nitrogen	7727-37-9	19.2	U	mg/kg wet	1	19.2	34.9	EPA 351.2	09/12/24	09/19/24
Phosphorus	7723-14-0	9.1	U	mg/kg wet	1	9.1	10.5	EPA 365.4	09/12/24	09/19/24

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Received Date : 09/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	107/40/23	mg/Kg	90-110	80-120	QM-07	55	0-20
					J(R-1)		
Nitrate/Nitrite as N	108/81/88	mg/L	90-110	90-110	QM-07	8	0-20
Total Kjeldahl Nitrogen	102/104/48	mg/Kg	90-110	90-110	QM-07	10	0-20
Total Kjeldahl Nitrogen	100/99/99	mg/L	90-110	90-110		0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	94/92/95	mg/L	90-110	80-120		3	0-20
Phosphorus	102/164/59	mg/Kg	90-110	80-120	QM-07	3	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	93	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	60.4	56.4	7		0-10

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an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-09001
Received Date : 09/04/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

J-(R1) Estimated Value. RPD value was outside control limits

Chain of Custody

2409001
6

Page 1 of 1

Project Manager: Mike Hardie	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone
City, State, Zip: Orlando Florida 32817	Project Location: Keystone Drive, Orlando
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Kevin Tyre / Geosyntec

Sampler(s) Signature(s): Kevin Tyre

Project Number: FW9650

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	TN	TP	Bulk Density					
1	PWG1	9/3/24	1:30	Comp	SW	2		X	X	X						2409001-001
2	PWG2	"	1:40	"	SW	2		X	X	X						-002
3	SWG	"	2:00	"	SW	2		X	X	X						-003
4	SC	"	5:00	"	SE	2			X	X	X					-004
5	Dup	"	"	"	SW	2		X	X	X						-005
6	SC Dup	"	"	"	SE	2			X	X	X					-006

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	Helen Turner	9/26/24	10:30	Geosyntec Staff Member	9-4-24	10:00
Returned: / /	Via:	Kevin Tyre	9/4/24	10:00			

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): teal 2.8 °C

Sampling Kit No.: 10149

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
Toll Free 1 (888) 420-Test

Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 12/12/24
Contact Name: **Mike Hardin**	Date Received: 12/12/24
Project Name: Keystone Drive BMP Monitoring	Time Received: 11:10
Project Number: FW9650	Date Reported : 01/09/25
Phone Number: (407) 321-7030	Date Emailed : 01/09/25
Fax Number: NA	SRL Work Order # 24-12023

SRL WO #	Clients #	Matrix	Analysis Requested
2412023-001	SC	Sediment	Bulk Density/Moisture Content/ Total Nitrogen (TKN+NOX)/ Total Phosphorus
2412023-002	SC Dup	Sediment	Bulk Density/Moisture Content/ Total Nitrogen (TKN+NOX)/ Total Phosphorus
2412023-003	SWG	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2412023-004	PWG2	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2412023-005	PWG1	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2412023-006	DUP	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS

Sherri Payne
Vice President & Quality Assurance Officer
Southern Research Laboratories, Inc.

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-12023
Received Date : 12/13/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SC**
SRL (Lab) ID# : 2412023-001
Date Collected : 12/12/24
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.31	U	mg/kg dry	1	0.31	0.63	EPA 353.2	12/14/24	12/14/24
Phosphorus	7723-14-0	**106**		mg/kg dry	1	22.4	25.9	EPA 365.4	12/21/24	12/26/24
Total Kjeldahl Nitrogen	7727-37-9	**54.4**	I	mg/kg dry	1	47.5	86.3	EPA 351.2	12/21/24	12/26/24
Total Nitrogen	17778-88-0	**54.4**		mg/kg dry	1	13.8	25.2	CALC	01/07/25	01/07/25
Percent Moisture		**20.5%**				0.10	0.10		12/24/24	12/24/24

Client ID # : **SC Dup**
SRL (Lab) ID# : 2412023-002
Date Collected : 12/12/24
Lab FDOH Certification # : E83079

Analyte	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.31	U	mg/kg dry	1	0.31	0.62	EPA 353.2	12/14/24	12/14/24
Phosphorus	7723-14-0	23.9	U	mg/kg dry	1	23.9	27.5	EPA 365.4	12/21/24	12/26/24
Total Kjeldahl Nitrogen	7727-37-9	**206**		mg/kg dry	1	50.5	91.8	EPA 351.2	12/21/24	12/26/24
Total Nitrogen	17778-88-0	**206**		mg/kg dry	1	13.5	24.8	CALC	01/07/25	01/07/25
Percent Moisture		**19.4%**				0.10	0.10		12/24/24	12/24/24

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-12023
Received Date : 12/13/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **SWG**
SRL (Lab) ID# : 2412023-003
Date Collected : 12/12/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**2.1**		mg/L	1	0.20	0.50	EPA 351.2	12/17/24	12/21/24
Nitrate/Nitrite as N		**0.71**		mg/L	1	0.015	0.050	EPA 353.2	12/14/24	12/14/24
Total Nitrogen	17778-88-0	**2.8**		mg/L	1	0.20	0.50	CALC	12/23/24	12/23/24
Phosphorus	7723-14-0	**0.26**		mg/L	1	0.070	0.10	EPA 365.4	12/17/24	12/21/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	12/16/24	12/16/24

Client ID # : **PWG2**
SRL (Lab) ID# : 2412023-004
Date Collected : 12/12/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**2.1**		mg/L	1	0.20	0.50	EPA 351.2	12/17/24	12/21/24
Nitrate/Nitrite as N		**1.6**		mg/L	1	0.015	0.050	EPA 353.2	12/14/24	12/14/24
Total Nitrogen	17778-88-0	**3.7**		mg/L	1	0.20	0.50	CALC	12/23/24	12/23/24
Phosphorus	7723-14-0	**0.29**		mg/L	1	0.070	0.10	EPA 365.4	12/17/24	12/21/24
Total Suspended Solids		**55.6**		mg/L	1	1.0	1.0	M-2540D-201	12/16/24	12/16/24

Client ID # : **PWG1**
SRL (Lab) ID# : 2412023-005
Date Collected : 12/12/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**2.2**		mg/L	1	0.20	0.50	EPA 351.2	12/17/24	12/21/24
Nitrate/Nitrite as N		**2.0**		mg/L	1	0.015	0.050	EPA 353.2	12/14/24	12/14/24
Total Nitrogen	17778-88-0	**4.2**		mg/L	1	0.20	0.50	CALC	12/23/24	12/23/24
Phosphorus	7723-14-0	**0.27**		mg/L	1	0.070	0.10	EPA 365.4	12/17/24	12/21/24
Total Suspended Solids		**54.7**		mg/L	1	1.0	1.0	M-2540D-201	12/16/24	12/16/24

Client ID # : **DUP**
SRL (Lab) ID# : 2412023-006
Date Collected : 12/12/24
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**2.1**		mg/L	1	0.20	0.50	EPA 351.2	12/17/24	12/21/24
Nitrate/Nitrite as N		**2.0**		mg/L	1	0.015	0.050	EPA 353.2	12/14/24	12/14/24
Total Nitrogen	17778-88-0	**4.1**		mg/L	1	0.20	0.50	CALC	12/23/24	12/23/24
Phosphorus	7723-14-0	**0.27**		mg/L	1	0.070	0.10	EPA 365.4	12/17/24	12/21/24
Total Suspended Solids		**58.7**		mg/L	1	1.0	1.0	M-2540D-201	12/16/24	12/16/24

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-12023
Received Date : 12/13/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : Blanks

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	12/17/24	12/21/24
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	12/14/24	12/14/24
Phosphorus	7723-14-0	0.070	U	mg/L	1	0.070	0.10	EPA 365.4	12/17/24	12/21/24
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	12/16/24	12/16/24

Client ID # : Blanks

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.25	U	mg/kg wet	1	0.25	0.50	EPA 353.2	12/14/24	12/14/24
Total Kjeldahl Nitrogen	7727-37-9	25.3	U	mg/kg wet	1	25.3	46.1	EPA 351.2	12/21/24	12/26/24
Phosphorus	7723-14-0	12.0	U	mg/kg wet	1	12.0	13.8	EPA 365.4	12/21/24	12/26/24

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 24-12023
Received Date : 12/13/24

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	105/69/64	mg/Kg	90-110	80-120	QM-07	8	0-20
Nitrate/Nitrite as N	96/88/87	mg/L	90-110	90-110	QM-07	1	0-20
Total Kjeldahl Nitrogen	99/99/98	mg/Kg	90-110	90-110		4	0-20
Total Kjeldahl Nitrogen	97/97/97	mg/L	90-110	90-110		0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	100/99/102	mg/L	90-110	80-120		3	0-20
Phosphorus	97/92/99	mg/Kg	90-110	80-120		4	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	86	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	82.8	83.6	1		0-10

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Received Date : 12/13/24

Mike Hardin
Geosyntec Consultants, Inc.
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Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chain of Custody

2412023
-6

Page of

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants, Inc.	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Drive, Suite 155	Project Name: OC Keystone Project
City, State, Zip: Orlando Florida 32817	Project Location:
Phone: 407-321-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Emma Ahearn

Sampler(s) Signature(s):

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)	Analyses Requested: TSS	T. Nitrogen = TKN + NOx	T. Phosphorus	Bulk Density	Moisture Content				
							I	I	S	S	I	I				
1	SC	12/12/24	6:20pm	Grab	SE	2	BD		X	X	X	X				2412023-001
2	SC Dup	12/12/24	6:20pm	Grab	SE	2	BD		X	X	X	X				-002
3	SWG	12/12/24	5:34pm	—	SW	2	TSS	X	X	X						-003
4	PWG2	12/12/24	5:34pm	—	SW	2	TP/TP	X	X	X						-004
5	PWG1	12/12/24	5:27pm	—	SW	2	TSS	X	X	X						-005
6	Dup	12/12/24	5:27pm	—	SW	2	TSS	X	X	X						-006

Shipment Method		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	[redacted]	11-19-24	10:15	Geosyntec Staff	11/19/24	11:00
Returned: / /	Via:		12-13-24	11:00		12-13-24	11:00

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): Teal 1.9 °C

Sampling Kit No.: 10247

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Southern Research Laboratories, Inc.

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Altamonte Springs, FL. 32714
(407) 522-7100 Fax (407) 522-7043
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Thank you **Mike Hardin** for the opportunity to be of service to you and your company, we **S**incerely **A**ppreciate **Y**our **B**usiness. SRL certifies these **Laboratory Results** were produced in accordance with NELAC Standards. Hold times and preservation requirements were met for all analytes unless specifically noted in the report. Results relate only to the samples as received.

Client Name: **Geosyntec Consultants, Inc.**	Date(s) Collected: 04/08/25
Contact Name: **Mike Hardin**	Date Received: 04/09/25
Project Name: Keystone Drive BMP Monitoring	Time Received: 11:07
Project Number: FW9650	Date Reported : 04/28/25
Phone Number: (407) 321-7030	Date Emailed : 04/28/25
Fax Number: NA	SRL Work Order # 25-04020

SRL WO #	Clients #	Matrix	Analysis Requested
2504020-001	PWG1	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2504020-002	PWG2	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2504020-003	SWG	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2504020-004	SC	Sediment	Bulk Density/Moisture Content/ Total Nitrogen (TKN+NOX)/ Total Phosphorus
2504020-005	DUP	Liquid	Total Nitrogen (TKN+NOX)/ Total Phosphorus/TSS
2504020-006	SC DUP	Sediment	Bulk Density/Moisture Content/ Total Nitrogen (TKN+NOX)/ Total Phosphorus

Saul Roa
Technical Manager & Quality Assurance Officer
Southern Research Laboratories, Inc.

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NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-04020
Received Date : 04/09/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **PWG1**
SRL (Lab) ID# : 2504020-001
Date Collected : 04/08/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**8.6**		mg/L	1	0.20	0.50	EPA 351.2	04/10/25	04/13/25
Nitrate/Nitrite as N		**0.29**		mg/L	1	0.015	0.050	EPA 353.2	04/11/25	04/11/25
Total Nitrogen	17778-88-0	**8.9**		mg/L	1	0.20	0.50	CALC	04/14/25	04/14/25
Phosphorus	7723-14-0	**2.4**		mg/L	1	0.10	0.070	EPA 365.4	04/10/25	04/15/25
Total Suspended Solids		**617**		mg/L	1	1.0	1.0	M-2540D-201	04/10/25	04/10/25

Client ID # : **PWG2**
SRL (Lab) ID# : 2504020-002
Date Collected : 04/08/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**7.7**		mg/L	1	0.20	0.50	EPA 351.2	04/10/25	04/13/25
Nitrate/Nitrite as N		**0.30**		mg/L	1	0.015	0.050	EPA 353.2	04/11/25	04/11/25
Total Nitrogen	17778-88-0	**8.0**		mg/L	1	0.40	1.0	CALC	04/14/25	04/14/25
Phosphorus	7723-14-0	**2.1**		mg/L	1	0.10	0.070	EPA 365.4	04/10/25	04/15/25
Total Suspended Solids		**442**		mg/L	1	1.0	1.0	M-2540D-201	04/10/25	04/10/25

Client ID # : **SWG**
SRL (Lab) ID# : 2504020-003
Date Collected : 04/08/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**0.85**		mg/L	1	0.20	0.50	EPA 351.2	04/10/25	04/13/25
Nitrate/Nitrite as N		**0.29**		mg/L	1	0.015	0.050	EPA 353.2	04/11/25	04/11/25
Total Nitrogen	17778-88-0	**1.1**		mg/L	1	0.40	1.0	CALC	04/14/25	04/14/25
Phosphorus	7723-14-0	**0.075**	I	mg/L	1	0.10	0.070	EPA 365.4	04/15/25	04/16/25
Total Suspended Solids		**12.0**		mg/L	1	1.0	1.0	M-2540D-201	04/10/25	04/10/25

Client ID # : **SC**
SRL (Lab) ID# : 2504020-004
Date Collected : 04/08/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.34	U	mg/kg dry	1	0.34	0.68	EPA 353.2	04/17/25	04/17/25
Phosphorus	7723-14-0	**409**		mg/kg dry	10	79.0	86.7	EPA 365.4	04/17/25	04/20/25
Total Kjeldahl Nitrogen	7727-37-9	**1040**		mg/kg dry	1	13.6	24.8	EPA 351.2	04/17/25	04/19/25
Total Nitrogen	17778-88-0	**1040**		mg/kg dry	1	14.9	27.1	CALC	04/21/25	04/21/25
Percent Moisture		**26.2%**				0.10	0.10		04/16/25	04/16/25

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-04020
Received Date : 04/09/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **DUP**
SRL (Lab) ID# : 2504020-005
Date Collected : 04/08/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Total Kjeldahl Nitrogen	7727-37-9	**7.9**		mg/L	1	0.20	0.50	EPA 351.2	04/10/25	04/13/25
Nitrate/Nitrite as N		**0.30**		mg/L	1	0.015	0.050	EPA 353.2	04/11/25	04/11/25
Total Nitrogen	17778-88-0	**8.2**		mg/L	1	0.40	1.0	CALC	04/14/25	04/14/25
Phosphorus	7723-14-0	**2.1**		mg/L	1	0.10	0.070	EPA 365.4	04/10/25	04/15/25
Total Suspended Solids		**446**		mg/L	1	1.0	1.0	M-2540D-201	04/10/25	04/10/25

Client ID # : **SC DUP**
SRL (Lab) ID# : 2504020-006
Date Collected : 04/08/25
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.32	U	mg/kg dry	1	0.32	0.64	EPA 353.2	04/17/25	04/17/25
Phosphorus	7723-14-0	**144**		mg/kg dry	1	7.6	8.4	EPA 365.4	04/17/25	04/20/25
Total Kjeldahl Nitrogen	7727-37-9	**287**		mg/kg dry	1	13.1	23.9	EPA 351.2	04/17/25	04/19/25
Total Nitrogen	17778-88-0	**287**		mg/kg dry	1	14.1	25.6	CALC	04/21/25	04/21/25
Percent Moisture		**21.9%**				0.10	0.10		04/16/25	04/16/25

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-04020
Received Date : 04/09/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.015	U	mg/L	1	0.015	0.050	EPA 353.2	04/10/25	04/13/25
Total Kjeldahl Nitrogen	7727-37-9	0.20	U	mg/L	1	0.20	0.50	EPA 351.2	04/11/25	04/11/25
Phosphorus	7723-14-0	0.070	U	mg/L	1	0.10	0.070	EPA 365.4	04/10/25	04/15/25
Phosphorus	7723-14-0	0.070	U	mg/L	1	0.10	0.070	EPA 365.4	04/15/25	04/16/25
Total Suspended Solids		1.0	U	mg/L	1	1.0	1.0	M-2540D-201	04/10/25	04/10/25

Client ID # : **Blanks**
Lab FDOH Certification # : E83079

Analtye	CAS Number	Results	Flag	Units	Dilution Factor	MDL	PQL	Method	Date Prepared	Date Analyzed
Nitrate/Nitrite as N		0.25	U	mg/kg wet	1	0.25	0.50	EPA 353.2	04/17/25	04/17/25
Total Kjeldahl Nitrogen	7727-37-9	11.2	U	mg/kg wet	1	11.2	20.3	EPA 351.2	04/17/25	04/19/25
Phosphorus	7723-14-0	6.5	U	mg/kg wet	1	6.5	7.1	EPA 365.4	04/17/25	04/20/25

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-04020
Received Date : 04/09/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

Classical Chemistry Parameters

QAQC

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Nitrate/Nitrite as N	101/95/97	mg/Kg	90-110	80-120		2	0-20
Nitrate/Nitrite as N	101/95/97	mg/L	90-110	90-110		2	0-20
Total Kjeldahl Nitrogen	94/86/45	mg/Kg	90-110	90-110	QM-07 J(R1)	31	0-20
Total Kjeldahl Nitrogen	95/94/94	mg/L	90-110	90-110		0	0-20

Total Nitrogen (Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

	% Recovery LCS/MS/MSD		LCS Acceptable Limits	MS/MSD Acceptable Limits	Notes	%RPD MS/MSD	Acceptable Limits
Phosphorus	96/82/80		90-110	80-120		2	0-20
Phosphorus	101/148/149		90-110	80-120	QM-07	0	0-20
Phosphorus	98/-33/-77	mg/Kg	90-110	80-120	QM-07	20	0-20

	% Recovery LCS	Acceptable Limits
Total Suspended Solids	91	80-120

	Result	DUP Result	RPD	Notes	RPD Limit
Total Suspended Solids (DUP)	436	442	1		0-10

Southern Research Laboratories, Inc.
an MBE Environmental Laboratory
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL. 32714 (407) 522-7100

NELAP Certified
FDOH Cert # : E83484
SRL Lab Ref # : 25-04020
Received Date : 04/09/25

Mike Hardin
Geosyntec Consultants, Inc.
3504 Lake Lynda Drive., Suite 155
Orlando, FL. 32817 (407) 321-7030

Project Number/Project Name
FW9650
Keystone Drive BMP Monitoring
2801 Keystone Dr., Orlando, FL.

DATA QUALIFIER CODES

Reporting Exceptions and Qualified Data

When quality control results are outside established control limits reanalysis, including re-extraction (if applicable), is preferred. If re-analysis is not viable or desirable, then results may be qualified. Sample results associated with quality control data that exceed acceptance criteria will be qualified with an appropriate comment.

D = Data reported from a dilution and or multiple dilutions.

I = Estimated Value, The reported value is between the Laboratory Method Detection Limit (**MDL**) and the Laboratory Practical Quantitation Limit (**PQL**)

J = Estimated Value

L = Off-Scale high; exceeds the linear range or highest calibration standard.

O = Sampled, but analysis lost or not performed

Q = Sample held beyond normal holding time
Q01 Analysis performed outside of method-specified holding time
Q02 Sample received outside of method-specified holding time

U = indicates the compound was analyzed for, but not detected. The numerical value preceding the "U" is the limit of detection for that compound based upon the dilution. **MEDF** = **M**atrix **E**ffected **D**ilution **F**actor.

V = Analyte was detected in both the sample and associated Laboratory Method Blank; Laboratory Contamination

Y = The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Unless otherwise noted, ug/Kg and mg/Kg denote dry weight.

(SOILS) Actual Reporting Limit will depend on moisture content of sample and the amount of sample received.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

J-(R1) Estimated Value. RPD value was outside control limits

Soil Density & Moisture Tests

Date: 04/22/25

Orlando Branch
Florida Registration No. 5950
8008 South Orange Avenue
Orlando, FL 32809
Phone: 407-855-3860

Client:
Southern Research Laboratories
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL 32714

Project:
24-5698
Various Bulk Density Testing
Various Locations
Altamonte Springs, FL

Table of Contents

Title	Description
Summary of Laboratory Testing	Soil Density & Moisture Tests (Received 4/14/25)
Summary Data Report	Chain of Custody Form

Distribution List

Name	Company
, Bookkeeping	Southern Research
, Lab	Southern Research
Payne, Sherri	Southern Research Laboratories, Inc.

This item has been digitally signed and sealed by Senior Project Manager Dan Dunham on Apr 22, 2025 using a Digital Signature.

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Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

April 22, 2025
File No. 24-61-5698

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 4/8/25
OC Keystone Project
Keystone Drive
Orange County, FL

Dear Ms. Payne,

As requested, loose bulk density testing was performed on sediment samples delivered to our laboratory on 4/14/25 by your representative. The loose bulk density of each sample was determined by dropping the "as-received" samples into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of each sample was used to calculate the loose bulk densities presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
SC	95.8	42.2	67.4
SC Dup	114.0	31.0	87.0

A copy of the Chain of Custody form is attached.

We appreciate the opportunity to be of assistance to you on this project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

Dan Dunham
Dan Dunham, P.E.
Senior Engineer
FL License No. 36782

8008 S. Orange Avenue (32809), Post Office Box 593003, Orlando, Florida 32859-3003 Phone (407) 855-3860 FAX (407) 859-8
Florida: Bartow, Cocoa, Fort Myers, Miami, Orlando, Port St. Lucie, Sarasota, Tallahassee, Tampa, West Palm Beach
Louisiana: Alexandria, Baton Rouge, Monroe, New Orleans and Shreveport

Chain of Custody

2504020
-6

Page 1 of 1

Project Manager: Mike Hardin	Southern Research Laboratories, Inc. 279 Douglas Ave., Suite #1110 Altamonte Springs, FL 32714
Company: Geosyntec Consultants Inc	Main (407) 522-7100 Fax: (407) 522-7043
Address: 3504 Lake Lynda Dr. Suite 155	Project Name: OC Keystone
City, State, Zip: Orlando FL 32817	Project Location: Keystone Dr.
Phone: 407-301-7030 Fax:	

Sampled by [Print Name(s)] / Affiliation: Kevin Tyre / Geosyntec

Sampler(s) Signature(s):

Project Number: FW9650

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Preservatives (see codes)									Analyses Requested								
																TN	TP	TSS	Moisture Cont.	Bulk Density				
1	PWG1	4/8/25	1:40	Grab	SW	2										X	X	X						
2	PWG2		1:50	Grab	SW	2										X	X	X						
3	SWG		1:55	Grab	SW	2										X	X	X						
4	SC		6:00	Comp	SE	1										X	X		X	X				
5	Dup			Grab	SW	2										X	X	X						
6	SC Dup			Comp	SE	1										X	X		X	X				

2504020-001
-002
-003
-004
-005
-006

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:	~~Robert Durkat~~	3/13/25	15 15	Kevin Tyre	3/14/25	10:15
Returned: / /	Via:	Kevin Tyre	4/8/25	6:10	Fed Ex Driver	4.9.25	11:07

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): RED 3.1 0-

Sampling Kit No.: 10362

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

772804

Chain of Custody

Project Manager:	Sherri Payne
Company:	Southern Research Laboratories
Address:	
City, Sta	279 Douglas Avenue Suite 1110 Altamonte Springs, FL. 32714
Phone:	

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: OC Keystone Baffle Box

Project Location:

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ___ yes ___ no

Sampled by (Print Name(s) / Affiliation):

Sampler(s) Signature(s):

Preservatives (see codes)

Analyses Requested

Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Bulk Density	Moisture content	Total Nitrogen Total Phosphorus
SC	3/28/24	1015	C	SE	2	✓	✓	✓
SC DUP	3/28/24	1018	C	SE	2	✓	✓	✓
		✓						

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:		3/27/24	14:10		3/27/24	14:10
Returned: / /	Via:		3/28/24	11:10		3/28/24	11:10

Additional Comments:

T402

Cooler No.(s) / Temperature(s) (°C):

Sampling Kit No.: 9937

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:_____)

Ardaman & Associates, Inc. Consolidated

Orlando Branch
Florida Registration No. 5950
8008 South Orange Avenue
Orlando, FL 32809
Phone: 407-855-3860

Report Date: 07/16/24

Client:
Southern Research Laboratories
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL 32714

Project:
20-5709
Various - Bulk Density Determination
2251 Lynx Lane - Suite 1
Orlando, FL 32804

Table of Contents

Title	Description
Summary of Laboratory Testing	Sample SC2 (Sampled 6/25/24)
Summary of Laboratory Testing	Sample SC (Sampled 6/25/24)
Summary of Laboratory Testing	Chain of Custody Form

Distribution List

Name	Company
Payne, Sherri	Southern Research Laboratories

This item has been digitally signed and sealed by Senior Project Manager Dan Dunham on Jul 16, 2024 using a Digital Signature.

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Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

July 16, 2024
File No. 20-61-5709

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 06/25/24
OC Keystone Drive BMP

Dear Ms. Payne,

As requested, loose bulk density testing was performed on a sediment sample delivered to our laboratory on 06/25/24 by your representative. The loose bulk density of the sediment was determined by dropping the "as-received" sample into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of the sediment sample was used to calculate the loose bulk density presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
SC2	67.8	62.4	41.7

A copy of the Chain of Custody form is attached.

We appreciate the opportunity to be of assistance to you during this phase of the project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

DANIEL J. DURHAM
LICENSE
No. 66782
STATE OF FLORIDA
PROFESSIONAL ENGINEER

7/16/24

Dan Durham, P.E.
Senior Engineer
FL License No. 66782

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

July 16, 2024
File No. 20-61-5709

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 06/25/24
OC Keystone Drive BMP

Dear Ms. Payne,

As requested, loose bulk density testing was performed on a sediment sample delivered to our laboratory on 06/25/24 by your representative. The loose bulk density of the sediment was determined by dropping the "as-received" sample into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of the sediment sample was used to calculate the loose bulk density presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
SC	86.6	90.0	45.6

A copy of the Chain of Custody form is attached.

We appreciate the opportunity to be of assistance to you during this phase of the project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

DANIEL J. DUNHAM LICENSE No. 36782 STATE OF FLORIDA PROFESSIONAL ENGINEER

7/16/24

Dan Dunham, P.E.
Senior Engineer
FL License No. 36782

8008 S. Orange Avenue (32809), Post Office Box 593003, Orlando, Florida 32859-3003 Phone (407) 855-3860 FAX (407) 859-8...
Florida: Bartow, Cocoa, Fort Myers, Miami, Orlando, Port St. Lucie, Sarasota, Tallahassee, Tampa, West Palm Beach
Louisiana: Alexandria, Baton Rouge, Monroe, New Orleans and Shreveport

Chain of Custody

Project Manager: Sherri Payne
Company: Southern Research Laboratories
Address:
City, Sta: 279 Douglas Avenue, Suite 1110, Altamonte Springs, FL. 32714
Phone:

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of
Project Name:
Project Location:
Project Number:
REQUESTED DUE DATE:
Facility ID#:
Petroleum Restoration Program ___ yes ✓ no

Sampled by (Print Name(s)/Affiliation):
Sampler(s) Signature(s):

Preservatives (see codes)
Analyses Requested

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers
1	SWG	06/25/24	1038	G	SW	2
2	PWG-1	06/25/24	1147	G	SW	2
3	PWG-2	06/25/24	1256	G	SW	2
4	SC	06/25/24	1415	G	SW	2
5	Dup	06/25/24	1150	G	SW	2
6	SC2	06/25/24	1422	G	SE	1

Shipment Method:
Out: / / Via:
Returned: / / Via:

Additional Comments:

Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Helen Serra	6.17.24	17:15	Kenneth Hamilton	6.17.24	17:15
Kenneth Hamilton	6.25.24	1525	Helen Serra	6.25.24	1535

Cooler No.(s)/ Temperature(s) (°C): 505, 2.1°, 3.2°
Sampling Kit No.: 10079
Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify):
Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitrie Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Ardaman & Associates, Inc. Consolidated

Orlando Branch
Florida Registration No. 5950
8008 South Orange Avenue
Orlando, FL 32809
Phone: 407-855-3860

Report Date: 10/18/24

Client:
Southern Research Laboratories
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL 32714

Project:
113-24-61-5698
Various Bulk Density Testing
Various Locations
Altamonte Springs, FL

Table of Contents

Title	Description
Summary of Laboratory Testing	Samples SC & SC Dup (Sampled 9/03/24)
Summary Table	Chain of Custody Form (Sampled 9/03/24)

Distribution List

Name	Company
Payne, Sherri	Southern Research Laboratories, Inc.

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Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

October 18, 2024
File No. 24-61-5698

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 09/03/24
Keystone Drive
Orlando, FL

Dear Ms. Payne,

As requested, loose bulk density testing was performed on sediment samples delivered to our laboratory on 09/12/24 by your representative. The loose bulk density of each sample was determined by dropping the "as-received" sample into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of the sample was used to calculate the loose bulk density presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
SC	121.0	18.3	102.3
SC Dup	117.7	17.8	99.9

A copy of the Chain of Custody form is attached.

We appreciate the opportunity to be of assistance to you on this project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

Dan Dunham

Dan Dunham, P.E.
Senior Engineer
FL License No. 36782

8008 S. Orange Avenue (32809), Post Office Box 593003, Orlando, Florida 32859-3003 Phone (407) 855-3860 FAX (407) 859-8
Florida: Bartow, Cocoa, Fort Myers, Miami, Orlando, Port St. Lucie, Sarasota, Tallahassee, Tampa, West Palm Beach
Louisiana: Alexandria, Baton Rouge, Monroe, New Orleans and Shreveport

Chain of Custody

Project Manager:	Sherri Payne
Company:	Southern Research Laboratories
Address:	279 Douglas Avenue, Suite 1110
City, State, Zip:	Altamonte Springs FL. 32714
Phone:	407-522-7100 Fax:

Southern Research Laboratories, Inc.
279 Douglas Ave., Suite #1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page 1 of 1

Project Name: OC Keystone

Project Location: Keystone Drive, Orlando

Project Number: FW9650

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program ____ yes ____ no

Sampled by [Print Name(s)] / Affiliation:

Signature(s):

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Analyses Requested: Bulk Density
1	PWG1	9/3/24	1:30	Comp	SW	2	
2	PWG2	"	1:40	"	SW	2	
3	SWG	"	2:00	"	SW	2	
4	SC	"	5:00	"	SE	2	X
5	Dup	"		"	SW	2	
6	SC Dup	"		"	SE	2	X

Shipment Method:		Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
Out: / /	Via:		9/26/24	10:30	Geosyntec Staff Member	9-4-24	10:00
Returned: / /	Via:		9/4/24	10:00			

Additional Comments:

Cooler No.(s) / Temperature(s) (°C): Teal 2.8 °C

Sampling Kit No.: 10149

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitric Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

Ardaman & Associates, Inc.

Soil Density & Moisture Tests

Date: 01/13/25

Orlando Branch
Florida Registration No. 5950
8008 South Orange Avenue
Orlando, FL 32809
Phone: 407-855-3860

Client:
Southern Research Laboratories
279 Douglas Avenue, Suite 1110
Altamonte Springs, FL 32714

Project:
24-5698
Various Bulk Density Testing
Various Locations
Altamonte Springs, FL

Table of Contents

Title	Description
Summary of Laboratory Testing	Soil Density & Moisture Tests (Received 12/17/24)
Summary Table	Chain of Custody Form

Distribution List

Name	Company
Payne, Sherri	Southern Research Laboratories, Inc.

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Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

January 13, 2025
File No. 24-61-5698

Southern Research Laboratories, Inc.
2251 Lynx Lane, Suite 1
Orlando, FL 32804

Attention: Ms. Sherri Payne

Subject: Loose Bulk Density Determination
Sediment – Sampled 12/13/24
OC Keystone Project
Orange County, FL

Dear Ms. Payne,

As requested, loose bulk density testing was performed on sediment samples delivered to our laboratory on 12/17/24 by your representative. The loose bulk density of each sample was determined by dropping the "as-received" samples into a 4-inch by 6-inch mold from slightly above the top of the mold until the sample overflowed the mold. The sample was then leveled by rolling a rod across the top of the mold, removing the excess overflow. The resulting weight and volume of each sample was used to calculate the loose bulk densities presented below.

Sample Identification	Wet Bulk Density (PCF)	Moisture Content (%)	Dry Bulk Density (PCF)
SC	118.5	24.2	95.4
SC Dup	116.4	25.6	92.7

A copy of the Chain of Custody form is attached.

We appreciate the opportunity to be of assistance to you on this project. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ARDAMAN & ASSOCIATES, INC.

Dan Dunham

Dan Dunham, P.E.
Senior Engineer
FL License No. 36782

8008 S. Orange Avenue (32809), Post Office Box 593003, Orlando, Florida 32859-3003 Phone (407) 855-3860 FAX (407) 859-8
Florida: Bartow, Cocoa, Fort Myers, Miami, Orlando, Port St. Lucie, Sarasota, Tallahassee, Tampa, West Palm Beach
Louisiana: Alexandria, Baton Rouge, Monroe, New Orleans and Shreveport

Chain of Custody

Project Manager: Sherry Payne
Company: Southern Research Laboratories
Address:
City, Sta: 279 Douglas Avenue
Suite 1110
Phone: Altamonte Springs, FL. 32714

Sampled by (Print Name(s)) / Affiliation:

Sampler(s) Signature(s):

Southern Research Laboratories, Inc.
279 Douglas Ave, Suite 1110
Altamonte Springs, FL 32714
Main (407) 522-7100 Fax: (407) 522-7043

Page of

Project Name: DL Keystone Project

Project Location:

Project Number:

REQUESTED DUE DATE:

Facility ID#:

Petroleum Restoration Program
___ yes ___ no

Preservatives (see codes): I I S S I I

Analyses Requested: TSS | Turbidity | Chlorophyll a | Total Phosphorus | Bulk Density | Carbon

	Sample Identification	Sampled Date:	Sampled Time:	Grab or Composite	Matrix: (see codes)	Total Number of Containers	Analyses Requested
1	SC	12/12/24	6:20pm	Grab	SE	2	BD X
2	SC-Dup	12/12/24	6:20pm	Grab	SE	2	BD X
3	SWG	12/12/24	5:39pm	—	SW	2	TSS
4	PWG2	12/12/24	5:39pm	—	SW	2	TSS
5	PWG1	12/12/24	5:27pm	—	SW	2	TSS
6	Dup	12/12/24	5:27pm	—	SW	2	TSS

Shipment Method:
Out: / / Via:
Returned: / / Via:

Additional Comments:

Relinquished by	Date:	Time:	Accepted by:	Date:	Time:
[redacted]	11-19-24	10:15	Geosyntec Staff	11/19/24	11:00
[redacted]	12-13-24	11:00	[redacted]	12-13-24	11:00

Cooler No.(s) / Temperature(s) (°C): tool

Sampling Kit No.: 10247

Equipment ID No.:

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water(Blanks) HW = Potential Haz Waste O = Other(Specify:)

Preservative Codes: H = Hydrochloric Acid & Ice I = Ice Only N = Nitric Acid& Ice S = Sulfuric Acid & Ice X = Sodium Hydroxide & Ice O = Other(Specify)

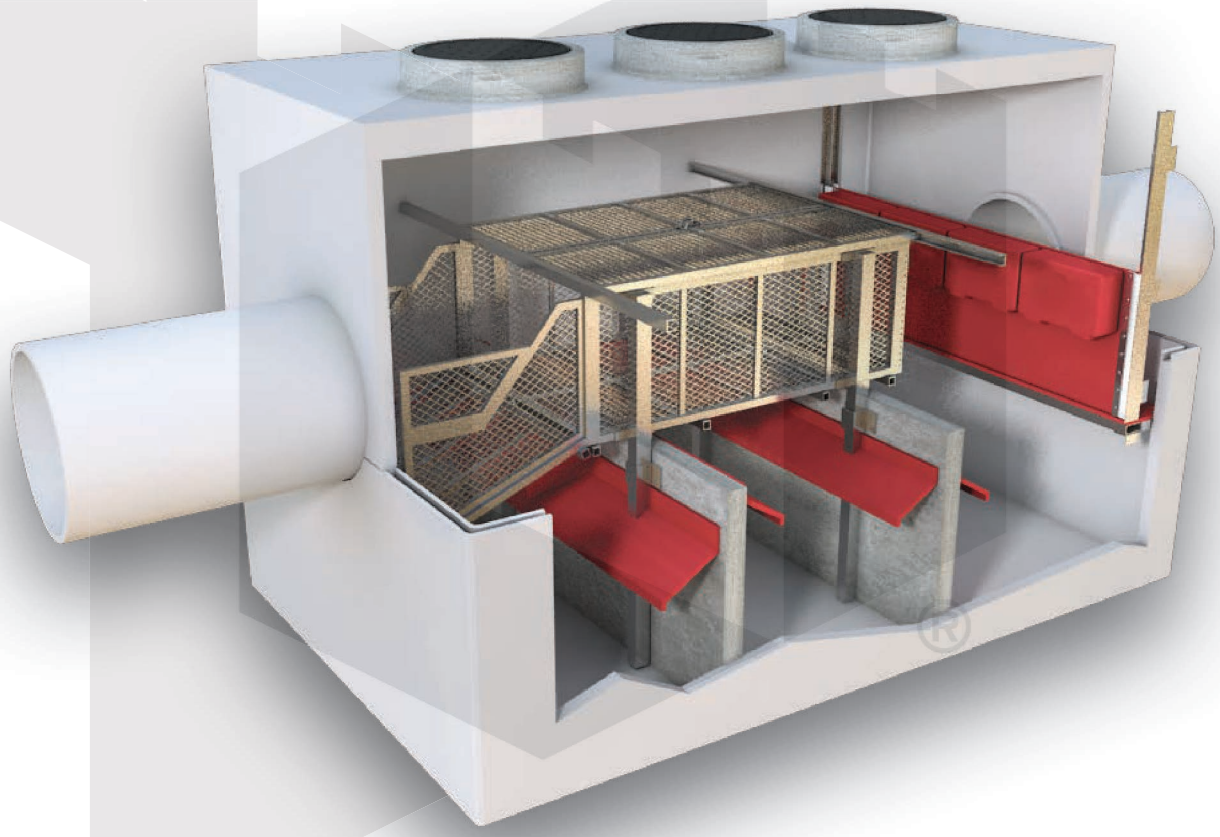
APPENDIX G

Oldcastle Infrastructure
Operation and Maintenance Manuals

NSBB®

Nutrient Separating Baffle Box®

Operation and Maintenance Manual



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WARNING

Read the Following Information, Instructions and Warnings Before Inspecting, Cleaning or Performing Maintenance on this Stormwater Treatment Device.

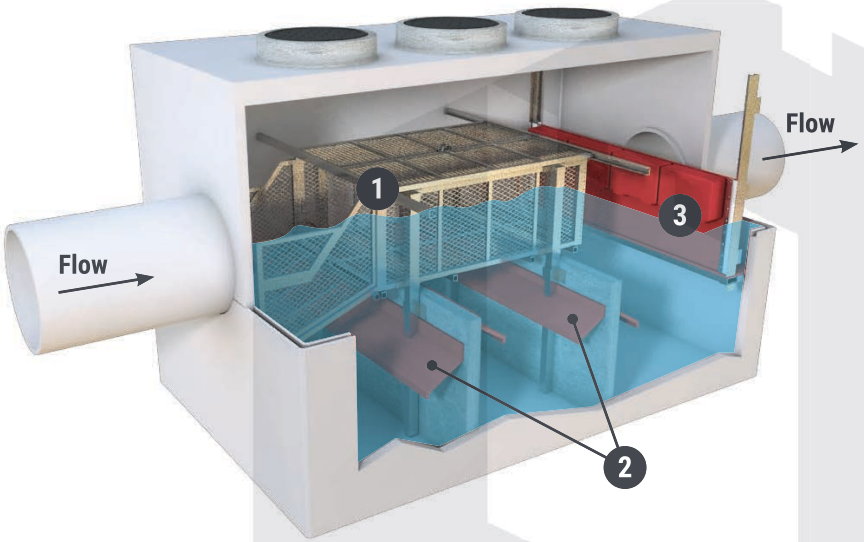
This manual is intended to explain the specifics of the Oldcastle Infrastructure Nutrient Separating Baffle Box and to review the aspects of existing regulations and safety procedures. It is the responsibility of all personnel to familiarize themselves with, understand and comply with all applicable local, state and federal laws before attempting to inspect or service this unit. All precautions and procedures in this manual are current at the time of printing but are subject to change based on the development of new processes and procedures. Oldcastle Infrastructure assumes no responsibility and is not accountable for any injuries, fines, penalties or losses that occur involving any procedure in this manual or other unaddressable actions taken. The Nutrient Separating Baffle Box performance is based on the procedures being followed in this manual. Non-Compliance with the outlined measures will be the responsibility of the owner.

GENERAL INFORMATION

The Nutrient Separating Baffle Box (NSBB) is a key component of your stormwater management program. To maintain proper operation, maintenance of these units is essential. The NSBB designed and manufactured by Oldcastle Infrastructure contains patented technologies to treat and manage stormwater. The NSBB is highly effective in capturing Nitrogen, Phosphorus, Total Suspended Solids, organics, trash, oils and grease. Independent testing has shown the NSBB is capable of capturing up to 95% of trash, 90% of Total Suspended Solids, 20% of nitrogen and 19% of phosphorus. Oldcastle Infrastructure recommends inspections be conducted semi-annually for the first year and annually thereafter for optimal removal efficiency.

During Storm Event

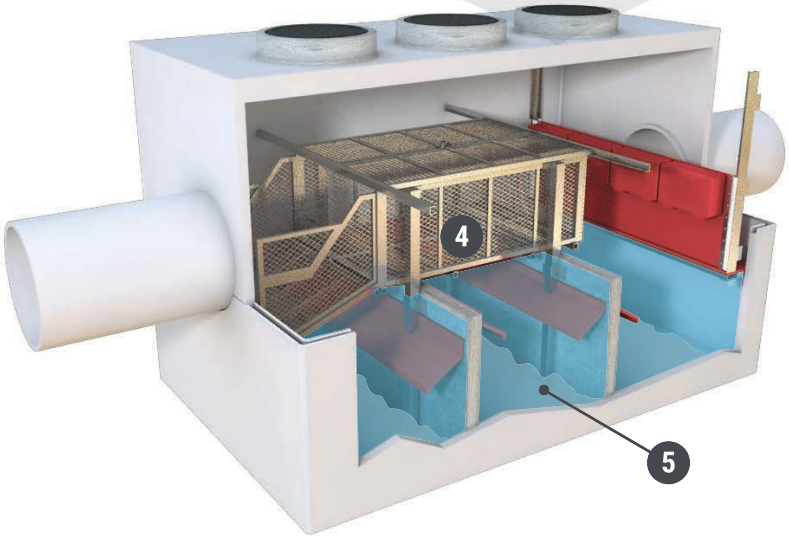
Nutrient rich organics and litter are captured in the screen system.



1. Runoff filters through the screen and skimmer leaving pollutants behind. Left over runoff evaporates over time.
2. Turbulence defectors prevent captured sediment from becoming resuspended.
3. Hydrocarbons and other floating debris are trapped upstream of the floating skimmer.

After Storm Event

Debris dry out between storm events while pollutants are stored above the static water. As a result, the system does not turn septic.



4. Nutrient pollutant load is not lost to static water and will not be flushed out during the next storm event.
5. Separating organic matter from the static water prevents bacterial buildup.

INSPECTION INFORMATION

Oldcastle Infrastructure recommends the following guidelines for inspection: After installation and the site has stabilized, post construction inspections should be conducted after every runoff event. To ensure the Nutrient Separating Baffle Box obtains optimal pollutant removal efficiencies, subsequent sediment accumulation inspections should be conducted a minimum of every six (6) months. In the event the sediment accumulation equals or exceeds 80% of the minimum sediment storage volume (Fig 1), then all accumulated sediment must be removed.

Fig 1: Nutrient Separating Baffle Box® (NSBB®) Sizing Summary

STANDARD SIZING								
MODEL	STRUCTURE SIZE (FT X FT)	MAX PIPE SIZE (IN)	MIN RIM TO INVERT DEPTH[a] (FT)	SUMP DEPTH (FT)	SEDIMENT STORAGE[b] (CF)	TREATMENT FLOW RATES		MAX PEAK FLOW[e] (CFS)
						50% REMOVAL, 75 MICRON NJCAT[c] (CFS)	80% REMOVAL, 150 MICRON[d] (CFS)	
NSBB-48	4 x 8	24	4.17	3.0	15.0	2.49	4.60	29
NSBB-510	5 x 10	30	5.08	4.1	23.8	3.89	8.03	37
NSBB-612	6 x 12	36	5.17	5.0	34.3	5.60	12.70	69
NSBB-816	8 x 16	48	6.00	6.2	61.3	9.96	26.00	114
NSBB-1020	10 x 20	60	7.08	7.6	95.0	15.56	45.40	202
NSBB-1224	12 x 24	72	8.83	9.0	138.0	22.40	71.70	296

TRASH CAPTURE SIZING								
MODEL	STRUCTURE SIZE (FT X FT)	MAX PIPE SIZE (IN)	MIN RIM TO INVERT DEPTH[a] (FT)	SUMP DEPTH (FT)	SUMP VOLUME (CF)	SCREEN VOLUME	5MM TRASH CAPTURE [f] (CFS)	MAX PEAK FLOW[g] (CFS)
NSBB-48-TC	4 x 8	24	4.17	3.0	88.1	25.8	28.80	25
NSBB-612-TC	6 x 12	36	5.17	3.0	204.1	54.5	42.80	64
NSBB-816-TC	8 x 16	48	6.00	3.0	360.0	124.6	72.00	108

(a) Minimum Rim to Invert Depth based on Max Pipe Size listed. For depths less than minimum contact Soln Engr for design assistance.

(b) Sump depth for all Trash Capture approved model sizes is 3.0' typical.

(c) 50% Maximum Sediment Storage Volume per NJCAT verification.

(d) Based on NJCAT verification for 50% removal of D50 = 75 micron.

(e) Based on AET Tech, LLC Technical Memo (Smith, 7/20/18). Contact Soln Engr for alternative particle size treatment flows.

(f) Based on empty 5mm Screen Basket.

(g) Based on a Hydraulic Grade Line at 6" above maximum pipe size. For smaller pipe sizes confirm capacity with Soln Engr.

INSPECTION PROCEDURE

- Inspect the unit from surface.
- Open access points (Manhole / Hatch) and secure properly.
- Visually inspect screen system to determine overall debris accumulation.
- Inspect sediment chambers under screen system.
- Inspect condition of joints and inflow / outflow pipe grout areas.

INSPECTION CHECKLIST

Inspection Checklist and Maintenance Guidance: Nutrient Separating Baffle Box.
To be completed at Time of Inspection or Maintenance.

OWNER NAME

LOCATION

ADDRESS

PHONE

DATE & TIME

SITE CONDITIONS

INSPECTION ITEMS	RECOMMENDED INTERVAL	COMMENTS
Access Openings	Semi-annually	
Screen System	Semi-annually	
Skimmer	Semi-annually	
Sediment Chambers	Semi-annually	
Vault Condition	Semi-annually	

1. Inspection items are to determine accessibility into Nutrient Separating Baffle Box.

2. Inspect screen system for debris volume and broken parts.

3. Inspect sediment chambers for estimated quantity.

4. Inspect general condition of vault for any clogged areas.

MAINTENANCE ITEMS	VOLUME COLLECTED	DATE	COMMENTS
Screen System			
Sediment Chambers			

1. Inspection items are to determine accessibility into Nutrient Separating Baffle Box.

2. After cleaning screen system, open bottom doors and vacuum out sediment chambers. (Estimate Volume Collected)

NSBB® COMPONENTS

Component Descriptions

The Nutrient Separating Baffle Box is a multi stage, self contained treatment system. Each subsequent component in the system protects prior stages from clogging. These stages include screening, separation and hydrocarbon absorption.

- Screening is provided by a rectangular basket system which is suspended above the static water level of the sedimentation chambers. The screening filter has a storage capacity of several cubic yards depending on the model. The primary function of the basket is to capture gross solids like trash and nutrient rich debris. The screening system contains debris and provides a dry storage state to prevent nutrient leaching and contamination of static water, causing a septic state.
- Sediment Separation is facilitated by three settling chambers each with a capacity of several cubic yards depending on the model. These chambers work to target smaller sediments and particulate metals.

View of Nutrient Separating Baffle Box and SkimBoss Upflow Filter

REQUIREMENTS & PARTS

Minimum Equipment Requirements

The use of a vacuum truck is required for servicing of the Nutrient Separating Baffle Box. Service crews are recommended to check all local, state and federal guidelines for servicing and disposal of any collected debris and sediments.

Structural Components

The structural components of the NSBB are designed to have a life span of several decades. Structural inspections are not required unless stipulated in guidelines set by the local municipality, state or federal agencies.

Replacement Parts

All interior components are designed and sized to be assembled and removed from the NSBB for servicing or for parts replacement. This can easily be accomplished via the access ports atop the structure. For any replacement parts or further instructions please contact:

Oldcastle Infrastructure
7000 Central Parkway
Suite 800
Atlanta, GA 30328

Phone: (888) 965-3227

SERVICING SUMMARY

Service Information

Maintenance activities include the removal of captured sediments and debris. Maintenance can be performed from outside the NSBB through access points such as manhole covers or hatches installed in the vault surface above the sediment chambers. During maintenance, the screen system may have either SunGlide™ Sliding Doors or Hinged Doors.

These top doors open to gain access to the debris captured by the screen system. This system also has bottom doors that open to give access to the sediment collected in the settling chambers. A vacuum truck is required for debris and sediment removal. Although not every circumstance can be covered in this manual, a situation may arise where the structure needs to be entered. Servicing does not require specialized tools.

Caution!
Any Service Work done in traffic areas must meet all DOT Roadway Work guidelines and necessary safety procedures.

Warning!
All OSHA confined space requirements must be met while cleaning any of the Nutrient Separating Baffle Box structures.

Service Procedure

1. Open the access openings (Manhole, Hatch or Grate) on the top of the Baffle Box.

2. Vacuum the debris captured by the screen system to expose the sediment collection chambers.

3. Open the bottom doors to the basket system to expose the sediment collection chambers. These doors have eyebolts to attach the service tool in order to open the bottom doors which hinge off to the side.

4. Vacuum each sediment chamber until they are empty.

5. After cleaning the sediment chambers close the bottom screen doors of the screen system. Lower or Slide the top doors and assure they lock correctly (if equipped with SunGlide Lids).

6. When all maintenance work is completed, be sure to close the access covers or hatches.

Note

All vacuum servicing of NSBB components can be done with the use of any vacuum truck designed for catch basin cleaning.

When possible, maintenance should be performed from the surface level.

SCREEN MAINTENANCE

Screen Maintenance Procedure

The Nutrient Separating Baffle Box Screen Basket is recommended to be inspected every 6 months and cleaned every 12 months.

1. Remove all manhole covers (or open hatches or grates) to gain access to the screening basket.

2. Remove all trash, litter, debris, organics and sediments captured by the screened basket either manually or with the use of a vacuum truck. The vacuum hose will not damage the screen.

3. Remove vacuum hose and replace manhole covers or hatch doors.

4. Transport all debris, trash, litter, organics and sediments to an approved disposal facility in accordance with local and state requirements.

Note

The screen basket must be cleaned before vacuuming each sediment separation chamber.

The bottom of the screen basket is designed with three hinged panels that are lifted vertically to access each separation chamber.

Nutrient Separating Baffle Box with trash / debris collected inside the screening system basket.

CHAMBER MAINTENANCE

Separation Chamber Maintenance Procedure
The Nutrient Separating Baffle Box Hydrodynamic Separation Chambers are recommended to be inspected every six (6) months and cleaned every twelve (12) months.

Open lower screen panels to remove sediments via vacuum truck.

1. Remove all manhole covers (or open hatches or grates) to gain access to the separation chambers.
2. Lower vacuum truck hose into the first separation chamber through the screening basket closest to the inflow pipe. Pressure washing may be needed to remove compacted sediments.
3. Repeat this process in each separation chamber.
4. Remove vacuum hose and lower hinged panels of screening basket back to a horizontal position.

POST SERVICING PROTOCOL

After completing inspection or maintenance, the service operator should prepare a record of service. The record should include maintenance activities performed, amount and description of debris collected and system condition.

- The owner will retain the service / inspection record for a minimum of five (5) years from the date of maintenance, or in accordance to specified EPA / DEP requirements.
- All records should be made available to the governing municipalities for inspection upon request at any time.
- Transport all debris, trash, litter, organics and sediments to an approved facility for disposal in accordance with local and state requirements.

Nutrient Separating Baffle Box with collected trash, organics and debris inside the screened basket system ready for disposal.

WARRANTY

Warranty Information

Oldcastle Infrastructure products are engineered and manufactured with the intent of being a permanent part of the infrastructure. Oldcastle Infrastructure warranties its products to be free from manufacturing defects for a period of 5 years from the purchase date. In the event a warranty claim is made and determined to be valid, Oldcastle Infrastructure will replace or repair the product at their own discretion. Warranty claims must be submitted, evaluated and approved by Oldcastle Infrastructure for the claim to be determined valid. All warranty work must be authorized by Oldcastle Infrastructure prior to work beginning not covered by this warranty. There are no warranties expressed or implied other than what is specified herein. Abusive treatment, neglect or improper use of the Nutrient Separating Baffle Box will not be covered by this warranty.

CONTACT INFORMATION

General Inquires

For additional information concerning installation, general usage, maintenance products, warranties or replacement parts please contact:

Oldcastle Infrastructure
7000 Central Parkway
Suite 800
Atlanta, GA 30328

Phone: (888) 965-3227

Oldcastle Infrastructure™
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NUTRIENT REMOVING FILTRATION SYSTEM®

Operation & Maintenance Manual Version 1

Oldcastle Infrastructure™
A CRH COMPANY

Oldcastle Infrastructure™
798 Clearlake Road, Suite 2
Cocoa, Florida 32922

321.637.7552
www.oldcastleinfrastructure.com

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WARNING

Read the Following Information, Instructions and Warnings Before Inspecting, Cleaning or Performing Maintenance on this Stormwater Treatment Device.

This manual is intended to explain the specifics of the Oldcastle Infrastructure, Nutrient Removing Filtration System (NRFS®) and to review the aspects of existing regulations and safety procedures. It is the responsibility of all personnel to familiarize themselves with, understand and comply with all applicable local, state and federal laws before attempting to inspect or service this unit.

All precautions and procedures in this manual are current at the time of printing but are subject to change based on the development of new processes and procedures. Oldcastle Infrastructure assumes no responsibility and is not accountable for any injuries, fines, penalties or losses that occur involving any procedure in this manual or other unaddressable actions.

The NRFS performance is based on the procedures being followed in this manual. Non-Compliance with the outlined measures will be the responsibility of the owner.

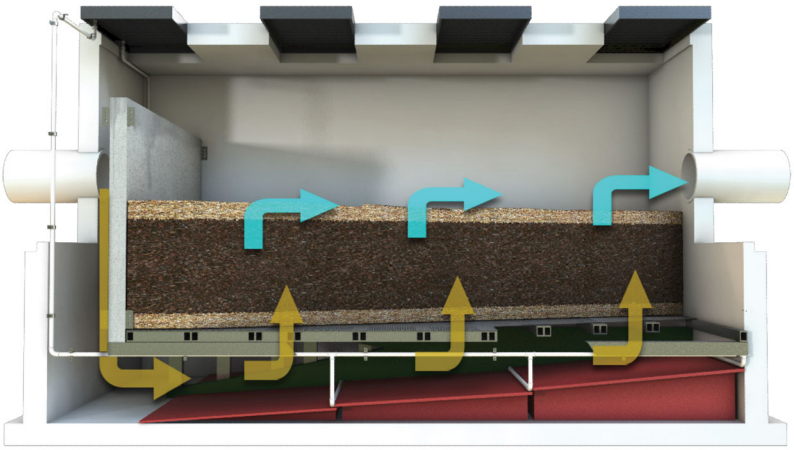
GENERAL INFORMATION

The Nutrient Removing Filtration System (NRFS) is a denitrifying media treatment vault that is commonly used at the end of a detention pond or for off line pretreatment applications. The NRFS is an orifice driven treatment vault for the removal of phosphorus, nitrogen and total suspended solids. Bold & Gold Biosorption Activated Media (BAM) is the exclusive media of choice in the NRFS vault system.

The NRFS is highly effective in capturing Nitrogen, Phosphorus, Total Suspended Solids, organics, trash, oils and grease. Independent testing has shown the NRFS is capable of capturing up to 75% of Nitrogen, 95% of Total Suspended Solids and 95% of Phosphorus. Local and State regulations may require inspections and cleanings every 90 days. Oldcastle Infrastructure recommends inspections be conducted quarterly for optimal removal efficiency.

Benefits

- Low maintenance (media does not require removal for servicing)
- Easily retrofits existing watersheds
- No organics to degrade and lose treatment capability
- Servicing is accomplished quickly using a vacuum truck
- Removes phosphorus, nitrogen and TSS
- Uses genuine Bold & Gold Biosorption Activated Media



Nutrient Removing Filtration System depicting stormwater flow and filtration through Bold & Gold media.

INSPECTION INFORMATION

Oldcastle Infrastructure recommends the following inspection guidelines:

The Bold & Gold media is positioned vertically between two layers of river rock. The layer of rock below the Bold & Gold should be 6”-10” thick and the layer above should be 6” thick. The Bold & Gold layer itself should be 30” thick and is possible to never need servicing. To determine if the media bed requires servicing, visually inspect the top layer of the media bed for any type of debris. It is safe to assume that the top layer of the media bed is the only place that would accumulate any debris. The decision to service the NRFS is based on the amount of debris accumulated on top of the media bed and if it is negatively impacting treatment flow rates. All inspections must be documented using the included inspection checklist.

- Visually inspect the vault from the surface for broken or missing hinges / handles.
- Open all access points (Manholes / Hatches) and secure each of them properly.
- Visually inspect the sediment chamber to determine the approximate accumulated sedimentation capacity.
- Inspect the conditions of all joints and the inflow / outflow pipe grout areas for cracks and wear.

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INSPECTION CHECKLIST

Inspection Checklist and Maintenance Guidance:
Nutrient Removing Filtration System

* **To be completed at Time of Inspection or Maintenance.**

Owner Name _____

Location _____

Address _____

Phone _____

Date & Time _____

Site Conditions _____

Inspection Items	Recommended Interval	Comments
Access Openings	Quarterly	
Sediment Chamber	Quarterly	
Vault Condition	Quarterly	

1 Inspection items are to determine accessibility into the Nutrient Removing Filtration System.

2 Inspect sediment chamber for estimated quantity.

3 Inspect general condition of vault for any clogged areas.

Maintenance Items	Volume Collected	Date	Comments
Sediment Chamber			

1 After opening access points, vacuum out sediment chamber. (Estimate Volume Collected)

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OPERATION INFORMATION

The Nutrient Removing Filtration System utilizes Bold & Gold biosorption activated media without the need for cartridge filters affording a more cost effective and efficient solution. Furthermore, the use of Bold & Gold media can accommodate high flow rates without organics which degrade and lose effectiveness over time.

- Stormwater enters the NRFS and flows upwards through the Bold & Gold Media.
- Vault specifications allow for 24 hour detention for maximum efficiency and media contact.
- During high or extreme flows the NRFS resists clogging. (If the SkimBoss floating skimmer is equipped, it will rise to allow water to bypass media filtration)
- Up to 75% reduction of total nitrogen and 95% total phosphorus based on treatment area / site conditions.

Available NRFS Sizes based on site conditions and flow rate specifications.

Model	Inside Dimensions
NRFS 04 - 04	NRFS 04’ - 04’
NRFS 04 - 08	NRFS 04’ - 08’
NRFS 05 - 10.5	NRFS 05’ - 10.5’
NRFS 06 - 12	NRFS 06’ - 12’
NRFS 06 - 15	NRFS 06’ - 15’
NRFS 08 - 14	NRFS 08’ - 14’
NRFS 10 - 16	NRFS 10’ - 16’
NRFS 10 - 20	NRFS 10’ - 20’
NRFS 10 - 25	NRFS 10’ - 25’
NRFS 12 - 20	NRFS 12’ - 20’
NRFS 12 - 24	NRFS 12’ - 24’

REQUIREMENTS & PARTS

Minimum Equipment Requirements

The use of a vacuum truck is required for servicing of the Nutrient Removing Filtration System. Service crews are recommended to check all local, state and federal guidelines for servicing and disposal of any collected debris and sediments.

Structural Components

The structural components of the NRFS are designed to have a life span of several decades. Structural inspections are not required unless stipulated in guidelines set by the local municipality, state or federal agencies

Replacement Parts

All interior components are designed and sized to be assembled and removed from the NRFS for servicing or for parts replacement. This can easily be accomplished via the access ports atop the structure. For any replacement parts or further instructions please contact Oldcastle Infrastructure:

Oldcastle Infrastructure
798 Clearlake Road, Suite 2
Cocoa, Florida 32922

Phone: **321.637.7552**

Fax: **321.637.7554**

Web: **www.oldcastleinfrastructure.com**

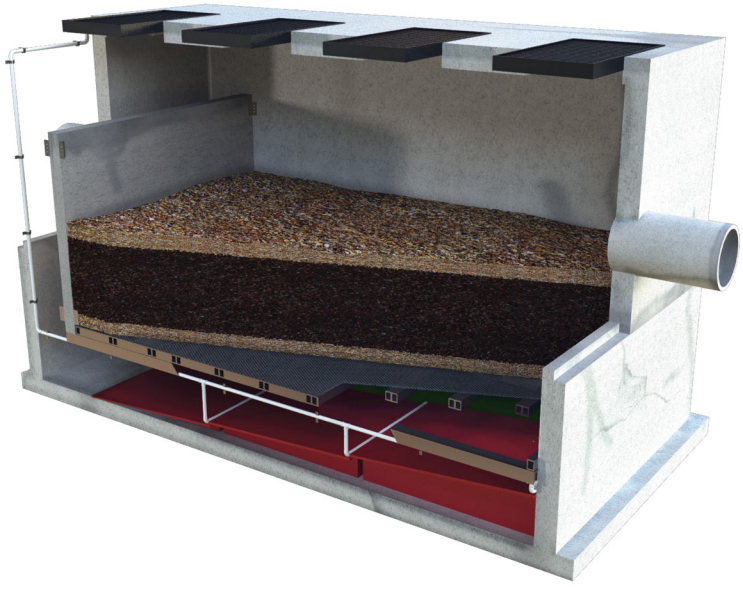
NRFS MAINTENANCE

Summary

The Nutrient Removing Filtration System is easily serviced with the use of a vacuum truck combined with the equipped HydroSlide® service system. The HydroSlide system allows the media to be back flushed and reused during servicing without removal. Furthermore, the vacuum system eliminates the need for confined space entry.

Vacuum Servicing

- Remove the manhole covers or open hatches.
- Lower the vacuum truck hose into the vault closest to the inflow pipe.
- Attach the vacuum truck water supply hose to the HydroSlide service system quick connector.
- Start the HydroSlide service system using the vacuum truck hose while operating the vacuum line. Debris will be quickly and easily flushed toward the vacuum line and removed.
- Remove vacuum line and disconnect truck water supply hose.
- Replace manhole covers or close top hatches.



BOLD & GOLD INFORMATION

Bold & Gold is a Biosorption Activated Media used for pollution control to reduce nitrogen, phosphorus, TSS and turbidity levels in stormwater. High phosphorus and nitrogen levels have the potential to compromise human health as well as ecosystem integrity. Bold & Gold media is ideal for pretreatment prior to rainwater harvesting or following detention prior to discharge into receiving bodies of water. Oldcastle Infrastructure is the only company in the USA licensed to include Bold & Gold inside of a treatment vault system. Further benefits of using Bold and Gold Media include:

- Available in various sizes and blends for specific applications
- Economical and lower cost than other media
- Made from recycled materials
- Effectively removes up to 95% Total Phosphorus, 75% Total Nitrogen and 95% Total Suspended Solids
- Sustainable: No biological toxic effects
- High Surface Area
- Physical filtration for the removal of solids
- Sorbent surface bonding for the capture of dissolved pollutants
- Biological activity including nutrient based consumption and denitrification

BOLD & GOLD REPLACEMENT

Media Replacement Procedure (If Necessary)

It is estimated that the physical filtration and biological activity of Bold & Gold may last indefinitely. However, the sorbent surface bonding may diminish after a period of 15 years and therefore may require replacement. It is important to determine a baseline removal efficiency of the unit when the system is first installed. If it is determined that the Bold & Gold is to be replaced, proceed with the following steps for replacement:

1. Determine the appropriate amount of Bold & Gold needed for replacement by first contacting Oldcastle Infrastructure or your local distributer. Stone can be purchased from local distributors.

2. Open all access points.

3. Using a vacuum truck, suction out all media and stone from the media bed. When the vacuum line reaches the lower layer of stone be careful to not move or dismount the underdrain. The underdrain pipes will not be glued into the pipe fittings and can be disassembled to more easily remove the stone and debris underneath the pipes.

4. Reassemble the underdrain pipe system.

5. Install the new stone around the underdrain pipes to a depth of 10”. Be careful when placing the stone over the underdrain pipes to avoid any damage.

6. Install the new Bold & Gold to form a layer 30” thick.

7. Install the top layer of stone to form a 6” thick layer.

8. Close all access points.

SKIMBOSS MAX INFORMATION

General Information

The included SkimBoss® MAX Skimmer prevents floating solids and liquids from passing through the vault. Through the use of Hydro-Variant Technology®, the SkimBoss MAX Skimmer can automatically adjust to accommodate variations in water level and flow with a negligible head loss.

- The SkimBoss MAX skimmer adjusts the hydraulic grade line via Hydro-Variant Technology during high flows.
- Primary buoyancy is on the front inflow side of the SkimBoss to match rising water levels regardless of outflow side levels.
- Once the hydraulic grade of the water reaches a point that is 20” above the bottom of the skimmer, the entire skimmer begins to float.
- During especially high flows in the NRFS, the SkimBoss will rise and allow the water to bypass media filtration as to prevent flooding concerns.

WARRANTY

Warranty Information

Oldcastle Infrastructure products are engineered and manufactured with the intent of being a permanent part of the infrastructure. Oldcastle Infrastructure warranties its products to be free from any manufacturing defects for a period of 5 years from the purchase date.

In the event a warranty claim is made and determined to be valid, Oldcastle Infrastructure will replace or repair the product at their own discretion. Warranty claims must be submitted, evaluated and approved by Oldcastle Infrastructure for the claim to be determined valid. All warranty work must be authorized by Oldcastle Infrastructure prior to work beginning not covered by this warranty. There are no warranties expressed or implied other than what is specified herein. Abusive treatment, neglect or improper use of the Nutrient Removing Filtration System will not be covered by this warranty.

CONTACT INFORMATION

General Inquires

For additional information concerning installation, general usage, maintenance products, warranties or replacement parts please contact:

Oldcastle Infrastructure
798 Clearlake Road, Suite 2
Cocoa, Florida 32922

Phone: **321.637.7552**

Fax: **321.637.7554**

Web: **www.oldcastleinfrastructure.com**

Visit our website for in depth information on all of our products!

We are engineers, scientists and innovators

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