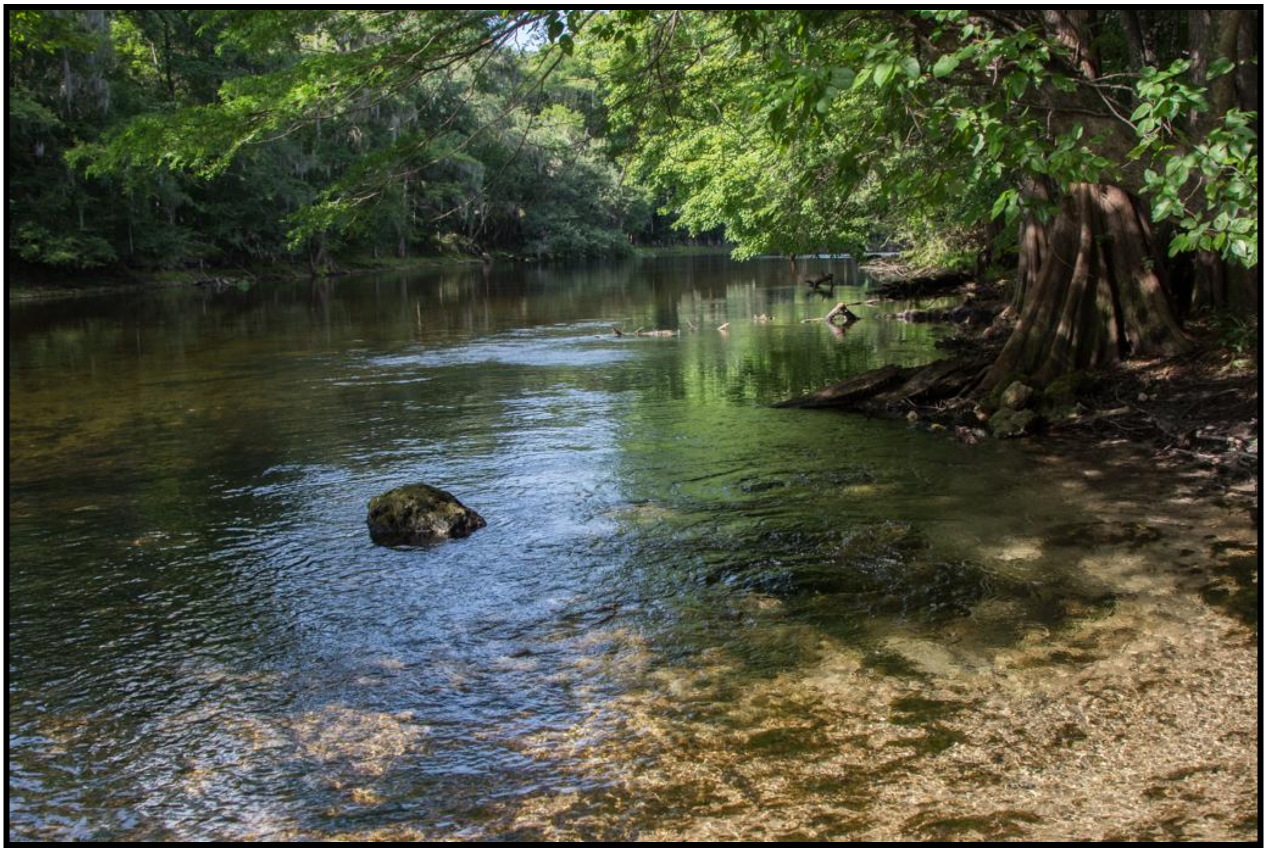
POE SPRINGS AREA
HYDROLOGIC FEATURES STUDY



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EXECUTIVE SUMMARY

During the summer of 2015, a study was made of springs and other hydrologic features in and around Poe Springs County Park (Alachua County) by Karst Environmental Services, Inc. (KES) for, and supported by, the Alachua County Environmental Protection Department (ACEPD). A total of twenty-seven springs along the Santa Fe River and other features were visited. Eight of these were sinks or features other than springs. Eleven springs were spring vents or clusters not yet referenced in publications, lists or maps. The study area was located in Alachua, Columbia and Gilchrist Counties.

Springs and features were documented by GPS position and photographs. At most sites, water quality field parameters were measured. At selected sites, water and periphyton samples were taken for analyses. Discharge measurements were made at selected springs, including the first measurements ever taken at Riverside Springs and Twin Cypress Spring.

Two sites, a flowing sink and 'The Crack' Estavelle, were identified as potential input points for a future dye trace that could provide further understanding of the hydrogeologic connections among the springs and features in the study area.

A report of the findings with photographs, tables and maps highlighting the investigated features of the study area was prepared by KES for the ACEPD to aid in its understanding of the hydrogeology of the Poe Springs County Park area. Specific features within these areas are listed and described, and their relationships discussed.

INTRODUCTION

Authorization

This study was authorized by the Alachua County Environmental Protection Department (ACEPD) through Alachua County Board of County Commissioners Purchase Order No. 151313, dated 4/16/2015, to Karst Environmental Services, Inc. (KES) of High Springs, FL. (Vendor No. 16901.) ACEPD contact for this project is Robin Hallbourg. KES contact and Project Manager for this project is Pete Butt.

Purpose and Scope

The purpose of this study was to conduct a detailed hydrologic investigation of the Poe Springs area and to measure the discharge of Watermelon II (Riverside) Spring, a submerged spring located on the Santa Fe River (SFR) bottom.

The primary goal of this study was to provide information essential to interpretation of water quality data, and to also provide the public with a unique view into the complex karst geology of the Santa Fe River Basin. This information will help citizens implement lifestyle choices that are protective of springs.

Specifically this study included the following tasks:

1. Perform a field reconnaissance of, and identify and inventory springs and karst features in the Poe Springs area. The study area included the section of the Santa Fe River between the Fenceline Spring area upstream of the County Park to the Seven Sisters Spring run area downstream. Upland sites within and near the Poe Springs County Park were also investigated. Study sites were located in Alachua, Columbia and Gilchrist Counties.

2. A submerged spring discharge measurement of Riverside (Watermelon II) Spring was made. Methods and special equipment developed by KES to estimate the discharge of submerged spring vents were used to make the first detailed discharge estimate at this site.

3. A report of findings with maps highlighting the investigated features of the study area was prepared by KES for the ACEPD. The features covered in this report are of interest to the ACEPD for its overall understanding of the hydrogeology of the Poe Springs County Park area. Specific features within these areas are listed and described, and their relationships discussed.

4. KES will lead an educational field trip for the public at Poe Springs County Park and adjacent Santa Fe River that will highlight the springs and karst features in this area.

Spring and Feature Names

An additional objective of this study was to review the existing names of individual springs and features, and to standardize ambiguous or confusing names and name un-named springs and features. See Figure 1 and Table 1. While there has been no ambiguity with well-known springs such as Poe, many springs in the study area are now known by several names. These names reflect local history, agency cataloging, cave divers, prior studies, etc. In addition to these, many as yet un-named springs and features were identified during this study. KES worked with ACEPD staff to update and clarify the naming convention for the Poe Springs area, the results of which are discussed in this report.

The most noteworthy name changes include those for 'The Crack' Estavelle (aka COL 428982, Allen Spring and 'Labatt's Blue'), Little Poe Spring (aka Watermelon I Spring), Riverside Spring (aka Watermelon II Spring) and Beaver Pond Spring (aka Watermelon III Spring).

The Suwannee River Water Management District (SRWMD) names and inventory numbers for features are included, when available. References to SRWMD information used throughout this report are from "Springs of the Suwannee River Basin in Florida", 1998, SRWMD Publication WR99-02.

The "Florida's Springs 2008 Master List" created by the Florida Department of Environmental Protection (FDEP) was also referenced for feature naming purposes. (Harrington and Wang, 2008.) This document also includes the FDEP Spring Magnitude Categories that are used in this report.

Several of the features discussed herein are not shown or labeled on the United States Geological Survey (USGS) 7.5 Minute Quadrangles or any other maps, have not been named in any publications or lists, and do not have local names. Therefore, for use in this discussion, KES and ACEPD personnel have given names to these features. The names selected for these features were based on field activities, salient features and/or their relationship to the overall physical setting of which they are a part. All features mentioned herein have been visited by KES personnel.

METHODS

Field Survey and Personnel

KES personnel conducted a series of site visits to Poe Springs County Park and surrounding area to investigate springs and other features of interest located along the Santa Fe River floodplain and uplands. Water access was by canoe or kayak. Visits that provided data for this report occurred between April 30, 2015 and August 30, 2015. A handheld Garmin GPS76 device was used to obtain GPS positions of springs and features. See Table 1.

KES field personnel included Peter Butt (Project Manager), Tom Morris (biologist) and Georgia Shemitz (photographer and GIS technician). On several visits, KES personnel accompanied ACEPD staff. ACEPD field staff included Greg Owen (Sr. Environmental Specialist), Patrick Moran (Environmental Specialist) and Robin Hallbourg (Geologist). Jennifer Adler contributed additional photographs.

Discharge Measurements

KES performed a submerged vent discharge measurement on Riverside Spring on May 5, 2015. The measurement was made using a Hach/Marsh-McBirney Model 2000 Flomate portable flowmeter and support poles. Multiple point velocities were taken in each of the three vents that comprised the spring. Velocities, their locations and vent dimensions were plotted and processed using Golden Surfer 10 contouring software. Results are discussed below, and the complete discharge measurement report is included in Appendix I of this report.

ACEPD staff also made discharge measurements of Poe, Twin Cypress, Riverside and Beaver Pond Springs during this study. A Sontek FlowTracker Handheld ADV flowmeter and top-setting wading rod were used as per USGS open-channel discharge measurement methods. Results of these measurement are discussed below.

Water Quality Sampling and Analysis
Water grab samples from selected springs and features were collected on June 5, 2015 by KES personnel and analyzed for specific conductance with an Oakton Acorn Series CON 5 conductivity meter.

Specific conductance, temperature, pH and dissolved oxygen were measured at selected springs and features by ACEPD staff in the field on June 23, 2015 with YSI Professional Plus Multiparameter Meter. ACEPD staff also collected water quality grab samples that were appropriately preserved and placed on ice in the field. One additional site was sampled on June 19, 2015. Water samples were shipped to Test America Laboratories, Inc. of Tampa, Florida for analyses. Parameters for analysis included: nitrate nitrite as N, sulfate, TOC, alkalinity, iron, calcium, magnesium, sodium, potassium, chloride and color. The results of water quality measurements and sampling analyses are presented in Tables 2 and 3. The complete Test America Laboratories, Inc. Analytical Reports are included in Appendix II of this report.

ACEPD staff also collected algae (periphyton) samples from selected springs, and these were delivered to Water & Air Research, Inc. of Gainesville Florida for analysis. Ten periphyton samples collected on July 31, 2015 were analyzed for filamentous algae and chain forming diatoms. Results of the periphyton sampling and analyses are included in Appendix III of this report. See Photo 44 for an example of algae growth observed and sampled.

DESCRIPTION OF SPRINGS & FEATURES

Flowing Sink Upstream of Fenceline Spring
This sinkhole feature is a karst window, or fenster, located on the river bottomland along the edge of a vertical rock outcrop about 700 feet northeast of Fenceline spring. See Figure 2 and Photos 1, 2 and 3. It has a spring vent on its northeast side, and flows about 100 feet to a siphon on its southwest side. It is located on private property. Under normal, non-flood conditions, it has no surface connection to the river. Initial water quality analyses and field parameters of water from the spring side indicate that the discharge is very similar to that of other springs in this area. No discharge measurements were attempted, but directional water movement was observed, with a significant duckweed accumulation on the downstream siphon side.

Fenceline Spring (ALA930971)
Fenceline Spring is a third magnitude spring located within an inside bend about ten feet out from the left bank of the SFR, about 2700 feet upstream of the Poe Spring Run confluence. The spring discharges from a vent on the river bottom about 10 feet deep. See Figure 2 and Photos 4,

5 and 6. This spring is listed as ALA930971 by SRWMD and the FDEP Florida's Springs 2008 Master List, but was given the name Fenceline Spring due to several fences that converge nearby at the riverbank.

'The Crack' Estavelle

'The Crack' is a unique feature located on the right bank approximately 1300 feet upstream of the Poe Spring Run confluence. It connects to the upstream end of the river braid that bypasses the northernmost of two islands that are part of the nearby shoals in the river. The Crack is a fissure in the limestone at the end of the short channel that runs north from the river braid. See Figure 2 and Photos 7 and 8. The Crack is listed as spring number COL428982 by SRWMD, as Allen Spring in the FDEP Florida's Springs 2008 Master List, and known to some local cave divers as 'Labatt's Blue'. Although officially listed as a spring, this feature is often observed receiving river water under non-flood conditions, as was the case during this survey. It has also been observed as isolated from the SFR. It is suggested that this feature be considered an estavelle for descriptive and classification purposes.

Cave diver Wes Skiles investigated The Crack and reported that the fissure intersects with an upstream-downstream cave passage at its bottom. He also reported that, at low river levels when The Crack was discharging, water in the upstream passage also flowed into the downstream passage. Other observations within the cave indicated that, when siphoning, the upstream tunnel flow reverses, taking in river water. The downstream passage appears to be taking water in a route that is sub-parallel to the river. The downstream flow may discharge at one or more of the many springs downstream of this feature.

Sink Pool North of 'The Crack'

This isolated water feature is located in the SFR floodplain about 300 feet northwest of The Crack. It has no surface connection to the The Crack or the SFR during normal water levels. The pool had dimensions of about 30 by 20 feet, and was about 4 feet deep. See Figure 2 and Photo 9. It contained clear water with a conductivity in the range of nearby local spring water. A low bank on one side of the sink suggests that this may be an active spring or siphon feature at higher river levels

Santa Fe River Island Springs

Below Fenceline Spring, the SFR becomes narrower and deeper for about 1500 feet. A row of houses are perched right along the steep left bank. This narrow, deep channel then transitions to a bedrock shoal, with two islands surrounded by rapids. The left (southern) island splits the river into two channels. The larger right (northern) island has a braid on its north side, separating it from the right bank. While most of the water in the braid flows around the island, some cuts across it in a smaller bisecting braid. Below the shoals and islands the river reforms into one channel as it continues past Poe Springs County Park. See Figure 3.

Twin Cypress Spring

Twin Cypress Spring is a lower second magnitude spring discharging along the south side of the northern island, just below the rapids. See Figure 3 and Photo 10. This feature is characterized by a network of vents in the bedrock, about 20 feet wide and about four to five feet deep. It was named after two large adjacent cypress trees, and is not known to be included on any other springs lists. A discharge measurement was made during the study period by ACEPD personnel using conventional open channel methods. Discharge on June 23, 2015 was measured at 23.713 CFS and on July 13 at 22.795 CFS.

Twin Cypress Spring Upstream Vents 1 & 2
Twin Cypress Spring Upstream Vents 1 and 2 are located just upstream of Twin Cypress Spring. Twin Cypress Spring Upstream Vent 1 is located in the river bottom in front of a large cypress tree. Twin Cypress Spring Upstream Vent 2 is the largest of this pair, and is located along the right bank and near the downstream end of the small braid that bisects the northern island. It can be located by its strong boil on the surface of the shallow channel. See Figure 3 and Photos 11 and 12.

Tiny Channel Vent
The Tiny Channel Vent is a very small vent located on the bottom near the center of the northern island main braid channel, just upstream of its confluence with the SFR. See Figure 3 and Photos 13 and 14. The vent discharges from bedrock beneath submerged logs, and is less than one foot in diameter.

Three Vent Run Springs
The Three Vent Run Springs are a small spring group consisting of three vents, identified as the Head Spring Vent, Middle Run Vent and the Run End Vent. The Three Vent Run Springs are located along the right bank of the northern island main braid channel, into which it discharges. See Figure 3 and Photos 15 and 16. The collective discharge of this vent group appeared to be in the lower second magnitude range.

<u>Poe Springs Park Area Springs</u>

Poe Dock Vent Cluster
The Poe Dock Vent Cluster consists of at least three small spring vents located on the shallow river bottom along the right bank of the SFR, across from, and about 100 feet downstream of, the upstream Poe Springs Park boat dock. The vents discharge directly from the bedrock bottom, and contain scattered organic debris. The vents are collectively estimated to be in the fifth magnitude category range. They can produce a boil on the surface during low water conditions. See Figures 3 and 4, and Photo 17.

Fracture Spring
Fracture Spring is a relatively large feature located on the right bank, directly across from the Poe Spring Run confluence. See Figure 4 and Photos 18 and 19. The rock ledge that makes up the bank drops directly into this nearly 100 foot long feature. Significant spring vents are located all along the fissures length, with the largest vents located at the upstream end, and producing visible boils on the surface during low water conditions. The fissure contains natural debris, and some of the vents at the downstream end are visible as sand boils.

Poe Spring
The primary focus of this study was the investigation of springs and features other than Poe Springs itself; Poe Spring was only sampled for comparative water quality purposes. Field parameters were measured and samples taken for laboratory analyses by ACEPD. See Figure 4, Tables 2 and 3, and Photos 20 and 21.

Two discharge measurements were made during the study period by ACEPD personnel using conventional open channel methods. Discharge on May 5, 2015 was measured at 45.715 CFS, and on June 29, 2015 was 30.8 CFS.

Little Poe Spring

Little Poe Spring is located in the bottomland forest about 20 feet south of the left bank of the SFR. This spring is also known as Watermelon Spring, a name that has origins in the large picnics that were held there in decades past. See Figure 4 and Photo 22. It has a small, silty spring pool that discharges to the river farther downstream through a 900 foot long run. See Photo 23. This spring is estimated to have a low fifth magnitude discharge.

Riverside Spring

Riverside Spring is a submerged third magnitude spring on the bottom of the Santa Fe River just out from the left bank, about 320 feet downstream of the Poe Spring Run confluence. Riverside Spring has been identified in past studies and reports as Watermelon II Spring. See Figure 4 and Photos 24, 25 and 26. At lower river levels, this spring is easily located by its powerful fountain-like boil on the river's surface. The vents of this spring are formed along a crack in the bare limestone bottom, with a total length of about 14 feet, lying about 10 feet from the shoreline during normal water level conditions. The maximum depth in the vents is about 4.5 feet.

It appears that no direct discharge measurements of this spring have been made, prior to this study. Since the vents of this spring are located on the floor of the river, its discharge cannot be measured by conventional methods at most water levels. A discharge measurement using a submerged vent/conduit method was made by KES of Riverside Spring during this study, the results and report of which is attached herein as Appendix I. Discharge of the spring was 4.7 CFS on May 5, 2015. A second discharge measurement was made during the study period by ACEPD personnel when water levels were at or near their lowest using conventional open channel methods. Discharge on June 24, 2015 was measured at 3.2 CFS. The drop in discharge between these two dates is almost identical to the percent drop in discharge recorded at Poe Spring on about the same dates.

Beaver Pond Spring

This small spring is located near the downstream end of the run that originates at Little Poe Spring, about 1000 feet downstream of the Poe Spring Run confluence. Beaver Pond Spring has been identified in past studies and reports as Watermelon III Spring. It discharges though a small vent on the bottom of the west side of a pond that had been created in the run by a small beaver dam just a few feet downstream at the run's confluence with the SFR. See Figure 4 and Photos 27 and 28.

A discharge measurement was made during the study period by ACEPD personnel using conventional open channel methods. Discharge on June 29, 2015 was measured at 0.163 CFS and on July 31 at 0.42 CFS.

Poe Lodge Vent Pair

These two small spring vents were observed discharging groundwater from the bedrock bottom of the SFR about 1000 feet downstream of the Poe Spring Run confluence, and just offshore from the cleared area in front of the Poe Springs Lodge. See Figure 4 and Photo 29. They are located on the left side of the channel just offshore of the cleared area east of the park lodge. Each vent is about one foot in diameter. See Photos 30 and 31.

Seven Sisters Spring Cluster

The Seven Sisters Spring Cluster is located on the north side (right bank) of the SFR in Columbia County, about seven tenths of a mile downstream of Poe Spring and two tenths of a mile upstream of Lily Spring. The springs lie at the head of a winding shallow run, about 450 feet from the river. See Figure 5 and Photos 32, 33 and 34.

The run and springs lie between the 25 and 30 foot elevation contour, the former defining the SFR shoreline in this reach. The features are entirely within the floodplain of the SFR, which is covered by a mosaic of mature bottomland forest and floodplain swamp. The area is subject to inundation.

Despite its name, the spring group consists of three distinct basins, which are connected by shallow muddy channels. The basins and channels are littered with detritus, ranging in size from tree trunks to smaller branches and leaves. The basins are very silty. During this study the water in the basins was somewhat brown and relatively warm at the surface, but noticeably cooler and a little clearer in the underlying rocky vents, which were about 6 to 10 feet below the water surface. The collective discharge of this vent group was estimated to be 1 to 2 cubic feet per second during the May 22, 2015 visit.

At its confluence with the SFR, the bottom of the run consists of limestone bedrock. There are several obvious man-made channels and cuts in the rock, some still containing remnants of old lumber, that are evidence of a water control structure that was part of a grist mill. See Figure 5 and Photos 35 and 36.

Lily Springs Group

The Lily Springs Group consists of Lily Springs, the Lily Springs SFR Vents and Pickard Springs. The individual springs that make up this group are all within 400 feet of one another, along an approximately 600 foot reach of the left bank of the SFR. The Lily Spring run confluence is located about 4400 feet downstream of the Poe Spring run confluence, and about 1100 feet downstream of the Seven Sisters run confluence. See Figure 6.

During this study, KES visited these springs and measured similar specific conductance. See Table 2. While located in geographical proximity, past data indicates some differences in water quality between Lily and Pickard. Past observations of Lily Spring have shown variability in water clarity. No data regarding the Lily Springs SFR Vents is known.

Poe Springs Park Area Upland Features

Poe Woods Spring

The wooded valley that extends to the south of Poe Spring, and supports a mosaic of bottomland forest and floodplain swamp, was investigated for the source(s) of water that has been observed discharging from the valley towards the spring and river during and after river floods have crested. As river levels were low, there was no discharge present during the study. Along the base of valley slopes are ledges of exposed bedrock.

The area within the 50 foot NGVD elevation contour was searched, and a water filled feature was located in a shallow depression about 1230 feet south of Poe Spring, and about 170 feet north of County Road 340 (Poe Springs Road). Two small, shallow pools were present in the depression, which was about 20 feet in length at the start of this study. As the SFR level rose near the end of the study, water levels in the depression also rose, filling it with a large single pool of dark water. See Figure 6 and Photos 37 and 38. This feature was first identified and listed in the FDEP Florida's Springs 2008 Master List.

At the lower water level, both pools harbored Eastern Mosquitofish, *Gambusia holbrooki*. A Common Snapping Turtle also resided in the northern pool. The pool area was probed with a ten foot long rod. Bedrock was easily encountered in the pool area from three to five feet below the land surface, and at one spot, the entire length of the ten foot rod was easily pushed down into an opening in the rock.

About 50 feet south of Poe Woods Spring on the southern slope of the valley is a dry sink. See Figure 6 and Photo 39. This funnel-shaped sink is on the upper half of the slope, and is about four to ten feet deep, and about 15 feet across. This sink, along with the depth reached by the rod in Poe Woods Spring, is indicative of potential underlying cave and conduit structures in this area.

Sinkholes South of Poe Springs Road

The valley identified by the 50 foot NGVD elevation contour extends south beyond County Road 340 for about 2000 feet. Within or near that contour several sink features were visited, including a sink about 3200 feet south-southwest of Poe Spring that opens to the water table and has an underwater cavern. See Figure 6 and Photos 40 and 41. These sites are on private property and not accessible to the public.

The large, deep sink identified as 'Cave Sink' has two surface openings at the bottom of the sink that open into a cavern room at least 55 feet deep and about 200 feet in diameter. The water-filled cavern is dominated by a large debris cone about 15 feet deep at its highest point. Cave divers who have visited this site have indicated that water in the cavern has color similar to that of Poe Spring. The elderly owner related to those divers that the site was used in the past as a swimming hole, had clearer water, and was observed to rise and fall with the SFR level.

About 400 feet northeast of the Cave Sink is a large dry sink with bedrock exposures on its southern side. This sink is about 12 feet deep and slopes upward toward the north. About 150 feet further east is another dry sink, about four feet deep, with scattered rock visible on its south side. See Figure 6 and Photos 42 and 43.

DISCUSSION OF FINDINGS

Investigation of Un-named Features.
This study identified twelve un-named springs and features, including the Flowing Sink upstream of Fenceline Spring, the Sink Pool North of The Crack, Twin Cypress Upstream Vents 1 and 2, the Tiny Channel Vent, the Three Vent Run Group, the Poe Dock Vent Cluster, Fracture Spring, the Poe Lodge Vent Pair, and the Cave Sink south of the park. Two of these features, the Flowing Sink and Cave Sink, are located on private property. See Figure 1 and Table 1.

Three important springs within Poe Spring County Park were also renamed as part of this study; Watermelon I Spring is now Little Poe Spring, Watermelon II is now Riverside Spring and, Watermelon III will now be referred to as Beaver Pond Spring. The Crack Estavelle should now be recognized as the name for the feature that has been referred to as COL428982 and Allen Spring.

Water Quality Measurements and Analyses
Water quality field parameters including specific conductance, temperature, pH and dissolved oxygen were taken by KES and ACEPD at a majority of the sites investigated and the SFR. Samples were also collected for laboratory analysis from selected springs. Parameters for laboratory analyses included; nitrate/nitrite as N, sulfate, total organic carbon (TOC), alkalinity, iron, calcium, magnesium, sodium, potassium, chloride and color. See Tables 2 and 3. Seven Sisters Spring and Poe Woods Spring are not included in this discussion, as conditions at these location indicated some stagnancy.

Specific conductance ranged from a low of 422 microSiemens/centimeter (uS/cm) to a high of 453 uS/cm in the springs, compared to 492 uS/cm in the SFR. Temperatures ranged from 22.3° to 22.9° Celsius. The pH's were all in the alkaline range, from 7.05 to 7.26 pH units. Dissolved oxygen ranged from 0.22 to 0.98 mg/L. These field parameter values are all within normal ranges for groundwater.

Nitrate/Nitrate as N ranged from 0.016 to 0.39 mg/L, with Poe Spring having a value of 0.19 mg/L. These are relatively low values, when compared to the Gilchrist Blue and Ginnie Springs groups further downstream. Sulfate ranged from 12 to 39 mg/L. TOC ranged from 1.3 to 2.5 mg/L, with an extreme value of 41 mg/L at the Flowing Sink. Alkalinity, iron, calcium, magnesium, sodium, potassium and chloride were all in the ranges of normal groundwater for this area. Color varied from 5 to 15 color units.

RECOMMENDATIONS

Based on the concentration of springs of varying size and discharge within the study area, and the presence of at least two siphoning features, a hydrogeologic connectivity study should be undertaken to better understand the relationships of this area's features. Under favorable river level conditions, a dye trace could be designed and executed that would help define the underlying conduit networks that may exist between the Fenceline Spring area upstream of the County Park downstream to Seven Sisters Spring Cluster, and possibly even the Lily Springs Group.

Based on observations made during this study, the suggested dye trace scenario would be to use the Flowing Sink Upstream of Fenceline Spring and The Crack Estavelle as dye introduction points. The SFR levels would need to be such that The Crack was receiving water from the river. Fluorescein dye would probably be the best dye candidate for release into The Crack, and rhodamine WT dye for the Flowing Sink. Private landowner permission would need to be secured.

During the suggested trace, numerous springs would be monitored for the arrival of dye, including spring groups downstream of the County Park area. Water quality field parameters would also be monitored.

A dye trace such as described here might identify the source of color observed in many of these springs, and reveal the degree of connectivity some of these springs may have with the SFR.

During periods of rising river levels that develop into flood conditions on the bottomland, the Poe Woods Spring should be monitored at key intervals for discharge and water quality. This would provide data that could demonstrate relationships between Poe Spring, the SFR and ground water in the southern area of the Poe Springs County Park.

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POE SPRINGS AREA
HYDROLOGIC FEATURES STUDY

FIGURES

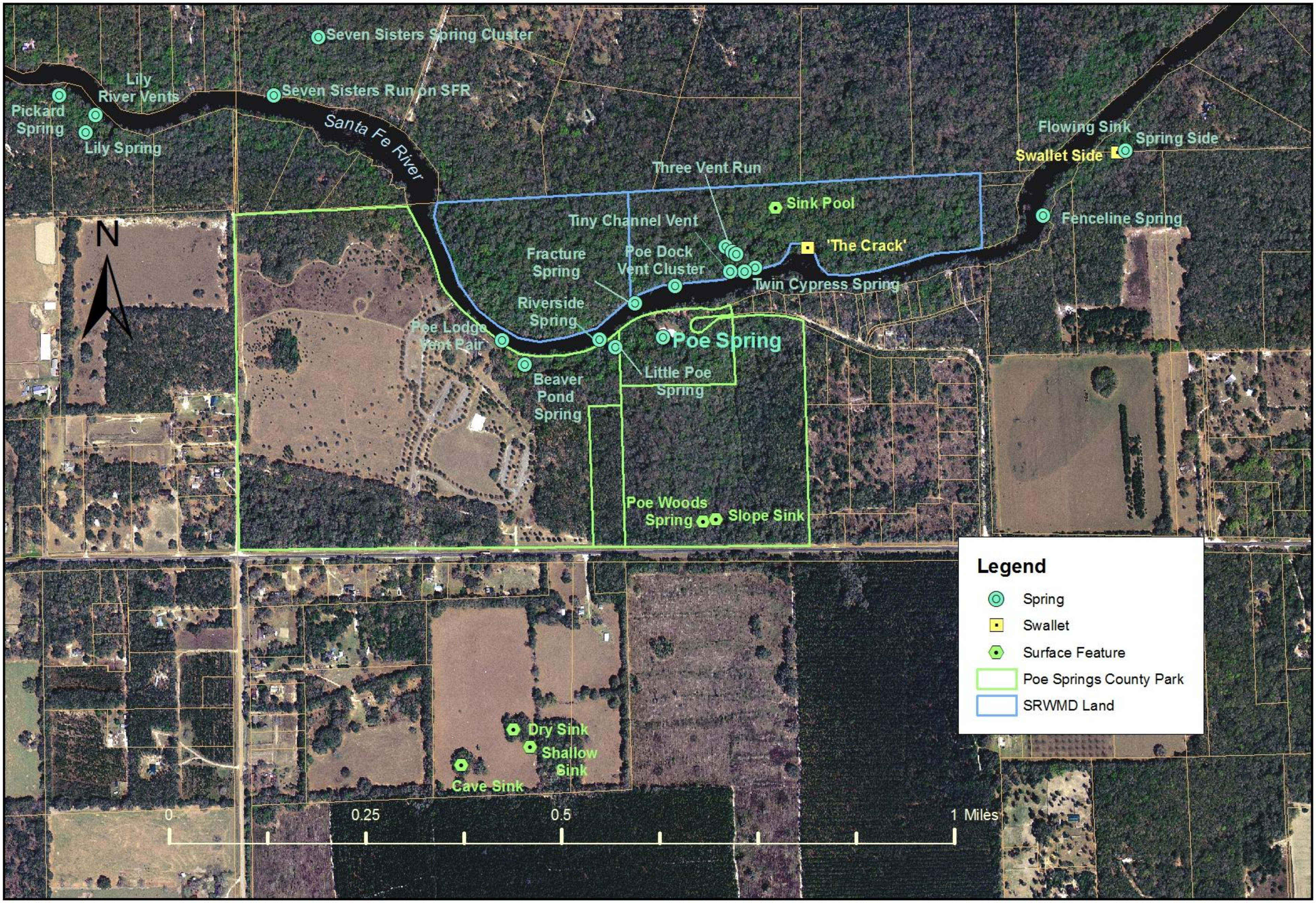

Figure 1. Map of the Poe Springs Area Hydrologic Features Study Area.

Figure 2. Map of the upper Poe Springs Area Hydrologic Features Study area.

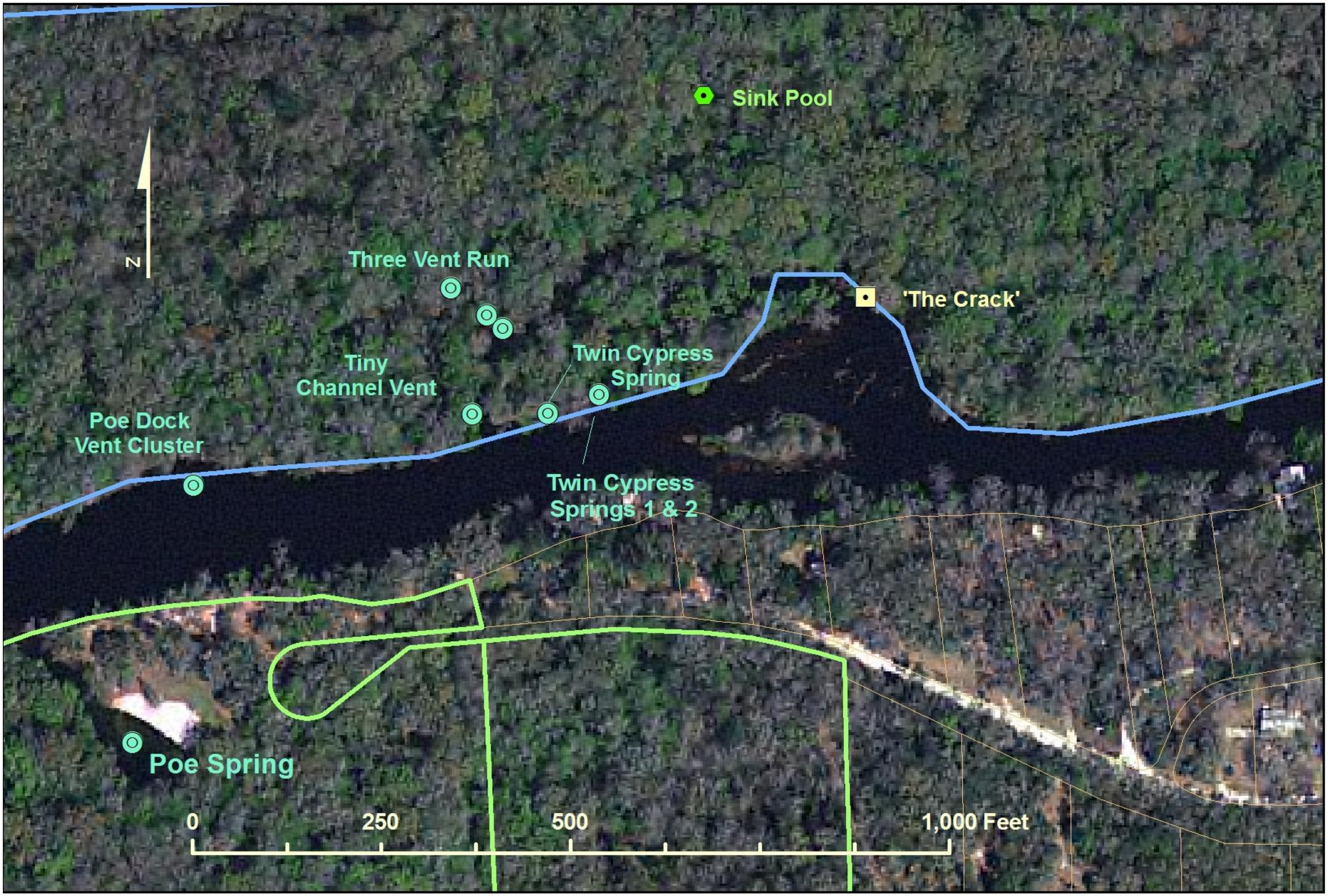

Figure 3. Map of the Santa Fe River island springs in the Poe Springs Area Hydrologic Features Study area.

Figure 4. Map of the Poe Springs County Park springs.

Figure 5. Map of the lower Poe Springs Area Hydrologic Features Study area.

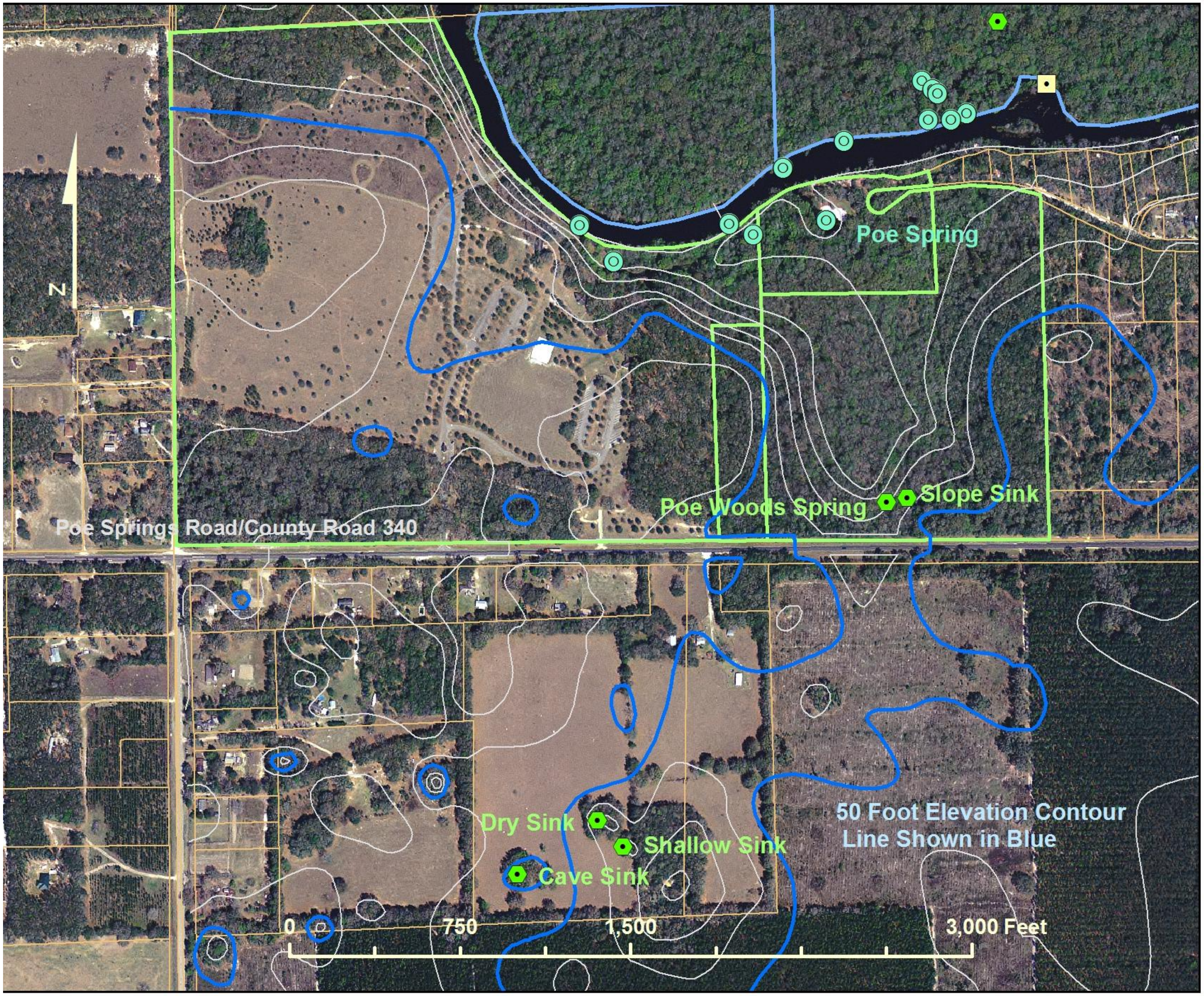

Figure 6. Map of the southern Poe Springs Area Hydrologic Features Study area.

POE SPRINGS AREA
HYDROLOGIC FEATURES STUDY

TABLES

POE SPRINGS AREA HYDROLOGIC FEATURES STUDY					
Table 1. List of Springs and Natural Features of Interest and Their Locations					
	GPS Coordinates**		**SFR**		
	DECIMAL MINUTES		**Bank Side**		
FEATURE NAME:	**LATITUDE**	**LONGITUDE**	**Position**	**County**	**FOM +/-'**
Flowing Sink U/S of Fenceline;					
Spring Side Ledge	N 29° 49.747'	W 82° 38.349'	Left	Alachua	17.7
Swallet Side at Ledge	N 29° 49.745'	W 82° 38.360'	Left	Alachua	24.5'
Fenceline Spring (ALA930971)*	N 29° 49.677'	W 82° 38.456'	Left	Alachua	29.1'
'The Crack' Estavelle (COL 428982)*	N 29° 49.653'	W 82° 38.758'	Right	Columbia	16.5'
Sink Pool N of 'The Crack'	N 29° 49.688'	W 82° 38.796'	Right	Columbia	31.7'
Twin Cypress Spring	N 29° 49.618'	W 82° 38.836'	Right	Columbia	21.4'
Twin Cypress Upstream Vent #1	N 29° 49.616'	W 82° 38.830'	Right	Columbia	
Twin Cypress Upstream Vent #2	N 29° 49.622'	W 82° 38.823'	Right	Columbia	21.1'
Three Vent Run;					
Head Spring Vent	N 29° 49.646'	W 82° 38.860'	Right	Columbia	15'
Middle Vent (on right bank of run)	N 29° 49.640'	W 82° 38.851'	Right	Columbia	21.1'
End of Run Vent (on right bank of run)	N 29° 49.634'	W 82° 38.847'	Right	Columbia	16.5'
Tiny Channel Vent	N 29° 49.618'	W 82° 38.855'	Right	Columbia	21'
Poe Dock Vent Cluster	N 29° 49.603'	W 82° 38.925'	Right	Columbia	13'
Poe Spring*	N 29° 49.553'	W 82° 38.935'	Left	Alachua	-
Fracture Spring	N 29° 49.584'	W 82° 38.976'	Right	Columbia	26'
Little Poe Spring	N 29° 49.545'	W 82° 39.000'	Left	Alachua	14.2'
Riverside Spring	N 29° 49.537'	W 82° 39.019'	Left	Alachua	15'
Beaver Pond Spring	N 29° 49.520'	W 82° 39.118'	Left	Alachua	12.7'
Poe Lodge Vent Pair	N 29° 49.543'	W 82° 39.147'	Left	Alachua	17.4'
Seven Sisters Springs (COL930971)*	N 29° 49.883'	W 82° 39.376'	Right	Columbia	-
Seven Sisters Run at Santa Fe River	N 29° 49.819'	W 82° 39.434'	Right	Columbia	27.7'
Lily Spring*	N 29° 49.780'	W 82° 39.674'	Left	Gilchrist	-
Lily Spring SFR Vents	N 29° 49.801'	W 82° 39.659'	Left	Gilchrist	-
Pickard Spring*	N 29° 49.821'	W 82° 39.707'	Left	Gilchrist	-
Poe Spring Upland;					
Poe Woods Spring	N 29° 49.341'	W 82° 38.893'	Left	Alachua	14.5'
Poe Woods; Dry Sink on Slope	N 29° 49.344'	W 82° 38.876'	Left	Alachua	18.3'
Cave Sink South of Poe Spring Cty Park	N 29° 49.075'	W 82° 39.204'	Left	Alachua	16.3
Dry Sink South of PSCP	N 29° 49.113'	W 82° 39.137'	Left	Alachua	20.6
Shallow Sink South of PSCP	N 29° 49.094'	W 82° 39.116'	Left	Alachua	16.3
Notes:					
*Listed by name/Number by SRWMD.					
**From hand-held GPS positions taken during this study, or by SRWMD, WGS 84 Map Datum.					

Table 1. List of Springs and Natural Features of Interest and Their Locations

POE SPRINGS AREA HYDROLOGIC FEATURES STUDY						
Table 2. Results of Water Quality Sampling; Field Parameters						
Parameters:	**Specific Conductance**		**Water Temp.**	**pH**	**Dissolved Oxygen**	**Dissolved Oxygen**
Units:	uS/cm		°Celsius	SU	%	mg/L
Date measured:	6/5/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015
Measured by:	KES	ACEPD	ACEPD	ACEPD	ACEPD	ACEPD
Feature Name:						
Flowing Sink; Spring Side	**423**	**431.7**	**22.5**	**7.05**	**4**	**0.35**
Fenceline Spring (ALA930971)	**424**	**431**	**22.4**	**7.12**	**3.5**	**0.29**
Santa Fe River Water above shoals	**-**	**492**	**25.6**	**7.55**	**66.5**	**5.38**
'The Crack' Estavelle: SFR inflow water	**478**	**490**	**25.3**	**7.52**	**56.4**	**4.6**
Sink Pool N of The Crack	**-**	**446**	**22.9**	**7.2**	**11.5**	**0.98**
Twin Cypress Upstream Vent #2	**435**	**442**	**22.8**	**7.22**	**9.1**	**0.78**
Twin Cypress Upstream Vent #1	**422**	**441**	**22.6**	**7.2**	**6.3**	**0.54**
Twin Cypress Spring	**433**	**440/441**	**22.7**	**7.18/7.19**	**7.7/7**	**0.64/0.6**
Three Vent Run;						
Head Spring Vent	**433**	**455**	**22.6**	**7.18**	**7**	**0.589**
Middle Vent (on right bank of run)	**432**	**444**	**22.7**	**7.18**	**6.9**	**0.58**
End of Run Vent (on right bank of run)	**434**	**444**	**22.8**	**7.21**	**9.3**	**0.78**
Tiny Channel Vent	**435**	**-**	**-**	**-**	**-**	**-**
Poe Dock Vent Cluster	**430**	**431**	**22.4**	**7.16**	**2.5**	**0.22**
Poe Spring	**427**	**429**	**22.4**	**7.26**	**3.4**	**0.3**
Fracture Spring	**453**	**455.8**	**22.8**	**7.21**	**10.3**	**0.88**
Little Poe Spring	**423**	**-**	**-**	**-**	**-**	**-**
Riverside Spring	**432**	**433**	**22.4**	**7.21**	**3.2**	**0.28**
Beaver Pond Spring	**-**	**427.8**	**22.3**	**7.26**	**3.2**	**0.28**
Poe Lodge Vent Pair	**453**	**-**	**-**	**-**	**-**	**-**
		6/19/2015				
Poe Woods Spring	**-**	**400**	**-**	**-**	**-**	**-**
Seven Sisters Springs; 'Head Pool'	**480**	**-**	**-**	**-**	**-**	**-**
Lily Spring	**441**	**-**	**-**	**-**	**-**	**-**
Lily Spring SFR Vents	**453**	**-**	**-**	**-**	**-**	**-**
Pickard Spring	**430**	**-**	**-**	**-**	**-**	**-**

Table 2. Results of Water Quality Field Parameter Measurements.

POE SPRINGS AREA HYDROLOGIC FEATURES STUDY											
Table 3. Results of Water Quality Sampling Analyses.											
Samples collected by ACEPD staff and analyses performed by Test America Laboratories, Inc.											
Parameters:	**Nitrate Nitrite as N**	**Sulfate**	**TOC**	**Alkalinity**	**Iron**	**Calcium**	**Magnesium**	**Sodium**	**Potassium**	**Chloride**	**Color**
Units:	mg/L	mg/L	mg/L	mg/L as CaCO3	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	PCU
Date sampled:	6/23/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015
Feature Name:											
Flowing Sink; Spring Side	**0.16**	**29**	**41**	**160**	**≤0.044**	**80**	**8**	**9.8**	**1.1**	**14**	**10**
Fenceline Spring (ALA930971)	**0.19**	**29**	**2.5**	**180**	**≤0.044**	**80**	**8**	**9.5**	**1**	**14**	**10**
Twin Cypress Upstream Vent #2	**0.39**	**34**	**2.3**	**180**	**0.059**	**73**	**8**	**8.7**	**0.99**	**14**	**15**
Twin Cypress Spring	**0.39**	**32**	**2.3**	**170**	**≤0.044**	**80**	**8.7**	**9.5**	**1**	**14**	**10**
Three Vent Run; Head Spring Vent	**0.27**	**33**	**2.2**	**170**	**0.078**	**80**	**9**	**9.4**	**1.1**	**14**	**15**
Poe Dock Vent Cluster	**0.3**	**20**	**2**	**180**	**≤0.044**	**80**	**7.3**	**8.6**	**0.96**	**13**	**10**
Poe Spring	**0.19**	**17**	**2**	**180**	**≤0.044**	**76**	**6.8**	**8**	**0.84**	**12**	**5**
Fracture Spring	**0.3**	**39**	**2.2**	**170**	**0.16**	**81**	**9.5**	**9.3**	**1**	**14**	**10**
Riverside Spring	**0.2**	**19**	**1.8**	**180**	**0.064**	**84**	**8**	**8.9**	**0.98**	**13**	**15**
Beaver Pond Spring	**0.37**	**12**	**1.3**	**190**	**≤0.044**	**77**	**6.7**	**7.1**	**0.75**	**11**	**5**
	6/19/2015	6/19/2015				6/19/2015	6/19/2015			6/19/2015	
Poe Woods Spring	**0.01**	**5.6**	**-**	**-**	**-**	**71**	**5.5**	**-**	**-**	**8**	**-**

Table 3. Results of Water Quality Sampling Laboratory Analyses.

POE SPRINGS AREA
HYDROLOGIC FEATURES STUDY

PHOTOGRAPHS

Photo 1. Flowing sink upstream of Fenceline Spring. Viewed from sink center to downstream.
Photo taken on July 31, 2015 by Jennifer Adler.

Photo 2. Flowing sink upstream of Fenceline Spring. Viewed from sink center to upstream. Photo taken on April 30, 2015.

Photo 3. Flowing sink upstream of Fenceline Spring. View of downstream siphon side. Photo taken on April 30, 2015.

Photo 4. Fenceline Spring. Spring is located in river in front of the two cypress trees. Photo taken on July 31, 2015 by Jennifer Adler.

Photo 5. Fenceline Spring. Spring boil can be seen in river in front of the two cypress trees. Photo taken on June 12, 2015.

Photo 6. Fenceline Spring. Submerged vent and detritus coated with algae. Periphyton specimens were collected here. Photo taken on June 12, 2015.

Photo 7. 'The Crack' Estavelle. Water from the Santa Fe River is flowing into the feature.   Photo taken on April 30, 2015.

Photo 8. 'The Crack' Estavelle. The feature is siphoning river water at low flow conditions. Photo taken on July 31, 2015 by Jennifer Adler.

Photo 9. Sink pool north of 'The Crack'. Photo taken on June 12, 2015.

Photo 10. Twin Cypress Spring. Photo taken on July 31, 2015 by Jennifer Adler.

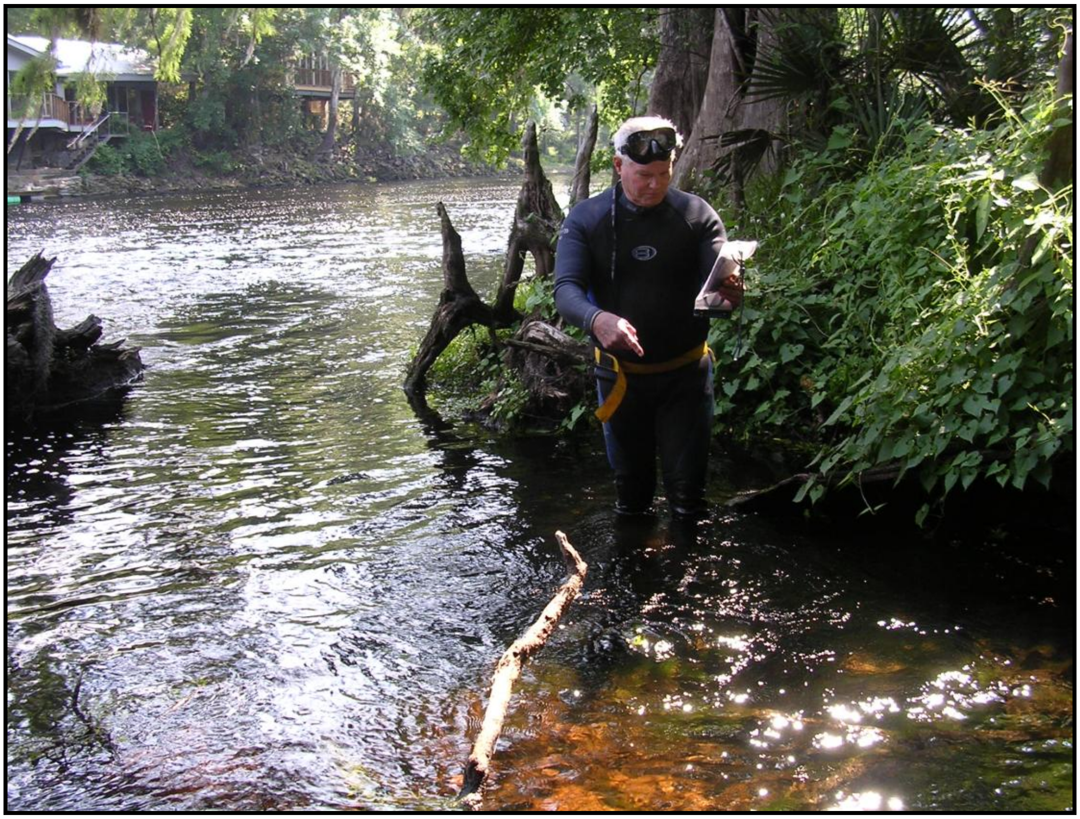

Photo 11. Twin Cypress Spring Upstream Vent 2 location. Photo taken on April 30, 2015.

Photo 12. Twin Cypress Spring Upstream Vent 1. Photo taken on June 12, 2015.

Photo 13. Tiny Channel Vent location downstream of Twin Cypress Spring. This is at the confluence of the northern island braid with the SFR. Photo taken on June 12, 2015.

Photo 14. Tiny Channel Vent downstream of Twin Cypress Spring. Photo taken on June 12, 2015.

Photo 15. Three Vent Run, viewed from the Head Spring Vent. Photo taken on July 31, 2015 by Jennifer Adler.

Photo 16. Three Vent Run; underwater view of Top of Run Vent showing algal growth present. Photo taken on June 12, 2015.

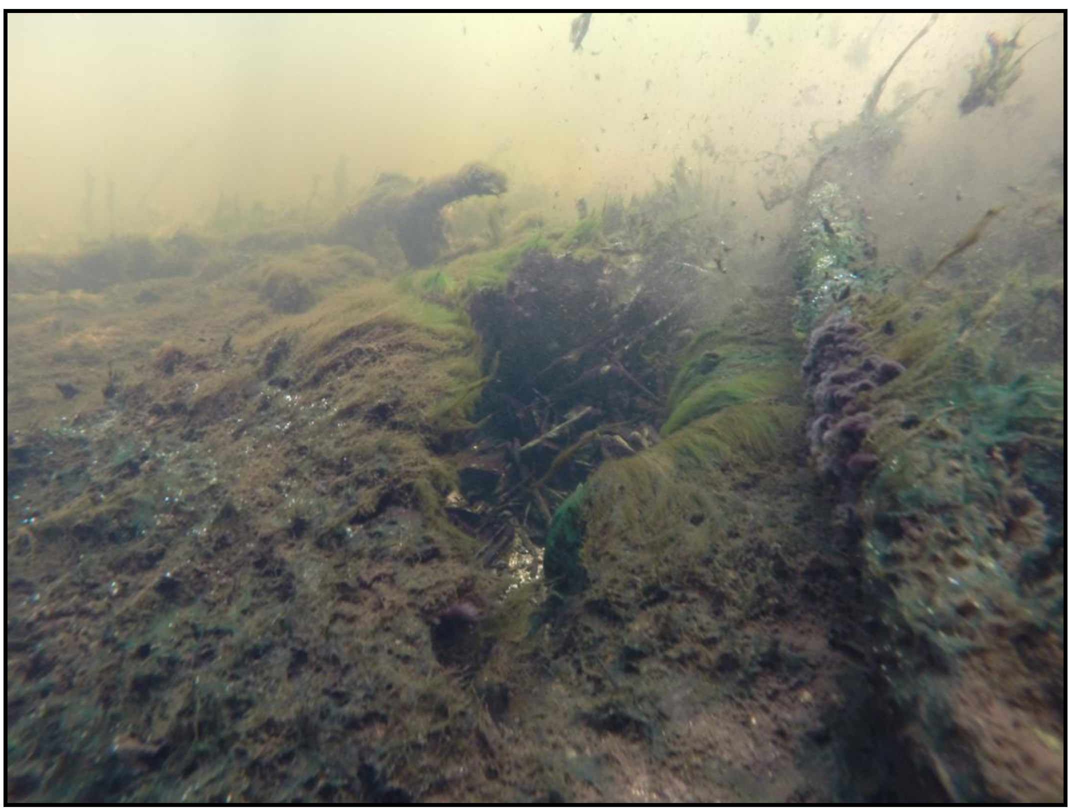

Photo 17. Poe Dock Vent Cluster. Underwater view of one of the vents. Photo taken on June 12, 2015.

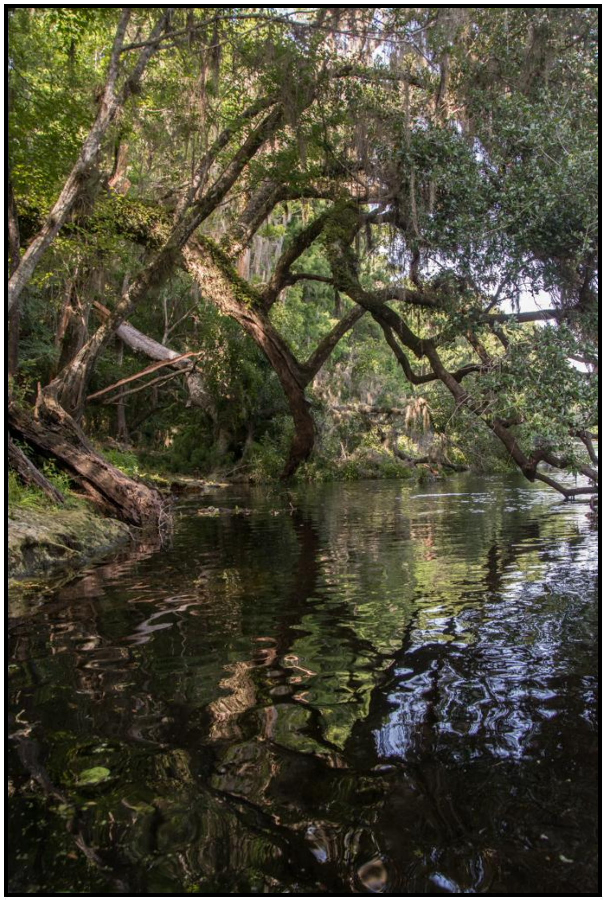

Photo 18. Fracture Spring. This linear feature runs along the river bottom here parallel to the right bank. Photo taken on June 12, 2015.

Photo 19. Fracture Spring. Underwater view looking down into one of the active vents along the feature's bottom. Photo taken on June 12, 2015.

Photo 20. Poe Spring. View of spring and run to SFR. Photo taken on August 30, 2015.

Photo 21. Poe Spring. View upstream to spring basin. Photo taken on August 30, 2015.

Photo 22. Little Poe Spring. Spring vents are in the center of the spring pool. Santa Fe River is visible beyond the high bank. Photo taken on August 30, 2015.

Photo 23. Little Poe Spring Run. This run flows through bottomland parallel to the river, and joins the river at Beaver Pond Spring. Photo taken on August 30, 2015.

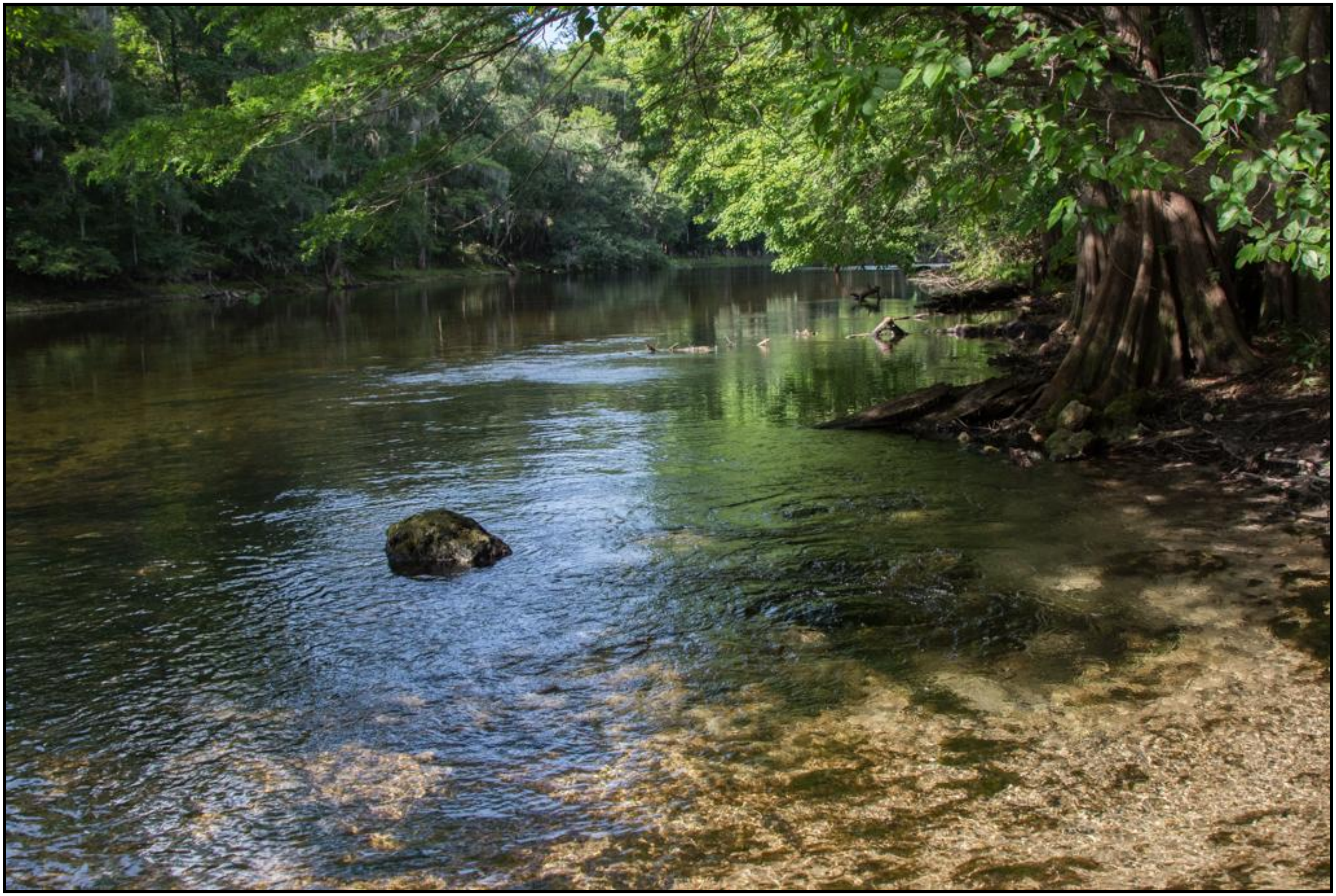

Photo 24. Riverside Spring. This view of Riverside Spring is from the Alachua County bank looking upstream to the Santa Fe River. The spring vents are between the boulder and the bank. Vent A is the prominent boil in the foreground, with the boils from Vents B and C visible behind it. Photo taken on June 12, 2015.

Photo 25. Riverside Spring. Close-up view of the boils. Photo taken on April 30, 2015.

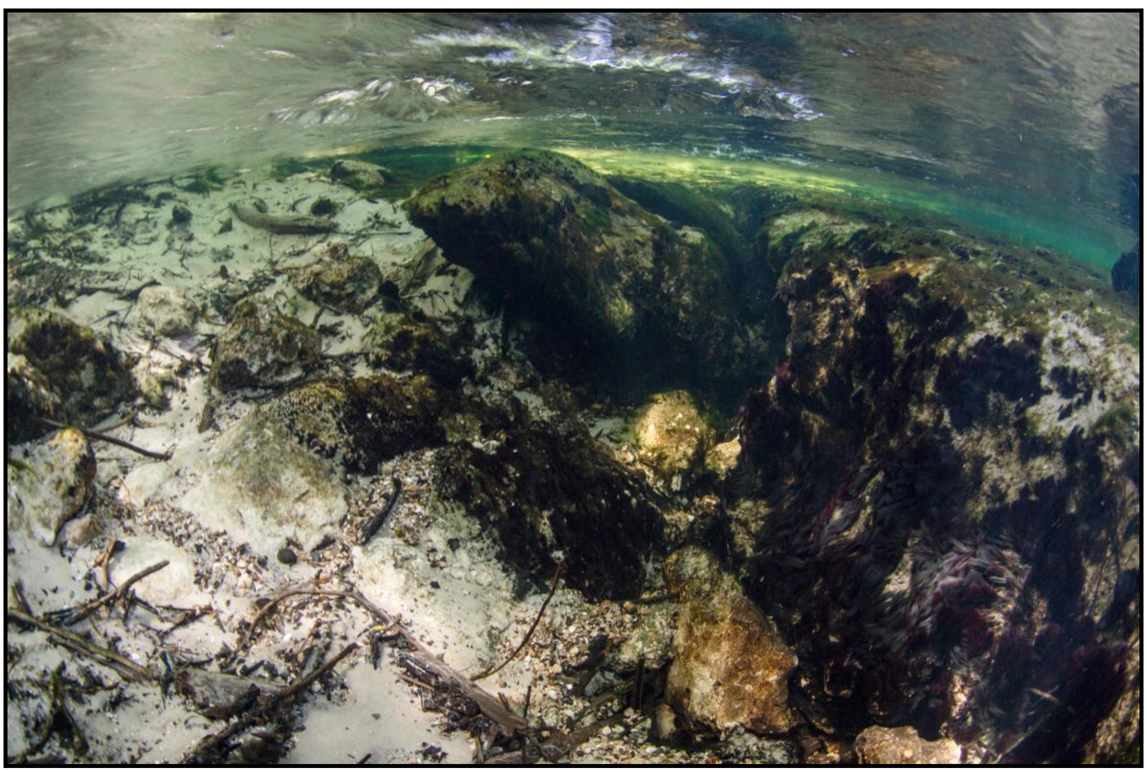

Photo 26. Riverside Spring. Underwater view of the vents. Algal growth is visible on the right vent wall. Photo taken on July 31, 2015 by Jennifer Adler.

Photo 27. Beaver Pond Spring. Spring vent is in front of cypress knees on the left side of the pond. Photo taken on August 30, 2015.

Photo 28. Beaver Pond Spring. Spring vent is located in pond behind cypress knees on right side of photo. Beaver dam and discharge measurement cross-section in the foreground. Photo taken on June 29, 2015 by ACEPD staff.

Photo 29. Poe Lodge Vent Pair. These two small vents are on the river bottom just offshore of the clearing. Photo taken on August 30, 2015.

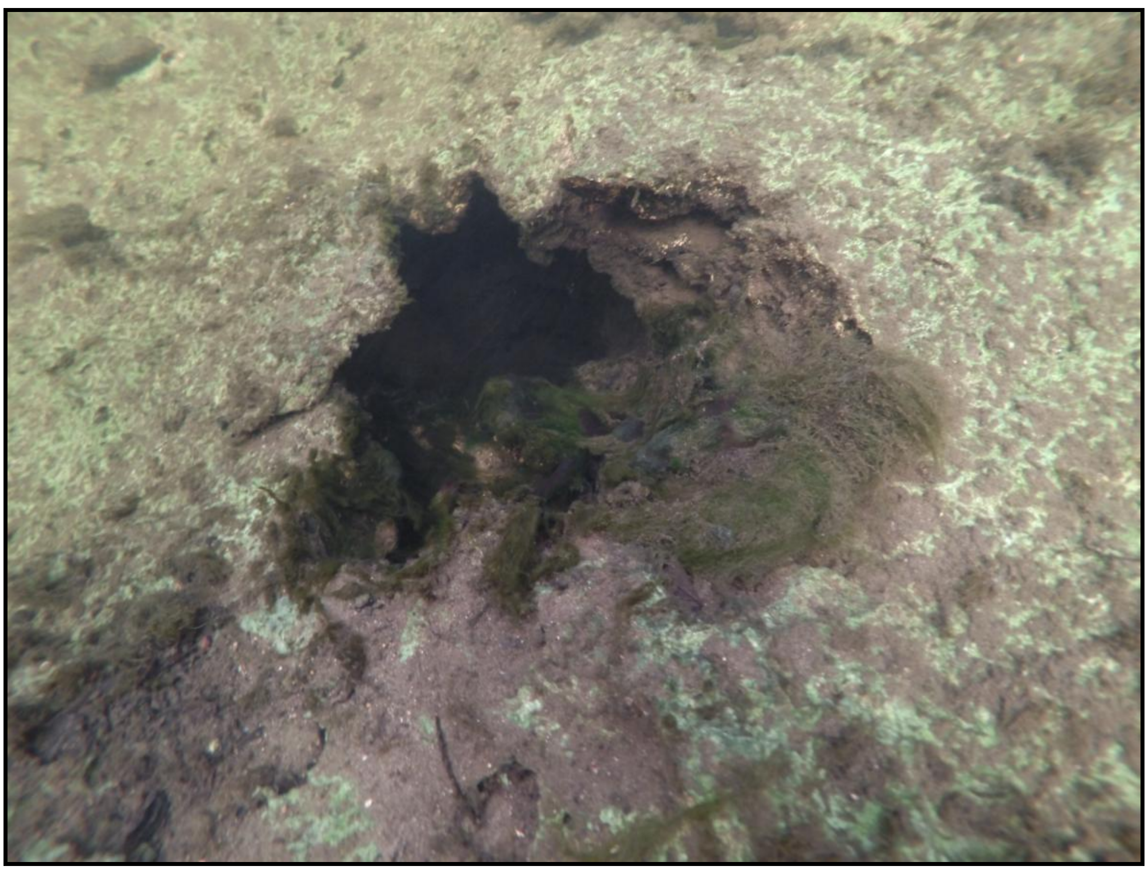

Photo 30. Poe Lodge Vent Pair; upstream vent. Photo taken on June 12, 2015.

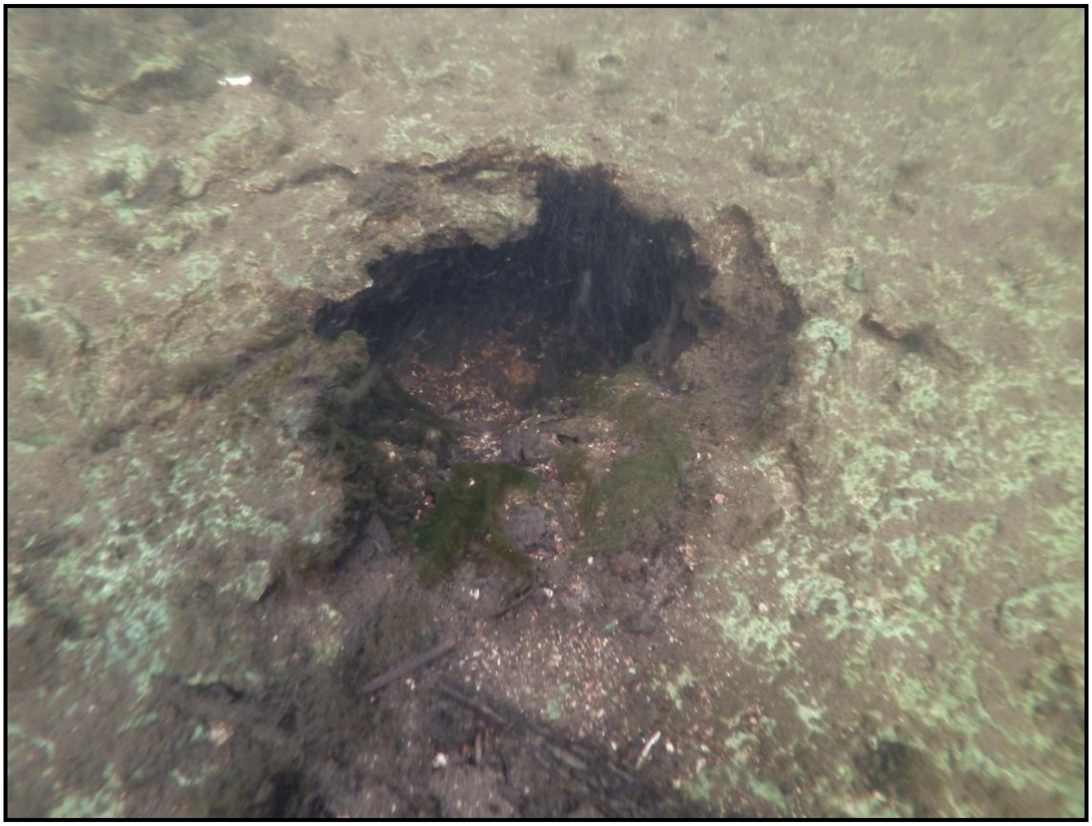

Photo 31. Poe Lodge Vent Pair; downstream vent. Photo taken on June 12, 2015.

Photo 32. Seven Sisters Spring cluster. One of the larger basins that make up the cluster. Photo taken on May 22, 2015.

Photo 33. Seven Sisters Spring cluster. One of the linear features that make up the cluster. Photo taken on May 22, 2015.

Photo 34. Seven Sisters Spring cluster. One of the deeper cluster basins. Photo taken on May 22, 2015.

Photo 35. Seven Sisters Spring Run at the Santa Fe River. The bedrock here has been shaped to support a former gristmill dam. Photo taken on May 22, 2015.

Photo 36. Seven Sisters Spring Run at the Santa Fe River. Photo taken on May 22, 2015.

Photo 37. Poe Woods Spring at low river level. Photo taken on June 11, 2015.

Photo 38. Poe Woods Spring at rising river level. Photo taken on August 30, 2015.

Photo 39. Poe Woods Spring; dry sink on southern slope. Photo taken on June 19, 2015.

Photo 40. Cave sink south of Poe Springs Road. Photo taken on June 25, 2015.

Photo 41. Cave Sink south of Poe Springs Road. A large debris cone lies about 15 feet below the two openings. Photo taken on June 25, 2015.

Photo 42. Dry Sink south of Poe Springs Road. A twelve-foot high bedrock wall is on the south side. Photo taken on June 25, 2015.

Photo 43. Shallow Dry Sink south of Poe Springs Road. The deeper Dry Sink is visible in the distance. Photo taken on June 25, 2015.

Photo 44. Example of algae growth observed and sampled during the study. Photo taken on July 31, 2015 by Jennifer Adler.

APPENDIX I

DISCHARGE MEASUREMENT: RIVERSIDE SPRING

Discharge Measurement:
Riverside Spring,
Alachua County, Florida;
May 5, 2015

Prepared for:

Alachua County Environmental Protection Department
408 W University Avenue, Suite 106
Gainesville, FL 32601

Prepared by:

Karst Environmental Services, Inc.
5779 NE County Road 340
High Springs, Florida 32643
(386) 454-3556 (386) 454-2147 kes@atlantic.net

Discharge Measurement: Riverside Spring, Alachua County, Florida; May 5, 2015

LIST OF CONTENTS

Results of Discharge Measurements of Riverside Spring, Alachua County, Florida; May 5, 2015

INTRODUCTION

The Alachua County Environmental Protection Department (ACEPD) issued Purchase Order No. 151313 to Karst Environmental Services, Inc. (KES) to conduct a discharge measurement of Riverside Spring at Poe Springs County Park in Alachua County, Florida. This report documents the results of the measurement made at the site on May 5, 2015, and is a part of the Poe Springs Area Hydrologic Features Study. A summary of the results and collected data for that measurement are presented in Table 1. Note: Prior to this measurement and the Poe Springs Area Hydrologic Features Study , this spring was known as Watermelon II Spring. The name has been changed to Riverside Spring as part of the studies goal to standardize spring and feature names.

PURPOSE and SCOPE OF WORK

The purpose of this work was to obtain an initial and accurate discharge measurement of the Riverside Spring, located within the Poe Springs Group, and a source of direct groundwater discharge into the Santa Fe River. A discharge measurement was to be made at the vent cluster of Riverside Spring during May, 2015.

Cover photo is a view of the spring during the May 5, 2015 discharge measurement operations.

SITE DESCRIPTION

Riverside Spring is a submerged spring on the bottom of the Santa Fe River. It is located on the left bank of the river, about 320 feet downstream of the mouth of the Poe Spring Run. Under normal conditions, this spring is visible as a pronounced set of boils near the bank. The vents of this spring are formed along a crack in the bare limestone river bottom, with a total length of about 14 feet, lying about 10 feet from the shoreline during normal water level conditions. The maximum depth in the accessible vents is about 4.5 feet. See Figure 1.

This spring consists of a small horizontal vent (Vent A in this report) with an adjacent vent (Vent B) extending along the same crack. The third and largest vent (Vent C) also lies along the crack to the upstream. Since the vents of this spring are located on the floor of the river, its discharge cannot be measured by conventional discharge measurement methods. However, these three horizontal openings, when modified, provided suitable locations for discharge measurements with the application of an appropriately adapted instrument. See Figures 2(ABC).

PERSONNEL

Fieldwork for this discharge measurement was conducted by KES personnel Peter Butt and Tom Morris. Data management and report preparation was performed by Peter Butt. Data processing using Surfer 10 contouring software was performed by W. Bruce Lafrenz, P.G., of Tetra Tech Inc. of Orlando, Florida.

METHODS

Instrumentation

The instrument used for this discharge measurement was a Marsh-McBirney Model 2000 Flo-Mate electronic flowmeter (Serial Number 2002679) that has been adapted for fully submersible use. In order to operate and read the meter at depth, the unit has been placed within an underwater housing with a transparent lid. The sensor wire is routed through a sealing gland on the housing lid. There are two housing controls that allow for direct operation of the flow meter. One operates the on/off/reset buttons, and the other operates the time interval selector buttons that control the measurement period.

The flowmeter used was factory calibrated while in its underwater housing in the method normally used for this unit on April 17, 2015. A copy of the Calibration Certificate is included with this report.

Field Operations

Velocity measurements were taken at locations just inside the ceiling ledges of all three vents. The measurement depth of Vent A was 1.6 feet deep. Vent B was 1.5 feet deep and Vent C was 2.9 feet deep.

A positioning grid of telescoping aluminum poles with 0.25-foot interval markings that provided support for the sensor was set up by Pete Butt. Small sandbags filled with clean gravel were used to block irregular portions of the vent openings, square-up vent sides, and provide a footing for the support poles. Butt also recorded measurements of the grid and surrounding walls. At Vent A, one 1.5-foot pole was positioned to provide a primary support for velocity measurements. One 2-foot pole crossed with a 1.5-foot pole were placed at Vent B. At Vent C, two parallel 3-foot poles were crossed by a one-foot pole. All poles were placed as horizontal and level as possible. Conduit dimensions around the grid were measured with a Keson 'Pocket Rod' collapsible steel tape. As all sensor-support poles were positioned at roughly right angles to the main flow path, no angle coefficient corrections for velocity readings were made. The flowmeter sensor was attached to the poles with a low-profile metal spring clamp. Most measurement stations were set using 0.25-foot intervals on the poles. Velocity stations and boundary points are identified with alpha-numeric labels, based on the letter assigned to identify each horizontal pole. See Figures 2(ABC) and 3(ABC).

Pete Butt positioned the sensor and recorded positional data. Tom Morris took the velocity readings after taking reset cues from Butt, and also re-positioned the sensor and recorded positional data. During all measurements, the sensor handler was able to move away from each measurement cross-section, and remove himself from the cross section of the flow. The meter operator was also positioned well away from each cross-section. This minimized or eliminated the possibility of interference with flow while the measurements were taken. The flowmeter was operated in the "Fixed Point Averaging" mode. Fixed Point Averaging is an average of velocities over a fixed period of time. Averaging periods of 60 seconds were used. The flowmeter was reset between each station. Seven station readings were made for Vent A, 15 for Vent B and 34 for Vent C. At the completion of the measurements, all equipment, including all gravel bags, were removed, and the vents left in their original condition.

Data Processing
Field measurements of the velocity measurement stations and vent boundaries were plotted on grid paper and assigned X- and Y-axis values. See Figures 3A, 3B and 3C. Values for the Z-axis were the point velocities, and zero values were assigned to the cross-section boundary points. See Tables 3A, 3B and 3C. The X, Y and Z data was processed using the Surfer v.10 (by Golden Software, Inc.) contouring program. The gridding method used was point Kriging with linear drift. Anisotropy ratios were of 2 at an angle of 0° for Vent A, 1.6 at an angle of 90° for Vent B and 1.5 at an angle of 0° for Vent C. The variogram slope for all vents was 1. The results of the contour processing are illustrated in Figures 4(ABC) and 5(ABC). Discharge and measurement cross-section areas are given on the Grid Volume Computations Report feature of the software, included in this report on page 1 of Tables 2A, 2B and 2C.

During this measurement, one negative velocity was measured in Vent C. When present, negative velocity stations typically represent slight back eddies near walls. In order to incorporate any negative values, calculations were made using a Surfer 10 "blanking file" operation to define the measurement cross-section boundary and eliminate artifacts present in the contouring process that would create inaccuracies in the flow calculations. The total discharge is shown on Tables 2A, 2B and 2C as the **Net Volume (Cut-Fill)**, and has been calculated as the Positive Volume (Cut) less that portion of the Negative Volume (Fill) lying within the measurement cross-section boundary walls that define the plane of measurement.

The software also calculates the total cross-sectional area of the measurement location within the vent, and is presented in Tables 2A, 2B and 2C as the Operational Planar Area. The Operational Planar Area is the sum of the Positive (Cut) and that portion of the Negative (Fill) Planar areas lying within the measurement cross-section boundary walls that define the plane of measurement.

RESULTS AND DISCUSSION

This measurement is the first one performed at Riverside Spring applying the method and data processing used at other spring sites by KES. Based on KES' experience at other springs, the estimate of discharge for this initial measurement should be considered to be a minimum value.

The estimated total discharge of Riverside Spring (Vents A, B and C) on May 5, 2015 was 4.7 CFS (cubic feet per second). This result is also expressed as 2109 GPM (gallons per minute) or 3.037 MGD (million gallons per day), see Table 1. A total of fifty-six (56) readings were made, see Figures 3(ABC), 4(ABC) and 5(ABC). The total cross-sectional area was calculated as 5.1 square feet. The point velocity readings ranged from -0.21 to 3.13 feet per second (fps). The overall average station reading was 1.88 fps. Individual point velocity measurement periods of 60 seconds were used. The measurements commenced at about 13:48 hours and were completed by 16:36 hours. The results for each of the individual vents are summarized below.

The estimated discharge of Riverside Vent A on May 5, 2015 was 0.766 CFS (cubic feet per second). This result is also expressed as 344 GPM (gallons per minute) or 0.495 MGD (million gallons per day), see Table 1. A total of seven (7) readings were made, see Figures 3A, 4A and 5A. The Vent 1 cross-sectional area was calculated as 0.619 square feet. The point velocity readings ranged from 1.98 to 3.13 feet per second (fps). The average station reading for Vent 1 was 2.63 fps.

The estimated discharge of Riverside Vent B on May 5, 2015 was 1.576 CFS (cubic feet per second). This result is also expressed as 707 GPM (gallons per minute) or 1.019 MGD (million gallons per day), see Table 1. A total of fifteen (15) readings were made, see Figures 3B, 4B and 5B. The Vent 2 cross-sectional area was calculated as 1.847 square feet. The point velocity readings ranged from 0.16 to 2.58 feet per second (fps). The average station reading for Vent 2 was 1.73 fps.

The estimated discharge of Riverside Vent C on May 5, 2015 was 2.357 CFS (cubic feet per second). This result is also expressed as 1058 GPM (gallons per minute) or 1.523 MGD (million gallons per day), see Table 1. A total of thirty-four (34) readings were made, see Figures 3C, 4C and 5C. The Vent 3 cross-sectional area was calculated as 2.636 square feet. The point velocity readings ranged from -0.21 to 2.58 feet per second (fps). The average station reading for Vent 2 was 1.29 fps.

UNDERWATER DISCHARGE MEASUREMENT					
Location:	**RIVERSIDE SPRING**			Date:	**May 5, 2015**
	Poe Springs Group,			Time Start:	13:48
	Alachua County, Florida			Time End:	16:36
Personnel:	Peter Butt, Tom Morris				
Method:	Grid within irregular conduit				
Instrument:	MMB2000 FLO-MATE in U/W case, sensor on support poles				
Msmt. Periods:		60 seconds			
Analysis Method: Surfer 10 with kriging					
Riverside Spring Total Discharge:			**Vent A:**	**Vent B:**	**Vent C:**
CFS	**4.70**		**0.766**	**1.576**	**2.357**
MGD	**3.037**		**0.495**	**1.019**	**1.523**
GPM	**2109**	All Vents:	**344**	**707**	**1058**
Total Cross-sectional Area (sq/ft):		5.10	0.619	1.847	2.636
Avg. Station Point Velocity (ft/sec):		1.88	2.63	1.73	1.29
Cross-section Depth (feet deep):		-	1.6	2	2.9
Velocity Reading by Station:		(All velocity readings in feet per second.)			
Station #	Point Velocity	Station #	Point Velocity	Station #	Point Velocity
VENT A		**Vent C**		**Vent C (cont'd.)**	
A1	2.9	C1	1.44	C25	1.81
A2	3.13	C2	1.96	C26	1.46
A3	2.98	C3	2.15	C27	1.69
A4	2.78	C4	1.65	C28	1.62
A5	2.15	C5	1.93	C29	1.91
A6	1.98	C6	1.35	C30	1.38
A7	2.5	C7	0.72	C31	0.73
		C8	0	C32	0.15
Vent B		C9	-0.21	C33	0.62
B1	0.16	C10	1.9	C34	1.46
B2	0.48	C11	1.32		
B3	1.92	C12	1.56		
B4	2.02	C13	1.39		
B5	2.56	C14	2.43		
B6	2.55	C15	1.86		
B7	2.57	C16	1.31		
B8	2.28	C17	0.39		
B9	1.82	C18	0.13		
B10	1.66	C19	1.38		
B11	2.37	C20	1.48		
B12	0.24	C21	0.84		
B13	1.25	C22	0.13		
B14	2.58	C23	0.66		
B15	1.47	C24	0.69		

Table 1. Discharge of Riverside Spring, Alachua County, Florida on May 5, 2015. Data record and calculation of discharge measurement.

Figure 1. Riverside Spring. This view of Riverside Spring is from the Alachua County bank looking upstream to the Santa Fe River. The spring vents are between the boulder and the bank. Vent A is the prominent boil in the foreground, with the boils from Vents B and C visible behind it.

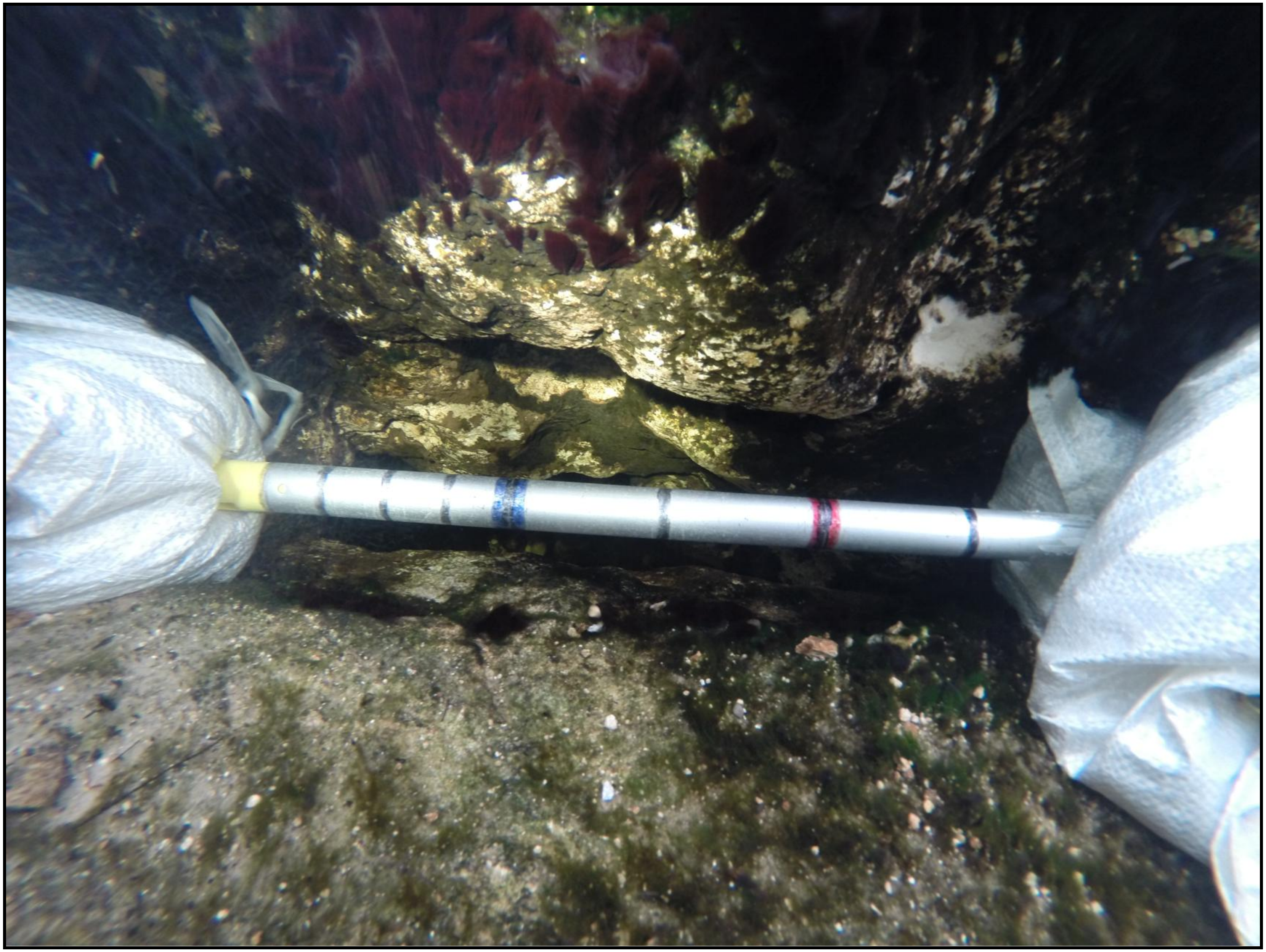

Figure 2A. View of Vent A, Riverside Spring during the May 5, 2015 submerged discharge measurement, showing sensor support pole and gravel bags in place.

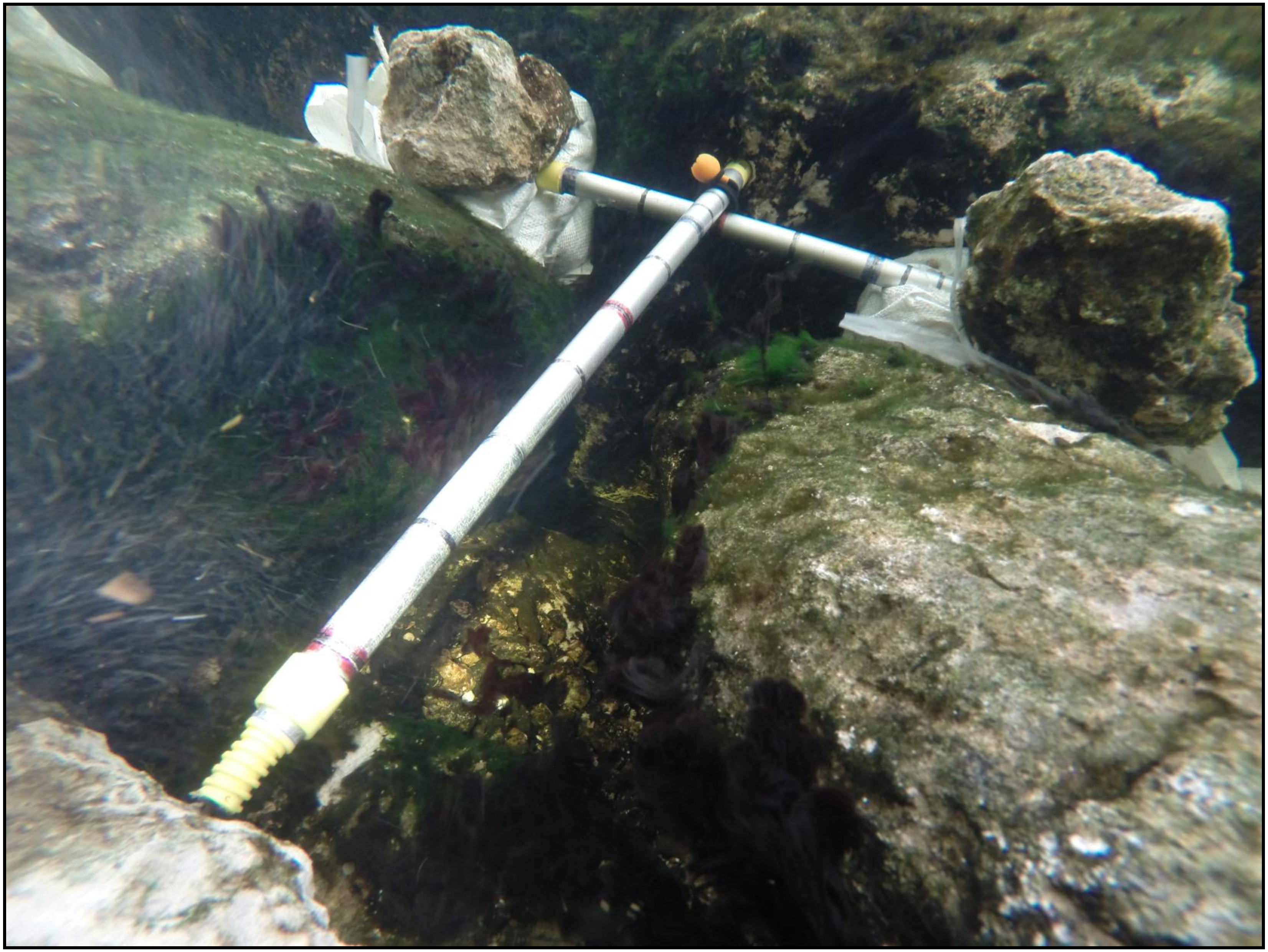

Figure 2B. View of Vent B, Riverside Spring during the May 5, 2015 submerged discharge measurement, showing sensor support poles and gravel bags in place.

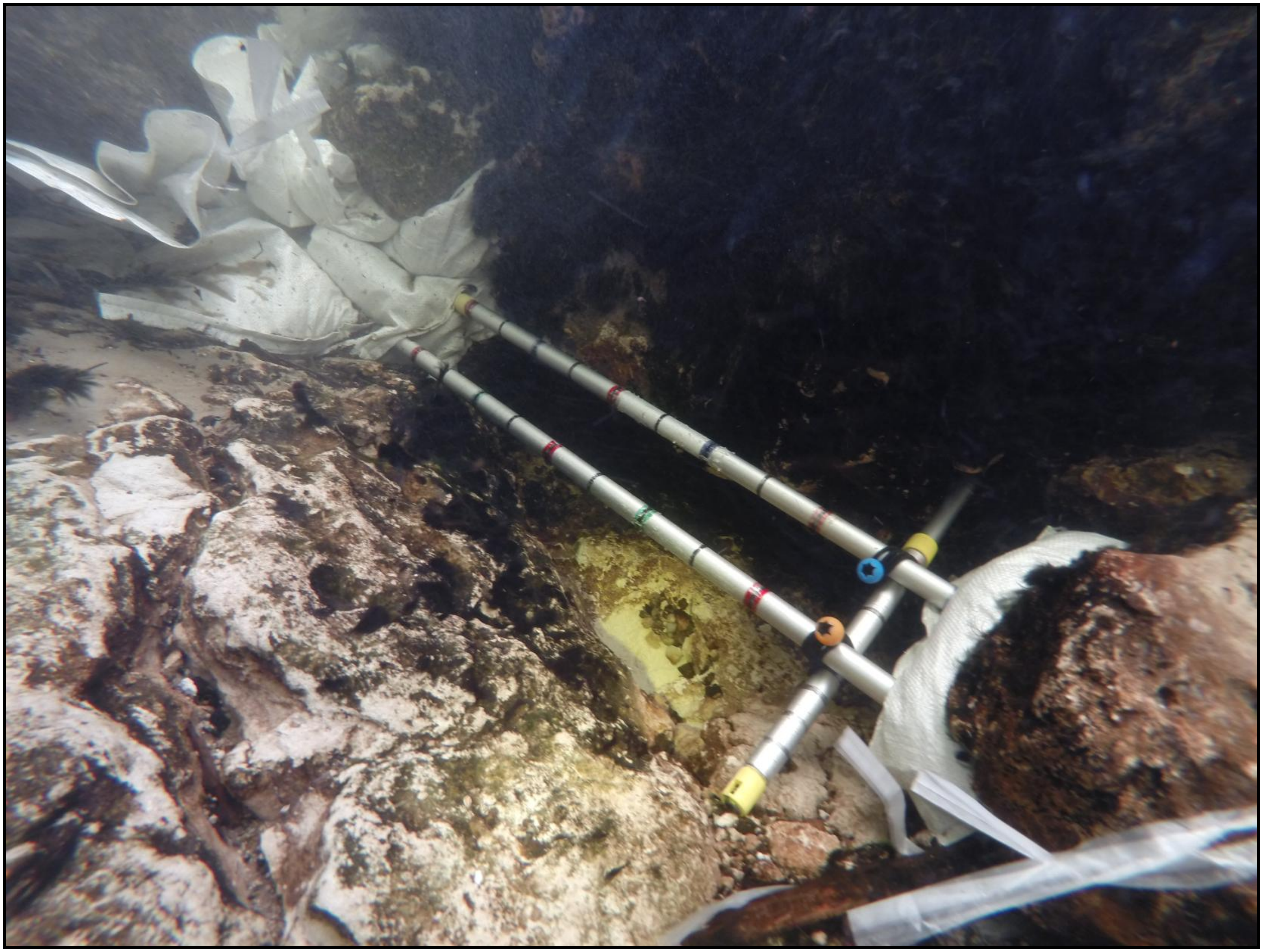

Figure 2C. View of Vent C, Riverside Spring during the May 5, 2015 submerged discharge measurement, showing sensor support poles and gravel bags in place.

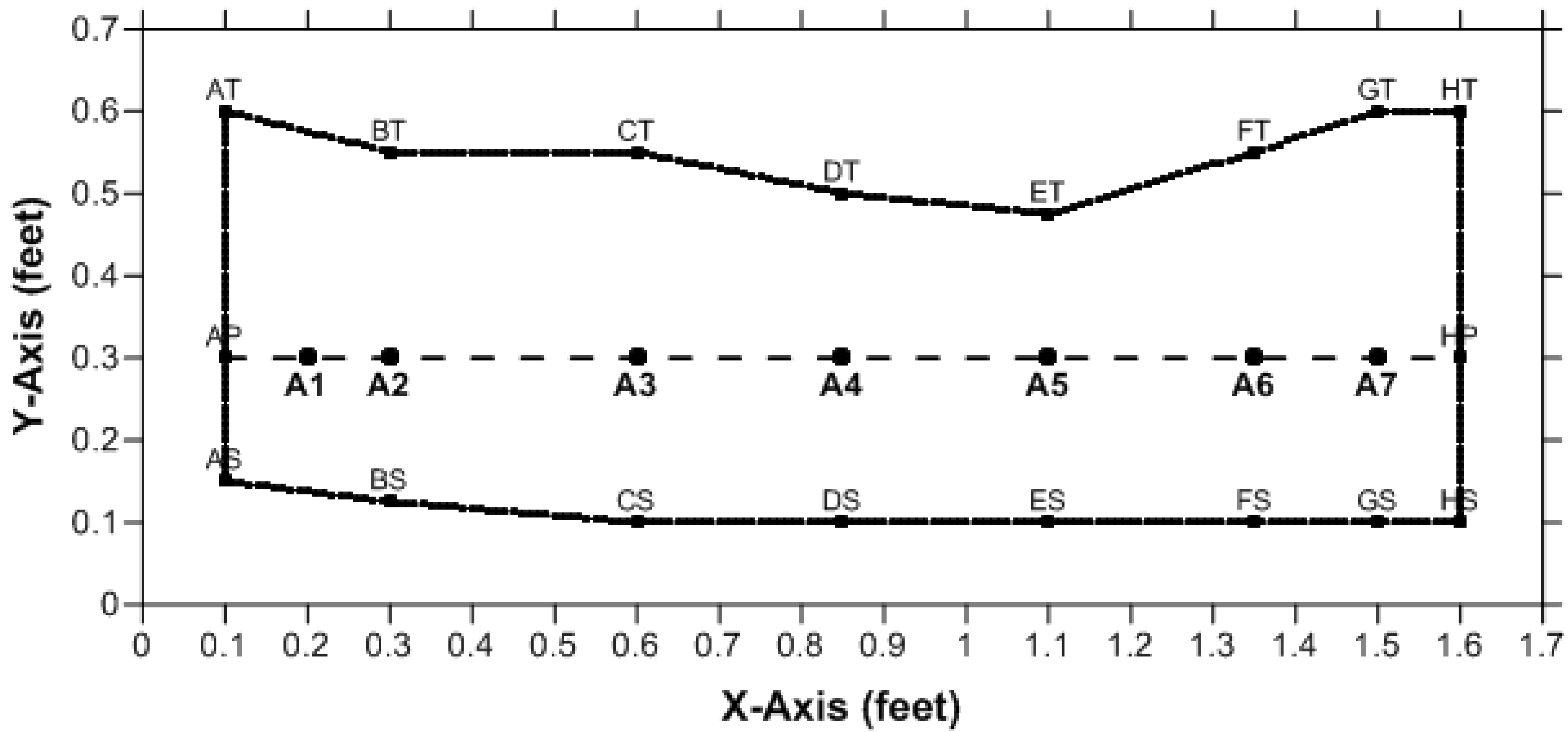

Figure 3A. Discharge measurement cross-section; Riverside Spring Vent A, Alachua County, Florida, May 5, 2015 measurement. Cross-section is horizontal and viewed from above, and is 1.6 feet deep. Support pole is represented by dashed lines. Velocity measurement stations are shown as points along the support pole. See Table 1 for station velocities. Boundary of cross section is shown as the perimeter ring of connected points. X- and Y-axis scales are shown in feet.

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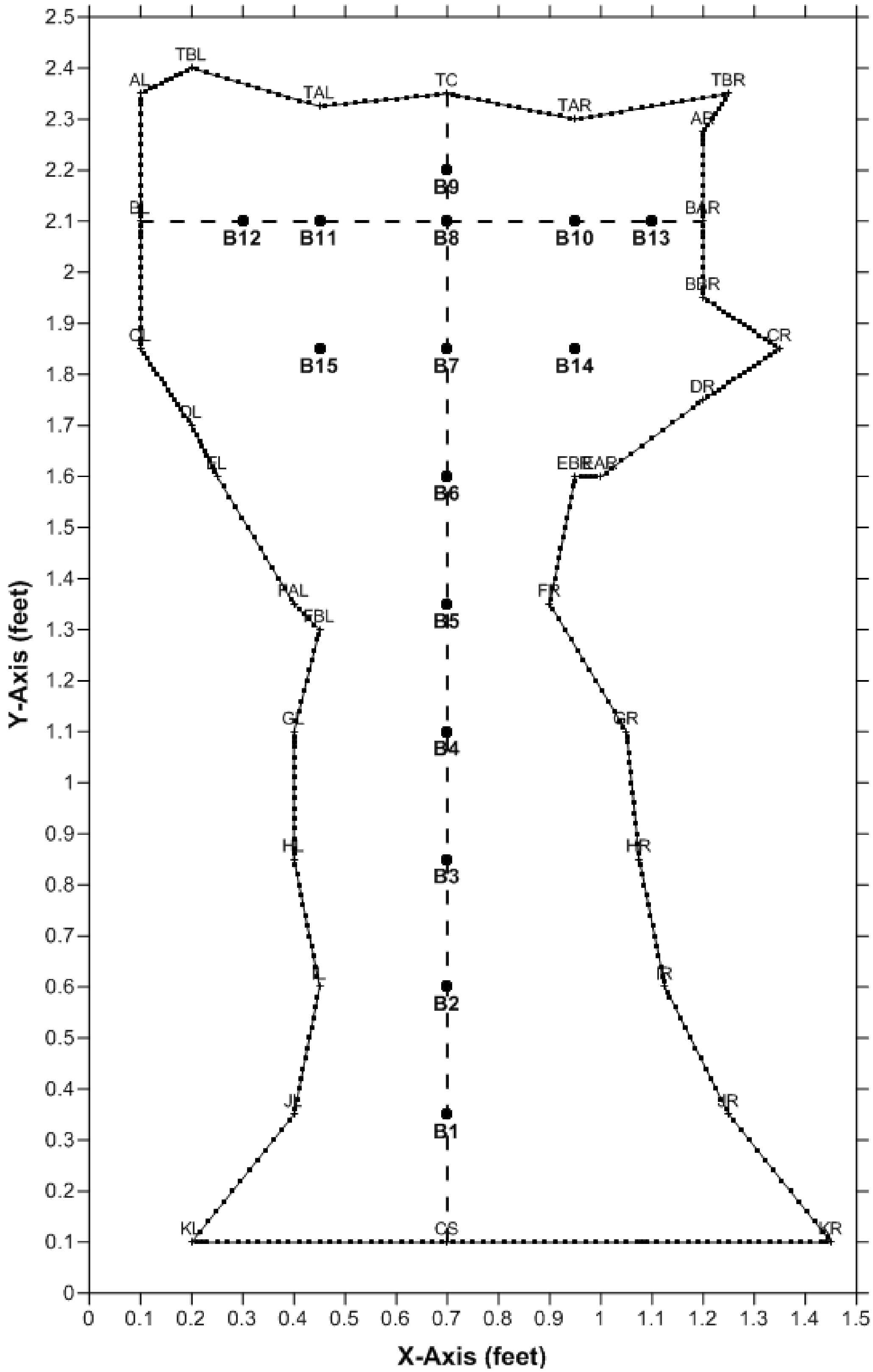

Figure 3B. Discharge measurement cross-section; Riverside Spring Vent B, Alachua County, Florida, May 5, 2015 measurement. Cross-section is horizontal and viewed from above, and is 2 feet deep. Support poles are represented by dashed lines. Velocity measurement stations are shown as points along the support poles. See Table 1 for station velocities. Boundary wall of the cross section is shown as the perimeter ring of connected points. X- and Y-axis scales are shown in feet.

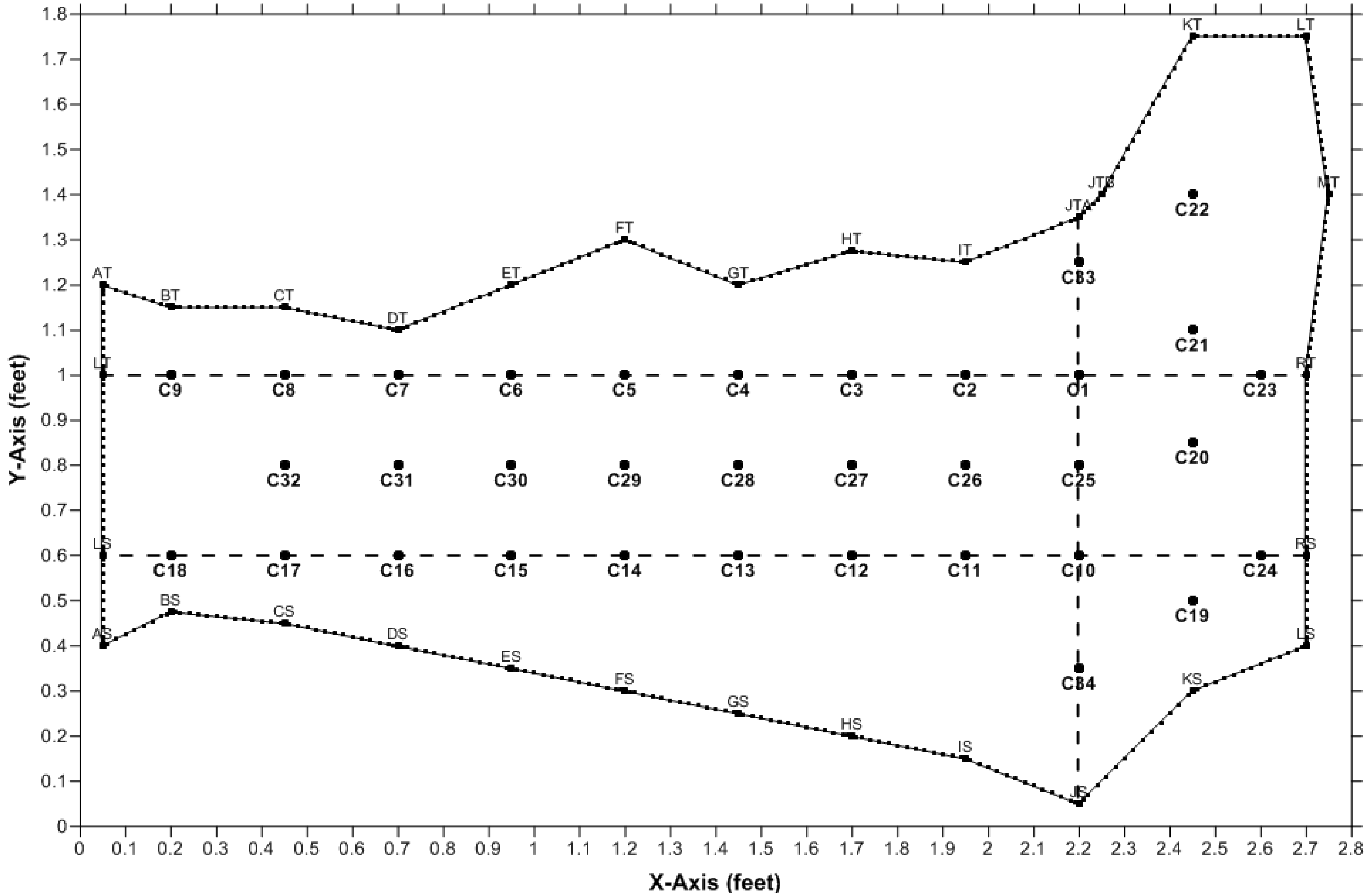

Figure 3C. Discharge measurement cross-section; Riverside Spring Vent C, Alachua County, Florida, May 5, 2015 measurement. Cross-section is horizontal and viewed from above, and is 2.9 feet deep. See Table 1 for station velocities. Boundary wall of the cross section is shown as the perimeter ring of connected points. X- and Y-axis scales are shown in feet.

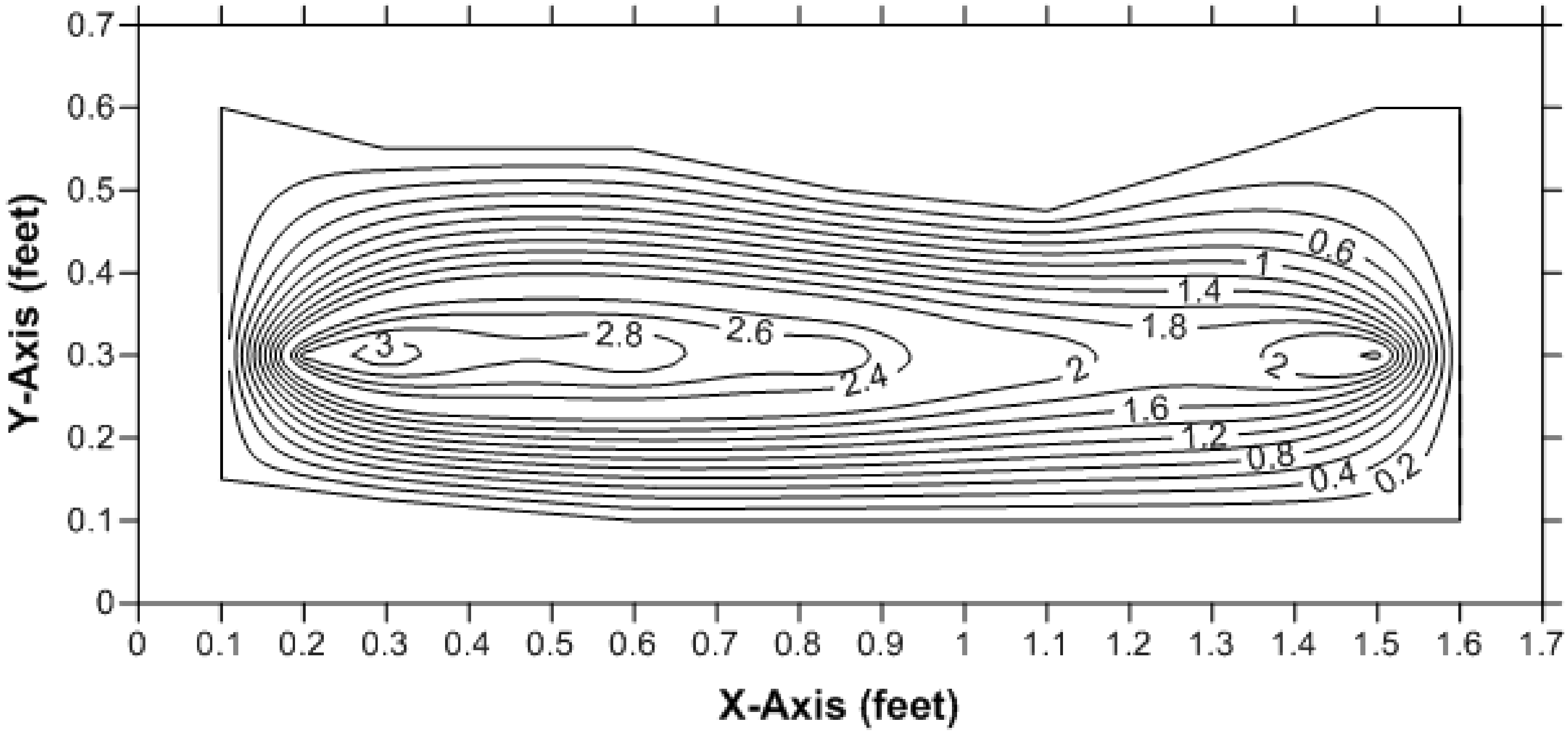

Figure 4A. Discharge measurement cross-section; Riverside Spring Vent A, Alachua County, Florida, May 5, 2015 measurement. Flow contour velocities are shown in feet per second. Outer boundary of cross section represents the zero-value contour. X- and Y-axis scales are shown in feet.

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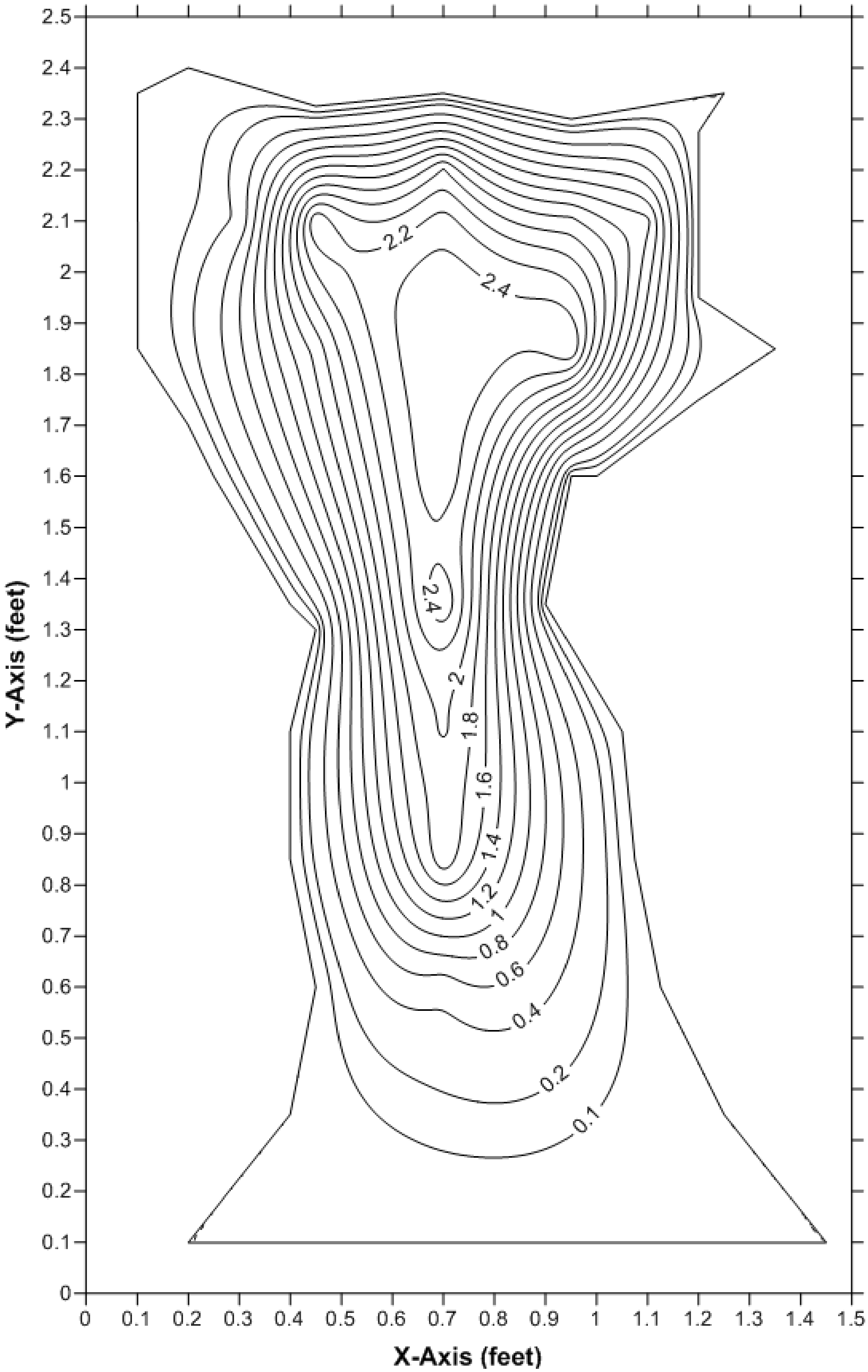

Figure 4B. Discharge measurement cross-section; Riverside Spring Vent B, Alachua County, Florida, May 5, 2015 measurement. Flow contour velocities are shown in feet per second. Outer boundary of cross section represents the zero-value contour. X- and Y-axis scales are shown in feet.

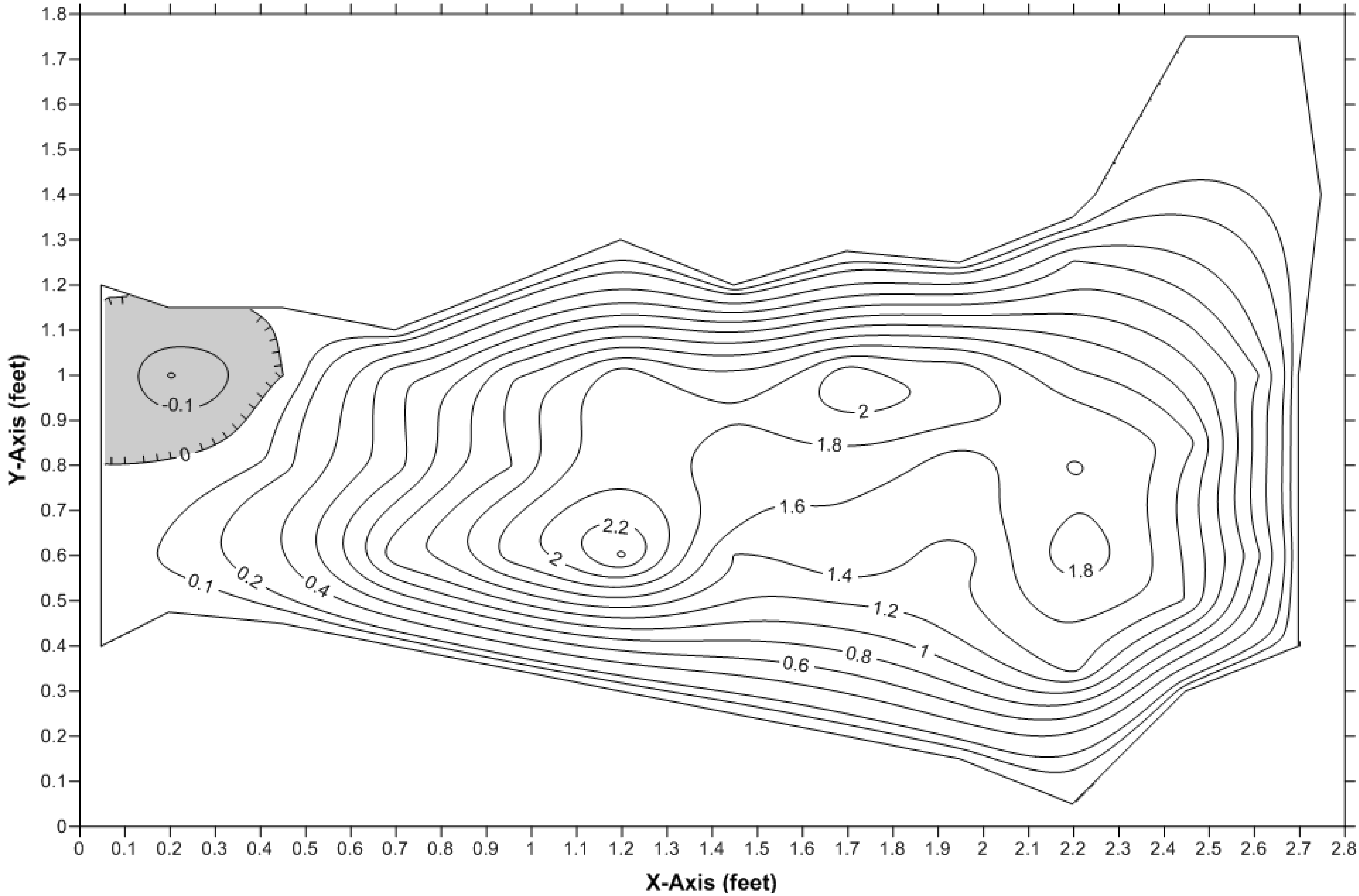

Figure 4C. Discharge measurement cross-section; Riverside Spring Vent C, Alachua County, Florida, May 5, 2015 measurement. Flow contour velocities are shown in feet per second. Areas with negative velocities (reverse flow) are shaded and delineated by hatched lines. Outer boundary of cross section represents the zero-value contour. X- and Y-axis scales are shown in feet.

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TABLE 2A. RIVERSIDE SPRING, VENT A, MAY 5, 2015.
SURFER 10 GRID VOLUME COMPUTATIONS AND GRIDDING REPORT

UPPER SURFACE

Grid File Name:	L:\ORLANDO\Hydro\KES\Watermelon\2015 May\ Vent A\Riverside 5-15 Scale_0d1.bln.grd
Grid Size:	81 rows x 181 columns
X Minimum:	0
X Maximum:	1.8
X Spacing:	0.01
Y Minimum:	0
Y Maximum:	0.8
Y Spacing:	0.01
Z Minimum:	-1.1914380593225E-009
Z Maximum:	3.1300000002022

LOWER SURFACE
Level Surface defined by Z = 0

VOLUMES

Z Scale Factor:	1
Total Volumes by:	
Trapezoidal Rule:	0.76613170805642
Simpson's Rule:	0.76622472376024
Simpson's 3/8 Rule:	0.76601277786645

CUT & FILL VOLUMES

Positive Volume [Cut]:	0.76613170805695
Negative Volume [Fill]:	5.3627785548205E-013
Net Volume [Cut-Fill]:	**0.76613170805642<<<<<<Total Discharge in CFS**

(The Net Volume value is used due to the presence of negative velocity values.
Positive Vol. Cut - Negative Vol. Fill = Net Volume. Please refer to report text.)

AREAS
Planar Areas
Operational Planar Area: 0.619 <<<<Total Cross-section Area in Square Feet
(Calculated using blanking file due to the presence of negative velocity values;
Operational Planar Area = [P.P.A.Cut + N.P.A.Fill] = [Total Planar Area - Blanked Planar Area].
Please refer to report text.)

Positive Planar Area [Cut]:	0.6190999999651
Negative Planar Area [Fill]:	3.4901308093137E-011
Blanked Planar Area:	0.8209
Total Planar Area:	1.44

Surface Areas

Positive Surface Area [Cut]:	7.4272862317696
Negative Surface Area [Fill]:	1.0640662184251E-010

GRIDDING REPORT

Data Source

Source Data File Name:	L:\ORLANDO\Hydro\KES\Watermelon\2015 May\ Vent A\Riverside 5-15 Scale_0d1.xls (sheet 'WMIIS VentA 5-5-2015')
X Column:	A
Y Column:	B
Z Column:	C

Data Counts

Active Data:	402
Original Data:	402
Excluded Data:	0
Deleted Duplicates:	0
Retained Duplicates:	0
Artificial Data:	0
Superseded Data:	0

Exclusion Filtering

Exclusion Filter String: Not In Use

Duplicate Filtering

Duplicate Points to Keep:	First
X Duplicate Tolerance:	1.7E-007
Y Duplicate Tolerance:	5.9E-008

No duplicate data were found.

Breakline Filtering

Breakline Filtering: Not In Use

Data Counts

Active Data: 402

Univariate Statistics

	X	Y	Z
Count:	402	402	402
1%%-tile:	0.1	0.1	0
5%%-tile:	0.1	0.1	0
10%%-tile:	0.1	0.1	0
25%%-tile:	0.37	0.1	0
50%%-tile:	0.86	0.34	0
75%%-tile:	1.35	0.534	0
90%%-tile:	1.6	0.565	0
95%%-tile:	1.6	0.5875	0
99%%-tile:	1.6	0.6	2.15

Minimum:	0.1	0.1	0
Maximum:	1.6	0.6	3.13
Mean:	0.8592039801	0.331715310945	0.0458208955224
Median:	0.86	0.345	0
Geometric Mean:	0.629018897825	0.259645766433	N/A
Harmonic Mean:	0.383066347028	0.19755881519	N/A
Root Mean Square:	1.00737331463	0.387352070708	0.351289734567
Trim Mean (10%%):	0.858171745152	0.329126412742	0
Interquartile Mean:	0.859850746269	0.329830124378	0
Midrange:	0.85	0.35	1.565
Winsorized Mean:	0.8592039801	0.329466803483	0
TriMean:	0.86	0.3285	0
Variance:	0.277259215146	0.0401063461964	0.121607429188
Standard Deviation:	0.526554095176	0.200265689014	0.34872256765
Interquartile Range:	0.98	0.434	0
Range:	1.5	0.5	3.13
Mean Difference:	0.606127715537	0.221469935944	0.0904073150457
Median Abs. Deviation:	0.49	0.205	0
Average Abs. Deviation:	0.464129353234	0.189924987562	0.0458208955224
Quartile Dispersion:	0.56976744186	0.684542586751	N/A
Relative Mean Diff.:	0.705452639392	0.667650628826	1.97305866712
Standard Error:	0.0262621312952	0.00998834472469	0.0173927008471
Coef. of Variation:	0.612839450668	0.603727601369	7.61055766532
Skewness:	-0.017077117031	-0.0314447957044	7.6013479122
Kurtosis:	1.60334294308	1.21391330613	60.005746402
Sum:	345.4	133.349555	18.42
Sum Absolute:	345.4	133.349555	18.42
Sum Squares:	407.95	60.316733926	49.6086
Mean Square:	1.01480099502	0.150041626682	0.123404477612

Inter-Variable Covariance

	X	Y	Z
X:	0.27725922	-0.0041740453	-0.0034128113
Y:	-0.0041740453	0.040106346	-0.0014568479
Z:	-0.0034128113	-0.0014568479	0.12160743

Inter-Variable Correlation

	X	Y	Z
X:	1.000	-0.040	-0.019
Y:	-0.040	1.000	-0.021
Z:	-0.019	-0.021	1.000

Inter-Variable Rank Correlation

	X	Y	Z
X:	1.000	-0.104	-0.005
Y:	-0.104	1.000	-0.014
Z:	-0.005	-0.014	1.000

Principal Component Analysis

	PC1	PC2	PC3
X:	0.0214018899489	0.0214018899489	0.0178547286872
Y:	-0.0189745470118	-0.0189745470118	0.999667685836
Z:	0.999590879146	0.999590879146	0.999667685836
Lambda:	0.277406279761	0.121562013027	0.0400046977433

Planar Regression: Z = AX+BY+C

Fitted Parameters

	A	B	C
Parameter Value:	-0.0128761289894	-0.0376646999199	0.069378074444
Standard Error:	0.0331676410502	0.0872069364864	0.0449219643545

Inter-Parameter Correlations

	A	B	C
A:	1.000	0.040	-0.660
B:	0.040	1.000	-0.669
C:	-0.660	-0.669	1.000

ANOVA Table

Source	df	Sum of Squares	Mean Square	F
Regression:	2	0.039625031049	0.0198125155245	0.162241172816
Residual:	399	48.7249540734	0.122117679382	
Total:	401	48.7645791045		

Coefficient of Multiple Determination (R^2): 0.00081257814128

Nearest Neighbor Statistics

	Separation	|Delta Z|
1%%-tile:	0.01	0
5%%-tile:	0.01	0
10%%-tile:	0.01	0
25%%-tile:	0.01	0
50%%-tile:	0.01	0
75%%-tile:	0.0100778221854	0
90%%-tile:	0.0104403065089	0
95%%-tile:	0.0104403065089	0
99%%-tile:	0.1	0.23
Minimum:	0.01	0
Maximum:	0.199339849393	2.98
Mean:	0.0124535703848	0.0283333333333
Median:	0.01	0
Geometric Mean:	0.0105546929327	N/A
Harmonic Mean:	0.0102462288942	N/A
Root Mean Square:	0.0224515522896	0.263243734363
Trim Mean (10%%):	0.0100704248574	0
Interquartile Mean:	0.0100143352771	0
Midrange:	0.104669924696	1.49
Winsorized Mean:	0.010086243309	0
TriMean:	0.0100194555463	0
Variance:	0.000349851061157	0.0686652950956
Standard Deviation:	0.0187043059523	0.262040636344
Interquartile Range:	7.78221853732e-005	0
Range:	0.189339849393	2.98
Mean Difference:	0.00481048860736	0.0561991786702
Median Abs. Deviation:	1.11022302463e-016	0
Average Abs. Deviation:	0.00245357038476	0.0283333333333
Quartile Dispersion:	0.00387602722321	N/A
Relative Mean Diff.:	0.386273852296	1.98350042366

Standard Error:	0.000932885990642	0.0130693990596
Coef. of Variation:	1.50192317339	9.24849304744
Skewness:	8.33444352087	9.86105898445
Kurtosis:	74.4530839775	100.707953445
Sum:	5.00633529468	11.39
Sum Absolute:	5.00633529468	11.39
Sum Squares:	0.202637024486	27.8575
Mean Square:	0.000504072200214	0.0692972636816

Complete Spatial Randomness

Lambda:	536
Clark and Evans:	0.576641998526
Skellam:	682.438402568

Gridding Rules

Gridding Method:	Kriging
Kriging Type:	Point
Polynomial Drift Order:	1
Kriging std. deviation grid:	no

Semi-Variogram Model

Component Type:	Linear
Anisotropy Angle:	0
Anisotropy Ratio:	2
Variogram Slope:	1

Search Parameters

No Search (use all data):	true

Output Grid

Grid File Name:	L:\ORLANDO\Hydro\KES\Watermelon\2015 May\Vent A\Riverside 5-15 Scale_0d1.grd
Grid Size:	81 rows x 181 columns
Total Nodes:	14661
Filled Nodes:	14661
Blanked Nodes:	0
Blank Value:	1.70141E+038

Grid Geometry

X Minimum:	0
X Maximum:	1.8
X Spacing:	0.01
Y Minimum:	0
Y Maximum:	0.8
Y Spacing:	0.01

Univariate Grid Statistics

	Z
Count:	14661
1%%-tile:	-0.814906790603
5%%-tile:	-0.597983777718
10%%-tile:	-0.504090513678
25%%-tile:	-0.373892341807
50%%-tile:	-0.102465727824
75%%-tile:	0.877300051291
90%%-tile:	1.9514352094
95%%-tile:	2.39152170936
99%%-tile:	2.82610973835
Minimum:	-1.10783570082
Maximum:	3.1300000002
Mean:	0.329582117184
Median:	-0.102465727824
Geometric Mean:	N/A
Harmonic Mean:	N/A
Root Mean Square:	1.01860408837
Trim Mean (10%%):	0.258046305067
Interquartile Mean:	0.00533582738027
Midrange:	1.01108214969
Winsorized Mean:	0.296235793315
TriMean:	0.0746190634591
Variance:	0.928993281818
Standard Deviation:	0.963842975706
Interquartile Range:	1.2511923931
Range:	4.23783570102
Mean Difference:	1.01486130343
Median Abs. Deviation:	0.365161036133
Average Abs. Deviation:	0.709524014446
Quartile Dispersion:	N/A
Relative Mean Diff.:	N/A
Standard Error:	0.00796020935271
Coef. of Variation:	N/A
Skewness:	1.11590903397
Kurtosis:	3.05728684661
Sum:	4832.00342004
Sum Absolute:	10490.6307412
Sum Squares:	15211.5834289
Mean Square:	1.03755428885

TABLE 2B. RIVERSIDE SPRING, VENT B, MAY 5, 2015.
SURFER 10 GRID VOLUME COMPUTATIONS AND GRIDDING REPORT

UPPER SURFACE

Grid File Name:	L:\ORLANDO\Hydro\KES\Watermelon\2015 May\ Vent B\Riverside Vent B.bln.grd
Grid Size:	501 rows x 301 columns
X Minimum:	0
X Maximum:	1.5
X Spacing:	0.005
Y Minimum:	0
Y Maximum:	2.5
Y Spacing:	0.005
Z Minimum:	-0.0016792414067951
Z Maximum:	2.5799999997318

LOWER SURFACE
Level Surface defined by Z = 0

VOLUMES
Z Scale Factor: 1
Total Volumes by:
Trapezoidal Rule: 1.57601570477
Simpson's Rule: 1.5760230608525
Simpson's 3/8 Rule: 1.5760177581093

CUT & FILL VOLUMES
Positive Volume [Cut]: 1.5760158349295
Negative Volume [Fill]: 1.3015953087463E-007
Net Volume [Cut-Fill]: 1.57601570477<<<<<<Total Discharge in CFS
(The Net Volume value is used due to the presence of negative velocity values.
Positive Vol. Cut - Negative Vol. Fill = Net Volume. Please refer to report text.)

AREAS
Planar Areas
Operational Planar Area: 1.847 <<<<Total Cross-section Area in Square Feet
(Calculated using blanking file due to the presence of negative velocity values;
Operational Planar Area = [P.P.A.Cut + N.P.A.Fill] = [Total Planar Area - Blanked Planar Area].
Please refer to report text.)
Positive Planar Area [Cut]: 1.8468558385114
Negative Planar Area [Fill]: 0.00011916148858232
Blanked Planar Area: 1.903025
Total Planar Area: 3.75

Surface Areas
Positive Surface Area [Cut]: 9.641595698041
Negative Surface Area [Fill]: 0.00012355578136386

GRIDDING REPORT

Data Source

Source Data File Name:	L:\ORLANDO\Hydro\KES\Watermelon\2015 May\ Vent B\Riverside 5-15 SURFER XYZ T3B-BLF.xls (sheet 'WMIIS Vent B 5-5-2015')
X Column:	A
Y Column:	B
Z Column:	C

Data Counts

Active Data:	447
Original Data:	447
Excluded Data:	0
Deleted Duplicates:	0
Retained Duplicates:	0
Artificial Data:	0
Superseded Data:	0

Exclusion Filtering

Exclusion Filter String: Not In Use

Duplicate Filtering

Duplicate Points to Keep:	First
X Duplicate Tolerance:	1.6E-007
Y Duplicate Tolerance:	2.7E-007

No duplicate data were found.

Breakline Filtering

Breakline Filtering: Not In Use

Data Counts

Active Data: 447

Univariate Statistics

	X	Y	Z
Count:	447	447	447
1%%-tile:	0.1	0.1	0
5%%-tile:	0.1	0.1	0
10%%-tile:	0.159994	0.1	0
25%%-tile:	0.392	0.5	0
50%%-tile:	0.79	1.46	0
75%%-tile:	1.14	2.07	0
90%%-tile:	1.25	2.331669	0
95%%-tile:	1.32	2.348	0
99%%-tile:	1.418	2.385	2.28

Minimum:	0.1	0.1	0
Maximum:	1.45	2.4	2.58
Mean:	0.743437993289	1.30620329083	0.0580089485459
Median:	0.79	1.46	0
Geometric Mean:	0.581392457564	0.870462277641	N/A
Harmonic Mean:	0.401814599947	0.411544619726	N/A
Root Mean Square:	0.854712008098	1.5398355491	0.350788501389
Trim Mean (10%%):	0.742464634328	1.31129984328	0
Interquartile Mean:	0.754515625	1.37573599107	0
Midrange:	0.775	1.25	1.29
Winsorized Mean:	0.740341259508	1.30375757494	0
TriMean:	0.778	1.3725	0
Variance:	0.178231294651	0.66641734786	0.119955892296
Standard Deviation:	0.422174483657	0.816343890686	0.346346491676
Interquartile Range:	0.748	1.57	0
Range:	1.35	2.3	2.58
Mean Difference:	0.482556001725	0.932533878392	0.113392522146
Median Abs. Deviation:	0.39	0.74	0
Average Abs. Deviation:	0.386290651007	0.720520964206	0.0580089485459
Quartile Dispersion:	0.488250652742	0.610894941634	N/A
Relative Mean Diff.:	0.649087087399	0.713927062457	1.95474189738
Standard Error:	0.019968167881	0.0386117410903	0.0163816269304
Coef. of Variation:	0.56786778113	0.624974608791	5.97057006476
Skewness:	-0.0833428801219	-0.222572842856	6.1630206731
Kurtosis:	1.50467303978	1.58466061884	40.4328891528
Sum:	332.316783	583.872871	25.93
Sum Absolute:	332.316783	583.872871	25.93
Sum Squares:	326.548079704	1059.87880267	55.0045
Mean Square:	0.730532616787	2.37109351828	0.123052572707

Inter-Variable Covariance

	X	Y	Z
X:	0.17823129	-0.041369836	-0.0013953972
Y:	-0.041369836	0.66641735	0.023531723
Z:	-0.0013953972	0.023531723	0.11995589

Inter-Variable Correlation

	X	Y	Z
X:	1.000	-0.120	-0.010
Y:	-0.120	1.000	0.083
Z:	-0.010	0.083	1.000

Inter-Variable Rank Correlation

	X	Y	Z
X:	1.000	-0.139	-0.019
Y:	-0.139	1.000	0.060
Z:	-0.019	0.060	1.000

Principal Component Analysis

	PC1	PC2	PC3
X:	0.996466132354	0.996466132354	-0.0068087185181
Y:	0.0833471147063	0.0833471147063	-0.0434551391969
Z:	0.0104165992955	0.0104165992955	-0.0434551391969
Lambda:	0.670906274195	0.174756423193	0.11894183742

Planar Regression: Z = AX+BY+C

Fitted Parameters

	A	B	C
Parameter Value:	0.000372328368124	0.0353339040643	0.0115788837244
Standard Error:	0.0390813493568	0.020211027085	0.0446425500671

Inter-Parameter Correlations

	A	B	C
A:	1.000	0.120	-0.722
B:	0.120	1.000	-0.669
C:	-0.722	-0.669	1.000

ANOVA Table

Source	df	Sum of Squares	Mean Square	F
Regression:	2	0.370602858701	0.18530142935	1.54854621341
Residual:	444	53.1297251055	0.11966154303	
Total:	446	53.5003279642		

Coefficient of Multiple Determination (R^2): 0.006927113773

Nearest Neighbor Statistics

	Separation	|Delta Z|
1%%-tile:	0.00897614126449	0
5%%-tile:	0.01	0
10%%-tile:	0.01	0
25%%-tile:	0.0116619037897	0
50%%-tile:	0.02	0
75%%-tile:	0.0203960780544	0
90%%-tile:	0.0233238075794	0
95%%-tile:	0.0256124969497	0
99%%-tile:	0.25	1.44
Minimum:	0.005	0
Maximum:	0.25	2.58
Mean:	0.0229262899365	0.043288590604
Median:	0.02	0
Geometric Mean:	0.0174147308138	N/A
Harmonic Mean:	0.0155656830742	N/A
Root Mean Square:	0.0412801082294	0.283716545693
Trim Mean (10%%):	0.0171982256304	0
Interquartile Mean:	0.0178184560427	0
Midrange:	0.1275	1.29
Winsorized Mean:	0.017071446663	0
TriMean:	0.018014495461	0
Variance:	0.00118107479066	0.0787974568875
Standard Deviation:	0.0343667686968	0.280708847184
Interquartile Range:	0.00873417426468	0
Range:	0.245	2.58
Mean Difference:	0.0169841796748	0.0849403597476
Median Abs. Deviation:	0.00332380757938	0
Average Abs. Deviation:	0.0100841669638	0.043288590604
Quartile Dispersion:	0.272449286021	N/A
Relative Mean Diff.:	0.74081675325	1.96218815541

Standard Error:	0.00162549238154	0.0132770728769
Coef. of Variation:	1.49901134427	6.48459197371
Skewness:	5.67218599858	7.42328548346
Kurtosis:	35.4723075012	60.360591986
Sum:	10.2480516016	19.35
Sum Absolute:	10.2480516016	19.35
Sum Squares:	0.761709158936	35.9813
Mean Square:	0.00170404733543	0.0804950782998

Complete Spatial Randomness

Lambda:	143.961352657
Clark and Evans:	0.550157116838
Skellam:	688.993245961

Gridding Rules

Gridding Method:	Kriging
Kriging Type:	Point
Polynomial Drift Order:	1
Kriging std. deviation grid:	no

Semi-Variogram Model

Component Type:	Linear
Anisotropy Angle:	90
Anisotropy Ratio:	1.6
Variogram Slope:	1

Search Parameters

No Search (use all data):	true

Output Grid

Grid File Name:	L:\ORLANDO\Hydro\KES\Watermelon\2015 May\ Vent B\Riverside Vent B.grd
Grid Size:	501 rows x 301 columns
Total Nodes:	150801
Filled Nodes:	150801
Blanked Nodes:	0
Blank Value:	1.70141E+038

Grid Geometry

X Minimum:	0
X Maximum:	1.5
X Spacing:	0.005
Y Minimum:	0
Y Maximum:	2.5
Y Spacing:	0.005

Univariate Grid Statistics

	Z
Count:	150801
1%%-tile:	-0.492096230591
5%%-tile:	-0.377438135855
10%%-tile:	-0.330311782967
25%%-tile:	-0.193670885749
50%%-tile:	0.00032966750268
75%%-tile:	0.518575991924
90%%-tile:	1.7496517339
95%%-tile:	2.19262542443
99%%-tile:	2.49272671519
Minimum:	-0.700941834789
Maximum:	2.57999999973
Mean:	0.317663389038
Median:	0.00032966750268
Geometric Mean:	N/A
Harmonic Mean:	N/A
Root Mean Square:	0.846544131536
Trim Mean (10%%):	0.245124048054
Interquartile Mean:	0.0329983918791
Midrange:	0.939529082472
Winsorized Mean:	0.281906315544
TriMean:	0.081391110295
Variance:	0.615731020973
Standard Deviation:	0.784685300597
Interquartile Range:	0.712246877673
Range:	3.28094183452
Mean Difference:	N/A
Median Abs. Deviation:	0.251659569684
Average Abs. Deviation:	0.518439731723
Quartile Dispersion:	N/A
Relative Mean Diff.:	N/A
Standard Error:	0.00202066075332
Coef. of Variation:	N/A
Skewness:	1.44774464198
Kurtosis:	3.94169189272
Sum:	47903.9567304
Sum Absolute:	78181.4439196
Sum Squares:	108069.571206
Mean Square:	0.716636966638

Table 2B. Riverside Spring B, May 5, 2015.

TABLE 2C. RIVERSIDE SPRING, VENT C, MAY 5, 2015.
SURFER 10 GRID VOLUME COMPUTATIONS AND GRIDDING REPORT

UPPER SURFACE
Grid File Name: L:\ORLANDO\Hydro\KES\Watermelon\2015 May\Vent C\Riverside Vent C 5-15.bln.grd
Grid Size: 361 rows x 561 columns
X Minimum: 0
X Maximum: 2.8
X Spacing: 0.005
Y Minimum: 0
Y Maximum: 1.8
Y Spacing: 0.005
Z Minimum: -0.21000000140874
Z Maximum: 2.4300000006067

LOWER SURFACE
Level Surface defined by Z = 0

VOLUMES
Z Scale Factor: 1
Total Volumes by:
Trapezoidal Rule: 2.3574245284523
Simpson's Rule: 2.3574288856862
Simpson's 3/8 Rule: 2.3574297775494

CUT & FILL VOLUMES
Positive Volume [Cut]: 2.3637869985343
Negative Volume [Fill]: 0.0063624700819698
Net Volume [Cut-Fill]: 2.3574245284523<<<<<<Total Discharge in CFS
(The Net Volume value is used due to the presence of negative velocity values.
Positive Vol. Cut - Negative Vol. Fill = Net Volume. Please refer to report text.)

AREAS
Planar Areas
Operational Planar Area: 2.636 <<<<Total Cross-section Area in Square Feet
(Calculated using blanking file due to the presence of negative velocity values;
Operational Planar Area = [P.P.A.Cut + N.P.A.Fill] = [Total Planar Area - Blanked Planar Area].
Please refer to report text.)
Positive Planar Area [Cut]: 2.5209215590279
Negative Planar Area [Fill]: 0.11532844097206
Blanked Planar Area: 2.40375
Total Planar Area: 5.04

Surface Areas
Positive Surface Area [Cut]: 10.059137982908
Negative Surface Area [Fill]: 0.1636342146815

GRIDDING REPORT

Data Source

Source Data File Name:	L:\ORLANDO\Hydro\KES\Watermelon\2015 May\ Vent C\Riverside 5-15 SURFER XYZ T3C-BLF.xls (sheet 'WMIIS V C 5-5-2015 (3)')
X Column:	A
Y Column:	B
Z Column:	C

Data Counts

Active Data:	463
Original Data:	463
Excluded Data:	0
Deleted Duplicates:	0
Retained Duplicates:	0
Artificial Data:	0
Superseded Data:	0

Exclusion Filtering

Exclusion Filter String: Not In Use

Duplicate Filtering

Duplicate Points to Keep:	First
X Duplicate Tolerance:	3.2E-007
Y Duplicate Tolerance:	2E-007

No duplicate data were found.

Breakline Filtering

Breakline Filtering: Not In Use

Data Counts

Active Data: 463

Univariate Statistics

	X	Y	Z
Count:	463	463	463
1%%-tile:	0.05	0.066	0
5%%-tile:	0.05	0.16	0
10%%-tile:	0.05	0.23	0
25%%-tile:	0.62	0.402	0
50%%-tile:	1.54	0.96	0
75%%-tile:	2.4	1.245	0
90%%-tile:	2.7	1.42	0
95%%-tile:	2.72	1.66	0.72
99%%-tile:	2.745	1.75	1.9

Minimum:	0.05	0.05	-0.21
Maximum:	2.75	1.75	2.43
Mean:	1.48807904104	0.857047477322	0.0891792656587
Median:	1.54	0.96	0
Geometric Mean:	0.938952034855	0.680496448461	N/A
Harmonic Mean:	0.319170441647	0.471286989786	N/A
Root Mean Square:	1.76309829541	0.981979395406	0.376349694928
Trim Mean (10%%):	1.49556596394	0.848141783654	0.00838942307692
Interquartile Mean:	1.53584337069	0.864887853448	0
Midrange:	1.4	0.9	1.11
Winsorized Mean:	1.48584060043	0.84264574946	0
TriMean:	1.525	0.89175	0
Variance:	0.896071726989	0.230250455819	0.133975515413
Standard Deviation:	0.946610652269	0.479844199526	0.36602665943
Interquartile Range:	1.78	0.843	0
Range:	2.7	1.7	2.64
Mean Difference:	1.0864225341	0.548529033127	0.171377520967
Median Abs. Deviation:	0.88142	0.39	0
Average Abs. Deviation:	0.838705390929	0.428330414687	0.0900863930886
Quartile Dispersion:	0.58940397351	0.511839708561	N/A
Relative Mean Diff.:	0.73008388946	0.640021758002	N/A
Standard Error:	0.043992727825	0.0223002511303	0.0170107014604
Coef. of Variation:	0.636129282225	0.559880534303	N/A
Skewness:	-0.142647095619	0.0332038118281	4.19934079262
Kurtosis:	1.59052954733	1.75283734791	19.9035786652
Sum:	688.980596	396.812982	41.29
Sum Absolute:	688.980596	396.812982	41.71
Sum Squares:	1439.24272246	446.46327578	65.5789
Mean Square:	3.10851559926	0.964283533002	0.141639092873

Inter-Variable Covariance

	X	Y	Z
X:	0.89607173	0.08486752	0.014242893
Y:	0.08486752	0.23025046	-0.0065140484
Z:	0.014242893	-0.0065140484	0.13397552

Inter-Variable Correlation

	X	Y	Z
X:	1.000	0.187	0.041
Y:	0.187	1.000	-0.037
Z:	0.041	-0.037	1.000

Inter-Variable Rank Correlation

	X	Y	Z
X:	1.000	0.215	0.027
Y:	0.215	1.000	-0.032
Z:	0.027	-0.032	1.000

Principal Component Analysis

	PC1	PC2	PC3
X:	-0.122100442097	-0.122100442097	-0.0287820710154
Y:	0.987998591511	0.987998591511	0.0917542801907
Z:	-0.0946058413259	-0.0946058413259	0.0917542801907
Lambda:	0.90694853258	0.22038597347	0.132963192172

Planar Regression: Z = AX+BY+C

Fitted Parameters

	A	B	C
Parameter Value:	0.0192461526199	-0.035385040009	0.090866128599
Standard Error:	0.0183171917666	0.0361351640034	0.0409410047055

Inter-Parameter Correlations

	A	B	C
A:	1.000	-0.187	-0.524
B:	-0.187	1.000	-0.632
C:	-0.524	-0.632	1.000

ANOVA Table

Source	df	Sum of Squares	Mean Square	F
Regression:	2	0.23313478506	0.11656739253	0.869573640555
Residual:	460	61.6635533359	0.134051202904	
Total:	462	61.896688121		

Coefficient of Multiple Determination (R^2): 0.00376651468985

Nearest Neighbor Statistics

	Separation	|Delta Z|
1%%-tile:	0.01	0
5%%-tile:	0.01	0
10%%-tile:	0.0100498756211	0
25%%-tile:	0.0111803398875	0
50%%-tile:	0.0201556443707	0
75%%-tile:	0.0215406592285	0
90%%-tile:	0.0230347386354	0
95%%-tile:	0.180277563773	0.13
99%%-tile:	0.2	0.69
Minimum:	0.01	0
Maximum:	0.212602916255	1.46
Mean:	0.0297279801837	0.0300215982721
Median:	0.0201556443707	0
Geometric Mean:	0.020208904196	N/A
Harmonic Mean:	0.0172496855725	N/A
Root Mean Square:	0.0527097199165	0.152140948632
Trim Mean (10%%):	0.0210269740847	0.00117788461538
Interquartile Mean:	0.0199060398258	0
Midrange:	0.111301458127	0.73
Winsorized Mean:	0.0181235744456	0
TriMean:	0.0182580719644	0
Variance:	0.00189866255093	0.0222937224762
Standard Deviation:	0.0435736451416	0.149310825047
Interquartile Range:	0.010360319341	0
Range:	0.202602916255	1.46
Mean Difference:	0.0265629634079	0.057955924565
Median Abs. Deviation:	0.00138501485779	0
Average Abs. Deviation:	0.0149118918473	0.0300215982721
Quartile Dispersion:	0.316626008402	N/A
Relative Mean Diff.:	0.89353407947	1.93047432184

Standard Error:	0.00202503902366	0.00693906250884
Coef. of Variation:	1.46574522966	4.97344690624
Skewness:	3.4015709149	6.41401472345
Kurtosis:	13.0656599876	49.9216885873
Sum:	13.764054825	13.9
Sum Absolute:	13.764054825	13.9
Sum Squares:	1.28635964761	10.717
Mean Square:	0.00277831457368	0.0231468682505

Complete Spatial Randomness

Lambda:	100.871459695
Clark and Evans:	0.597144657619
Skellam:	815.287121008

Gridding Rules

Gridding Method:	Kriging
Kriging Type:	Point
Polynomial Drift Order:	1
Kriging std. deviation grid:	no

Semi-Variogram Model

Component Type:	Linear
Anisotropy Angle:	0
Anisotropy Ratio:	1.5
Variogram Slope:	1

Search Parameters

No Search (use all data):	true

Output Grid

Grid File Name:	L:\ORLANDO\Hydro\KES\Watermelon\2015 May\Vent C\Riverside Vent C 5-15 .grd
Grid Size:	361 rows x 561 columns
Total Nodes:	202521
Filled Nodes:	202521
Blanked Nodes:	0
Blank Value:	1.70141E+038

Grid Geometry

X Minimum:	0
X Maximum:	2.8
X Spacing:	0.005
Y Minimum:	0
Y Maximum:	1.8
Y Spacing:	0.005

Univariate Grid Statistics

	Z
Count:	202521
1%%-tile:	-0.654719298518
5%%-tile:	-0.493811908199
10%%-tile:	-0.403936285054
25%%-tile:	-0.260427631563
50%%-tile:	0.00301806093818
75%%-tile:	0.933043648659
90%%-tile:	1.63305937687
95%%-tile:	1.79604776113
99%%-tile:	2.01591267549
Minimum:	-0.789572007875
Maximum:	2.43000000061
Mean:	0.335379466973
Median:	0.00301806093818
Geometric Mean:	N/A
Harmonic Mean:	N/A
Root Mean Square:	0.838781991197
Trim Mean (10%%):	0.298226638603
Interquartile Mean:	0.111619397609
Midrange:	0.820213996366
Winsorized Mean:	0.327115046708
TriMean:	0.169663034743
Variance:	0.591078760495
Standard Deviation:	0.768816467367
Interquartile Range:	1.19347128022
Range:	3.21957200848
Mean Difference:	N/A
Median Abs. Deviation:	0.367557883847
Average Abs. Deviation:	0.598401917711
Quartile Dispersion:	N/A
Relative Mean Diff.:	N/A
Standard Error:	0.00170839245758
Coef. of Variation:	N/A
Skewness:	0.81704526078
Kurtosis:	2.29583107842
Sum:	67921.3850308
Sum Absolute:	121192.391289
Sum Squares:	142484.708483
Mean Square:	0.703555228757

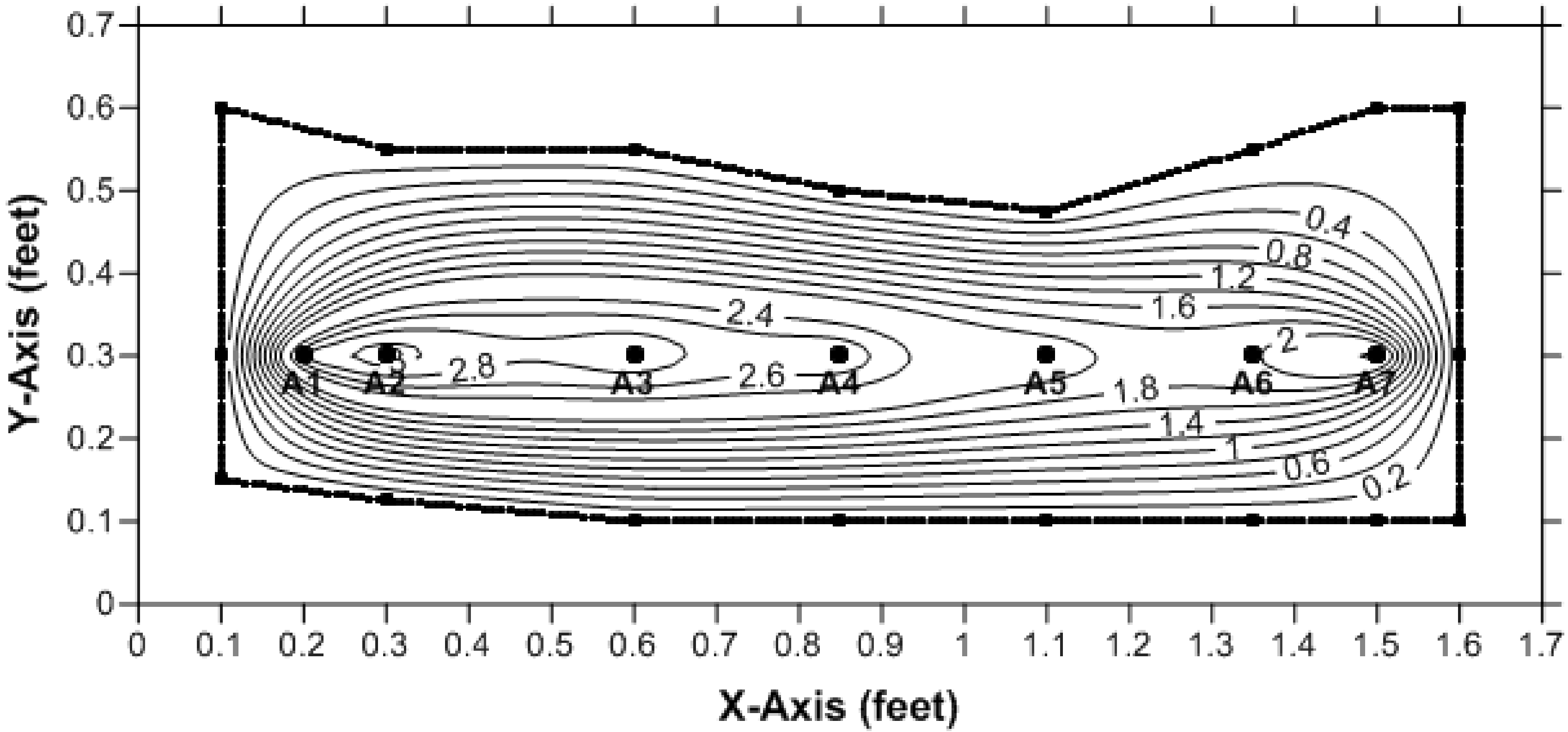

Figure 5A. Discharge measurement cross-section; Riverside Spring Vent A, Alachua County, Florida, May 5, 2015 measurement. Relationship of flow contours (velocities shown in feet per second) and velocity measurement stations (labeled points) are shown. See Table 1 for station velocities. Boundary wall of the cross section is shown as the perimeter ring of connected points. X- and Y-axis scales are shown in feet.

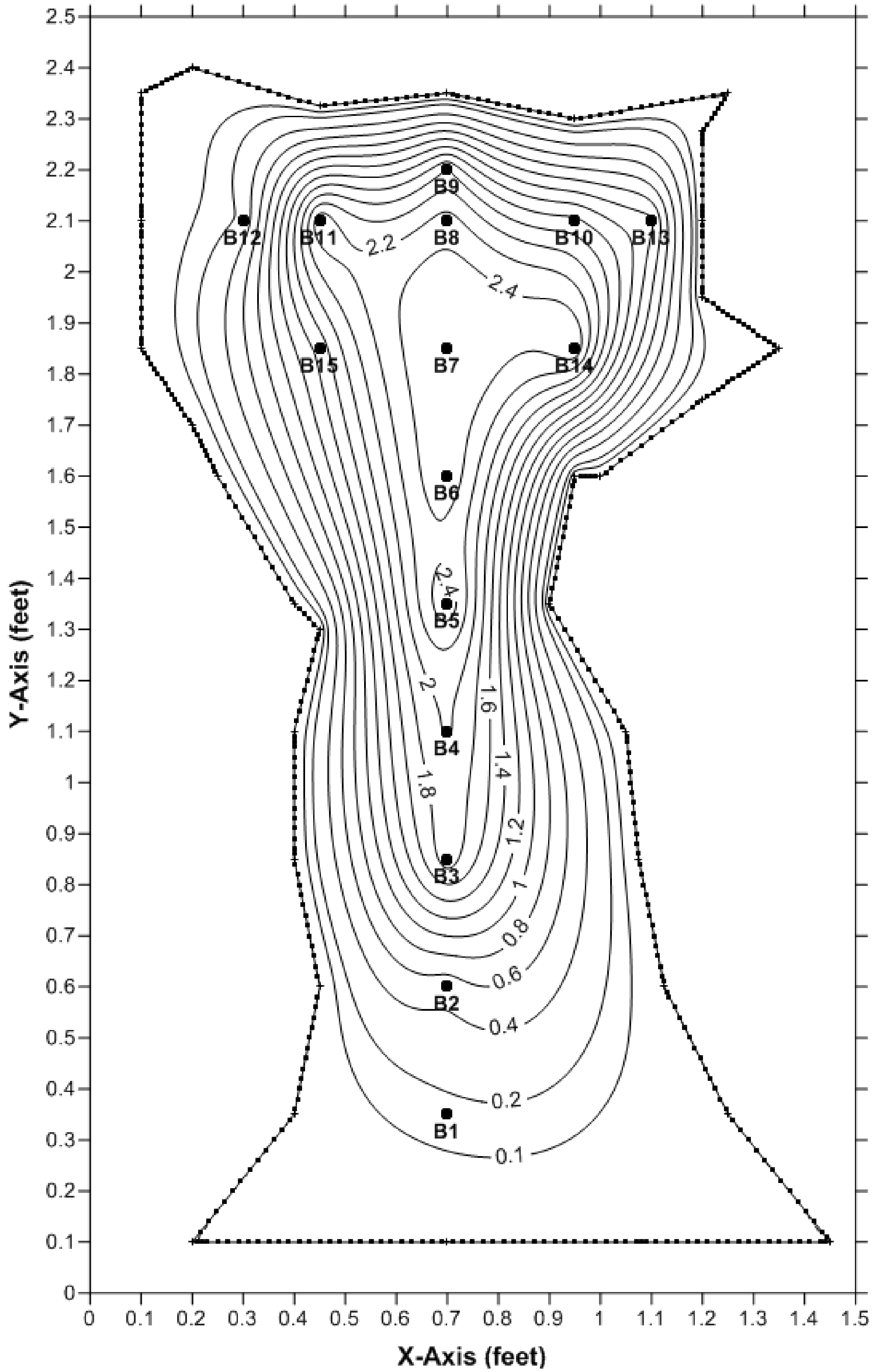

Figure 5B. Discharge measurement cross-section; Riverside Spring Vent B, Alachua County, Florida, May 5, 2015 measurement. Relationship of flow contours (velocities shown in feet per second) and velocity measurement stations (labeled points) are shown. See Table 1 for station velocities. Boundary wall of the cross section is shown as the perimeter ring of connected points. X- and Y-axis scales are shown in feet.

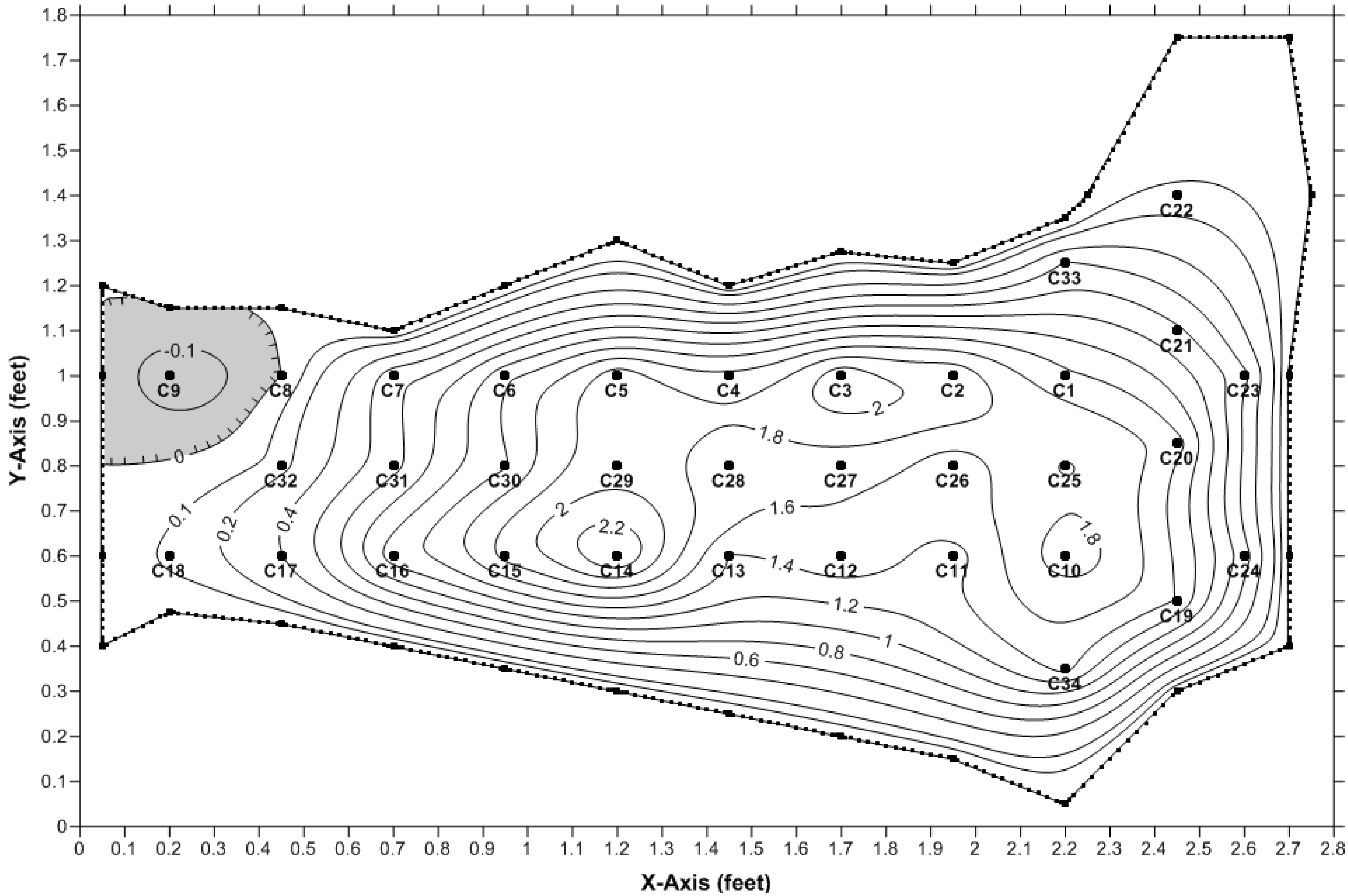

Figure 5C. Discharge measurement cross-section; Riverside Spring Vent C, Alachua County, Florida, May 5, 2015 measurement. Relationship of flow contours (velocities shown in feet per second) and velocity measurement stations (labeled points) are shown. Areas with negative velocities (reverse flow) are shaded and delineated by hatched lines. See Table 1 for station velocities. Boundary wall of the cross section is shown as the perimeter ring of connected points. X- and Y-axis scales are shown in feet.

Table 3A. Riverside Spring Vent A XYZ Grid Data, May 5, 2015.					
X	**Y**	**Z (Velocity)**	**Station Name**	**X Plot**	**Y Plot**
2	**3**	**2.9**	**A1**	20	30
3	**3**	**3.13**	**A2**	30	30
6	**3**	**2.98**	**A3**	60	30
8.5	**3**	**2.78**	**A4**	85	30
11	**3**	**2.15**	**A5**	110	30
13.5	**3**	**1.98**	**A6**	135	30
15	**3**	**2.5**	**A7**	150	30
1	**6**	**0**	**AT**	10	60
1	**1.5**	**0**	**AS**	10	15
3	**5.5**	**0**	**BT**	30	55
3	**1.25**	**0**	**BS**	30	12.5
6	**5.5**	**0**	**CT**	60	55
6	**1**	**0**	**CS**	60	10
8.5	**5**	**0**	**DT**	85	50
8.5	**1**	**0**	**DS**	85	10
11	**4.75**	**0**	**ET**	110	47.5
11	**1**	**0**	**ES**	110	10
13.5	**5.5**	**0**	**FT**	135	55
13.5	**1**	**0**	**FS**	135	10
15	**6**	**0**	**GT**	150	60
15	**1**	**0**	**GS**	150	10
16	**6**	**0**	**HT**	160	60
16	**1**	**0**	**HS**	160	10
1	**3**	**0**	**AP**	10	30
16	**3**	**0**	**HP**	160	30
1.1	**5.975**	**0**	**ABT-1**	11	59.75
1.2	**5.95**	**0**	**ABT-2**	12	59.5
1.3	**5.925**	**0**	**ABT-3**	13	59.25
1.4	**5.9**	**0**	**ABT-4**	14	59
1.5	**5.875**	**0**	**ABT-5**	15	58.75
1.6	**5.85**	**0**	**ABT-6**	16	58.5
1.7	**5.825**	**0**	**ABT-7**	17	58.25
1.8	**5.8**	**0**	**ABT-8**	18	58
1.9	**5.775**	**0**	**ABT-9**	19	57.75
2	**5.75**	**0**	**ABT-10**	20	57.5
2.1	**5.725**	**0**	**ABT-11**	21	57.25
2.2	**5.7**	**0**	**ABT-12**	22	57
2.3	**5.675**	**0**	**ABT-13**	23	56.75
2.4	**5.65**	**0**	**ABT-14**	24	56.5
2.5	**5.625**	**0**	**ABT-15**	25	56.25
2.6	**5.6**	**0**	**ABT-16**	26	56
2.7	**5.575**	**0**	**ABT-17**	27	55.75
2.8	**5.55**	**0**	**ABT-18**	28	55.5

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
2.9	**5.525**	**0**	**ABT-19**	29	55.25
3.1	**5.5**	**0**	**BCT-1**	31	55
3.2	**5.5**	**0**	**BCT-2**	32	55
3.3	**5.5**	**0**	**BCT-3**	33	55
3.4	**5.5**	**0**	**BCT-4**	34	55
3.5	**5.5**	**0**	**BCT-5**	35	55
3.6	**5.5**	**0**	**BCT-6**	36	55
3.7	**5.5**	**0**	**BCT-7**	37	55
3.8	**5.5**	**0**	**BCT-8**	38	55
3.9	**5.5**	**0**	**BCT-9**	39	55
4	**5.5**	**0**	**BCT-10**	40	55
4.1	**5.5**	**0**	**BCT-11**	41	55
4.2	**5.5**	**0**	**BCT-12**	42	55
4.3	**5.5**	**0**	**BCT-13**	43	55
4.4	**5.5**	**0**	**BCT-14**	44	55
4.5	**5.5**	**0**	**BCT-15**	45	55
4.6	**5.5**	**0**	**BCT-16**	46	55
4.7	**5.5**	**0**	**BCT-17**	47	55
4.8	**5.5**	**0**	**BCT-18**	48	55
4.9	**5.5**	**0**	**BCT-19**	49	55
5	**5.5**	**0**	**BCT-20**	50	55
5.1	**5.5**	**0**	**BCT-21**	51	55
5.2	**5.5**	**0**	**BCT-22**	52	55
5.3	**5.5**	**0**	**BCT-23**	53	55
5.4	**5.5**	**0**	**BCT-24**	54	55
5.5	**5.5**	**0**	**BCT-25**	55	55
5.6	**5.5**	**0**	**BCT-26**	56	55
5.7	**5.5**	**0**	**BCT-27**	57	55
5.8	**5.5**	**0**	**BCT-28**	58	55
5.9	**5.5**	**0**	**BCT-29**	59	55
6.1	**5.48**	**0**	**CDT-1**	61	54.8
6.2	**5.46**	**0**	**CDT-2**	62	54.6
6.3	**5.44**	**0**	**CDT-3**	63	54.4
6.4	**5.42**	**0**	**CDT-4**	64	54.2
6.5	**5.4**	**0**	**CDT-5**	65	54
6.6	**5.38**	**0**	**CDT-6**	66	53.8
6.7	**5.36**	**0**	**CDT-7**	67	53.6
6.8	**5.34**	**0**	**CDT-8**	68	53.4
6.9	**5.32**	**0**	**CDT-9**	69	53.2
7	**5.3**	**0**	**CDT-10**	70	53
7.1	**5.28**	**0**	**CDT-11**	71	52.8
7.2	**5.26**	**0**	**CDT-12**	72	52.6
7.3	**5.24**	**0**	**CDT-13**	73	52.4
7.4	**5.22**	**0**	**CDT-14**	74	52.2
7.5	**5.2**	**0**	**CDT-15**	75	52

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
7.6	**5.18**	**0**	**CDT-16**	76	51.8
7.7	**5.16**	**0**	**CDT-17**	77	51.6
7.8	**5.14**	**0**	**CDT-18**	78	51.4
7.9	**5.12**	**0**	**CDT-19**	79	51.2
8	**5.1**	**0**	**CDT-20**	80	51
8.1	**5.08**	**0**	**CDT-21**	81	50.8
8.2	**5.06**	**0**	**CDT-22**	82	50.6
8.3	**5.04**	**0**	**CDT-23**	83	50.4
8.4	**5.02**	**0**	**CDT-24**	84	50.2
8.6	**4.99**	**0**	**DET-1**	86	49.9
8.7	**4.98**	**0**	**DET-2**	87	49.8
8.8	**4.97**	**0**	**DET-3**	88	49.7
8.9	**4.96**	**0**	**DET-4**	89	49.6
9	**4.95**	**0**	**DET-5**	90	49.5
9.1	**4.94**	**0**	**DET-6**	91	49.4
9.2	**4.93**	**0**	**DET-7**	92	49.3
9.3	**4.92**	**0**	**DET-8**	93	49.2
9.4	**4.91**	**0**	**DET-9**	94	49.1
9.5	**4.9**	**0**	**DET-10**	95	49
9.6	**4.89**	**0**	**DET-11**	96	48.9
9.7	**4.88**	**0**	**DET-12**	97	48.8
9.8	**4.87**	**0**	**DET-13**	98	48.7
9.9	**4.86**	**0**	**DET-14**	99	48.6
10	**4.85**	**0**	**DET-15**	100	48.5
10.1	**4.84**	**0**	**DET-16**	101	48.4
10.2	**4.83**	**0**	**DET-17**	102	48.3
10.3	**4.82**	**0**	**DET-18**	103	48.2
10.4	**4.81**	**0**	**DET-19**	104	48.1
10.5	**4.8**	**0**	**DET-20**	105	48
10.6	**4.79**	**0**	**DET-21**	106	47.9
10.7	**4.78**	**0**	**DET-22**	107	47.8
10.8	**4.77**	**0**	**DET-23**	108	47.7
10.9	**4.76**	**0**	**DET-24**	109	47.6
11.1	**4.78**	**0**	**EFT-1**	111	47.8
11.2	**4.81**	**0**	**EFT-2**	112	48.1
11.3	**4.84**	**0**	**EFT-3**	113	48.4
11.4	**4.87**	**0**	**EFT-4**	114	48.7
11.5	**4.9**	**0**	**EFT-5**	115	49
11.6	**4.93**	**0**	**EFT-6**	116	49.3
11.7	**4.96**	**0**	**EFT-7**	117	49.6
11.8	**4.99**	**0**	**EFT-8**	118	49.9
11.9	**5.02**	**0**	**EFT-9**	119	50.2
12	**5.05**	**0**	**EFT-10**	120	50.5
12.1	**5.08**	**0**	**EFT-11**	121	50.8
12.2	**5.11**	**0**	**EFT-12**	122	51.1

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
12.3	**5.14**	**0**	**EFT-13**	123	51.4
12.4	**5.17**	**0**	**EFT-14**	124	51.7
12.5	**5.2**	**0**	**EFT-15**	125	52
12.6	**5.23**	**0**	**EFT-16**	126	52.3
12.7	**5.26**	**0**	**EFT-17**	127	52.6
12.8	**5.29**	**0**	**EFT-18**	128	52.9
12.9	**5.32**	**0**	**EFT-19**	129	53.2
13	**5.35**	**0**	**EFT-20**	130	53.5
13.1	**5.38**	**0**	**EFT-21**	131	53.8
13.2	**5.41**	**0**	**EFT-22**	132	54.1
13.3	**5.44**	**0**	**EFT-23**	133	54.4
13.4	**5.47**	**0**	**EFT-24**	134	54.7
13.6	**5.5333**	**0**	**FGT-1**	136	55.333
13.7	**5.5666**	**0**	**FGT-2**	137	55.666
13.8	**5.5999**	**0**	**FGT-3**	138	55.999
13.9	**5.6332**	**0**	**FGT-4**	139	56.332
14	**5.6665**	**0**	**FGT-5**	140	56.665
14.1	**5.6998**	**0**	**FGT-6**	141	56.998
14.2	**5.7331**	**0**	**FGT-7**	142	57.331
14.3	**5.7664**	**0**	**FGT-8**	143	57.664
14.4	**5.7997**	**0**	**FGT-9**	144	57.997
14.5	**5.833**	**0**	**FGT-10**	145	58.33
14.6	**5.8663**	**0**	**FGT-11**	146	58.663
14.7	**5.8996**	**0**	**FGT-12**	147	58.996
14.8	**5.933**	**0**	**FGT-13**	148	59.33
14.9	**5.9666**	**0**	**FGT-14**	149	59.666
15.1	**6**	**0**	**GHT-1**	151	60
15.2	**6**	**0**	**GHT-2**	152	60
15.3	**6**	**0**	**GHT-3**	153	60
15.4	**6**	**0**	**GHT-4**	154	60
15.5	**6**	**0**	**GHT-5**	155	60
15.6	**6**	**0**	**GHT-6**	156	60
15.7	**6**	**0**	**GHT-7**	157	60
15.8	**6**	**0**	**GHT-8**	158	60
15.9	**6**	**0**	**GHT-9**	159	60
1.1	**1.4875**	**0**	**ABS-1**	11	14.875
1.2	**1.475**	**0**	**ABS-2**	12	14.75
1.3	**1.4625**	**0**	**ABS-3**	13	14.625
1.4	**1.45**	**0**	**ABS-4**	14	14.5
1.5	**1.4375**	**0**	**ABS-5**	15	14.375
1.6	**1.425**	**0**	**ABS-6**	16	14.25
1.7	**1.4125**	**0**	**ABS-7**	17	14.125
1.8	**1.4**	**0**	**ABS-8**	18	14
1.9	**1.3875**	**0**	**ABS-9**	19	13.875

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
2	**1.375**	**0**	**ABS-10**	20	13.75
2.1	**1.3625**	**0**	**ABS-11**	21	13.625
2.2	**1.35**	**0**	**ABS-12**	22	13.5
2.3	**1.3375**	**0**	**ABS-13**	23	13.375
2.4	**1.325**	**0**	**ABS-14**	24	13.25
2.5	**1.3125**	**0**	**ABS-15**	25	13.125
2.6	**1.3**	**0**	**ABS-16**	26	13
2.7	**1.2875**	**0**	**ABS-17**	27	12.875
2.8	**1.275**	**0**	**ABS-18**	28	12.75
2.9	**1.2625**	**0**	**ABS-19**	29	12.625
3.1	**1.24157**	**0**	**BCS-1**	31	12.4157
3.2	**1.23324**	**0**	**BCS-2**	32	12.3324
3.3	**1.22491**	**0**	**BCS-3**	33	12.2491
3.4	**1.21658**	**0**	**BCS-4**	34	12.1658
3.5	**1.20825**	**0**	**BCS-5**	35	12.0825
3.6	**1.19992**	**0**	**BCS-6**	36	11.9992
3.7	**1.19159**	**0**	**BCS-7**	37	11.9159
3.8	**1.18326**	**0**	**BCS-8**	38	11.8326
3.9	**1.17493**	**0**	**BCS-9**	39	11.7493
4	**1.1666**	**0**	**BCS-10**	40	11.666
4.1	**1.15827**	**0**	**BCS-11**	41	11.5827
4.2	**1.14994**	**0**	**BCS-12**	42	11.4994
4.3	**1.14161**	**0**	**BCS-13**	43	11.4161
4.4	**1.13328**	**0**	**BCS-14**	44	11.3328
4.5	**1.12495**	**0**	**BCS-15**	45	11.2495
4.6	**1.11662**	**0**	**BCS-16**	46	11.1662
4.7	**1.10829**	**0**	**BCS-17**	47	11.0829
4.8	**1.09996**	**0**	**BCS-18**	48	10.9996
4.9	**1.09163**	**0**	**BCS-19**	49	10.9163
5	**1.0833**	**0**	**BCS-20**	50	10.833
5.1	**1.07497**	**0**	**BCS-21**	51	10.7497
5.2	**1.06664**	**0**	**BCS-22**	52	10.6664
5.3	**1.05831**	**0**	**BCS-23**	53	10.5831
5.4	**1.04998**	**0**	**BCS-24**	54	10.4998
5.5	**1.04165**	**0**	**BCS-25**	55	10.4165
5.6	**1.03332**	**0**	**BCS-26**	56	10.3332
5.7	**1.02499**	**0**	**BCS-27**	57	10.2499
5.8	**1.01666**	**0**	**BCS-28**	58	10.1666
5.9	**1.00833**	**0**	**BCS-29**	59	10.0833
6.1	**1**	**0**	**CDS-1**	61	10
6.2	**1**	**0**	**CDS-2**	62	10
6.3	**1**	**0**	**CDS-3**	63	10
6.4	**1**	**0**	**CDS-4**	64	10
6.5	**1**	**0**	**CDS-5**	65	10
6.6	**1**	**0**	**CDS-6**	66	10

Table 3A. Watermelon Spring Vent A XYZ Grid Data, May 5, 2015.

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
6.7	**1**	**0**	**CDS-7**	67	10
6.8	**1**	**0**	**CDS-8**	68	10
6.9	**1**	**0**	**CDS-9**	69	10
7	**1**	**0**	**CDS-10**	70	10
7.1	**1**	**0**	**CDS-11**	71	10
7.2	**1**	**0**	**CDS-12**	72	10
7.3	**1**	**0**	**CDS-13**	73	10
7.4	**1**	**0**	**CDS-14**	74	10
7.5	**1**	**0**	**CDS-15**	75	10
7.6	**1**	**0**	**CDS-16**	76	10
7.7	**1**	**0**	**CDS-17**	77	10
7.8	**1**	**0**	**CDS-18**	78	10
7.9	**1**	**0**	**CDS-19**	79	10
8	**1**	**0**	**CDS-20**	80	10
8.1	**1**	**0**	**CDS-21**	81	10
8.2	**1**	**0**	**CDS-22**	82	10
8.3	**1**	**0**	**CDS-23**	83	10
8.4	**1**	**0**	**CDS-24**	84	10
8.6	**1**	**0**	**DES-1**	86	10
8.7	**1**	**0**	**DES-2**	87	10
8.8	**1**	**0**	**DES-3**	88	10
8.9	**1**	**0**	**DES-4**	89	10
9	**1**	**0**	**DES-5**	90	10
9.1	**1**	**0**	**DES-6**	91	10
9.2	**1**	**0**	**DES-7**	92	10
9.3	**1**	**0**	**DES-8**	93	10
9.4	**1**	**0**	**DES-9**	94	10
9.5	**1**	**0**	**DES-10**	95	10
9.6	**1**	**0**	**DES-11**	96	10
9.7	**1**	**0**	**DES-12**	97	10
9.8	**1**	**0**	**DES-13**	98	10
9.9	**1**	**0**	**DES-14**	99	10
10	**1**	**0**	**DES-15**	100	10
10.1	**1**	**0**	**DES-16**	101	10
10.2	**1**	**0**	**DES-17**	102	10
10.3	**1**	**0**	**DES-18**	103	10
10.4	**1**	**0**	**DES-19**	104	10
10.5	**1**	**0**	**DES-20**	105	10
10.6	**1**	**0**	**DES-21**	106	10
10.7	**1**	**0**	**DES-22**	107	10
10.8	**1**	**0**	**DES-23**	108	10
10.9	**1**	**0**	**DES-24**	109	10
11.1	**1**	**0**	**EFS-1**	111	10
11.2	**1**	**0**	**EFS-2**	112	10
11.3	**1**	**0**	**EFS-3**	113	10

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
11.4	**1**	**0**	**EFS-4**	114	10
11.5	**1**	**0**	**EFS-5**	115	10
11.6	**1**	**0**	**EFS-6**	116	10
11.7	**1**	**0**	**EFS-7**	117	10
11.8	**1**	**0**	**EFS-8**	118	10
11.9	**1**	**0**	**EFS-9**	119	10
12	**1**	**0**	**EFS-10**	120	10
12.1	**1**	**0**	**EFS-11**	121	10
12.2	**1**	**0**	**EFS-12**	122	10
12.3	**1**	**0**	**EFS-13**	123	10
12.4	**1**	**0**	**EFS-14**	124	10
12.5	**1**	**0**	**EFS-15**	125	10
12.6	**1**	**0**	**EFS-16**	126	10
12.7	**1**	**0**	**EFS-17**	127	10
12.8	**1**	**0**	**EFS-18**	128	10
12.9	**1**	**0**	**EFS-19**	129	10
13	**1**	**0**	**EFS-20**	130	10
13.1	**1**	**0**	**EFS-21**	131	10
13.2	**1**	**0**	**EFS-22**	132	10
13.3	**1**	**0**	**EFS-23**	133	10
13.4	**1**	**0**	**EFS-24**	134	10
13.6	**1**	**0**	**FGS-1**	136	10
13.7	**1**	**0**	**FGS-2**	137	10
13.8	**1**	**0**	**FGS-3**	138	10
13.9	**1**	**0**	**FGS-4**	139	10
14	**1**	**0**	**FGS-5**	140	10
14.1	**1**	**0**	**FGS-6**	141	10
14.2	**1**	**0**	**FGS-7**	142	10
14.3	**1**	**0**	**FGS-8**	143	10
14.4	**1**	**0**	**FGS-9**	144	10
14.5	**1**	**0**	**FGS-10**	145	10
14.6	**1**	**0**	**FGS-11**	146	10
14.7	**1**	**0**	**FGS-12**	147	10
14.8	**1**	**0**	**FGS-13**	148	10
14.9	**1**	**0**	**FGS-14**	149	10
15.1	**1**	**0**	**GHS-1**	151	10
15.2	**1**	**0**	**GHS-2**	152	10
15.3	**1**	**0**	**GHS-3**	153	10
15.4	**1**	**0**	**GHS-4**	154	10
15.5	**1**	**0**	**GHS-5**	155	10
15.6	**1**	**0**	**GHS-6**	156	10
15.7	**1**	**0**	**GHS-7**	157	10
15.8	**1**	**0**	**GHS-8**	158	10
15.9	**1**	**0**	**GHS-9**	159	10

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
1	5.9	0	APT-1	10	59
1	5.8	0	APT-2	10	58
1	5.7	0	APT-3	10	57
1	5.6	0	APT-4	10	56
1	5.5	0	APT-5	10	55
1	5.4	0	APT-6	10	54
1	5.3	0	APT-7	10	53
1	5.2	0	APT-8	10	52
1	5.1	0	APT-9	10	51
1	5	0	APT-10	10	50
1	4.9	0	APT-11	10	49
1	4.8	0	APT-12	10	48
1	4.7	0	APT-13	10	47
1	4.6	0	APT-14	10	46
1	4.5	0	APT-15	10	45
1	4.4	0	APT-16	10	44
1	4.3	0	APT-17	10	43
1	4.2	0	APT-18	10	42
1	4.1	0	APT-19	10	41
1	4	0	APT-20	10	40
1	3.9	0	APT-21	10	39
1	3.8	0	APT-22	10	38
1	3.7	0	APT-23	10	37
1	3.6	0	APT-24	10	36
1	3.5	0	APT-25	10	35
1	3.4	0	APT-26	10	34
1	3.3	0	APT-27	10	33
1	3.2	0	APT-28	10	32
1	3.1	0	APT-29	10	31
1	1.6	0	APS-1	10	16
1	1.7	0	APS-2	10	17
1	1.8	0	APS-3	10	18
1	1.9	0	APS-4	10	19
1	2	0	APS-5	10	20
1	2.1	0	APS-6	10	21
1	2.2	0	APS-7	10	22
1	2.3	0	APS-8	10	23
1	2.4	0	APS-9	10	24
1	2.5	0	APS-10	10	25
1	2.6	0	APS-11	10	26
1	2.7	0	APS-12	10	27
1	2.8	0	APS-13	10	28
1	2.9	0	APS-14	10	29
16	5.9	0	HPT-1	160	59
16	5.8	0	HPT-2	160	58

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
16	**5.7**	**0**	**HPT-3**	160	57
16	**5.6**	**0**	**HPT-4**	160	56
16	**5.5**	**0**	**HPT-5**	160	55
16	**5.4**	**0**	**HPT-6**	160	54
16	**5.3**	**0**	**HPT-7**	160	53
16	**5.2**	**0**	**HPT-8**	160	52
16	**5.1**	**0**	**HPT-9**	160	51
16	**5**	**0**	**HPT-10**	160	50
16	**4.9**	**0**	**HPT-11**	160	49
16	**4.8**	**0**	**HPT-12**	160	48
16	**4.7**	**0**	**HPT-13**	160	47
16	**4.6**	**0**	**HPT-14**	160	46
16	**4.5**	**0**	**HPT-15**	160	45
16	**4.4**	**0**	**HPT-16**	160	44
16	**4.3**	**0**	**HPT-17**	160	43
16	**4.2**	**0**	**HPT-18**	160	42
16	**4.1**	**0**	**HPT-19**	160	41
16	**4**	**0**	**HPT-20**	160	40
16	**3.9**	**0**	**HPT-21**	160	39
16	**3.8**	**0**	**HPT-22**	160	38
16	**3.7**	**0**	**HPT-23**	160	37
16	**3.6**	**0**	**HPT-24**	160	36
16	**3.5**	**0**	**HPT-25**	160	35
16	**3.4**	**0**	**HPT-26**	160	34
16	**3.3**	**0**	**HPT-27**	160	33
16	**3.2**	**0**	**HPT-28**	160	32
16	**3.1**	**0**	**HPT-29**	160	31
16	**1.1**	**0**	**HPS-1**	160	11
16	**1.2**	**0**	**HPS-2**	160	12
16	**1.3**	**0**	**HPS-3**	160	13
16	**1.4**	**0**	**HPS-4**	160	14
16	**1.5**	**0**	**HPS-5**	160	15
16	**1.6**	**0**	**HPS-6**	160	16
16	**1.7**	**0**	**HPS-7**	160	17
16	**1.8**	**0**	**HPS-8**	160	18
16	**1.9**	**0**	**HPS-9**	160	19
16	**2**	**0**	**HPS-10**	160	20
16	**2.1**	**0**	**HPS-11**	160	21
16	**2.2**	**0**	**HPS-12**	160	22
16	**2.3**	**0**	**HPS-13**	160	23
16	**2.4**	**0**	**HPS-14**	160	24
16	**2.5**	**0**	**HPS-15**	160	25
16	**2.6**	**0**	**HPS-16**	160	26
16	**2.7**	**0**	**HPS-17**	160	27
16	**2.8**	**0**	**HPS-18**	160	28
16	**2.9**	**0**	**HPS-19**	160	29

Table 3B. Riverside Spring Vent B XYZ Grid Data, May 5, 2015.					
X	**Y**	**Z (Velocity)**	**Station Name**	**X Plot**	**Y Plot**
7	**3.5**	**0.16**	**B1**	70	35
7	**6**	**0.48**	**B2**	70	60
7	**8.5**	**1.92**	**B3**	70	85
7	**11**	**2.02**	**B4**	70	110
7	**13.5**	**2.56**	**B5**	70	135
7	**16**	**2.55**	**B6**	70	160
7	**18.5**	**2.57**	**B7**	70	185
7	**21**	**2.28**	**B8**	70	210
7	**22**	**1.82**	**B9**	70	220
9.5	**21**	**1.66**	**B10**	95	210
4.5	**21**	**2.37**	**B11**	45	210
3	**21**	**0.24**	**B12**	30	210
11	**21**	**1.25**	**B13**	110	210
9.5	**18.5**	**2.58**	**B14**	95	185
4.5	**18.5**	**1.47**	**B15**	45	185
7	**23.5**	**0**	**TC**	70	235
4.5	**23.25**	**0**	**TAL**	45	232.5
2	**24**	**0**	**TBL**	20	240
1	**23.5**	**0**	**AL**	10	235
1	**21**	**0**	**BL**	10	210
1	**18.5**	**0**	**CL**	10	185
2	**17**	**0**	**DL**	20	170
2.5	**16**	**0**	**EL**	25	160
4	**13.5**	**0**	**FAL**	40	135
4.5	**13**	**0**	**FBL**	45	130
4	**11**	**0**	**GL**	40	110
4	**8.5**	**0**	**HL**	40	85
4.5	**6**	**0**	**IL**	45	60
4	**3.5**	**0**	**JL**	40	35
2	**1**	**0**	**KL**	20	10
9.5	**23**	**0**	**TAR**	95	230
12.5	**23.5**	**0**	**TBR**	125	235
12	**22.75**	**0**	**AR**	120	227.5
12	**21**	**0**	**BAR**	120	210
12	**19.5**	**0**	**BBR**	120	195
13.5	**18.5**	**0**	**CR**	135	185
12	**17.5**	**0**	**DR**	120	175
10	**16**	**0**	**EAR**	100	160
9.5	**16**	**0**	**EBR**	95	160
9	**13.5**	**0**	**FR**	90	135
10.5	**11**	**0**	**GR**	105	110
10.75	**8.5**	**0**	**HR**	107.5	85
11.25	**6**	**0**	**IR**	112.5	60
12.5	**3.5**	**0**	**JR**	125	35

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
14.5	**1**	**0**	**KR**	145	10
7	**1**	**0**	**CS**	70	10
6.8	**23.48**	**0**	**TCAL-1**	68	234.8
6.6	**23.46**	**0**	**TCAL-2**	66	234.6
6.4	**23.44**	**0**	**TCAL-3**	64	234.4
6.2	**23.42**	**0**	**TCAL-4**	62	234.2
6	**23.4**	**0**	**TCAL-5**	60	234
5.8	**23.38**	**0**	**TCAL-6**	58	233.8
5.6	**23.36**	**0**	**TCAL-7**	56	233.6
5.4	**23.34**	**0**	**TCAL-8**	54	233.4
5.2	**23.32**	**0**	**TCAL-9**	52	233.2
5	**23.3**	**0**	**TCAL-10**	50	233
4.8	**23.28**	**0**	**TCAL-11**	48	232.8
4.6	**23.26**	**0**	**TCAL-12**	46	232.6
1.9	**23.95**	**0**	**TABL-1**	19	239.5
1.8	**23.9**	**0**	**TABL-2**	18	239
1.7	**23.85**	**0**	**TABL-3**	17	238.5
1.6	**23.8**	**0**	**TABL-4**	16	238
1.5	**23.75**	**0**	**TABL-5**	15	237.5
1.4	**23.7**	**0**	**TABL-6**	14	237
1.3	**23.65**	**0**	**TABL-7**	13	236.5
1.2	**23.6**	**0**	**TABL-8**	12	236
1.1	**23.55**	**0**	**TABL-9**	11	235.5
4.3	**23.31**	**0**	**TBAL-1**	43	233.1
4.1	**23.37**	**0**	**TBAL-2**	41	233.7
3.9	**23.43**	**0**	**TBAL-3**	39	234.3
3.7	**23.49**	**0**	**TBAL-4**	37	234.9
3.5	**23.55**	**0**	**TBAL-5**	35	235.5
3.3	**23.61**	**0**	**TBAL-6**	33	236.1
3.1	**23.67**	**0**	**TBAL-7**	31	236.7
2.9	**23.73**	**0**	**TBAL-8**	29	237.3
2.7	**23.79**	**0**	**TBAL-9**	27	237.9
2.5	**23.85**	**0**	**TBAL-10**	25	238.5
2.3	**23.91**	**0**	**TBAL-11**	23	239.1
2.1	**23.97**	**0**	**TBAL-12**	21	239.7
1	**23.4**	**0**	**ABL-1**	10	234
1	**23.3**	**0**	**ABL-2**	10	233
1	**23.1**	**0**	**ABL-3**	10	231
1	**22.9**	**0**	**ABL-4**	10	229
1	**22.7**	**0**	**ABL-5**	10	227
1	**22.5**	**0**	**ABL-6**	10	225
1	**22.3**	**0**	**ABL-7**	10	223
1	**22.1**	**0**	**ABL-8**	10	221

Table 3B. Watermelon Spring Vent B XYZ Grid Data, May 5, 2015.

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
1	**21.9**	**0**	**ABL-9**	10	219
1	**21.7**	**0**	**ABL-10**	10	217
1	**21.5**	**0**	**ABL-11**	10	215
1	**21.3**	**0**	**ABL-12**	10	213
1	**21.2**	**0**	**ABL-13**	10	212
1	**21.1**	**0**	**ABL-14**	10	211
1	**20.9**	**0**	**BCL-1**	10	209
1	**20.8**	**0**	**BCL-2**	10	208
1	**20.7**	**0**	**BCL-3**	10	207
1	**20.5**	**0**	**BCL-4**	10	205
1	**20.3**	**0**	**BCL-5**	10	203
1	**20.1**	**0**	**BCL-6**	10	201
1	**19.9**	**0**	**BCL-7**	10	199
1	**19.7**	**0**	**BCL-8**	10	197
1	**19.5**	**0**	**BCL-9**	10	195
1	**19.3**	**0**	**BCL-10**	10	193
1	**19.1**	**0**	**BCL-11**	10	191
1	**18.9**	**0**	**BCL-12**	10	189
1	**18.7**	**0**	**BCL-13**	10	187
1	**18.6**	**0**	**BCL-14**	10	186
1.06666	**18.4**	**0**	**CDL-1**	10.6666	184
1.13332	**18.3**	**0**	**CDL-2**	11.3332	183
1.19998	**18.2**	**0**	**CDL-3**	11.9998	182
1.26664	**18.1**	**0**	**CDL-4**	12.6664	181
1.3333	**18**	**0**	**CDL-5**	13.333	180
1.39996	**17.9**	**0**	**CDL-6**	13.9996	179
1.46662	**17.8**	**0**	**CDL-7**	14.6662	178
1.53328	**17.7**	**0**	**CDL-8**	15.3328	177
1.59994	**17.6**	**0**	**CDL-9**	15.9994	176
1.6666	**17.5**	**0**	**CDL-10**	16.666	175
1.73326	**17.4**	**0**	**CDL-11**	17.3326	174
1.79992	**17.3**	**0**	**CDL-12**	17.9992	173
1.86658	**17.2**	**0**	**CDL-13**	18.6658	172
1.93325	**17.1**	**0**	**CDL-14**	19.3325	171
2.05	**16.9**	**0**	**DEL-1**	20.5	169
2.1	**16.8**	**0**	**DEL-2**	21	168
2.15	**16.7**	**0**	**DEL-3**	21.5	167
2.2	**16.6**	**0**	**DEL-4**	22	166
2.25	**16.5**	**0**	**DEL-5**	22.5	165
2.3	**16.4**	**0**	**DEL-6**	23	164
2.35	**16.3**	**0**	**DEL-7**	23.5	163
2.4	**16.2**	**0**	**DEL-8**	24	162
2.45	**16.1**	**0**	**DEL-9**	24.5	161

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
2.62	**15.8**	**0**	**EFAL-1**	26.2	158
2.74	**15.6**	**0**	**EFAL-2**	27.4	156
2.86	**15.4**	**0**	**EFAL-3**	28.6	154
2.98	**15.2**	**0**	**EFAL-4**	29.8	152
3.1	**15**	**0**	**EFAL-5**	31	150
3.22	**14.8**	**0**	**EFAL-6**	32.2	148
3.34	**14.6**	**0**	**EFAL-7**	33.4	146
3.46	**14.4**	**0**	**EFAL-8**	34.6	144
3.58	**14.2**	**0**	**EFAL-9**	35.8	142
3.7	**14**	**0**	**EFAL-10**	37	140
3.82	**13.8**	**0**	**EFAL-11**	38.2	138
3.94	**13.6**	**0**	**EFAL-12**	39.4	136
4.1	**13.4**	**0**	**FABL-1**	41	134
4.2	**13.3**	**0**	**FABL-2**	42	133
4.3	**13.2**	**0**	**FABL-3**	43	132
4.4	**13.1**	**0**	**FABL-4**	44	131
4.475	**12.9**	**0**	**FGL-1**	44.75	129
4.45	**12.8**	**0**	**FGL-2**	44.5	128
4.4	**12.6**	**0**	**FGL-3**	44	126
4.35	**12.4**	**0**	**FGL-4**	43.5	124
4.3	**12.2**	**0**	**FGL-5**	43	122
4.25	**12**	**0**	**FGL-6**	42.5	120
4.2	**11.8**	**0**	**FGL-7**	42	118
4.15	**11.6**	**0**	**FGL-8**	41.5	116
4.1	**11.4**	**0**	**FGL-9**	41	114
4.05	**11.2**	**0**	**FGL-10**	40.5	112
4	**10.9**	**0**	**GHL-1**	40	109
4	**10.8**	**0**	**GHL-2**	40	108
4	**10.7**	**0**	**GHL-3**	40	107
4	**10.5**	**0**	**GHL-4**	40	105
4	**10.3**	**0**	**GHL-5**	40	103
4	**10.1**	**0**	**GHL-6**	40	101
4	**9.9**	**0**	**GHL-7**	40	99
4	**9.7**	**0**	**GHL-8**	40	97
4	**9.5**	**0**	**GHL-9**	40	95
4	**9.3**	**0**	**GHL-10**	40	93
4	**9.1**	**0**	**GHL-11**	40	91
4	**8.9**	**0**	**GHL-12**	40	89
4	**8.7**	**0**	**GHL-13**	40	87
4	**8.6**	**0**	**GHL-14**	40	86
4.02	**8.4**	**0**	**HIL-1**	40.2	84
4.06	**8.2**	**0**	**HIL-2**	40.6	82
4.1	**8**	**0**	**HIL-3**	41	80

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
4.14	**7.8**	**0**	**HIL-4**	41.4	78
4.18	**7.6**	**0**	**HIL-5**	41.8	76
4.22	**7.4**	**0**	**HIL-6**	42.2	74
4.26	**7.2**	**0**	**HIL-7**	42.6	72
4.3	**7**	**0**	**HIL-8**	43	70
4.34	**6.8**	**0**	**HIL-9**	43.4	68
4.38	**6.6**	**0**	**HIL-10**	43.8	66
4.42	**6.4**	**0**	**HIL-11**	44.2	64
4.46	**6.2**	**0**	**HIL-12**	44.6	62
4.46	**5.8**	**0**	**IJL-1**	44.6	58
4.42	**5.6**	**0**	**IJL-2**	44.2	56
4.38	**5.4**	**0**	**IJL-3**	43.8	54
4.34	**5.2**	**0**	**IJL-4**	43.4	52
4.3	**5**	**0**	**IJL-5**	43	50
4.26	**4.8**	**0**	**IJL-6**	42.6	48
4.22	**4.6**	**0**	**IJL-7**	42.2	46
4.18	**4.4**	**0**	**IJL-8**	41.8	44
4.14	**4.2**	**0**	**IJL-9**	41.4	42
4.1	**4**	**0**	**IJL-10**	41	40
4.06	**3.8**	**0**	**IJL-11**	40.6	38
4.02	**3.6**	**0**	**IJL-12**	40.2	36
3.92	**3.4**	**0**	**JKL-1**	39.2	34
3.76	**3.2**	**0**	**JKL-2**	37.6	32
3.6	**3**	**0**	**JKL-3**	36	30
3.44	**2.8**	**0**	**JKL-4**	34.4	28
3.28	**2.6**	**0**	**JKL-5**	32.8	26
3.12	**2.4**	**0**	**JKL-6**	31.2	24
2.96	**2.2**	**0**	**JKL-7**	29.6	22
2.8	**2**	**0**	**JKL-8**	28	20
2.64	**1.8**	**0**	**JKL-9**	26.4	18
2.48	**1.6**	**0**	**JKL-10**	24.8	16
2.32	**1.4**	**0**	**JKL-11**	23.2	14
2.16	**1.2**	**0**	**JKL-12**	21.6	12
2.1	**1**	**0**	**KCSL-1**	21	10
2.2	**1**	**0**	**KCSL-2**	22	10
2.3	**1**	**0**	**KCSL-3**	23	10
2.5	**1**	**0**	**KCSL-4**	25	10
2.7	**1**	**0**	**KCSL-5**	27	10
2.9	**1**	**0**	**KCSL-6**	29	10
3.1	**1**	**0**	**KCSL-7**	31	10
3.3	**1**	**0**	**KCSL-8**	33	10
3.5	**1**	**0**	**KCSL-9**	35	10
3.7	**1**	**0**	**KCSL-10**	37	10
3.9	**1**	**0**	**KCSL-11**	39	10

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
4.1	**1**	**0**	**KCSL-12**	41	10
4.3	**1**	**0**	**KCSL-13**	43	10
4.5	**1**	**0**	**KCSL-14**	45	10
4.7	**1**	**0**	**KCSL-15**	47	10
4.9	**1**	**0**	**KCSL-16**	49	10
5.1	**1**	**0**	**KCSL-17**	51	10
5.3	**1**	**0**	**KCSL-18**	53	10
5.5	**1**	**0**	**KCSL-19**	55	10
5.7	**1**	**0**	**KCSL-20**	57	10
5.9	**1**	**0**	**KCSL-21**	59	10
6.1	**1**	**0**	**KCSL-22**	61	10
6.3	**1**	**0**	**KCSL-23**	63	10
6.5	**1**	**0**	**KCSL-24**	65	10
6.7	**1**	**0**	**KCSL-25**	67	10
6.9	**1**	**0**	**KCSL-26**	69	10
7.1	**23.48**	**0**	**TCAR-1**	71	234.8
7.2	**23.46**	**0**	**TCAR-2**	72	234.6
7.4	**23.42**	**0**	**TCAR-3**	74	234.2
7.6	**23.38**	**0**	**TCAR-4**	76	233.8
7.8	**23.34**	**0**	**TCAR-5**	78	233.4
8	**23.3**	**0**	**TCAR-6**	80	233
8.2	**23.26**	**0**	**TCAR-7**	82	232.6
8.4	**23.22**	**0**	**TCAR-8**	84	232.2
8.6	**23.18**	**0**	**TCAR-9**	86	231.8
8.8	**23.14**	**0**	**TCAR-10**	88	231.4
9	**23.1**	**0**	**TCAR-11**	90	231
9.2	**23.06**	**0**	**TCAR-12**	92	230.6
9.4	**23.02**	**0**	**TCAR-13**	94	230.2
9.6	**23.0167**	**0**	**TABR-1**	96	230.1666
9.8	**23.05**	**0**	**TABR-2**	98	230.4999
10	**23.0833**	**0**	**TABR-3**	100	230.8332
10.2	**23.1167**	**0**	**TABR-4**	102	231.1665
10.4	**23.15**	**0**	**TABR-5**	104	231.4998
10.6	**23.1833**	**0**	**TABR-6**	106	231.8331
10.8	**23.2167**	**0**	**TABR-7**	108	232.167
11	**23.25**	**0**	**TABR-8**	110	232.5003
11.2	**23.2834**	**0**	**TABR-9**	112	232.8336
11.4	**23.3167**	**0**	**TABR-10**	114	233.1669
11.6	**23.35**	**0**	**TABR-11**	116	233.5002
11.8	**23.3834**	**0**	**TABR-12**	118	233.8335
12	**23.4167**	**0**	**TABR-13**	120	234.1668
12.2	**23.45**	**0**	**TABR-14**	122	234.5001
12.4	**23.4833**	**0**	**TABR-15**	124	234.8334
12.4333	**23.4**	**0**	**TBAR-1**	124.3334	234

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
12.3667	**23.3**	**0**	**TBAR-2**	123.6668	233
12.3	**23.2**	**0**	**TBAR-3**	123.0002	232
12.2334	**23.1**	**0**	**TBAR-4**	122.3336	231
12.1667	**23**	**0**	**TBAR-5**	121.667	230
12.1	**22.9**	**0**	**TBAR-6**	121.0004	229
12.0334	**22.8**	**0**	**TBAR-7**	120.3338	228
12	**22.7**	**0**	**ABR-1**	120	227
12	**22.6**	**0**	**ABR-2**	120	226
12	**22.5**	**0**	**ABR-3**	120	225
12	**22.3**	**0**	**ABR-4**	120	223
12	**22.1**	**0**	**ABR-5**	120	221
12	**21.9**	**0**	**ABR-6**	120	219
12	**21.7**	**0**	**ABR-7**	120	217
12	**21.5**	**0**	**ABR-8**	120	215
12	**21.3**	**0**	**ABR-9**	120	213
12	**21.2**	**0**	**ABR-10**	120	212
12	**21.1**	**0**	**ABR-11**	120	211
12	**20.9**	**0**	**BABR-1**	120	209
12	**20.8**	**0**	**BABR-2**	120	208
12	**20.7**	**0**	**BABR-3**	120	207
12	**20.5**	**0**	**BABR-4**	120	205
12	**20.3**	**0**	**BABR-5**	120	203
12	**20.1**	**0**	**BABR-6**	120	201
12	**19.9**	**0**	**BABR-7**	120	199
12	**19.7**	**0**	**BABR-8**	120	197
12	**19.6**	**0**	**BABR-9**	120	196
12.1	**19.4333**	**0**	**BCR-1**	121	194.3325
12.2	**19.3666**	**0**	**BCR-2**	122	193.6658
12.3	**19.2999**	**0**	**BCR-3**	123	192.9992
12.4	**19.2333**	**0**	**BCR-4**	124	192.3326
12.5	**19.1666**	**0**	**BCR-5**	125	191.666
12.6	**19.0999**	**0**	**BCR-6**	126	190.9994
12.7	**19.0333**	**0**	**BCR-7**	127	190.3328
12.8	**18.9666**	**0**	**BCR-8**	128	189.6662
12.9	**18.9**	**0**	**BCR-9**	129	188.9996
13	**18.8333**	**0**	**BCR-10**	130	188.333
13.1	**18.7666**	**0**	**BCR-11**	131	187.6664
13.2	**18.7**	**0**	**BCR-12**	132	186.9998
13.3	**18.6333**	**0**	**BCR-13**	133	186.3332
13.4	**18.5667**	**0**	**BCR-14**	134	185.6666
13.4	**18.4333**	**0**	**CDR-1**	134	184.3325
13.3	**18.3666**	**0**	**CDR-2**	133	183.6658
13.2	**18.2999**	**0**	**CDR-3**	132	182.9992
13.1	**18.2333**	**0**	**CDR-4**	131	182.3326

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
13	**18.1666**	**0**	**CDR-5**	130	181.666
12.9	**18.0999**	**0**	**CDR-6**	129	180.9994
12.8	**18.0333**	**0**	**CDR-7**	128	180.3328
12.7	**17.9666**	**0**	**CDR-8**	127	179.6662
12.6	**17.9**	**0**	**CDR-9**	126	178.9996
12.5	**17.8333**	**0**	**CDR-10**	125	178.333
12.4	**17.7666**	**0**	**CDR-11**	124	177.6664
12.3	**17.7**	**0**	**CDR-12**	123	176.9998
12.2	**17.6333**	**0**	**CDR-13**	122	176.3332
12.1	**17.5667**	**0**	**CDR-14**	121	175.6666
11.9	**17.425**	**0**	**DER-1**	119	174.25
11.8	**17.35**	**0**	**DER-2**	118	173.5
11.6	**17.2**	**0**	**DER-3**	116	172
11.4	**17.05**	**0**	**DER-4**	114	170.5
11.2	**16.9**	**0**	**DER-5**	112	169
11	**16.75**	**0**	**DER-6**	110	167.5
10.8	**16.6**	**0**	**DER-7**	108	166
10.6	**16.45**	**0**	**DER-8**	106	164.5
10.4	**16.3**	**0**	**DER-9**	104	163
10.2	**16.15**	**0**	**DER-10**	102	161.5
10.1	**16.075**	**0**	**DER-11**	101	160.75
9.6	**16**	**0**	**EABR-1**	96	160
9.7	**16**	**0**	**EABR-2**	97	160
9.8	**16**	**0**	**EABR-3**	98	160
9.9	**16**	**0**	**EABR-4**	99	160
9.48	**15.9**	**0**	**EFR-1**	94.8	159
9.46	**15.8**	**0**	**EFR-2**	94.6	158
9.42	**15.6**	**0**	**EFR-3**	94.2	156
9.38	**15.4**	**0**	**EFR-4**	93.8	154
9.34	**15.2**	**0**	**EFR-5**	93.4	152
9.3	**15**	**0**	**EFR-6**	93	150
9.26	**14.8**	**0**	**EFR-7**	92.6	148
9.22	**14.6**	**0**	**EFR-8**	92.2	146
9.18	**14.4**	**0**	**EFR-9**	91.8	144
9.14	**14.2**	**0**	**EFR-10**	91.4	142
9.1	**14**	**0**	**EFR-11**	91	140
9.06	**13.8**	**0**	**EFR-12**	90.6	138
9.02	**13.6**	**0**	**EFR-13**	90.2	136
9.06	**13.4**	**0**	**FGR-1**	90.6	134
9.18	**13.2**	**0**	**FGR-2**	91.8	132
9.3	**13**	**0**	**FGR-3**	93	130
9.42	**12.8**	**0**	**FGR-4**	94.2	128
9.54	**12.6**	**0**	**FGR-5**	95.4	126

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
9.66	**12.4**	**0**	**FGR-6**	96.6	124
9.78	**12.2**	**0**	**FGR-7**	97.8	122
9.9	**12**	**0**	**FGR-8**	99	120
10.02	**11.8**	**0**	**FGR-9**	100.2	118
10.14	**11.6**	**0**	**FGR-10**	101.4	116
10.26	**11.4**	**0**	**FGR-11**	102.6	114
10.38	**11.2**	**0**	**FGR-12**	103.8	112
10.44	**11.1**	**0**	**FGR-13**	104.4	111
10.51	**10.9**	**0**	**GHR-1**	105.1	109
10.52	**10.8**	**0**	**GHR-2**	105.2	108
10.54	**10.6**	**0**	**GHR-3**	105.4	106
10.56	**10.4**	**0**	**GHR-4**	105.6	104
10.58	**10.2**	**0**	**GHR-5**	105.8	102
10.6	**10**	**0**	**GHR-6**	106	100
10.62	**9.8**	**0**	**GHR-7**	106.2	98
10.64	**9.6**	**0**	**GHR-8**	106.4	96
10.66	**9.4**	**0**	**GHR-9**	106.6	94
10.68	**9.2**	**0**	**GHR-10**	106.8	92
10.7	**9**	**0**	**GHR-11**	107	90
10.72	**8.8**	**0**	**GHR-12**	107.2	88
10.74	**8.6**	**0**	**GHR-13**	107.4	86
10.77	**8.4**	**0**	**HIR-1**	107.7	84
10.81	**8.2**	**0**	**HIR-2**	108.1	82
10.85	**8**	**0**	**HIR-3**	108.5	80
10.89	**7.8**	**0**	**HIR-4**	108.9	78
10.93	**7.6**	**0**	**HIR-5**	109.3	76
10.97	**7.4**	**0**	**HIR-6**	109.7	74
11.01	**7.2**	**0**	**HIR-7**	110.1	72
11.05	**7**	**0**	**HIR-8**	110.5	70
11.09	**6.8**	**0**	**HIR-9**	110.9	68
11.13	**6.6**	**0**	**HIR-10**	111.3	66
11.17	**6.4**	**0**	**HIR-11**	111.7	64
11.21	**6.2**	**0**	**HIR-12**	112.1	62
11.23	**6.1**	**0**	**HIR-13**	112.3	61
11.3	**5.9**	**0**	**IJR-1**	113	59
11.35	**5.8**	**0**	**IJR-2**	113.5	58
11.45	**5.6**	**0**	**IJR-3**	114.5	56
11.55	**5.4**	**0**	**IJR-4**	115.5	54
11.65	**5.2**	**0**	**IJR-5**	116.5	52
11.75	**5**	**0**	**IJR-6**	117.5	50
11.85	**4.8**	**0**	**IJR-7**	118.5	48
11.95	**4.6**	**0**	**IJR-8**	119.5	46
12.05	**4.4**	**0**	**IJR-9**	120.5	44
12.15	**4.2**	**0**	**IJR-10**	121.5	42
12.25	**4**	**0**	**IJR-11**	122.5	40

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
12.35	**3.8**	**0**	**IJR-12**	123.5	38
12.45	**3.6**	**0**	**IJR-13**	124.5	36
12.58	**3.4**	**0**	**JKR-1**	125.8	34
12.74	**3.2**	**0**	**JKR-2**	127.4	32
12.9	**3**	**0**	**JKR-3**	129	30
13.06	**2.8**	**0**	**JKR-4**	130.6	28
13.22	**2.6**	**0**	**JKR-5**	132.2	26
13.38	**2.4**	**0**	**JKR-6**	133.8	24
13.54	**2.2**	**0**	**JKR-7**	135.4	22
13.7	**2**	**0**	**JKR-8**	137	20
13.86	**1.8**	**0**	**JKR-9**	138.6	18
14.02	**1.6**	**0**	**JKR-10**	140.2	16
14.18	**1.4**	**0**	**JKR-11**	141.8	14
14.34	**1.2**	**0**	**JKR-12**	143.4	12
14.42	**1.1**	**0**	**JKR-13**	144.2	11
14.4	**1**	**0**	**KCSR-1**	144	10
14.3	**1**	**0**	**KCSR-2**	143	10
14.1	**1**	**0**	**KCSR-3**	141	10
13.9	**1**	**0**	**KCSR-4**	139	10
13.7	**1**	**0**	**KCSR-5**	137	10
13.5	**1**	**0**	**KCSR-6**	135	10
13.3	**1**	**0**	**KCSR-7**	133	10
13.1	**1**	**0**	**KCSR-8**	131	10
12.9	**1**	**0**	**KCSR-9**	129	10
12.7	**1**	**0**	**KCSR-10**	127	10
12.5	**1**	**0**	**KCSR-11**	125	10
12.3	**1**	**0**	**KCSR-12**	123	10
12.1	**1**	**0**	**KCSR-13**	121	10
11.9	**1**	**0**	**KCSR-14**	119	10
11.7	**1**	**0**	**KCSR-15**	117	10
11.5	**1**	**0**	**KCSR-16**	115	10
11.3	**1**	**0**	**KCSR-17**	113	10
11.1	**1**	**0**	**KCSR-18**	111	10
10.9	**1**	**0**	**KCSR-19**	109	10
10.8	**1**	**0**	**KCSR-20**	108	10
10.7	**1**	**0**	**KCSR-21**	107	10
10.5	**1**	**0**	**KCSR-22**	105	10
10.3	**1**	**0**	**KCSR-23**	103	10
10.1	**1**	**0**	**KCSR-24**	101	10
9.9	**1**	**0**	**KCSR-25**	99	10
9.7	**1**	**0**	**KCSR-26**	97	10
9.5	**1**	**0**	**KCSR-27**	95	10
9.3	**1**	**0**	**KCSR-28**	93	10
9.1	**1**	**0**	**KCSR-29**	91	10
8.9	**1**	**0**	**KCSR-30**	89	10
8.7	**1**	**0**	**KCSR-31**	87	10

Table 3B. Watermelon Spring Vent B XYZ Grid Data, May 5, 2015.

8.5	**1**	**0**	**KCSR-32**	85	10
8.3	**1**	**0**	**KCSR-33**	83	10
8.1	**1**	**0**	**KCSR-34**	81	10
7.9	**1**	**0**	**KCSR-35**	79	10
7.7	**1**	**0**	**KCSR-36**	77	10
7.5	**1**	**0**	**KCSR-37**	75	10
7.3	**1**	**0**	**KCSR-38**	73	10
7.1	**1**	**0**	**KCSR-39**	71	10

Table 3C. Riverside Spring Vent C XYZ Grid Data, May 5, 2015.					
X	**Y**	**Z (Velocity)**	**Station Name**	**X Plot**	**Y Plot**
22	**10**	**1.44**	**C1**	220	100
19.5	**10**	**1.96**	**C2**	195	100
17	**10**	**2.15**	**C3**	170	100
14.5	**10**	**1.65**	**C4**	145	100
12	**10**	**1.93**	**C5**	120	100
9.5	**10**	**1.35**	**C6**	95	100
7	**10**	**0.72**	**C7**	70	100
4.5	**10**	**0**	**C8**	45	100
2	**10**	**-0.21**	**C9**	20	100
22	**6**	**1.9**	**C10**	220	60
19.5	**6**	**1.32**	**C11**	195	60
17	**6**	**1.56**	**C12**	170	60
14.5	**6**	**1.39**	**C13**	145	60
12	**6**	**2.43**	**C14**	120	60
9.5	**6**	**1.86**	**C15**	95	60
7	**6**	**1.31**	**C16**	70	60
4.5	**6**	**0.39**	**C17**	45	60
2	**6**	**0.13**	**C18**	20	60
24.5	**5**	**1.38**	**C19**	245	50
24.5	**8.5**	**1.48**	**C20**	245	85
24.5	**11**	**0.84**	**C21**	245	110
24.5	**14**	**0.13**	**C22**	245	140
26	**10**	**0.66**	**C23**	260	100
26	**6**	**0.69**	**C24**	260	60
22	**8**	**1.81**	**C25**	220	80
19.5	**8**	**1.46**	**C26**	195	80
17	**8**	**1.69**	**C27**	170	80
14.5	**8**	**1.62**	**C28**	145	80
12	**8**	**1.91**	**C29**	120	80
9.5	**8**	**1.38**	**C30**	95	80
7	**8**	**0.73**	**C31**	70	80
4.5	**8**	**0.15**	**C32**	45	80
22	**12.5**	**0.62**	**C33**	220	125
22	**3.5**	**1.46**	**C34**	220	35
0.5	**10**	**0**	**LT**	5	100
0.5	**12**	**0**	**AT**	5	120
2	**11.5**	**0**	**BT**	20	115
4.5	**11.5**	**0**	**CT**	45	115
7	**11**	**0**	**DT**	70	110
9.5	**12**	**0**	**ET**	95	120
12	**13**	**0**	**FT**	120	130
14.5	**12**	**0**	**GT**	145	120
17	**12.75**	**0**	**HT**	170	127.5
19.5	**12.5**	**0**	**IT**	195	125

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
22	**13.5**	**0**	**JTA**	220	135
22.5	**14**	**0**	**JTB**	225	140
24.5	**17.5**	**0**	**KT**	245	175
27	**17.5**	**0**	**LT**	270	175
27.5	**14**	**0**	**MT**	275	140
27	**10**	**0**	**RT**	270	100
0.5	**6**	**0**	**LS**	5	60
0.5	**4**	**0**	**AS**	5	40
2	**4.75**	**0**	**BS**	20	47.5
4.5	**4.5**	**0**	**CS**	45	45
7	**4**	**0**	**DS**	70	40
9.5	**3.5**	**0**	**ES**	95	35
12	**3**	**0**	**FS**	120	30
14.5	**2.5**	**0**	**GS**	145	25
17	**2**	**0**	**HS**	170	20
19.5	**1.5**	**0**	**IS**	195	15
22	**0.5**	**0**	**JS**	220	5
24.5	**3**	**0**	**KS**	245	30
27	**4**	**0**	**LS**	270	40
27	**6**	**0**	**RS**	270	60
0.5	**6.1**	**0**	**LTS-1**	5	61
0.5	**6.2**	**0**	**LTS-2**	5	62
0.5	**6.4**	**0**	**LTS-3**	5	64
0.5	**6.6**	**0**	**LTS-4**	5	66
0.5	**6.8**	**0**	**LTS-5**	5	68
0.5	**7**	**0**	**LTS-6**	5	70
0.5	**7.2**	**0**	**LTS-7**	5	72
0.5	**7.4**	**0**	**LTS-8**	5	74
0.5	**7.6**	**0**	**LTS-9**	5	76
0.5	**7.8**	**0**	**LTS-10**	5	78
0.5	**8**	**0**	**LTS-11**	5	80
0.5	**8.2**	**0**	**LTS-12**	5	82
0.5	**8.4**	**0**	**LTS-13**	5	84
0.5	**8.6**	**0**	**LTS-14**	5	86
0.5	**8.8**	**0**	**LTS-15**	5	88
0.5	**9**	**0**	**LTS-16**	5	90
0.5	**9.2**	**0**	**LTS-17**	5	92
0.5	**9.4**	**0**	**LTS-18**	5	94
0.5	**9.6**	**0**	**LTS-19**	5	96
0.5	**9.8**	**0**	**LTS-20**	5	98
0.5	**9.9**	**0**	**LTS-21**	5	99
0.5	**10.1**	**0**	**ALT-1**	5	101
0.5	**10.2**	**0**	**ALT-2**	5	102
0.5	**10.4**	**0**	**ALT-3**	5	104

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
0.5	**10.6**	**0**	**ALT-4**	5	106
0.5	**10.8**	**0**	**ALT-5**	5	108
0.5	**11**	**0**	**ALT-6**	5	110
0.5	**11.2**	**0**	**ALT-7**	5	112
0.5	**11.4**	**0**	**ALT-8**	5	114
0.5	**11.6**	**0**	**ALT-9**	5	116
0.5	**11.8**	**0**	**ALT-10**	5	118
0.5	**11.9**	**0**	**ALT-11**	5	119
0.6	**11.9666**	**0**	**ABT-1**	6	119.6663
0.8	**11.9**	**0**	**ABT-2**	8	118.9996
1	**11.8333**	**0**	**ABT-3**	10	118.333
1.2	**11.7666**	**0**	**ABT-4**	12	117.6664
1.4	**11.7**	**0**	**ABT-5**	14	116.9998
1.6	**11.6333**	**0**	**ABT-6**	16	116.3332
1.8	**11.5667**	**0**	**ABT-7**	18	115.6666
1.9	**11.5333**	**0**	**ABT-8**	19	115.3333
2.1	**11.5**	**0**	**BCT-1**	21	115
2.2	**11.5**	**0**	**BCT-2**	22	115
2.4	**11.5**	**0**	**BCT-3**	24	115
2.6	**11.5**	**0**	**BCT-4**	26	115
2.8	**11.5**	**0**	**BCT-5**	28	115
3	**11.5**	**0**	**BCT-6**	30	115
3.2	**11.5**	**0**	**BCT-7**	32	115
3.4	**11.5**	**0**	**BCT-8**	34	115
3.6	**11.5**	**0**	**BCT-9**	36	115
3.8	**11.5**	**0**	**BCT-10**	38	115
4	**11.5**	**0**	**BCT-11**	40	115
4.2	**11.5**	**0**	**BCT-12**	42	115
4.4	**11.5**	**0**	**BCT-13**	44	115
4.6	**11.48**	**0**	**CDT-1**	46	114.8
4.8	**11.44**	**0**	**CDT-2**	48	114.4
5	**11.4**	**0**	**CDT-3**	50	114
5.2	**11.36**	**0**	**CDT-4**	52	113.6
5.4	**11.32**	**0**	**CDT-5**	54	113.2
5.6	**11.28**	**0**	**CDT-6**	56	112.8
5.8	**11.24**	**0**	**CDT-7**	58	112.4
6	**11.2**	**0**	**CDT-8**	60	112
6.2	**11.16**	**0**	**CDT-9**	62	111.6
6.4	**11.12**	**0**	**CDT-10**	64	111.2
6.6	**11.08**	**0**	**CDT-11**	66	110.8
6.8	**11.04**	**0**	**CDT-12**	68	110.4
6.9	**11.02**	**0**	**CDT-13**	69	110.2
7.1	**11.04**	**0**	**DET-1**	71	110.4

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
7.2	**11.08**	**0**	**DET-2**	72	110.8
7.4	**11.16**	**0**	**DET-3**	74	111.6
7.6	**11.24**	**0**	**DET-4**	76	112.4
7.8	**11.32**	**0**	**DET-5**	78	113.2
8	**11.4**	**0**	**DET-6**	80	114
8.2	**11.48**	**0**	**DET-7**	82	114.8
8.4	**11.56**	**0**	**DET-8**	84	115.6
8.6	**11.64**	**0**	**DET-9**	86	116.4
8.8	**11.72**	**0**	**DET-10**	88	117.2
9	**11.8**	**0**	**DET-11**	90	118
9.2	**11.88**	**0**	**DET-12**	92	118.8
9.4	**11.96**	**0**	**DET-13**	94	119.6
9.6	**12.04**	**0**	**EFT-1**	96	120.4
9.8	**12.12**	**0**	**EFT-2**	98	121.2
10	**12.2**	**0**	**EFT-3**	100	122
10.2	**12.28**	**0**	**EFT-4**	102	122.8
10.4	**12.36**	**0**	**EFT-5**	104	123.6
10.6	**12.44**	**0**	**EFT-6**	106	124.4
10.8	**12.52**	**0**	**EFT-7**	108	125.2
11	**12.6**	**0**	**EFT-8**	110	126
11.2	**12.68**	**0**	**EFT-9**	112	126.8
11.4	**12.76**	**0**	**EFT-10**	114	127.6
11.6	**12.84**	**0**	**EFT-11**	116	128.4
11.8	**12.92**	**0**	**EFT-12**	118	129.2
11.9	**12.96**	**0**	**EFT-13**	119	129.6
12.1	**12.96**	**0**	**FGT-1**	121	129.6
12.2	**12.92**	**0**	**FGT-2**	122	129.2
12.4	**12.84**	**0**	**FGT-3**	124	128.4
12.6	**12.76**	**0**	**FGT-4**	126	127.6
12.8	**12.68**	**0**	**FGT-5**	128	126.8
13	**12.6**	**0**	**FGT-6**	130	126
13.2	**12.52**	**0**	**FGT-7**	132	125.2
13.4	**12.44**	**0**	**FGT-8**	134	124.4
13.6	**12.36**	**0**	**FGT-9**	136	123.6
13.8	**12.28**	**0**	**FGT-10**	138	122.8
14	**12.2**	**0**	**FGT-11**	140	122
14.2	**12.12**	**0**	**FGT-12**	142	121.2
14.4	**12.04**	**0**	**FGT-14**	144	120.4
14.6	**12.03**	**0**	**GHT-1**	146	120.3
14.8	**12.09**	**0**	**GHT-2**	148	120.9
15	**12.15**	**0**	**GHT-3**	150	121.5
15.2	**12.21**	**0**	**GHT-4**	152	122.1
15.4	**12.27**	**0**	**GHT-5**	154	122.7
15.6	**12.33**	**0**	**GHT-6**	156	123.3

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
15.8	**12.39**	**0**	**GHT-7**	158	123.9
16	**12.45**	**0**	**GHT-8**	160	124.5
16.2	**12.51**	**0**	**GHT-9**	162	125.1
16.4	**12.57**	**0**	**GHT-10**	164	125.7
16.6	**12.63**	**0**	**GHT-11**	166	126.3
16.8	**12.69**	**0**	**GHT-12**	168	126.9
16.9	**12.72**	**0**	**GHT-13**	169	127.2
17.1	**12.74**	**0**	**HIT-1**	171	127.4
17.2	**12.73**	**0**	**HIT-2**	172	127.3
17.4	**12.71**	**0**	**HIT-3**	174	127.1
17.6	**12.69**	**0**	**HIT-4**	176	126.9
17.8	**12.67**	**0**	**HIT-5**	178	126.7
18	**12.65**	**0**	**HIT-6**	180	126.5
18.2	**12.63**	**0**	**HIT-7**	182	126.3
18.4	**12.61**	**0**	**HIT-8**	184	126.1
18.6	**12.59**	**0**	**HIT-9**	186	125.9
18.8	**12.57**	**0**	**HIT-10**	188	125.7
19	**12.55**	**0**	**HIT-11**	190	125.5
19.2	**12.53**	**0**	**HIT-12**	192	125.3
19.4	**12.51**	**0**	**HIT-13**	194	125.1
19.6	**12.54**	**0**	**IJT-1**	196	125.4
19.8	**12.62**	**0**	**IJT-2**	198	126.2
20	**12.7**	**0**	**IJT-3**	200	127
20.2	**12.78**	**0**	**IJT-4**	202	127.8
20.4	**12.86**	**0**	**IJT-5**	204	128.6
20.6	**12.94**	**0**	**IJT-6**	206	129.4
20.8	**13.02**	**0**	**IJT-7**	208	130.2
21	**13.1**	**0**	**IJT-8**	210	131
21.2	**13.18**	**0**	**IJT-9**	212	131.8
21.4	**13.26**	**0**	**IJT-10**	214	132.6
21.6	**13.34**	**0**	**IJT-11**	216	133.4
21.8	**13.42**	**0**	**IJT-12**	218	134.2
21.9	**13.46**	**0**	**IJT-13**	219	134.6
22.1	**13.6**	**0**	**JABT-1**	221	136
22.2	**13.7**	**0**	**JABT-2**	222	137
22.3	**13.8**	**0**	**JABT-3**	223	138
22.4	**13.9**	**0**	**JABT-4**	224	139
22.5571	**14.1**	**0**	**JKT-1**	225.5714	141
22.6143	**14.2**	**0**	**JKT-2**	226.1428	142
22.7286	**14.4**	**0**	**JKT-3**	227.2856	144
22.8428	**14.6**	**0**	**JKT-4**	228.4284	146
22.9571	**14.8**	**0**	**JKT-5**	229.5712	148
23.0714	**15**	**0**	**JKT-6**	230.714	150

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
23.1857	**15.2**	**0**	**JKT-7**	231.8568	152
23.3	**15.4**	**0**	**JKT-8**	232.9996	154
23.4142	**15.6**	**0**	**JKT-9**	234.1424	156
23.5285	**15.8**	**0**	**JKT-10**	235.2852	158
23.6428	**16**	**0**	**JKT-11**	236.428	160
23.7571	**16.2**	**0**	**JKT-12**	237.5708	162
23.8714	**16.4**	**0**	**JKT-13**	238.7136	164
23.9856	**16.6**	**0**	**JKT-14**	239.8564	166
24.0999	**16.8**	**0**	**JKT-15**	240.9992	168
24.2142	**17**	**0**	**JKT-16**	242.142	170
24.3285	**17.2**	**0**	**JKT-17**	243.2848	172
24.4428	**17.4**	**0**	**JKT-18**	244.4276	174
24.6	**17.5**	**0**	**KLT-1**	246	175
24.8	**17.5**	**0**	**KLT-2**	248	175
25	**17.5**	**0**	**KLT-3**	250	175
25.2	**17.5**	**0**	**KLT-4**	252	175
25.4	**17.5**	**0**	**KLT-5**	254	175
25.6	**17.5**	**0**	**KLT-6**	256	175
25.8	**17.5**	**0**	**KLT-7**	258	175
26	**17.5**	**0**	**KLT-8**	260	175
26.2	**17.5**	**0**	**KLT-9**	262	175
26.4	**17.5**	**0**	**KLT-10**	264	175
26.6	**17.5**	**0**	**KLT-11**	266	175
26.8	**17.5**	**0**	**KLT-12**	268	175
26.9	**17.5**	**0**	**KLT-13**	269	175
27.0143	**17.4**	**0**	**LMT-1**	270.1428	174
27.0429	**17.2**	**0**	**LMT-1**	270.4285	172
27.0714	**17**	**0**	**LMT-1**	270.7142	170
27.1	**16.8**	**0**	**LMT-1**	270.9999	168
27.1286	**16.6**	**0**	**LMT-1**	271.2856	166
27.1571	**16.4**	**0**	**LMT-1**	271.5713	164
27.1857	**16.2**	**0**	**LMT-1**	271.857	162
27.2143	**16**	**0**	**LMT-1**	272.1427	160
27.2428	**15.8**	**0**	**LMT-1**	272.4284	158
27.2714	**15.6**	**0**	**LMT-1**	272.7141	156
27.3	**15.4**	**0**	**LMT-1**	272.9998	154
27.3286	**15.2**	**0**	**LMT-1**	273.2855	152
27.3571	**15**	**0**	**LMT-1**	273.5712	150
27.3857	**14.8**	**0**	**LMT-1**	273.8569	148
27.4143	**14.6**	**0**	**LMT-1**	274.1426	146
27.4428	**14.4**	**0**	**LMT-1**	274.4283	144
27.4714	**14.2**	**0**	**LMT-1**	274.714	142
27.4857	**14.1**	**0**	**LMT-1**	274.857	141
27.0125	**10.1**	**0**	**MRT-1**	270.125	101

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
27.025	**10.2**	**0**	**MRT-2**	270.25	102
27.05	**10.4**	**0**	**MRT-3**	270.5	104
27.075	**10.6**	**0**	**MRT-4**	270.75	106
27.1	**10.8**	**0**	**MRT-5**	271	108
27.125	**11**	**0**	**MRT-6**	271.25	110
27.15	**11.2**	**0**	**MRT-7**	271.5	112
27.175	**11.4**	**0**	**MRT-8**	271.75	114
27.2	**11.6**	**0**	**MRT-9**	272	116
27.225	**11.8**	**0**	**MRT-10**	272.25	118
27.25	**12**	**0**	**MRT-11**	272.5	120
27.275	**12.2**	**0**	**MRT-12**	272.75	122
27.3	**12.4**	**0**	**MRT-13**	273	124
27.325	**12.6**	**0**	**MRT-14**	273.25	126
27.35	**12.8**	**0**	**MRT-15**	273.5	128
27.375	**13**	**0**	**MRT-16**	273.75	130
27.4	**13.2**	**0**	**MRT-17**	274	132
27.425	**13.4**	**0**	**MRT-18**	274.25	134
27.45	**13.6**	**0**	**MRT-19**	274.5	136
27.475	**13.8**	**0**	**MRT-20**	274.75	138
27.4875	**13.9**	**0**	**MRT-21**	274.875	139
0.5	**5.9**	**0**	**ALS-1**	5	59
0.5	**5.8**	**0**	**ALS-2**	5	58
0.5	**5.6**	**0**	**ALS-3**	5	56
0.5	**5.4**	**0**	**ALS-4**	5	54
0.5	**5.2**	**0**	**ALS-5**	5	52
0.5	**5**	**0**	**ALS-6**	5	50
0.5	**4.8**	**0**	**ALS-7**	5	48
0.5	**4.6**	**0**	**ALS-8**	5	46
0.5	**4.4**	**0**	**ALS-9**	5	44
0.5	**4.2**	**0**	**ALS-10**	5	42
0.5	**4.1**	**0**	**ALS-11**	5	41
0.6	**4.05**	**0**	**ABS-1**	6	40.5
0.8	**4.15**	**0**	**ABS-2**	8	41.5
1	**4.25**	**0**	**ABS-3**	10	42.5
1.2	**4.35**	**0**	**ABS-4**	12	43.5
1.4	**4.45**	**0**	**ABS-5**	14	44.5
1.6	**4.55**	**0**	**ABS-6**	16	45.5
1.8	**4.65**	**0**	**ABS-7**	18	46.5
1.9	**4.7**	**0**	**ABS-8**	19	47
2.1	**4.74**	**0**	**BCS-1**	21	47.4
2.2	**4.73**	**0**	**BCS-2**	22	47.3
2.4	**4.71**	**0**	**BCS-3**	24	47.1
2.6	**4.69**	**0**	**BCS-4**	26	46.9
2.8	**4.67**	**0**	**BCS-5**	28	46.7

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
3	4.65	0	BCS-6	30	46.5
3.2	4.63	0	BCS-7	32	46.3
3.4	4.61	0	BCS-8	34	46.1
3.6	4.59	0	BCS-9	36	45.9
3.8	4.57	0	BCS-10	38	45.7
4	4.55	0	BCS-11	40	45.5
4.2	4.53	0	BCS-12	42	45.3
4.4	4.51	0	BCS-13	44	45.1
4.6	4.48	0	CDS-1	46	44.8
4.8	4.44	0	CDS-2	48	44.4
5	4.4	0	CDS-3	50	44
5.2	4.36	0	CDS-4	52	43.6
5.4	4.32	0	CDS-5	54	43.2
5.6	4.28	0	CDS-6	56	42.8
5.8	4.24	0	CDS-7	58	42.4
6	4.2	0	CDS-8	60	42
6.2	4.16	0	CDS-9	62	41.6
6.4	4.12	0	CDS-10	64	41.2
6.6	4.08	0	CDS-11	66	40.8
6.8	4.04	0	CDS-12	68	40.4
6.9	4.02	0	CDS-13	69	40.2
7.1	3.98	0	DES-1	71	39.8
7.2	3.96	0	DES-2	72	39.6
7.4	3.92	0	DES-3	74	39.2
7.6	3.88	0	DES-4	76	38.8
7.8	3.84	0	DES-5	78	38.4
8	3.8	0	DES-6	80	38
8.2	3.76	0	DES-7	82	37.6
8.4	3.72	0	DES-8	84	37.2
8.6	3.68	0	DES-9	86	36.8
8.8	3.64	0	DES-10	88	36.4
9	3.6	0	DES-11	90	36
9.2	3.56	0	DES-12	92	35.6
9.4	3.52	0	DES-13	94	35.2
9.6	3.48	0	EFS-1	96	34.8
9.8	3.44	0	EFS-2	98	34.4
10	3.4	0	EFS-3	100	34
10.2	3.36	0	EFS-4	102	33.6
10.4	3.32	0	EFS-4	104	33.2
10.6	3.28	0	EFS-5	106	32.8
10.8	3.24	0	EFS-6	108	32.4
11	3.2	0	EFS-7	110	32
11.2	3.16	0	EFS-8	112	31.6
11.4	3.12	0	EFS-9	114	31.2

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
11.6	**3.08**	**0**	**EFS-10**	116	30.8
11.8	**3.04**	**0**	**EFS-11**	118	30.4
11.9	**3.02**	**0**	**EFS-12**	119	30.2
12.1	**2.98**	**0**	**FGS-1**	121	29.8
12.2	**2.96**	**0**	**FGS-2**	122	29.6
12.4	**2.92**	**0**	**FGS-3**	124	29.2
12.6	**2.88**	**0**	**FGS-4**	126	28.8
12.8	**2.84**	**0**	**FGS-5**	128	28.4
13	**2.8**	**0**	**FGS-6**	130	28
13.2	**2.76**	**0**	**FGS-7**	132	27.6
13.4	**2.72**	**0**	**FGS-8**	134	27.2
13.6	**2.68**	**0**	**FGS-9**	136	26.8
13.8	**2.64**	**0**	**FGS-10**	138	26.4
14	**2.6**	**0**	**FGS-11**	140	26
14.2	**2.56**	**0**	**FGS-12**	142	25.6
14.4	**2.52**	**0**	**FGS-13**	144	25.2
14.6	**2.48**	**0**	**GHS-1**	146	24.8
14.8	**2.44**	**0**	**GHS-2**	148	24.4
15	**2.4**	**0**	**GHS-3**	150	24
15.2	**2.36**	**0**	**GHS-4**	152	23.6
15.4	**2.32**	**0**	**GHS-5**	154	23.2
15.6	**2.28**	**0**	**GHS-6**	156	22.8
15.8	**2.24**	**0**	**GHS-7**	158	22.4
16	**2.2**	**0**	**GHS-8**	160	22
16.2	**2.16**	**0**	**GHS-9**	162	21.6
16.4	**2.12**	**0**	**GHS-10**	164	21.2
16.6	**2.08**	**0**	**GHS-11**	166	20.8
16.8	**2.04**	**0**	**GHS-12**	168	20.4
16.9	**2.02**	**0**	**GHS-13**	169	20.2
17.1	**1.98**	**0**	**HIS-1**	171	19.8
17.2	**1.96**	**0**	**HIS-2**	172	19.6
17.4	**1.92**	**0**	**HIS-3**	174	19.2
17.6	**1.88**	**0**	**HIS-4**	176	18.8
17.8	**1.84**	**0**	**HIS-5**	178	18.4
18	**1.8**	**0**	**HIS-6**	180	18
18.2	**1.76**	**0**	**HIS-7**	182	17.6
18.4	**1.72**	**0**	**HIS-8**	184	17.2
18.6	**1.68**	**0**	**HIS-9**	186	16.8
18.8	**1.64**	**0**	**HIS-10**	188	16.4
19	**1.6**	**0**	**HIS-11**	190	16
19.2	**1.56**	**0**	**HIS-12**	192	15.6
19.4	**1.52**	**0**	**HIS-13**	194	15.2
19.6	**1.46**	**0**	**IJS-1**	196	14.6

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
19.8	**1.38**	**0**	**IJS-2**	198	13.8
20	**1.3**	**0**	**IJS-3**	200	13
20.2	**1.22**	**0**	**IJS-4**	202	12.2
20.4	**1.14**	**0**	**IJS-5**	204	11.4
20.6	**1.06**	**0**	**IJS-6**	206	10.6
20.8	**0.98**	**0**	**IJS-7**	208	9.8
21	**0.9**	**0**	**IJS-8**	210	9
21.2	**0.82**	**0**	**IJS-9**	212	8.2
21.4	**0.74**	**0**	**IJS-10**	214	7.4
21.6	**0.66**	**0**	**IJS-11**	216	6.6
21.8	**0.58**	**0**	**IJS-12**	218	5.8
21.9	**0.54**	**0**	**IJS-13**	219	5.4
22.1	**0.6**	**0**	**JKS-1**	221	6
22.2	**0.7**	**0**	**JKS-2**	222	7
22.4	**0.9**	**0**	**JKS-3**	224	9
22.6	**1.1**	**0**	**JKS-4**	226	11
22.8	**1.3**	**0**	**JKS-5**	228	13
23	**1.5**	**0**	**JKS-6**	230	15
23.2	**1.7**	**0**	**JKS-7**	232	17
23.4	**1.9**	**0**	**JKS-8**	234	19
23.6	**2.1**	**0**	**JKS-9**	236	21
23.8	**2.3**	**0**	**JKS-10**	238	23
24	**2.5**	**0**	**JKS-11**	240	25
24.2	**2.7**	**0**	**JKS-12**	242	27
24.4	**2.9**	**0**	**JKS-13**	244	29
24.6	**3.04**	**0**	**KLS-1**	246	30.4
24.8	**3.12**	**0**	**KLS-2**	248	31.2
25	**3.2**	**0**	**KLS-3**	250	32
25.2	**3.28**	**0**	**KLS-4**	252	32.8
25.4	**3.36**	**0**	**KLS-5**	254	33.6
25.6	**3.44**	**0**	**KLS-6**	256	34.4
25.8	**3.52**	**0**	**KLS-7**	258	35.2
26	**3.6**	**0**	**KLS-8**	260	36
26.2	**3.68**	**0**	**KLS-9**	262	36.8
26.4	**3.76**	**0**	**KLS-10**	264	37.6
26.6	**3.84**	**0**	**KLS-11**	266	38.4
26.8	**3.92**	**0**	**KLS-12**	268	39.2
26.9	**3.96**	**0**	**KLS-13**	269	39.6
27	**4.1**	**0**	**LRS-1**	270	41
27	**4.2**	**0**	**LRS-2**	270	42
27	**4.4**	**0**	**LRS-3**	270	44
27	**4.6**	**0**	**LRS-4**	270	46
27	**4.8**	**0**	**LRS-5**	270	48
27	**5**	**0**	**LRS-6**	270	50

X	Y	Z (Velocity)	Station Name	X Plot	Y Plot
27	**5.2**	**0**	**LRS-7**	270	52
27	**5.4**	**0**	**LRS-8**	270	54
27	**5.6**	**0**	**LRS-9**	270	56
27	**5.8**	**0**	**LRS-10**	270	58
27	**5.9**	**0**	**LRS-11**	270	59
27	**6.1**	**0**	**RTS-1**	270	61
27	**6.2**	**0**	**RTS-2**	270	62
27	**6.4**	**0**	**RTS-3**	270	64
27	**6.6**	**0**	**RTS-4**	270	66
27	**6.8**	**0**	**RTS-5**	270	68
27	**7**	**0**	**RTS-6**	270	70
27	**7.2**	**0**	**RTS-7**	270	72
27	**7.4**	**0**	**RTS-8**	270	74
27	**7.6**	**0**	**RTS-9**	270	76
27	**7.8**	**0**	**RTS-10**	270	78
27	**8**	**0**	**RTS-11**	270	80
27	**8.2**	**0**	**RTS-12**	270	82
27	**8.4**	**0**	**RTS-13**	270	84
27	**8.6**	**0**	**RTS-14**	270	86
27	**8.8**	**0**	**RTS-15**	270	88
27	**9**	**0**	**RTS-16**	270	90
27	**9.2**	**0**	**RTS-17**	270	92
27	**9.4**	**0**	**RTS-18**	270	94
27	**9.6**	**0**	**RTS-19**	270	96
27	**9.8**	**0**	**RTS-20**	270	98
27	**9.9**	**0**	**RTS-21**	270	99

OPEN CHANNEL
CALIBRATION CERTIFICATE

P/N: 2000 Serial Number: 2006103

Sensor Number: 2974

Type of Reading

Velocity: FPS

Level:

☐ IN
☒ N/A

	Static Velocity	Dynamic Velocity	Level
Standard:	Zero	1.94	N/A
Measured:	-0.01	1.92	N/A
Tolerance:	± 0.05 FPS	± 2%	± 0.4 in.

Calibration Technician: 4221 Date: 4/17/15

Calibration is traceable to the National Institute of Standards and Technology (NIST), Gaithersburg, MD. For Product information, service, or calibration, please contact the Customer Service Department.

HACH®

MARSH McBIRNEY SIGMA

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APPENDIX II

TESTAMERICA LABORATORIES INC.

ANALYTICAL REPORTS

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tampa
6712 Benjamin Road
Suite 100
Tampa, FL 33634
Tel: (813)885-7427

TestAmerica Job ID: 660-67626-1
Client Project/Site: POE Hydrology

For:
Alachua County
Environmental Protection Department
408 W University Avenue
Suite 106
Gainesville, Florida 32601

Attn: Robin Hallbourg

Authorized for release by:
7/1/2015 1:30:09 PM

Nancy Robertson, Project Manager II
(813)885-7427
nancy.robertson@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Table of Contents

Sample Summary

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67626-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
660-67626-1	Poe	Water	06/23/15 15:45	06/25/15 08:30
660-67626-2	Upstream Vent Cluster	Water	06/23/15 14:18	06/25/15 08:30
660-67626-3	Fence line Spring	Water	06/23/15 12:00	06/25/15 08:30
660-67626-4	Fence line flowing sink	Water	06/23/15 11:30	06/25/15 08:30
660-67626-5	Watermelon 3	Water	06/23/15 15:25	06/25/15 08:30
660-67626-6	PR Vent	Water	06/23/15 14:30	06/25/15 08:30
660-67626-7	Twin Cypress	Water	06/23/15 13:15	06/25/15 08:30
660-67626-8	Twin Cypress # 2	Water	06/23/15 13:10	06/25/15 08:30
660-67626-9	Watermelon # 2	Water	06/23/15 14:50	06/25/15 08:30
660-67626-10	3 Vent Run	Water	06/23/15 13:55	06/25/15 08:30

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Job ID: 660-67626-1

Laboratory: TestAmerica Tampa

Narrative

Job Narrative
660-67626-1

Comments
No additional comments.

Receipt
The samples were received on 6/25/2015 8:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.5º C.

HPLC/IC
No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method 110.2: The following samples were received outside of holding time for color: Poe (660-67626-1), Upstream Vent Cluster (660-67626-2), Fence line Spring (660-67626-3), Fence line flowing sink (660-67626-4), Watermelon 3 (660-67626-5), PR Vent (660-67626-6), Twin Cypress (660-67626-7), Twin Cypress # 2 (660-67626-8), Watermelon # 2 (660-67626-9), 3 Vent Run (660-67626-10) and (660-67626-A-1 DU). The samples are qualified with Q.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
U	Indicates that the compound was analyzed for but not detected.

Metals

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

General Chemistry

Qualifier	Qualifier Description
Q	Sample held beyond the accepted holding time.
U	Indicates that the compound was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67626-1

Client Sample ID: Poe — Lab Sample ID: 660-67626-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	17		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	76		0.50	0.17	mg/L	1		200.8	Total/NA
Potassium	0.84	I	1.0	0.33	mg/L	1		200.8	Total/NA
Magnesium	6.8		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	8.0		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.19		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.0		1.0	0.50	mg/L	1		9060A	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	5.0	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	180		5.0	5.0	mg/L	1		2320B-2011	Total/NA

Client Sample ID: Upstream Vent Cluster — Lab Sample ID: 660-67626-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	13		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	20		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	80		0.50	0.17	mg/L	1		200.8	Total/NA
Potassium	0.96	I	1.0	0.33	mg/L	1		200.8	Total/NA
Magnesium	7.3		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	8.6		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.30		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.0		1.0	0.50	mg/L	1		9060A	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	10	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	180		5.0	5.0	mg/L	1		2320B-2011	Total/NA

Client Sample ID: Fence line Spring — Lab Sample ID: 660-67626-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	29		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	80		0.50	0.17	mg/L	1		200.8	Total/NA
Potassium	1.0		1.0	0.33	mg/L	1		200.8	Total/NA
Magnesium	8.0		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	9.5		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.19		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.5		1.0	0.50	mg/L	1		9060A	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	10	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	180		5.0	5.0	mg/L	1		2320B-2011	Total/NA

Client Sample ID: Fence line flowing sink — Lab Sample ID: 660-67626-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	29		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	80		0.50	0.17	mg/L	1		200.8	Total/NA
Iron	0.044	I	0.10	0.044	mg/L	1		200.8	Total/NA
Potassium	1.1		1.0	0.33	mg/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: Fence line flowing sink (Continued)

Lab Sample ID: 660-67626-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Magnesium	8.0		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	9.8		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.16		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	41		1.0	0.50	mg/L	1		9060A	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	10	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	160		5.0	5.0	mg/L	1		2320B-2011	Total/NA

Client Sample ID: Watermelon 3

Lab Sample ID: 660-67626-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	11		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	12		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	77		0.50	0.17	mg/L	1		200.8	Total/NA
Potassium	0.75	I	1.0	0.33	mg/L	1		200.8	Total/NA
Magnesium	6.7		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	7.1		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.37		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	1.3		1.0	0.50	mg/L	1		9060A	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	5.0	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	190		5.0	5.0	mg/L	1		2320B-2011	Total/NA

Client Sample ID: PR Vent

Lab Sample ID: 660-67626-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	39		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	81		0.50	0.17	mg/L	1		200.8	Total/NA
Iron	0.16		0.10	0.044	mg/L	1		200.8	Total/NA
Potassium	1.0		1.0	0.33	mg/L	1		200.8	Total/NA
Magnesium	9.5		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	9.3		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.30		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.2		1.0	0.50	mg/L	1		9060A	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	10	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	170		5.0	5.0	mg/L	1		2320B-2011	Total/NA

Client Sample ID: Twin Cypress

Lab Sample ID: 660-67626-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	32		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	80		0.50	0.17	mg/L	1		200.8	Total/NA
Potassium	1.0		1.0	0.33	mg/L	1		200.8	Total/NA
Magnesium	8.7		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	9.5		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.39		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.3		1.0	0.50	mg/L	1		9060A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: Twin Cypress (Continued) — Lab Sample ID: 660-67626-7

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	10	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	170		5.0	5.0	mg/L	1		2320B-2011	Total/NA

Client Sample ID: Twin Cypress # 2 — Lab Sample ID: 660-67626-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	34		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	73		0.50	0.17	mg/L	1		200.8	Total/NA
Iron	0.059	I	0.10	0.044	mg/L	1		200.8	Total/NA
Potassium	0.99	I	1.0	0.33	mg/L	1		200.8	Total/NA
Magnesium	8.0		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	8.7		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.39		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.3		1.0	0.50	mg/L	1		9060A	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	15	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	180		5.0	5.0	mg/L	1		2320B-2011	Total/NA

Client Sample ID: Watermelon # 2 — Lab Sample ID: 660-67626-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	13		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	19		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	84		0.50	0.17	mg/L	1		200.8	Total/NA
Iron	0.064	I	0.10	0.044	mg/L	1		200.8	Total/NA
Potassium	0.98	I	1.0	0.33	mg/L	1		200.8	Total/NA
Magnesium	8.0		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	8.9		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.20		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	1.8		1.0	0.50	mg/L	1		9060A	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	15	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	180		5.0	5.0	mg/L	1		2320B-2011	Total/NA

Client Sample ID: 3 Vent Run — Lab Sample ID: 660-67626-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	33		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	80		0.50	0.17	mg/L	1		200.8	Total/NA
Iron	0.078	I	0.10	0.044	mg/L	1		200.8	Total/NA
Potassium	1.1		1.0	0.33	mg/L	1		200.8	Total/NA
Magnesium	9.0		0.25	0.10	mg/L	1		200.8	Total/NA
Sodium	9.4		0.50	0.17	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.27		0.050	0.010	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.2		1.0	0.50	mg/L	1		9060A	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Color, True	15	Q	5.0	5.0	PCU	1		110.2	Total/NA
Alkalinity	170		5.0	5.0	mg/L	1		2320B-2011	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: Poe

Lab Sample ID: 660-67626-1

Date Collected: 06/23/15 15:45
Matrix: Water
Date Received: 06/25/15 08:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12		0.50	0.20	mg/L			06/26/15 14:26	1
Sulfate	17		1.0	0.40	mg/L			06/26/15 14:26	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	76		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:40	1
Iron	0.044	U	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 19:40	1
Potassium	0.84	I	1.0	0.33	mg/L		06/29/15 13:42	06/30/15 19:40	1
Magnesium	6.8		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 19:40	1
Sodium	8.0		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.19		0.050	0.010	mg/L			06/26/15 13:11	1
Total Organic Carbon	2.0		1.0	0.50	mg/L			06/30/15 02:57	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	5.0	Q	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	180		5.0	5.0	mg/L			06/29/15 19:43	1

Client Sample ID: Upstream Vent Cluster

Lab Sample ID: 660-67626-2

Date Collected: 06/23/15 14:18
Matrix: Water
Date Received: 06/25/15 08:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13		0.50	0.20	mg/L			06/26/15 14:41	1
Sulfate	20		1.0	0.40	mg/L			06/26/15 14:41	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	80		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:45	1
Iron	0.044	U	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 19:45	1
Potassium	0.96	I	1.0	0.33	mg/L		06/29/15 13:42	06/30/15 19:45	1
Magnesium	7.3		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 19:45	1
Sodium	8.6		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.30		0.050	0.010	mg/L			06/26/15 13:16	1
Total Organic Carbon	2.0		1.0	0.50	mg/L			06/30/15 04:06	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	10	Q	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	180		5.0	5.0	mg/L			06/29/15 19:36	1

Client Sample ID: Fence line Spring

Lab Sample ID: 660-67626-3
Date Collected: 06/23/15 12:00
Matrix: Water
Date Received: 06/25/15 08:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**14**		0.50	0.20	mg/L			06/26/15 14:57	1
Sulfate	**29**		1.0	0.40	mg/L			06/26/15 14:57	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**80**		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:50	1
Iron	0.044	U	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 19:50	1
Potassium	**1.0**		1.0	0.33	mg/L		06/29/15 13:42	06/30/15 19:50	1
Magnesium	**8.0**		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 19:50	1
Sodium	**9.5**		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**0.19**		0.050	0.010	mg/L			06/26/15 13:17	1
Total Organic Carbon	**2.5**		1.0	0.50	mg/L			06/30/15 04:33	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	**10**	**Q**	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	**180**		5.0	5.0	mg/L			06/29/15 19:28	1

Client Sample ID: Fence line flowing sink

Lab Sample ID: 660-67626-4
Date Collected: 06/23/15 11:30
Matrix: Water
Date Received: 06/25/15 08:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**14**		0.50	0.20	mg/L			06/26/15 15:12	1
Sulfate	**29**		1.0	0.40	mg/L			06/26/15 15:12	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**80**		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:55	1
Iron	**0.044**	**I**	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 19:55	1
Potassium	**1.1**		1.0	0.33	mg/L		06/29/15 13:42	06/30/15 19:55	1
Magnesium	**8.0**		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 19:55	1
Sodium	**9.8**		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**0.16**		0.050	0.010	mg/L			06/26/15 13:18	1
Total Organic Carbon	**41**		1.0	0.50	mg/L			06/30/15 04:55	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	**10**	**Q**	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	**160**		5.0	5.0	mg/L			06/29/15 19:20	1

Client Sample Results

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67626-1

Client Sample ID: Watermelon 3

Lab Sample ID: 660-67626-5

Date Collected: 06/23/15 15:25
Date Received: 06/25/15 08:30

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	11		0.50	0.20	mg/L			06/26/15 15:28	1
Sulfate	12		1.0	0.40	mg/L			06/26/15 15:28	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	77		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:00	1
Iron	0.044	U	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 20:00	1
Potassium	0.75	I	1.0	0.33	mg/L		06/29/15 13:42	06/30/15 20:00	1
Magnesium	6.7		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 20:00	1
Sodium	7.1		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.37		0.050	0.010	mg/L			06/26/15 13:19	1
Total Organic Carbon	1.3		1.0	0.50	mg/L			06/30/15 05:23	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	5.0	Q	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	190		5.0	5.0	mg/L			06/29/15 19:05	1

Client Sample ID: PR Vent

Lab Sample ID: 660-67626-6

Date Collected: 06/23/15 14:30
Date Received: 06/25/15 08:30

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		0.50	0.20	mg/L			06/26/15 15:43	1
Sulfate	39		1.0	0.40	mg/L			06/26/15 15:43	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	81		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:05	1
Iron	0.16		0.10	0.044	mg/L		06/29/15 13:42	06/30/15 20:05	1
Potassium	1.0		1.0	0.33	mg/L		06/29/15 13:42	06/30/15 20:05	1
Magnesium	9.5		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 20:05	1
Sodium	9.3		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.30		0.050	0.010	mg/L			06/26/15 13:21	1
Total Organic Carbon	2.2		1.0	0.50	mg/L			06/30/15 05:46	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	10	Q	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	170		5.0	5.0	mg/L			06/29/15 19:12	1

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67626-1

Client Sample ID: Twin Cypress

Lab Sample ID: 660-67626-7
Date Collected: 06/23/15 13:15
Matrix: Water
Date Received: 06/25/15 08:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		0.50	0.20	mg/L			06/26/15 15:58	1
Sulfate	32		1.0	0.40	mg/L			06/26/15 15:58	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	80		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:10	1
Iron	0.044	U	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 20:10	1
Potassium	1.0		1.0	0.33	mg/L		06/29/15 13:42	06/30/15 20:10	1
Magnesium	8.7		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 20:10	1
Sodium	9.5		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.39		0.050	0.010	mg/L			06/26/15 13:22	1
Total Organic Carbon	2.3		1.0	0.50	mg/L			06/30/15 06:08	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	10	Q	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	170		5.0	5.0	mg/L			06/29/15 18:58	1

Client Sample ID: Twin Cypress # 2

Lab Sample ID: 660-67626-8
Date Collected: 06/23/15 13:10
Matrix: Water
Date Received: 06/25/15 08:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		0.50	0.20	mg/L			06/26/15 16:14	1
Sulfate	34		1.0	0.40	mg/L			06/26/15 16:14	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	73		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:25	1
Iron	0.059	I	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 20:25	1
Potassium	0.99	I	1.0	0.33	mg/L		06/29/15 13:42	06/30/15 20:25	1
Magnesium	8.0		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 20:25	1
Sodium	8.7		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.39		0.050	0.010	mg/L			06/26/15 13:23	1
Total Organic Carbon	2.3		1.0	0.50	mg/L			06/30/15 06:35	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	15	Q	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	180		5.0	5.0	mg/L			06/29/15 18:43	1

Client Sample ID: Watermelon # 2
Lab Sample ID: 660-67626-9
Date Collected: 06/23/15 14:50
Matrix: Water
Date Received: 06/25/15 08:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13		0.50	0.20	mg/L			06/26/15 19:40	1
Sulfate	19		1.0	0.40	mg/L			06/26/15 19:40	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	84		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:30	1
Iron	0.064	I	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 20:30	1
Potassium	0.98	I	1.0	0.33	mg/L		06/29/15 13:42	06/30/15 20:30	1
Magnesium	8.0		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 20:30	1
Sodium	8.9		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.20		0.050	0.010	mg/L			06/26/15 13:25	1
Total Organic Carbon	1.8		1.0	0.50	mg/L			06/30/15 07:30	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	15	Q	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	180		5.0	5.0	mg/L			06/29/15 18:50	1

Client Sample ID: 3 Vent Run
Lab Sample ID: 660-67626-10
Date Collected: 06/23/15 13:55
Matrix: Water
Date Received: 06/25/15 08:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		0.50	0.20	mg/L			06/26/15 19:55	1
Sulfate	33		1.0	0.40	mg/L			06/26/15 19:55	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	80		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:35	1
Iron	0.078	I	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 20:35	1
Potassium	1.1		1.0	0.33	mg/L		06/29/15 13:42	06/30/15 20:35	1
Magnesium	9.0		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 20:35	1
Sodium	9.4		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 20:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.27		0.050	0.010	mg/L			06/26/15 13:29	1
Total Organic Carbon	2.2		1.0	0.50	mg/L			06/30/15 07:57	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	15	Q	5.0	5.0	PCU			06/26/15 15:48	1
Alkalinity	170		5.0	5.0	mg/L			06/29/15 18:16	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 680-389315/2
Matrix: Water
Analysis Batch: 389315

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.20	U	0.50	0.20	mg/L			06/26/15 09:36	1
Sulfate	0.40	U	1.0	0.40	mg/L			06/26/15 09:36	1

Lab Sample ID: LCS 680-389315/3
Matrix: Water
Analysis Batch: 389315

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.86		mg/L		99	90 - 110
Sulfate	10.0	10.0		mg/L		100	90 - 110

Lab Sample ID: LCSD 680-389315/4
Matrix: Water
Analysis Batch: 389315

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	9.87		mg/L		99	90 - 110	0	30
Sulfate	10.0	10.1		mg/L		101	90 - 110	1	30

Lab Sample ID: 660-67626-8 MS
Matrix: Water
Analysis Batch: 389315

Client Sample ID: Twin Cypress # 2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	14		10.0	23.5		mg/L		98	80 - 120
Sulfate	34		10.0	43.5		mg/L		96	80 - 120

Lab Sample ID: 660-67626-8 MSD
Matrix: Water
Analysis Batch: 389315

Client Sample ID: Twin Cypress # 2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	14		10.0	23.6		mg/L		99	80 - 120	0	30
Sulfate	34		10.0	43.6		mg/L		97	80 - 120	0	30

Lab Sample ID: LCS 680-389374/35
Matrix: Water
Analysis Batch: 389374

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.0		mg/L		100	90 - 110
Sulfate	10.0	9.83		mg/L		98	90 - 110

Lab Sample ID: LCSD 680-389374/36
Matrix: Water
Analysis Batch: 389374

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.0		mg/L		100	90 - 110	0	30

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 680-389374/36
Matrix: Water
Analysis Batch: 389374

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	10.0	9.93		mg/L		99	90 - 110	1	30

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 680-389591/1-A
Matrix: Water
Analysis Batch: 389880

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389591

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	0.17	U	0.50	0.17	mg/L		06/29/15 13:42	06/30/15 18:25	1
Iron	0.044	U	0.10	0.044	mg/L		06/29/15 13:42	06/30/15 18:25	1
Potassium	0.33	U	1.0	0.33	mg/L		06/29/15 13:42	06/30/15 18:25	1
Magnesium	0.10	U	0.25	0.10	mg/L		06/29/15 13:42	06/30/15 18:25	1
Sodium	0.17	U	0.50	0.17	mg/L		06/29/15 13:42	06/30/15 18:25	1

Lab Sample ID: LCS 680-389591/2-A
Matrix: Water
Analysis Batch: 389880

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389591

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	5.00	5.38		mg/L		108	85 - 115
Iron	5.00	5.36		mg/L		107	85 - 115
Potassium	5.00	5.34		mg/L		107	85 - 115
Magnesium	5.00	5.18		mg/L		104	85 - 115
Sodium	5.00	5.24		mg/L		105	85 - 115

Method: 110.2 - Color, True, Colorimetric

Lab Sample ID: MB 680-389421/4
Matrix: Water
Analysis Batch: 389421

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Color, True	5.0	U	5.0	5.0	PCU			06/26/15 15:48	1

Lab Sample ID: 660-67626-1 DU
Matrix: Water
Analysis Batch: 389421

Client Sample ID: Poe
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Color, True	5.0	Q	5.00		PCU		0	30

QC Sample Results

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67626-1

Method: 2320B-2011 - Alkalinity, Total

Lab Sample ID: MB 680-389663/5
Matrix: Water
Analysis Batch: 389663

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0	5.0	mg/L			06/29/15 17:23	1

Lab Sample ID: LCS 680-389663/6
Matrix: Water
Analysis Batch: 389663

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			250	248		mg/L		99	80 - 120		

Lab Sample ID: LCSD 680-389663/27
Matrix: Water
Analysis Batch: 389663

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity			250	250		mg/L		100	80 - 120	0	30

Lab Sample ID: 660-67626-1 DU
Matrix: Water
Analysis Batch: 389663

Client Sample ID: Poe
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Alkalinity	180			183		mg/L				0.4	30

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-389350/13
Matrix: Water
Analysis Batch: 389350

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.010	U	0.050	0.010	mg/L			06/26/15 12:30	1

Lab Sample ID: LCS 680-389350/15
Matrix: Water
Analysis Batch: 389350

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrate Nitrite as N			1.00	1.04		mg/L		104	90 - 110		

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 400-263081/32
Matrix: Water
Analysis Batch: 263081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.50	U	1.0	0.50	mg/L			06/30/15 02:05	1

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 400-263081/33
Matrix: Water
Analysis Batch: 263081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	10.1		mg/L		101	80 - 120

Lab Sample ID: MRL 400-263081/2
Matrix: Water
Analysis Batch: 263081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	1.00	1.13		mg/L		113	50 - 150

Lab Sample ID: 660-67626-1 MS
Matrix: Water
Analysis Batch: 263081

Client Sample ID: Poe
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	2.0		5.00	6.72		mg/L		95	76 - 117

Lab Sample ID: 660-67626-1 MSD
Matrix: Water
Analysis Batch: 263081

Client Sample ID: Poe
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	2.0		5.00	6.61		mg/L		93	76 - 117	2	16

1 2 3 4 5 6 7 8 9 10 11 12 13 14

HPLC/IC

Analysis Batch: 389315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67626-1	Poe	Total/NA	Water	300.0	
660-67626-2	Upstream Vent Cluster	Total/NA	Water	300.0	
660-67626-3	Fence line Spring	Total/NA	Water	300.0	
660-67626-4	Fence line flowing sink	Total/NA	Water	300.0	
660-67626-5	Watermelon 3	Total/NA	Water	300.0	
660-67626-6	PR Vent	Total/NA	Water	300.0	
660-67626-7	Twin Cypress	Total/NA	Water	300.0	
660-67626-8	Twin Cypress # 2	Total/NA	Water	300.0	
660-67626-8 MS	Twin Cypress # 2	Total/NA	Water	300.0	
660-67626-8 MSD	Twin Cypress # 2	Total/NA	Water	300.0	
LCS 680-389315/3	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-389315/4	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-389315/2	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 389374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67626-9	Watermelon # 2	Total/NA	Water	300.0	
660-67626-10	3 Vent Run	Total/NA	Water	300.0	
LCS 680-389374/35	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-389374/36	Lab Control Sample Dup	Total/NA	Water	300.0	

Metals

Prep Batch: 389591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67626-1	Poe	Total/NA	Water	200.8	
660-67626-2	Upstream Vent Cluster	Total/NA	Water	200.8	
660-67626-3	Fence line Spring	Total/NA	Water	200.8	
660-67626-4	Fence line flowing sink	Total/NA	Water	200.8	
660-67626-5	Watermelon 3	Total/NA	Water	200.8	
660-67626-6	PR Vent	Total/NA	Water	200.8	
660-67626-7	Twin Cypress	Total/NA	Water	200.8	
660-67626-8	Twin Cypress # 2	Total/NA	Water	200.8	
660-67626-9	Watermelon # 2	Total/NA	Water	200.8	
660-67626-10	3 Vent Run	Total/NA	Water	200.8	
LCS 680-389591/2-A	Lab Control Sample	Total/NA	Water	200.8	
MB 680-389591/1-A	Method Blank	Total/NA	Water	200.8	

Analysis Batch: 389880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67626-1	Poe	Total/NA	Water	200.8	389591
660-67626-2	Upstream Vent Cluster	Total/NA	Water	200.8	389591
660-67626-3	Fence line Spring	Total/NA	Water	200.8	389591
660-67626-4	Fence line flowing sink	Total/NA	Water	200.8	389591
660-67626-5	Watermelon 3	Total/NA	Water	200.8	389591
660-67626-6	PR Vent	Total/NA	Water	200.8	389591
660-67626-7	Twin Cypress	Total/NA	Water	200.8	389591
660-67626-8	Twin Cypress # 2	Total/NA	Water	200.8	389591
660-67626-9	Watermelon # 2	Total/NA	Water	200.8	389591
660-67626-10	3 Vent Run	Total/NA	Water	200.8	389591

Metals (Continued)

Analysis Batch: 389880 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-389591/2-A	Lab Control Sample	Total/NA	Water	200.8	389591
MB 680-389591/1-A	Method Blank	Total/NA	Water	200.8	389591

General Chemistry

Analysis Batch: 263081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67626-1	Poe	Total/NA	Water	9060A	
660-67626-1 MS	Poe	Total/NA	Water	9060A	
660-67626-1 MSD	Poe	Total/NA	Water	9060A	
660-67626-2	Upstream Vent Cluster	Total/NA	Water	9060A	
660-67626-3	Fence line Spring	Total/NA	Water	9060A	
660-67626-4	Fence line flowing sink	Total/NA	Water	9060A	
660-67626-5	Watermelon 3	Total/NA	Water	9060A	
660-67626-6	PR Vent	Total/NA	Water	9060A	
660-67626-7	Twin Cypress	Total/NA	Water	9060A	
660-67626-8	Twin Cypress # 2	Total/NA	Water	9060A	
660-67626-9	Watermelon # 2	Total/NA	Water	9060A	
660-67626-10	3 Vent Run	Total/NA	Water	9060A	
LCS 400-263081/33	Lab Control Sample	Total/NA	Water	9060A	
MB 400-263081/32	Method Blank	Total/NA	Water	9060A	
MRL 400-263081/2	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 389350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67626-1	Poe	Total/NA	Water	353.2	
660-67626-2	Upstream Vent Cluster	Total/NA	Water	353.2	
660-67626-3	Fence line Spring	Total/NA	Water	353.2	
660-67626-4	Fence line flowing sink	Total/NA	Water	353.2	
660-67626-5	Watermelon 3	Total/NA	Water	353.2	
660-67626-6	PR Vent	Total/NA	Water	353.2	
660-67626-7	Twin Cypress	Total/NA	Water	353.2	
660-67626-8	Twin Cypress # 2	Total/NA	Water	353.2	
660-67626-9	Watermelon # 2	Total/NA	Water	353.2	
660-67626-10	3 Vent Run	Total/NA	Water	353.2	
LCS 680-389350/15	Lab Control Sample	Total/NA	Water	353.2	
MB 680-389350/13	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 389421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67626-1	Poe	Total/NA	Water	110.2	
660-67626-1 DU	Poe	Total/NA	Water	110.2	
660-67626-2	Upstream Vent Cluster	Total/NA	Water	110.2	
660-67626-3	Fence line Spring	Total/NA	Water	110.2	
660-67626-4	Fence line flowing sink	Total/NA	Water	110.2	
660-67626-5	Watermelon 3	Total/NA	Water	110.2	
660-67626-6	PR Vent	Total/NA	Water	110.2	
660-67626-7	Twin Cypress	Total/NA	Water	110.2	
660-67626-8	Twin Cypress # 2	Total/NA	Water	110.2	
660-67626-9	Watermelon # 2	Total/NA	Water	110.2	

General Chemistry (Continued)

Analysis Batch: 389421 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67626-10	3 Vent Run	Total/NA	Water	110.2	
MB 680-389421/4	Method Blank	Total/NA	Water	110.2	

Analysis Batch: 389663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67626-1	Poe	Total/NA	Water	2320B-2011	
660-67626-1 DU	Poe	Total/NA	Water	2320B-2011	
660-67626-2	Upstream Vent Cluster	Total/NA	Water	2320B-2011	
660-67626-3	Fence line Spring	Total/NA	Water	2320B-2011	
660-67626-4	Fence line flowing sink	Total/NA	Water	2320B-2011	
660-67626-5	Watermelon 3	Total/NA	Water	2320B-2011	
660-67626-6	PR Vent	Total/NA	Water	2320B-2011	
660-67626-7	Twin Cypress	Total/NA	Water	2320B-2011	
660-67626-8	Twin Cypress # 2	Total/NA	Water	2320B-2011	
660-67626-9	Watermelon # 2	Total/NA	Water	2320B-2011	
660-67626-10	3 Vent Run	Total/NA	Water	2320B-2011	
LCS 680-389663/6	Lab Control Sample	Total/NA	Water	2320B-2011	
LCSD 680-389663/27	Lab Control Sample Dup	Total/NA	Water	2320B-2011	
MB 680-389663/5	Method Blank	Total/NA	Water	2320B-2011	

Client Sample ID: Poe
Lab Sample ID: 660-67626-1
Date Collected: 06/23/15 15:45
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389315	06/26/15 14:26	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 19:40	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 19:43	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:11	GRX	TAL SAV
Total/NA	Analysis	9060A		1	263081	06/30/15 02:57	NAB	TAL PEN

Client Sample ID: Upstream Vent Cluster
Lab Sample ID: 660-67626-2
Date Collected: 06/23/15 14:18
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389315	06/26/15 14:41	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 19:45	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 19:36	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:16	GRX	TAL SAV
Total/NA	Analysis	9060A		1	263081	06/30/15 04:06	NAB	TAL PEN

Client Sample ID: Fence line Spring
Lab Sample ID: 660-67626-3
Date Collected: 06/23/15 12:00
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389315	06/26/15 14:57	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 19:50	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 19:28	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:17	GRX	TAL SAV
Total/NA	Analysis	9060A		1	263081	06/30/15 04:33	NAB	TAL PEN

Client Sample ID: Fence line flowing sink
Lab Sample ID: 660-67626-4
Date Collected: 06/23/15 11:30
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389315	06/26/15 15:12	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Client Sample ID: Fence line flowing sink

Lab Sample ID: 660-67626-4
Date Collected: 06/23/15 11:30
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	200.8		1	389880	06/30/15 19:55	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 19:20	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:18	GRX	TAL SAV
Total/NA	Analysis	9060A		1	263081	06/30/15 04:55	NAB	TAL PEN

Client Sample ID: Watermelon 3

Lab Sample ID: 660-67626-5
Date Collected: 06/23/15 15:25
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389315	06/26/15 15:28	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 20:00	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 19:05	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:19	GRX	TAL SAV
Total/NA	Analysis	9060A		1	263081	06/30/15 05:23	NAB	TAL PEN

Client Sample ID: PR Vent

Lab Sample ID: 660-67626-6
Date Collected: 06/23/15 14:30
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389315	06/26/15 15:43	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 20:05	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 19:12	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:21	GRX	TAL SAV
Total/NA	Analysis	9060A		1	263081	06/30/15 05:46	NAB	TAL PEN

Client Sample ID: Twin Cypress

Lab Sample ID: 660-67626-7
Date Collected: 06/23/15 13:15
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389315	06/26/15 15:58	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 20:10	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV

Client Sample ID: Twin Cypress

Lab Sample ID: 660-67626-7

Date Collected: 06/23/15 13:15
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 18:58	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:22	GRX	TAL SAV
Total/NA	Analysis	9060A		1	263081	06/30/15 06:08	NAB	TAL PEN

Client Sample ID: Twin Cypress # 2

Lab Sample ID: 660-67626-8

Date Collected: 06/23/15 13:10
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389315	06/26/15 16:14	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 20:25	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 18:43	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:23	GRX	TAL SAV
Total/NA	Analysis	9060A		1	263081	06/30/15 06:35	NAB	TAL PEN

Client Sample ID: Watermelon # 2

Lab Sample ID: 660-67626-9

Date Collected: 06/23/15 14:50
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389374	06/26/15 19:40	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 20:30	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 18:50	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:25	GRX	TAL SAV
Total/NA	Analysis	9060A		1	263081	06/30/15 07:30	NAB	TAL PEN

Client Sample ID: 3 Vent Run

Lab Sample ID: 660-67626-10

Date Collected: 06/23/15 13:55
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389374	06/26/15 19:55	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 20:35	BWR	TAL SAV
Total/NA	Analysis	110.2		1	389421	06/26/15 15:48	JME	TAL SAV
Total/NA	Analysis	2320B-2011		1	389663	06/29/15 18:16	LBH	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:29	GRX	TAL SAV

Client Sample ID: 3 Vent Run

Lab Sample ID: 660-67626-10

Date Collected: 06/23/15 13:55

Matrix: Water

Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	263081	06/30/15 07:57	NAB	TAL PEN

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Method Summary

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL SAV
200.8	Metals (ICP/MS)	EPA	TAL SAV
110.2	Color, True, Colorimetric	MCAWW	TAL SAV
2320B-2011	Alkalinity, Total	SM	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
9060A	Organic Carbon, Total (TOC)	SW846	TAL PEN

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Certification Summary

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67626-1

Laboratory: TestAmerica Tampa

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40610	06-30-15 *
Florida	NELAP	4	E84282	06-30-16
Georgia	State Program	4	905	06-30-15 *
USDA	Federal		P330-14-00159	05-07-17

Laboratory: TestAmerica Pensacola

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40150	06-30-15 *
Arizona	State Program	9	AZ0710	01-11-16
Arkansas DEQ	State Program	6	88-0689	09-01-15
Florida	NELAP	4	E81010	06-30-16
Georgia	State Program	4	N/A	06-30-16
Illinois	NELAP	5	200041	10-09-15
Iowa	State Program	7	367	07-31-16
Kansas	NELAP	7	E-10253	08-31-15 *
Kentucky (UST)	State Program	4	53	06-30-16 *
Kentucky (WW)	State Program	4	98030	12-31-15
Louisiana	NELAP	6	30976	06-30-15 *
Maryland	State Program	3	233	09-30-15
Massachusetts	State Program	1	M-FL094	06-30-16
Michigan	State Program	5	9912	06-30-15 *
New Jersey	NELAP	2	FL006	09-30-15 *
North Carolina (WW/SW)	State Program	4	314	12-31-15
Oklahoma	State Program	6	9810	08-31-15
Pennsylvania	NELAP	3	68-00467	01-31-16
Rhode Island	State Program	1	LAO00307	12-30-15
South Carolina	State Program	4	96026	06-30-15 *
Tennessee	State Program	4	TN02907	06-30-15 *
Texas	NELAP	6	T104704286-12-5	09-30-15
USDA	Federal		P330-13-00193	07-01-16
Virginia	NELAP	3	460166	06-14-16
West Virginia DEP	State Program	3	136	06-30-15 *

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-17
A2LA	ISO/IEC 17025		399.01	02-28-17
Alabama	State Program	4	41450	06-30-15 *
Arkansas DEQ	State Program	6	88-0692	01-31-16
California	State Program	9	2939	07-31-15
Colorado	State Program	8	N/A	12-31-15
Connecticut	State Program	1	PH-0161	03-31-17
Florida	NELAP	4	E87052	06-30-16
GA Dept. of Agriculture	State Program	4	N/A	06-12-17
Georgia	State Program	4	N/A	06-30-16
Guam	State Program	9	14-004r	04-16-16

* Certification renewal pending - certification considered valid.

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Hawaii	State Program	9	N/A	06-30-15 *
Illinois	NELAP	5	200022	11-30-15
Indiana	State Program	5	N/A	06-30-15 *
Iowa	State Program	7	353	06-30-17
Kentucky (DW)	State Program	4	90084	12-31-15
Kentucky (UST)	State Program	4	18	06-30-15 *
Kentucky (WW)	State Program	4	90084	12-31-15
Louisiana	NELAP	6	30690	06-30-15 *
Louisiana (DW)	NELAP	6	LA150014	12-31-15
Maine	State Program	1	GA00006	09-24-16
Maryland	State Program	3	250	12-31-15
Massachusetts	State Program	1	M-GA006	06-30-16
Michigan	State Program	5	9925	06-30-15 *
Mississippi	State Program	4	N/A	06-30-15 *
Montana	State Program	8	CERT0081	12-31-15
Nebraska	State Program	7	TestAmerica-Savannah	06-30-15 *
New Jersey	NELAP	2	GA769	06-30-15 *
New Mexico	State Program	6	N/A	06-30-15 *
New York	NELAP	2	10842	03-31-16
North Carolina (DW)	State Program	4	13701	07-31-15
North Carolina (WW/SW)	State Program	4	269	12-31-15
Oklahoma	State Program	6	9984	08-31-15
Pennsylvania	NELAP	3	68-00474	06-30-15 *
Puerto Rico	State Program	2	GA00006	12-31-15
South Carolina	State Program	4	98001	06-30-15 *
Tennessee	State Program	4	TN02961	06-30-15 *
Texas	NELAP	6	T104704185-14-7	11-30-15
USDA	Federal		SAV 3-04	06-11-17
Virginia	NELAP	3	460161	06-14-16
Washington	State Program	10	C805	06-10-16
West Virginia (DW)	State Program	3	9950C	12-31-15
West Virginia DEP	State Program	3	094	06-30-15 *
Wisconsin	State Program	5	999819810	08-31-15
Wyoming	State Program	8	8TMS-L	06-30-15 *

Laboratory: TestAmerica Tallahassee

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E81005	06-30-16

* Certification renewal pending - certification considered valid.

TestAmerica Tallahassee
2846 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Greg Owen	Lab PM: Robertson, Nancy	Carrier Tracking No(s):	COC No: 640-51569-13066.1
Client Contact: Greg Owen	Phone: 352/264-6800	E-Mail: nancy.robertson@testamericainc.com		Page: Page 1 of 2
Company: Alachua County				Job #:
Address: Environmental Protection Department 408 W University Avenue	Due Date Requested:			
City: Gainesville	TAT Requested (days):			
State, Zip: FL, 32601				
Phone: 352-264-6825(Tel)	PO #: 151163			
Email: gowen@alachuacounty.us	WO #:			
Project Name: Synoptic Nitrate 1505	Project #: 64008583			
Site: Poe Hydrogeology	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	353.2 - Nitrate	Ca, Mg, Na, K, Fe, SO4, Cl, total alk, TOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:				S	1		
Poe	6/23/15	1545	G	Water	N	N	1	2		
Upstream Vent Cluster		1418		Water			1	2		
Fenceline Spring		1200		Water			1	2		
Fenceline Flowing Sink		1130		Water			1	2		
Watermelon 3		1525		Water			1	2		
PRvent		1430		Water			1	2		
Twin Cypress		1315		Water			1	2		
Twin Cypress #2		1310		Water			1	2		
Watermellon #2		1450		Water			1	2		
3 Vent Run		13:55		Water			1	2		
				Water						

Shipped in 2 coolers
Run anions + cations listed if possible

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Loc: 660
67626
660-67626 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date: 06-18-15	Time: 1245	Method of Shipment: FXG	
Relinquished by: [signature]	Date/Time: 6/24/15 17:30	Company: ACEPD	Received by: [signature]	Date/Time: 6.25.15 0830	Company: TA TPA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 0.0/0.5 cu-09

Login Sample Receipt Checklist

Client: Alachua County

Job Number: 660-67626-1

Login Number: 67626
List Number: 1
Creator: Southers, Kristin B

List Source: TestAmerica Tampa

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	False	Sample splitting required for subcontract purposes.
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Alachua County | Job Number: 660-67626-1

Login Number: 67626
List Number: 3
Creator: Benforado, Jessica L

List Source: TestAmerica Pensacola
List Creation: 06/26/15 11:31 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.6°C IR-6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Alachua County | Job Number: 660-67626-1

Login Number: 67626
List Number: 2
Creator: White, Menica R

List Source: TestAmerica Savannah
List Creation: 06/26/15 09:43 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tampa
6712 Benjamin Road
Suite 100
Tampa, FL 33634
Tel: (813)885-7427

TestAmerica Job ID: 660-67628-1
Client Project/Site: POE Hydrology

For:
Alachua County
Environmental Protection Department
408 W University Avenue
Suite 106
Gainesville, Florida 32601

Attn: Robin Hallbourg

Authorized for release by:
7/1/2015 1:39:27 PM

Nancy Robertson, Project Manager II
(813)885-7427
nancy.robertson@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
660-67628-1	Poe Hollow North Pool	Water	06/19/15 12:33	06/25/15 08:30
660-67628-2	Poe Hollow South Pool	Water	06/19/15 12:32	06/25/15 08:30

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Job ID: 660-67628-1

Laboratory: TestAmerica Tampa

Narrative

Job Narrative
660-67628-1

Comments
No additional comments.

Receipt
The samples were received on 6/25/2015 8:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.5º C.

HPLC/IC
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67628-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
U	Indicates that the compound was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates that the compound was analyzed for but not detected.

General Chemistry

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample ID: Poe Hollow North Pool

Lab Sample ID: 660-67628-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	5.1		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	89		0.50	0.17	mg/L	1		200.8	Total/NA
Magnesium	7.3		0.25	0.10	mg/L	1		200.8	Total/NA
Nitrate Nitrite as N	0.018	I	0.050	0.010	mg/L	1		353.2	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Specific Conductance	560		5.0	5.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: Poe Hollow South Pool

Lab Sample ID: 660-67628-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8.0		0.50	0.20	mg/L	1		300.0	Total/NA
Sulfate	5.6		1.0	0.40	mg/L	1		300.0	Total/NA
Calcium	71		0.50	0.17	mg/L	1		200.8	Total/NA
Magnesium	5.5		0.25	0.10	mg/L	1		200.8	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Specific Conductance	400		5.0	5.0	umhos/cm	1		SM 2510B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67628-1

Client Sample ID: Poe Hollow North Pool

Lab Sample ID: 660-67628-1

Date Collected: 06/19/15 12:33
Date Received: 06/25/15 08:30

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12		0.50	0.20	mg/L			06/26/15 14:32	1
Sulfate	5.1		1.0	0.40	mg/L			06/26/15 14:32	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	89		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:30	1
Magnesium	7.3		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 19:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.018	I	0.050	0.010	mg/L			06/26/15 13:30	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	560		5.0	5.0	umhos/cm			06/30/15 05:20	1

Client Sample ID: Poe Hollow South Pool

Lab Sample ID: 660-67628-2

Date Collected: 06/19/15 12:32
Date Received: 06/25/15 08:30

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.0		0.50	0.20	mg/L			06/26/15 14:47	1
Sulfate	5.6		1.0	0.40	mg/L			06/26/15 14:47	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	71		0.50	0.17	mg/L		06/29/15 13:42	06/30/15 19:35	1
Magnesium	5.5		0.25	0.10	mg/L		06/29/15 13:42	06/30/15 19:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.010	U	0.050	0.010	mg/L			06/26/15 13:38	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	400		5.0	5.0	umhos/cm			06/30/15 05:20	1

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67628-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 680-389301/2
Matrix: Water
Analysis Batch: 389301

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.20	U	0.50	0.20	mg/L			06/26/15 09:36	1
Sulfate	0.40	U	1.0	0.40	mg/L			06/26/15 09:36	1

Lab Sample ID: LCS 680-389301/3
Matrix: Water
Analysis Batch: 389301

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.0		mg/L		100	90 - 110
Sulfate	10.0	10.0		mg/L		100	90 - 110

Lab Sample ID: LCSD 680-389301/4
Matrix: Water
Analysis Batch: 389301

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.1		mg/L		101	90 - 110	0	30
Sulfate	10.0	10.0		mg/L		100	90 - 110	0	30

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 680-389591/1-A
Matrix: Water
Analysis Batch: 389880

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389591

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	0.17	U	0.50	0.17	mg/L		06/29/15 13:42	06/30/15 18:25	1
Magnesium	0.10	U	0.25	0.10	mg/L		06/29/15 13:42	06/30/15 18:25	1

Lab Sample ID: LCS 680-389591/2-A
Matrix: Water
Analysis Batch: 389880

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389591

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	5.00	5.38		mg/L		108	85 - 115
Magnesium	5.00	5.18		mg/L		104	85 - 115

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-389350/13
Matrix: Water
Analysis Batch: 389350

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.010	U	0.050	0.010	mg/L			06/26/15 12:30	1

Method: 353.2 - Nitrogen, Nitrate-Nitrite (Continued)

Lab Sample ID: LCS 680-389350/15
Matrix: Water
Analysis Batch: 389350

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrate Nitrite as N			1.00	1.04		mg/L		104	90 - 110		

Lab Sample ID: 660-67628-2 MS
Matrix: Water
Analysis Batch: 389350

Client Sample ID: Poe Hollow South Pool
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrate Nitrite as N	0.010	U	1.00	1.05		mg/L		105	90 - 110		

Lab Sample ID: 660-67628-2 MSD
Matrix: Water
Analysis Batch: 389350

Client Sample ID: Poe Hollow South Pool
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate Nitrite as N	0.010	U	1.00	1.05		mg/L		105	90 - 110	0	10

Method: SM 2510B - Conductivity, Specific Conductance

Lab Sample ID: MB 660-159206/1
Matrix: Water
Analysis Batch: 159206

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	5.0	U	5.0	5.0	umhos/cm			06/30/15 05:20	1

Lab Sample ID: LCS 660-159206/2
Matrix: Water
Analysis Batch: 159206

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Specific Conductance			1000	1000		umhos/cm		100	90 - 110		

Lab Sample ID: 660-67628-1 DU
Matrix: Water
Analysis Batch: 159206

Client Sample ID: Poe Hollow North Pool
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Specific Conductance	560			559		umhos/cm				0	10

HPLC/IC

Analysis Batch: 389301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67628-1	Poe Hollow North Pool	Total/NA	Water	300.0	
660-67628-2	Poe Hollow South Pool	Total/NA	Water	300.0	
LCS 680-389301/3	Lab Control Sample	Total/NA	Water	300.0	
LCSD 680-389301/4	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 680-389301/2	Method Blank	Total/NA	Water	300.0	

Metals

Prep Batch: 389591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67628-1	Poe Hollow North Pool	Total/NA	Water	200.8	
660-67628-2	Poe Hollow South Pool	Total/NA	Water	200.8	
LCS 680-389591/2-A	Lab Control Sample	Total/NA	Water	200.8	
MB 680-389591/1-A	Method Blank	Total/NA	Water	200.8	

Analysis Batch: 389880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67628-1	Poe Hollow North Pool	Total/NA	Water	200.8	389591
660-67628-2	Poe Hollow South Pool	Total/NA	Water	200.8	389591
LCS 680-389591/2-A	Lab Control Sample	Total/NA	Water	200.8	389591
MB 680-389591/1-A	Method Blank	Total/NA	Water	200.8	389591

General Chemistry

Analysis Batch: 159206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67628-1	Poe Hollow North Pool	Total/NA	Water	SM 2510B	
660-67628-1 DU	Poe Hollow North Pool	Total/NA	Water	SM 2510B	
660-67628-2	Poe Hollow South Pool	Total/NA	Water	SM 2510B	
LCS 660-159206/2	Lab Control Sample	Total/NA	Water	SM 2510B	
MB 660-159206/1	Method Blank	Total/NA	Water	SM 2510B	

Analysis Batch: 389350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-67628-1	Poe Hollow North Pool	Total/NA	Water	353.2	
660-67628-2	Poe Hollow South Pool	Total/NA	Water	353.2	
660-67628-2 MS	Poe Hollow South Pool	Total/NA	Water	353.2	
660-67628-2 MSD	Poe Hollow South Pool	Total/NA	Water	353.2	
LCS 680-389350/15	Lab Control Sample	Total/NA	Water	353.2	
MB 680-389350/13	Method Blank	Total/NA	Water	353.2	

Client Sample ID: Poe Hollow North Pool
Lab Sample ID: 660-67628-1

Date Collected: 06/19/15 12:33
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389301	06/26/15 14:32	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 19:30	BWR	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:30	GRX	TAL SAV
Total/NA	Analysis	SM 2510B		1	159206	06/30/15 05:20	AJG	TAL TAM

Client Sample ID: Poe Hollow South Pool
Lab Sample ID: 660-67628-2

Date Collected: 06/19/15 12:32
Matrix: Water
Date Received: 06/25/15 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	389301	06/26/15 14:47	AJO	TAL SAV
Total/NA	Prep	200.8			389591	06/29/15 13:42	BJB	TAL SAV
Total/NA	Analysis	200.8		1	389880	06/30/15 19:35	BWR	TAL SAV
Total/NA	Analysis	353.2		1	389350	06/26/15 13:38	GRX	TAL SAV
Total/NA	Analysis	SM 2510B		1	159206	06/30/15 05:20	AJG	TAL TAM

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL SAV
200.8	Metals (ICP/MS)	EPA	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
SM 2510B	Conductivity, Specific Conductance	SM	TAL TAM

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL TAM = TestAmerica Tampa, 6712 Benjamin Road, Suite 100, Tampa, FL 33634, TEL (813)885-7427

Certification Summary

Client: Alachua County
Project/Site: POE Hydrology

TestAmerica Job ID: 660-67628-1

Laboratory: TestAmerica Tampa

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40610	06-30-15 *
Florida	NELAP	4	E84282	06-30-16
Georgia	State Program	4	905	06-30-15 *
USDA	Federal		P330-14-00159	05-07-17

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-17
A2LA	ISO/IEC 17025		399.01	02-28-17
Alabama	State Program	4	41450	06-30-15 *
Arkansas DEQ	State Program	6	88-0692	01-31-16
California	State Program	9	2939	07-31-15
Colorado	State Program	8	N/A	12-31-15
Connecticut	State Program	1	PH-0161	03-31-17
Florida	NELAP	4	E87052	06-30-16
GA Dept. of Agriculture	State Program	4	N/A	06-12-17
Georgia	State Program	4	N/A	06-30-16
Guam	State Program	9	14-004r	04-16-16
Hawaii	State Program	9	N/A	06-30-15 *
Illinois	NELAP	5	200022	11-30-15
Indiana	State Program	5	N/A	06-30-15 *
Iowa	State Program	7	353	06-30-17
Kentucky (DW)	State Program	4	90084	12-31-15
Kentucky (UST)	State Program	4	18	06-30-15 *
Kentucky (WW)	State Program	4	90084	12-31-15
Louisiana	NELAP	6	30690	06-30-15 *
Louisiana (DW)	NELAP	6	LA150014	12-31-15
Maine	State Program	1	GA00006	09-24-16
Maryland	State Program	3	250	12-31-15
Massachusetts	State Program	1	M-GA006	06-30-16
Michigan	State Program	5	9925	06-30-15 *
Mississippi	State Program	4	N/A	06-30-15 *
Montana	State Program	8	CERT0081	12-31-15
Nebraska	State Program	7	TestAmerica-Savannah	06-30-15 *
New Jersey	NELAP	2	GA769	06-30-15 *
New Mexico	State Program	6	N/A	06-30-15 *
New York	NELAP	2	10842	03-31-16
North Carolina (DW)	State Program	4	13701	07-31-15
North Carolina (WW/SW)	State Program	4	269	12-31-15
Oklahoma	State Program	6	9984	08-31-15
Pennsylvania	NELAP	3	68-00474	06-30-15 *
Puerto Rico	State Program	2	GA00006	12-31-15
South Carolina	State Program	4	98001	06-30-15 *
Tennessee	State Program	4	TN02961	06-30-15 *
Texas	NELAP	6	T104704185-14-7	11-30-15
USDA	Federal		SAV 3-04	06-11-17
Virginia	NELAP	3	460161	06-14-16

* Certification renewal pending - certification considered valid.

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Washington	State Program	10	C805	06-10-16
West Virginia (DW)	State Program	3	9950C	12-31-15
West Virginia DEP	State Program	3	094	06-30-15 *
Wisconsin	State Program	5	999819810	08-31-15
Wyoming	State Program	8	8TMS-L	06-30-15 *

Laboratory: TestAmerica Tallahassee

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E81005	06-30-16

* Certification renewal pending - certification considered valid.

TestAmerica Tallahassee
2843 Industrial Plaza Drive
Tallahassee, FL 32301
Phone (850) 878-3994 Fax (850) 878-9504

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information			
Client Contact: Greg Owen	Sampler: ~~Pete Brett Hoover~~ / Phone: 352/264-6800 Owen	Lab PM: Robertson, Nancy / E-Mail: nancy.robertson@testamericainc.com	Carrier Tracking No(s):
Company: Alachua County			COC No: 640-51569-13066.2 / Page: Page 2 of ~~3~~ 2 / Job #:
Address: Environmental Protection Department 408 W University Avenue	Due Date Requested:		
City: Gainesville	TAT Requested (days):		
State, Zip: FL, 32601			
Phone: 352-264-6825(Tel)	PO #: 151163		
Email: gowen@alachuacounty.us	WO #:		
Project Name: Synoptic Nitrate 1505	Project #: 64008583		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification: Poe Hydrology	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	353.2 - Nitrate	Sp.Cond., Ca, Mg, SO4, Cl, NO3 + NO2	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	S		X	
Poe Hollow North Pool	6/19/15	12:33	G	Water	N	N	|	|		
Poe Hollow South Pool	↓	12:32	↓	Water	↓	↓	|	|		
				Water						
				Water						
				Water						
				Water						
				Water						
				Water						
				Water						
				Water						
				Water						

Loc: 660
67628
660-67628 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: [signature]	Date: 06-18-15	Time: 1245	Method of Shipment: FX6		
Relinquished by: [signature]	Date/Time: 6/24/15 17:30	Company: ACEPD	Received by: [signature]	Date/Time: 6.25.15 0830	Company: TA TPA
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 0.0/0.5 CU-09		

Login Sample Receipt Checklist

Client: Alachua County

Job Number: 660-67628-1

Login Number: 67628
List Number: 1
Creator: Southers, Kristin B

List Source: TestAmerica Tampa

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	False	Sample splitting required for subcontract purposes.
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Alachua County

Job Number: 660-67628-1

Login Number: 67628
List Number: 2
Creator: White, Menica R

List Source: TestAmerica Savannah
List Creation: 06/26/15 09:43 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX III

WATER & AIR RESEARCH, INC.

SANTA FE RIVER PERIPHYTON REPORT

water & air
RESEARCH, INC.

*Environmental Engineers,
Biologists, & Planners*

August 17, 2015

Ms. Robin Hallbourg
ACEPD
408 W. University Ave., Suite 106
Gainesville, FL 32601

Dear Ms. Hallbourg:
Ten periphyton samples from the Santa Fe River near Poe Springs were collected and delivered to Water & Air Research on 7/31/15 by Greg Owen. As requested, the samples were analyzed for the more abundant filamentous algae present. I also included larger chain forming diatoms in my analysis since they were abundant in some of the samples.

Included with this report is an Excel table of results and photos of the algae taxa observed in thesamples. Also attached are PDF files of two publications I found on the internet with photos and information on the chantransia stage of *Batrachospermum macrosporum*, the dominant red algal taxon in some of the samples.

Confirmation of the chantransia stage of *Batrachospermum macrospora* was made by Dr. Morgan Vis-Chiasson of Ohio University. Andrew Chapman of GreenWater Lab also looked at it but suggested I contact Morgan since he was also unsure of its identification.

If you have any questions, please give me a call.

Sincerely,

Michael K. Hein

Michael K. Hein
Consultant

HEIN/WPWIN\ACEPD[WP10]HALLBOURG15.WPD 081715

6821 S.W. Archer Road
Gainesville, Florida 32608
Voice: 352/372-1500
Toll Free: 1/800/242-4927
Fax: 352/378-1500
info@waterandair.com
www.waterandair.com

Santa Fe River Periphyton Analyses Comments

A. GENERAL AND SPECIFIC COMMENTS

1. Ten periphyton samples collected from natural substrata were collected and delivered on 7/31/2015 by Greg Owen (ACEPD).

2. Portions of he samples were first examined with a Nikon dissecting microscope and then at higher magnification with a Leica inverted microscope. The more abundant filamentous algal taxa present were ranked from 1 to 3 based on filament size and abundance. Larger chain forming diatoms also were included in the analysis because of their abundance in some of the samples. The results were tabulated in the attached Excel table (ACEPD Springs Algae.xls).

3. The most abundant filamentous taxon present in the "red" and "red/blue" samples was the chantransia stage (tetrasporophyte) of the red algae (Rhodophyta) *Batrachospermum macrospora*. Attached are several papers with more information on the taxon. (Note: the "A", "B", "C", etc. in the photo file names for this taxon do not designate different taxa and are used only to distinguish the file names.)

4. No taxa were observed in the samples that are considered potentially capable of producing toxins based on Table 1 in Landsberg (2002).

5. The chain forming diatoms present in the samples are generally common in freshwater habitats. *Cymbella mexicana* is a widely distributed taxon most often reported from hard waters. Species of *Eunotia* are generally characteristic of acidic water. *Melosira undulata* is reported to be a soil diatom, but is also found in oligotrophic rivers, lakes, and in freshwater springs with a pH of about 7.5 and specific conductance about 600 µS/cm. *Melosira varians* is a widely distributed taxon found in the benthos and plankton. *Synedra ulna* is widely distributed in freshwater habitats. *Terpsinoe musica* is widely distributed in freshwater to marine habitats. It has been suggested that *T. musica* is most frequent in hard waters with warm temperatures and found on submerged tree branches, roots, aquatic bryophytes, rocks, and on the surface of filamentous algae such as *Cladophora*.

References

Landsberg, J. H. 2002. The effects of harmful algal blooms on aquatic organisms. Reviews in Fisheries Science 10(2):113-390.

ACEPD Springs Algae Samples

Qualitative Algal Samples - list of dominant filamentous algal taxa and large chain-forming diatoms

		Fenceline		Twin Cypress		3 Vent Run		Watermelon 2		Watermelon 3	Poe River
		Green	**Red/blue**	**Green**	**Red/blue**	**Green**	**Red**	**Green**	**Red**	**Green floating**	**Green**
		7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015
		1015	1015	1100	1100	1136	1136	1205	1205	1220	
Division or Class	**Taxon**	Dominance	Dominance	Dominance	Dominance	Dominance	Dominance	Dominance	Dominance	Dominance	Dominance
cyanobacteria	Oscillatoria limosa	2	1			1				1	
cyanobacteria	Phormidium sp. 3			1							
cyanobacteria	Phormidium sp. 4	1	1			1		1			
Chlorophyta	Closterium moniliferum			1				1			
Chlorophyta	Rhizocolonium hieroglyphicum						1			2	
Chlorophyta	Spirogyra spp.							1		1	1
Chlorophyta	Ulothrix sp.							3			
Xanthophyceae	Vaucheria sp.	3		1		3				2	3
Rhodophyta	Batrachospermum macrospora (chantransia stage)		3		3		3		3		
Bacillariophyceae	Cymbella mexicana	1	1								
Bacillariophyceae	Eunotia sp.			3		1		3		1	
Bacillariophyceae	Melosira undulata									1	
Bacillariophyceae	Melosira varians							1		1	1
Bacillariophyceae	Synedra ulna (large side by side diatom)	2		1	1	1	1	1	1	1	1
Bacillariophyceae	Terpsinoe musica (large, chain forming diatom)	1		2				1			

Relative Dominance (relative within sample - not between samples).

3 **Taxa with large cells and common in sample.**

2 **Taxa with smaller cells or less common.**

1 **Taxa only occasionally seen in sample.**

Notes:

Periphyton samples collected from natural substrata or floating mats.

Fenceline Red - Many diatoms present (primarily Navicula & Pinnularia).

Twin Cypress Green - Many diatoms (including Eunotia formica & Terpsinoe musica).

Twin Cypress Red/Blue - Fine reddish brown silt present.

Watermelon 3 Green Floating - abundant brown silt/detritus.