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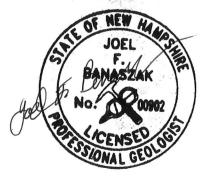
RIB HYDRAULIC LOADING TEST

Pinetree Power 469 Plains Road Tamworth, New Hampshire, 03886

NHDES Site #: 199407004 Project Type: Rapid Infiltration Basin Project Number: 0038933

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RAPID INFILTRATION BASIN HYDRAULIC LOADING TESTS Pinetree Power Tamworth, New Hampshire

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PINETREE POWER - TAMWORTH RAPID INFILTRATION BASIN HYDRAULIC LOAD TESTING

1.0 INTRODUCTION

Pinetree Power owns and operates a biomass power generation facility on Plains Road in Tamworth, New Hampshire. A **Site Location Map** is included as **Appendix A**. The biomass power generation facility has had ongoing issues with cooling water quality, specifically the precipitation of hardness and silica in the facility cooling towers. The estimated amount of water used daily for the cooling process at the plant ranges from approximately 30,000 gallons per day (gpd) in the winter months to a maximum of 100,000 gpd in the summer months. Historically, to mitigate this problem, Pinetree Power had been trucking effluent to Plymouth in order to dilute the cooling circulation water with fresh groundwater from the on Site water supply well, Well C.

As a potential alternative to trucking circulation water to Plymouth, Horizons Engineering, Inc. (HEI) proposed the construction of a rapid infiltration basin system for disposal of the circulation water. In December of 2018 HEI prepared a report titled <u>Preliminary RIB Siting Report and</u> <u>Proposal for Hydraulic Loading Test</u> and submitted it to NHDES for review and comment. The report also included an application for a Temporary Groundwater Discharge Permit (TGDP). A copy of the **TGDP** is included as **Appendix B**.

This document reports the findings of the hydraulic loading test of Basin 4 (see **Annotated Site Plan** in **Appendix C**) on January 8-11 (Loading Test I) and April 9-29, 2019 (Loading Test II). Under the Temporary Discharge Permit (TGP-199407004-001) a total of 1,031,665 gallons of water was discharged to Test Basin 4 over the span of both tests. 399,400 gallons during Loading Test I and 632,265 gallons during Loading Test II. The total effluent run through the basin was 732,115 gallons with the balance being freshwater dilution from Well C.

2.0 TEST BORINGS AND MONITORING WELL INSTALLATION

In conformance with the Proposal, test borings and monitoring well installations were completed between November 1 and November 9, 2018 at previously determined locations. All of the borings and well installations were performed by Geosearch Inc. of Sterling, Massachusetts. The borings were completed under the field observation of Horizons geologist, Joel Banaszak, who logged the soils. The locations of the soils borings and monitoring wells are presented on the **Site Plan** included in **Appendix C**.

2.1 Test Borings

A total of 19 soil borings were advanced at the Site. Of these borings, four (4) were continuously sampled within the anticipated perimeter of the RIB's. The sampled borings were MW-2, MW-7, MW-10, and MW-12. The protocol at the four (4) locations was to advance the borings with hollow stem augers while continuously collecting split spoon samples. The final depth of the four (4) borings was 50 feet below the ground surface (bgs). Soil samples from each split spoon were obtained for project records. No sieve

analyses or other tests were performed. The findings of the test boring program are presented in Table 1. The other 15 test borings were described by auger cuttings. All 19 test borings were completed as temporary monitoring wells. **Soil Boring Logs** are included in **Appendix D**.

The 15 soil borings which were advanced in the upland area where the proposed RIB system is to be located exhibited similar soil characteristics. The ground surface layer consisted of loose, loamy sand topsoil down to approximately 6-inches. This was underlain by approximately 30-feet of moderately well sorted, medium dense, medium to coarse sand with occasional gravel. Underlying the medium to coarse sand unit is a very well sorted, dense, silt-free, fine sand. Bedrock was not encountered in any of the soil borings. The average depth to groundwater was 38-feet bgs.

Four (4) soils borings were also advanced in the low lying area, down gradient of the proposed RIB system. These soil borings had similar lithologic characteristics as the lower unit encountered in the previously mentioned soil borings; a very well sorted, dense, silt-free, fine sand. Bedrock was not encountered in any of the 4 borings. Average depth to groundwater in the four (4) borings was 1-foot bgs.

The findings of the test boring program are presented in Table 1 below.

	Total Depth	ary of Test Boring P Refusal	
Boring#	(ft)	(Yes / No)	Generalized Soil Profile
MW-1	50	No	Sand
MW-2	50	No	Sand
MW-3	50	No	Sand
MW-4	50	No	Sand
MW-5	50	No	Sand
MW-6	50	No	Sand
MW-7	50	No	Sand
MW-8	50	No	Sand
MW-9	50	No	Sand
MW-10	50	No	Sand
MW-11	50	No	Sand-some gravel
MW-12	50	No	Sand-some gravel
MW-13	50	No	Sand-some gravel
MW-14	50	No	Sand-some gravel
MW-15	20	No	Sand-some gravel
MW-16	20	No	Sand
MW-17	20	No	Sand
MW-18	20	No	Sand
MW-19	20	No	Sand

 Table 1

 Summary of Test Boring Program

Note Bedrock refusal was not encountered in any of the soil borings.

2.2 Permanent Monitoring Wells

All installed monitoring wells were designed with the ability to be converted to permanent monitoring wells, pending the final design and regulatory needs of the RIB system. At this time, none of the wells have been designated as permanent. General construction consisted of a 10-foot slotted PVC screen with well point installed at terminal depth of the boring. This was then threaded to 10-foot sections of 2-inch PVC riser until roughly 3-feet stood above ground level. The boring was then filled with filter sand to roughly 2-feet above the top of the screened interval. Over top of the fresh sand, roughly 3-feet of bentonite seal was added, before backfilling the boring to grade with soil cuttings. Table 2 contains a summary of each installation. All measurements made were from top of casing (TOC).

MW #	Total Depth TOC (ft)	Screened Interval (ft.)	Sand Interval (ft.)	Bentonite Interval (ft.)
MW-1	52.17	42.17'-52.17'	40.17'-52.17'	37.17'-40.17'
MW-2	52.10	42.10'-52.10'	40.10'-52.10'	37.10'-40.10'
MW-3	52.15	42.15'-52.15'	40.15'-52.15'	37.15'-40.15'
MW-4	52.25	42.25'-52.25'	40.25'-52.25'	37.25'-40.25'
MW-5	53.95	43.95'-53.95'	41.95'-53.95'	38.95'-41.95'
MW-6	52.70	42.70'-52.70'	40.70'-52.70'	37.70'-40.70'
MW-7	52.60	42.60'-52.60'	40.60'-52.60'	37.70'-40.60'
MW-8	52.90	42.90'-52.90'	40.90'-52.90'	37.90'-40.90'
MW-9	53.95	43.95'-53.95'	41.95'-53.95'	38.95'-41.95'
MW-10	52.30	42.30'-52.30'	40.30'-53.30'	37.30'-40.30'
MW-11	51.18	41.18'-51.18'	39.18'-51.18'	36.18'-39.18'
MW-12	52.25	42.25'-52.25'	40.25'-52.25'	37.25'-40.25'
MW-13	51.50	41.50'-51.50'	39.50'-51.50'	36.50'-39.50'
MW-14	53.30	43.30'-53.30'	41.30'-53.30'	38.30'-41.30'
MW-15	52.30	42.30'-52.30'	40.30'-52.30'	37.30'-40.30'
MW-16	19.65	9.65'-19.65'	7.65'-19.65'	4.65'-7.65'
MW-17	22.91	12.91'-22.91'	10.91'-22.91'	7.91'-10.91'
MW-18	22.30	12.30'-22.30'	10.30'-22.30'	7.30'-10.30'
MW-19	22.75	12.75'-22.75'	10.75'-22.75'	7.75'-10.75'

 Table 2

 Summary of Temporary Monitoring Well Installations

3.0 HYDRAULIC LOADING TEST OPERATION

Two hydraulic loading tests were conducted on the rapid infiltration basin which was excavated at the southernmost location at the Site. For the purposes of this report the basin is designated at Basin 4. The basin was excavated to a depth of approximately 3.5-feet bgs with a bottom dimension of 30-feet by 50-feet. The basin was provided with a graduated stake to monitor any ponding in the basin.

3.1 Hydraulic Loading Test I

Groundwater elevation response to the first loading test was monitored utilizing In Situ-Level Troll 700 electronic pressure transducers installed in surrounding site monitoring wells; MW-1, MW-9, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16 and MW-17; adjacent to, upgradient and down-gradient of the test basin. The transducers were programmed to log water level data every minute for the duration of the test and through the recovery period. Approximately coincident with the data logger installation, depths to the water table were measured in each of the observation wells.

Hydraulic Loading Test I of Basin 4 was conducted over a span of 4 days from January 8-11, 2019. A total of 399,400-gallons of water was discharged to the test basin over this time interval. The total amount of circulation water effluent discharged to the basin was 99,850-gallons with the remaining balance of 299,550-gallons being freshwater dilution from Well C.

Loading was accomplished utilizing two tanker trucks running alternating trips until the desired loading for that day was achieved. One truck had a 5,000-gallon capacity, and the other 4,200-gallons. Each load was 25 percent effluent and with 75 percent fresh water from Well-C, mixed in the truck. The water was discharged onto plywood to reduce scouring of the test basin. A loading log is attached in **Appendix E - Load Test I, Basin Loading Log**, along with a graph of the daily and total discharge volume achieved during testing.

Below is a summary of the daily loading rates during the test;

January 8: 96,200 gallons total (24,050 gallons of circulation water effluent) January 9: 50,000 gallons total (12,500 gallons of circulation water effluent) January 10: 188,200 gallons total (47,050 gallons of circulation water effluent) January 11: 65,000 gallons total (16,250 gallons of circulation water effluent)

The maximum loading achieved by Loading Test I resulted in a peak of 17.1-feet of water in MW-12 which is roughly centered in the test basin. The average pre-test groundwater level of MW-12 was 12.7-feet, equating to a maximum increase in groundwater elevation of 4.4-feet achieved on the third day of the test with the introduction of 188,200-gallons to the system. A graph of MW-12 with the peak water column heights can be found in **Appendix F.**

In the proximal wells (MW-12, MW-11, MW-13, MW-14, MW-15) the individual days of loading are readily apparent on the loading test graphs. Further to the west of the tested basin, the response in MW-9 was present, but lacked the distinct peaks seen in the data from the previously mentioned closer wells. Near the base of the hill, downgradient from the test basin, there was little response noted in MW-16. There was no perceivable response in either MW-1 which lies roughly 3,300-feet to the north-northeast, and MW-17 which lies roughly 3,000-feet to the west-northwest. A full suite of graphs for all monitored wells for Hydraulic Loading Test I is included in **Appendix F**.

3.2 Hydraulic Loading Test II

Hydraulic Loading Test II of Basin 4 was conducted over a span of 20 days from April 9-29, 2019. A total of 632,265 gallons of blended effluent was discharged to the test basin over this period. In order to accomplish more efficient disposal of effluent, individual volumes of circulation water were stored in five frac tanks on site. These were then individually tested for dissolved metals in order to determine the correct dilution ratios for each to remain below AGQS with particular attention paid to the dissolved arsenic component. The tanks were then blended in accordance with their results prior to discharging to the basin by pump. **Appendix G** contains a table of the different mixes and ratios used throughout the testing, along with a graph displaying daily and cumulative discharge totals.

Water levels were monitored once a day that discharge occurred by Pinetree Power personnel. The following monitoring wells were observed for water level change during testing; MW-1, MW-9, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16, and MW-17. Data for MW-12, located in the center of the basin is sparse due to difficulties accessing the monitoring well when there was water in the basin. A full suite of water level graphs for all monitored wells is included in **Appendix H.**

4.0 GROUNDWATER AND EFFLUENT MONITORING

Prior to the Hydraulic Load Testing of Basin 4, groundwater samples were collected from supply Well C, and monitoring wells MW-11, MW-14, and MW-16 to ascertain baseline water quality. Numerous effluent samples were also taken prior to testing in order to determine the average water quality of the effluent, and to determine the correct dilution ratio necessary per the Temporary Discharge Permit. All **Water Sample Results** can be found in **Appendix I**.

4.1 Circulation Water/Effluent Sampling and Analysis

Prior to and over the course of the loading tests, multiple samples of the wastewater were collected from the cooling tower effluent. Effluent samples were tested on eight (8) separate occasions. The samples were collected in laboratory supplied containers, placed on ice and transported to Eastern Analytical, Inc. of Concord, New Hampshire to be analyzed for the following; sulfate, chloride, nitrite, nitrate, ammonia, TKN, total phosphorus, BOD, COD, pH, specific conductance, total hardness (as CaCO3), and metals including; arsenic, selenium, antimony, beryllium, calcium, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, silver, sodium, thallium, and zinc. Effluent samples were also tested for perfluorinated alkylated substances (PFAS). The PFAS results reported analyte below detection limits for the sample on September 21, 2018. The sample on January 7, 2019 reported a PFBA (Perfluorobutanoate-PFBA) concentration of 9.27 ng/L, with all other compounds below detection limit.

Initial pre-test laboratory analytical results for the sample taken on January 7, 2019 reported dissolved arsenic concentration of 29 μ g/L, almost three times the AGQS of 10 μ g/L. All other analytes reported concentrations either below method detection levels or the AGQS.

The effluent was sampled periodically throughout and after the conclusion of the first infiltration test. By the end of the initial hydraulic load testing on January 11, 2019, only arsenic reported levels above the AGQS. It was however diminishing rapidly as the roughly 100,000-gallons of effluent were removed from the cooling system and replaced with fresh water from Well-C over the course of the test.

Over the course of the initial testing most compounds showed a decreasing concentration trend, as more fresh water was being added to the system while the diluted effluent was loaded into the basin. Of note, Sulfate and Chloride concentration decreased over the course of testing, 44 percent and 56 percent respectively. Analytical results from compounds with reported concentrations above the laboratory detection limit are summarized in the table contained in **Appendix I**, with their respective New Hampshire Department of Environmental Services (NHDES) Ambient Groundwater Quality Standard (AGQS).

The circulation water continued to be tested with particular interest in the arsenic concentration, which increased in the testing of January 22nd but decreased again as of the results of January 24, 2019.

Prior to initiation of Hydraulic Load Test II on Basin 4 the effluent/cooling water was temporarily stored in five 21,357-gallon frac tanks on site. Prior to discharge, the five frac tanks (UST, SV2, FTS, SV2-7, and SV3) were tested for dissolved metals including Antimony, Arsenic, Beryllium, Calcium, Cadmium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, and Zinc. The frac tanks were also tested for Total Hardness (as CaCO3), Sulfate, Chloride, Nitrite-N, Nitrate-N, Ammonia-N, TKN, Total Phosphorus-P, pH, and Specific Conductance. These analytical results were utilized to determine dilution and blending ratios for the discharge to keep compound levels below AGQS. All **Analytical Laboratory Results** can be found in **Appendix I**.

The slight increase in Arsenic post Loading Test I was likely due to the fact that they cannot remove the large volume of effluent that was accomplished during the load test by trucking. Due to the above noted trend, it can be reasonably concluded that once the RIB system is operational, the plant will have the ability to mitigate and reduce the arsenic content to below AGQS via dilution and running fewer cycles of concentration on the system. This should also help reduce the concentrations of the other compounds in the system.

It is hypothesized that the arsenic is leaching out of pressure treated trussing in the cooling tower substructure when exposed to the high temperatures of the cooling water/steam. If this is the case, each cycle through the system further concentrates the dissolved arsenic. It is likely that with fewer cycles of concentration on the cooling water, the effluent discharged could be brought to reasonable contaminant levels without treatment or dilution. Another option discussed would be to replace the pressure treated substructure timber with a different material. This would eliminate the arsenic problem at its source.

4.2 Well C/Influent Sampling and Analysis

Well C was sampled twice prior to the start of the initial hydraulic loading test. The samples were collected in laboratory supplied containers, placed on ice and transported to Eastern Analytical, Inc. of Concord, New Hampshire to be analyzed for the following; sulfate, chloride, nitrite, nitrate, ammonia, TKN, total phosphorus, BOD, COD, pH, specific conductance, total hardness (as CaCO3), and metals including; arsenic, selenium, antimony, beryllium, calcium, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, silver, sodium, thallium, zinc, and uranium. The influent was also tested for perfluorinated alkylated substances (PFAS) with the pre-test sample suite on January 7, 2019. Analytical results reported PFAS concentration below method detection limits.

Laboratory analytical results reported the following compounds at concentration less than their respective laboratory detection limit; antimony, arsenic, cadmium, chromium, copper, mercury, molybdenum, selenium, COD, ammonia, and total phosphorus.

After the conclusion of Loading Test II, Well C was tested for only dissolved arsenic and total arsenic in order to rule out the influent definitively as a source of the arsenic. The sample was made on June 10, 2019. Analytical results reported that concentrations for both tests were below method detection limits.

Analytical results from compounds with reported concentrations above the laboratory detection limit are summarized in the table in **Appendix I**, with their respective NHDES AGQS. No compounds were found to exceed the AGQS in either sampling event.

4.3 Monitoring Well Sampling and Analysis

Monitoring Wells MW-11, MW-14, and MW-16 were sampled prior to the start of hydraulic load testing in order to ascertain baseline water quality. They were also sampled again at the conclusion of both rounds of load testing. The samples were collected in laboratory supplied containers, placed on ice and transported to Eastern Analytical, Inc. of Concord, New Hampshire to be analyzed for the following; sulfate, chloride, nitrite, nitrate, ammonia, TKN, total phosphorus, BOD, COD, pH, specific conductance, total hardness (as CaCO3), and metals including; arsenic, selenium, antimony, beryllium, calcium, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, silver, sodium, thallium, and zinc.

The initial post Loading Test II analytical results reported dissolved arsenic concentrations above AGQS in two of the monitoring wells. MW-11 reported a dissolved arsenic concentration of 40 μ g/L and MW-14 reported a dissolved arsenic concentration of 26 μ g/L, both exceeding the AGQS of 10 μ g/L. All other analytes were below AGQS or were below detection threshold. The samples of May 16, 2019 were taken by a Pinetree Power employee. It is Horizons Engineering suspicion that proper sample taking protocol was not adhered to in this round of sampling. Two follow-up sampling events followed, executed by Horizons Engineering personnel for consistency. Individual results are summarized below.

Analytical results from compounds with reported concentrations above the laboratory detection limit are summarized in **Appendix I**, with their respective New Hampshire Department of Environmental Services (NHDES) Ambient Groundwater Quality Standard (AGQS).

4.3.1 Monitoring Well MW-11

Loading Test I

Monitoring well MW-11 is situated to the northeast of the test location, roughly 50 feet from the edge of the test basin. The sampling results for MW-11 reported a post-test increase in arsenic, beryllium, cadmium, calcium, chloride, copper, magnesium, manganese, potassium, selenium, sodium, zinc, total hardness, TKN, specific conductance and sulfate. While these compounds showed an increase, mostly to detectable levels, most are all still well below their respective AGQS. Arsenic concentration increased to 3.3μ g/L, from a previous level below detection threshold. Chloride increased roughly 37 percent over the span of the loading test.

Loading Test II

The initial post-Loading Test II sampling results for monitoring well MW-11 had a reported concentration of dissolved arsenic of 40 μ g/L, four times the AGQS of 10 μ g/L. MW-11 was then sampled on two separate occasions to confirm the analytical results. Both of the follow-up sampling events had reported dissolved arsenic concentrations below detection threshold. All other analytes reported concentrations either below method detection levels or the AGQS.

4.3.2 Monitoring Well MW-14

Loading Test I

Monitoring well-14 is situated directly to the west of the test basin, slightly down gradient. The sampling results for monitoring well-14 reported a post-test concentration increase in arsenic, beryllium, cadmium, calcium, chloride, copper, magnesium, potassium, selenium, sodium, zinc, total hardness, and specific conductance. While these compounds showed an increase from background, mostly to detectable levels, they are all still well below their respective AGQS. Notably, arsenic increased to 2.5μ g/L, from a previous level below detection threshold and chloride increased roughly 58 percent over the span of the loading test. Total phosphorus, TKN, and pH reported a decrease in concentration at the conclusion of the first loading test.

Monitoring well-14 was also tested for perfluorinated alkylated substances (PFAS) with the pre-test sample suite on January 7, 2019. Testing reported PFAS levels below detection limits for the sample.

Loading Test II

The initial May 16, 2019 post-loading test II sampling results for monitoring well-14 reported a dissolved arsenic concentration of 26 μ g/L, exceeding the AGQS of 10 μ g/L. MW-14 was sampled on three more occasions, with both the May 24, 2019 and June 3, 2019 events having a reported concentration of dissolved arsenic of 11 μ g/L and 14 μ g/L respectively. Both of these analytical results were above the arsenic AGQS of 10 μ g/L, so the well was tested again on June 10, 2019 yielding a reported dissolved arsenic concentration of 2.2 μ g/L. All other analytes reported concentrations either below method detection levels or the AGQS.

4.3.3 Monitoring Well MW-16

Loading Test I

Monitoring Well-16 is situated to the west of the test basin, down a steep gradient just upslope from the lowlands and wetlands adjacent to the Chocorua River. The sampling results for monitoring well MW-16 reported a post-test increase in calcium, chloride, copper, magnesium, potassium, sodium, zinc, and pH. While these compounds showed a slight increase from background, all were still well below their respective AGQS. Manganese, COD, and total hardness reported a decrease post loading test.

Loading Test II

The initial post-Loading Test II sampling results for monitoring well MW-16 were taken on May 16, 2019 and reported a dissolved arsenic concentration of 1.1 μ g/L, well below the AGQS of 10 μ g/L. Follow-up testing on May 24, 2019 and June 3, 2019 both reported dissolved arsenic concentrations below method detection limits. All other analytes reported concentrations either below method detection levels or their respective AGQS.

5.0 HYDRAULIC LOADING TEST ANALYSES

5.1 Loading Test I Analysis

Water table response was observed at observation wells MW-9, MW-11, MW-12, MW-13, MW-14 and MW-15. Additional responses were noted in other wells which were monitored but did not directly correlate to the loading of the basin. A maximum water table response of 4.98-feet was observed at MW-12. MW-1 was also monitored for water level during the loading test. The maximum response observed at MW-1 was 0.19-feet. It is interpreted that the response noted at MW-1 is not correlative with the basin loading but rather a semi-regional natural rise in water level.

For ease of analysis, the data has been graphed in several formats:

- **Figure 1** Response; Arithmetic
- **Figure 2** Response; Semi-Log
- **Figure 3** Water Elevation; Arithmetic

- **Figure 4** Water Elevation; Semi-Log
- Figure 5 9 Modeled versus Actual Mounding Height

Hydraulic conductivity was calculated using the water elevations on the third day of testing when the basin was dosed with the largest volume of water, 188,200 gallons. Wells MW-9, MW-11, MW-13, MW-14 and MW-15 were used to calculate the hydraulic conductivity. The equilibrium equation for an unconfined aquifer was used. The calculated hydraulic conductivity from; MW-13 to MW-14 is 74.205 feet per day (ft/day), MW-13 to MW-15 is 67.01 ft/day, MW-14 to MW-15 is 123.46 ft/day, MW-11 to MW-15 is 22.657 ft/day and MW-15 to MW-9 is 39.33 ft/day. The calculated average hydraulic conductivity for the Site is 65.332 ft/day.

The RIB mounding analysis uses the Hantush Method. Input data includes the dimensions of the recharge basin, hydraulic conductivity, the initial saturated thickness, and the time frame for the calculation. The real variable in the analysis is the hydraulic conductivity. This value is refined by calibrating the Hantush model to agree with the actual groundwater mound growth observed during the loading tests. Multiple calculations were made for each of the observation wells using the actual measured saturated thickness before the test started and the measured flow rate into the basin. A range of hydraulic conductivities were used and the results graphed. The best fits were obtained using hydraulic conductivities of 50 ft/day, 18 ft/day, 25 ft/day, 42 ft/day, and 42 ft/day for MW-11, MW-14, MW-13, MW-12 and MW-15, respectively. The geometric mean for the area is 35.4 ft/day.

All figures and calculations related to Load Test I response and calculations are included in **Appendix J**.

5.2 Loading Test II Analysis

Hydraulic Loading Test II of Basin 4 was conducted over a span of 20 days from April 9-29, 2019. A total of 632,265-gallons of water was discharged to the test basin over this period. Monitoring wells MW-1, MW-9, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16, and MW-17 were monitored for water table response to the loading test. Data for MW-12, located in the center of the basin is sparse due to difficulties accessing the monitoring well when there was water in the basin. Water levels were measured for each day of loading utilizing a tape measure by Pinetree Power personnel. The maximum water level response occurred at MW-9, northwest and down gradient from the test basin. 4.84feet of water table response was noted on April 19, 2019. Significant response was also observed in MW-13 with an elevation change of 4.5-feet from pre-test levels. Response was noted in all monitored wells with the exception of MW-16 and MW-17. Both lie downgradient by the Chocorua River and both showed little response from loading. Maximum response in those wells was 0.83 feet, likely due to rainfall and snow melt affecting local water table variation more than the loading influence. Over the course of testing 5.28-inches of precipitation fell, and approximately 15-inches of snowpack melted. The NOAA climatological data for the area can be found in Appendix K, along with water level graphical response charts for the monitored wells.

For ease of analysis, the data has been graphed in several formats:

- **Figure 10** Response; Arithmetic
- Figure 11 Response; Semi-Log
- **Figure 12** Water Elevation; Arithmetic
- **Figure 13** Water Elevation; Semi-Log

The test basin did not show signs of overtopping or breakout during or after the load testing.

6.0 RIB GROUNDWATER MOUNDING ANALYSES

The hydraulic conductivity values from Loading Test I were used to run the groundwater mounding analyses for the RIB area. The RIB area is defined as the area north/northwest of the existing basin and west of the Pinetree Power Plant.

A calculation was completed for a scenario during "average" water table conditions. The calculations were run for two scenarios at the area; during "average" water table conditions. Average water table conditions are assumed to be those measured prior to the start of the loading tests. The calculations were done for various times ranging up to the 90 days specified in the NHDES publication Land Treatment and Disposal of Reclaimed Wastewater: Guidance for Groundwater Discharge Permitting.

To determine the direction of groundwater flow over the entire site, a comprehensive set of water measurements was obtained on December 10, 2018. The groundwater contour plan produced from that data is included as **Appendix L**. The overall direction of groundwater flow is westerly, toward Chocorua River.

Test Run #1

Test run #1 was for the area to be loaded at 25,000 gpd. It can be seen in Table 1 that at 90 days under normal water conditions the RIB area has 37.151 feet of unsaturated soil below the RIBs. This area meets the 4 feet of unsaturated soil at the 90 day requirement.

Test Run #2

Test run #2 was for the area to be loaded at 50,000 gpd. It can be seen in Table 2 that at 90 days under normal water conditions the RIB area has 35.628 feet of unsaturated soil below the RIBs. This area meets the 4 feet of unsaturated soil at the 90 day requirement.

Test Run #3

Test run #3 was for the area to be loaded at 100,000 gpd. It can be seen in Table 3 that at 90 days under normal water conditions the RIB area has 32.832 feet of unsaturated soil below the RIBs. This area meets the 4 feet of unsaturated soil at the 90 day requirement.

	No	ormal Water Tab	ole
	Mound	Elev at Avg	Unsaturated
Days	Height (ft)	Water Table	Soil (ft)
1	0.853	433.333	37.927
2	0.973	433.453	37.807
3	1.044	433.524	37.736
4	1.094	433.574	37.686
5	1.132	433.612	37.648
6	1.164	433.644	37.616
7	1.191	433.671	37.589
8	1.214	433.694	37.566
9	1.234	433.714	37.546
10	1.252	433.732	37.528
20	1.372	433.852	37.408
30	1.441	433.921	37.339
40	1.491	433.971	37.289
50	1.529	434.009	37.251
60	1.560	434.040	37.22
70	1.586	434.066	37.194
80	1.609	434.089	37.171
90	1.629	434.109	37.151

Table 1Long-Term Mounding at RIB AreaLoading Rate: 25,000 gpd

Table 2Long-Term Mounding at RIB AreaLoading Rate: 50,000 gpd

	No	ormal Water Tat	ble	
	Mound Elev at Avg Unsaturated			
Days	Height (ft)	Water Table	Soil (ft)	
1	1.677	434.157	37.103	
2	1.908	434.388	36.872	
3	2.043	434.523	36.737	
4	2.139	434.619	36.641	
5	2.213	434.693	36.567	
6	2.273	434.753	36.507	
7	2.324	434.804	36.456	
8	2.368	434.848	36.412	
9	2.406	434.886	36.374	
10	2.441	434.921	36.339	
20	2.667	435.147	36.113	
30	2.799	435.279	35.981	
40	2.892	435.372	35.888	
50	2.963	435.443	35.817	
60	3.022	435.502	35.758	
70	3.071	435.551	35.709	
80	3.114	435.594	35.666	
90	3.152	435.632	35.628	

	No	ormal Water Tab	ble
	Mound	Elev at Avg	Unsaturated
Days	Height (ft)	Water Table	Soil (ft)
1	3.248	435.728	35.532
2	3.679	436.159	35.101
3	3.930	436.41	34.850
4	4.106	436.586	34.674
5	4.242	436.722	34.538
6	4.353	436.833	34.427
7	4.446	436.926	34.334
8	4.527	437.007	34.253
9	4.598	437.078	34.182
10	4.661	437.141	34.119
20	5.074	437.554	33.706
30	5.313	437.793	33.467
40	5.481	437.961	33.299
50	5.610	438.090	33.170
60	5.715	438.195	33.065
70	5.804	438.284	32.976
80	5.881	438.360	32.900
90	5.948	438.428	32.832

Table 3Long-Term Mounding at RIB AreaLoading Rate: 100,000 gpd

It is clear from the data presented above that the area for the RIB system meets the 4' of unsaturated soil requirement under normal water conditions. It is noted that seasonal high water table may fluctuate some amount but it is interpreted the natural fluctuation will not exceed the available capacity of the unsaturated soil column.

7.0 SUMMARY AND RECCOMENDATIONS

Based on the data and results presented in this report it is recommended that Pinetree Power continue the development of the RIB system in the proposed area and be permitted to dispose of up to 100,000 gallons per day of wastewater effluent from the facility's cooling system. This is to include the construction of 3 additional, 50 feet by 30 feet rapid infiltration basins. A Groundwater Discharge Permit application is included as **Appendix M**.

Recommended standard conditions of the permit are as follows;

- Pinetree Power shall not violate surface water quality standards (N.H. Admin. Rules, Env-Wq 1700) in any surface water body.
- The discharge shall not result in erosion or sedimentation on site or into any surface water, wetland, or storm water drainage way.
- The discharge shall not *cause* a violation of the Ambient Groundwater Quality Standards adopted by the NHDES (N.H. Admin Rules, Env-Wq-402).
- Pinetree Power shall allow an authorized member of the NHDES' staff, or its agent, to enter the property covered by the permit for the purpose of collecting information,

examining records, collecting samples, or undertaking other actions associate with the permit.

- Pinetree Power shall comply with any conditions associated with the discharge that are stipulated by the municipality or county authority in which it is located.
- Any chemical treatment or alteration of the discharge shall be documented.
- Erosion controls shall be implemented and maintained to eliminate scouring and erosion as needed.
- Pinetree Power shall maintain a water quality monitoring program and submit monitoring results to the NHDES' Waste Management Division no later than 45 days after sampling. Samples shall be taken from on-site monitoring wells as shown and labeled on the referenced Site plan and other sampling points listed on the following table in accordance with the schedule outlined herein.

Monitoring Locations	Sampling Frequency	Parameters
MW-1, MW-4, MW-5, MW-	April and October each year	Specific conductance @
8, MW-9, MW-19, MW-17,		25°C, pH, chloride, nitrate,
MW-16, MW-14, MW-11,		nitrite, dissolved metals
MW-13		including; antimony, arsenic,
		beryllium, cadmium, calcium,
		chromium, copper,
		magnesium, manganese,
		mercury, molybdenum,
		nickel, potassium, selenium,
		sulfate and static water
		elevation
Circulation Water Effluent	Weekly	Specific conductance @
		25°C, pH, chloride, nitrate,
		nitrite, total metals including;
		antimony, arsenic, beryllium,
		cadmium, calcium,
		chromium, copper,
		magnesium, manganese,
		mercury, molybdenum,
		nickel, potassium, selenium,
		sulfate

Sampling shall be performed in accordance with the documents listed in Env-Or 704.01 (i). Samples shall be analyzed by a laboratory certified by the U.S. Environmental Protection Agency or the New Hampshire Department of Environmental Services. All overburden groundwater samples collected for metals analyses shall be analyzed for dissolved metals; and thus must be field filtered (with a 0.45 micron filter) and acidified after filtration in the field. Water samples collected from the circulation water effluent shall be analyzed for total metals and shall not be filtered.

Summaries of water quality shall be submitted annually to the NHDES' Waste Management Division, in the month of December, using a format acceptable to the NHDES. The Annual

Report shall include a tabular summary of all monitoring results to date, an assessment of trends in the data, a groundwater contour map utilizing the most recent groundwater elevation data, an evaluation of the performance of the water quality monitoring program and any recommendations for modifications to the permit.

The Annual Report shall be prepared and stamped by a professional engineer or professional geologist licensed in the State of New Hampshire.

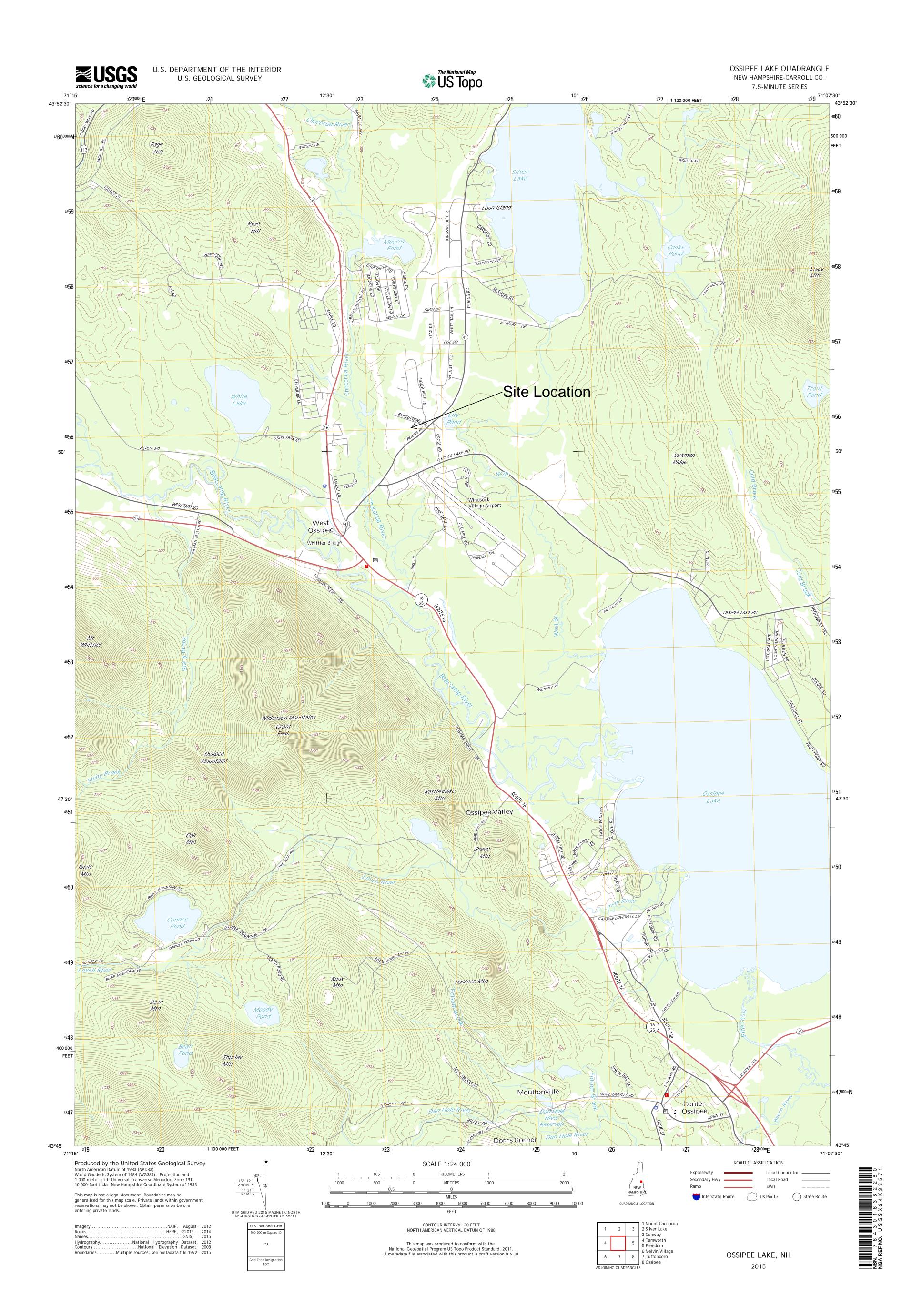
Please do not hesitate to contact the undersigned at 603-877-0116 if you have any questions or comments regarding the information contained within this report.

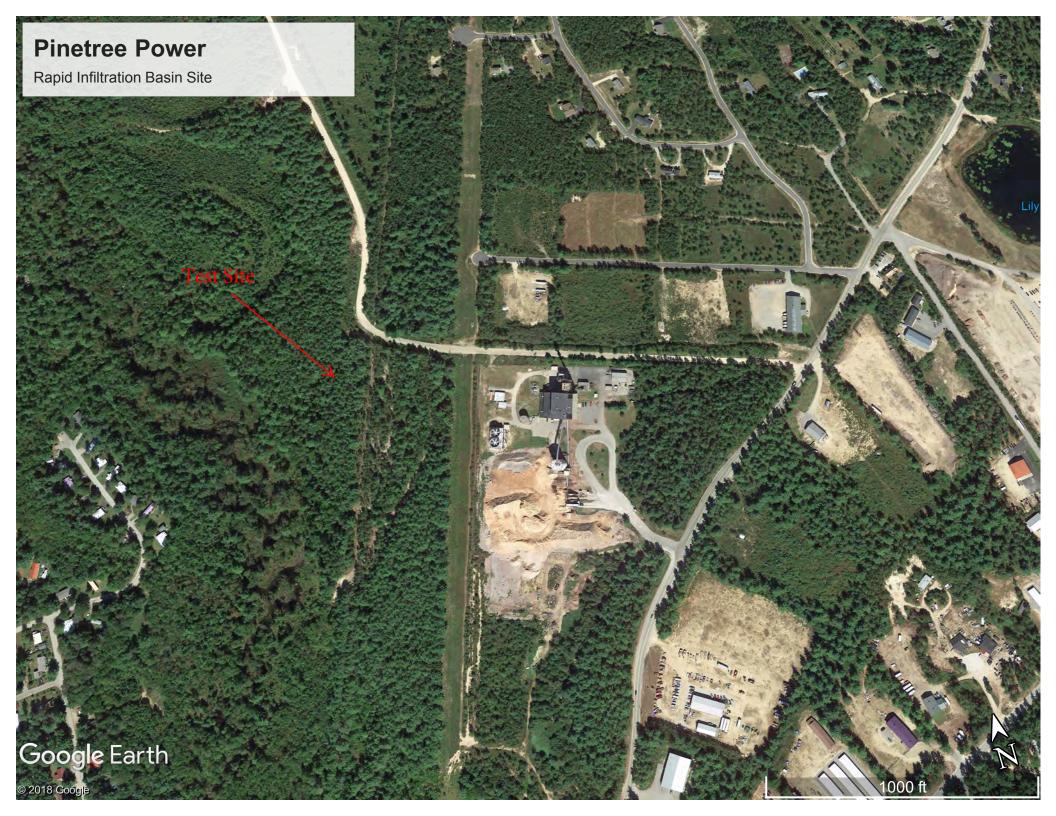
Sincerely,

Joel F. Banazah

Joel F. Banaszak

APPENDIX A Site Location Map





APPENDIX B Temporary Groundwater Discharge Permit



The State of New Hampshire Department of Environmental Services

Robert R. Scott, Commissioner



December 28, 2018

JOEL F. BANASZAK HORIZONS ENGINEERING, INC. P.O. BOX 1825 NEW LONDON, NH 03257-1825

TEMPORARY DISCHARGE PERMIT

SUBJECT: TAMWORTH – ENGIE-Pine Tree Power, 469 Palins Road, Temporary Discharge Permit for Proposed Rapid Infiltration Basin Site Site # 199407004 / RSN# 38933 / Activity # 264283

Dear Mr. Banaszak:

Please find enclosed the Temporary Discharge Permit Number TGP-199407004-T-001, approved by the Water Division of the Department of Environmental Services (NHDES) for the discharge of water for hydraulic basin testing activities.

The discharge shall not result in erosion or sedimentation into any surface water or wetland.

Please contact me at the number below or by e-mail at <u>mitchell.locker@des.nh.gov</u>.if you have any questions

Sincerely,

Mitchell Locker P.G. Drinking Water & Groundwater Bureau

S:\WD-DWGB\...\...\2019mdl\Permits\199407004-T-001 tgp basintest.doc e-copy: Stephen Roy, NHDES/DWGB File copy: Robert Lussier, Pine Tree Power, Inc.



The

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

WATER DIVISION

hereby issues

TEMPORARY DISCHARGE PERMIT

NO. TGP-199407004-T-001

to the permittee

ENGIE – PINE TREE POWER, INC.

for the discharge of water for basin testing

off of PLAINS ROAD

in TAMWORTH, NH

TO: PINE TREE POWER, INC. 469 PLAINS ROAD TAMWORTH, NH 03886 ATTN: ROBERT LUSSIER

Date of Issuance: December 28, 2018 Date of Expiration: April 27, 2019

Pursuant to authority in N.H. RSA 485-A:13, I(a), the New Hampshire Department of Environmental Services (NHDES), hereby grants this permit to discharge water at the above described location subject to the following conditions:

(continued)

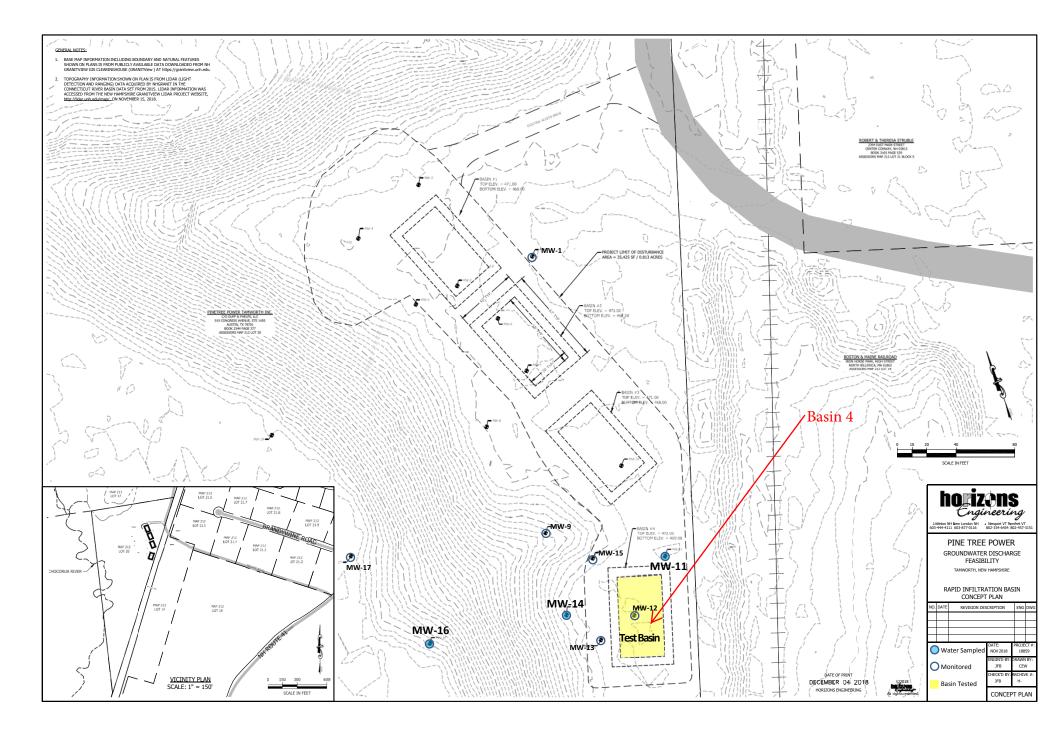
STANDARD PERMIT CONDITIONS

- 1. The permittee shall not violate surface water quality standards (N.H. Admin. Rules, Env-Wq 1700) in any surface water body.
- 2. The discharge shall not result in erosion or sedimentation on site or into any surface water, wetland, or storm water drainage way.
- 3. The discharge shall not cause a violation of the Ambient Groundwater Quality Standards adopted by the NHDES (N.H. Admin. Rules, Env-Wq-402). If the natural groundwater quality exceeds the AGQS the discharge shall not exceed the site's natural levels.
- 4. The permittee shall allow an authorized member of the NHDES' staff, or its agent, to enter the property covered by this permit for the purpose of collecting information, examining records, collecting samples, or undertaking other action associated with this permit.
- 5. The permittee shall comply with any conditions associated with this discharge that are stipulated by the municipality or county authority in which it is located.
- 6. The NHDES reserves the right under RSA 485-A, to require additional sampling of the discharge and/or discharge area.
- 7. Any chemical treatment or alteration of the discharge shall be documented.
- 8. Erosion controls shall be implemented and maintained to eliminate scouring and erosion as needed.

Mitchell D. Locker, P.G. Water Division / Drinking Water & Groundwater Bureau

Under RSA 21-0:14 and 21-0:7-IV, any person aggrieved by any terms or conditions of this permit may appeal to the Water Council in accordance with RSA 541-A and N.H. Admin. Rules, Env-WC 200. Such appeal must be made to the Council within 30 days and must be addressed to the Chairman, Water Council, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095.

APPENDIX C Annotated Site Plan



APPENDIX D Soil Boring Logs



SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

MW-1

WELL ID: MW-1

Page	1	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE COMPLETED

Joel F. Banaszak, P.G.
November 5, 2018
November 5, 2018

Joel F. Banaszak

18859

Elevation	:	ft.	Datum: As	sumed		Boring L	ocation: 43 50) 13.9 -71 11	1 59.94						
GRO	UNDWATER REA	ADINGS	SA	MPLER		Rig Mak	e & Model: (Central Minin	na Eaui	pment 55			Protective	Casing	Well Development
Dete	Domth (ft)	Deferrer	Tumor No.			Truc			-	Hollow Stem Auger	Πν	fud Rotary	Roadbo		
Date	Depth (ft)	Reference				 ✓ AT				Cable Tool		ual Rotary	✓ Standp		
11/14/18	40.66	TOC	Hammer (Ib):		Trip				Drive & Wash		Direct Push	None None		
			Fall (in):	1		Ш пір	oa			Drive & Wash		fileet i usii			
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENI (ppm)	NG \	WELL				SAMPLE DE	SCRIP	TION			LITHOLOGIC DESCRIPTION
- 0 -															
-							59			e debris, dark br)	SL
							0.3' - 18.0' l	Medium to	coars	e sand, biege/ta	n, mec	lium well sorte	d, dry,		_
							loose								
															-
				-											
			_												
- 5 -					-										
			_		-										-
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- 10 -															~S~
			_												
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			_		_										-
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			_												
- 15 -															
											-				
			1												
			1				18.0'-30.0' 1	Medium to	fine s	and, white/biege	, well s	sorted drv. loo	se		-
			1							,		,,			
			1	1											
			-												
			-												
20			-												
	OHESIVE SOIL	S C	DHESIVE SC		LEC	END	INTERVAL (FT)			SUMMARY	-	1		DESCRIPT	
-	S/FT CONSISTENCY	-	OWS/FT CONSIST			crete	-	sos Overburg			50	L	THOLOGIC		
0 - 4	V. LOOSE	<2		OFT	Back					ear n.). e/air hammer:	0	-S- SAND		HT. TILL	
4 - 10	LOOSE	2 - 4		DFT	Grou					pipe length:(ft)	43	SAND SL SILT		FILL	
10 - 30	M. DENSE	4 - 8		STIFF		onite		ses Well star			3	-C- CLAY			COMPETENT
30 - 50	DENSE	8 - 15		IFF		d Pack		ses Well diar			2	SAND 8	GRAVEL		WEATHERED
>50	V. DENSE	15 - 3		TIFF		r Pipe		BGS Screen le			10				
		>30			Scre			BGS Screen s			0.01				

NOTES: Lithology logged from auger cuttings.

horiza	ns
Engin	eering Inc.

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

MW-1

WELL ID: MW-1

Page	2	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin					
LOCATION	Tamworth, New Hampshire					
CLIENT	ENGIE - Pinetree Power					
CONTRACTOR	Geosearch, Inc Sterling, MA					
DRILLER	Joseph Keenan					

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE

E COMPLETED	Ν

Joel F. Banaszak, P.G.	
November 5, 2018	
November 5, 2018	

			1		- 1								
Elevation		ft.	Datum: As				ocation: 43 50 13					<u> </u>	
	UNDWATER RE	ADINGS		SAMPLER Rig Make & Model: Central Mining Equipment 55 Protective Casin						Well Development			
Date	Depth (ft)	Reference	Type: Nor	ie		Truc		Hollow Stem		Mud Rotary	Roadbo		Air Lift
11/14/18	40.66	TOC	Hammer (lb): 14	10	✓ ATV		Cable Tool		Dual Rotary	✓ Standpi		
			Fall (in):	30		Tripo	od	Drive & Was	sh ∐ I	Direct Push	None None		Peristaltic
				FIELD				SAMPL	E DESCRIP	PTION			
DEPTH	SAMPLE ID	BLOWS	REC / PEN	SCREENING		VELL							LITHOLOGIC
(FT)	0,	PER 6 IN	(IN)	(ppm)	D	ETAIL							DESCRIPTION
_ 20 _													
							18.0'-30.0' Me	dium to fine sand, white/	biege, well	sorted dry, lo	ose		-
													-
													-
													-
													-
- 25 -			-										-
													-
			_										-
			_										-
													-
			_										_
													_
_ 30 _													~S~
_ 30 _							30.0' - 50.0' F	ne sand, tan/beige, well	sorted, dry,	loose			
													-
		-		-									
		-	-	-									-
		-	-	-									-
- 35 -													-
			-	-									
													-
													-
			4										-
													-
1													
40]										
NON-C	OHESIVE SOI	LS CO	DHESIVE SC	DILS	LEG	END	INTERVAL (FT)	SUMMARY			LITHOLOGIC	DESCRIPT	ION
BLOW	VS/FT CONSISTENCY	BL	OWS/FT CONSIST	ENCY	Conc	rete	BGS	Overburden (linear ft.):	50				
0 - 4	V. LOOSE	<2	V. S	SOFT	Back	fill	0'-35' BGS	Feet of rock core/air hammer	r: 0	<mark>~S~</mark> SAND		HT- TILL	
4 - 10	LOOSE	2 - 4		DFT	Grou	t	BGS	Well solid riser pipe length:(f	ft) 43			22 FILL	
10 - 30	M. DENSE	4 - 8		STIFF	Bent	onite	35'-38' BGS	Well standpipe height ags:	3	CLAY			COMPETENT
30 - 50	DENSE	8 - 15		IFF		Pack		Well diameter (in.):	2	SAND	& GRAVEL	R/W ROCK /	WEATHERED
>50	V. DENSE	15 - 30				r Pipe		Screen length (ft.):	10				
L		>30		ARD	Scre	ən	40' - 50' BGS	Screen slot size:	0.01				
NOTES:	Lithology logge	ed from aug	er cuttings.										

h	De ize	eerii	ng Inc.	SOII	- B	ORIN	G LOG &	WELL D	IAGRAM		BO	RING NO.: MW-1		WELL I MW-1 3 of	
PROJE(LOCATI CLIENT CONTR DRILLE	ON ACTOR	Pinetree Por Tamworth, N ENGIE - Pin	wer - Rapid Ir Jew Hampshi etree Power Inc Sterling	HORIZONS FILE NO. 18859 Impshire PROJECT MGR. Joel F. Banaszak Power FIELD REP. Joel F. Banaszak						, P.G. 8					
Elevation	: UNDWATER REA	ft.	Datum: As	sumed			ocation:43 50 13.9								
						Rig Make		tral Mining Equi	pment 55 Hollow Stem Auge	er 🔲 Mud Rota	1517	Protective Casin Roadbox	<u>,</u>	Well Deve Air Lift	
Date	Depth (ft)	Reference	Type: Non			☑ ATV			Cable Tool	Dual Rota		Standpipe		Bailer	
11/14/18	40.66	TOC	Hammer (Ib Fall (in):): 140 30	,	Tripo			Drive & Wash	Direct Pus		□ None		Peristal	ltic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD		WELL DETAIL			SAMPLE DE	ESCRIPTION					OLOGIC RIPTION
- 40			-				30.0'-50.0' Fine	e sand, white	/biege, well sor	ted dry, loose					
- 45			-												-S-
- 50															
														· · · ·	
- 55 -			-												
60 NON-C	OHESIVE SOIL	s co	HESIVE SO		LEC	END	INTERVAL (FT)	c	UMMARY			THOLOGIC DE	CRIPT	.ION	
	SIFT CONSISTENCY V. LOOSE LOOSE M. DENSE DENSE V. DENSE		WS/FT CONSISTE V. S SC M. S ST	OFT OFT TIFF IFF	Con Back Grou Bent Sand	crete kfill ut tonite d Pack er Pipe	BGS 0'-35' BGS BGS 35'-38' BGS 38'-50' BGS +3' - 40' BGS	Overburden (lin Feet of rock cor Well solid riser Well standpipe Well diameter (i Screen length (Screen slot size	ear ft.): e/air hammer: pipe length:(ft) height ags: n.): f.):	43 SL 3 C	SAND SILT CLAY	R/C	TILL FILL ROCK /	COMPE	
NOTES:	Lithology logge	d from auge	er cuttings				•								



SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

MW-2

WELL ID: MW-2

Page	1	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin						
LOCATION	Tamworth, New Hampshire						
CLIENT	ENGIE - Pinetree Power						
CONTRACTOR	Geosearch, Inc Sterling, MA						
DRILLER	Joseph Keenan						

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE

STARTED	INO
COMPLETED	No

Joel F. Banaszak, P.G.
November 5, 2018
November 5, 2018

Joel F. Banaszak

Elevation		ft.	Datum: As			Boring L	ocation: 43 50 13	.89 -71 12 0	.69					
GRO	UNDWATER RE	ADINGS	SA	MPLER		Rig Mak	e & Model: Cer	tral Mining E	quipment 55			Protective	Casing	Well Development
Date	Depth (ft)	Reference	Type: Non	e		Truc	k	[✓ Hollow Stem A	uger 🗌 1	Mud Rotary	Roadb	ox 🛛	Air Lift
11/14/18	40.23	TOC	Hammer (Ib):	140	ATV	7	[Cable Tool		Dual Rotary	Standy	pipe 🖸	Bailer
			Fall (in):		30	🗌 Trip	od	[Drive & Wash		Direct Push	✓ None		Peristaltic
									SAMPLE	DESCRIP				
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELI SCREEN (ppm	IING	WELL DETAIL			SAWFEL	DESCRI	TION			LITHOLOGIC DESCRIPTION
						ТТ								
- o -														SL
		3					3		tive debris, darl				9	
	S-24	3	16.5/24				0.5' - 2.3' FINE	sand, orai	ngish-brown, we	ell sorted,	dry, very loos	se		_
		4	_											_
		5												
		4	_				2.3' - 18.0' Me	dium to co	arse sand, beig	e, mediun	n well sorted,	dry,		_
	S-25	5	19/24				loose							
	0 20	7	10/24											
		7												
		5												
_	0.00	9	47/04											
- 5 -	S-26	9	17/24											
		8												
		6												
		8	_											
	S-27	6	17/24											
		6												
		7												-
	S-28	5	18/24	-										
		7												_
- 10 -		7												_
		4	_											~S~
	S-29	6	16/24											
		7	_											
		9												
		7												
	S-30	7	7 22/24											
	0.00	6												
		7												
		3												
- 15 -	S-31	5	17/24											
- 15 -	3-31	8	17724											
		8												
		8												
	S-32	7	19/24											
	5-32	7	19/24											
		7												
		4		1			18.0' - 30.0' N	edium to fi	ne sand, tan/be	ige, well	sorted, dry, le	oose		
	0.00	6	10/01							-				
	S-33	8	16/24											
20		8	1											
	OHESIVE SOIL		HESIVE SC	DILS	LE	GEND	INTERVAL (FT)		SUMMARY			LITHOLOGI	C DESCRIP	TION
BLOW	S/FT CONSISTENCY	BLC	WS/FT CONSIST	ENCY		ncrete	BGS	Overburden	(linear ft.):	50				
0 - 4	V. LOOSE	<2	V. S	OFT		kfill			core/air hammer:	0	-S- SAND		+T+ TILL	
4 - 10	LOOSE	2 - 4		DFT	Gro	ut	BGS	Well solid ri	ser pipe length:(ft)	43	SL SILT		S FILL	
10 - 30	M. DENSE	4 - 8		TIFF		tonite	35'-38' BGS	Well standp	ipe height ags:	3	-C-CLAY			/ COMPETENT
30 - 50	DENSE	8 - 15		IFF		d Pack		Well diamet		2	SAND	& GRAVEL	R/W ROCK	/ WEATHERED
>50	V. DENSE	15 - 30		TIFF		er Pipe		Screen leng		10				
I		>30	HA	RD	Scr	een	40' - 50' BGS	Screen slot	size:	0.01				

horiza	ns
Engin	eering Inc.

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

November 5, 2018

Joel F. Banaszak, P.G.

MW-2

HORIZONS FILE NO.

PROJECT MGR.

DATE STARTED

FIELD REP.

WELL ID: MW-2

Page	2	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin							
LOCATION	Tamworth, New Hampshire							
CLIENT	ENGIE - Pinetree Power							
CONTRACTOR	Geosearch, Inc Sterling, MA							
DRILLER	Joseph Keenan							

DRILLE	R	Joseph Keenan DATE COMPLETED November 5, 2018						018						
						1								
Elevation		ft.	Datum: As			-	ocation: 43 50 13					1	<u> </u>	
	UNDWATER RE	1		MPLER		Rig Make		tral Mining Equi			MadDatam	Protecti Road	ve Casing	Well Development Air Lift
Date	Depth (ft)	Reference	Type: Non			☐ Huer			Hollow Stem Aug Cable Tool		Mud Rotary Dual Rotary			Bailer
11/14/18	40.23	TOC	Hammer (Ib Fall (in):): 14 30	10	Tripc			Drive & Wash		Direct Push	✓ Non		Peristaltic
			i an (iii).	FIELD					SAMPLE D	ESCR			k	
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	SCREENING (ppm)		WELL DETAIL								LITHOLOGIC DESCRIPTION
- 20 -														
		3 6	_	-			18.0 - 30.0 IVI	edium to fine	sand, tan/beige	e, we	Il sorted, dry, lo	ose		_
	S-34	6	15/24											
		5	-											
		10												
	S-35	9	21/24											
	0-00	4	21/24											
		6												
		5	_											
_ 25 _	S-36	6	21/24	-										
		5	-											—
		7 10												
		8	-											
	S-37	8	20/24											
		7	_											
		6												
	S-38	7	19/24											
	0.00	9		-										
- 30		8												~S~
		6	_	-			30.0' - 50.0' Fi	ne sand, tan/	beige, well sor	ted, d	ry, loose			
	S-39	8 9	17/24											
		9	_											
		7												
	S 40	9	10/04											
	S-40	9	18/24											
		9												
		6	_											
- 35 -	S-41		12 20/24											
		9 9	-											_
		9												_
		8	-				Saturated soils	s at 37.0' bos						
	S-42	10	21/24											
		11												
		5	_											
	S-43	6	22/24											
		9	_		_									_
40 NON-C	OHESIVE SOI	8 _s co	DHESIVE SC		LEG	GEND	INTERVAL (FT)	9	SUMMARY		L	ITHOLOG	IC DESCRI	PTION
-	VS/FT CONSISTENCY	-	DWS/FT CONSIST			crete		Overburden (lin		50	T	•		
0 - 4	V. LOOSE	<2		OFT	Bacl			Feet of rock cor		0	-S- SAND		+T+ TILL	
4 - 10	LOOSE	2 - 4		OFT TIFF	Grou			Well solid riser		43				
10 - 30 30 - 50	M. DENSE DENSE	4 - 8 8 - 15		IFF		tonite d Pack		Well standpipe Well diameter (i		3 2	-C-CLAY		R/W POC	K / COMPETENT K / WEATHERED
>50	V. DENSE	15 - 30		TIFF	Rise	r Pipe		Screen length (10				
		>30			Scre			Screen slot size		0.01				
NOTES:														

horiza	NS
Engin	eering Inc.

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

November 5, 2018

Joel F. Banaszak, P.G.

MW-2

HORIZONS FILE NO.

PROJECT MGR.

DATE STARTED

FIELD REP.

WELL ID: MW-2

Page 3 of 3

PROJECT	Pinetree Power - Rapid Infiltration Basin						
LOCATION	Tamworth, New Hampshire						
CLIENT	ENGIE - Pinetree Power						
CONTRACTOR	Geosearch, Inc Sterling, MA						
DRILLER	Joseph Keenan						

DRILLE	R	Joseph Kee	enan							DA	TE COMPLET	ED No	vember 5, 201	8	
Elevation		ft.	Datum: As	ssumed		Boring I	ocation: 43 50 13	3.89 -71 12 0.69)						
GRO	UNDWATER RE	ADINGS	S/	AMPLER		Rig Mak	ig Make & Model: Central Mining Equipment 55 Protective Casing Well								
Date	Depth (ft)	Reference	Type: Non	ne .		🗌 Tru	- k	1	Hollow Stem Aug	ger 🗌 N	Mud Rotary	🗌 Roadt	box 🗌	Air Lift	
11/14/18	40.23	TOC	Hammer (Ib		0	✓ AT	v		Cable Tool		Dual Rotary	Stand	pipe 🗸	Bailer	
11/14/10	40.20	100	Fall (in):	30	0	🗌 Trij	ood		Drive & Wash		Direct Push	✓ None		Peristaltic	
			r un (m).										I		
DEPTH		BLOWS	REC / PEN	FIELD		NELL			SAMPLE D	ESCRIP	TION			LITHOLOGIC	
(FT)	SAMPLE ID	PER 6 IN	(IN)	(ppm)		ETAIL								DESCRIPTION	
40															
- 40 -		3					30.0' - 50.0' Fi	ne sand, tan/	beige, well so	rted, dry	, loose				
	0.24	3	40/04												
	S-34	4	16/24												
		5													
ľ							Standard pene	etration test c	ould not be cor	npleted	beyond 42 fee	et bgs			
									ng the borehole		•	-			
	NS		-				2007		terminal depth						
			-				Ŭ		·		U				
-															
			1											-	
- 45	NS		-	-	-									~S~	
			-	-											
			-												
	NS		-		_										
			-												
			-		-										
			-		_										
	NS		-												
			-		_										
- 50															
			-												
			-												
			-												
- 55 -															
-															
		<u> </u>	_		_										
			4		-										
		L	-		-		-								
60 NON C	OHESIVE SOIL		DHESIVE SC						SUMMARY				C DESCRIPT		
	ORESIVE SOIL		OMESIVE SU			END	INTERVAL (FT)	Overburden (lir		50	L		O DEGURIPI		
0 - 4	V. LOOSE	<2		SOFT	Bacl			Feet of rock co		0	~S~ SAND		TILL		
4 - 10	LOOSE	2 - 4		DFT	Grou				pipe length:(ft)	43	SL SILT				
10 - 30	M. DENSE	4 - 8		STIFF	77	onite		Well standpipe		3	-C- CLAY			COMPETENT	
30 - 50	DENSE	8 - 15	ST	IFF	1000	Pack		Well diameter (2	SAND 8	GRAVEL		WEATHERED	
>50	V. DENSE	15 - 30			HT .	r Pipe		Screen length (10					
		>30	HA	ARD	Scre	en	40' - 50' BGS	Screen slot size	9:	0.01					
NOTES:															



V. DENSE

NOTES: Lithology logged from auger cuttings.

>50

15 - 30

>30

V. STIFF

HARD

Riser Pipe

Screen

+3' - 40'

40' - 50'

BGS

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

MW-3

WELL ID: MW-3

Page	1	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

CLIENT		ENGIE - Pinetree Power FIELD REP. Joel F. Banaszak, P										, P.G.			
CONTR	ACTOR	Geosearch, Inc Sterling, MA								DA	DATE STARTED November		5, 2018		
DRILLE	R	Joseph Kee	oseph Keenan					DATE C					E COMPLETED November 5, 201		
Elevation	:	Datum: As	sumed		Borir	ng Lo	ocation: 43 50 14.	62 -71 12	0.7						
GRO	UNDWATER REA	ADINGS	GS SAMPLER			Rig N	/ ake	& Model: Cent	ral Mining	Equipment 55			Protective Casing		Well Development
Date	Depth (ft)	Reference	Type: Non	е			Truck	k		✓ Hollow Stem Auger	r 🗌	Mud Rotary	Roadbox		Air Lift
11/14/18	39.08	TOC	Hammer (Ib			~	ATV	7		Cable Tool		Dual Rotary	Standpipe	1	Bailer
1.0.1.0.10	00.00		Fall (in):	,.	Tripo		od		Drive & Wash		Direct Push	✓ None		Peristaltic	
			(SCRI			┻┑	
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENIN (ppm)	ENING WELL				SAMPLE DESCRIPTION						
- o -															
•								Si		tative debris, dark br					SL
								0.5' - 16.0' Mee	dium to c	coarse sand, biege/ta	an, me	edium well sorte	ed, dry,		
								loose							
Ē															
			-												
- 5 -			-												
-															
			-												
-															
- 10 -															~S~
			-												~3~
-															
								I							[
			1											-	
- 15 -			1												[
	I		1												
								16 0'-30 0' Mov	lium to f	ine sand, white/biege		sorted dry loo	\$0		
	ļ		1					10.0-50.0 Met		ine sanu, white/blege	e, well	301 c u ul y, 100	36		
			-												
	I		-					 							
															
	ļ		4												
			1												
														_]	
20															
NON-C	OHESIVE SOIL	s co	HESIVE SO	OILS	LEG	END)	INTERVAL (FT)		SUMMARY		L	ITHOLOGIC DESCR	RIPT	ION
		WS/FT CONSISTE	ENCY	Con	crete		BGS	Overburde	en (linear ft.):	50					
0 - 4	V. LOOSE	<2	V. S	OFT	Bacl	cfill		0'-35' BGS	Feet of ro	ck core/air hammer:	0	-S- SAND	HT+ TIL	L	
4 - 10	LOOSE	2 - 4		DFT	Grou	ıt		BGS	Well solid	riser pipe length:(ft)	43	SL SILT	E FIL	L	
10 - 30	M. DENSE	4 - 8	M. S	TIFF	Bent	onite		35'-38' BGS	Well stand	dpipe height ags:	3	CLAY	R/C RO		COMPETENT
30 - 50	DENSE	8 - 15	ST	IFF	Sand	d Pacl	k	38'-50' BGS	Nell diam	eter (in.):	2	SAND 8	GRAVEL R/W RO	ск/	WEATHERED

Screen length (ft.):

BGS Screen slot size:

10

0.01

horiza	ns
Engin	eering Inc.

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

MW-3

WELL ID: MW-3

Page	2	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

DATE COMPLETED

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18859

Joel F. Banaszak							
Joel F. Banaszak, P.G.							
November 5, 2018							
November 5, 2018							

Elevation		ft.	Datum: As			1	ocation: 43 50 1					<u>т</u>		
	UNDWATER RE	1	SAMPLER			Rig Make & Model: Central Mining Equipment 55 Protective Casing Truck Thollow Stem Auger Mud Rotary Roadbox								Well Development Air Lift
Date	Depth (ft)	Reference							Hollow Stem Auger		fud Rotary	_		-
11/14/18	39.08	TOC	Hammer (Ib):	140	ATV					Dual Rotary	Stand		
			Fall (in):	30)	Tripo	d		Drive & Wash		Direct Push	✓ None		Peristance
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENII (ppm)		WELL DETAIL			SAMPLE DE	SCRIF	TION			LITHOLOGIC DESCRIPTION
- 20 -			_				16.0'-30.0' Me	dium to fine :	sand, white/biege	e, well	sorted dry, lo	ose		_ _ _ _ _
			_											
- 25 -			-											
			-											
- 30 -			-				30.0' - 50.0' Fi	ne sand, tan	/beige, well sorte	ed, dry,	loose			~5~
			_											 - - -
- 35 -			_											- - - -
			-											
40 NON 0														
	SOHESIVE SOII		OHESIVE SC .ows/ft consist			GEND	INTERVAL (FT)		SUMMARY	50				
0 - 4 4 - 10 10 - 30 30 - 50 >50	V. LOOSE LOOSE M. DENSE DENSE V. DENSE	<pre></pre>	V. S SC M. S 5 ST 0 V. S	OFT DFT STIFF IFF STIFF	Bac Gro Ben San Rise	ut tonite d Pack er Pipe	0'-35' BGS BGS 35'-38' BGS 38'-50' BGS +3'-40' BGS		ore/air hammer: r pipe length:(ft) e height ags: (in.): (ft.):	0 43 3 2 10	-S- SAND SL SILT CC CLAY	& GRAVEL		/ COMPETENT / WEATHERED
				NRU .	Scre	96[]	40' - 50' BGS	SUCCH SIUL SIZ		0.01				
NOTES: Lithology logged from auger cuttings.														

horize	ns
Engine	pering ^{inc.}

BORING NO .:

MW-3

WELL ID: MW-3

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PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE STARTED

	Joel F. Banaszak, P.G.
TED	November 5, 2018
PLETED	November 5, 2018

18859

Joel F. Banaszak

			-										
levation		ft.	Datum: As		Boring I	ocation: 43 50 14	.62 -71 12 0.7						
GROI	JNDWATER REA	ADINGS	SA	MPLER			tral Mining Equi				Protective		Well Development
Date	Depth (ft)	Reference	Type: Non	e	🗌 Tru			Hollow Stem Auger	□ M	ud Rotary	Roadb		Air Lift
11/14/18	39.08	TOC	Hammer (Ib): 140				Cable Tool		al Rotary	Standp	-	Bailer
			Fall (in):	30	🗌 Trij	ood		Drive & Wash	Di Di	rect Push	✓ None		Peristaltic
DEPTH		BLOWS	REC / PEN	FIELD SCREENING	WELL			SAMPLE DE	SCRIP	ΓΙΟΝ			
(FT)	SAMPLE ID	PER 6 IN	(IN)	(ppm)	DETAIL								LITHOLOGIC DESCRIPTION
40													
- 40						30.0'-50.0' Fin	e sand, white	/biege, well sorte	ed, dry,	loose			
							·	•					
45													~S~
- 45													~3~
50 -													
			-										
			-										
			-										
-													
			-										
- 55 -		-	4										
			-										
ŀ						+							
			-										
			-										
			-										
ŀ													
			-										
			-										
60			-										
	OHESIVE SOIL	S CO	HESIVE SC		LEGEND	INTERVAL (FT)	,	UMMARY	<u> </u>		ITHOI OGIO	DESCRIPT	ION
	S/FT CONSISTENCY		WS/FT CONSIST		Concrete		o Overburden (lin		50	L			
0 - 4	V. LOOSE	<2		OFT	Backfill	-	Feet of rock cor		0	-S- SAND		-T- TILL	
4 - 10	LOOSE	2 - 4		DFT	Grout		Well solid riser		43	SL SILT			
10 - 30	M. DENSE	4 - 8		TIFF	Bentonite	-	Well standpipe		3	CLAY			COMPETENT
30 - 50	DENSE	8 - 15			Sand Pack		Well diameter (2	SAND	& GRAVEL	R/W ROCK /	WEATHERED
>50	V. DENSE	15 - 30			Riser Pipe		Screen length (10				
		>30	HA	RD	Screen	40' - 50' BGS	Screen slot size	:	0.01				



V. DENSE

NOTES: Lithology logged from auger cuttings.

>50

15 - 30

>30

V. STIFF

HARD

Riser Pipe

Screen

+3' - 40'

40' - 50'

BGS

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

November 6, 2018

Joel F. Banaszak, P.G.

MW-4

WELL ID:

3

	Μ	W-4
Page	1	of

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DRILLE	R	Joseph k	Keenan							D	ATE COMPLET	ED	November 6,	2018	
Elevation	:		ft. Datum: A	ssumed		Boring	Location:43 50 14	.42 -71 12 1.4							
GRO	UNDWATER RE	ADINGS	S	AMPLER		Rig Mal	ce & Model: Ce	ntral Mining Equ	uipment 55			Proter	ctive Casing	v	/ell Development
Date	Depth (ft)	Referen	ce Type: No	ne		🗌 Tru	ck	Image: A start of the start	Hollow Stem Aug	er 🗌	Mud Rotary	🗌 Ro	oadbox		Air Lift
11/14/18	40.38	TOC	Hammer (I			🖌 AT	v		Cable Tool		Dual Rotary	🗌 Sta	andpipe	1	Bailer
11/14/10	40.30	100	Fall (in):	5).		🗌 Tri			Drive & Wash		Direct Push	✓ No	one		Peristaltic
DEPTH (FT)	SAMPLE ID	BLOW PER 6	S REC / PEN	FIEL SCREEI (ppn	NING	WELL DETAIL			SAMPLE D	ESCF	RIPTION				LITHOLOGIC DESCRIPTION
- 0 -															
Ũ							0.0 - 0.3' Top	soil/ vegetativ	/e debris, dark b	prown	, silty, moist, me	dium de	nse		SL
							0.3' - 18.0' Me	edium to coar	se sand, biege/	tan, m	nedium well sorte	∍d, dry,			
							loose								
-															
- 5 -															
-															
		-		-											
- 10 -															-
															~S~
- 15															
-							40.01.20.01 M	a diu na ta fina a							
		-		-			18.0-30.0 146	edium to fine	sand, white/bieg	je, we	ell sorted dry, loo	se			
				-											
				_											
20															
	OHESIVE SOII	LS	COHESIVE S	OILS	LE	GEND	INTERVAL (FT)		SUMMARY		L	ITHOLO	GIC DESCR	IPTI	N
BLOW	S/FT CONSISTENCY		BLOWS/FT CONSIS		Con	crete	BGS	overburden (li	inear ft.):	50					
0 - 4	V. LOOSE	<	2 V. 3	SOFT	Bac	kfill	0'-35' BGS	Feet of rock of	ore/air hammer:	0	-S- SAND		-T- TILL		
4 - 10	LOOSE	2 -		OFT	Gro	ut	BGS	Well solid rise	r pipe length:(ft)	43			SE FILL		
10 - 30	M. DENSE	4 -		STIFF		tonite		Well standpipe		3	CLAY		R/C ROO		OMPETENT
30 - 50	DENSE	8 -	15 S ⁻	TIFF	San	d Pack	38'-50' BGS	Well diameter	(in.):	2	SAND 8	GRAVE	L R/W ROO	CK/V	VEATHERED

Screen length (ft.):

BGS Screen slot size:

10

0.01

horiza	ns
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BORING NO .:

18859

Joel F. Banaszak

MW-4

WELL ID: MW-4

Page	2	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

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Joel F. Banaszak, P.G.							
November 6, 2018							
November 6, 2018							

Elevation	:	ft.	Datum: As	sumed		Borin	na La	ocation: 43 50 14	.42 -71 12	1.4					
	UNDWATER REA			MPLER		1		& Model: Cent					Protective Ca	sina	Well Development
Date	Depth (ft)	Reference	Type: Non	e						Hollow Stem A	uger 🗌 N	fud Rotary	Roadbox		
11/14/18	40.38	TOC	Hammer (Ib		40	v	ATV			Cable Tool		Jual Rotary	Standpipe	-	Bailer
1	10.00		Fall (in):	30			Tripo	d		Drive & Wash		Direct Push	✓ None		Peristaltic
DEDTU		PL OWE	REC / PEN	FIELD					U	SAMPLE	DESCRIP	TION			
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	(IN)	SCREENIN (ppm)		WELL									LITHOLOGIC DESCRIPTION
- 20 -															
			-					18.0'-26.0' Med	dium to fi	ne sand, white/bi	ege, well s	sorted dry, loc	se		-
			-												-
			-												-
															-
			-												
			-												-
															-
- 25 -			_												_
			-												-
															-
			-					26.0° - 50.0° FII	ne sand,	tan/beige, well so	ortea, ary,	loose			_
			-												-
			-												
															-
															-
- 30 -															~S~
			_												-
			-												-
			-												_
															-
															-
															-
- 35 -			_												_
			-												
															-
			-												
			-												-
			1												-
					mm		mn								-
			4												_
40	OHESIVE SOIL					GEND				SUMMARY			ITHOLOGIC D	ESCOIPT	
	SIFT CONSISTENCY		DHESIVE SC			Crete	_	INTERVAL (FT)	Overhurde	n (linear ft.):	50	L		LOCKIPI	
0 - 4	V. LOOSE	<2	V. S	OFT		kfill				k core/air hammer:	0	-S- SAND	H	TILL	
4 - 10	LOOSE	2 - 4)FT	Gro					riser pipe length:(ft)	43	SL SILT		FILL	
10 - 30	M. DENSE	4 - 8		TIFF		tonite				pipe height ags:	3	-C-CLAY	R		COMPETENT
30 - 50 >50	DENSE V. DENSE	8 - 15 15 - 30				d Pack er Pipe			Well diame Screen len		2	SAND 8	GRAVEL R	ROCK	WEATHERED
-50	V. DENSE	>30			Scr		'		Screen slo		10 0.01				
NOTES:	Lithology logge										-				

horiza	ns
Engine	eering ^{Inc.}

CLIENT

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

MW-4

WELL ID: MW-4

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18859

Joel F. Banaszak

PROJECT Pinetree Power - Rapid Infiltration Basin LOCATION Tamworth, New Hampshire ENGIE - Pinetree Power CONTRACTOR Geosearch, Inc. - Sterling, MA

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

Joel F. Banaszak, P.G. November 6, 2018

	ACTOR	-	nie Oteninę	9, 117 (
DRILLE	ĸ	Joseph Kee	enan									U	ATE COMPLET		ember 6, 201	8
Elevation: ft. Datum: Assumed						Bori	oring Location: 43 50 14.42 -71 12 1.4									
	UNDWATER REA	ADINGS	SS SAMPLER				g Make & Model: Central Mining Equipment 55 Protective Casing							Casing	Well Development	
	1	1					Truck				Hollow Stem Auge	<u>"</u> П	Mud Potery	Roadb		
Date	Depth (ft)	Reference	Type: Non				ATV				Cable Tool			Standp		
11/14/18	40.38	TOC	Hammer (Ib): 14	10								Dual Rotary	✓ Standp		
	I		Fall (in):	30			Tripo	d			Drive & Wash		Direct Push	✓ None		Peristaltic
				FIELD							SAMPLE D	ESCR				
DEPTH	SAMPLE ID	BLOWS	REC / PEN	SCREENING		WELI										LITHOLOGIC
(FT)		PER 6 IN	(IN)	(ppm)		DETA	IL									DESCRIPTION
	I															
- 40 -								26.0' - 50.0' F	ine sand	d. tan/	beige, well sort	ed. dr	v. loose			
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NON-C	OHESIVE SOIL	LS CO	DHESIVE SC	DILS	LEC	GEND	2	INTERVAL (FT)		5	SUMMARY		LI	THOLOGIC	DESCRIPT	ION
BLOW	S/FT CONSISTENCY	BL	OWS/FT CONSIST	ENCY	Con	crete)	BGS	overbur	den (lir	near ft.):	50				
0 - 4	V. LOOSE	<2	V. S	OFT	Вас						re/air hammer:	0	~S~ SAND		-T- TILL	
4 - 10	LOOSE	2 - 4		DFT	Gro						pipe length:(ft)	43	SL SILT			
10 - 30	M. DENSE	4 - 8		STIFF	88	tonite	e				height ags:	3	-C-CLAY			COMPETENT
30 - 50	DENSE	8 - 15		IFF	0000	d Pac			Well dia			2	CLAY	GRAVEL		WEATHERED
>50	V. DENSE	15 - 30				er Pip		+3' - 40' BGS				10				
		>30			Scr		-	40'- 50' BGS	Screens			0.01				

NOTES: Lithology logged from auger cuttings



BORING NO .:

MW-5

WELL ID: MW-5

3

Page 1 of

PROJECT	Pinetree Power - Rapid Infiltration Bas	sin								
LOCATION	Tamworth, New Hampshire	Tamworth, New Hampshire								
CLIENT	ENGIE - Pinetree Power	ENGIE - Pinetree Power								
CONTRACTOR	Geosearch, Inc Sterling, MA	Geosearch, Inc Sterling, MA								
DRILLER	Joseph Keenan	Joseph Keenan								
Elevation:	ft Datum: Assumed	Boring Location:43 50 13.87 -71 12 1.11								

HORIZONS FILE NO.	18859
PROJECT MGR.	Joel F.
FIELD REP.	Joel F.
DATE STARTED	Novem

DATE	STARTED
DATE	COMPLETED

Joel F. Banaszak	
Joel F. Banaszak, P.G.	
November 6, 2018	
November 6, 2018	

Elevation	:	ft.	Datum: As	sumed	1	Boring Lo	ocation:43 50 13.	87 -71 12	1.11					
GRO	UNDWATER REA	ADINGS	SA	MPLER	I	Rig Make	& Model: Cer	tral Mining	g Equipment 55			Protective Casing		Well Development
Date	Depth (ft)	Reference	Type: Non	e	[Truck	C		✓ Hollow Stem A	uger 🗌 🛚 M	Mud Rotary	Roadbox		Air Lift
11/14/18	39.35	TOC	Hammer (Ib			✓ ATV	-		Cable Tool		Dual Rotary	Standpipe	4	Bailer
	00.00	100	Fall (in):			Tripo	d		Drive & Wash		Direct Push	✓ None		Peristaltic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		/ELL ETAIL			SAMPLE	DESCRIF	PTION			LITHOLOGIC DESCRIPTION
- o -														
-		-							etative debris, dark					SL
			_				0.6' - 22.0' Me	dium to	coarse sand, biege	e/tan, mee	dium well sorte	ed, dry,		
			_				loose							
		-												
			_											
			-											
_ 5 _														
Ŭ														
L 10 _														
- 10 -														~S~
45														
- 15 -			1											
							22.0'-30.0' Me	dium to t	fine sand, white/bi	ege, well	sorted dry, loo	se		
]											
]											
]											
20														
-	OHESIVE SOIL	-	HESIVE SC		LEG		INTERVAL (FT)		SUMMARY		L	ITHOLOGIC DESCI	RIPT	ION
	SIFT CONSISTENCY		WS/FT CONSISTI		Conc		BGS		len (linear ft.):	50				
0 - 4	V. LOOSE	<2			Back		0'-35' BGS		ock core/air hammer:	0	-S- SAND			
4 - 10	LOOSE	2 - 4		OFT STIFF	Grout				d riser pipe length:(ft)	43	SL SILT	Fill		
10 - 30 30 - 50	M. DENSE DENSE	4 - 8 8 - 15		IFF	Bento Sand				ndpipe height ags: neter (in.):	3 2	-C-CLAY			COMPETENT WEATHERED
30 - 50 >50	V. DENSE	8 - 15 15 - 30			Sand Riser		38'-50' BGS +3' - 40' BGS	Screen le		2 10	SAND	KU KU	/ /or	WEATHERED
	V. DENOL	>30			Scree		40'-50' BGS			0.01				
NOTES	Lithology logge													

- 0		inc.	SO	IL B	ORIN	G LOG &	WELL DIAGRAM		M	W-5	David	MW-5
ION ACTOR	Pinetree Por Tamworth, N ENGIE - Pin Geosearch,	wer - Rapid Ir Iew Hampshin etree Power Inc Sterling	re	asin				PROJEC FIELD R DATE S	CT MGR. EP. TARTED	Joel F. B Joel F. B Novembe	anaszak anaszak er 6, 201	a, P.G. 8
	ft.											
	1							r 🗌 Mud Ro		-	•	Well Development Air Lift
				40			Cable Tool		··· ,		7	Bailer
00.00	100	Fall (in):			Tripo	od	Drive & Wash	Direct I	Push 🗸] None		Peristaltic
SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENIN (ppm)	-			SAMPLE DE	SCRIPTIO	N			LITHOLOGIC DESCRIPTION
		-				22.0'-30.0' Me	dium to fine sand, white/biege	e, well sorte	d dry, loose			
						30.0' - 50.0' Fi	ne sand, tan/beige, well sorte	ed, dry, loos	9			-S-
		HESIVE SO					SUMMARY		LITH		SCRIPT	ION
								50	L		1 1	
V. LOOSE LOOSE M. DENSE DENSE V. DENSE	<2 2 - 4 4 - 8 8 - 15 15 - 30 >30	V.S SC M.S ST V.S HA	OFT FT TIFF IFF TIFF	Bacl Grou Bent Sand Rise	kfill ut tonite d Pack er Pipe	0'-35' BGS BGS 35'-38' BGS 38'-50' BGS +3' - 40' BGS	Feet of rock core/air hammer: Well solid riser pipe length:(ft) Well standpipe height ags: Well diameter (in.): Screen length (ft.):	0 ~	L SILT		FILL ROCK /	COMPETENT WEATHERED
	CT ION ACTOR R Depth (ft) 39.35 SAMPLE ID SAMPLE ID	CT Pinetree Point ION Tarnworth, N ENGIE - Pin ENGIE - Pin CACTOR Geosearch, Joseph Kee Depth (ft) Reference 39.35 TOC SAMPLE ID BLOWS SAMPLE ID BLOWS SAMPLE ID BLOWS VINDWATER READINGS Image: Comparison of the second se	ION Tamworth, New Hampshi ENGIE - Pinetree Power Geosearch, Inc Sterling Joseph Keenan T: 1. Datum: As SAMPLE READINGS S/ Depth (ft) Reference Type: Non 39.35 TOC Hammer (lb Fall (in): SAMPLE ID BLOWS REC / PEN (IN) SAMPLE ID SE SA SAMPLE ID S	CT Pinetree Power - Rapid Infiltration E ION Tarmworth, New Hampshire ENGIE - Pinetree Power Geossearch, Inc Sterling, MA Joseph Keenan Joseph Keenan 1000WATER READINGS SAMPLER Depth (ft) Reference Type: None 39.36 TOC Hammer (lb): 30 SAMPLE ID BLOWS PER 6 IN REC / PEN (IN) FIELD ScreEenink (ippm) SAMPLE ID BLOWS PER 6 IN REC / PEN (IN) FIELD ScreEenink (ippm) Image: Sample ID BLOWS PER 6 IN Image: Screenink (ippm) Image: Screenink (ippm) Image: Sample ID BLOWS PER 6 IN Image: Screenink (ippm) Image: Screenink (ippm) Image: Sample ID Image: Screenink (ippm) Image: Screenink (ippm) Image: Screenink (ippm) Image: Sample ID Image: Screenink (ippm) Image: Screenink (ippm) Image: Screenink (ippm) Image: Sample ID Image: Screenink (inpm) Image: Screenink (inpm) Image: Screenink (inpm) Image: Sample ID Image: Screenink (inpm) Image: Screenink (inpm) Image: Screenink (inpm) Image: Sample ID	CT Pinetree Power - Rapid Infiltration Basin ION Tarnworth, New Hampshire ENGIE - Pinetree Power ACTOR Geosearch, Inc Sterling, MA IR Joseph Keenan 1000/000000000000000000000000000000000	CT Pinetree Power - Rapid Infiltration Basin ION Tarmorth, New Hampshire ENGIE - Pinetree Power ACTOR Geceearch, Inc Sterling, MA Joseph Keenan INDWATER READINGS SAMPLER Rig Make Depth (ft) Reference True Interview 39.35 TOC Hammer (lb): 140 Interview 39.35 TOC Fail (n): 30 Interview SAMPLE ID PLOWS REC / PEN SCREENNO WELL DETAL SAMPLE ID PLOWS REC / PEN SCREENNO WELL DETAL ID ID ID ID ID ID ID SAMPLE ID PLOWS REC / PEN SCREENNO ID ID ID ID <td>CT Pinetree Power - Rapid Infiltration Basin ION Tarnworth, New Hampshire ENCIE Pinetree Power ACTOR Geosearch, Inc Sterling, MA Joseph Keenan Boring Location: 43 50 13 UNDWATER READINGS SAMPLE ID Batum: Assumed Boring Location: 43 50 13 UNDWATER READINGS SAMPLE ID Batum: Assumed Boring Location: 43 50 13 SAMPLE ID BLOWS REC / PEN Sreed Base Andel: Cen Sample ID BLOWS REC / PEN Sreed Base Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Sreed Base Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Sreed Base Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Ster Andel: Cen Sample Cin Ster Andel: Cen</td> <td>CT Pinetree Power - Rapid Infiltration Basin ENGLE Transorth, New Hampshire ACTOR Geocearch, Inc Sterling, MA Jaceph Keenan Jourgh Keenan x: n Boring Location: 43 50 13.67 -71 12 1.11 UNDWATER READROS SAMPLER Rig Make & Model: Central Mining Equipment 55 Depth (ft) Reference Type: Intra- Fail (min) 30 32.5 TCC Hammer (b): 100 Intra- Tripod Intra- Depth (ft) Reference 33.5 TCC Hammer (b): 100 Intra- Depth (ft) SAMPLE DE SAMPLE ID BLOWS REC / PEN Sections (min) Intra- Depth (ft) SAMPLE DE SAMPLE ID BLOWS REC / PEN Sections (min) Intra- Depth (ft) SAMPLE DE SAMPLE ID BLOWS REC / PEN Sections (min) Intra- Depth (ft) SAMPLE DE SAMPLE ID BLOWS REC / PEN Sections (min) Sample Intra- Depth (ft) Sample Intra- Depth (ft) SAMPLE ID BLOWS REC / PEN Secti</td> <td>Printing Power - Right Infliction Basin HORIZO ENDUCE ENDUCE Printing Power - Right Infliction Basin PELDER ACTOR Gestearch, Inc Steing, MA DATE S Joseph Kennen Annone DATE S VMONATER READNOS SAMPLE N Picture Trick Date S VIDMATER READNOS SAMPLE N Part Market Trick Date S SAMPLE ID Bedrig Location: 43 69 13.87 -71 t2 1.11 Date Name Multic Name M</td> <td>CT Producto Power-Rapid Influtation Bosin PROJECT MOR. RNUE Failed Power PROJECT MOR. ACTOR Geographic Letter, MA Date Stategoine Instruction SAMPLER Bering Location: 43 61 337: 71 12 1.11 PROJECT MOR. VICUNAT READINGS SAMPLER Bering Location: 43 61 337: 71 12 1.11 Provide Reading Geographic Letter More Computations Date COMPLETED SampLe ID Dotter: SAMPLER Bering Location: 43 61 337: 71 12 1.11 Provide Reading Geographic Letter More Computations Malkows to Augurn Letter More Computations Date State More Computations SampLe ID PER 8 N Ref. / PEN Provide 20 Trool Date State More Computations SampLe ID PER 8 N Ref. / PEN Provide Provide Provide SampLe Description SampLe ID PER 8 N Ref. / PEN Provide Provi</td> <td>CT Provise Prover - Rapid Influence Seals</td> <td>CT Perstere Rouer - Rought inflution Roun Tamont Nor Amplifie Decement Nor Amplifie Tamont Nor Amplifie Tamont Nor Amplifie Codedwart Net - Outring NA Codedwart Net - Outres Na Codedwart Net - Outring NA Codedwart Net - Outring NA Codedw</td>	CT Pinetree Power - Rapid Infiltration Basin ION Tarnworth, New Hampshire ENCIE Pinetree Power ACTOR Geosearch, Inc Sterling, MA Joseph Keenan Boring Location: 43 50 13 UNDWATER READINGS SAMPLE ID Batum: Assumed Boring Location: 43 50 13 UNDWATER READINGS SAMPLE ID Batum: Assumed Boring Location: 43 50 13 SAMPLE ID BLOWS REC / PEN Sreed Base Andel: Cen Sample ID BLOWS REC / PEN Sreed Base Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Sreed Base Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Sreed Base Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Image Andel: Cen SAMPLE ID BLOWS REC / PEN Ster Andel: Cen Ster Andel: Cen Sample Cin Ster Andel: Cen	CT Pinetree Power - Rapid Infiltration Basin ENGLE Transorth, New Hampshire ACTOR Geocearch, Inc Sterling, MA Jaceph Keenan Jourgh Keenan x: n Boring Location: 43 50 13.67 -71 12 1.11 UNDWATER READROS SAMPLER Rig Make & Model: Central Mining Equipment 55 Depth (ft) Reference Type: Intra- Fail (min) 30 32.5 TCC Hammer (b): 100 Intra- Tripod Intra- Depth (ft) Reference 33.5 TCC Hammer (b): 100 Intra- Depth (ft) SAMPLE DE SAMPLE ID BLOWS REC / PEN Sections (min) Intra- Depth (ft) SAMPLE DE SAMPLE ID BLOWS REC / PEN Sections (min) Intra- Depth (ft) SAMPLE DE SAMPLE ID BLOWS REC / PEN Sections (min) Intra- Depth (ft) SAMPLE DE SAMPLE ID BLOWS REC / PEN Sections (min) Sample Intra- Depth (ft) Sample Intra- Depth (ft) SAMPLE ID BLOWS REC / PEN Secti	Printing Power - Right Infliction Basin HORIZO ENDUCE ENDUCE Printing Power - Right Infliction Basin PELDER ACTOR Gestearch, Inc Steing, MA DATE S Joseph Kennen Annone DATE S VMONATER READNOS SAMPLE N Picture Trick Date S VIDMATER READNOS SAMPLE N Part Market Trick Date S SAMPLE ID Bedrig Location: 43 69 13.87 -71 t2 1.11 Date Name Multic Name M	CT Producto Power-Rapid Influtation Bosin PROJECT MOR. RNUE Failed Power PROJECT MOR. ACTOR Geographic Letter, MA Date Stategoine Instruction SAMPLER Bering Location: 43 61 337: 71 12 1.11 PROJECT MOR. VICUNAT READINGS SAMPLER Bering Location: 43 61 337: 71 12 1.11 Provide Reading Geographic Letter More Computations Date COMPLETED SampLe ID Dotter: SAMPLER Bering Location: 43 61 337: 71 12 1.11 Provide Reading Geographic Letter More Computations Malkows to Augurn Letter More Computations Date State More Computations SampLe ID PER 8 N Ref. / PEN Provide 20 Trool Date State More Computations SampLe ID PER 8 N Ref. / PEN Provide Provide Provide SampLe Description SampLe ID PER 8 N Ref. / PEN Provide Provi	CT Provise Prover - Rapid Influence Seals	CT Perstere Rouer - Rought inflution Roun Tamont Nor Amplifie Decement Nor Amplifie Tamont Nor Amplifie Tamont Nor Amplifie Codedwart Net - Outring NA Codedwart Net - Outres Na Codedwart Net - Outring NA Codedwart Net - Outring NA Codedw

ho	ZONS gineering ^{.inc.}
PROJECT	Pinetree Power - Rapid Infilt

BORING NO .:

18859

Joel F. Banaszak

November 6, 2018

November 6, 2018

Joel F. Banaszak, P.G.

MW-5

HORIZONS FILE NO.

PROJECT MGR.

DATE STARTED

DATE COMPLETED

FIELD REP.

WELL ID: MW-5

Page 3 c

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

levation:	:	ft.	Datum: As	sumed		Boring I	ocation: 43 50 13	.87 -71 12 1.11						
GROU	JNDWATER REA	ADINGS	SA	MPLER		Rig Mak	e & Model: Cen	tral Mining Equ	ipment 55			Protective	Casing	Well Development
Date	Depth (ft)	Reference	Type: None	<u>^</u>		_ Tru				ПМ	ud Rotary	Roadb		Air Lift
					-	✓ AT	v		Cable Tool		ual Rotary	Standr	oipe 🗸	Bailer
1/14/18	39.35	TOC	Hammer (Ib)			🗌 Trij			Drive & Wash		irect Push	✓ None		Peristaltic
			Fall (in):	30]		
				FIELD					SAMPLE DE	SCRIP	TION			
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	SCREENING (ppm)		/ELL ETAIL								LITHOLOGIC DESCRIPTION
()			(wr /										
40 -									//					
			-				30.0° - 50.0° FI	ne sand, tan	/beige, well sorte	a, ary, I	oose			
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	OHESIVE SOIL		HESIVE SO		LEG		INTERVAL (FT)		SUMMARY		L	ITHOLOGIC	CDESCRIPT	ION
			WS/FT CONSISTE		Conc			Overburden (li		50	0		 	
0-4	V. LOOSE	<2	V. S		Back				re/air hammer:	0	-S- SAND			
4 - 10	LOOSE	2 - 4	SO M. S		Grou				pipe length:(ft)	43				
10 - 30	M. DENSE	4 - 8 9 1 F			Bento			Well standpipe		3	-C-CLAY			COMPETENT
30 - 50	DENSE V. DENSE	8 - 15 15 - 30				Pack		Well diameter Screen length		2	SAND &	GRAVEL	ROCK /	WEATHERED
>50	V. DENSE	15 - 30 >30	V.S HA		Riser Scree			Screen slot siz		10 0.01				
OTES:	Lithology logge				00166	41	40-00 BGS	5510011 5101 512		0.01				
0155: 1	Liniology logge	u nom auge	a cutungs											



Elevation:

Date 11/14/18

DEPTH (FT)

- 15 -

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

MW-6

HORIZONS FILE NO.

PROJECT MGR.

WELL ID: MW-6

3

Page 1 of

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

CLIENT		ENGIE - Pir	netree Power								F	FIELD REP.	Jo	el F. Banas	zak,	P.G.
CONTRA	ACTOR	Geosearch,	Inc Sterling	g, MA								DATE STARTED	Nc Nc	ovember 9, 2	2018	
DRILLEI	ર	Joseph Kee	nan									DATE COMPLE	FED No	vember 9, 2	2018	
levation:		ft.	Datum: As	sumed		Boring Lo	ocation:	43 50 13	5.59 -71 12 0	.44						
GROL	JNDWATER REA	ADINGS	SA	AMPLER		Rig Make	& Model	: Cent	tral Mining E	quipment 55			Protectiv	e Casing	١	Vell Development
Date	Depth (ft)	Reference	Type: Non	e		Truck	¢.		[✓ Hollow Stem	Auger	Mud Rotary	Roadt	box		Air Lift
11/14/18	39.89	TOC	Hammer (Ib):		✓ ATV			[Cable Tool		Dual Rotary	Stand	lpipe	1	Bailer
			Fall (in):	/		Tripo	d		[Drive & Wash	sh 🗌	Direct Push	✓ None			Peristaltic
			- ()							SAMPL	E DESCI		<u>.</u>			
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENIN (ppm)		VELL ETAIL				SANIF LI		RIF HON				LITHOLOGIC DESCRIPTION
0 -																
•							0.0 - 0.6	6' Tops	oil/ vegeta	tive debris, da	ark browr	n, silty, moist, me	dium dens	e		SL
							0.6' - 10	0.0' Mee	dium to coa	arse sand, bie	ege/tan, n	nedium well sort	ed, dry,			
							loose									
-																
				-												
- 5				-											_	
			_												-	
-																
				-												
			_													
			_													
- 10 -							10.0' - 2	20.0' Fi	ne to medi	um sand, bied	ne/tan. m	edium well sorte	d. drv.			~S~
			_				loose			, .			<u>· / ·]</u> /			
			_													
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			4													
20			1													
NON-C	OHESIVE SOIL	s co	HESIVE SO	DILS	LEG	END	INTERVA	L (FT)		SUMMARY		L	ITHOLOGI	C DESCR	IPTI	ON
BLOW	S/FT CONSISTENCY	BLC	WS/FT CONSISTE	ENCY	Cond	crete		BGS	Overburden	(linear ft.):	50					
0 - 4	V. LOOSE	<2	V. S	OFT	Back	fill	0'-35'	BGS	Feet of rock	core/air hammer	r: 0	~S~ SAND		TT- TILL		
4 - 10	LOOSE	2 - 4		DFT	Grou	ıt		BGS	Well solid ris	ser pipe length:(f	ft) 43			E FILL		
10 - 30	M. DENSE	4 - 8		STIFF	Bent	onite	35'-38'	BGS	Well standpi	ipe height ags:	3	C CLAY				COMPETENT
30 - 50	DENSE	8 - 15		IFF	Sand	l Pack	38'-50'		Well diamete		2	SAND	& GRAVEL	R/W ROC	κ/\	WEATHERED
>50	V. DENSE	15 - 30				r Pipe	+3' - 40'		Screen leng		10					
		>30	HA	RD	Scre	en	40' - 50'	BGS	Screen slot :	size:	0.0	1				

horiza	ns
Engin	eering Inc.

BORING NO .:

18859

Joel F. Banaszak

November 9, 2018

November 9, 2018

Joel F. Banaszak, P.G.

MW-6

HORIZONS FILE NO.

PROJECT MGR.

DATE STARTED

DATE COMPLETED

FIELD REP.

WELL ID: MW-6

Page 2 of 3

PROJE	СТ	Pinetree Po	wer - Rapid Infiltration Basin										
LOCAT	ON	Tamworth, N	lew Hampshire										
CLIENT		ENGIE - Pin	etree Power										
CONTR	ACTOR	Geosearch,	Inc Sterling, MA										
DRILLE	R	Joseph Kee	nan										
Elevation	:	ft.	Datum: Assumed	Boring Location: 43 50 13.59 -7	1 12 0.44								
GRO	UNDWATER RE	ADINGS	SAMPLER	Rig Make & Model: Central Mi	ning Equipment 55								
Date	Depth (ft)	Reference	Type: None	Truck	✓ Hollow Ste								
11/14/18	39.35	TOC	Hammer (Ib): 140	ATV ATV	Cable Too								

Elevation	:	ft.	Datum: As	sumed		Boring	Lo	cation: 43 50 13.59	-71 12 0.	.44					
	UNDWATER REA			MPLER						quipment 55			Protective	Casing	Well Development
Date	Depth (ft)	Reference	Type: Non	٩			uck			Hollow Stem Aug	ger 🗌 N	/ud Rotary	Roadbo		
11/14/18	39.35	TOC	Hammer (Ib		0	✓ A ¹	гv			Cable Tool		Jual Rotary	Standp	ipe 🗸	Bailer
11/14/10	39.35	100	Fall (in):	<u>). 14</u> 30	0	Tr		1				Direct Push	✓ None		
			raii (iii).	FIELD			-p -	-	_	SAMPLE D					
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	SCREENING (ppm)		VELL									LITHOLOGIC DESCRIPTION
- 20 -								20.0'-33.0' Mediu	m to fine	e sand, white/bied	ae, well :	sorted dry, loo	se		
			-									, , ,			
															-
															-
			_												-
															-
- 25 -			-												
			-												-
			-												-
			-												
- 30															~S~
			-					33.0' - 50.0' Fine	sand, ta	n/beige, well sor	ted, dry,	loose			-
			_												
															-
			-												
			-												
			_												-
- 35 -			-												
															-
			-												
			-												-
															-
40								•			-				
	OHESIVE SOIL		HESIVE SC		LEG	END	┥	INTERVAL (FT)	erhurden	SUMMARY (linear ft.):	50	L	ITHOLOGIC	DESCRIPT	ION
0 - 4	V. LOOSE	<2		OFT	Back		ŀ			core/air hammer:	0	-S- SAND		-T- TILL	
4 - 10	LOOSE	2 - 4		OFT	Grou		ŀ			er pipe length:(ft)	43	SL SILT		S FILL	
10 - 30	M. DENSE	4 - 8	M. S		8	onite	ľ			pe height ags:	3	-C-CLAY			COMPETENT
30 - 50	DENSE	8 - 15		IFF	000	l Pack	ľ		ell diamete		2	CLAY	GRAVEL		WEATHERED
>50	V. DENSE	15 - 30	V. S	TIFF	1	r Pipe	ľ		een lengt		10				
		>30	HA	RD	Scre	en	_[40' - 50' BGS Scr	een slot s	ize:	0.01				
NOTES:	Lithology logge	d from auge	er cuttings.												

ho izens Engineering ^{Inc.}
Crighteethy

BORING NO .:

MW-6

WELL ID: MW-6

Page 3 of 3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.	
PROJECT MGR.	
FIELD REP.	
DATE STARTED	

DATE COMPLETED

	Joel F. Banaszak, P.G.
D	November 6, 2018
ETED	November 6, 2018

18859

Joel F. Banaszak

											-				
Elevation	:	ft.	Datum: As	sumed		Borir	ng Lo	ocation: 43 50 13	8.59 -71 12 0	.44					
GRO	UNDWATER REA	ADINGS	SAMPLER			Rig Make & Model: Central Mining Equipment 55 Protective Casing								Well Development	
Date	Depth (ft)	Reference	Type: Non	۵			Truck			Hollow Stem Aug	ger 🔲 🛛	Mud Rotary	Roadbox		Air Lift
11/14/18	39.89	TOC	Hammer (Ib		_	1	ATV			Cable Tool		Dual Rotary	Standpipe		Bailer
11/14/10	39.69	100		<u>). 14</u> 30	~ I			d		Drive & Wash		Direct Push	✓ None		
			Fall (in):	30				-							
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		VELL ETAII				SAMPLE D	ESCRI	PTION			LITHOLOGIC DESCRIPTION
- 40 -															
			-		-			33.0' - 50.0' F	ine sand, t	an/beige, well sor	ted, dry	, loose			_
					_										_
			_												_
															_
			-		_										_
															_
															_
- 45 -															~S~
40															
															_
															_
															-
															-
															-
															-
- 50 -															_
			-												-
			-												-
			_		1										-
															-
															-
					-										-
					-										-
					1										-
			1		1										-
- 55 -			1		1										-
			1		1										-
					-										-
			_												-
															-
			-		-										_
					-										-
			-												-
			-												-
			-		-										-
60 NON-C	OHESIVE SOIL	S CO	HESIVE SO			END		INTERVAL (FT)		SUMMARY		1	ITHOLOGIC DE	CRIP.	
	SIFT CONSISTENCY		WS/FT CONSISTE		Cond				Overburder		50	-		, on the	
0 - 4	V. LOOSE	<2	V. S		Back					core/air hammer:	0	-S- SAND	HH-	TILL	
4 - 10	LOOSE	2 - 4		OFT	Grou					iser pipe length:(ft)	43	SL SILT		FILL	
	M. DENSE	4 - 8	M. S		Bent					bipe height ags:	3	CLAY			/ COMPETENT

BGS Well standpipe height ags:

Well diameter (in.):

Screen length (ft.):

BGS Screen slot size:

3

2

10

0.01

4 - 8

8 - 15

15 - 30

STIFF

V. STIFF

Bentonite

Sand Pack

Riser Pipe

Screen

35'-38'

38'-50'

+3' - 40'

40' - 50'

BGS

BGS

M. DENSE

DENSE

V. DENSE

10 - 30

30 - 50

>50



BORING NO .:

MW-7

WELL ID:

3

MW-7 Page 1 of

PROJECT	Pinetree Power - Rapid Infiltration Basin							
LOCATION	Tamworth, New Hampshire							
CLIENT	ENGIE - Pinetree Power							
CONTRACTOR	Geosearch, Inc Sterling, MA							
DRILLER	Joseph Keenan							

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE STARTED	
DATE COMPLETED	

	November 7, 2018
)	November 7, 2018

Joel F. Banaszak

Joel F. Banaszak, P.G.

18859

Elevation	:	ft.	Datum: As	sumed		Boring L	ocation: 43 50 13	3.19 -71 12 0.36																							
	UNDWATER RE			MPLER				tral Mining Equip				Protective	e Casing	Well Development																	
Date	Depth (ft)	Reference	Type: Non	e			ζ.	✓	Hollow Stem Auge	r 🗌 N	Aud Rotary	Roadb	box [Air Lift																	
11/14/18	40.60	TOC	Hammer (Ib		10	🗹 ATV			Cable Tool		Dual Rotary	Stand	pipe 🖸	Bailer																	
			Fall (in):	30	-	Tripo	d		Drive & Wash		Direct Push	✓ None] Peristaltic																	
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		WELL DETAIL			SAMPLE DE	ESCRIF	ντιον			LITHOLOGIC DESCRIPTION																	
- o -																															
		3	-						e debris, dark bi				е	SL																	
	S-45	3	19/24						nd, orangish-tai		-			_																	
		3	-	-		—		ium to coarse	sand, beige, m	lealum	well sorted, dr	у,		-																	
		3					loose							_																	
		4	-											_																	
	S-46	4	19/24																												
			-											_																	
		4																													
		4	-											_																	
- 5 -	S-47	4	17/24																												
		5	-											_																	
		5												_																	
		6	6											_																	
	S-48	6	18/24											-																	
		6																													
		3												_																	
	S-49	3	17/24																												
	5-49	4	17/24				9.5' - 19.0' Fin	e to medium s	sand, white/beig	ge, well	sorted, dry, v	ery loose t	0																		
- 10		5					loose																								
_ 10 _		2												~S~																	
	S-50	3	20/24	20/24	20/24																										
	0.00	4																													
		6												_																	
		6		4	-	4	-		l		-	4	-	4	4	4						_									_
	S-51	5	17/24											_																	
		5												_																	
		6												_																	
		3	-																												
- 15 -	S-52		17/24	17/24	17/24	4 17/24											_														
		4	-											_																	
		6	-											_																	
		5	-											_																	
	S-53	5	18/24											-																	
		7	1																												
		5	1	1			19.0' - 24.0' Fi	ne sand, white	e/beige, well so	orted, d	lry, loose																				
	0.54	7	04/04					,		, -	•																				
	S-54	9	21/24																												
20		8																													
	OHESIVE SOIL	-	DHESIVE SC	-		GEND	INTERVAL (FT)		UMMARY		L	ITHOLOGI	C DESCRIP	TION																	
					888	crete		Overburden (line		50	0																				
0 - 4 4 - 10	V. LOOSE LOOSE	<2 2 - 4		OFT	Bac Gro			Feet of rock con		0	-S- SAND SL SILT																				
10 - 30	M. DENSE	2 - 4 4 - 8			88	ut tonite		Well solid riser Well standpipe I		43 3				/ COMPETENT																	
30 - 50	DENSE	8 - 15		IFF	1111	d Pack		Well diameter (i		2	SIC SAND 8	GRAVEL		/ WEATHERED																	
>50	V. DENSE	15 - 30		TIFF	Rise	er Pipe	+3' - 40' BGS	Screen length (f		10																					
		>30	HA	RD	Scr	en	40' - 50' BGS	Screen slot size	:	0.01																					
NOTES:																															



BORING NO .:

18859

MW-7

WELL ID: MW-7

Page	2	of	3
go	_	U 1	•

PROJECT	Pinetree Power - Rapid Infiltration Basin						
LOCATION	Tamworth, New Hampshire						
CLIENT	ENGIE - Pinetree Power						
CONTRACTOR	Geosearch, Inc Sterling, MA						
DRILLER	Joseph Keenan						

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE COMPLETED

Joel F. Banaszak, P.G.
November 7, 2018
November 7, 2018

Joel F. Banaszak

Flouetier		4	Deturn A	a current d		Derine I		40 74 40 0 20					
Elevation GRO	1: OUNDWATER RE	ft.		AMPLER			ocation: 43 50 13	tral Mining Equipment 55			Protective	Casing	Well Development
	1	1				Truc		Hollow Stem A	uger 🗌	Mud Rotary	Roadbo		
Date	Depth (ft)	Reference	1 .		10	☑ ATV		Cable Tool		Dual Rotary	Standp		
11/14/18	40.60	TOC	Hammer (It	30 30	10	□ Trip		Drive & Wash		Direct Push	✓ None		
			Fall (in):			L		—					
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		WELL DETAIL		SAMPLE	DESCRI	PTION			LITHOLOGIC DESCRIPTION
- 20 -		4					19.0' - 24.0' F	ne sand, white/beige, well	sorted,	dry, loose			
	0.55	5	47/04					· • • •		•			
	S-55	6	17/24										
		6											
		10											-
	S-56	7	19/24										
	3-50	8	19/24										-
		6											-
		3					24.0' - 33.0' N	edium sand, beige, mediur	n well so	rted, dry, very	/ loose to		
- 25 -	S-57	5	17/24				loose						-
- 25 -	3-57	6	17/24										
		6											
		7											
	S-58	6	18/24										
	0.00	6	10/21										_
		6											
		4	_										-
	S-59	5	17/24									_	
		7	_										_
- 30		9											~S~
		4											_
	S-60	8	19/24										_
		8	_										
		9											_
		8	_										-
	S-61	9	17/24										-
		9	_				33.0 - 50.0 F	ne sand, white/beige, well	sorted,	ary, loose			-
		9 5	-										_
		5	_										_
- 35 -	S-62	7	21/24										-
		7	_										
		8											-
	0.00	6	47/04										-
	S-63	7	17/24										-
		7											
		1											
	S-64	1	21/24										
		2											-
40		3						o				DE00-1-	
	COHESIVE SOI		OHESIVE SO			GEND	INTERVAL (FT)	SUMMARY	50		LITHOLOGIC	DESCRIPT	IUN
0 - 4	V. LOOSE	<2		SOFT	Bac	crete kfill	BGS 0'-35' BGS	Overburden (linear ft.): Feet of rock core/air hammer:	0	~S~ SAND		HT- TILL	
4 - 10	LOOSE	2 - 4		DFT	Gro			Well solid riser pipe length:(ft)	43	SL SILT			
10 - 30	M. DENSE	4 - 8		STIFF	88	tonite		Well standpipe height ags:	3		& GRAVEL		COMPETENT
30 - 50	DENSE	8 - 15		TIFF	San	d Pack	38'-50' BGS	Well diameter (in.):	2	SAND	& GRAVEL	R/W ROCK	WEATHERED
>50	V. DENSE	15 - 3				er Pipe	+3' - 40' BGS	Screen length (ft.):	10				
		>30	HA	ARD	Scre	en	40' - 50' BGS	Screen slot size:	0.01				
NOTES:													

horiza	ns
Engin	eering Inc.

NOTES:

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

MW-7

WELL ID: MW-7

Page	3	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin					
LOCATION	Tamworth, New Hampshire					
CLIENT	ENGIE - Pinetree Power					
CONTRACTOR	Geosearch, Inc Sterling, MA					
DRILLER	Joseph Keenan					

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE STARTED November 7, 2018 DATE COMPLETED November 7, 2018

	Joel F. Banaszak
	Joel F. Banaszak, P.G.
	November 7, 2018
_	

18859

Elevation	:	ft.	Datum: As	sumed		Bor	ing Lo	ocation: 43 50 1	3.19 -71 12 0	.36					
GRO	UNDWATER REA	ADINGS	SA	MPLER		Rig	Make	& Model: Cer	tral Mining E	quipment 55			Protective	Casing	Well Development
Date	Depth (ft)	Reference	Type: Non	е			Truck			Hollow Stem Aug	ger 🗌 M	lud Rotary	Roadbo		Air Lift
11/14/18	40.60	TOC	Hammer (Ib		140	1	ATV		[Cable Tool	D	ual Rotary	Standp	-	
			Fall (in):		0		Tripo	od		Drive & Wash	D	irect Push	✓ None		Peristaltic
										SAMPLE D	ESCRIP	TION			
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENI (ppm)	NG	WEL DETA				0, uni 22 2	20011				LITHOLOGIC DESCRIPTION
- 40 -		1	-					33.0' - 50.0' F	ine sand, w	hite/beige, well	sorted, d	ry, loose			
	S-65	1	0/24												
		2													
		2													
	NS														
	NO														
45	NS							Standard pen	etration test	could not be co	mpleted I	beyond 42 fee	et bgs		
- 45 -	NS							due to flowing	sands ente	ering the borehole	e. 8.25" c	liameter hollo	w stem		~S~
										a terminal depth					
	NS														
	NS														
			-												
- 50 -															
			-		_										
					_										
_ EE _					T										
- 55 -															
			1		1]
					1										1
			1												1
			1		1										
			1												
			1												
			1												
60			1												
	OHESIVE SOIL	s co	HESIVE SC			GEN	D	INTERVAL (FT)		SUMMARY		1		DESCRIPT	ION
	SIFT CONSISTENCY		WS/FT CONSIST			ncrete			Overburden		50	L		, DECONIPT	
0 - 4	V. LOOSE	<2		OFT		ckfill				core/air hammer:	0	-S- SAND		HTH TILL	
4 - 10	LOOSE	2 - 4) FT		out				er pipe length:(ft)	43	SL SILT			
10 - 30	M. DENSE	4 - 8		TIFF		ntonit	e			pe height ags:	45 3	CLAY			COMPETENT
30 - 50	DENSE	8 - 15		IFF		nd Pa			Well diamete		2	SAND 8	GRAVEL		WEATHERED
>50	V. DENSE	15 - 30		TIFF		er Pip			Screen lengt		10				
		>30		RD		reen			Screen slot s		0.01				



GROUNDWATER READINGS

Reference

TOC

Depth (ft)

39.62

Elevation:

Date

11/14/18

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

November 7, 2018

November 7, 2018

Joel F. Banaszak, P.G.

MW-8

WELL ID: MW-8

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Page	1	of	

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

SAMPLER

ft. Datum: Assumed

Hammer (lb):

Type: None

Fall (in):

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE COMPLETED

-	000	

Boring Lo	ocation: 43 50 12.93 -7	1 12 0.89			
Rig Make	& Model: Central Mi	ning Equipment 55		Protective Casing	Well Development
Truck	ĸ	✓ Hollow Stem Auger	Mud Rotary	Roadbox	Air Lift
🖌 ATV		Cable Tool	Dual Rotary	Standpipe	Bailer
Tripo	od	Drive & Wash	Direct Push	✓ None	Peristaltic
WELL DETAIL		SAMPLE DES	SCRIPTION		LITHOLOGIC DESCRIPTION
	Rig Make	Rig Make & Model: Central Min Truck	Truck	Rig Make & Model: Central Mining Equipment 55 Truck Image: Hollow Stem Auger Mud Rotary ATV Cable Tool Dual Rotary Tripod Drive & Wash Direct Push WELL SAMPLE DESCRIPTION	Rig Make & Model: Central Mining Equipment 55 Protective Casing Truck Image: Hollow Stem Auger Mud Rotary Roadbox ATV Image: Cable Tool Dual Rotary Standpipe Tripod Image: Drive & Wash Direct Push None SAMPLE DESCRIPTION

DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENI (ppm)	NG	WELL DETAIL	-	SAMPLE DESCRIPTION		LITHOLOGIC DESCRIPTION			
- o -													
- 0 -								0.0 - 0.3' Tops	soil/ vegetative debris,	dark brown, s	silty, moist, medium dens	e SL	
									dium to coarse sand, I				
								loose					
			_										
- 5 -													
			_										
			_										
40													
- 10 -								12.0' - 20.0' F	ine to medium sand, bi	iege/tan. med	lium well sorted. drv.	~S~	
								loose	, -	J ,	, , , , , , , , , , , , , , , , , , ,		
			_										
			_										
			_										
			_										
- 15 -	-		_										
-													
20			_										
	OHESIVE SOIL	S CC	HESIVE SC	DILS		LEGEND		INTERVAL (FT)	SUMMAR	Y	LITHOLOGI	C DESCRIPTION	
	WS/FT CONSISTENCY		WS/FT CONSIST			Concrete		BGS	Overburden (linear ft.):	50			
0 - 4	V. LOOSE	<2	V. S	OFT		Backfill		0'-35' BGS	, ,	mer: 0	-S- SAND	TILL	
4 - 10	LOOSE	2 - 4	SC	DFT		Grout			Well solid riser pipe lengt		SL SILT	FILL	
10 - 30	M. DENSE	4 - 8		STIFF	mm	Bentonite			Well standpipe height ags		-C-CLAY	R/C ROCK / COMPETENT	
30 - 50	DENSE	8 - 15	ST	'IFF		Sand Pack	t I		Well diameter (in.):	2	SAND & GRAVEL	R/W ROCK / WEATHERED	
>50	V. DENSE	15 - 30) V. S	TIFF		Riser Pipe		+3' - 40' BGS	Screen length (ft.):	10			
		>30	HA	ARD		Screen		40' - 50' BGS	Screen slot size:	0.01			
NOTES:	Lithology logge	d from auge	er cuttings.										

horiza	ns
Engin	eering Inc.

BORING NO .:

18859

Joel F. Banaszak

Joel F. Banaszak, P.G.

MW-8

WELL ID: MW-8

Page	2	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE COMPLETED

ARTED	Nover
MPLETED	Nover

November 7, 2018
November 7, 2018

Flouration		ft.	Datum: A	a a uma d		Dering	L	2 0 2 74 4 2 0 00						
Elevation GRO	UNDWATER RE		Datum: As	AMPLER	2		Location: 43 50 1 ke & Model: Ce	ntral Mining Equ				Protective	o Casing	Well Development
Date	Depth (ft)	Reference							,	□ Mu	id Rotary	Roadt		
					140	A					al Rotary	Stand		
11/14/18	39.62	TOC	Hammer (Ib		140 30		ipod				rect Push	✓ None		Peristaltic
		-	Fall (in):	1	30		pou							
DEPTH		BLOWS	REC / PEN	FIEL		WELL			SAMPLE DES	CRIPT	ION			LITHOLOGIC
(FT)	SAMPLE ID	PER 6 IN	(IN)	(ppn		DETAIL								DESCRIPTION
- 20 -														
- 20 -							20.0'-30.0' M	edium to fine	sand, white/biege,	well so	orted dry, lo	oose		
														_
														_
														-
														-
														-
														-
- 25 -														-
				-										_
														_
														-
														_
			-											_
	-													-
			_											_
														_
			_											_
- 30 -														~S~
			_				30.0' - 50.0' F	ine sand, tan	/beige, well sorted	, dry, le	oose			_
		-	_											_
		-	_											_
														_
			_											_
														_
		-	_											_
														_
- 35 -														
]											
40			1											
NON-C	OHESIVE SOI	LS CO	DHESIVE SC	DILS	LE	GEND	INTERVAL (FT)		SUMMARY			LITHOLOGI	C DESCRIP	TION
BLOW	VS/FT CONSISTENCY	BLO	OWS/FT CONSIST	ENCY	Col	ncrete	BG	s Overburden (li	near ft.):	50				
0 - 4	V. LOOSE	<2	V. 5	SOFT	Bad	kfill	0'-35' BG	s Feet of rock co	ore/air hammer:	0	<mark>~S~</mark> SAND	ł	+T+ TILL	
4 - 10	LOOSE	2 - 4		OFT	Gro	out				43	SL SILT		22 FILL	
10 - 30	M. DENSE	4 - 8		STIFF		ntonite	35'-38' BG	s Well standpipe	e height ags:	3	-C- CLAY			(/ COMPETENT
30 - 50	DENSE	8 - 15		ſIFF		nd Pack		s Well diameter		2	SAND	& GRAVEL	R/W ROCK	/ WEATHERED
>50	V. DENSE	15 - 30		STIFF		er Pipe	+3' - 40' BG			10				
		>30	HA	١RD	Scr	een	40' - 50' BG	Screen slot siz	ze: 0	0.01				

horizons
Engineering ^{Inc.}

DENSE

V. DENSE

NOTES: Lithology logged from auger cuttings

30 - 50

>50

STIFF

V. STIFF

HARD

Sand Pack

Riser Pipe

Screen

38'-50'

+3' - 40'

40' - 50'

BGS

BGS

BGS

Well diameter (in.):

Screen length (ft.):

Screen slot size:

8 - 15

15 - 30

>30

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

MW-8

WELL ID: MW-8

	-		
Page	3	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.	18859
PROJECT MGR.	Joel F. Banaszak
FIELD REP.	Joel F. Banaszak, P.G.
DATE STARTED	November 7, 2018

DATE STARTED
DATE COMPLETED

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COMPLETED	N

-												
Elevation	:	ft.	Datum: As		Во	ring Lo	ocation: 43 50 12.93 -7	1 12 0.89			-	
GRO	UNDWATER REA	ADINGS	SA	MPLER	Rig	Make	& Model: Central Mi	ning Equipment 55			Protective Casing	Well Development
Date	Depth (ft)	Reference	Type: Non	e		Truc		✓ Hollow Ste	em Auger 🔲 🛛	Mud Rotary	Roadbox	Air Lift
11/14/18	39.62	TOC	Hammer (Ib): 140	1	ATV		Cable Tool		Dual Rotary	✓ Standpipe	Bailer
			Fall (in):	30		Tripo	d	Drive & Wa	ash 🗌 🛛	Direct Push	✓ None	Peristaltic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)	WEI DET/			SAMP	LE DESCRI	PTION		LITHOLOGIC DESCRIPTION
_ 40 _												
- 40 - 45 - 50							30.0' - 50.0' Fine sa	nd, tan/beige, we	Il sorted, dry	, loose		
60												
NON-C	OHESIVE SOIL	S CO	HESIVE SO	OILS	LEGEN	ID	INTERVAL (FT)	SUMMARY	/	L	ITHOLOGIC DESCR	RIPTION
BLOW	S/FT CONSISTENCY	BLC	WS/FT CONSISTE	ENCY	Concret	e	BGS Overb	urden (linear ft.):	50			
0 - 4	V. LOOSE	<2	V. S		Backfill			f rock core/air hamm	ner: 0	-S- SAND	HT- TIL	L
4 - 10	LOOSE	2 - 4	SC		Grout			olid riser pipe length		SL SILT	FILI	
10 - 30	M. DENSE	4 - 8			Bentoni	te		tandpipe height ags:		CLAY		- CK / COMPETENT

SAND & GRAVEL R/W ROCK / WEATHERED

2

10

0.01



Elevation:

V. DENSE

NOTES: Lithology logged from auger cuttings.

>50

15 - 30

>30

V. STIFF

HARD

Riser Pipe

Screen

+3' - 40'

40' - 50'

BGS

SOIL BORING LOG & WELL DIAGRAM

Boring Location: 43 50 12.12 -71 12 0.72

BORING NO .:

MW-9

WELL ID: MW-9

Page	1	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

ft. Datum: Assumed

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DAT

E	COMPLETED	Ν
E	COMPLETED	N

TARTED		November 9,	2018	
OMPLET	ΓED	November 9,	2018	3
	Prot	ective Casing	v	Vell Developme
otary	F F	loadbox		Air Lift
				D 1

18859

Joel F. Banaszak

Joel F. Banaszak, P.G.

GROUNDWATER READINGS SAMPLER Rig Make & Model: Central Mining Equipment 55 Protective Casing	Well Development
Date Depth (ft) Reference Type: None Truck Image: Hollow Stem Auger Mud Rotary Roadbox	Air Lift
11/14/18 33.95 TOC Hammer (Ib):	☑ Bailer
Fall (in): Tripod Drive & Wash Direct Push	Peristaltic
DEPTH (FT) SAMPLE ID BLOWS PER 6 IN FIELD SCREENING (IN) WELL DETAIL	LITHOLOGIC DESCRIPTION
0.0 - 0.3' Topsoil/ vegetative debris, dark brown, silty, moist, medium dense	SL
0.3' - 22.0' Fine to medium sand, biege/tan, medium well sorted, dry,	
	_
	—
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	—
b 5 d	
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	—
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	—
	~S~
– 15 –	
	_
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	—
	—
	—
20	—
NON-COHESIVE SOILS COHESIVE SOILS LEGEND INTERVAL (FT) SUMMARY LITHOLOGIC DESCR	IPTION
BLOWS/FT CONSISTENCY BLOWS/FT CONSISTENCY CONCrete BGS Overburden (linear ft.): 50	
0 - 4 V. LOOSE <2 V. SOFT Backfill 0-35 BGS Feet of rock core/air hammer: 0	
4 - 10 LOOSE 2 - 4 SOFT Grout BGS Well solid riser pipe length:(ft) 43 SL SILT SL SILT 10 - 30 M. DENSE 4 - 8 M. STIFF Bentonite 35'-38' BGS Well standpipe height ags: 3 CC CLAY R/C ROC	CK / COMPETENT
	CK / WEATHERED

Screen length (ft.):

BGS Screen slot size:

10

0.01

horiza	ns
Engin	eering Inc.

BORING NO .:

18859

MW-8

WELL ID: MW-8

Page	2	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE COMPLETED

Joel F. Banaszak, P.G.
November 7, 2018
November 7, 2018

Joel F. Banaszak

DRILLE	R	Joseph Kee	enan						DA	TE COMPLETI	ED Novemb	er 7, 201	18
			T			1							
Elevation			Datum: As				ocation: 43 50 1					-	
	UNDWATER RE	1	-	AMPLER				tral Mining Equipment 55	Ť	14.10	Protective Casin Roadbox	-	Well Development Air Lift
Date	Depth (ft)	Reference	1.			_		Hollow S		Mud Rotary		_ 	
11/14/18	33.95	TOC	Hammer (Ib		40	☑ ATV □ Tripo				Dual Rotary Direct Push	☐ Standpipe ✓ None		
			Fall (in):	30	-		d		wasii	Dilect Push	- Hone		1 cristance
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENIN (ppm)		WELL DETAIL		SAM	PLE DESCRI	PTION			LITHOLOGIC DESCRIPTION
- 20													
20							22.0' - 50.0' Fi	ne sand, tan/beige, w	ell sorted, dry	, loose			
													_
													_
			_										
- 25 -				-									-
				-									-
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			-										
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			-	-									-
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- 30 -													~S~
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			-	-									-
- 35 -													
			-										-
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			1	-									
			1										
			1	-									
						1							
			1										_
			1										
40			1										
-	COHESIVE SOI	-	DHESIVE SC			GEND	INTERVAL (FT)	SUMMAR		LI	THOLOGIC DE	SCRIPT	ΓΙΟΝ
-	VS/FT CONSISTENCY		OWS/FT CONSIST		888 B	crete		Overburden (linear ft.):	50		[]]1111	1	
0-4	V. LOOSE	<2		SOFT	Bac			Feet of rock core/air ham		~S~ SAND		TILL	
4 - 10 10 - 30	LOOSE M. DENSE	2 - 4 4 - 8		OFT STIFF	Gro			Well solid riser pipe leng		SL SILT		FILL	COMPETENT
10 - 30 30 - 50	M. DENSE DENSE	4 - 8 8 - 15		TIFF		tonite d Pack	35'-38' BGS 38'-50' BGS	Well standpipe height ag Well diameter (in.):	ıs: 3 2	SAND &	GRAVEL R/W		/ COMPETENT / WEATHERED
>50	V. DENSE	15 - 30				er Pipe	38-50' BGS +3'-40' BGS	Screen length (ft.):	2 10	IIIIII SAND &		NOON	MEATHERED
		>30		RD	Scre			Screen slot size:	0.01				
NOTES:	IOTES: Lithology logged from auger cuttings.												

horizons
Engineering Inc.

Date

11/14/18

DEPTH

(FT)

40

- 45 -

- 50

- 55 -

0 - 4

4 - 10

10 - 30

30 - 50

>50

BLOWS/FT CONSISTENCY

V. LOOSE

LOOSE

M. DENSE

DENSE

V. DENSE

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

MW-9

HORIZONS FILE NO. 18859

WELL ID: MW-9

Page 3 of 3

		1							
DRILLER	DRILLER Joseph Keenan								
CONTRACTOR	CONTRACTOR Geosearch, Inc Sterling, MA								
CLIENT	ENGIE - Pin	ENGIE - Pinetree Power							
LOCATION Tamworth, New Hampshire									
PROJECT Pinetree Power - Rapid Infiltration Basin									

OCATI	ON	Tamworth, N	lew Hampshi	re					PROJECT MGR.	Joel F. Banas	szak
LIENT			etree Power						FIELD REP.	Joel F. Banas	
ONTR	ACTOR	Geosearch,	Inc Sterling	j, MA					DATE STARTED	November 7,	2018
RILLE	-	Joseph Kee							DATE COMPLET	ED November 7,	2018
										· · · · · ·	
evation	:	ft.	Datum: As	sumed	Bori	ng Location: 43 50 1	2.12 -71 12 0.72				
GROU	JNDWATER REA	ADINGS	SA	MPLER	Rig I	Make & Model: Ce	ntral Mining Equi	oment 55		Protective Casing	Well Development
Date	Depth (ft)	Reference	Type: None	e		Truck		Hollow Stem Auger		Roadbox	Air Lift
1/14/18	33.95	TOC	Hammer (Ib): 14	0	ATV			Dual Rotary	Standpipe	Bailer
			Fall (in):	30		Tripod		Drive & Wash	Direct Push	✓ None	Peristaltic
EPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)	WELL DETAI			SAMPLE DES	CRIPTION		LITHOLOGIC DESCRIPTION
40 -											
40						22.0' - 50.0' F	ine sand, tan/l	beige, well sorted,	dry, loose		
			-								
-											
			-								
			-								
-											
			-								
45 —											~S~
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50 —											
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55 -			-								
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]								
							-				
60				-			-				
NON-C	OHESIVE SOIL	s co	HESIVE SO	ILS	LEGEND) INTERVAL (FT)	S	UMMARY	L	ITHOLOGIC DESCR	

	()	•••			
	BGS	Overburden (linear ft.):	50		
0'-35'	BGS	Feet of rock core/air hammer:	0	-S- SAND	HTH TILL
	BGS	Well solid riser pipe length:(ft)	43	SL SILT	FILL
35'-38'	BGS	Well standpipe height ags:	3	-C-CLAY	R/C ROCK / COMPETENT
38'-50'	BGS	Well diameter (in.):	2	SAND & GRAVEL	R/W ROCK / WEATHERED
+3' - 40'	BGS	Screen length (ft.):	10		
40' - 50'	BGS	Screen slot size:	0.01		

OTES:	Lithology logged	from auger cuttings
-------	------------------	---------------------

BLOWS/FT CONSISTENCY

V. SOFT

SOFT

M. STIFF

STIFF

V. STIFF

HARD

<2

2 - 4

4 - 8

8 - 15

15 - 30

>30

Concrete

Backfill

Bentonite

Sand Pack

Riser Pipe

Screen

Grout



SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

Joel F. Banaszak, P.G.

MW-10

HORIZONS FILE NO.

PROJECT MGR.

FIELD REP.

WELL ID: MW-10

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Page	1	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

CONTRACTOR Geosearch		Inc Sterling	g, MA			DATE STARTED N		Nov	November 8, 2018														
DRILLER Joseph Keenan						DATE COMPLETED Novem			vember 8, 20	mber 8, 2018													
Elevation: ft. Datum: Assumed					Boring	g Location: 43	50 12.37 -71 11 59	.84															
GRO	UNDWATER REA	ADINGS	SA	MPLER	Rig M	ake & Model:	Central Mining Eq	uipment 55			Protective	Casing	Well Development										
Date	Depth (ft)	Reference	Type: Non	e	🗌 T	ruck	1	Hollow Stem Auger	Mud	Rotary	Roadb	ox 🗌	Air Lift										
11/14/18	40.71	TOC	Hammer (Ib) 🗹 A	TV		Cable Tool	Dual	Rotary	Standp	pipe [Bailer										
11/14/10	40.71	100	Fall (in):	30	т			Drive & Wash	Direc	et Push	✓ None		Peristaltic										
			r un (m).					SAMPLE DES	COIDTI			B											
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)	WELL DETAIL			SAMPLE DE	SCRIPTI	UN			LITHOLOGIC DESCRIPTION										
- o -																							
		3	_			333333		ve debris, dark bro				е	SL										
	S-66	4	16/24			0.3' - 17.0	' Medium to coar	rse sand, orangish	n-tan, me	dium well so	orted, dry,		_										
	0.00	4	10/21			loose																	
		4																					
		4																					
		2																					
	S-67	2	17/24																				
		3																					
													_										
		2	-										_										
- 5 -	S-68	3	15/24										_										
		3											_										
		5																					
		5																					
	S-69	6	18/24																				
	0.00	6	10/24																				
		7.																					
		3																					
		4																					
	S-70	6	17/24																				
		8											-										
- 10 -													~S~										
		3																					
	S-71	7	17/24																				
		4	-										-										
		6											_										
		6																					
	S-72	5	20/24	20/24	20/24	20/24	20/24	5 20/24	20/24	20/24	20/24	20/24	5 20/24										
	072	5	20/24																				
		6																					
		3																					
	0.70	4	40/04																				
- 15 -	S-73	4	18/24																				
		6	1										_										
		6																					
		5	1										_										
	S-74	5	19/24			17.0' 50.0	' Fine cond whit	a/biaga wall carta					_										
			-			17.0-50.0	Fine sand, whit	e/biege, well sorte	eu ury, ioi	Use			-										
		7											_										
		5	-										_										
	S-75	7	18/24										_										
		9	-																				
20		8																					
	OHESIVE SOIL		HESIVE SC		LEGEND	INTERVAL (F	,	SUMMARY		LI	THOLOGIC	C DESCRIP	TION										
			WS/FT CONSISTI		Concrete		BGS Overburden (I		50	• • • • •													
0 - 4	V. LOOSE	<2			Backfill	0'-35'	BGS Feet of rock c		0	-S- SAND													
4 - 10	LOOSE	2 - 4		OFT	Grout		BGS Well solid rise		43														
10 - 30	M. DENSE	4 - 8		IFF	Bentonite	35'-38'	BGS Well standpip		3	CLAY	CDAVE		/ COMPETENT / WEATHERED										
30 - 50		8 - 15 15 - 30			Sand Pack Riser Pipe		BGS Well diameter BGS Screen length			SAND &	GRAVEL	ROCK	/ WEATHERED										
>50	V. DENSE	15 - 30 >30			Riser Pipe Screen	+3' - 40' 40' - 50'	BGS Screen length		10 0.01														
NOTES:		- 50	11/4		0010011	40 - 50	535 CO. CO. OICT 0101 01		3.01														
INVIED:																							

horiza	NS
Engin	eering ^{Inc.}

15 - 30

>30

V. STIFF

HARD

Riser Pipe

Screen

+3' - 40'

40' - 50'

BGS

>50

NOTES:

V. DENSE

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

MW-10

WELL ID: MW-10

Page	2	of	3
i age	4	01	

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DA

ATE COMPLETED	
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ED	November 8, 2018
ETED	November 8, 2018

18859

Joel F. Banaszak

Joel F. Banaszak, P.G.

Elevation	:	ft.	Datum: As	sumed		Boring	ocation: 43 50 1	2.37 -71 11 59.8	34					
GRO	UNDWATER REA	ADINGS	SAMPLER			_	Rig Make & Model: Central Mining Equipment 55 Protective Casing						Well Development	
Date	Depth (ft)	Reference	Type: Non	e		🗌 Tru			Hollow Stem Aug			Roadbox		-
11/14/18	40.71	тос	Hammer (Ib):	140	✓ AT			Cable Tool		Dual Rotary	Standpipe	∠	
			Fall (in):		30	🗌 Trij	ood		Drive & Wash		Direct Push	✓ None		Peristaltic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELI SCREEN (ppm	IING	WELL DETAIL			SAMPLE D	ESCRI	PTION			LITHOLOGIC DESCRIPTION
- 20 -	S-76	3	16/24				17.0'-50.0' Fin	e sand, white	/biege, well sor	rted dry	ı, loose			-
		6 5	-											
		7	-	-										_
	S-77	7	17/24											_
		6												-
		6												_
		4	-											_
- 25 -	S-78	7	15/24	-										-
		7 8	-											-
		8												-
		8	-											-
S-79	9	18/24											-	
	8												=	
		6												=
	0.00	7	47/04											=
	S-80	9	17/24											-
		10												
- 30 -		5												~S~
	S-81	9	17/24											
	3-01	9												
		10												
		8												_
	S-82	5	20/24											_
		8												_
		8												_
		8	-	-										_
- 35 -	S-83	11	18/24	-										-
		10 11		-										-
		6												-
		6					Saturated soil	s at 37' has						=
	S-84	5	19/24					s at or bys						-
		5	-	-										-
		2												
	C 0F	4	10/04											
	S-85	4	18/24											
40		4												
	OHESIVE SOIL		HESIVE SC			GEND	INTERVAL (FT)		SUMMARY		L	ITHOLOGIC DES	CRIP	ΓΙΟΝ
вLOW 0 - 4	V. LOOSE	BLC <2				ncrete		Overburden (lir	,	50 0	0	┝┿╈┼┥╵		
0 - 4 4 - 10	LOOSE	<2 2 - 4		DFT		ckfill out		Feet of rock co	re/air hammer: pipe length:(ft)	0 43	<mark>~S~</mark> SAND SL SILT		IILL FILI	
10 - 30	M. DENSE	2 - 4 4 - 8		TIFF		ntonite		Well standpipe		43 3	C-CLAY	R/C		COMPETENT
30 - 50	DENSE	8 - 15		IFF		nd Pack		Well diameter (2	STC SAND 8	GRAVEL R/W		/ WEATHERED

Screen length (ft.):

BGS Screen slot size:

10

0.01

horize	ns
Engine	ering Inc.

BORING NO .:

18859

Joel F. Banaszak

November 8, 2018

November 8, 2018

Joel F. Banaszak, P.G.

MW-10

HORIZONS FILE NO.

PROJECT MGR.

DATE STARTED

DATE COMPLETED

FIELD REP.

WELL ID: MW-10

Page	3	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

Ievation	:	ft.	Datum: As	sumed	Bor	ing Lo	ocation: 43 50 12.3	7 -71 11 59.84					
GRO	JNDWATER REA	ADINGS	SAMPLER			Rig Make & Model: Central Mining Equipment 55 Protective Casing							Well Development
Date	Depth (ft)	Reference	Type: Non	Type: None Truck				✓ Hollow Stem Au	iger 🗌 Mi	ud Rotary	Roadbox		Air Lift
						ATV		Cable Tool	-	al Rotary	Standpipe	1	Bailer
11/14/18	40.71	TOC	Hammer (Ib		5			Drive & Wash		rect Push	✓ None		Peristaltic
			Fall (in):	30		Tripo	d			lect Push	. None		i eristatte
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)	WEL DETA			SAMPLE I	DESCRIPT	ΓΙΟΝ			LITHOLOGIC DESCRIPTION
- 40 -		3					17.0'-50.0' Fine	sand, white/biege, well so	orted drv. I	oose			
		5						;	, ,.				
	S-86	6	24/24										
			-										
		5											
	NS												
	113						Standard penetr	ation test could not be co	mpleted b	eyond 42 fee	t bgs		
			-					ands entering the borehol		-	-		
								anced to a terminal dept					
			-				augers were au	ranceu lo a terminar depli		n bys.			
- 45	NS												~S~
												-	
	NS												
			-										
	NS												
- 50 -													
-													
			_										
												-	
- 55													
			-										
			-										
ł													
			-										
			1										
60													
NON-C	OHESIVE SOIL	.s co	HESIVE SO	DILS	LEGEN	D	INTERVAL (FT)	SUMMARY		L	THOLOGIC DE	SCRIPT	ION
BLOW	S/FT CONSISTENCY	BLO	WS/FT CONSISTE	ENCY	Concrete)	BGS O	verburden (linear ft.):	50				
0 - 4	V. LOOSE	<2	V. S	OFT	Backfill			eet of rock core/air hammer:	0	~S~ SAND	+ t +	TILL	
4 - 10	LOOSE	2 - 4	SC)FT	Grout			ell solid riser pipe length:(ft)	43	SL SILT		FILL	
10 - 30	M. DENSE	4 - 8		TIFF	Bentonit	е		ell standpipe height ags:	3				COMPETENT
30 - 50	DENSE	8 - 15		IFF	Sand Pa			ell diameter (in.):	2	-C-CLAY	GRAVEL R/W		WEATHERED
>50	V. DENSE	15 - 30		TIFF	Riser Pip			creen length (ft.):	10			,	
		>30			Screen	-		creen slot size:	0.01				
IOTES:			117		20.001				0.01				



SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

November 1, 2018

November 1, 2018

Joel F. Banaszak, P.G.

MW-11

WELL ID: MW-11

3

Page 1 of

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE	CON	IPL	ET.	ΈD

			1										
Elevation		ft.	Datum: Assumed			Boring Location: 43 50 11.7 -71 11 59.75							
GROUNDWATER READINGS			SAMPLER			Rig Make & Model: Central Mining Equipment 55 Protective Casing							
Date	Depth (ft)	Reference	Type: Non	e		Truc							
11/14/18	40.91	TOC	Hammer (Ib): 140)	ATV		Bailer					
			Fall (in):	30		Tripo	Drive & Wash Direct Push Vone	Peristaltic					
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		WELL DETAIL	SAMPLE DESCRIPTION	LITHOLOGIC DESCRIPTION					
- 0 -													
ů							0.0 - 0.4' Topsoil/ vegetative debris, dark brown, silty, moist, medium dense	SL					
							0.4' - 2.0' Medium - fine sand, beige/ orange, well sorted, dry, very loose	~S~					
							2.0' - 30.0' Medium sand with occasional gravel (<5%) tan/ beige, well						
							sorted, dry, medium dense						
- 5 -													
- 3 -													
			_										
- 10 -													
								S/G					
			_										
			_										
			1										
			-										
- 15 -			-										
			-										
			-										
				1	E C								

20 NON-COHESIVE SOILS COHESIVE SOILS LEGEND INTERVAL (FT) SUMMARY LITHOLOGIC DESCRIPTION BLOWS/FT CONSISTENCY BLOWS/FT CONSISTENCY 50 Concrete BGS Overburden (linear ft.): FILL 0 - 4 V. LOOSE <2 V. SOFT 0 -S- SAND Backfill 0'-35' BGS Feet of rock core/air hammer: SL SILT FILL CC CLAY R/C ROCK / COMPETENT SAND & GRAVEL R/W ROCK / WEATHERED 4 - 10 LOOSE 2 - 4 SOFT Grout Well solid riser pipe length:(ft) 43 BGS M. STIFF 10 - 30 M. DENSE 4 - 8 Bentonite 35'-38' BGS Well standpipe height ags: 3 STIFF Sand Pack 30 - 50 DENSE 8 - 15 2 38'-50' BGS Well diameter (in.): V. STIFF Screen length (ft.): >50 V. DENSE 15 - 30 Riser Pipe 10 +3' - 40' BGS >30 HARD Screen 40' - 50' BGS Screen slot size: 0.01 NOTES: Lithology logged from auger cuttings



BORING NO .:

MW-11

WELL ID:

MW-11								
Page	2	of	3					

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE CON

RTED	November 1, 2018
IPLETED	November 1, 2018

18859

Joel F. Banaszak

Joel F. Banaszak, P.G.

levation		ft.	Datum: As		Boring L	ocation: 43 50 11	.7 -71 11 59.75				T		
GRO	JNDWATER REA	ADINGS	SA	MPLER			tral Mining Equi				Protective Casing	_	Well Development
Date	Depth (ft)	Reference	Type: Non	e	True			Hollow Stem Auger			Roadbox		Air Lift
11/14/18	40.91	TOC	Hammer (lb): 140			_	Cable Tool		ual Rotary	Standpipe	\checkmark	Bailer
			Fall (in):	30	🗌 Trip	od		Drive & Wash	🗌 Di	rect Push	✓ None		Peristaltic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)	WELL DETAIL			SAMPLE DES	SCRIP [.]	ΓΙΟΝ			LITHOLOGIC DESCRIPTION
- 20						sorted, dry, m	ne sand, whit	th occasional gra			e, well		src
- 30													-5-
40			-										
	OHESIVE SOIL		HESIVE SO		LEGEND	INTERVAL (FT)		SUMMARY		L	ITHOLOGIC DESC	, KIPT	IUN
BLOW 0 - 4 4 - 10 10 - 30 30 - 50 >50	V. LOOSE LOOSE M. DENSE DENSE V. DENSE	сородина	M. S ST	OFT DFT TIFF IFF TIFF	Concrete Backfill Grout Bentonite Sand Pack Riser Pipe Screen	0'-35' BGS BGS 35'-38' BGS 38'-50' BGS +3' - 40' BGS	Overburden (lin Feet of rock cor Well solid riser Well standpipe Well diameter (i Screen length (i Screen slot size	e/air hammer: pipe length:(ft) height ags: in.): ft.):	50 0 43 3 2 10 0.01	<mark>-S-</mark> SAND SL SILT CLAY SAND 8	tting T R/C R & GRAVEL R/W R	ILL OCK /	COMPETENT WEATHERED

horiza	MS
Engin	eering Inc.

BORING NO .:

18859

Joel F. Banaszak

November 1, 2018

Joel F. Banaszak, P.G.

MW-11

HORIZONS FILE NO.

PROJECT MGR.

DATE STARTED

FIELD REP.

WELL ID: MW-11

Page	3	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

RILLE	R	Joseph Kee	nan							D.	ATE COMPLE	TED No	ovember 1, 201	8
levation		ft.	Datum: As				ocation: 43 50 11					1		
GROI	UNDWATER REA	ADINGS	SA	MPLER		_			quipment 55			Protective		Well Development
Date	Depth (ft)	Reference	Type: None	e		_ Tru			Hollow Stem			✓ Roadt		
1/14/18	40.91	TOC	Hammer (Ib): 140	,	✓ AT	-		Cable Tool Drive & Wash		Dual Rotary	Stand		
		<u> </u>	Fall (in):	30		🗌 Trij	ood				Direct Push			Teristanie
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		/ELL ETAIL			SAMPLE	DESCR				LITHOLOGIC DESCRIPTION
40 -														
			-				30.0' - 50.0' Fi		hite/ beige, we	ell sorted,	dry, loose to			_
			-				medium dense	•						-
			_											
-														_
			-											-
			-											
			-											
45 —														~S~
45														~~-
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50 -			1											
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			-											
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			-											-
60			-											
	OHESIVE SOIL	s co	HESIVE SO	DILS	LEG	END	INTERVAL (FT)		SUMMARY		L	ITHOLOGI	C DESCRIPT	ION
	S/FT CONSISTENCY		WS/FT CONSISTE		Conc	rete	BGS	Overburden	(linear ft.):	50				
0 - 4	V. LOOSE	<2		OFT	Back				core/air hammer:		~S~ SAND			
4 - 10	LOOSE	2 - 4		OFT STIFF	Grou				ser pipe length:(ft					COMPETENT
10 - 30 30 - 50	M. DENSE DENSE	4 - 8 8 - 15		IFF	Bent Sand	onite Pack		Well standp Well diamet	pe height ags: er (in)	3 2	CLAY	& GRAVEI		COMPETENT
>50	V. DENSE	15 - 30		TIFF	Riser			Screen leng		10				
		>30			Scree			Screen slot		0.01				
OTES:	Lithology logge	d from auge	or cuttings											



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SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

MW-12

WELL ID: MW-12

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of	
	of

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE

STARTED	Ν
COMPLETED	Ν

Joel F. Banaszak, P.G.	
November 1, 2018	
November 1, 2018	

Elevation			Datum: As			Boring Lo	ocation: 43 50 11	.4 -71 12	2 0.21				-							
GRO	UNDWATER RE	ADINGS	S/	MPLER				tral Minir	ng Equipment 55	,		Protective		Well Development						
Date	Depth (ft)	Reference	Type: Non	e		Trucl	-			em Auger	Mud Rotary	Roadbo								
11/14/18	41.30	TOC	Hammer (Ib): 140	, ,	✓ ATV			Cable Too	_	Dual Rotary	Standp								
			Fall (in):	30		Tripo	od		Drive & W	/ash	Direct Push	✓ None] Peristaltic						
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		VELL ETAIL			SAMP	PLE DESCR	RIPTION			LITHOLOGIC DESCRIPTION						
- o -																				
		3							etative debris,)	SL						
	S-1	3	17/24				0.3' - 1.6' Med	ium - fir	ne sand, beige/	orange, we	ell sorted, dry, v	ery loose		~S~						
		3																		
		4					8		and with occasion	onal gravel	(<5%) tan/ beig	je, well								
		4	_				sorted, dry, m	edium d	lense											
	S-2	5	16/24	-																
	0 -	6																		
		6																		
		4																		
_ 5 _	S-3	5	14/24																	
, <u> </u>	0-0	7	17/27																	
		6																		
		11																		
	S-4	7	18/24																	
	0-4	8	10/24																	
		10																		
		5																		
	S-5	8	13/24																	
	3-5	8	13/24																	
40		7																		
- 10 -		5																		
		6	4.0/0.4											SIG						
	S-6	8	16/24																	
		10																		
		13																		
	o -		21/24	21/24	21/24	21/24	, 21/24	7	7 21/24											
	S-7									21/24	21/24	21/24	21/24	21/24						
		8																		
		5	1	1																
		9	-	-	9															
- 15 -	S-8	7	14/24																	
		7	1																	
		10																		
		9	1																	
	S-9	9	18/24																	
		8	1																	
		4																		
		4	1																	
	S-10	4	15/24																	
20		5	1																	
	OHESIVE SOIL		HESIVE SC	ILS	LEG	END	INTERVAL (FT)		SUMMAR	Y		LITHOLOGIC	DESCRIP	ΓΙΟΝ						
	VS/FT CONSISTENCY		WS/FT CONSIST		Conc	rete	BGS	Overbur	den (linear ft.):	50		_								
0 - 4	V. LOOSE	<2		OFT	Back	fill	0'-35' BGS	Feet of r	ock core/air hamn	ner: 0	~S~ SAND		HTH TILL							
4 - 10	LOOSE	2 - 4		DFT	Grou				id riser pipe length	. ,			E E FILL							
10 - 30	M. DENSE	4 - 8		TIFF	Bent				ndpipe height ags		C-C-CLAY			/ COMPETENT						
30 - 50	DENSE	8 - 15			1	Pack			meter (in.):	2	S/C SAND	& GRAVEL	R/W ROCK	/ WEATHERED						
>50	V. DENSE	15 - 30 >30		TIFF .RD	Riser Scree	r Pipe	+3' - 40' BGS	Screen I	ength (ft.): Not size:	10 0.01	1									
NOTES:		~30	ПА		Scree	011	40' - 50' BGS	50,00118		0.01										
INVIES:																				

.....



GROUNDWATER READINGS

Depth (ft)

41.30

SAMPLE ID

S-11

DENSE

V. DENSE

30 - 50

>50

NOTES:

8 - 15

15 - 30

>30

STIFF

V. STIFF

HARD

Elevation:

Date

11/14/18

DEPTH

(FT)

- 20

SOIL BORING LOG & WELL DIAGRAM

Boring Location: 43 50 11.4 -71 12 0.21

Truck

ATV

WELL

DETAIL

Tripod

Rig Make & Model: Central Mining Equipment 55

BORING NO .:

18859

Joel F. Banaszak

November 1, 2018

November 1, 2018

Joel F. Banaszak, P.G.

MW-12

WELL ID:

3

	M١	V-12	
Page	2	of	

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

140

30

FIELD SCREENING

(ppm)

Datum: Assumed

lammer (lb):

Type: None

Fall (in):

REC / PEN

(IN)

15/24

SAMPLER

ft.

Reference

TOC

BLOWS

PER 6 IN

4

6

6 7 Q

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE COMPLETED

Model: Central Minir	ng Equipment 55	Protective Casing	Well Development
	Hollow Stem Auger Mud Rotary Cable Tool Dual Rotary	Roadbox	Air Lift
	Cable Tool Dual Rotary Drive & Wash Direct Push	Standpipe None	Peristaltic
			LITHOLOGIC DESCRIPTION
6' - 28.0' Medium sa rted, dry, medium d	and with occasional gravel (<5%) tan/ bei lense	ige, well	

			0			в			8							
			4													
	S-12		7	19/24												-
			8													-
-			5													- \$/G
			5													
- 25 -	S-13		7	16/24												-
			7													-
-																-
			9													-
	S-14		11	19/24												-
			10													_
-			10													
			6						9		vhite/ beige, wel	l sorted,	dry, loose to			-
	S-15		9	17/24					medium den	se						
			10													
- 30 -			11													
			3													
	S-16		9	15/24												
	3-10		9	13/24												
			10													
			8													
	0.47		9	00/04												-
	S-17		9	20/24												-
			9													-
-			8													- ~S~
			9													-
- 35 —	S-18		12	20/24												-
			12													-
-			11													-
			7													
	S-19		9	20/24												-
			9													-
-			9 6													-
																-
	S-20		6	17/24												-
40			8													-
40	OHESIVE SOIL	<u>د</u> ا	8	HESIVE SO					INTERVAL (FT	1	SUMMARY		<u> </u>		GIC DESCRIPT	
	S/FT CONSISTENCY	.5		WS/FT CONSISTE			Concrete) S Overburden		50			JIC DESCRIPT	
0 - 4	V. LOOSE		<2	V. S		0000000	Backfill				core/air hammer:	0	-S- SAN	D	HT- TILL	
4 - 10	LOOSE		_ 2 - 4		OFT		Grout				ser pipe length:(ft)				SE FILL	
	M DENSE		4 - 8	M. S		mmm	3entonit	6			ine height ags:	3		Y		

38'-50'

+3' - 40'

40' - 50'

Sand Pack

Riser Pipe

Screen

BGS Well diameter (in.):

BGS Screen length (ft.):

BGS Screen slot size:

2

10

0.01

SAND & GRAVEL R/W ROCK / WEATHERED

horiza	NS
Engin	eering ^{Inc.}

NOTES:

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

MW-12

WELL ID: MW-12

Page	3	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE (

STARTED	Nov
COMPLETED	No

Joel F. Banaszak
Joel F. Banaszak, P.G.
November 1, 2018
November 1, 2018

			L			Devine Location: 42 50 44 4 74 42 0 24								
Elevation: ft. GROUNDWATER READINGS			Datum: Assumed SAMPLER			Boring Location: 43 50 11.4 -71 12 0.21								
						Rig Make & Model: Central Mining Equipment 55 Protective Casing Truck Image: Hollow Stem Auger Mud Rotary Image: Roadbox							Well Development Air Lift	
Date	Depth (ft)	Reference	Type: None			ATV Cable Tool Dual Rotary Standpipe				Bailer				
11/14/18	41.30	TOC	Hammer (Ib		,	Tripo		D			Direct Push	None None		Peristaltic
			Fall (in):	30		mpe	u			_		_		
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)	WEI DET/				SAMPLE DE	SCRIF	PTION			LITHOLOGIC DESCRIPTION
- 40 -														
40		3					28.0' - 50.0' F	ine sand, whi	te/ beige, well so	rted, d	lry, loose to			
	S-21	3	19/24				medium dens	se						
		4												
		6												
		3	_											
	S-22	6	24/24											
		8	-											
		11												
		10	_											
- 45	S-23	10	24/24											~S~
		10	-											
-		27						4 4 4 4 4		1 - 41	h	4 h		
			-						could not be comp					
	NS		-						ng the borehole.			wstem		
			-				augers were	advanced to a	a terminal depth o	1 50 16	eet bgs.			
			-											
	NS		_											
			-											
- 50 -														
- 55 -														
			_											
		-												
		-	4											
			-											
			+											
			-											
			-											
60			-											
	OHESIVE SOIL	s co	DHESIVE SC	DILS	LEGEN	ID	INTERVAL (FT)		SUMMARY		1	ITHOLOGIC DE	SCRIPT	ION
	S/FT CONSISTENCY		OWS/FT CONSIST		Concret			S Overburden (li		50				
0 - 4	V. LOOSE	<2	V. S	OFT	Backfill			S Feet of rock co		0	~S~ SAND	нт	TILL	
4 - 10	LOOSE	2 - 4		DFT	Grout			S Well solid riser		43	SL SILT		FILL	
10 - 30	M. DENSE	4 - 8		STIFF	Bentoni			S Well standpipe		3	CLAY	R/C		COMPETENT
30 - 50	DENSE	8 - 15		IFF	Sand Pa			S Well diameter		2	SAND 8	GRAVEL R/W	ROCK /	WEATHERED
>50	V. DENSE	15 - 30 >30		TIFF	Riser Pi	ре		Screen length		10				
		-30	Ah	ע אוי	Screen			S S S S S S S S S S S S S S S S S S S		0.01				



NOTES: Lithology logged from auger cuttings

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

MW-13

WELL ID:

	M١	V-13	
Page	1	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE

COMPLETED	No

Joel F. Banaszak, P.G.	
November 2, 2018	
November 2, 2018	

Elevation	:	ft.	Datum: As	ssumed		Boring Location: 43 50 11.32 -71 12 0.58												
GRO	UNDWATER RE	ADINGS	SA	AMPLER		Rig Make	Rig Make & Model: Central Mining Equipment 55 Protective Casing											
Date	Depth (ft)	Reference	Type: Non	ne		Truck	ĸ	~	Hollow Stem Auge	r 🗌 N	lud Rotary	Roadbo	x 🗌	Air Lift				
11/14/18	41.80	TOC	Hammer (Ib		40	🗸 ATV			Cable Tool	🗌 D	ual Rotary	Standp	ipe 🗌	Bailer				
	11.00		Fall (in):	30		Tripe	d		Drive & Wash	🗌 D	virect Push	✓ None		Peristalt	ic			
			().						SAMPLE DE	SCDID			<u> </u>	1				
DEPTH		BLOWS	REC / PEN	FIELD SCREENIN	G	WELL			SAMPLE DE	SCRIP	TION			LITHC	DLOGIC			
(FT)	SAMPLE ID	PER 6 IN	(IN)	(ppm)		DETAIL									RIPTION			
- 0 -							0.0 - 0.6' Tops	soil/ vegetati	ve debris, dark bi	rown, si	ilty, moist, me	edium dense		S	SL			
									and, beige/ orange						•			
														-	S~			
							5.0' - 28.0' Me	dium sand v	vith occasional gr	avel (<	5%) tan/ beig	e, well						
			-				sorted, dry, m				, 0	,		-				
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			4															
20																		
	OHESIVE SOII	-	DHESIVE SC		LE	GEND	INTERVAL (FT)		SUMMARY		I	ITHOLOGIC	DESCRIPT	TON				
-	S/FT CONSISTENCY		OWS/FT CONSISTI		Cor	ncrete	BGS	Overburden (I	inear ft.):	50								
0 - 4	V. LOOSE	<2		OFT	Bac	kfill			ore/air hammer:	0	~S~ SAND							
4 - 10	LOOSE	2 - 4		OFT	Gro				er pipe length:(ft)	43	SL SILT		FILL					
10 - 30	M. DENSE	4 - 8		STIFF	00000	tonite		Well standpip		3	CLAY		R/C ROCK					
30 - 50	DENSE	8 - 15		IFF		d Pack		Well diameter		2	SAND	& GRAVEL	R/W ROCK	WEATHE	RED			
>50	V. DENSE	15 - 30				er Pipe		Screen length		10								
I		>30	HA	ARD	Scr	een	40' - 50' BGS	Screen slot si	ze.	0.01								



BORING NO .:

18859

Joel F. Banaszak

MW-13

WELL ID:

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Page	2	of	

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

D DATE COMPLETED

Joel F. Banaszak, P.G.											
November 2, 2018											
November 2, 2018											

Elevation					Boring Location: 43 50 11.32 -71 12 0.58											
GRO	UNDWATER RE	ADINGS	S	AMPLER					ntral Min	ing Equ	ipment 55				ve Casing	Well Development
Date	Depth (ft)	Reference	Type: Nor	ie			Truck	C C C C C C C C C C C C C C C C C C C		1	Hollow Stem Au	ger 🔲 🛛	Mud Rotary	✓ Road	box [Air Lift
11/14/18	41.80	TOC	Hammer (lb		0	✓ .	ATV				Cable Tool		Dual Rotary	Stand	dpipe	Bailer
			Fall (in):	30			Tripo	d			Drive & Wash		Direct Push	None	e E	Peristaltic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD		WELL					SAMPLE [DESCRI	PTION			LITHOLOGIC DESCRIPTION
- 20 -																
			_					5.0' - 28.0' Me				gravel (<	<5%) tan/ beig	je, well		
			_					sorted, dry, m	edium	dense						
			_													
			_													
			_													
			_													
																\$/G
			_													
- 25 -			_													
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			_													
			_													
			_													
			_					28.0' - 50.0' Fi		nd, whi	te/ beige, well	sorted, o	dry, loose to			_
			_					medium dense	9							_
			_													_
- 30 -																_
			_													_
			_													_
			_													_
																_
			_													_
			_													_
			_													_
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		-	_	-												_
- 35 -		-	_	-												_
			-													_
																_
			-													_
			-													_
			-													_
																_
			-		_											_
			-		_											_
40			-													_
	OHESIVE SOI	LS CO	DHESIVE SC	DILS	LEG	GEND		INTERVAL (FT)			SUMMARY			LITHOLOG	IC DESCRIP	TION
	VS/FT CONSISTENCY		OWS/FT CONSIST			crete			Overbu		near ft.):	50	<u> </u>			
0 - 4	V. LOOSE	<2	V. S	OFT	Bacl						ore/air hammer:	0	~S~ SAND		+T+ TILL	
4 - 10	LOOSE	2 - 4		DFT	Grou						pipe length:(ft)	43	SL SILT		E FILL	
10 - 30	M. DENSE	4 - 8	M. S	STIFF	800 E	tonite					height ags:	3	-C-CLAY			(/ COMPETENT
30 - 50	DENSE	8 - 15		IFF	San	d Pack	ĸ		Well di			2	SAND	& GRAVEL	R/W ROCK	/ WEATHERED
>50	V. DENSE	15 - 30			HT .	r Pipe	•		Screen			10				
L		>30		ARD	Scre	en		40' - 50' BGS	Screen	slot siz	e:	0.01				
NOTES:	Lithology logge	ed from aug	er cuttings													

horiza	ns
Engin	eering ^{Inc.}

BORING NO .:

18859

Joel F. Banaszak

November 2, 2018

Joel F. Banaszak, P.G.

MW-13

WELL ID: MW-13

Page	3	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DRILLER Joseph Keenan											D	DATE COMPLETED November 2, 2018					
						Bori	oring Location: 43 50 11.32 -71 12 0.58										
GRO	JNDWATER REA	ADINGS						& Model: Central Mi							Well Development		
Date	Depth (ft)	Reference	Type: Non	e		_	Truck			Hollow Stem Auge		Mud Rotary	✓ Road		Air Lift		
11/14/18	41.80	TOC	Hammer (Ib): 140)		ATV			Cable Tool		Dual Rotary	Stand		Bailer		
			Fall (in):	30	1		Tripo	d		Drive & Wash		Direct Push			Peristaltic		
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		WELL				SAMPLE DE	SCR				LITHOLOGIC DESCRIPTION		
- 40 -																	
							100000000000000000000000000000000000000	28.0' - 50.0' Fine sa	nd, whit	e/ beige, well so	orted,	dry, loose to					
			_					medium dense									
			_														
·																	
			-														
- 45 -															~S~		
			-														
·																	
			-														
			-														
			-														
- 50 -																	
- 55 -		-	_														
·																	
		-	-														
			-														
			-														
			-														
			1														
60			1														
	OHESIVE SOIL		HESIVE SO		-	BEND		INTERVAL (FT)		SUMMARY	_	LI	THOLOG	IC DESCRIPTI	ON		
			WS/FT CONSISTE			crete		BGS Overb			50						
0 - 4 4 - 10	V. LOOSE LOOSE	<2 2 - 4		OFT	Back					re/air hammer:	0	<mark>~S~</mark> SAND <mark>SL</mark> SILT					
4 - 10 10 - 30	M. DENSE	2 - 4 4 - 8			Grou Bent	it tonite				pipe length:(ft) height ags:	43 3			R/C ROCK /	COMPETENT		
30 - 50	DENSE	8 - 15		IFF	Sand				liameter (2	CLAY		R/W ROCK /			
>50	V. DENSE	15 - 30		TIFF	Rise				n length (10	mmd -	_				
		>30	HA	RD	Scre	en		40' - 50' BGS Scree	n slot size	e:	0.01						
NOTES:	Lithology logge	d from auge	er cuttings														



30 - 50

>50

DENSE

V. DENSE

NOTES: Lithology logged from auger cuttings

8 - 15

15 - 30

>30

STIFF

V. STIFF

HARD

Sand Pack

Riser Pipe

Screen

38'-50'

+3' - 40'

40' - 50'

BGS Well diameter (in.):

BGS Screen slot size:

BGS

Screen length (ft.):

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

Joel F. Banaszak, P.G.

MW-14

WELL ID: MW-14

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Page	1	of	

U	C
PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DA

ΛTE	COMPLETED	

STARTED	November 2, 2018
COMPLETED	November 2, 2018

			1			1										
Elevation: ft.			1				Boring Location: 43 50 11.56 -71 12 0.39							-		
GRO	UNDWATER REA	ADINGS	SA	MPLER				& Model: Cen	tral Mining					Protective Casing	_	Well Development
Date	Depth (ft)	Reference	Type: Non	e		ПТ					ollow Stem Auger			Roadbox		Air Lift
11/14/18	41.52	TOC	Hammer (Ib): 14	40	V A	_				able Tool		Dual Rotary	Standpipe	7	
			Fall (in):	30		П	ripod	1		Di Di	rive & Wash		Direct Push	✓ None		Peristaltic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		WELL					SAMPLE DES	SCRIF	PTION			LITHOLOGIC DESCRIPTION
- 0 - - 5 - - 10 -							(dium sar	nd with	lebris, dark bro occasional gra					
			-													
20			1													
	OHESIVE SOIL	S CO	HESIVE SC			GEND		INTERVAL (FT)		SIII	MMARY		1	ITHOLOGIC DESC	RIPT	ION
	S/FT CONSISTENCY		WS/FT CONSISTI			crete	-+		Overburde			50	E		TAF 1	
0 - 4	V. LOOSE	<2		OFT	Bacl		⊦				air hammer:	0	-S- SAND	<mark>нтн</mark> ті		
4 - 10	LOOSE	2 - 4		OFT .	Grou		ŀ				e length:(ft)	43	SL SILT	FI		
10 - 30	M. DENSE	2 - 4 4 - 8	M. S			ui tonite	ŀ		Well stand			43 3				COMPETENT
10-30	IVI. DEINOE	4-0	IVI. O		m Deu	conne		35'-38' BGS	wen stand	uhihe iiei	iyiil ays.	3	ULAY	NºS R	JUR /	CONFEIENI

2

10

0.01



Elevation:

Date

11/14/18

DEPTH

(FT)

- 20

- 25 -

- 30 -

- 35 -

10 - 30

30 - 50

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

Joel F. Banaszak, P.G.

MW-14

WELL ID: MW-14

Page	2	of	3

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

STARTED	November 2, 2018
COMPLETED	November 2, 2018

RILLE	R	Joseph Kee	nan					D/	ATE COMPLET	ED November 2,	2018	3
			1		- T		ocation: 43 50 11.56 -71 12 0.39					
evation		ft.	Datum: As				r –					
	JNDWATER RE	1		MPLER	_	Truck	& Model: Central Mining Equipme		10.10	Protective Casing Roadbox		Well Development Air Lift
Date	Depth (ft)	Reference	Type: Non				110	ollow Stem Auger	-	_	_	
1/14/18	41.52	TOC	Hammer (Ib		- J	ATV			Dual Rotary	☐ Standpipe✓ None		Bailer Peristaltic
			Fall (in):	30		Tripo	d Dri	ive & Wash	Direct Push	 None 		Peristance
EPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		'ELL TAIL		SAMPLE DESCRI	IPTION			LITHOLOGIC DESCRIPTION
20 -												
20							0.6' - 28.0' Medium sand with o	occasional gravel (<5%) tan/ beige	, well		
							sorted, dry, medium dense					
			-									
			-									
-											_	\$/G
				-								
25 —			-								_	
			-									
					-							
			-									
				-		_						
			4				28.0' - 50.0' Fine sand, white/ b	beige, well sorted,	dry, loose to			
							medium dense					
30 —												
				· · · · · · · · · · · · · · · · · · ·								
			1									
			1									
			1									
			1									
			1									
-												~S~

40												
NON-C	ION-COHESIVE SOILS COHESIVE SOILS		ESIVE SOILS	LEGEND	INTER	INTERVAL (FT) SUMMARY			LITHOLOGI	C DESCRIPTION	SCRIPTION	
BLOW	BLOWS/FT CONSISTENCY BLOWS/FT CONSISTENCY		Concrete		BGS	Overburden (linear ft.):	50					
0 - 4	V. LOOSE	<2	V. SOFT	Backfill	0'-35'	BGS	Feet of rock core/air hammer:	0	-S- SAND	HTH TILL		
4 - 10	LOOSE	2 - 4	SOFT	Grout		BGS	Well solid riser pipe length:(ft)	43	SL SILT	S FILL		
10 - 30	M. DENSE	4 - 8	M. STIFF	Bentonite	35'-38'	BGS	Well standpipe height ags:	3	-C- CLAY	R/C ROCK / COMPETE	INT	
30 - 50	DENSE	8 - 15	STIFF	Sand Pack	38'-50'	BGS	Well diameter (in.):	2	SAND & GRAVEL	R/W ROCK / WEATHER	RED	
>50	V. DENSE	15 - 30	V. STIFF	Riser Pipe	+3' - 40	BGS	Screen length (ft.):	10				
		>30	HARD	Screen	40' - 50	BGS	Screen slot size:	0.01				

horiza	ns
Engin	eering ^{Inc.}

BORING NO .:

MW-14

WELL ID: MW-14

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U	U
PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE	STARTED
DATE	COMPLETED

STARTED	No
	No

Joel F. Banaszak, P.G.
November 2, 2018
November 2, 2018

Joel F. Banaszak

18859

Elevation	1:	ft.	Datum: As	sumed		Boring L	ocation: 43 50 1	1.56 -71 12	2 0.39					
	UNDWATER REA	ADINGS	SA	MPLER		Rig Make	& Model: Cer	ntral Mining	Equipment 55			Protective Ca	sing	Well Development
Date	Depth (ft)	Reference	Type: Non	e		Truc			Hollow Stem Au	iger 🗌 N	fud Rotary	✓ Roadbox		Air Lift
11/14/18	41.52	TOC	Hammer (Ib): 1	40	✓ ATV	r		Cable Tool	🗌 D	ual Rotary	Standpipe		
			Fall (in):	30		Trip	od		Drive & Wash	🗌 D	Pirect Push	None None		Peristaltic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENIN (ppm)		WELL DETAIL			SAMPLE [DESCRIP	TION			LITHOLOGIC DESCRIPTION
- 40														
					_				white/ beige, well	sorted, d	ry, loose to			
			_				medium dens	e						
					-									
					_									
														_
- 45 -														~S~
			_		_									
					_									
- 50 -														
					_									
			-		_									
					-									
					-									
			-											
- 55 -														
- 55 -														
			_		_									
					_									
					_									
			-		+									
			-											
60			1											
	OHESIVE SOIL	s co	HESIVE SC	DILS	LE	GEND	INTERVAL (FT)		SUMMARY		L	ITHOLOGIC D	ESCRIPT	ION
BLOW	VS/FT CONSISTENCY	BLC	WS/FT CONSIST	ENCY	Cor	icrete	BGS	Overburde	en (linear ft.):	50				
0 - 4	V. LOOSE	<2		OFT		kfill			ck core/air hammer:	0	~S~ SAND		TILL	
4 - 10	LOOSE	2 - 4			Gro				riser pipe length:(ft)	43	SL SILT		콜 FILL	
10 - 30 30 - 50	M. DENSE DENSE	4 - 8 8 - 15		TIFF	00000	itonite			dpipe height ags:	3	CLAY			COMPETENT WEATHERED
30 - 50 >50	V. DENSE	8 - 15 15 - 30				d Pack er Pipe		Well diam Screen ler		2 10	SAND 8	GRAVEL R	- RUCK /	WEATHERED
	V. DENOL	>30			Scr			Screen slo		0.01				
NOTES:	Lithology logge			<u>A</u> +++			.							



BORING NO .:

MW-15

WELL ID:

3

	MW-15						
Page	1	of					

PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE STARTED DATE COMPLETED

	Joel F. Banaszak, P.G.
D	November 8, 2018
TED	November 8, 2018

18859

Joel F. Banaszak

Elevation	:	ft.	Datum: As	sumed		Boring Lo	Datum: Assumed Boring Location: 43 50 11.85 -71 12 0.39							
GRO	UNDWATER RE	ADINGS	SAMPLER Rig Make & Model: Central Mining Equipment 55 Protective Casing				Well Development							
Date	Depth (ft)	Reference	Type: Non	e		Truck			Hollow Stem Au	ger 🗌	Mud Rotary	Roadb		Air Lift
11/14/18	41.18	TOC	Hammer (Ib): 14	0	🖌 ATV			Cable Tool		Dual Rotary	Standp	-	✓ Bailer
			Fall (in):	30		Tripo	od		Drive & Wash		Direct Push	✓ None	[Peristaltic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		WELL DETAIL			SAMPLE D	DESCRI	PTION			LITHOLOGIC DESCRIPTION
- o -														
			_						getative debris, dark				e	SL
			_				0.5' - 3.0' Medii	um - fi	ne sand, beige/ oran	ge, well	sorted, dry, ve	ery loose		~S~
			_				3.0' - 30.0' Medium sand with occasional gravel (<5%) tan/ beige, well							
										gravei (•	<5%) tan/ beige	e, well		
			_				sorted, dry, me	aiuma	Jense					
			_											
			-											
			_											
- 5 -			_											
			-											
- 10														
														s <i>r</i> G
			_											
			_											
			_											
			-											
- 15 -			_											
			-											
				1										
			1	-										
			1											
			1											
			1											
			1											
20			1											
	OHESIVE SOIL		DHESIVE SC			GEND	INTERVAL (FT)		SUMMARY		L	ITHOLOGIC	DESCRIF	PTION
			DWS/FT CONSIST		8	crete			rden (linear ft.):	50			 	
0 - 4 4 - 10	V. LOOSE LOOSE	<2 2 - 4		OFT	Bac				rock core/air hammer:	0	<mark>∼S∼</mark> SAND <mark>SL</mark> SILT			
4 - 10 10 - 30	M. DENSE	2 - 4 4 - 8		STIFF	Gro	ut tonite			lid riser pipe length:(ft) andpipe height ags:	43 3				(/ COMPETENT
30 - 50	DENSE	8 - 15		IFF	500	d Pack			ameter (in.):	2	SAND 8	GRAVEL		(/WEATHERED
>50	V. DENSE	15 - 30		TIFF		er Pipe			length (ft.):	10				
		>30	HA	RD	Scre	en	40' - 50' BGS	Screen	slot size:	0.01				
NOTES:	Lithology logge	d from auge	er cuttings											



SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

Joel F. Banaszak, P.G.

MW-15

HORIZONS FILE NO.

PROJECT MGR.

FIELD REP.

WELL ID:

3

	MW-15					
Page	2	of				

V	0
PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

CONTR	ACTOR	CTOR Geosearch, Inc Sterling, MA DATE STARTED November 8, 20						8, 201	8							
DRILLE	R	Joseph Kee	Keenan DATE COMPLETED November 8, 2018					8								
Elevation		ft.	Datum: As					ocation: 43 50 11								
GRO	UNDWATER RE	ADINGS	SA	MPLER			_		ral Mining Equ		_			otective Casing		Well Development
Date	Depth (ft)	Reference	Type: Non	е		_	Truck			Hollow Stem Auger	_		_	Roadbox		Air Lift
11/14/18	41.18	TOC	Hammer (Ib):	140	V						Dual Rotary		Standpipe None		Bailer Peristaltic
			Fall (in):	30	2		Tripo	d		Drive & Wash		Direct Push		None		Peristance
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENII (ppm)		WELL				SAMPLE DE	SCR	IPTION				LITHOLOGIC DESCRIPTION
- 20 -									dia ana ang atao di sa di			(-=== (: - : - : - : - : - : - : - : - :				
										ith occasional gra	ivei	<5%) tan/ beige	e, wei	I		
			_					sorted, dry, me	alum dense							
			_													
			_													
			_													
- 25 -			_													S/G
			_													
								30.0' - 50.0' Fir	ne sand, whi	te/ beige, well so	rted,	dry, loose to				
								medium dense								
			_													
_ 30 _																
			_													
- 35 -																~S~
40					_											
	OHESIVE SOIL	-	HESIVE SC	-		GEND		INTERVAL (FT)		SUMMARY	=	L	THO	LOGIC DESC	CRIPT	ION
						crete			Overburden (lir		50					
0 - 4 4 - 10	V. LOOSE LOOSE	<2 2 - 4		OFT OFT	Bac					re/air hammer:	0	<mark>~S~</mark> SAND <mark>SL</mark> SILT		F		
4 - 10 10 - 30	M. DENSE	2 - 4 4 - 8			Gro	ut tonite			Well solid riser Well standpipe	pipe length:(ft)	43 3					COMPETENT
10 - 30 30 - 50	DENSE	4 - 8 8 - 15		IFF		tonite d Pacl			Well standpipe Well diameter (3 2	SAND 8	GPA	VFI R/W P		WEATHERED
>50	V. DENSE	15 - 30		TIFF		er Pipe			Screen length (10					
20		>30		RD	Scr	-			Screen slot size		0.01					
NOTES:	Lithology logge			<u>.</u>												
	3, 30															

horiza	ns
Engin	eering ^{Inc.}

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

MW-15

WELL ID: MW-15

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0	U
PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE CON

P.	Joel F. Banaszak, P.G.			
RTED	November 8, 2018			
IPLETED	November 8, 2018			

18859

Joel F. Banaszak

			1												
Elevation		ft.	Datum: As		1	Boring	Loca	ation: 43 50 11.	85 -71 12 0.	39					
GRO	UNDWATER REA	ADINGS	SA	MPLER		Rig Make & Model: Central Mining Equipment 55 Protective Casing								Well Development	
Date	Depth (ft)	Reference	Type: Non	e	[Tri	ıck			Hollow Stem Auger	r 🗌 M	lud Rotary	🔽 Roadb	ox 🗌	Air Lift
11/14/18	41.18	TOC	Hammer (Ib): 14	₀	✓ A1	V		[Cable Tool	D	ual Rotary	Standj	pipe 🗌	Bailer
			Fall (in):	30		Tr	ipod		[Drive & Wash	D	irect Push	None		Peristaltic
										SAMPLE DE	SCRIP	TION			
DEPTH	SAMPLE ID	BLOWS	REC / PEN	FIELD SCREENING	v	/ELL						nen			LITHOLOGIC
(FT)	SAWFLEID	PER 6 IN	(IN)	(ppm)	DE	TAIL									DESCRIPTION
- 40 -															
40							30	0.0' - 50.0' Fir	ne sand, w	hite/ beige, well so	orted, d	ry, loose to			
							m	edium dense							
÷															
- 45 -			-												~S~
			-												
			-												
			-												
			-												
			_												
- 50 -															
- 55 -															
			1				1								1
			1	1	l I		\top								1
			1		1		+								
			1				+								
60			1		-		+								
	OHESIVE SOIL	s co	DHESIVE SC	DILS	LEG	END	IN	NTERVAL (FT)		SUMMARY	I	L	ITHOLOGI	CDESCRIPT	ION
-	SIFT CONSISTENCY	-	OWS/FT CONSIST		Conc				Overburden		50	-			
0 - 4	V. LOOSE	<2		OFT	Back		0			core/air hammer:	0	-S- SAND		-T- TILL	
4 - 10	LOOSE	2 - 4)FT	Grout		F			ser pipe length:(ft)	43	SL SILT			
10 - 30	M. DENSE	4 - 8		TIFF	Bento		35			pe height ags:	3				COMPETENT
30 - 50	DENSE	8 - 15	ST	IFF	Sand	Pack		8'-50' BGS	Well diamete	er (in.):	2	CLAY	GRAVEL	R/W ROCK /	WEATHERED
>50	V. DENSE	15 - 30		TIFF	Riser				Screen lengt		10				
		>30	HA	RD	Scree	n	40)' - 50' BGS	Screen slot s	size:	0.01				



SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

MW-16

WELL ID: MW-16

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PROJECT	Pinetree Power - Rapid Infiltration Basin
LOCATION	Tamworth, New Hampshire
CLIENT	ENGIE - Pinetree Power
CONTRACTOR	Geosearch, Inc Sterling, MA
DRILLER	Joseph Keenan

18859
Joel F. Banaszak
Joel F. Banaszak, P.G.
November 8, 2018
November 8, 2018

Flowetiem			Deturn As	auma d		Davis		antion: 42 50 44 7 7	74 40 0 00						
Elevation	: UNDWATER REA	ft.	Datum: As	MPLER				ocation: 43 50 11.7 -7							
		1					Truck	& Model: Central					Protective Roadb		Well Development Air Lift
Date	Depth (ft)	Reference	Type: Non	е		_				Hollow Stem Aug		lud Rotary	_		
11/14/18	3.09	TOC	Hammer (Ib): 14	•	2						ual Rotary	☐ Standµ ✓ None	pipe	Bailer Peristaltic
			Fall (in):	30			Tripo	d		Drive & Wash		irect Push	INOILE		renstantic
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)		VELL ETAI				SAMPLE D	ESCRIP	TION			LITHOLOGIC DESCRIPTION
- 0															
Ū								0.0 - 0.5' Topsoil/	vegetativ	ve debris, dark b	brown, si	lty, moist, me	dium dense	e	SL
								0.5' - 20.0' Mediur	m - fine s	and, beige/ orai	nge, well	sorted, satura	ated,		
								very loose							
			-												
			-												
- 5 -			1												
		-	_												
			-			_									
			-												
			_												
			_												
			_		_										
- 10 -															
															~S~
			1												
- 15 -			1												
			1												
			1	1											
			1												
			1												
			1												
			1	1											
			1												
			1												
20			1												
	OHESIVE SOIL	s co	DHESIVE SC	DILS	LEG	END)	INTERVAL (FT)		SUMMARY	I	L	ITHOLOGIC	C DESCRIPT	ION
BLOW	S/FT CONSISTENCY	BL	OWS/FT CONSISTI	ENCY	Conc	rete		BGS OVE	erburden (li	near ft.):	20				
0 - 4	V. LOOSE	<2	V. S	OFT	Back	fill		0'-5' вс Fee	et of rock co	ore/air hammer:	0	-S- SAND		+T+ TILL	
4 - 10	LOOSE	2 - 4		DFT	Grou	t		BGS Wel	Il solid risei	r pipe length:(ft)	13	SL SILT		22 FILL	
10 - 30	M. DENSE	4 - 8		TIFF	Bent					e height ags:	3	-C- CLAY			COMPETENT
30 - 50	DENSE	8 - 15		IFF	Sand				II diameter		2	SAND 8	GRAVEL	R/W ROCK /	WEATHERED
>50	V. DENSE	15 - 30			Rise		Ð		een length		10				
		>30		RD	Scre	en		10' - 20' BGS Scre	een slot siz	e:	0.01				
NOTES:	Lithology logge	d from aug	er cuttings												

horiza	ns
Engin	eering Inc.

SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

November 9, 2018

Joel F. Banaszak, P.G.

MW-17

WELL ID:

1

	M١	N-17	
Page	1	of	

PROJECT	Pinetree Po	Pinetree Power - Rapid Infiltration Basin									
LOCATION Tamworth, New Hampshire											
CLIENT	ENGIE - Pinetree Power										
CONTRACTOR	Geosearch, Inc Sterling, MA										
DRILLER	LLER Joseph Keenan										
Elevation:	ft.	Datum: Assumed	Boring Location: 43 50 12.43 -71 12 2.41								

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE COMPLETED

DRILLE	RILLER Joseph Keenan DATE COMPLETED November 9, 2018								18							
			1			1										
							Boring Location: 43 50 12.43 -71 12 2.41									
GRO	UNDWATER RE	ADINGS	SA	MPLER			Rig Make & Model: Central Mining Equipment 55 Protective Casing									
Date	Depth (ft)	Reference	Type: Non	e		_	Truck		✓ Hollow	-			Road		-	
11/14/18	3.33	TOC	Hammer (Ib):	140	~			Cable 1			ual Rotary	Stand			
			Fall (in):	3	0		Tripo	d	Drive &	& Wash	D	irect Push	✓ None	• [Peristaltic	
				FIELD					SAI	MPLE DE	SCRIP	TION				
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	SCREEN (ppm)		WELL									LITHOLOGIC DESCRIPTION	1
(,			()				-									
- 0 -								0.0 - 0.5' Tops	oil/ vegetative debri	is, dark br	own, si	ilty, moist, me	dium dens	se	SL	
								0.5' - 20.0' Me	dium - fine sand, be	ige/ orang	ge, well	sorted, satur	ated,			
								very loose								
- 5 -																
-			_													
															_	
		-													_	
															_	
			_												_	
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- 10 -															~S~	
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45			1												_	
- 15 -]													
															_	
															_	
															_	
			-												_	
			-												-	
			4												_	
20 NON-C	OHESIVE SOII	s co	HESIVE SC			GEND		INTERVAL (FT)	SUMMA	NBY				C DESCRIP		
	SITESIVE SUI		WS/FT CONSIST			Icrete			Overburden (linear ft.):		20	L		IS DESCRIP		
0 - 4	V. LOOSE	<2		OFT		kfill			Feet of rock core/air ha		0	-S- SAND		HTH TILL		
4 - 10	LOOSE	2 - 4		DFT	Gro				Well solid riser pipe ler		13	SL SILT		FILL		
10 - 30	M. DENSE	4 - 8	M. S	TIFF	mm	tonite			Well standpipe height a		3	-C- CLAY			/ COMPETENT	
30 - 50	DENSE	8 - 15		IFF		d Pacl			Well diameter (in.):		2	SAND 8	& GRAVEL	R/W ROCK	/ WEATHERED	
>50	V. DENSE	15 - 30		TIFF		er Pipe	•		Screen length (ft.):		10					
		>30	HA	RD	Scr	een		10' - 20' BGS	Screen slot size:		0.01					



GROUNDWATER READINGS

Depth (ft)

ft.

Type:

Reference

Elevation:

Date

SOIL BORING LOG & WELL DIAGRAM

Boring Location: 43 50 12.89 -71 12 2.41

Truck

Rig Make & Model: Central Mining Equipment 55

✓ Hollow Stem Auger □

BORING NO .:

MW-18

WELL ID: MW-18

1

Page	1	of	

PROJECT	Pinetree Power - Rapid Infiltration Basin						
LOCATION	Tamworth, New Hampshire						
CLIENT	ENGIE - Pinetree Power						
CONTRACTOR	Geosearch, Inc Sterling, MA						
DRILLER	Joseph Keenan						

Datum: Assumed SAMPLER

None

HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DATE COMPL

ATE	COMPLETED	

	Protective Casing	Well Development
Mud Rotary	Roadbox	Air Lift
Dual Rotary	Standpipe	Bailer

18859

Joel F. Banaszak

November 9, 2018

November 9, 2018

Joel F. Banaszak, P.G.

11/14/18	3.33	TOC	Hammer (lb		0	☑.	ATV		Cable Tool		Dual Rotary		Standpipe	Bailer		
11/14/10	0.00	100	Fall (in):	30			Tripo	d	Drive & Wash		Direct Push	1		Peristaltic		
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIEL D		WELL DETAIL		SAMPLE DESCRIPTION								
- 0 -																
			-						getative debris, dark t				ense	SL		
			-					very loose	fine sand, beige/ orar	ige, w	ell sorted, satura	ated,		_		
			-					Very loose						_		
			_											_		
			_											_		
														_		
			-													
- 5 -																
			_											_		
			_			—								_		
			-													
														_		
			-											_		
- 10 -				-										-S-		
			-											_		
														_		
			-											_		
			-											_		
- 15																
			_											_		
			-											_		
			-											_		
														_		
			-											_		
20			-											_		
NON-C	OHESIVE SOIL	s co	DHESIVE SC	DILS	LEG	GEND		INTERVAL (FT)	SUMMARY		L	THOL	OGIC DESCRI	TION		
			OWS/FT CONSIST		8	crete			ırden (linear ft.):	20						
0 - 4 4 - 10	V. LOOSE LOOSE	<2 2 - 4		OFT	Bacl Grou				rock core/air hammer: blid riser pipe length:(ft)	0 13	<mark>~S~</mark> SAND SL SILT					
10 - 30	M. DENSE	2 - 4 4 - 8		STIFF	2	ut tonite			andpipe height ags:	13 3			R/C ROCI	(/ COMPETENT		
30 - 50	DENSE	8 - 15		IFF	San	d Pacl	¢	8'-20' вgs Well di	ameter (in.):	2	CC CLAY	GRAV	EL R/W ROCH	(/ WEATHERED		
>50	V. DENSE	15 - 30			*	r Pipe	,		length (ft.):	10						
1		>30	HA	RD	Scre	en		10' - 20' BGS Screen	SIUL SIZE.	0.01	1					

NOTES: Lithology logged from auger cuttings



SOIL BORING LOG & WELL DIAGRAM

BORING NO .:

18859

Joel F. Banaszak

November 9, 2018

Joel F. Banaszak, P.G.

MW-19

WELL ID: MW-19

Page	4	of	1
Page		01	

Pinetree Power - Rapid Infiltration Basin
Tamworth, New Hampshire
ENGIE - Pinetree Power
Geosearch, Inc Sterling, MA
Joseph Keenan

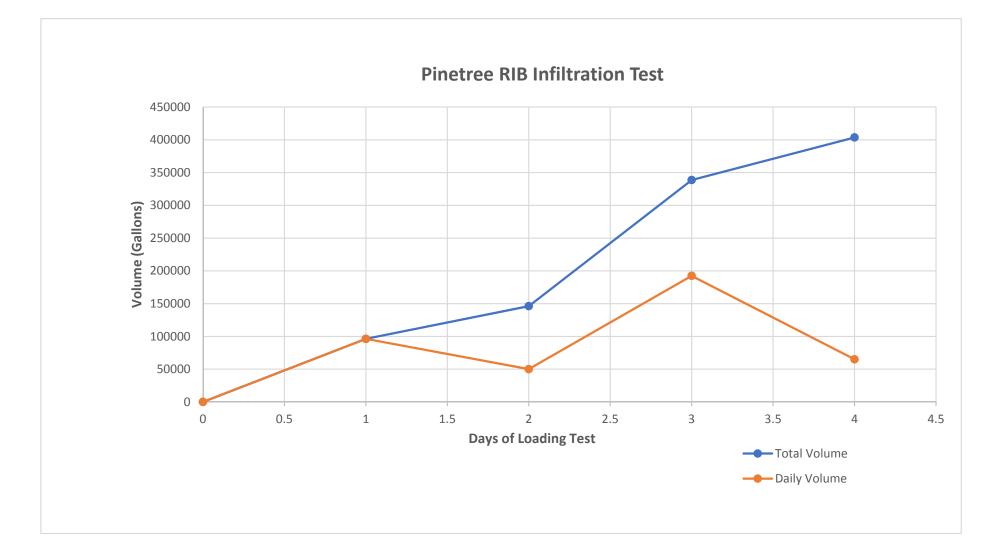
HORIZONS FILE NO.
PROJECT MGR.
FIELD REP.
DATE STARTED

DRILLE	R	Joseph Kee	an DATE COMPLETED November 9, 2018												
			1												
						Boring	oring Location: 43 50 13.38 -71 12 2.79								
GRO	MPLER				& Model: Central Mi					Protective Casing	Well Development				
Date	Depth (ft)	Reference	Type: Non	e		_	uck			Hollow Stem Aug			Roadbox	Air Lift	
11/14/18	3.16	TOC	Hammer (Ib): 140	,	✓ A]				Cable Tool		Dual Rotary	Standpipe	Bailer	
			Fall (in):	30		🗌 Tr	ipo	1		Drive & Wash		Direct Push	✓ None	Peristaltic	
DEPTH (FT)	SAMPLE ID	BLOWS PER 6 IN	REC / PEN (IN)	FIELD SCREENING (ppm)	NG WE					SAMPLE D	ESCRIP	PTION		LITHOLOGIC DESCRIPTION	
- 0 -								0.0 - 0.5' Topsoil/ v 0.5' - 20.0' Medium very loose						SL	
- 15															
	OHESIVE SOIL		HESIVE SO		1	END	┦	INTERVAL (FT)			20	LI	THOLOGIC DESCR	RIPTION	
0 - 4 4 - 10 10 - 30 30 - 50 >50	S/FT CONSISTENCY V. LOOSE LOOSE M. DENSE DENSE V. DENSE	сородина	V.S SC M.S ST	OFT FT TIFF IFF TIFF	Sanc	tfill onite I Pack r Pipe	•	BGS Well s	of rock co solid riser standpipe diameter (n length (re/air hammer: pipe length:(ft) height ags: (in.): (ft.):	20 0 13 3 2 10 0.01	<mark>~S~</mark> SAND <mark>SL</mark> SILT CC CLAY SAND &	TIL FIL R/C RO GRAVEL R/W RO		

APPENDIX E Load Test I, Basin Loading Log

Date	Time	Dilution	Volume	Total Volume	Volume per Day	Volume of Efflue	ent
1/8/2019	8:30 1/08/19 08:30:00	.25 Circ	5000	5000	· · · · · · · · · · · · · · · · · · ·		
1/8/2019	8:45 1/08/19 08:45:00	.25 Circ	4200	9200			
1/8/2019	9:00 1/08/19 09:00:00	.25 Circ	5000	14200			
1/8/2019	9:30 1/08/19 09:30:00	.25 Circ	4200	18400			
1/8/2019	9:45 1/08/19 09:45:00	.25 Circ	5000	23400			
1/8/2019	10:07 1/08/19 10:07:00	.25 Circ	4200	27600			
1/8/2019	10:15 1/08/19 10:07:00	.25 Circ	5000	32600			
1/8/2019	10:40 1/08/19 10:40:00	.25 Circ	4200	36800			
1/8/2019	10:50 1/08/19 10:50:00	.25 Circ	5000	41800			
1/8/2019	11:15 1/08/19 11:15:00	.25 Circ	4200	46000			
1/8/2019	11:30 1/08/19 11:30:00	.25 Circ	5000	51000			
1/8/2019	11:47 1/08/19 11:47:00	.25 Circ	4200	55200			
	12:00 1/08/19 12:00:00	.25 Circ		60200			
1/8/2019			5000				
1/8/2019	12:17 1/08/19 12:17:00	.25 Circ	4200	64400			
1/8/2019	12:30 1/08/19 12:30:00	.25 Circ	5000	69400			
1/8/2019	12:50 1/08/19 12:50:00	.25 Circ	4200	73600			
1/8/2019	13:10 1/08/19 13:10:00	.25 Circ	5000	78600			
1/8/2019	13:22 1/08/19 13:22:00	.25 Circ	4200	82800			
1/8/2019	13:35 1/08/19 13:35:00	.25 Circ	5000	87800			
1/8/2019	13:47 1/08/19 13:47:00	.25 Circ	4200	92000		200	24050
1/8/2019	14:17 1/08/19 14:17:00	.25 Circ	4200	96200	96	<mark>200</mark>	24050
1/9/2019	8:00 1/09/19 08:00:00	.25 Circ	5000	101200			
1/9/2019	8:35 1/09/19 08:35:00	.25 Circ	5000	106200			
1/9/2019	9:10 1/09/19 09:10:00	.25 Circ	5000	111200			
1/9/2019	9:44 1/09/19 09:44:00	.25 Circ	5000	116200			
1/9/2019	10:19 1/09/19 10:19:00	.25 Circ	5000	121200			
1/9/2019	10:51 1/09/19 10:51:00	.25 Circ	5000	126200			
1/9/2019	11:23 1/09/19 11:23:00	.25 Circ	5000	131200			
1/9/2019	11:54 1/09/19 11:54:00	.25 Circ	5000	136200			
1/9/2019	12:25 1/09/19 12:25:00	.25 Circ	5000	141200			
1/9/2019	12:59 1/09/19 12:59:00	.25 Circ	5000	146200	50	000	12500
1/10/2019	7:53 1/10/19 07:53:00	.25 Circ	4200	150400			
1/10/2019	8:13 1/10/19 08:13:00	.25 Circ	5000	155400			
1/10/2019	8:15 1/10/19 08:15:00	.25 Circ	4200	159600			
1/10/2019	8:34 1/10/19 08:34:00	.25 Circ	5000	164600			
1/10/2019	8:36 1/10/19 08:36:00	.25 Circ	4200	168800			
1/10/2019	8:58 1/10/19 08:58:00	.25 Circ	5000	173800			
1/10/2019	9:00 1/10/19 09:00:00	.25 Circ	4200	178000			
1/10/2019	9:21 1/10/19 09:21:00	.25 Circ	5000	183000			
1/10/2019	9:22 1/10/19 09:22:00	.25 Circ	4200	187200			
1/10/2019	9:43 1/10/19 09:43:00	.25 Circ	4200	191400			
1/10/2019	9:44 1/10/19 09:44:00	.25 Circ	5000	196400			
1/10/2019	10:05 1/10/19 10:05:00	.25 Circ	4200	200600			
1/10/2019	10:06 1/10/19 10:06:00	.25 Circ	5000	205600			
1/10/2019	10:26 1/10/19 10:26:00	.25 Circ	4200	209800			
1/10/2019	10:28 1/10/19 10:28:00	.25 Circ	5000	214800			
1/10/2019	10:49 1/10/19 10:49:00	.25 Circ	5000	219800			
1/10/2019	10:51 1/10/19 10:51:00	.25 Circ	4200	224000			
1/10/2019	11:09 1/10/19 11:09:00	.25 Circ	4200	228200			
1/10/2019	11:10 1/10/19 11:10:00	.25 Circ	5000	233200			
1/10/2019	11:31 1/10/19 11:31:00	.25 Circ	4200	237400			
1/10/2019	11:32 1/10/19 11:32:00	.25 Circ	5000	242400			
1/10/2019	11:53 1/10/19 11:53:00	.25 Circ	4200	246600			
1/10/2019	12:16 1/10/19 12:16:00	.25 Circ	5000	251600			
1/10/2019	12:17 1/10/19 12:17:00	.25 Circ	4200	255800			
1/10/2019	12:37 1/10/19 12:37:00	.25 Circ	4200	260000			
1/10/2019	12:38 1/10/19 12:38:00	.25 Circ	5000	265000			
							-

Date	Time	Dilution	Volume	Total Volume	Volume per Day	Volume of Effluent
1/10/2019	13:00 1/10/19 13:00:00	.25 Circ	4200	269200		
1/10/2019	13:01 1/10/19 13:01:00	.25 Circ	5000	274200		
1/10/2019	13:21 1/10/19 13:21:00	.25 Circ	4200	278400		
1/10/2019	13:23 1/10/19 13:23:00	.25 Circ	5000	283400		
1/10/2019	13:43 1/10/19 13:43:00	.25 Circ	5000	288400		
1/10/2019	13:45 1/10/19 13:45:00	.25 Circ	4200	292600		
1/10/2019	14:08 1/10/19 14:08:00	.25 Circ	5000	297600		
1/10/2019	14:09 1/10/19 14:09:00	.25 Circ	4200	301800		
1/10/2019	14:32 1/10/19 14:32:00	.25 Circ	5000	306800		
1/10/2019	14:33 1/10/19 14:33:00	.25 Circ	4200	311000		
1/10/2019	14:53 1/10/19 14:53:00	.25 Circ	4200	315200		
1/10/2019	14:54 1/10/19 14:54:00	.25 Circ	5000	320200		
1/10/2019	15:16 1/10/19 15:16:00	.25 Circ	5000	325200		
1/10/2019	15:17 1/10/19 15:17:00	.25 Circ	4200	329400		
1/10/2019	15:43 1/10/19 15:43:00	.25 Circ	5000	334400	188200	47050
1/11/2019	8:20 1/11/19 08:20:00	.25 Circ	5000	339400		
1/11/2019	8:45 1/11/19 08:45:00	.25 Circ	5000	344400		
1/11/2019	9:09 1/11/19 09:09:00	.25 Circ	5000	349400		
1/11/2019	9:38 1/11/19 09:38:00	.25 Circ	5000	354400		
1/11/2019	10:03 1/11/19 10:03:00	.25 Circ	5000	359400		
1/11/2019	10:26 1/11/19 10:26:00	.25 Circ	5000	364400		
1/11/2019	10:50 1/11/19 10:50:00	.25 Circ	5000	369400		
1/11/2019	11:15 1/11/19 11:15:00	.25 Circ	5000	374400		
1/11/2019	11:36 1/11/19 11:36:00	.25 Circ	5000	379400		
1/11/2019	12:00 1/11/19 12:00:00	.25 Circ	5000	384400		
1/11/2019	12:24 1/11/19 12:24:00	.25 Circ	5000	389400		
1/11/2019	12:48 1/11/19 12:48:00	.25 Circ	5000	394400		
1/11/2019	13:17 1/11/19 13:17:00	.25 Circ	5000	399400	65000	16250
				Total Volume	399400	99850



ROBERT 978-660-3980

JOEC - HORFZOINS 603-616-1334

Pinetree Power - RIB Infiltration Test					
Malan Asia			Date:		
		Notes	H	Initials	
	258	, 1	1/0/19	RC.	
		1	. 8/19	110	
		· · · · · · · · · · · · · · · · · · ·	18/19	RC	
/(Ra	
11			1.41	RC	
11	11 8			RC	
14		. K.	11	RC	
11	16.			RC	
5000	21		17	RC nc	
			×.		
50000					
1					
	1				
				_	
				_	
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			s		
				_	
	Volume (gal) 5000 11 11 11 11 11 11 11 11 11	Volume (gal) Dilution Ratio 5600 25% 11 11	Volume (gal) Dilution Ratio Notes 56000 25% 1 11 1.1 1 11 <t< td=""><td>Volume (gal) Dilution Ratio Notes 5600 25% 1 1/8/19 11 11 8/19 11 11 11 18/19 11 11 11 18/19 11 11 11 18/19 11 11 11 18/19 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 5800 1 11 11 11 11 11 11 11 11 11 11 5800 11 11 11 59000 11 11 11 11 11 11 11 11 11 11 11</td></t<>	Volume (gal) Dilution Ratio Notes 5600 25% 1 1/8/19 11 11 8/19 11 11 11 18/19 11 11 11 18/19 11 11 11 18/19 11 11 11 18/19 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 5800 1 11 11 11 11 11 11 11 11 11 11 5800 11 11 11 59000 11 11 11 11 11 11 11 11 11 11 11	

Pinetree	Power - RI	B Infiltratio		Pg.
			Date:	
Time	Volume (gal)	Dilution Ratio	Notes	Initials
N.W	5000	25/2	1 1/9/19	RC
8:35	11		10	RÈ
9:10		10	//	RE
9:44		1	//	RC
10:19		11	11	RC
10:51		11	10	RC
11:23		eil .	16	RĈ
11:69		11		RC
12:25		10	pe-	RC
12:59	5000	11	71	RC
			50,000 gal	
		1		
	2			
			×	

rinetree	Power - RI	B INTIITRATIO		Pg.
Time	Volume (gal)	Dilution Ratio	Date:	
8:13	5 MM	25%	Notes 1	Initials
12.711	300	201.	· · · · · ·	517
8:59	1/		1	515
8:38	1			53
9:21	()			53
9:43				513
io:06				5B
0:29				1.12
10.40				<u>SB</u>
11.10				51
11.37				SB
11.12	1			STS
216			л.	53
12:38				SB
1:00				513
1:23				SB
1:43				SB
7:09				513
2:37			5	
2:54	ĺ.			SB
				SB
3:16	· · · · /, · · · ·			513
3:43	V	V		SB
			100,000 gal	
			<i></i>	

25% 8:20 5000 5R 8:45 9:09 9:38 10:03 10:2G 10:50 11:15 11:36 12:00 12:24 12:48 1:17 65,000

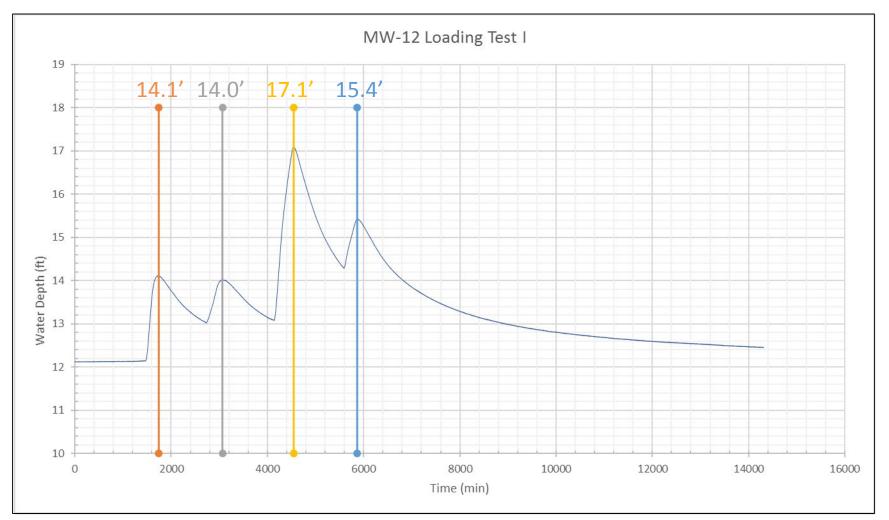
ROBERT

JORC - HONFROMS

		() ()			
/ G	78-661	0-3480	603-616-	1334	
Pinetree	Power - RI	B Infiltration	Test		Pg.
Time	Volume (gal)	Dilution Ratio	Notes	Date:	Initials
8:45	4.000	251-75%	1819	Ŷ.	J.C
9:30	4000	25% 75%	1		1.c
10:07	4000	25 - 75%			Jic
10:40	4/100	25 - 75%			J.C
11:15	HUDD	25-75%			J.C
11:47	4000	25% - 75%			Tic
12:17	4/000	25%-75%	a)	0.0	J.C
12:50	400	25% - 75%	11		N,C
1:22	HOUD	25%-75%	λ_{a}		
1:47	4000	25% 75%	60 1		7.C 7.C
2:17	4/100	25% 75%		i i	T.C
				>~	
7:53	420D	35- 75	1/10/19		J.C
7:53 8:15	41200	25-75%			JNC
8:36	2/200	25% 75%			JIC
2:00	4200	35% 75%	<i>v</i>		JiC
9321	27208	25%-75%			7.6
9:43	4200	35% - 75%			7.6
10:05	4200	25% -75%			J.C
10:26	4200	25%- 45%			Tic
10,51	1/2,00	25%-75-			J.C
11:09	47.00	25% - 75%		11	Jic
11:31	4000	25% 75%		14	J,C
11:53	4/200	25/ - 75%			J.C
12117	21200	25/2-752			Tr
12.37	4200	25/2 - 75%	N/V		à l
1,00	4/200	25%-75%	0		Į
1:21	4200	25% -75%			
1:45	2/200	25% - 75%	1 ,		1

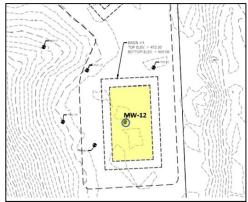
netree Power - RIB Infiltration Test					
			Date		
Time	Volume (gal)	Dilution Ratio	Notes	Initials	
2:09	4200	25% - 75%	11/10/19	J.C	
2'32	4200	5%-75%		JIC	
2:53	1/200	5%-75%	V	JC	
3:17	4200	5% - 75%		J.2	
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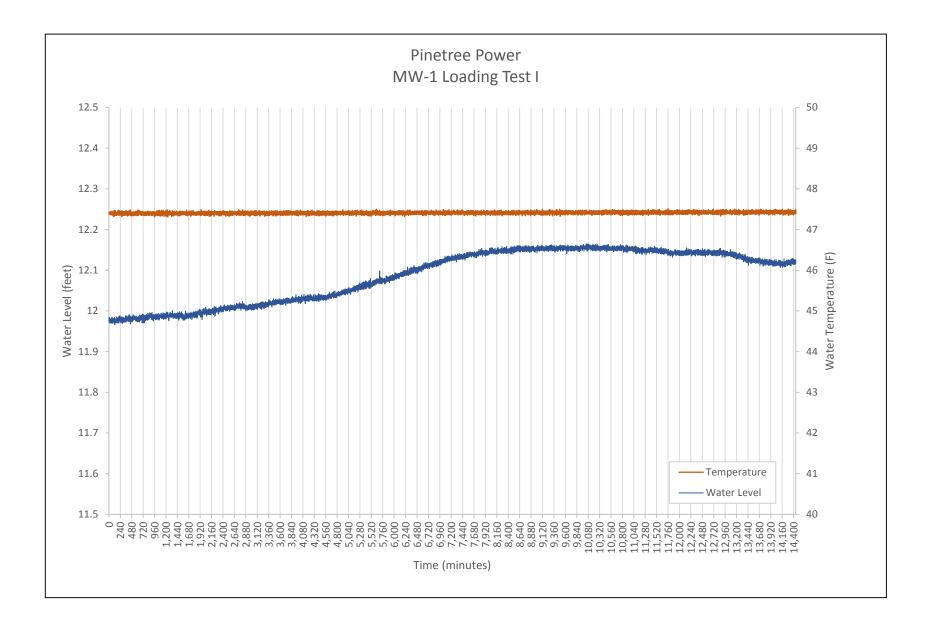
APPENDIX F Load Test I, Water Level Graphs

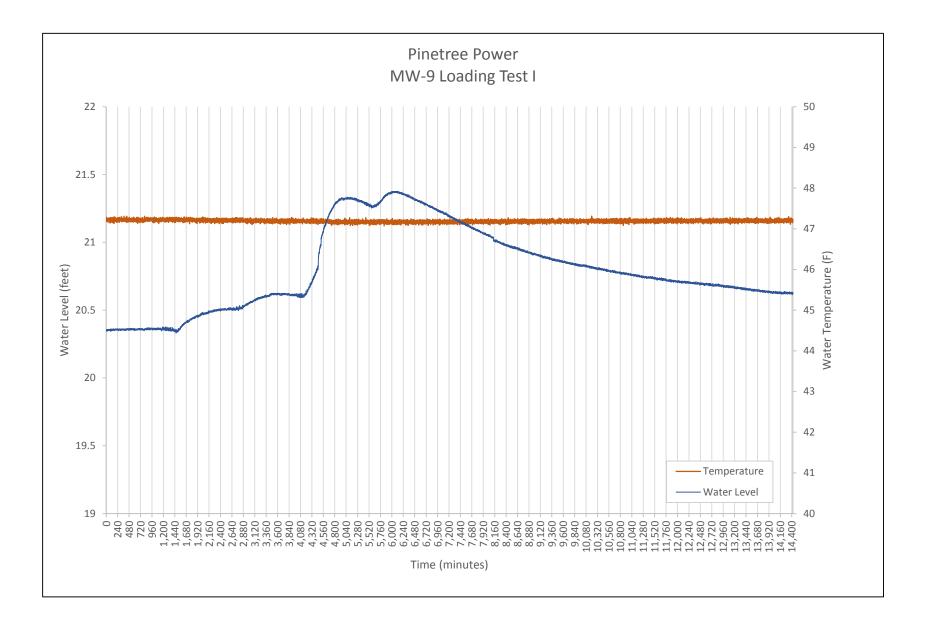


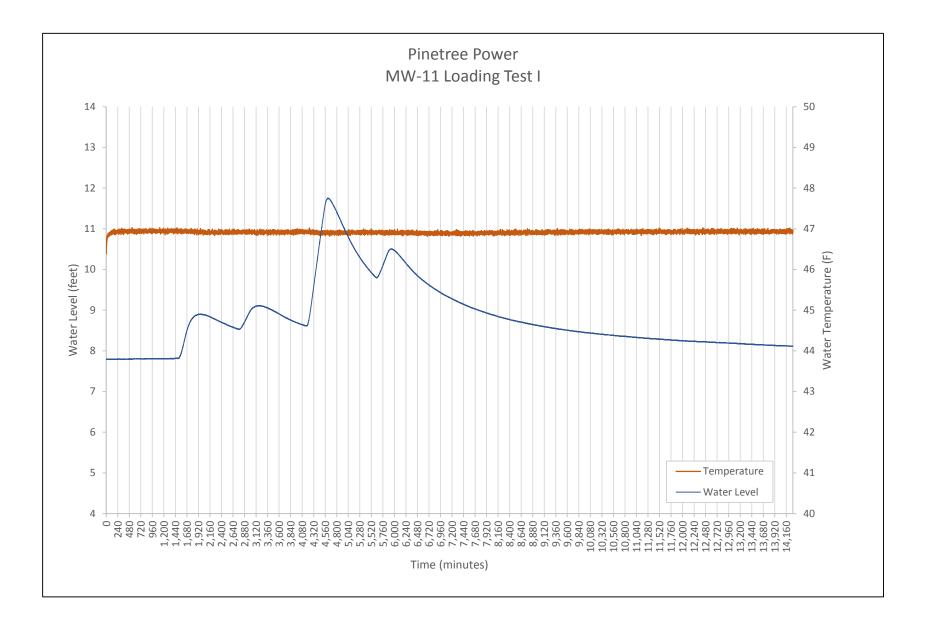
MW-12 Loading Test Peak Water Column Values:

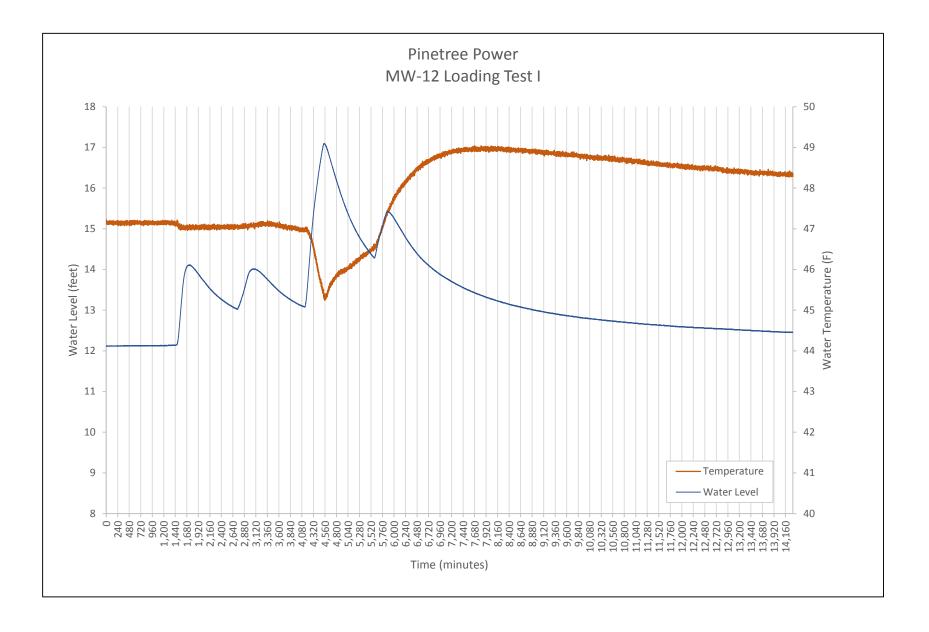
1/8/2019 17:46 (1743min): 14.1' 1/9/2019 15:48 (3065min): 14.0' 1/10/2019 16:29 (4546min): 17.1' 1/11/2019 14:29 (5866min): 15.4'

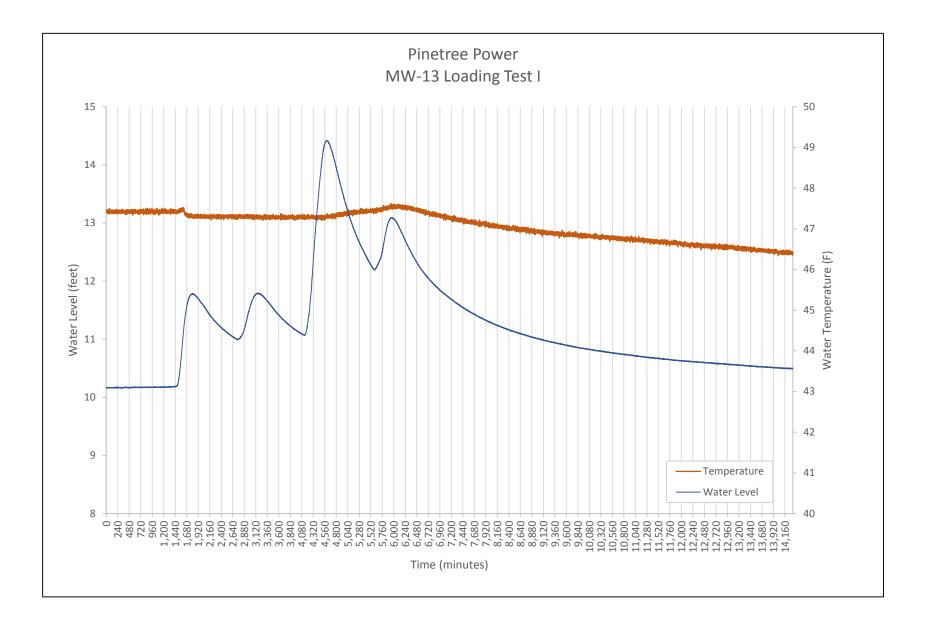


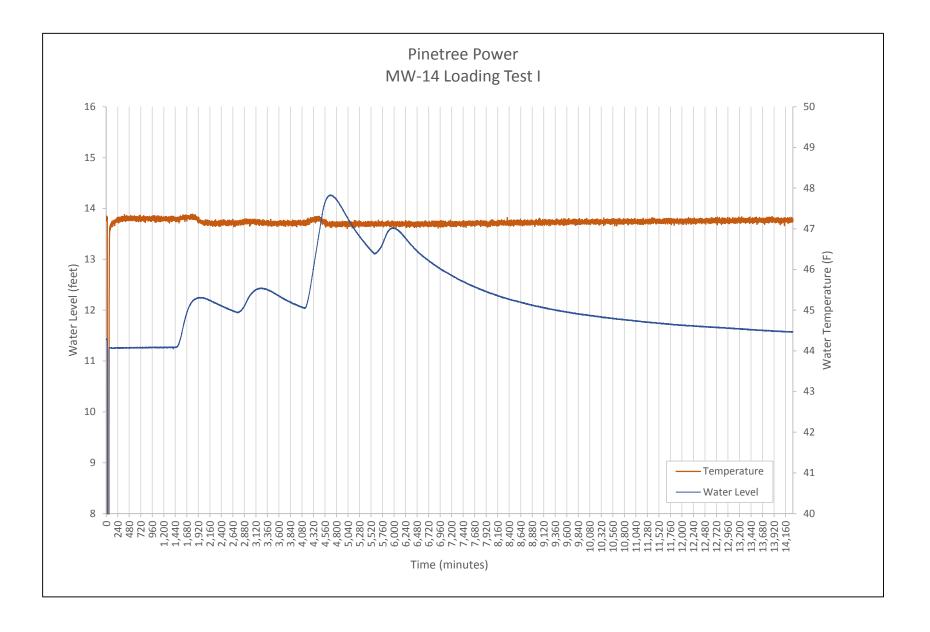


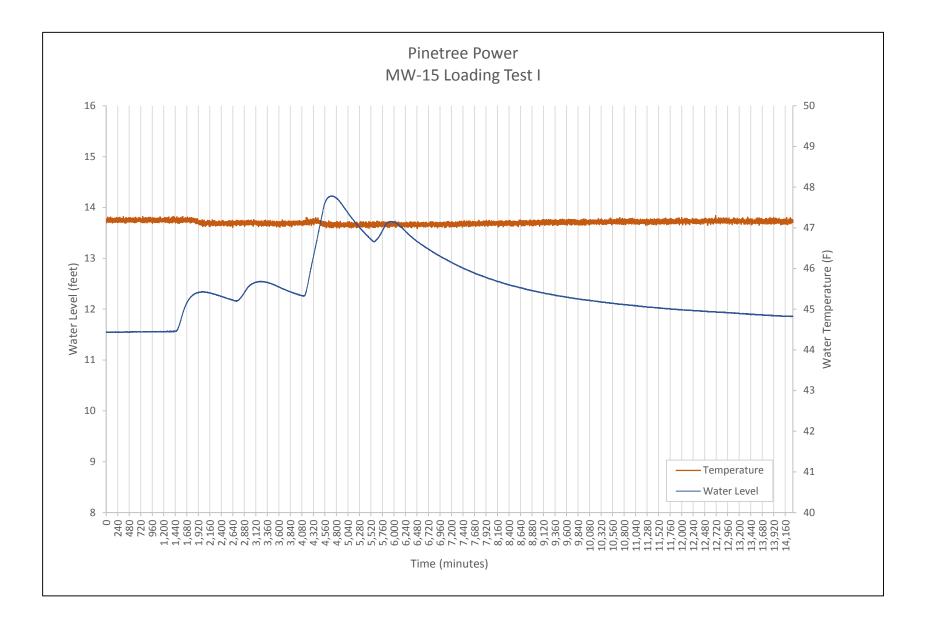


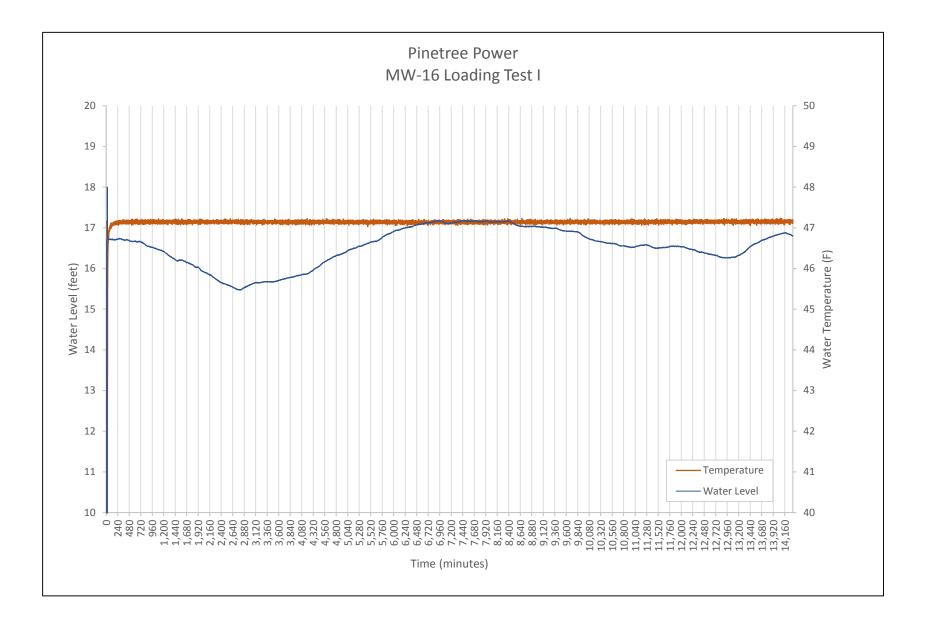


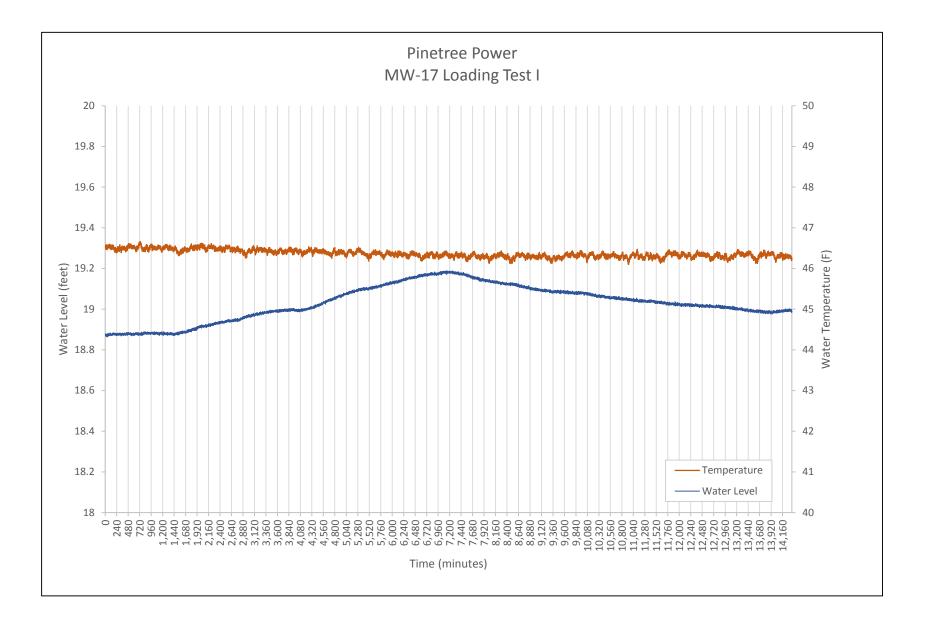






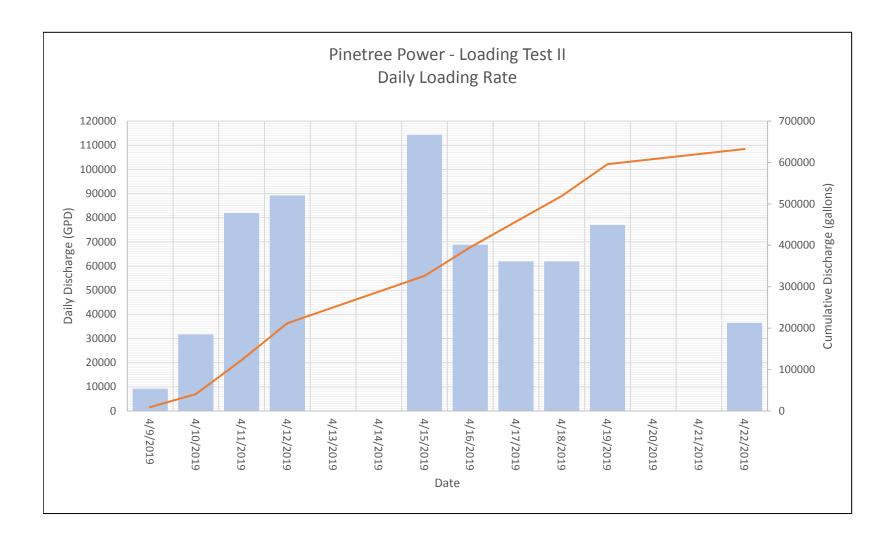




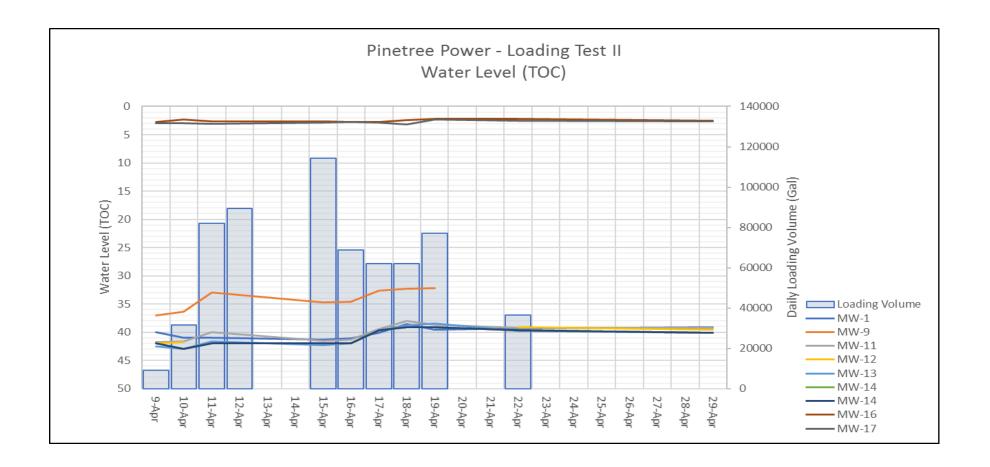


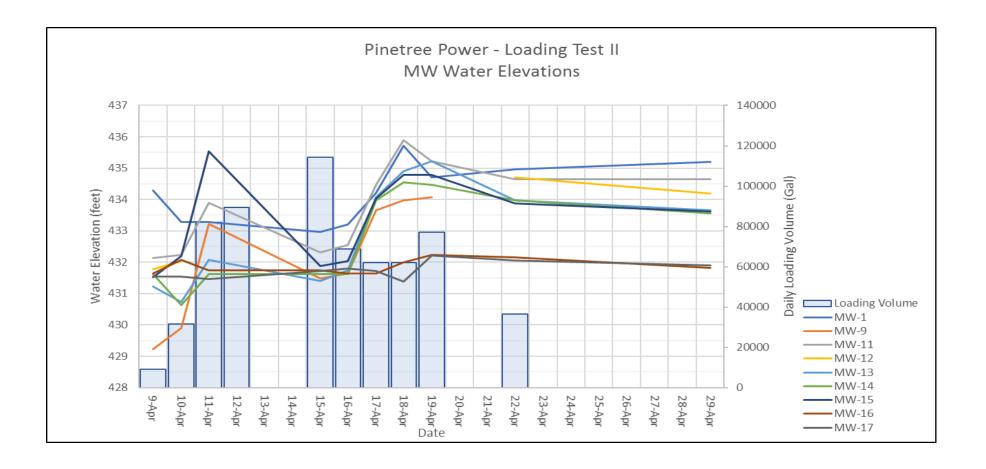
APPENDIX G Load Test II, Basin Loading Log

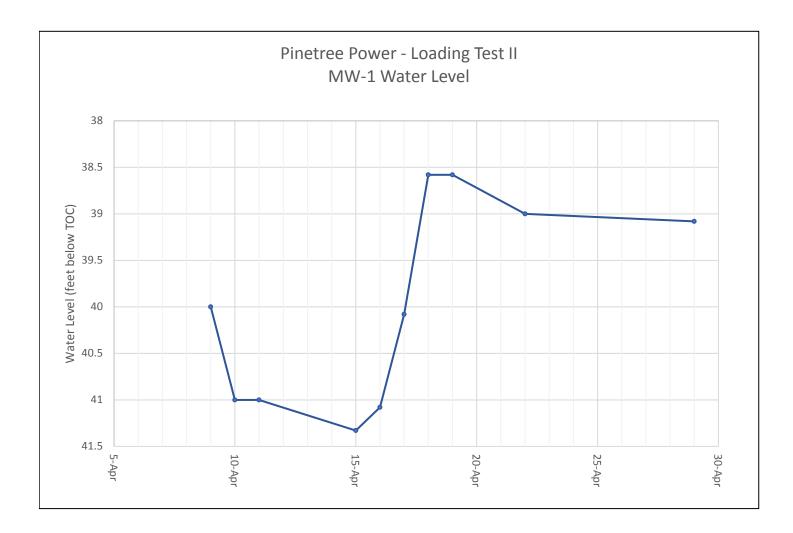
		Pinetree	Power - RI	3 Loading	g - Pumping Sheet	Pg. 1 of 1
Date	Time	Height (in)	Volume (gal)	Running Total	Notes	Initials
9-Apr	1406-1500	48	9243	9243	SV30 blended with SV25 50/50	RL
10-Apr	0840-0936	70	11791	21034	SV30 blended with SV25 50/50	RL
10-Apr	1115-1355	104	19900	40934	SV25 blended 50/50	RL
11-Apr	0948-1228	109	20844	61778	SV36 pumped at 100/0	RL
11-Apr		92	16669	78447	Added SV27 into SV36 at 100/0	RL
11-Apr	1332-1724	58	13506	91953	SV36 with FTS blend 10/90	RL
11-Apr		112	21357	113310	added SV25 into SV36 with FTS blend 10/90	RL
11-Apr		49	9559	122869	added SV27 into SV36 with FTS blend 10/90	RL
12-Apr	0850-1120	83	15867	138736	SV36 with FTS blend 10/90	RL
12-Apr		60	10516	149252	added SV27 into SV36 with FTS blend 10/90	RL
12-Apr	1235-1740	111	21186	170438	SV36 with FTS blend 10/90	RL
12-Apr		109	20844	191282	added SV25 into SV36 with FTS blend 10/90	RL
12-Apr		109	20844	212126	added SV27 into SV36 with FTS blend 10/90	RL
15-Apr	0840-1405	82	15672	227798	SV36 with FTS blend 10/90	RL
15-Apr		112	20451	248249	added SV27 into SV36 with FTS blend 10/90	RL
15-Apr		112	21357	269606	added SV25 into SV36 with FTS blend 10/90	RL
15-Apr	1430-1815	112	20451	290057	SV36 with FTS blend 10/90	RL
15-Apr		82	15563	305620	added SV27 into SV36 with FTS blend 10/90	RL
15-Apr		109	20844	326464	SV25 with FTS blend 10/90	RL
16-Apr	1028-1045	30	4888	331352	SV36 with FTS blend 10/90	RL
16-Apr	1255-1445	112	21357	352709	SV36 with UST blend 45/55	RL
16-Apr	1450-1600	117	21183	373892	SV27 with UST blend 45/55	RL
16-Apr	1645-1830	112	21357	395249	SV36 with UST blend 45/55	RL
17-Apr	1020-1205	110	21018	416267	SV36 with UST blend 45/55	RL
17-Apr	1210-1407	106	19540	435807	SV27 with UST blend 45/55	RL
17-Apr	1412-1610	112	21360	457167	SV36 with UST blend 45/55	RL
18-Apr	1030-1220	110	21018	478185	SV36 with UST blend 45/55	RL
18-Apr	1225-1420	115	20885	499070	SV27 with UST blend 45/55	RL
18-Apr	1421-	107	20031	519101	SV36 with UST blend 45/55	RL
19-Apr	0835-1045	109	20844	539945	SV25 with UST blend 45/55	RL
19-Apr	1047-1252	103	19757	559702	SV36 with UST blend 45/55	RL
19-Apr	255-1502	110	20152	579854	SV25 with UST blend 45/55	RL
19-Apr	1506-1700	85	16257	596111	SV36 with UST blend 45/55	RL
22-Apr	0838-1000	73	15087	611198	SV36 with UST blend 45/55	RL
22-Apr	1004-1350	112	21367	632565	SV25 with UST blend 45/55	RL
				632565		
				632565		
				632565		
				632565		
				632565		

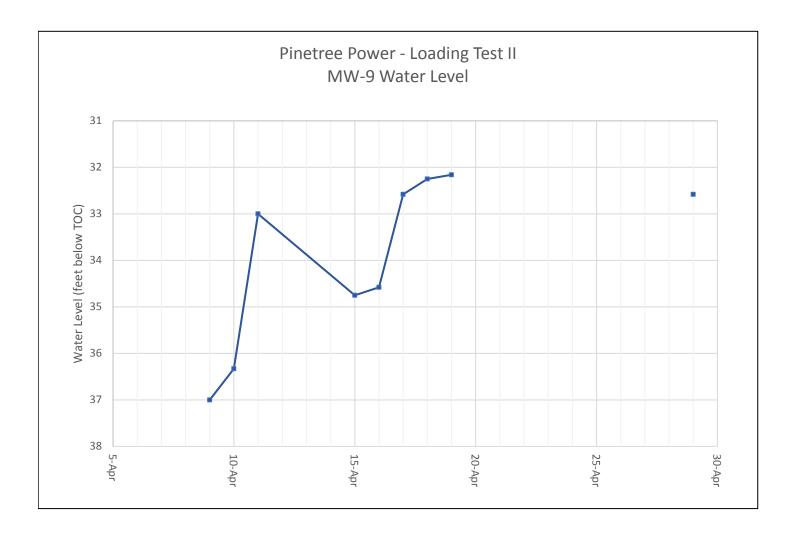


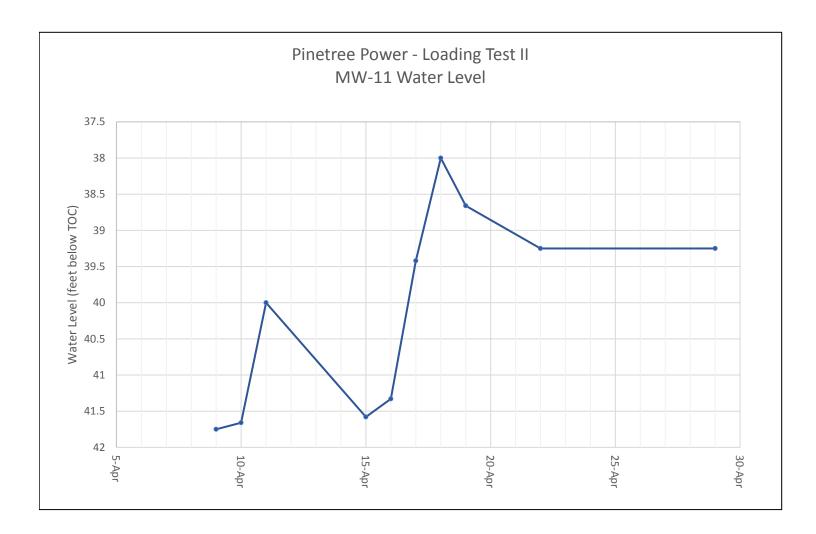
APPENDIX H Load Test II, Water Level Graphs

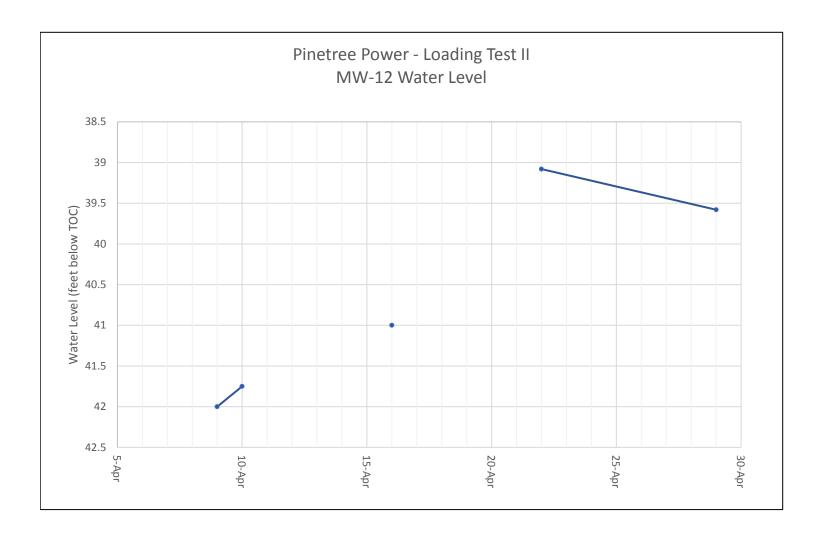


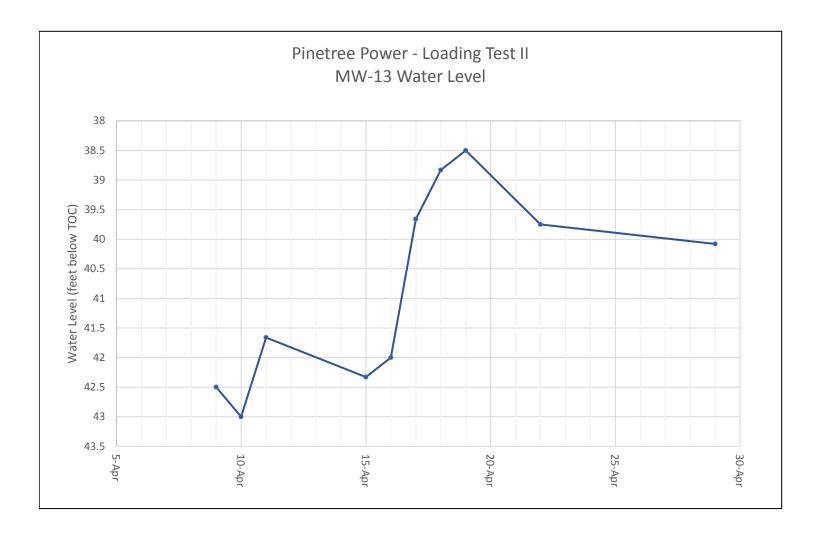


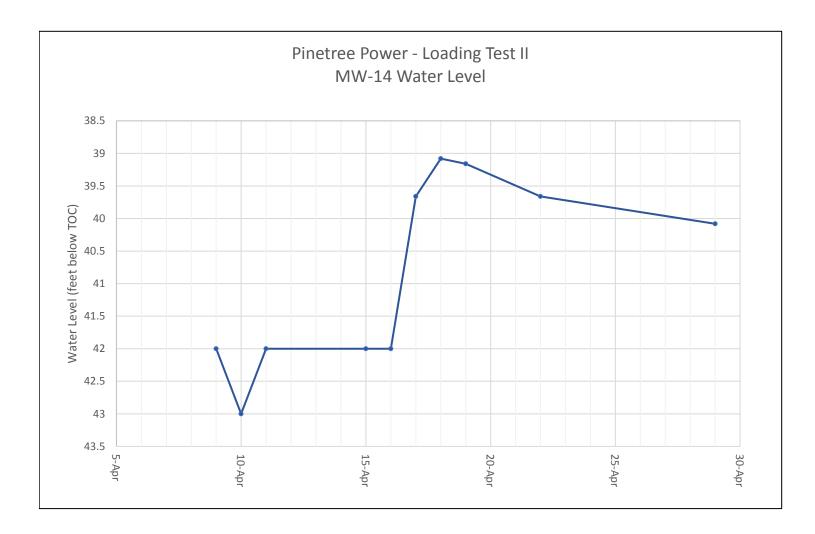


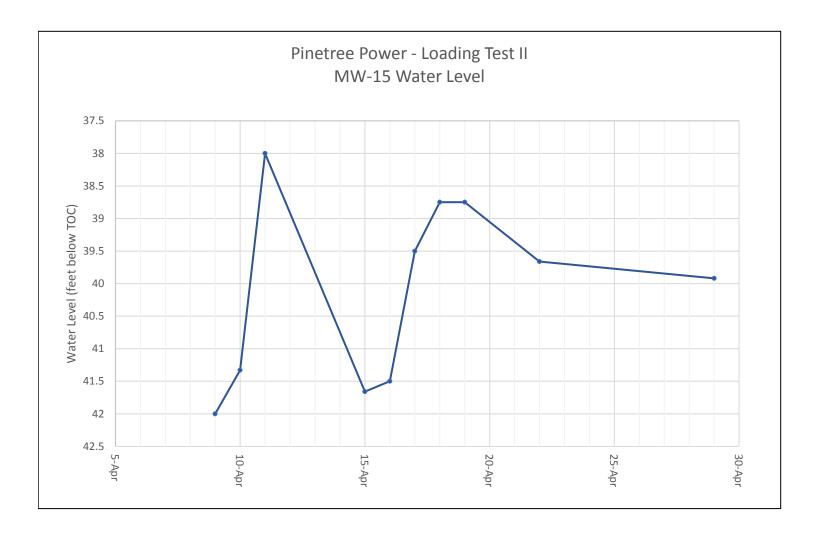


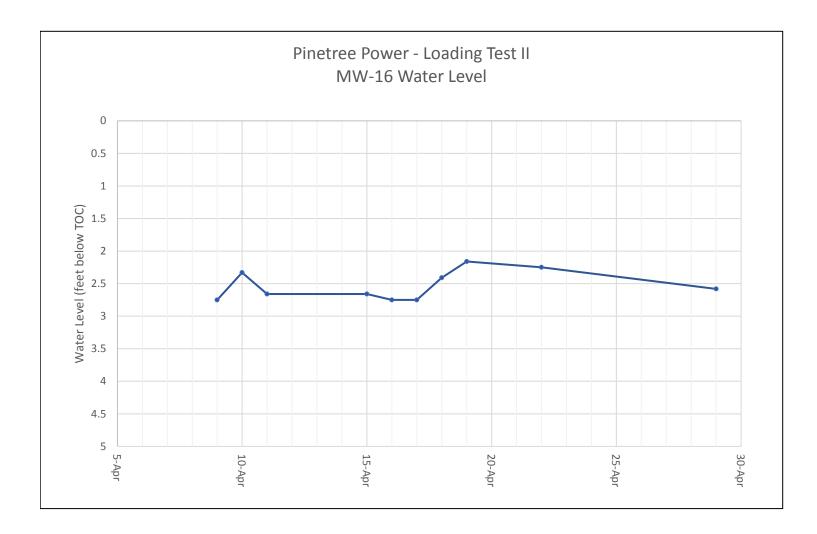


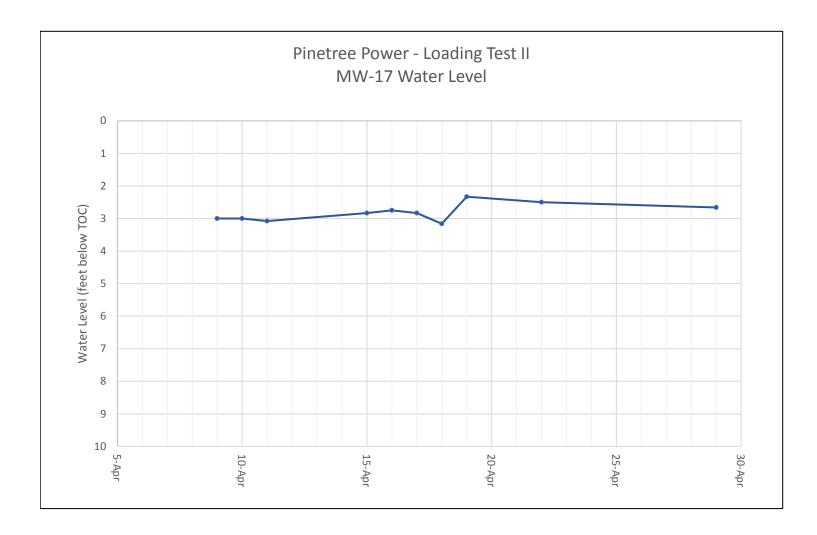












APPENDIX I Water Sample Analytical Results

SAMPLE	DID:	Circulation Water 09/21/2017	Circulation Water 12/10/2018	Circulation Water 01/07/2019	Circulation Water 01/08/2019	Circulation Water 01/10/2019	Circulation Water 01/11/2019	Circulation Water 01/22/2019	Circulation Water 01/24/2019	UST 04/04/19	SV2 04/04/19	FTS 04/04/19	SV2-7 04/08/19	SV3 04/08/19
Compound	AGQS (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)
Antimony	6	<5	1.1	<1	<1	<1	<1	<1	<1	1.2	<1	1.3	<1	<1
Arsenic	10	<10	40	29	24	18	17	22	15	21	13	65	5.6	8.8
Beryllium	4	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.8	<1	<1
Cadmium	5	<5	<1	<1	<1	<1	<1	<1	<1	<1	1.3	1.4	<1	<1
Calcium	NS	660,000	230,000	180,000	150,000	120,000	120,000	130,000	100,000	150,000	91,000	540,000	33,000	71,000
Chromium	100	10	12	9	5.3	4.6	4.2	5	3.7	5.2	6.9	32	3.3	4.4
Copper	1,300	35	26	12	10	8.3	8.4	7.2	5.7	79	22	46	19	34
Iron	NS	300	<50	<100	<100	<100	<100	<50	<100	640	1,200	1,000	1,500	630
Magnesium	NS	41,000	21,000	21,000	16,000	13,000	13,000	16,000	12,000	14,000	11,000	74,000	3,500	9,200
Manganese	840	390	1,500	230	190	110	65	<	5	6	700	120	650	300
Mercury	2	<1	0.15	<0.1	<0.1	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	0.21	<0.2	<0.2
Molybdenum	NS	190	44	31	25	19	18	20	12	24	13	95	4.6	11
Nickel	100	19	5	3.8	2.2	2.2	1.8	2.3	1.3	2.9	5.3	6.1	2.5	2.2
Potassium	160,000	210,000	53,000	42,000	32,000	25,000	25,000	27,000	21,000	32,000	16,000	120,000	3,900	13,000
Selenium	50	<10	7	7.1	5	4	3	4.8	2.4	3.2	4.9	22	1.7	<1
Sodium	NS	8,900,000	1,100	810,000	620,000	490,000	470,000	510,000	380,000	640,000	320,000	2,500,000	32,000	250,000
Zinc	NS	33	<5	<5	<	23	10	4	<5	28	78	50	63	44
Total Hardness (as CaCO ₃)	NS	1,800,000	670,000	550,000	NA	NA	NA	400,000	300,000	440,000	270,000	1,600,000	97,000	210,000
COD	NS	390,000	81,000	34,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	NS	7.9 SU	8.18 SU	8.27 SU	NA	NA	NA	8.19 SU	8.16 SU	8.64 SU	7.65 SU	7.81 SU	7.44 SU	7.08 SU
Ammonia	NS	110	120	66	NA	NA	NA	<50	<50	<5	340	170	310	140
Nitrite	1000	500	<500	<500	<500	<500	<500	<100	<500	<500	<500	<500	<500	<500
Nitrate	10,000	100,000	5,200	7,700	6,600	1,300	1,900	8,400	6,100	8,600	3,900	29,000	<500	3,000
TKN	NS	23,000	2,700	980	NA	NA	NA	550	620	920	3,400	2,500	700	1,300
Specific Conductance	NS	47,000 uS/cm	7,600 uS/cm	4 uS/cm	NA	NA	NA	3,900 uS/cm	2,400 uS/cm	4,800	2,600	19,000	350	1,600
Chloride	NS	9,200,000	1,500,000	NA	NA	NA	NA	850,000	600,000	950,000	470,000	4,200,000	59,000	430
Total Phosphorus	NS	320	27,000	760	NA	NA	NA	1,500	1,700	750	4,100	5,700	3500	2,600
Perfluorobutanoate (PFBA)	NS	NA	NA	0.0097	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	500,000	6,000,000	510,000	270,000	NA	NA	NA	120,000	71,000	300,000	140,000	1,200,000	22,000	110,000
	<i></i>	-	•		Loadin	g Test I						Loading Test II		

NS = No Standard NA = Not Analyzed

Bold and Shaded = Detection of compound above respective AGQS

SAMPLE	ID:	Influent Well C 01/25/2018	Influent Well C 01/07/2019	Influent Well C 06/10/2019
Compound	AGQS (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)
Antimony	6	NA	<1	NA
Arsenic (Dissolved)	10	<1	<1	<1
Arsenic (Total)	10	NA	NA	<1
Barium	2000	7	NA	NA
Beryllium	4	NA	<1	NA
Cadmium	5	<1	<1	NA
Calcium	NS	NA	5,500	NA
Chromium	100	<1	<1	NA
Copper	1,300	NA	<1	NA
Iron	NS	NA	56	NA
Lead	15	6	4.3	NA
Magnesium	NS	NA	740	NA
Manganese	840	NA	17	NA
Mercury	2	< 0.1	< 0.1	NA
Molybdenum	NS	NA	<1	NA
Nickel	100	NA	1.4	NA
Potassium	160,000	NA	1,200	NA
Selenium	50	<1	<1	NA
Sodium	NS	NA	23,000	NA
Zinc	NS	NA	8.1	NA
Uranium	NS	NA	0.2	NA
Total Hardness (as CaCO ₃)	NS	19,000	18,000	NA
Silica (Calculated)	NS	12,000	NA	NA
COD	NS	NA	<10,000	NA
pН	NS	NA	6.28 SU	NA
Ammonia	NS	NA	<50	NA
Nitrate	10,000	600	<500	NA
TKN	NS	NA	<500	NA
Specific Conductance	NS	170 uS/cm	160 uS/cm	NA
Total Phosphorus	NS	NA	<10	NA
Chloride	NS	NA	39,000	NA
Sulfate	500,000	3,000	2,400	NA

NA = Not Analyzed

Bold and Shaded = Detection of compound above respective AGQS

SAMPLE ID:	:	MW-11 01/07/2019	MW-11 01/17/2019	MW-11 05/16/2019	MW-11 05/24/2019	MW-11 06/03/2019	MW-14 01/07/2019	MW-14 01/17/2019	MW-14 05/16/2019	MW-14 05/24/2019	MW-14 06/03/2019	MW-14 06/10/2019	MW-16 01/07/2019	MW-16 01/17/2019	MW-16 05/16/2019	MW-16 05/24/2019	MW-16 06/03/2019
Compound	AGQS (µg/L)	Concentration (µg/L)															
Antimony	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic	10	<1	3.3	40	<1	<1	<1	2.5	26	11	14	2.2	<1	<1	1.1	<1	<1
Beryllium	4	<1	1.2	<1	<1	<1	<1	1.7	2.7	2.4	1.5	<1	<1	<1	<1	<1	<1
Cadmium	5	<1	1.9	<1	<1	<1	<1	1.5	<1	2	<1	<1	<1	<1	<1	<1	<1
Calcium	NS	4,800	20,000	1,600	21,000	2,900	13,000	21,000	61,000	54,000	31,000	13,000	5,800	6,400	6,400	7,300	9,400
Chromium	100	<1	<1	16	<1	<1	<1	<1	9.7	<1	<1	<1	<1	<1	<1	<1	<1
Copper	1,300	<1	4.2	2.2	9.4	1.3	1.3	2.9	1.2	2.8	<1	<1	<1	4.3	<1	3	<1
Magnesium	NS	780	2,800	340	310	450	2,100	2,900	8,600	7,800	4,500	1,900	750	820	760	860	1,200
Manganese	840	14	51	6.6	6	7	37	27	37	43	26	12	110	91	16	20	17
Mercury	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	NS	<1	<0.1	<1	<0.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.5	<1	<1	<1	<1
Potassium	160,000	1,200	3,100	1,300	740	970	1,800	2,900	7,600	6,100	3,800	2,000	880	900	1,000	970	1,100
Selenium	50	<1	8.5	<1	<1	<1	<1	7.2	16	11	14	1.9	<1	<1	<1	<1	<1
Sodium	NS	18,000	53,000	<5	11,000	15,000	35,000	71,000	290,000	270,000	160,000	65,000	<5,000	5,300	8,500	11,000	13,000
Zinc	NS	6.4	13	11	12	<5	9	11	26	31	16	7	9.6	11.0	5.2	8.6	5.6
Uranium	NS	NA	NA	NA	NA	NA	4.9	NA									
Total Hardness (as CaCO ₃)	NS	17,000	61,000	NA	NA	NA	42,000	64,000	NA	NA	NA	NA	26,000	19,000	NA	NA	NA
COD	NS	<10,000	<10,000	NA	NA	NA	<10,000	<10,000	NA	NA	NA	NA	55,000	21,000	NA	NA	NA
pH	NS	5.59 SU	5.32 SU	NA	NA	NA	5.33 SU	5.19 SU	NA	NA	NA	NA	5.6 SU	5.69 SU	NA	NA	NA
Ammonia	NS	<56	<50	NA	NA	NA	<50	<50	NA	NA	NA	NA	<50	<50	NA	NA	NA
Nitrate	10,000	<500	<500	NA	NA	NA	<500	590	NA	NA	NA	NA	<500	<500	NA	NA	NA
TKN	NS	<500	600	NA	NA	NA	2,700	740	NA	NA	NA	NA	<500	<500	NA	NA	NA
Specific Conductance	NS	150 uS/cm	410 uS/cm	NA	NA	NA	300 uS/cm	530 uS/cm	NA	NA	NA	NA	69 uS/cm	71 uS/cm	NA	NA	NA
Total Phosphorus	NS	1,600	1,600	NA	NA	NA	1,600	1,300	NA	NA	NA	NA	5,000	3,800	NA	NA	NA
Sulfate	500,000	1,700	2,700	NA	NA	NA	<1,000	<1000	NA	NA	NA	NA	<1,000	<1,000	NA	NA	NA
Chloride	NS	41,000	110,000	NA	NA	NA	88,000	150,000	NA	NA	NA	NA	14,000	15,000	NA	NA	NA

NS = No Standard NA = Not Analyzed Bold and Shaded = Detection of compound above respective AGQS

SAMPLE	ID:	MW-11 01/07/2019	MW-11 01/17/2019	MW-11 05/16/2019	MW-11 05/24/2019	MW-11 06/03/2019
Compound	AGQS (µg/L)	Concentration (µg/L)				
Antimony	6	<1	<1	<1	<1	<1
Arsenic	10	<1	3.3	40	<1	<1
Beryllium	4	<1	1.2	<1	<1	<1
Cadmium	5	<1	1.9	<1	<1	<1
Calcium	NS	4,800	20,000	1,600	21,000	2,900
Chromium	100	<1	<1	16	<1	<1
Copper	1,300	<1	4.2	2.2	9.4	1.3
Magnesium	NS	780	2,800	340	310	450
Manganese	840	14	51	6.6	6	7
Mercury	2	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Molybdenum	NS	<1	<0.1	<1	< 0.1	<1
Nickel	100	<1	<1	<1	<1	<1
Potassium	160,000	1,200	3,100	1,300	740	970
Selenium	50	<1	8.5	<1	<1	<1
Sodium	NS	18,000	53,000	<5	11,000	15,000
Zinc	NS	6.4	13	11	12	<5
Total Hardness (as CaCO ₃)	NS	17,000	61,000	NA	NA	NA
COD	NS	<10,000	<10,000	NA	NA	NA
pН	NS	5.59 SU	5.32 SU	NA	NA	NA
Ammonia	NS	<56	<50	NA	NA	NA
Nitrate	10,000	<500	<500	NA	NA	NA
TKN	NS	<500	600	NA	NA	NA
Specific Conductance	NS	150 uS/cm	410 uS/cm	NA	NA	NA
Total Phosphorus	NS	1,600	1,600	NA	NA	NA
Sulfate	500,000	1,700	2,700	NA	NA	NA
Chloride	NS	41,000	110,000	NA	NA	NA

NA = Not Analyzed

Bold and Shaded = Detection of compound above respective AGQS

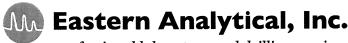
SAMPLE	ID:	MW-14 01/07/2019	MW-14 01/17/2019	MW-14 05/16/2019	MW-14 05/24/2019	MW-14 06/03/2019	MW-14 06/10/20
Compound	AGQS (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)
Antimony	6	<1	<1	<1	<1	<1	<1
Arsenic	10	<1	2.5	26	11	14	2.2
Beryllium	4	<1	1.7	2.7	2.4	1.5	<1
Cadmium	5	<1	1.5	<1	2	<1	<1
Calcium	NS	13,000	21,000	61,000	54,000	31,000	13,000
Chromium	100	<1	<1	9.7	<1	<1	<1
Copper	1,300	1.3	2.9	1.2	2.8	<1	<1
Magnesium	NS	2,100	2,900	8,600	7,800	4,500	1,900
Manganese	840	37	27	37	43	26	12
Mercury	2	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1
Molybdenum	NS	<1	<1	<1	<1	<1	<1
Nickel	100	<1	<1	<1	<1	<1	<1
Potassium	160,000	1,800	2,900	7,600	6,100	3,800	2,000
Selenium	50	<1	7.2	16	11	14	1.9
Sodium	NS	35,000	71,000	290,000	270,000	160,000	65,000
Uranium	NS	4.9	NA	26	31	16	7
Zinc	NS	9	11	NA	NA	NA	NA
Total Hardness (as CaCO ₃)	NS	42,000	64,000	NA	NA	NA	NA
COD	NS	<10,000	<10,000	NA	NA	NA	NA
pН	NS	5.33 SU	5.19 SU	NA	NA	NA	NA
Ammonia	NS	<50	<50	NA	NA	NA	NA
Nitrate	10,000	<500	590	NA	NA	NA	NA
TKN	NS	2,700	740	NA	NA	NA	NA
Specific Conductance	NS	300 uS/cm	530 uS/cm	NA	NA	NA	NA
Total Phosphorus	NS	1,600	1,300	NA	NA	NA	NA
Sulfate	500,000	<1,000	<1000	NA	NA	NA	NA
Chloride	NS	88,000	150.000	NA	NA	NA	NA

NA = Not Analyzed

Bold and Shaded = Detection of compound above respective AGQS

SAMPLE 1	ID:	MW-16 01/07/2019	MW-16 01/17/2019	MW-16 05/16/2019	MW-16 05/24/2019	MW-16 06/03/2019
Compound	AGQS (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)	Concentration (µg/L)
Antimony	6	<1	<1	<1	<1	<1
Arsenic	10	<1	<1	1.1	<1	<1
Beryllium	4	<1	<1	<1	<1	<1
Cadmium	5	<1	<1	<1	<1	<1
Calcium	NS	5,800	6,400	6,400	7,300	9,400
Chromium	100	<1	<1	<1	<1	<1
Copper	1,300	<1	4.3	<1	3	<1
Magnesium	NS	750	820	760	860	1,200
Manganese	840	110	91	16	20	17
Mercury	2	<0.1	<0.1	<0.1	<0.1	< 0.1
Molybdenum	NS	<1	<1	<1	<1	<1
Nickel	100	1.5	<1	<1	<1	<1
Potassium	160,000	880	900	1,000	970	1,100
Selenium	50	<1	<1	<1	<1	<1
Sodium	NS	<5,000	5,300	8,500	11,000	13,000
Zinc	NS	9.6	11.0	5.2	8.6	5.6
Total Hardness (as CaCO ₃)	NS	26,000	19,000	NA	NA	NA
COD	NS	55,000	21,000	NA	NA	NA
pН	NS	5.6 SU	5.69 SU	NA	NA	NA
Ammonia	NS	<50	<50	NA	NA	NA
Nitrate	10,000	<500	<500	NA	NA	NA
TKN	NS	<500	<500	NA	NA	NA
Specific Conductance	NS	69 uS/cm	71 uS/cm	NA	NA	NA
Total Phosphorus	NS	5,000	3,800	NA	NA	NA
Sulfate	500,000	<1,000	<1,000	NA	NA	NA
Chloride	NS	14,000	15,000	NA	NA	NA

NA = Not Analyzed Bold and Shaded = Detection of compound above respective AGQS



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PRELIMINARY ANALYTICAL RESULTS ATTACHED

The attached .pdf file contains results that have not been subjected to a final QA/QC review. If you have any questions, please contact us at <u>customerservice@easternanalytical.com</u> or call 1-800-287-0525.

Chain-of-Custody

As a reminder, please fill out chain-of-custody forms completely when submitting samples to the lab.

Information most often missing on COCs-

- Relinquishing signature, date and time
- Sample ID, Date of Collection and Time of Collection (should match sample containers)
- Analyses

If you have any questions when completing the COC, please call us at 800-287-0525. We'd be happy to assist you!

Order Containers for Spring Sampling

Spring is here – and that means Spring sampling rounds are too! By ordering your container kits now, you'll be prepared for when your groundwater and industrial monitoring projects are scheduled.

Drilling

EAI offers direct push drilling services, to complement those of our laboratory.

The EAI drilling crew is licensed and 40-hour OSHA certified. Our field team is ready to meet your drilling needs for the most challenging of job sites in New Hampshire, Massachusetts, Vermont and Maine.

If you have questions regarding our drilling capabilities or would like to schedule an upcoming project, please call us at 1-800-287-0525, email <u>customerservice@easternanalytical.com</u> or visit EasternAnalytical.com.

EAI ID#: 193800

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

Sample ID:	UST	SV2	FTS				
Lab Sample ID:	193800.01	193800.02	193800.03				
Matrix:	aqueous	aqueous	aqueous				
Date Sampled:	4/4/19	4/4/19	4/4/19	Analytical		Date of	
Date Received:	4/4/19	4/4/19	4/4/19	Matrix	Units	Analysis	Method Analyst
Antimony	0.0012	< 0.001	0.0013	AqTot	mg/L	4/5/19	200.8 DS
Arsenic	0.021	0.013	0.065	AqTot	mg/L	4/5/19	200.8 DS
Beryllium	< 0.001	< 0.001	0.0028	AqTot	mg/L	4/5/19	200.8 DS
Calcium	150	91	540	AqTot	mg/L	4/5/19	200.8 DS
Cadmium	< 0.001	0.0013	0.0014	AqTot	mg/L	4/5/19	200.8 DS
Chromium	0.0052	0.0069	0.032	AqTot	mg/L	4/5/19	200.8 DS
Copper	0.079	0.022	0.046	AqTot	mg/L	4/5/19	200.8 DS
Iron	0.64	1.2	1.0	AqTot	mg/L	4/5/19	200.8 DS
Lead	0.040	0.0047	0.0036	AqTot	mg/L	4/5/19	200.8 DS
Magnesium	14	11	74	AqTot	mg/L	4/5/19	200.8 DS
Manganese	0.060	0.70	0.12	AqTot	mg/L	4/5/19	200.8 DS
Mercury	< 0.0002	< 0.0002	0.00021	AqTot	mg/L	4/5/19	200.8 DS
Molybdenum	0.024	0.013	0.095	AqTot	mg/L	4/5/19	200.8 DS
Nickel	0.0029	0.0053	0.0061	AqTot	mg/L	4/5/19	200.8 DS
Potassium	32	16	120	AqTot	mg/L	4/5/19	200.8 DS
Selenium	0.0032	0.0049	0.022	AqTot	mg/L	4/5/19	200.8 DS
Silver	< 0.001	< 0.001	< 0.001	AqTot	mg/L	4/5/19	200.8 DS
Sodium	640	320	2500	AqTot	mg/L	4/5/19	200.8 DS
Thallium	< 0.001	< 0.001	< 0.001	AqTot	mg/L	4/5/19	200.8 DS
Zinc	0.028	0.078	0.050	AqTot	mg/L	4/5/19	200.8 DS
Total Hardness (as CaCO3	3) 440	270	1600	AqTot	mg/L	4/5/19	200.8 DS



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PRELIMINARY ANALYTICAL RESULTS ATTACHED

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Drilling

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The EAI drilling crew is licensed and 40-hour OSHA certified. Our field team is ready to meet your drilling needs for the most challenging of job sites in New Hampshire, Massachusetts, Vermont and Maine.

If you have questions regarding our drilling capabilities or would like to schedule an upcoming project, please call us at 1-800-287-0525, email <u>customerservice@easternanalytical.com</u> or visit EasternAnalytical.com.

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power

Sample ID:	UST	SV2	FTS					
Lab Sample ID:	193800.01	193800.02	193800.03					
Matrix:	aqueous	aqueous	aqueous					
Date Sampled:	4/4/19	4/4/19	4/4/19		Ana	alysis		
Date Received:	4/4/19	4/4/19	4/4/19	Units	Date	Time	e Method A	Analyst
Sulfate	300	140	1200	mg/L	4/10/19	9:25	300.0	KD
Chloride	950	470	4200	mg/L	4/05/19	15:40	4500CLE-11	KD
Nitrite-N	< 0.5	< 0.5	< 0.5	mg/L	4/05/19	14:53	353.2	KD
Nitrate-N	8.6	3.9	29	mg/L	4/05/19	14:53	353.2	KD
Ammonia-N	< 0.05	0.34	0.17	mg/L	4/05/19	11:47	TM NH3-001	SEL
TKN	0.92	3.4	2.5	mg/L	4/05/19	14:37	4500N _{ora} C/N	SEL
Total Phosphorus-P	0.75	4.1	5.7	mg/L	4/08/19	12:01	365.1	SEL
рН	8.64	7.65	7.81	SU	4/04/19	16:45	4500H+B-11	KL
Specific Conductance	4800	2600	19000	uS/cm	4/10/19	10:30	120.1	SEL



Eastern Analytical, Inc.

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Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 193881 Client Identification: Pinetree Power Date Received: 4/8/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

of pages (excluding cover letter)

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SAMPLE CONDITIONS PAGE

EAI ID#: 193881

1

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

Temperature upon receipt (°C): Acceptable temperature range (°C): 0-6		13.1 Received on ice or cold packs (Yes/No): Υ						
Lab ID	Sample ID	Date Received		Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)			
193881.01	SV 2-7	4/8/19	4/8/19	aqueous	Adheres to Sample Acceptance Policy			
193881.02	SV 3	4/8/19	4/8/19	aqueous	Adheres to Sample Acceptance Policy			

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

Eastern Analytical, Inc.

www.easternanalytical.com | 800.287.0525 | customerservice@easternanalytical.com

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power

Sample ID:	SV 2-7	
Lab Sample ID:	193881.01	
Matrix:	aqueous	
Date Sampled:	4/8/19	Analysis
Date Received:	4/8/19	Units Date Time Method Analyst
Sulfate	22	mg/L 04/10/19 4:36 300.0 KD
Chloride	59	mg/L 04/09/19 8:09 4500CLE-11 KD
Nitrite-N	< 0.5	mg/L 04/09/19 8:09 353.2 KD
Nitrate-N	< 0.5	mg/L 04/09/19 8:09 353.2 KD
Ammonia-N	0.31	mg/L 04/10/19 10:57 TM NH3-001 SEL
TKN	0.7	mg/L 04/09/19 15:41 4500N _{ore} C/N SEL
Total Phosphorus-P	3.5	mg/L 04/12/19 12:32 365.1 SEL
рН	7.44	SU 04/08/19 16:35 4500H+B-11 KL
Specific Conductance	350	uS/cm 04/10/19 10:30 120.1 SEL

Sample ID:	SV 3
Lab Sample ID:	193881.02
Matrix:	aqueous
Date Sampled:	4/8/19
Date Received:	4/8/19
Sulfate Chloride Nitrite-N Nitrate-N Ammonia-N TKN Total Phosphorus-P pH Specific Conductance	110 430 < 0.5 3.0 0.14 1.3 2.6 7.08 1600
Specific Conductance	1600

Analysis Units Date Time Method Analyst												
Units	Date	IIIIe	wethod Al	naiyst								
mg/L	04/10/19	10:25	300.0	KD								
mg/L	04/09/19	8:40	4500CLE-11	KD								
mg/L	04/09/19	8:11	353.2	KD								
mg/L	04/09/19	8:11	353.2	KD								
mg/L	04/10/19	11:15	TM NH3-001	SEL								
mg/L	04/09/19	15:43	4500N _{ora} C/N	SEL								
mg/L	04/12/19	12:33	365.1	SEL								
SU	04/08/19	16:35	4500H+B-11	KL								
uS/cm	04/10/19	10:30	120.1	SEL								

EAI ID#: 193881

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

Sample ID:	SV 2-7	SV 3	
Lab Sample ID:	193881.01	193881.02	
Matrix:	aqueous	aqueous	
Date Sampled:	4/8/19	4/8/19	
Date Received:	4/8/19	4/8/19	
Antimony	< 0.001	< 0.001	
Arsenic	0.0056	0.0088	
Beryllium	< 0.001	< 0.001	
Calcium	33	71	
Cadmium	< 0.001	< 0.001	
Chromium	0.0033	0.0044	
Copper	0.019	0.034	
Iron	1.5	0.63	
Lead	0.0045	0.0026	
Magnesium	3.5	9.2	
Manganese	0.65	0.30	
Mercury	< 0.0002	< 0.0002	
Molybdenum	0.0046	0.011	
Nickel	0.0025	0.0022	
Potassium	3.9	13	
Selenium	0.0017	< 0.001	
Silver	< 0.001	< 0.001	
Sodium	32	250	
Thallium	< 0.001	< 0.001	
Zinc	0.063	0.044	
Total Hardness (as CaCO3)) . 97	210	

Analytical Matrix	Units	Date of Analysis	Method Ar	nalyst
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS
AqTot	mg/L	4/9/19	200.8	DS

Please ensure this auto COC is accurate, adh EAI Project ID 5260 Project Name Pinetree Power State NH Client (Pro Mgr) Joel Banaszak Customer Horizons Engineering, Inc. (NL) Address 176 Newport Road City ATTN: Accounts City ATTN: Accounts Phone 603-877-0116 Fax QC Email: Jbanaszak@horizonsengineering.com Direct 877-0116 Eastern Analytical, Inc.	SVス・ア イ/S/14 aqueous SVス・ア クタン Grab or Comp Sampler confirms ID and parameters are accurate	Eastern Da Composi and stop
eres to permit or sampling requirements for this sa sults Needed by: Preferred date $\frac{1}{100}$, $\frac{1}{100}$, Repo tes: deliverables A $ $ A+ $ $ B $ $ B+ $ $ C $ $ MA MCP \overline{Re} sa www.easternanalytical.com 800.287.0525	AqTot/SO4/CI/NO3/NO2/NH3/TKN/TPhos/pH/SpecCon/ICPMets.As.Se.Sb.Be.Ca.Cd.Cr.Cu.Fe.Pb.Mg.Mn.Hg.M Ag.Na.TI.Zn.HardTot <i>Circle preservative/s:</i> HCL_HNO ₃ _H ₂ SO ₄ _NaOH_MEOH_Na ₂ S ₂ O ₃ _ICE	CHAIN-OF-CUSTODY RECORD 193881 gnlr 193881 4 nE



Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 196120 Client Identification: Pinetree Power Date Received: 6/3/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

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- > : "greater than" followed by the reporting limit
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If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: 196120

1

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

•	temperature range (°C): 0-6	5		Received	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received	Date Sampled	Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
196120.01	MVV-11	6/3/19	6/3/19	aqueous	Adheres to Sample Acceptance Policy
196120.02	MW-14	6/3/19	6/3/19	aqueous	Adheres to Sample Acceptance Policy
196120.03	MW-16	6/3/19	6/3/19	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

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EAI ID#: 196120

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

Sample ID:	MW-11	MW-14	MW-16				
Lab Sample ID:	196120.01	196120.02	196120.03				
Matrix:	aqueous	aqueous	aqueous				
Date Sampled:	6/3/19	6/3/19	6/3/19	Analytical		Date of	
Date Received:	6/3/19	6/3/19	6/3/19	Matrix	Units	Analysis	Method Analyst
Antimony	< 0.001	< 0.001	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Arsenic	< 0.001	0.014	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Beryllium	< 0.001	0.0015	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Calcium	2.9	31	9.4	AqDis	mg/L	6/4/19	200.8 DS
Cadmium	< 0.001	< 0.001	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Chromium	< 0.001	< 0.001	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Copper	0.0013	< 0.001	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Iron	< 0.05	< 0.05	< 0.05	AqDis	mg/L	6/4/19	200.8 DS
Lead	< 0.001	< 0.001	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Magnesium	0.45	4.5	1.2	AqDis	mg/L	6/4/19	200.8 DS
Manganese	0.0065	0.026	0.017	AqDis	mg/L	6/4/19	200.8 DS
Mercury	< 0.0001	< 0.0001	< 0.0001	AqDis	mg/L	6/4/19	200.8 DS
Molybdenum	< 0.001	< 0.001	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Nickel	< 0.001	< 0.001	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Potassium	0.97	3.8	1.1	AqDis	mg/L	6/4/19	200.8 DS
Selenium	< 0.001	0.014	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Silver	< 0.001	< 0.001	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Sodium	15	160	13	ÁqDis	mg/L	6/4/19	200.8 DS
Thallium	< 0.001	< 0.001	< 0.001	AqDis	mg/L	6/4/19	200.8 DS
Zinc	< 0.005	0.016	0.0056	AqDis	mg/L	6/4/19	200.8 DS

-		GREEN: PROJECT MANAGER)	ROJECT	REEN:	F	(WHITE: ORIGINAL	WHITE				d drilling services	professional laboratory and drilling services
1.800.287.0525 E-MAIL: CUSTOMERSERVICE@EASTERNANALYTICAL.COM	stomerService@EasternAn	525 E-MAIL: CU	800.287.05	8.0525 1.	L: 603.22	25 CHENELL DRIVE CONCORD, NH 03301 TEL: 603.228.0525	VCORD, N	RIVE COT	NELL D	25 CHI	tical, Inc.	M Eastern Analytical, Inc.
Field Readings:		RECEIVED BY:	TIME:	DATE:		RELINQUISHED BY:	RELINQU					
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											Va-NaOH; M-MEOH	PRESERVATIVE: H-HCL; N-HNO3; S-H2SO4; Na-NaOH; M-MEOH
									/ATER;	INKING V	r; SW-Surface Water; DW-Df	Matrix: A-Air; S-Soil; GW-Ground Water; SW-Surface Water; DW-Drinking Water; WW-Waste water
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NT	C DOC ulfide tive Sulfide y	PEC. CON.	Below) W)	TPH 1664)8 32	EDB DBCP Ah		MTBE ONLY	MPOSITE	BELOW)	SAMPLING	
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		D	ECOR	ODY R	JUST	CHAIN-OF-CUSTODY RECORD	CHA					\sim



196/20

Quotation 1016231

Quotation Date: 1/25/2019 Project ID: Pinetree Power

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London , NH 03257

EAI Project ID: 5260

Dear Mr. Banaszak:

Thank you for the opportunity to provide this quotation.

Qty.	Description
1	Sulfate
1	Chloride
1	Nitrite
1	Nitrate
1	Ammonia
1	TKN
1	Total Phosphorus
1	pH
1	Specific Conductance
1	Metals Aqueous Prep
1	Antimony
1	Arsenic
1	Beryllium
1	Calcium
1	Cadmium
1	Chromium
1	Copper
1	Iron
1	Lead
1	Magnesium
1	Manganese
1	Mercury
1	Molybdenum
1	Nickel
1	Potassium
1	Selenium
1	Silver
1	Sodium
1	Thallium
1	Zinc
1	Hardness Total

1 Hardness, Total



Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 196405 Client Identification: Pinetree Power Date Received: 6/6/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

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The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: 196405

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

-	ture upon receipt (°C): 2 temperature range (°C): 0-6	2.5		Rec	ceived	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received	Date Sampled	Sample % Matrix V		Exceptions/Comments (other than thermal preservation)
196405.01	CT Basin	6/6/19	6/6/19	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

Eastern Analytical, Inc.

www.easternanalytical.com | 800.287.0525 | customerservice@easternanalytical.com

1

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power

ample ID:	CT Basin						
Lab Sample ID:	196405.01						
Matrix:	aqueous						
Date Sampled:	6/6/19			Ana	alysis		
Date Received:	6/6/19		Units	Date	Time	e Method	ŀ
Sulfate	190		mg/L	6/11/19	10:43	300.0	
Chloride	880		mg/L	6/11/19	10:43	300.0	
Nitrite-N	< 0.5		mg/L	6/07/19	9:14	353.2	
Nitrate-N	5.6		mg/L	6/07/19	9:14	353.2	
Ammonia-N	0.45		mg/L	6/07/19	15:54	TM NH3-001	1
ΓKN	2.2		mg/L	6/10/19	15:14	4500N _{ora} C/N	1
Fotal Phosphorus-P	5.2		mg/L	6/10/19	14:55	365.1	
ъH	8.01		SU	6/06/19	17:15	4500H+B-11	1
Specific Conductance	3800		uS/cm	6/11/19	14:00	120.1	

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

Sample ID:	CT Basin			
Lab Sample ID:	196405.01			
Matrix:	aqueous			
Date Sampled:	6/6/19	Analytical Da	te of	
Date Received:	6/6/19	Matrix Units An	alysis Method A	Analyst
Antimony	< 0.001	AqTot mg/L 6	6/7/19 200.8	B DS
Arsenic	0.025	AqDis mg/L 6	6/7/19 200.8	B DS
Arsenic	0.026	AqTot mg/L 6	3/7/19 200.8	B DS
Beryllium	0.0019	AqTot mg/L 6	5/7/19 200.8	B DS
Calcium	130	AqTot mg/L 6	5/7/19 200.8	B DS
Cadmium	< 0.001	AqTot mg/L 6	6/7/19 200.8	B DS
Chromium	0.013	AqTot mg/L 6	6/7/19 200.8	B DS
Copper	0.039	AqTot mg/L 6	6/7/19 200.8	B DS
Iron	0.07	AqTot mg/L 6	6/7/19 200.8	B DS
Lead	< 0.001	AqTot mg/L 6	6/7/19 200.8	B DS
Magnesium	15	AqTot mg/L 6	6/7/19 200.8	B DS
Manganese	0.83	AqTot mg/L 6	6/7/19 200.8	B DS
Mercury	< 0.0001	AqTot mg/L 6	6/7/19 200.8	3 DS
Molybdenum	0.022	AqTot mg/L 6	5/7/19 200.8	B DS
Nickel	0.0068	AqTot mg/L 6	5/7/19 200.8	B DS
Potassium	26	AqTot mg/L 6	5/7/19 200.8	B DS
Selenium	0.003	AqTot mg/L 6	6/7/19 200.8	B DS
Silver	< 0.001	AqTot mg/L 6	6/7/19 200.8	B DS
Sodium	520	AqTot mg/L 6	6/7/19 200.8	B DS
Thallium	< 0.001		6/7/19 200.8	B DS
Zinc	0.011	AqTot mg/L 6	6/7/19 200.8	B DS
Total Hardness (as CaC	O3) 390	AqTot mg/L 6	6/7/19 200.8	B DS

Direct 877-0116 Eastern Analytical, Inc.	Email: jbanaszak@horizonsengineering.com	Phone 603-877-0116 Fax	City ATTN: Accounts NH 03257		Client (Pro Mgr) Joel Banaszak	State NH	Project Name Pinetree Power	EAI Project ID 5260	Please ensure this auto COC is accurate,				Sampler confirms ID and barameters are accurate	Ci Grand Strain Strain Strain Strain Grand Strain S	Date/Time Composites need start Sample IDs and stop dates/times Matrix	🐞 Eastern Analytical, Inc.
I, Inc. www.easternanalytical.com 800.287.0525 customerservice@easternanalytical.com	\square deliverables \square A \square A+ \square B \square B+ \square C \square MA MCP Relinquished by	Relinquished by	04 DY-	Samples Collected by	⊠ PDF prelim, NO FAX	X EDD PDF		Results Needed by: Preferred date ReportingOptions	Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.			1	Circle preservative/s: HCI HNO, H SO, NaOH MEOH Na S O, ICE	AqTot/SO4/CI/NO3/NO2/NH3/TKN/TPhos/pH/SpecCon/ICPMets.As.Se.Sb.Be.Ca.Cd.Cr.Cu.Fe.Pb.Mg.Mn.Hg.Mo.Ni.K. Ag.Na.TI.Zn.HardTot	Parameters and Sample Notes	CHAIN-OF-CUSTODY RECORD
ernanalytical.com	Date/Time Received by	Date/Time Received by		Storiens Ice Y ZND		☐ Partial FAX	NO FAX PO# Verbal		odify as necessary.				Dissolved Sample Field Filtered	Cu.Fe.Pb.Mg.Mn.Hg.Mo.Ni.K.	# of containers	196405



Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 196490 Client Identification: **Pinetree Power** Date Received: 6/10/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

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- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

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If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

Date

of pages (excluding cover letter)

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SAMPLE CONDITIONS PAGE

EAI ID#: 196490

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

-	ture upon receipt (°C): temperature range (°C): 0-6	23.5		Received	on ice or cold packs (Yes/No): N
Lab ID	Sample ID	Date Received S		Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
196490.01	Well C	6/10/19 6	5/10/19	aqueous	Adheres to Sample Acceptance Policy
196490.02	MW-14	6/10/19 6	6/10/19	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

Eastern Analytical, Inc.

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LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

Sample ID:	Well C	
Lab Sample ID:	196490.01	
Matrix:	aqueous	
Date Sampled:	6/10/19	Analytical Date of
Date Received:	6/10/19	Matrix Units Analysis Method Analyst
Arsenic	< 0.001	AqDis mg/L 6/12/19 200.8 DS
Arsenic	< 0.001	AqTot mg/L 6/12/19 200.8 DS

EAI ID#: 196490

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

Sample ID:

MW-14

Lab Sample ID: Matrix: Date Sampled: Date Received:	196490.02 aqueous 6/10/19 6/10/19	Analytical Matrix	Units	Date of Analysis	Method Ana	alyst
Antimony	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Arsenic	0.0022	AqDis	mg/L	6/12/19	200.8	DS
Beryllium	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Calcium	13	AqDis	mg/L	6/12/19	200.8	DS
Cadmium	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Chromium	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Copper	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Iron	< 0.05	AqDis	mg/L	6/12/19	200.8	DS
Lead	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Magnesium	1.9	AqDis	mg/L	6/12/19	200.8	DS
Manganese	0.012	AqDis	mg/L	6/12/19	200.8	DS
Mercury	< 0.0001	AqDis	mg/L	6/12/19	200.8	DS
Molybdenum	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Nickel	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Potassium	2.0	AqDis	mg/L	6/12/19	200.8	DS
Selenium	0.0019	AqDis	mg/L	6/12/19	200.8	DS
Silver	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Sodium	65	AqDis	mg/L	6/12/19	200.8	DS
Thallium	< 0.001	AqDis	mg/L	6/12/19	200.8	DS
Zinc	0.0065	AqDis	mg/L	6/12/19	200.8	DS

					JER)	GREEN: PROJECT MANAGER)				6	INAL	(WHITE: ORIGINAL	ITE	(WH					professional laboratory and drilling services
NALYTICAL COM	vww.Eastern <i>e</i>	25 CHENELL DRIVE CONCORD, NH 03301 TEL: 603.228.0525 1.800.287.0525 E-MAIL: CUSTOMERSERVICE@EASTERNANALYTICAL.COM WWW.EASTERNANALYTICAL.COM	VICE@EASTER	TOMERSER	MAIL: Cus	25 E-M).287.05	1.800	28.0525	603.23	Ē	-H 0330	rd, NH	ONCO	NE 0		CHENE		W Eastern Analytical, Inc.
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INFO, IF DIFFERENT)	IN LIMITS, BILLING	Notes: (ie: Special Detection Limits, Billing Info, If Different)	ZI			-DNG	FIELENIC OPTIONS	ECTBOR	 TI		•-	Q,						EXT.:	PHONE: 603-877-0116
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		OTHER METALS: 12		? YES.(ICE?	OPTIONS	NG OP	REPORTING			FVF	QA/QC Reporting Level	QA/QC					1 KA	176 Newson
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														-	-	-		NaOH; M-MEOH	PRESERVATIVE: H-HCL; N-HNO3; S-H2SO4; Na-NaOH; M-MEOH
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Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 190893 Client Identification: Pinetree Date Received: 1/7/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

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- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

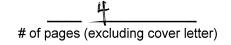
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If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,



SAMPLE CONDITIONS PAGE

EAI ID#: 190893

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree

-	ture upon receipt (°C): temperature range (°C): 0-6	11.8		Received	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID		•	-	Exceptions/Comments (other than thermal preservation)
190893.01	Circulation Water	1/7/19	1/7/19	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

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1

EAI ID#: 190893

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree

Sample ID:	Circulation Water							
Lab Sample ID:	190893.01							
Matrix:	aqueous							
Date Sampled:	1/7/19				Ana	alysis		
Date Received:	1/7/19		U	Inits	Date	Time	Method	Anal
Nitrite-N	< 0.5		m	ng/L	1/07/19	12:06	353.2	K
Nitrate-N	7.7		m	ng/L	1/07/19	12:06	353.2	KI

Eastern Analytical, Inc.

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree

Sample ID:	Circulation Water					
Lab Sample ID:	190893.01					
Matrix:	aqueous				•	
Date Sampled:	1/7/19	Analytical		Date of		
Date Received:	1/7/19	Matrix	Units	Analysis	Method Ana	alys
Antimony	< 0.001	AqTot	mg/L	1/8/19	200.8	DS
Arsenic	0.029	AqTot	mg/L	1/8/19	200.8	DS
Beryllium	< 0.001	AqTot	mg/L	1/8/19	200.8	DS
Calcium	180	AqTot	mg/L	1/8/19	200.8	DS
Cadmium	< 0.001	AqTot	mg/L	1/8/19	200.8	DS
Chromium	0.0090	AqTot	mg/L	1/8/19	200.8	DS
Copper	0.012	AqTot	mg/L	1/8/19	200.8	DS
Iron	< 0.1	AqTot	mg/L	1/8/19	200.8	DS
Lead	< 0.001	AqTot	mg/L	1/8/19	200.8	DS
Magnesium	21	AqTot	mg/L	1/8/19	200.8	DS
Manganese	0.23	AqTot	mg/L	1/8/19	200.8	DS
Mercury	< 0.0001	AqTot	mg/L	1/8/19	200.8	DS
Molybdenum	0.031	AqTot	mg/L	1/8/19	200.8	DS
Nickel	0.0038	AqTot	mg/L	1/8/19	200.8	DS
Potassium	42	AqTot	mg/L	1/8/19	200.8	DS
Selenium	0.0071	AqTot	mg/L	1/8/19	200.8	DS
Silver	< 0.001	AqTot	mg/L	1/8/19	200.8	DS
Sodium	810	AqTot	mg/L	1/8/19	200.8	DS
Thallium	< 0.001	AqTot	mg/L	1/8/19	200.8	DS
Zinc	< 0.005	AqTot	mg/L	1/8/19	200.8	DS
Total Hardness (as	CaCO3) 550	AqTot	mg/L	1/8/19	200.8	DS

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professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 191018 Client Identification: Pinetree Power Date Received: 1/8/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

Date

of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: 191018

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

•	ture upon receipt (°C): 2 temperature range (°C): 0-6	2.3	-	Rec	eived	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received		Sample % Matrix W		Exceptions/Comments (other than thermal preservation)
191018.01	Cooling Tower	1/8/19	1/8/19	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

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1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

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1

LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power

Sample ID:	Cooling Tower						
Lab Sample ID:	191018.01						
Matrix:	aqueous						
Date Sampled:	1/8/19			Ana	alysis		
Date Received:	1/8/19		Units	Date	Time	Method	Analyst
Nitrite-N	< 0.5		mg/L	1/10/19	9:41	353.2	KD
Nitrate-N	6.6		mg/L	1/10/19	9:41	353.2	KD

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

ole ID:	Cooling Tower		
_ab Sample ID:	191018.01		
/latrix:	aqueous		
ate Sampled:	1/8/19	Analytical Date of	
te Received:	1/8/19	Matrix Units Analysis	M
timony	< 0.001	AqTot mg/L 1/10/19	
senic	0.024	AqTot mg/L 1/10/19	
ryllium	< 0.001	AqTot mg/L 1/10/19	
lcium	150	AqTot mg/L 1/10/19	
dmium	< 0.001	AqTot mg/L 1/10/19	
romium	0.0053	AqTot mg/L 1/10/19	
pper	0.010	AqTot mg/L 1/10/19	
ו	< 0.1	AqTot mg/L 1/10/19	
d	< 0.001	AqTot mg/L 1/10/19	
gnesium	16	AqTot mg/L 1/10/19	
nganese	0.19	AqTot mg/L 1/10/19	
rcury	< 0.0001	AqTot mg/L 1/10/19	
lybdenum	0.025	AqTot mg/L 1/10/19	
ckel	0.0022	AqTot mg/L 1/10/19	
tassium	32	AqTot mg/L 1/10/19	
enium	0.005	AqTot mg/L 1/10/19	
er	< 0.001	AqTot mg/L 1/10/19	
lium	620	AqTot mg/L 1/10/19	
allium	< 0.001	AqTot mg/L 1/10/19	
าด	< 0.005	AqTot mg/L 1/10/19	

JANALYTICAL.CO	25 CHENELL DRIVE CONCORD, NH 03301 TEL: 603.228.0525 I.800.287.0525 E-MAIL: CUSTOMERSERVICE@EASTERNANALYTICAL.COM WWW.EASTERNANALYTICAL.COM	'ERNANALYTIC;	wice@Easti	TOMERSER	IAIL: CUST	525 E-M	228.0525 1.800.287.0525 E-MAIL:	0525 1.:	03.228.(TEL: 6	ONCORD, NH 03301 TEL	DRD, NH	Conc	DRIVE	CHENELL		ical, Inc trilling service	Eastern Analytical, Inc. professional laboratory and drilling services	professio	_ m-
	51	FIELD READINGS:			RECEIVED BY:	Re	Time:	LL,	Date:	BY:	RELINQUISHED BY:	ELINQU	77				•	ē r		
	TAMINATION:	Suspected Contamination:			Received By:	RE	Time:		Date:	BY:	RELINQUISHED BY:	ELINQU	 				PO #:		Quote #:	~
		Site History:			CLINED DI.	- Un		F	5		MELINQUISHED DI.					ER OR	OTW STORMWATI	REGULATORY PROGRAM: NPDES: RGP POTW STORNWATER OR GWP DII FIIMD REDMANTED OR OTHER-	GV GV	
			2	All.		h	l(aug	19	1/8/			Alder	 				VT OTHER:	ME	$\langle Z \rangle$	5
				1					air	Aban (SAMPLER(S): _	SA					Tivetree Pinetree Tourn	Site Name: 71	
1 oral	* Per J. Bana scale Jur Molia	× Per J.		:	Excel	Equis	MAIN COF HONS	E-MAIL		P	MA MCP		ocent	Inser	Sensi	C Abrizonsensineeny.com	Jbanaszak .	n)	Fax:	
5 INFO, IF DIFFER	NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)	NOTES: (IE: SPECI				TIONS					OR					Ехт.:		603-877-0116	Ē	
Yes XNo	1 ERED?	OTHER METALS:	No	(YES	ICE?	PTIONS No	REPORTING OPTIONS PRELIMS: (YES) OR NO	Repo i	0		QA/QC Reporting Level A B	QA/QC REPORT A	 صحر	4	03257	ZIP:	State:	TT	14.4	• •
	56.75 PH EF	METALS:	° C		TEMP.					ĔD:	DATE NEEDED:	DATE					- Banaszak	i sor	Project Manager: . Company: /40/172	-
															Water;	er; DW-Drinking	SW-Surface Wati NaOH; M-MEOH	Matrix: A-Air; S-Soil; GW-Ground Water; SW-Sufface Water; DW-Drinking Water; WW-Maste water Preservative: H-HCL; N-HNO;; S-H2SO4; Na-NaOH; M-MEOH	Matrix: A-Air; S-Sc WW-Wasti Preservative: H-HCI	
							 .													
															ম (54:41	1/8/15	Tome	Coolist	
Notes Medh Val #	HETEROTROPHIC PLATE COUNT	REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY TOTAL COLIFORM E. COLI FECAL COLIFORM ENTERCOCOCI HETERCTORDUME PLATE COUNT	COD PHENOLS TOC DOC Total Cyanide Total Sulfide Reactive Cyanide Reactive Sulfide	pH T. Res. Chlorine	BOD CBOD T. ALK. TKN NH ₃ T. Phos. O. Phos.	TS TSS TDS Spec. Con. Br Cl F <u>SO4</u> NO ₂ NO3 (NO3NO2)	DISSOLVED METALS (LIST BELOW) TOTAL METALS (LIST BELOW)	TCLP 1311 ABN Metals VOC PEST Herb	PEST 608 PCB 608 PEST 8081 PCB 8082 OIL & Grease 1664 TPH 1664	8015 DRO MAEPH	8270 625 SVTICs EDB DBCP ABN A BN PAH TPH8100 L1 L2	8015 GRO MAVPH	8260 624 VTICs I, 4 Dioxane 8021 BTEX HALOS	524.2 524.2 BTEX 524.2 MTBE ONLY 8260 624 VTICs	Matrix (see below) Grab/*Composite		SAMPLING DATE/TIME *IF COMPOSITE INDICATE BOTH START & FINISH START & FINISH	Sample I.D.	SAMP	
	MICRO OTHER	MICRO	lics	Ζ	NORGA		TCLP METALS	TCLP	ñ	SVO	10		VOC							-
				YSIS.	ANAL	STED 1	PLEASE CIRCLE REQUESTED ANALYSIS	RCLE		PLEA		QUI	os R	FIEL	BOLD FIELDS REQUIRED.				48e	-
1	191018					D	CHAIN-OF-CUSTODY RECORD	DY R	ISTO	0	N-0	HAI	0					5	0.00	

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(VV HIIE: ORIGINAL

GREEN: PROJECT MANAGER)



Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 191145 Client Identification: Pinetree / Pintree RIB Date Received: 1/10/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

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- Solid samples are reported on a dry weight basis, unless otherwise noted
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- > : "greater than" followed by the reporting limit
- %R:% Recovery

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If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

sumellutur

Lorraine Olashaw, Lab Director

of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: 191145

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree / Pinetree RIB

•	ture upon receipt (°C): temperature range (°C): 0-6	1.5		Received	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received S		Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
191145.01	Cooling Tower	1/10/19 1/	/10/19	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

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LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree / Pinetree RIB

Sample ID:	Cooling Tower						
Lab Sample ID:	191145.01						
Matrix:	aqueous						
Date Sampled:	1/10/19			Ana	alysis		
Date Received:	1/10/19		Units	Date	Time	Method	Analyst
Nitrite-N	< 0.5		mg/L	1/11/19	12:38	353.2	KD
Nitrate-N	1.3		mg/L	1/11/19	12:38	353.2	KD

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree / Pinetree RIB	Client Designation:	Pinetree / Pinetree RIB
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	Cooling Tower				
b Sample ID:	191145.01				
latrix:	aqueous				
Date Sampled:	1/10/19	Analytical		Date of	
ate Received:	1/10/19	Matrix	Units	Analysis	Me
ntimony	< 0.001	AqTot	mg/L	1/14/19	
Arsenic	0.018	AqTot	mg/L	1/14/19	
Beryllium	< 0.001	AqTot	mg/L	1/14/19	
alcium	120	AqTot	mg/L	1/14/19	
admium	< 0.001	AqTot	mg/L	1/14/19	
hromium	0.0046	AqTot	mg/L	1/14/19	
opper	0.0083	AqTot	mg/L	1/14/19	
on	< 0.1	AqTot	mg/L	1/14/19	
ad	< 0.001	AqTot	mg/L	1/14/19	
agnesium	13	AqTot	mg/L	1/14/19	
anganese	0.11	AqTot	mg/L	1/14/19	
ercury	< 0.0002	AqTot	mg/L	1/14/19	
olybdenum	0.019	AqTot	mg/L	1/14/19	
ickel	0.0022	AqTot	mg/L	1/14/19	
otassium	25	AqTot	mg/L	1/14/19	
elenium	0.004	AqTot	mg/L	1/14/19	
ver	< 0.001	AqTot	mg/L	1/14/19	
dium	490	AqTot	mg/L	1/14/19	
nallium	< 0.001	AqTot	mg/L	1/14/19	
nc	0.023	AqTot	mg/L	1/14/19	

Eastern Analytical, Inc. professional laboratory and drilling services	QUOTE #: PO #	PROJECT #: Tribesteen KIB STATE: NH MA ME VT OTHER: REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR GMP DII FININ REMANDERED ON DTHES.	Shaveszak@ Piketree	<u>New lesden</u> 11: <u>603-877-611</u>	COMPANY: Horizous buyine rivy ADDRESS: 176 Newport Rd	MANAGER: Joe	Matrix: A-Ain; S-Soil; GW-Ground Water, SW-Surface Water; DW-Drinking Water; WW-Waste water Preservative: H-HCL; N-HNO;; S-H2SO4; Na-NaOH; M-MEOH			Certing Tower 1/4	Page of SAMPLE I.D. ST
_	P0 #:	Other: Stormwater or	Harizons engineering, com	STATE: <u>////</u> IP: <u>03257</u> Ext::	ب بر ب	Salf-	RFACE WATER; DW-DRINKING WATER; ; M-MEOH			1/19 15:00 2	START & FINISH START & START & START START & STA
Image: Concord, NH 03301 Tel: 603.228.0525 I.800.287.0525 E-Mail: CustomerService@EasternAnalytical.com White: Original Green: Project Manager)	BY: DATE: TIME:	SHED BY:		0	ICE? (TES) N	DATE NEEDED: Righ Reserves Temp 1.5 or				× ×	8021 BTEX HALOS CLARN 8015 GRO MAVPH GROUP GROUP 8270 625 SVTICS EDB DBCP 8270 625 SVTICS EDB DBCP 8015 DRO MAPPH SVOC FREE 8015 DRO MAEPH SVOC FREE FREE 9015 DRO MAEPH PCB 608 PCB FREE FREE 9015 DRO MAEPH PCB 8082 OIL & GREASE 1664 TPH 1664 TCLP 1311 ABN METALS FREE FREE FREE FREE DISSOLVED METALS (LIST BELOW) TOTAL METALS TOK FREE FREE FREE NO2 NO2 NO3 NO3NO2 BOD CBOD T. ALK. TKN NH3 T. PHOS. O. PHOS. FREE
FIELD READINGS:	SUSPECTED CONTAMINATION:	- K, AS, NE, TL, ZN - Mr. J. Jonnessant Sur Human.	Hz, Sr, Sh, De, Ca, Cd, Cr, Cu, te, Th, My, Mw, HS, Mo, Ni,		OTHER METALS: Bolow V	METALS: 8 RCRA 13 PP FE, MN PB, CU					TOTAL CYANIDE TOTAL SULFIDE REACTIVE CVANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY TOTAL COLIFORM E. COLI FECAL COLIFORM ENTEROCOCCI HETEROTROPHIC PLATE COUNT # OF CONTAINERS MON OF CONTAINERS MON OF CONTAINERS



Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 191180 Client Identification: Pinetree / Pinetree RIB Date Received: 1/11/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

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- > : "greater than" followed by the reporting limit
- %R:%Recovery

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The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

servine Andren

Lorraine Olashaw, Lab Director

1.15.19 Date

of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: 191180

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree / Pinetree RIB

•	ture upon receipt (°C): temperature range (°C): 0-6	3.0		Receiv	ved on ice or cold packs (Yes/No): Υ	
Lab ID	Sample ID	Date Received		Sample % D Matrix Wei	Dry ight Exceptions/Comments (other than thermal preservation)	
191180.01	Cooling Tower	1/11/19	1/11/19	aqueous	Adheres to Sample Acceptance Policy	

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

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4) Hach Water Analysis Handbook, 4th edition, 1992

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1

LABORATORY REPORT

EAI ID#: 191180

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree / Pinetree RIB

Sample ID:	Cooling Tower					
Lab Sample ID:	191180.01					
•						
Matrix:	aqueous					
Date Sampled:	1/11/19		Ana	alysis		
Date Received:	1/11/19	Units	Date	Time	Method	An
Nitrite-N	< 0.5	mg/L	1/11/19	20:10	300.0	
Nitrate-N	1.9	mg/L	1/11/19	20:10	300.0	

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree / Pinetree RIB

Sample ID:	Cooling Tower				
Lab Sample ID:	191180.01				
Matrix:	aqueous				
Date Sampled:	1/11/19	Analytical		Date of	
Date Received:	1/11/19	Matrix	Units	Analysis	Method Analyst
Antimony	< 0.001	AqTot	mg/L	1/14/19	200.8 DS
Arsenic	0.017	AqTot	mg/L	1/14/19	200.8 DS
Beryllium	< 0.001	AqTot	mg/L	1/14/19	200.8 DS
Calcium	120	AqTot	mg/L	1/14/19	200.8 DS
Cadmium	< 0.001	AqTot	mg/L	1/14/19	200.8 DS
Chromium	0.0042	AqTot	mg/L	1/14/19	200.8 DS
Copper	0.0084	AqTot	mg/L	1/14/19	200.8 DS
Iron	< 0.1	AqTot	mg/L	1/14/19	200.8 DS
Lead	< 0.001	AqTot	mg/L	1/14/19	200.8 DS
Magnesium	13	AqTot	mg/L	1/14/19	200.8 DS
Manganese	0.065	AqTot	mg/L	1/14/19	200.8 DS
Mercury	< 0.0002	AqTot	mg/L	1/14/19	200.8 DS
Molybdenum	0.018	AqTot	mg/L	1/14/19	200.8 DS
Nickel	0.0018	AqTot	mg/L	1/14/19	200.8 DS
Potassium	25	AqTot	mg/L	1/14/19	200.8 DS
Selenium	0.003	AqTot	mg/L	1/14/19	200.8 DS
Silver	< 0.001	AqTot	mg/L	1/14/19	200.8 DS
Sodium	470	AqTot	mg/L	1/14/19	200.8 DS
Thallium	< 0.001	AqTot	mg/L	1/14/19	200.8 DS
Zinc	0.010	AqTot	mg/L	1/14/19	200.8 DS

ernAnalytical.com	(WHITE: ORIGINAL GREEN: PROJECT MANAGER)	ail: Customerservice@east :rr)	GREEN: PROJECT MANAGER)	PROJEC	GREEN	NAL	(WHITE: ORIGINAL						professional laboratory and drilling services	
	FIELD READINGS:	Received By:	Rec	TIME:	DATE:	- BY:	RELINQUISHED BY:	RELIN	2				M Eastern Analytical. Inc.	
	Suspected Contamination:				UNIL:		MELINQODIED DI.		·.			P0 #:	Quote #:	~
	Site History:	ENED By		TIME-	DATE.							D OR OTHER:	REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR GWP, OIL FUND, BROWNFIELD OR OTHER:	
		RECEIVED BY:	July 1		1/11/	B?	RELINGUISHED BY:	RELE				VT OTHER:	STATE: NH MA ME V	
	K, As, Ne, TI, ZN	i III i sa	s M	Ĩ	0) dan	(ŝ)	SAMPLER(S):					1 1	
$\sum_{j=1}^{n}$	fe, 72, mg, ma, Hg, Mo, Ni	EXCEL .	EQUIS			· 4	MA MCP				, Com	Chartens engineering ,	E-MAIL: J. Beause East @ Ha	<u> </u>
LING INFO, IF DIFFERENT)	Notes: (IE: Special Detection Limits, Billing Info, If Different) As So Sb Ben Can Cal Ca Ca	1	OPTIONS	ELECTRONIC			OR					EXI:	001	
VES NO	SAMPLES FIELD FILTERED?		:	У	0		B	≻		03527	0	STATE: _///// ZIP:	OTT: 1/2nd Landon PHONE: KO3 - B22- CU16	
	OTHER METALS: <u>Below</u> 4	(B) N	OPTIONS R No	REPORTING OPTI PRELIMS: (YES) OR NO	Pre	VEL	QA/QC REPORTING LEVEL	QA/QC REPORTI				+ Rd	ADDRESS: 176 New port Ra	-
 Fe, Mn Pb, Cu	METALS: 8 RCRA 13 PP	TEMP. SEO C		cleese	Reash pla	1 1	DATE NEEDED:	DAT	<u> </u>			Bernsteek	MANAGER: Joel	_
												NaOH; M-MEOH	WW-WASTE WATER Preservative: H-HCL; N-HNO;; S-H <u>3</u> SO4; Na-NaOH; M-MEOH	
								_			WATER;	SW-SURFACE WATER; DW-DRINKING	MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER;	
N											×	1/11/19 1325	Cepting Tower	
# OF CONTAINERS MEOH VIAL #	REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY TOTAL COLIFORM E. COLI FECAL COLIFORM ENTEROCOCCI HETEROTROPHIC PLATE COUNT	BOD CBOD T. ALK. TKN NH3 T. PHOS. O. PHOS. PH T. RES. CHLORINE COD PHENOIS TOC DOC TOTAL CYANIDE TOTAL SULFIDE	TS TSS TDS SPEC. CON. BR CI F SO. NO2 NO3 (103NO2)	VOC PEST HERB DISSOLVED METALS (LIST BELOW) TOTAL METALS (LIST BELOW)	PEST 608 PCB 608 PEST 8081 PCB 8082 OIL & GREASE I664 TPH I664 TCLP I311 ABN Metals	8015 DRO MAEPH	8270 625 SVTICs EDB DBCP ABN A BN PAH TPH8100 LI L2	8021 BTEX HALOS 8015 GRO MAVPH	8260 624 VTICs 1, 4 Dioxane	524.2 524.2 BTEX 524.2 MTBE ONLY	GRABS*COMPOSITE	SAMPLING DATE / TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE / TIME MATRIX (SEE BELOW)	Sample I.D.	
	MICRO OTHER	NORGANICS	LS I	TCLP METAL	(0) ਰ	SVOC	6	0	Voc					
4 ^{L_}		Please Circle Requested Analysis.	JESTED A	LE REQU		PLEAS	BOLD FIELDS REQUIRED.	E A C	DS R		010	B	Page of	
RO	191180		ÂD	RECO	CHAIN-OF-CUSTODY RECORD	200	NIN-OI		6					



Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 191408 Client Identification: Pinetree Power Date Received: 1/22/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

aulunt

Lorraine Olashaw, Lab Director

<u>1:28.19</u> Date



SAMPLE CONDITIONS PAGE

EAI ID#: 191408

preservation)

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

•	ure upon receipt (°C): emperature range (°C): 0-6	17.1		Re	eceived	on ice or cold packs (Yes/No): N
Lab ID	Sample ID	Date Received		Sample Matrix		Exceptions/Comments (other than thermal p
191408.01	Circulation Water	1/22/19	1/22/19	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

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1

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power

Sample ID:	Circulation Water		
Lab Sample ID:	191408.01		
Matrix:	aqueous		
Date Sampled:	1/22/19	Analysis	
Date Received:	1/22/19	Units Date Time Method	An
Sulfate	120	mg/L 1/23/19 18:18 300.0	I
Chloride	850	mg/L 1/23/19 18:18 300.0	ł
Nitrite-N	< 1	mg/L 1/23/19 18:18 300.0	۲
Nitrate-N	8,4	mg/L 1/23/19 16:54 300.0	٢
Ammonia-N	< 0.05	mg/L 1/23/19 12:45 TM NH3-00	1 S
TKN	0.55	mg/L 1/24/19 15:09 4500N _{ora} C/I	N S
Total Phosphorus-P	1.5	mg/L 1/24/19 11:32 365.1	S
H	8.19	SU 1/22/19 15:45 4500H+B-1	1 H
Specific Conductance		uS/cm 1/23/19 16:30 120.1	ł

2

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power

Sample ID:	Circulation Water					
Lab Sample ID:	191408.01					
Matrix:	aqueous					
Date Sampled:	1/22/19	Analytical		Date of		
Date Received:	1/22/19	Matrix	Units	Analysis	Method An	nalyst
Antimony	< 0.001	AqTot	mg/L	1/23/19	200.8	DS
Arsenic	0.022	AqTot	mg/L	1/23/19	200.8	DS
Beryllium	< 0.001	AqTot	mg/L	1/23/19	200.8	DS
Calcium	130	AqTot	mg/L	1/23/19	200.8	DS
Cadmium	< 0.001	AqTot	mg/L	1/23/19	200.8	DS
Chromium	0.0050	AqTot	mg/L	1/23/19	200.8	DS
Copper	0.0072	AqTot	mg/L	1/23/19	200.8	DS
Iron	< 0.05	AqTot	mg/L	1/23/19	200.8	DS
Lead	< 0.001	AqTot	mg/L	1/23/19	200.8	DS
Magnesium	16	AqTot	mg/L	1/23/19	200.8	DS
Manganese	< 0.005	AqTot	mg/L	1/23/19	200.8	DS
Mercury	< 0.0001	AqTot	mg/L	1/23/19	200.8	DS
Molybdenum	0.020	AqTot	mg/L	1/23/19	200.8	DS
Nickel	0.0023	AqTot	mg/L	1/23/19	200.8	DS
Potassium	27	AqTot	mg/L	1/23/19	200.8	DS
Selenium	0.0048	AqTot	mg/L	1/23/19	200.8	DS
Silver	< 0.001	AqTot	mg/L	1/23/19	200.8	DS
Sodium	510	AqTot	mg/L	1/23/19	200.8	DS
Thallium	< 0.001	AqTot	mg/L	1/23/19	200.8	DS
Zinc	< 0.005	AqTot	mg/L	1/23/19	200.8	DS
Total Hardness (a	s CaCO3) 400	AqTot	mg/L	1/23/19	200.8	DS

Eastern Analytical, Inc.	Email: jbanaszak@horizonsengineering.com	Phone 603-877-0116 Fax	Address 176 Newport Road City ATTN: Accounts NH 03257	Customer Horizons Engineering, Inc. (NL)	State NH Client (Pro Mor) Joel Banaszak	Project Name Pinetree Power	EAI Project ID 5260	Please ensure this auto COC is accurate,					Sampler confirms ID and parameters are accurate	WASEN 1/23/14/1240 / Grab of comp	Sample IDs and stop dates/times Matrix	Date/Time		Eastern Analytical, Inc.
Inc. www.easternanalytical.com 800.287.0525 customerservice@easternanalytical.com	⊠А □А+ □В □В+ □С □МАМСР	QC deliverables				Notes:	Results Needed by: Preferred date	Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.					Circle preservative/s: HCL HNO ₃ H,SO ₄ NaOH MEOH Na,S,O ₃	AqTot/SO4/Cl/NO3/NO2/NH3/TKN/TPhos/pH/SpecCon/ICPMets.As.Se.Sb.Be.Ca.Cd.Cr.Cu.Fe.Pb.Mg.Mn.Hg.Mo.Ni.K. Ag.Na.TI.Zn.HardTot	Parameters and Sample Notes			CHAIN-OF-CUSTODY RECORD
.0525 customerservice@ea	Relinquished by	Relinquished by	Samples Collected by:	e-mail Login Confirmatio	A EDD PDF EDD email		ReportingOptions	his sampling event, and	ĸ	,			,,5,0, ICE	CPMets.As.Se.Sb.Be.Ca.Cd				
asternanalytical.com	Date/Time	Date/Time	OIL/ WITCH) [Partial FAX			modify as necessa			·		רוופופט אמווועים בווועי בווניומים אמווועים בווויים בוויים ב	.Cr.Cu.Fe.Pb.Mg.Mn.H				
	Received by	Received by	$\sim $		Quote#:	PO# Verbal		и у .			·			Hg:Mo.Ni.K.	# of containers		4	191408



Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 191509 Client Identification: Pinetree Power Date Received: 1/24/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

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The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

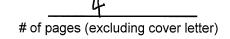
If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

<u>2.1.19</u> Date



SAMPLE CONDITIONS PAGE

EAI ID#: 191509

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

Temperat	ture upon receipt (°C):	3.5		Re	eceived	on ice or cold packs (Yes/No): Υ	
Acceptable	temperature range (°C): 0-6				•		•
		Date	Date	Sample			
Lab ID	Sample ID	Received	I Sampled	Matrix	Weight	Exceptions/Comments (other than thern	nal preservation)
191509 01	Circ Water	1/24/19	1/24/19	aqueous		Adheres to Sample Acceptance Policy	

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

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1

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power

Sample ID:	Circ Water		
Lab Sample ID:	191509.01		
Matrix:	aqueous		
Date Sampled:	1/24/19	Analysis	
Date Received:	1/24/19	Units Date Time Method	Ar
Sulfate	71	mg/L 1/28/19 10:15 300.0	
Chloride	600	mg/L 1/28/19 10:15 300.0	
litrite-N	< 0.5	mg/L 1/25/19 9:24 353.2	
litrate-N	6.1	mg/L 1/25/19 9:24 353.2	
mmonia-N	< 0.05	mg/L 1/28/19 11:47 TM NH3-001	
KN	0.62	mg/L 1/30/19 12:32 4500N _{ora} C/N	1 3
otal Phosphorus-P	1.7	mg/L 1/29/19 12:30 365.1	\$
H	8.16	SU 1/24/19 16:30 4500H+B-11	
Specific Conductance	2400	uS/cm 1/30/19 10:15 120.1	/

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power

Sample ID:	Circ Water				
Lab Sample ID:	191509.01				
Matrix:	aqueous				
Date Sampled:	1/24/19	Analytical		Date of	
Date Received:	1/24/19	Matrix	Units	Analysis	Method Analyst
Antimony	< 0.001	AqTot	mg/L	1/29/19	200.8 DS
Arsenic	0.015	AqTot	mg/L	1/29/19	200.8 DS
Beryllium	< 0.001	AqTot	mg/L	1/29/19	200.8 DS
Calcium	100	AqTot	mg/L	1/29/19	200.8 DS
Cadmium	< 0.001	AqTot	mg/L	1/29/19	200.8 DS
Chromium	0.0037	AqTot	mg/L	1/29/19	200.8 DS
Copper	0.0057	AqTot	mg/L	1/29/19	200.8 DS
Iron	< 0.1	AqTot	mg/L	1/29/19	200.8 DS
Lead	< 0.001	AqTot	mg/L	1/29/19	200.8 DS
Magnesium	12	AqTot	mg/L	1/29/19	200.8 DS
Manganese	< 0.005	AqTot	mg/L	1/29/19	200.8 DS
Mercury	< 0.0001	AqTot	mg/L	1/29/19	200.8 DS
Molybdenum	0.012	AqTot	mg/L	1/29/19	200.8 DS
Nickel	0.0013	AqTot	mg/L	1/29/19	200.8 DS
Potassium	21	AqTot	mg/L	1/29/19	200.8 DS
Selenium	0.0024	AqTot	mg/L	1/29/19	200.8 DS
Silver	< 0.001	AqTot	mg/L	1/29/19	200.8 DS
Sodium	380	AqTot	mg/L	1/29/19	200.8 DS
Thallium	< 0.001	AqTot	mg/L	1/29/19	200.8 DS
Zinc	< 0.005	AqTot	mg/L	1/29/19	200.8 DS
Total Hardness (as Ca	aCO3) 300	AqTot	mg/L	1/29/19	200.8 DS

State NH Client (Pro Mgr) Joel Banaszak Customer Horizons Engineering, Inc. (NL) Address 176 Newport Road City ATTN: Accounts NH 03257 Phone 603-877-0116 Fax Email: jbanaszak@horizonsengineering.com Direct 877-0116 Eastern Analytical, Inc.	EAI Project ID 5260 Project Name Pinetree Power	Please ensure this auto COC is accurate,	Sampler contirms ID and parameters are accurate	CIRC 1-24-19 aqueous	Eastern Analytical, Inc. Date/Time Composites need start Sample IDs and stop dates/times Matrix
C deliverables A □ A+ □ B □ B+ □ C □ M. www.easternanalytical.com	Results Needed by: Preferred date Notes:	Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.	Circle preservative/s: HCL HNO, H,SO, NaOH MEOH Na,S,O	KN/TPhos/pH/S	CHAIN-OF-CUSTODY RECORD Parameters and Sample Notes
ii n, NO FAX jin Confirmation Collected by: UAS Collected by: UAS Collected by: UAS Intervice@eastern	ReportingOptions	this sampling event, and modify as	Ōm	/ICPMets.As.Se.Sb.Be.Ca.Cd.Cr.Cu.Fe.P	
PDF Invoice EQUIS Temp <u>35°C</u> Ice Y EAN Douber V EAN terTime Received by terTime Received by	NO FAX PO# Verbal	necessary.		Cu.Fe.Pb.Mg.Mn.Hg.Mo.Ni.K.	191509 4



M Eastern Analytical, Inc.

professional laboratory and drilling services

PRELIMINARY ANALYTICAL RESULTS ATTACHED

The attached .pdf file contains results that have not been subjected to a final QA/QC review. If you have any questions, please contact us at <u>customerservice@easternanalytical.com</u> or call 1-800-287-0525.

EAI's Winter Drilling Calendar - Dates Available!

The cold weather doesn't slow down our drilling crew. Now is a great time to schedule your drilling projects while there are plenty of dates available.

To schedule, call 800-287-0525, email <u>customerservice@easternanalytical.com</u> or visit www.EasternAnalytical.com.

EAI's Consultant Nuts & Bolts Training Seminar - Limited Space Still Available

We invite you to attend our last *free* informal and informative laboratory and sample collection training sessions this winter. For new employees or seasoned veterans, our training offers a variety of material including pre-project planning, sample collection, sample delivery and analyses, final reporting, available resources, and more.

- Training is held at our laboratory in Concord, NH.
- Each session begins at 9:00 a.m. and ends at noon.

Tuesday, February 12th Environmental Consultant Sessions (3 TCHs)

In addition to the nuts and bolts training, guest speaker **Brandon Kernen**, with the NHDES Drinking Water and Groundwater Bureau, will present "**PFAS in New Hampshire's Environment: NH's Response to an Evolving Challenge**".

To reserve your seat, call us at 1-800-287-0525 or email <u>customerservice@easternanalytical.com.</u>

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

Sample ID:	Circ Water						
Lab Sample ID:	191509.01						
Matrix:	aqueous						
Date Sampled:	1/24/19	Analytic	al		Date of		
Date Received:	1/24/19	Matrix		Units	Analysis	Method Ar	nalyst
Antimony	< 0.001	Aq	Гot	mg/L	1/29/19	200.8	DS
Arsenic	0.015	Aq	Гot	mg/L	1/29/19	200.8	DS
Beryllium	< 0.001	Aq	Гot	mg/L	1/29/19	200.8	DS
Calcium	100	Aq	Гot	mg/L	1/29/19	200.8	DS
Cadmium	< 0.001	Aq	Γot	mg/L	1/29/19	200.8	DS
Chromium	0.0037	Aq	Γot	mg/L	1/29/19	200.8	DS
Copper	0.0057	Ac	Гot	mg/L	1/29/19	200.8	DS
Iron	< 0.1	Aq	Tot	mg/L	1/29/19	200.8	DS
Lead	< 0.001	Ac	Γot	mg/L	1/29/19	200.8	DS
Magnesium	12	Ac	Tot	mg/L	1/29/19	200.8	DS
Manganese	< 0.005	Ac	Tot	mg/L	1/29/19	200.8	DS
Mercury	< 0.0001	Ac	Tot	mg/L	1/29/19	200.8	DS
Molybdenum	0.012	Ac	Tot	mg/L	1/29/19	200.8	DS
Nickel	0.0013	Ac	Tot	mg/L	1/29/19	200.8	DS
Potassium	21	Ac	Tot	mg/L	1/29/19	200.8	DS
Selenium	0.0024	Ac	Tot	mg/L	1/29/19	200.8	DS
Silver	< 0.001	Ac	Tot	mg/L	1/29/19	200.8	DS
Sodium	380	Ac	Tot	mg/L	1/29/19	200.8	DS
Thallium	< 0.001	Ac	Tot	mg/L	1/29/19	200.8	DS
Zinc	< 0.005	Ac	Tot	mg/L	1/29/19	200.8	DS
Total Hardness (as CaC	O3) 300	Ac	Tot	mg/L	1/29/19	200.8	DS

LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power

Sample ID:	Circ Water		
Lab Sample ID:	191509.01		
Matrix:	aqueous		
Date Sampled:	1/24/19	Analysis	
Date Received:	1/24/19	Units Date Time Method	Anal
Sulfate	71	mg/L 1/28/19 10:15 300.0	KI
Chloride	600	mg/L 1/28/19 10:15 300.0	K
Nitrite-N	< 0.5	mg/L 1/25/19 9:24 353.2	KE
Nitrate-N	6.1	mg/L 1/25/19 9:24 353.2	KD
Ammonia-N	< 0.05	mg/L 1/28/19 11:47 TM NH3-001	SE
TKN	0.62	mg/L 1/30/19 12:32 4500N _{ora} C/N	SE
Total Phosphorus-P	1.7	mg/L 1/29/19 12:30 365.1	SE
рН	8.16	SU 1/24/19 16:30 4500H+B-11	KL
Specific Conductance	2400	uS/cm 1/30/19 10:15 120.1	AM



Eastern Analytical, Inc.

professional laboratory and drilling services

Robert Lussier Engie 469 Plains Road Tamworth , NH 03886



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 173780 Client Identification: Pinetree Power Tamworth Water Date Received: 9/22/2017

Dear Mr. Lussier:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Date

Sincerely,

DURINAL

Lorraine Olashaw, Lab Director

of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: 173780

Client: Engie

Client Designation: Pinetree Power Tamworth Water

Temperature upon receipt (°C): Acceptable temperature range (°C): 0-6		2.7 & 2.1 Received on ice or cold packs (Yes/No): Υ					
Lab ID	Sample ID	Date Received	Date Sampled	Sample % Matrix V		Exceptions/Comments (other than thermal preservation)	
173780.01	Circ Wtr	9/22/17	9/21/17	aqueous		Adheres to Sample Acceptance Policy Sample temperature 2.7° upon receipt.	
173780.02	Trip Blank - 8260	9/22/17	8/25/17	aqueous		Adheres to Sample Acceptance Policy Sample temperature 2.7° upon receipt.	
173780.03	Trip Blank - 1,4 diox	9/22/17	8/16/17	aqueous		Adheres to Sample Acceptance Policy Sample temperature 2.7° upon receipt.	
173780.04	Aq	9/29/17	9/29/17	aqueous		Adheres to Sample Acceptance Policy Sample temperature 2.1° upon receipt.	

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th Edition, 1998 and 22nd Edition, 2012

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 2nd edition, 1992

Eastern Analytical, Inc.

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EAI ID#: 173780

Client: Engie

Client Designation: Pinetree Power Tamworth Water

Sample ID:	Circ Wtr	Trip Blank - 8260
		0200
Lab Sample ID:	173780.01	173780.02
Matrix:	aqueous	aqueous
Date Sampled:	9/21/17	8/25/17
Date Received:	9/22/17	9/22/17
Units:	ug/L	ug/L
Date of Analysis:	9/26/17	9/26/17
Analyst:	BML	BML
Method:	8260C	8260C
Dilution Factor:	1	1
Disklausdiffusers at a set	۰ <i>۲</i>	. 5
Dichlorodifluoromethane Chloromethane	< 5 < 2	< 5 < 2
Vinyl chloride	<2	<2
Bromomethane	< 2	< 2
Chloroethane	< 5	< 5
Trichlorofluoromethane	< 5	< 5
Diethyl Ether Acetone	< 5 < 10	< 5 < 10
1,1-Dichloroethene	< 10	< 10
tert-Butyl Alcohol (TBA)	< 30	< 30
Methylene chloride	< 5	< 5
Carbon disulfide	< 2	< 2
Methyl-t-butyl ether(MTBE)	< 1	< 1
Ethyl-t-butyl ether(ETBE)	< 5	< 5
Isopropyl ether(DIPE) tert-amyl methyl ether(TAME)	< 5 < 5	< 5 < 5
trans-1,2-Dichloroethene	< 1	< 1
1,1-Dichloroethane	< 1	< 1
2,2-Dichloropropane	< 1	< 1
cis-1,2-Dichloroethene	< 1	< 1
2-Butanone(MEK)	< 10	< 10
Bromochloromethane Tetrahydrofuran(THF)	< 1 < 10	< 1 < 10
Chloroform	< 1	< 1
1,1,1-Trichloroethane	< 1	< 1
Carbon tetrachloride	_ < 1	< 1
1,1-Dichloropropene	< 1	< 1
Benzene	< 1	< 1
1,2-Dichloroethane Trichloroethene	< 1 < 1	<1 <1
1,2-Dichloropropane	< 1	< 1
Dibromomethane	< 1	< 1
Bromodichloromethane	< 0.5	< 0.5
1,4-Dioxane	< 50	< 50
4-Methyl-2-pentanone(MIBK) cis-1,3-Dichloropropene	< 10 < 0.5	< 10 < 0.5
Toluene	< 0.5	< 0.5
trans-1,3-Dichloropropene	< 0.5	< 0.5
1,1,2-Trichloroethane	< 1	< 1
2-Hexanone	< 10	< 10
Tetrachloroethene	< 1	< 1
1,3-Dichloropropane Dibromochloromethane	<1 <1	<1 <1
1,2-Dibromoethane(EDB)	< 2	< 2
Chlorobenzene	< 1	< 1
1,1,1,2-Tetrachloroethane	< 1	< 1
Ethylbenzene	< 1	< 1
To show An abott of the		

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EAI ID#: 173780

Client: Engie

Client Designation: Pinetree Power Tamworth Water

Sample ID:	Circ Wtr	Trip Blank - 8260
Lab Sample ID:	173780.01	173780.02
Matrix:	aqueous	aqueous
Date Sampled:	9/21/17	8/25/17
Date Received:	9/22/17	9/22/17
Units:	ug/L	ug/L
Date of Analysis:	9/26/17	9/26/17
Analyst:	BML	BML
Method:	8260C	8260C
Dilution Factor:	. 1	1
mp-Xylene o-Xylene	< 1 < 1	< 1 < 1
Styrene	< 1	< 1
Bromoform	< 2	< 2
IsoPropylbenzene Bromobenzene	< 1 < 1	< 1 < 1
1,1,2,2-Tetrachloroethane	< 1	< 1
1,2,3-Trichloropropane	< 0.5	< 0.5
n-Propylbenzene 2-Chlorotoluene	< 1 < 1	< 1 < 1
4-Chlorotoluene	<1	<1
1,3,5-Trimethylbenzene	< 1	< 1
tert-Butylbenzene	< 1	< 1
1,2,4-Trimethylbenzene sec-Butylbenzene	< 1 < 1	<1 <1
1,3-Dichlorobenzene	<1	< 1
p-Isopropyltoluene	< 1	< 1
1,4-Dichlorobenzene	< 1 < 1	< 1 < 1
1,2-Dichlorobenzene n-Butylbenzene	<1	< 1
1,2-Dibromo-3-chloropropane	< 2	< 2
1,3,5-Trichlorobenzene	< 1	< 1
1,2,4-Trichlorobenzene Hexachlorobutadiene	< 1 < 0.5	<pre>< 1 </pre> <pre>< 0.5</pre>
Naphthalene	< 5	< 5
1,2,3-Trichlorobenzene	< 1	< 1
4-Bromofluorobenzene (surr)	99 %R 101 %R	100 %R 101 %R
1,2-Dichlorobenzene-d4 (surr) Toluene-d8 (surr)	98 %R	98 %R
1,2-Dichloroethane-d4 (surr)	101 %R	100 %R

Hexachlorobutadiene exhibited recovery outside acceptance limits in the Quality Control sample(s). The analyte(s) were not detected in the sample(s).

Circ Wtr: The sample vial contained air bubbles upon receipt. A sample result bias may be present.

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EAI ID#: 173780

Client: Engie

Client Designation: Pinetree Power Tamworth Water

Sample ID:	Circ Wtr	Trip Blank - 1,4 diox
Lab Sample ID:	173780.01	173780.03
Matrix:	aqueous	aqueous
Date Sampled:	9/21/17	8/16/17
Date Received:	9/22/17	9/22/17
Units:	ug/L	ug/L
Date of Analysis:	10/2/17	10/2/17
Analyst:	VG	VG
Method:	8260B SIM	8260B SIM
Dilution Factor:	1	1
1,4-Dioxane 4-Bromofluorobenzene (surr) Toluene-d8 (surr)	< 0.25 98 %R 97 %R	< 0.25 100 %R 98 %R

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EAI ID#: 173780

Client: Engie

Client Designation: Pinetree Power Tamworth Water

Sample ID:	Circ Wtr
Lab Sample ID:	173780.01
Matrix:	aqueous
Date Sampled:	9/21/17
Date Received:	9/22/17
Units:	ug/L
Date of Extraction/Prep:	9/25/17
Date of Analysis:	9/25/17
Analyst:	JMR
Method:	8011/504
Dilution Factor:	1
1,2-Dibromoethane(EDB)	< 0.02
Dibromochloropropane (DBCP)	< 0.02
1,1,1,2-Tetrachloroethane (surr)	108 %R

EAI ID#: 173780

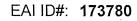
Client: Engie

Client Designation: Pinetree Power Tamworth Water

Sample ID:	Circ Wtr	
Lab Sample ID:	173780.01	
Matrix:	aqueous	
Date Sampled:	9/21/17	Analysis
Date Received:	9/22/17	Units Date Time Method Analy
Solids Suspended	27	mg/L 09/27/17 14:00 2540D-97 AT/
Solids Dissolved	25000	mg/L 09/25/17 14:15 2540C-97 SC
Sulfate	6000	mg/L 10/03/17 12:00 300.0 KD
Chloride	9200	mg/L 09/22/17 15:28 4500CIE-97 KD
Nitrite-N	0.5	mg/L 09/22/17 15:11 353.2 KD
Nitrate-N	100	mg/L 09/22/17 15:18 353.2 KD
Ammonia-N	0.11	mg/L 09/28/17 12:00 TM NH3-001 SE
TKN	23	mg/L 09/25/17 14:58 4500N _{org} C/N SE
Total Phosphorus-P	0.32	mg/L 10/02/17 13:39 365.1 SE
BOD	< 6	mg/L 09/22/17 15:55 5210B-01 SC
COD	390	mg/L 10/02/17 10:33 H8000 JCS
рН	7.9	SU 09/22/17 15:40 4500H+B-00 TM
Specific Conductance	47000	uS/cm 09/27/17 10:30 120.1 AM
Sample ID:	Aq	
Lab Sample ID:	173780.04	
Matrix:	aqueous	
Date Sampled:	9/29/17	Analysis
Date Received:		Units Date Time Method Analy
Date Neverveu.	9/29/17	
Total Phenols	< 0.05	mg/L 10/02/17 9:15 420.1 AT

Circ Wtr: The matrix spike duplicate for TKN associated with this sample exhibited recovery outside the acceptance criteria. The matrix spike and all other batch QC were in control. The presence of high nitrates in a sample may cause a negative interference for TKN.

Eastern Analytical, Inc.



Client: Engie

Client Designation: Pinetree Power Tamworth Water

Sample ID:	Circ Wtr				
Lab Sample ID:	173780.01				
Matrix:	aqueous				
Date Sampled:	9/21/17	Analytical		Date of	
Date Received:	9/22/17	Matrix	Units	Analysis	Method Analyst
Arsenic	< 0.01	AqTot	mg/L	9/27/17	200.7 JCS
Selenium	< 0.01	AqTot	mg/L	9/27/17	200.7 JCS
Antimony	< 0.005	AqTot	mg/L	10/3/17	200.8 DS
Beryllium	< 0.005	AqTot	mg/L	10/3/17	200.8 DS
Calcium	660	AqTot	mg/L	10/3/17	200.8 DS
Cadmium	< 0.005	AqTot	mg/L	10/3/17	200.8 DS
Chromium	0.010	AqTot	mg/L	10/3/17	200.8 DS
Copper	0.035	AqTot	mg/L	10/3/17	200.8 DS
Iron	0.3	AqTot	mg/L	10/3/17	200.8 DS
Lead	< 0.005	AqTot	mg/L	10/3/17	200.8 DS
Magnesium	41	AqTot	mg/L	10/3/17	200.8 DS
Manganese	0.39	AqTot	mg/L	10/3/17	200.8 DS
Mercury	< 0.001	AqTot	mg/L	10/3/17	200.8 DS
Molybdenum	0.19	AqTot	mg/L	10/3/17	200.8 DS
Nickel	0.019	AqTot	mg/L	10/3/17	200.8 DS
Potassium	210	AqTot	mg/L	10/3/17	200.8 DS
Silver	< 0.005	AqTot	mg/L	10/3/17	200.8 DS
Sodium	8900	AqTot	mg/L	10/3/17	200.8 DS
Thallium	< 0.005	AqTot	mg/L	10/3/17	200.8 DS
Zinc	0.033	AqTot	mg/L	10/3/17	200.8 DS
Total Hardness (as Ca	1800 1800	AqTot	mg/L	10/3/17	200.8 DS

professional laboratory and drilling services	M Eastern Analytical, Inc.	A oor: 11:	Oliote #-	REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR GWP. OIL FUND. BROWMFIELD OR OTHER:	STATE: NH MA ME		SITE NAME PINCTURE POWER	E-MAIL:	FAX:	CITY:	ADDRESS:	COMPANY:	PROJECT MANAGER:	PRESERVATIVE: H-HCL; N-HNO; S-H,SO; Na-NaOH; M-MEOH	MATRIX: A-AIR; S-SOIL; GW-GROUND WATE						Circ wtr	SAMPLE I.D.					Page of	, , ,
-			PN #:	POTW STORMWATER OR ELD OR OTHER:	VT OTHER:		r Tamworth Water		EA1.:	STATE: ZIP:			oburt Lussier	a-NaOH; M-MEOH	Matrix: A-Air, S-Soil; GW-Ground Water, SW-Surface Water; DW-Drinking Water; WW-Waste water					/ / /		DATE / TIME	K (SE		.ow)		Bold Fi	
(WHITE: ORIGINAL GF	VE CONCORD, NH 03301 TEL: 603.228	RELINQUISHED BY: D		Ø		SAMPLER(S):		PRESUMPTIVE CERTAINTY	OR	A B C	RTING LEVEL		DATE NEEDED:									8260 624 I, 4 Dioxane 8021 BT 8015 GRO 8270 625 ABN A	VTI EX H MAVPH SVTICs BN LI L MAEPH	IALOS I Edb PAH 2	DBCP		BOLD FIELDS REQUIRED. PLEASE C	CHAIN-OF-CUSTODY RECO
GREEN: PROJECT MANAGER)	0525 1.800.287.0525 E-MAIL: Cus	ATE: TIME: CRECEIVED BY	בנ ר ר	51/22/17	DATE: TIME: RECEIVED R		-	E-MAIL PDF Equis Excel			PRELIMS: YES OR NO											OIL & GREASE TCLP 1311 VOC PEST DISSOLVED ME TOTAL METALS TS TS BR CI NO2 NO3 BOD CBOE	ABN Here Tals (Lis (List Be TDS F SO NO ₃ N	ELOW) SPEC. Co 4 10 ₂	; /) on.	TCLP METALS INO	PLEASE CIRCLE REQUESTED ANALYSIS	DDY RECORD
	TOMERSERVICE@EASTERNANA	FIELD RI	- hanne	alure						SAMPL	(YES) NO		<i>د</i> ل									pH T. Res. COD Phenc Fotal Cyanide Reactive Cyanid	DLS T Total de Re Ignitabii	E OC E Sulfide Eactive Su Lity)OC JLFIDE	NICS	LYSIS.	
-	25 CHENELL DRIVE CONCORD, NH 03301 TEL: 603.228.0525 1.800.287.0525 E-MAIL: CUSTOMERSERVICE@EASTERNANALYTICAL.COM WWW.EASTERNANALYTICAL.COM	EADINGS:	Suspected Contamination:	SITE HISTORY - 8/16/17 15:00		1901		2 the norler	NOTES: (TE: SPECIAL DETECTION LIMITS; BILLING INFO; IF DIFFERENT)	SAMPLES FIELD FILTERED? YES INO]		LS: 8 RCRA 13 PP FE. MN PB. CH									HECH COLIFORM ENTEROCOCCI HETEROTROPHIC # OF CONTAINE HETEROTROPHIC # OF CONTAINE MEOH VIAL #	PLATE C			MICRO OTHER	<u>173780</u>	

173780



Bottle Order # 4261

At	tention: R	obert Lussier		Questions with your bottle order? call 800-287-05 Comments	25
Cı	ustomer: Engie				
		ains Road			
	City: Tamwo	orth NH 03886			
Deli	very Date Needed:	: 9/19/2017	CoolerID		
Sh	ipped by: UP	S Ground	S-116	Quote No. EAI Project ID	
	Prepared GM	IBecker		Project ID: Pinetree Power Tamworth Water NH	
Qty.	IDs	Parameters		Container/Preservation	
1	Aq	AqTot / Solids Dissolved / Sulfa Specific Conductance (µS)	te / Chloride / pH /	16 oz Plastic Bottle Unpreserved	
1	Aq	AqTot / Metals by ICP		4 oz Plastic Bottle Nitric Acid CAUTION Do not spill	
1	Aq	AqTot / Total Phosphorus / Amr	nonia / TKN / COD	4 oz Plastic Bottle Sulfuric Acid CAUTION Do not spill	
1	Aq	AqTot / Nitrite / Nitrate / BOD / S	Solids Suspended	1 L Plastic Bottle Unpreserved - Cool and return to lab ASAP - 48 HOUR HOLD TIME	
1	Aq	AqTot / Volatiles by 8260C		VOA Vials (40 mL) Hydrochloric Acid CAUTION Do not Spill - Collect in Duplicate - No bubbles	
1	Aq	AqTot / EDB and DBCP by Sem	nivolatiles	2 - 40 ml VOC Vials Sodium Thiosulfate, Collect in Duplicate - No bubbles	
1	Aq	AqTot / Volatiles SIM 8260 1,4-	Dioxane	2 - 40 ml VOC Vials Unpreserved - Collect in duplicate with no bubbles	
1	Trip Blank - 8260	AqTot / Trip Blank		VOA Vials (40 mL) Hydrochloric Acid CAUTION Do not Spill - Collect in Duplicate - No bubbles	
1	Trip Blank - 1,4 diox	AqTot / Trip Blank		2 - 40 ml VOC Vials Unpreserved - Collect in duplicate with no bubbles	
				D/O scheduled in courier bo	
Prepa	red by	Date	·	Temperature Blank Included P/U scheduled in courier bo	
Via: (d	circle one) UPS	S next day UPS Air Saver	UPS Std E/	AI Courier EAI Sampling Customer p/u EAI employee	
Coole	r ID	Cooler ID Coole	er ID	Cooler ID Cooler ID	

Direct Eastern Analytical, Inc.	Email: Robert.Lussier@na.engie.com	Phone 603-323-8187 Fax		Customer Engle Address 469 Plains Road	State NH Client (Pro Mgr) Robert Lussier	Project Name Pinetree Power Tamworth Water	EAI Project ID	Please ensure this auto COC is accurate,			Sampler confirms ID and parameters are accurate	Grab or Comp		Date/Time Composites need start Sample IDs and stop dates/times Matrix	Eastern Analytical, Inc.
	⊠A □A+ □B □B+ □C □PC	QC deliverables				Notes:		Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.		·	Circle preservative/s: HCL HNO, H,SO, NaOH MEOH Na,S,O,		AqTot/TPhenols	Parameters and Sample Notes	CHAIN-OF-CUSTODY RECORD
www.easternanalytical.com 800.287.0525 customerservice@easternanalytical.com	Date/Time	WWWW Dars 1.1.12 Dars 1.1.12 Dars 1.1.12 Dars 1.1.12	09/27/17 13:2	lee Y 近いロン しょう	EDD email X PDF Invoice PDF prelim, NO FAX EQUIS e-mail Login Confirmation	For any options HC EDD PDF	osorting	s sampling event, and modify as necessary.			0, ICE Dissolved Sample Field Filtered			# of containers	ENG 1

Eastern Analytical, Inc. 25 Chenell Drive Concord, NH 03301

(603)-228-0525 1-800-287-0525 FAX: (603)-228-4591

Invoice 174721

Job Description

ion 173780

Site Name: Pinetree Power Tamworth Water Contact: Robert Lussier

Date Received: 9/22/2017

469 Plains Road Tamworth NH 03886 ATTN: Accounts Payable

Engie

Invoice Date	Your Order Number	Terms
10/5/2017	Verbal	1:Net 30

				Extended
Quantity	Item Description	Discountable	List Price	Price Gross
1	Solids, Total Suspended	N	15.00	15.00
1	Solids, Total Dissolved	N	15.00	15.00
1	Sulfate	N	15.00	15.00
1	Chloride	N	15.00	15.00
1	Nitrite	N	15.00	15.00
1	Nitrate	N	15.00	15.00
1	Ammonia	Ν	25.00	25.00
1	TKN	N	40.00	40.00
1	Total Phosphorus	N	25.00	25.00
1	BOD	N	40.00	40.00
[`] 1	COD	N	25.00	25.00
1	Phenols, Total	N	55.00	55.00
1	рН	N	5.00	5.00
1	Specific Conductance	N	10.00	10.00
1 *	Metals Aqueous Prep	N	10.00	10.00
1	Metals * (16 metals list)	N	240.00	240.00
1	EDB and DBCP 504	N	85.00	85.00
1	VOCs 8260B SIM 1,4 Dioxane	N	100.00	100.00
2	Trip Blank	N	0.00	0.00
1	VOCs 8260C NH	N	165.00	165.00
1	Calcium	N	15.00	15.00
1	Magnesium	N	15.00	15.00
1	Potassium	N	15.00	15.00
1	Sodium	N	15.00	15.00
1	Hardness, Total	N	15.00	15.00

Gross Invoice Amount

\$990.00

Please pay this amount:

\$990.00

Thank you for this opportunity to be of service



Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 190154 Client Identification: Pinetree Power | 18859 Date Received: 12/11/2018

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

<u>|2.(}.(₿</u> Date



SAMPLE CONDITIONS PAGE

EAI ID#: 190154

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power | 18859

Temperature upon receipt (°C): Acceptable temperature range (°C): 0-6	1.8	Received	on ice or cold packs (Yes/No): Υ
Lab ID Sample ID	Date Date Received Sample	Sample % Dry ed Matrix Weight	Exceptions/Comments (other than thermal preservation)
190154.01 Circ Water	12/11/18 12/10/18	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

Eastern Analytical, Inc.

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LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power | 18859

ole ID:	Circ Water		
ab Sample ID:	190154.01		
latrix:	aqueous		
ate Sampled:	12/10/18	Analysis	
Date Received:	12/11/18	Units Date Time Method A	naly
Sulfate	510	mg/L 12/13/18 8:36 300.0	KD
Chloride	1500	. mg/L 12/12/18 14:55 4500CLE-11	KD
Nitrite-N	< 0.5	mg/L 12/11/18 15:24 353.2	KD
Nitrate-N	5.2	mg/L 12/11/18 15:24 353.2	KD
Ammonia-N	0.12	mg/L 12/12/18 9:34 TM NH3-001	SEL
-KN	2.7	mg/L 12/12/18 13:20 4500N _{ora} C/N	SEL
otal Phosphorus-P	2.7	mg/L 12/13/18 12:06 365.1	SEL
BOD	< 6	mg/L 12/12/18 9:39 5210B-11	ATA
COD	81	mg/L 12/11/18 9:40 H8000	JCS
·Η	8.18	SU 12/11/18 15:20 4500H+B-11	KL
Specific Conductance	7600	uS/cm 12/12/18 17:20 120.1	KL

Eastern Analytical, Inc.

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LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power | 18859

Sample ID:	Circ Water				
Lab Sample ID:	190154.01				
Matrix:	aqueous				
	•	Angletical		Dete of	
Date Sampled:	12/10/18	Analytical Matrix	Units	Date of Analysis	Mothed Applyot
Date Received:	12/11/18	INAU IX	Units	Allalysis	Method Analyst
Antimony	0.0011	AqTot	mg/L	12/12/18	200.8 DS
Arsenic	0.040	AqTot	mg/L	12/12/18	200.8 DS
Beryllium	< 0.001	AqTot	mg/L	12/12/18	200.8 DS
Calcium	230	AqTot	mg/L	12/12/18	200.8 DS
Cadmium	< 0.001	AqTot	mg/L	12/12/18	200.8 DS
Chromium	0.012	AqTot	mg/L	12/12/18	200.8 DS
Copper	0.026	AqTot	mg/L	12/12/18	200.8 DS
Iron	< 0.05	AqTot	mg/L	12/12/18	200.8 DS
Lead	< 0.001	AqTot	mg/L	12/12/18	200.8 DS
Magnesium	21	AqTot	mg/L	12/12/18	200.8 DS
Manganese	1.5	AqTot	mg/L	12/12/18	200.8 DS
Mercury	0.00015	AqTot	mg/L	12/12/18	200.8 DS
Molybdenum	0.044	AqTot	mg/L	12/12/18	200.8 DS
Nickel	0.0050	AqTot	mg/L	12/12/18	200.8 DS
Potassium	53	AqTot	mg/L	12/12/18	200.8 DS
Selenium	0.007	AqTot	mg/L	12/12/18	200.8 DS
Silver	< 0.001	AqTot	mg/L	12/12/18	200.8 DS
Sodium	1100	AqTot	mg/L	12/12/18	200.8 DS
Thallium	< 0.001	AqTot	mg/L	12/12/18	200.8 DS
Zinc	< 0.005	AqTot	mg/L	12/12/18	200.8 DS
Total Hardness (as CaCO3	670	AqTot	mg/L	12/12/18	200.8 DS

ANALYTICAL.COM	E-Mail: CustomerService@EasternAnalytical.com www.EasternAnalytical.com	;rnAnalytic <i>;</i>	(VICE@EASTE	STOMERSER	Mail: Cus Ager)		1.800.287.0525	8.0525	: 603.22 L G	01 TEL	DNCORD, NH 03301 TEL:	ICORD,	25 CHENELL DRIVE CONCORD, NH 03301 TEL: 603.228.0525		CHENE	_	professional laboratory and drilling services
		FIELD READINGS:		SV:	RECEIVED BY:		Time:	Date:		D By:	RELINQUISHED BY:	RELIN	-				
	TAMINATION:	Suspected Contamination:		SE	KECEIVED BY			DAIE		1013	MELIMQUISMED DT:					P0 #:	QUOTE #:
		Site History: _	10	- Chiller				11 De-c2018	11		Han Co	Add				DTW STORMWATER OR 0 OR OTHER:	REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR GWP, OIL FUND, BROWNFIELD OR OTHER:
				<u>}</u>	Bereiven I		Time	DATE-			REINDINCHED RY.					T OTHER:	STATE: IN MA ME VT
											IR(S):	SAMPLER(S):					18856
								-									SITE NAME: Tructore Tower
1211212	48 hr Ture	48 h			Excel	Equis	UL PDF	E-MAIL		МА МСР	MA						E-MAIL:
IG INFO, IF DIFFERENT)	NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)	NOTES: (IE: SPE				PTIONS	ELECTRONIC OPTIONS	m		OR	~					LAI	Fax:
J YES Z NO	SAMPLES FIELD FILTERED?	SAMPLES FI					. (C	σ		⊳	f.	4 < 200		JIAIE:	ΩĽ
3	Crystemes	OTHER METALS: 14 Curs	NO	ICE? (YE)	5	OPTIONS IR NO	REPORTING OI PRELIMS: (YES) OR	PREI)	LEVEL	QA/QC REPORTING LEVEL	QA/QC REPORTI	1	\$ }		- 1/2	Newport
FE, MN PR, CU	et El	METALS: * 8 RCRA	°C	TEMP. L.C	=		2016	- 13	12	EDED:	DATE NEEDED:	DAT			-	1 Bunstack	PROJECT MANAGER: Joel 13 COMPANY: Warizon's Lincis
																laOH; M-MEOH	WW-WASTE WATER Preservative: H-HCL; N-HNO3; S-H2SO4; Na-NaOH; M-MEOH
									_		+	_		¥	G WAT	W-Surface Water; DW-Drinkin	MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SUNFACE WATER; DW-DRINKING WATER;
											_						
									_			_					
	X		V	X	X X	Q X									Post.	10 Dec 2018 / 12 - 59 hrs 1	Waren
		Fi To Fi Ei						C T	F	1			1			1.5 -ori	
Notes Medh Vial #	ETEROTROPHIC PLATE COUNT TOTAL Hardwess Cocces of Containers	eactive Cyanide Reactive Sulfide ashpoint Ignitability ytal Coliform E. Coli ecal Coliform iterococci	Z. DTAL CYANIDE TOTAL SULFIDE		02 (NO3) NO3NO2 OD CBOD T. ALK.	S TSS TDS (PEC. CON.)	OC PEST HERB	DIL & GREASE 1664 TPH 1664	EOIS DRO MAEPH EST 608 PCB 608 EST 8081 PCB 8082	PH8100 LI L2	3015 GRO MAVPH 3270 625 SVTICs EDB DBCP 18N A BN PAH	BOZI BTEX HALOS	524.2 BTEX 524.2 MTBE ONLY 8260 624 VTICs I, 4 DIOXANE	524.2	Matrix (see below) Grab/*Composite	SAMPLING DATE / TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE / TIME	Sample I.D.
		MICRO	NICS	NORGAN	Ino	LS	TCLP METALS	TC	SVOC	VS		õ	Voc		_		
4				LYSIS.	ESTED ANALYSIS.	UESTED	PLEASE CIRCLE REQU		ASE		JIRED	REQU	BOLD FIELDS REQUIRED.	F	SOL.		
4	190154					RD	CHAIN-OF-CUSTODY RECORD	ODY	TSD.	01-10	NN	Ĩ 0					Page of



Eastern Analytical, Inc.

professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 190927 Client Identification: None Date Received: 1/7/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

<u>|.|8.</u>9 Date



SAMPLE CONDITIONS PAGE

EAI ID#: 190927

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

•	ture upon receipt (°C): temperature range (°C): 0-6	3.3		Received	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received	Date Sampled	Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
190927.01	Cooling Tower	1/7/19	1/7/19	aqueous	Adheres to Sample Acceptance Policy
190927.02	Well C	1/7/19	1/7/19	aqueous	Adheres to Sample Acceptance Policy
190927.03	MW-14	1/7/19	1/7/19	aqueous	Adheres to Sample Acceptance Policy
190927.04	MW-11	1/7/19	1/7/19	aqueous	Adheres to Sample Acceptance Policy
190927.05	MW-16	1/7/19	1/7/19	aqueous	Adheres to Sample Acceptance Policy
190927.06	Trip Blank - 1,4 diox	1/7/19	11/13/18	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

Eastern Analytical, Inc.

LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

Sample ID:	Cooling Tower	Well C	MW-14	Trip Blank - 1,4 diox
Lab Sample ID:	190927.01	190927.02	190927.03	190927.06
Matrix:	aqueous	aqueous	aqueous	aqueous
Date Sampled:	1/7/19	1/7/19	1/7/19	11/13/18
Date Received:	1/7/19	1/7/19	1/7/19	1/7/19
Units:	ug/L	ug/L	ug/L	ug/L
Date of Analysis:	1/9/19	1/9/19	1/9/19	1/9/19
Analyst:	VG	VG	VG	VG
Method:	8260B SIM	8260B SIM	8260B SIM	8260B SIM
Dilution Factor:	1	1	1	1
1,4-Dioxane 4-Bromofluorobenzene (surr) Toluene-d8 (surr)	< 0.2 112 %R 106 %R	< 0.2 111 %R 106 %R	< 0.2 111 %R 105 %R	< 0.2 112 %R 106 %R

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

ple ID:	Cooling Tower		
b Sample ID:	190927.01		
atrix:	aqueous		
ate Sampled:	1/7/19	Analysis	
ate Received:	1/7/19	Units Date Time Method Ar	nə
ulfate	270	mg/L 01/09/19 1:50 300.0	к
nmonia-N	0.066	mg/L 01/08/19 15:50 TM NH3-001	s
KN	0.98	mg/L 01/10/19 12:09 4500N _{org} C/N	S
otal Phosphorus-P	0.76	mg/L 01/09/19 13:25 365.1	s
OD	34	mg/L 01/08/19 9:35 H8000	J
Η	8.27	SU 01/07/19 18:30 4500H+B-11	ĸ
pecific Conductance	4.0	uS/cm 01/07/19 16:00 120.1	K

Sample ID:	Well C	MW-14	MW-11	MW-16					
Lab Sample ID:	190927.02	190927.03	190927.04	190927.05					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	1/7/19	1/7/19	1/7/19	1/7/19		Ana	alysis		
Date Received:	1/7/19	1/7/19	1/7/19	1/7/19	Units	Date	Time	Method A	nalyst
Sulfate	2.4	< 1	1.7	< 1	mg/L	01/08/19	19:10	300.0	KD
Chloride	39	88	41	14	mg/L	01/08/19	19:10	300.0	KD
Nitrite-N	< 0.5	< 0.5	< 0.5	< 0.5	mg/L	01/08/19	19:10	300.0	KD
Nitrate-N	< 0.5	< 0.5	< 0.5	< 0.5	mg/L	01/08/19	19:10	300.0	KD
Ammonia-N	< 0.05	< 0.05	< 0.05	< 0.05	mg/L	01/08/19	15:56	TM NH3-001	SEL
TKN	< 0.5	< 0.5	< 0.5	< 0.5	mg/L	01/10/19	12:12	4500N _{ora} C/N	SEL
Total Phosphorus-P	< 0.01	1.6	1.6	5.0	mg/L	01/09/19	13:26	365.1	SEL
BOD	< 6	< 6	< 6	< 6	mg/L	01/09/19	10:25	5210B-11	ATA
COD	< 10	< 10	< 10	55	mg/L	01/08/19	9:35	H8000	JCS
рН	6.28	5.33	5.59	5.6	SU	01/07/19	18:30	4500H+B-11	KL
Specific Conductance	160	300	150	69	uS/cm	01/07/19	16:00	120.1	KL

EAI ID#: 190927

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

.

Sample ID:	Well C				
Lab Sample ID:	190927.02				
Matrix:	aqueous				
Date Sampled:	1/7/19	Analytical		Date of	
Date Received:	1/7/19	Matrix	Units	Analysis	Method Analyst
Total Hardness (as CaCO Uranium	3) 18 0.2	AqTot AqTot	mg/L ug/L	1/8/19 1/14/19	200.8 DS 200.8 DS

LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

Sample ID:	MW-14				
Lab Sample ID:	190927.03				
Matrix:	aqueous				
Date Sampled:	1/7/19	Analytical		Date of	
Date Received:	1/7/19	Matrix	Units	Analysis	Method
Total Hardness (as C	CaCO3) 42	AqTot	mg/L	1/8/19	200
Antimony	< 0.001	AqDis	mg/L	1/8/19	200
Arsenic	< 0.001	AqDis	mg/L	1/8/19	200
Beryllium	< 0.001	AqDis	mg/L	1/8/19	200
Calcium	13	AqDis	mg/L	1/8/19	200
Cadmium	< 0.001	AqDis	mg/L	1/8/19	200
Chromium	< 0.001	AqDis	mg/L	1/8/19	200
Copper	0.0013	AqDis	mg/L	1/8/19	200
Iron	< 0.05	AqDis	mg/L	1/8/19	200
Lead	< 0.001	AqDis	mg/L	1/8/19	200
Magnesium	2.1	AqDis	mg/L	1/8/19	200
Manganese	0.037	AqDis	mg/L	1/8/19	200
Mercury	< 0.0001	AqDis	mg/L	1/8/19	200
Molybdenum	< 0.001	AqDis	mg/L	1/8/19	200
Nickel	< 0.001	AqDis	mg/L	1/8/19	200
Potassium	1.8	AqDis	mg/L	1/8/19	200
Selenium	< 0.001	AqDis	mg/L	1/8/19	200
Silver	< 0.001	AqDis	mg/L	1/8/19	200
Sodium	35	AqDis	mg/L	1/8/19	200
Thallium	< 0.001	AqDis	mg/L	1/8/19	200
Zinc	0.0092	AqDis	mg/L	1/8/19	200
Uranium	4.9	AqTot	ug/L	1/14/19	200

LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

Lab Sample ID: 190927.04 190927.05 Matrix: aqueous aqueous Date Sampled: 1/7/19 1/7/19 Date Received: 1/7/19 1/7/19 Total Hardness (as CaCO3) 17 26 Antimony < 0.001 < 0.001 Arsenic < 0.001 < 0.001 Beryllium < 0.001 < 0.001 Calcium 4.8 5.8
Date Sampled: 1/7/19 1/7/19 Date Received: 1/7/19 1/7/19 Total Hardness (as CaCO3) 17 26 Antimony < 0.001
Date Received: 1/7/19 1/7/19 Total Hardness (as CaCO3) 17 26 Antimony < 0.001
Total Hardness (as CaCO3) 17 26 Antimony < 0.001
Antimony < 0.001 < 0.001 Arsenic < 0.001
Arsenic < 0.001 < 0.001 Beryllium < 0.001
Beryllium < 0.001 < 0.001 Calcium 4.8 5.8
Calcium 4.8 5.8
Cadmium < 0.001 < 0.001
Chromium < 0.001 < 0.001
Copper < 0.001 < 0.001
Iron < 0.05 < 0.05
Lead < 0.001 < 0.001
Magnesium 0.78 0.75
Manganese 0.014 0.11
Mercury < 0.0001 < 0.0001
Molybdenum < 0.001 < 0.001
Nickel < 0.001 0.0015
Potassium 1.2 0.88
Selenium < 0.001 < 0.001
Silver < 0.001 < 0.001
Sodium 18 < 5
Thallium < 0.001 < 0.001
Zinc 0.0064 0.0096

Analytical Matrix	Units	Date of Analysis	Method A	Analyst
AqTot	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS
AqDis	mg/L	1/8/19	200.8	B DS



January 17, 2019 Vista Work Order No. 1900084

Ms. Jennifer Laramie Eastern Analytical, Inc. 25 Chennell Drive Concord, NH 03301

Dear Ms. Laramie,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on January 09, 2019 under your Project Name '190927 NH'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Maille Maier

Martha Maier Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Vista Work Order No. 1900084 Case Narrative

Sample Condition on Receipt:

Three aqueous samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

Sample "MW-14" contained particulate and was centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method (Modified EPA Method 537). The results for PFHxS, PFOA, and PFOS include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries for all QC and field samples were within the acceptance criteria.

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Sample Inventory	4
Analytical Results	5
Qualifiers	11
Certifications	12
Sample Receipt	15

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1900084-01	Cooling Tower	07-Jan-19 10:35	09-Jan-19 11:01	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
1900084-02	Well C	07-Jan-19 10:25	09-Jan-19 11:01	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
1900084-03	MW-14	07-Jan-19 13:30	09-Jan-19 11:01	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL

Vista Project: 1900084

Client Project: 190927 NH

ANALYTICAL RESULTS

	When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both	eFOSAA and EtFO	FOA, PFOS, M	orted, PFHxS, F	When rep		Results reported to RL.	Results re	RL - Reporting limit	RL - R	
-	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082		60 - 130		94.7	IS		13C8-PPOS
<u>н</u> е	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082		50 - 130		77.9	2 2		13C3-PFNA
1	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	dete felle andere andata and an and an address and	60 - 130	ana hintara dal makeyo a kada.	<u>, 76</u>	2	literation in the second s	ISC2-PPUA
4	14-Jan-19 19:59	0,125 L	11-Jan-19	B9A0082		60 - 130		101	12		13C2-PPHXS
	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	n of the second s	60 - 150	and the state of the	102	2		1000 DELLO
H	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082		70 - 130		104	5		13C2-PFHXA
-	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	er folder and too there are within all tracks. The first	60 - 150		114	51		IJCJ-FFBS
	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082		60 - 150		102	IS IS		13C3 DEDG
	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	a a Maanaa tadha shahiifi ahaa a dahala ahaa	60 - 130		7.99	SI		13C3-PFBA
Dilution	Analyzed I	Samp Size	Extracted	Batch	Qualifiers	Limits		% Recovery	Lype	larus	Labeleu Standarus
1	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	1.00			UN	1/63-23-1		T-L-19
-	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	1.00	animas minii shinanashi mana tini o	and the second	DN	3/5-95-1		PFNA
H	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	F:00			ND	335-67-1		PENA
1	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	1. 00	ala se se as al de la consecte de l 7	يستعدل المالية الملاطنة المالية المحادث	UN UN	300-40-4	and a first state of the second s	
1	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	1.00			, N	355 45 4		pert-c
1	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	4.00	definister statusti seutar (1230) (1230) 2		UN UN	307-24-4		PPHXA
,	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	1.00			ND	375-73-5		Lites
1	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	1.00	7		ΩN	2-06-9077	2. A set of the set	rrreA
	14-Jan-19 19:59	0.125 L	11-Jan-19	B9A0082	4.00			an ND	375-22-4		PFBA
Dilution	Analyzed	Samp Size	Extracted	Batch	RL Qualifiers		and the second	Conc. (ng/L)	CAS Number	مستعملها والمرابع والمستقد الأعراضية والمعاد ليمحا محادثه فالمعاد والمريح المحادثة والمحاد	Analyte
	BEH C18	Column:	DLNI	D7AVV02-DLK	ມລາວ ຈາມແມຼນເຮັ	ŧ	ci rombi i v			190927 NH	Project:
		2		D0 1 000	Laboratory Data		Δημο	Matrix		Fastern Analytical Inc.	Client Data Name:
Tethod	PFAS Isotope Dilution Method	PFAS Isot								Sample ID: Method Blank	Sample ID:

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Work Order 1900084

1	14-Jan-19 19:48	0.125 L	11-Jan-19	B9A0082		70 - 130	99.0 101	80.0	79.2	355-46-4		PFHxS
1	14-Jan-19 19:48 14-Jan-19 19:48	0.125 L 0.125 L	11-Jan-19 11-Jan-19	B9A0082 B9A0082		70 - 130 70 - 130	102 101	80.0 80.0	81.8 80.9	307-24-4 375-85-9		PFHxA PFHpA
1	14-Jan-19 19:48 14-Jan-19 19:48	0.125 L 0.125 L	11-Jan-19 11-Jan-19	B9A0082 B9A0082		70 - 130 70 - 130	9.90 9.90	80.0	79.7 791	2706-90-3 375-73-5		PFPeA PFBS
	14-Jan-19 19:48		11-Jan-19 0.125 L	B9A0082		70 - 130	0.66	80.0	79.2	375-22-4		PFBA
Dilution	Analyzed Dilution	Samp Size	Extracted Samp Size	Batch	Qualifiers	Limits	% Rec	Spike Amt	Amt Found (ng/L) Spike Amt	CAS Number	C	Analyte
	BEH C18	Column:	-BS1	B9A0082-BS1	Sample:	Lab	01	Aqueous	Matrix:		Eastern Analytical, Inc. 190927 NH	Name: Project:
					oratory Data	Labo						Client Data
Method	PFAS Isotope Dilution Method	PFAS Is									OPR	Sample ID: OPR

13C4-PFHpA 18O2-PFHxS

100 101 127 98.6 88.8 95.3 96.6 96.6 84.2 90.8

60-150

60- 150 70- 130

60- 130 60- 150

B9A0082

11-Jan-19

0.125 L

B9A0082

11-Jan-19

0.125 L

14-Jan-19 19:48

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B9A0082

11-Jan-19

0.125 L

1

B9A0082

11-Jan-19

0.125 L

B9A0082

11-Jan-19

60-130

B9A0082

11-Jan-19

14-Jan-19 19:48 14-Jan-19 19:48 14-Jan-19 19:48 14-Jan-19 19:48 14-Jan-19 19:48

14-Jan-19 19:48

14-Jan-19 19:48

60- 130 50- 130 60- 130

B9A0082 B9A0082 B9A0082

11-Jan-19

0.125 L 0.125 L 0.125 L 0.125 L 0.125 L 0.125 L

14-Jan-19 19:48

11-Jan-19 11-Jan-19

13C2-PFOA 13C5-PFNA 13C8-PFOS 13C2-PFHxA

13C3-PFPeA

13C3-PFBS

13C3-PFBA



Sample ID: Cooling Tower	oling Tower							PFAS Isot	PFAS Isotope Dilution Method	fethod
Client Data Name:	Eastern Analytical, Inc.		Matrix:	Aqueous	Laboratory Data Lab Sample:	1900084-01		Column:	BEH C18	
Project:	190927 NH			0/-Jan-19 10:33	Date Keceived:	09-Jan-19 11:01	1:01			
Analyte		CAS Number	Conc. (ng/L)		RL Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA		375-22-4	9:27		4.35	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	1
PFPeA		2706-90-3	ND		4.35	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	1
PFBS		375-73-5	Ŋ			B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	
PFHxA		307-24-4	ND		4.35	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	, , , , , , , , , , , , , , , , , , ,
PFHpA		375-85-9	ΔN			B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	
PFH _x S		355-46-4	ND	oogen and the contract of the second s	4.35	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	
PFOA		335-67-1	Ð		4.35	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	1
PFNA	ter a construction de la construction	375-95-1	ND	e les settéreses sur les l'auté entennisées éntrementent entre le auté de la set	areas consider a consider core collected administration of	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	1
PFOS		1763-23-1	ND		4.35	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	1
Labeled Standards	ls	Туре	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		SI	95.2	60 - 130	and a second	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	
13C3-PFPeA		SI	95.1	60 - 150		B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	1
13C3-PFBS	and other and the second s	SI	95.3	60 - 150	define the second statement of t	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	j
13C2-PFHxA		SI	97.1	70 - 130		B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	1
13C4-PFHpA	consistent acceleration of them as former of another for an alternation	SI	102	60 - 150	s as the state of the state of the state and the state of	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	
1802-PFHxS		SI	95.2	60 - 130		B9A0082	11-Jan-19	$0.115 \mathrm{L}$	14-Jan-19 20:41	
13C2-PFOA	THE REPORT OF THE	SI	96.4	60 - 130	TO PROTECTION OF THE REAL PROTECTION OF THE PROTECTION OF THE TAXABLE PROTECTION OF THE PROTECTION OF	B9A0082	11-Jan-19	0.115 L	14-Jan-19 20:41	
13C5-PFNA		SI	88.6	50 - 130		B9A0082	11-Jan-19	$0.115\mathrm{L}$	14-Jan-19 20:41	
13C8-PFOS		IS	98.9	60 - 130		B9A0082	9A0082 11-Jan-19 0.115		14-Jan-19 20:41	1

RL - Reporting limit

Results reported to RL.

B9A0082 11-Jan-19 0.115 L 14-Jan-19 20:41 When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other

analytes.

Work Order 1900084

Page 8 of 16



	0944 . 1 1 1 .		DELLA DECA DECA N	noted DELLAS	W/hen ret	RI,	Results reported to R	RL - Reporting limit	RL-R	
1	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082		60 - 130	105	IS		13C8-PFOS
Ļ	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082		50 - 130	84,4	15		LOCO-FFINA
<u> </u>	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	novanili okomotomi do otor és etek lendonen en du	051 - 00		CT.		
1	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082		00 120 UCL - VO	705 T	DI Ar		13C2-PEOA
las and aschard.	14-Jan-19 20:52		11-Jan-19	D9AUU02		001 - 00	C 20	Te	[5] M. S. C. L. B. D. S. S. M. M. B. B. S. S. S. M. M. M. S. M. M. S. M S. M. S. M. SM S. M. S. M.	1803-DEHvS
	14 T- 10 20 22	0 11 <i>5</i> T	11 Tem 10	000002		60 - 1 5 0	94.0	SI		13C4-PFHpA
	14 Ton 10 20.02	0 115 1	11_Tan_10	R0A0087		70 - 130	98.7	SI		13C2-PFHxA
1	14-Jan-19 20.52	0.115 L	11-Jan-19	B9A0082		60 - 150	100	SI		13C3-PFBS
Т	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082		60 - 150	104	SI		13C3-PFPeA
1	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	e ere verken verkenskinskinskinskinskinskinskinskinskinski	60 - 130	99.3	SI		13C3-PFBA
Dilution	Analyzed	Samp Size	Extracted	Batch	Qualifiers	Limits	% Recovery	Туре	ards	Labeled Standards
1	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	4.34		UN	1763-23-1		PHUS
1	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	4.34	and the second	dN	375-95-1		IPHNA
1	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	434		ND	335-67-1		PFUA
1	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	4.34	dad a sector of the first of the	DN	355-46-4	19. marchine and 19. marchine and 19. Parts and 19. marchine and 1	PFHXS
	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	4.34		ND	375-85-9	and the second se	РЕНРА
1	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	4.34		ND	307-24-4		PFHxA
	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	4.34		ND	375-73-5		PFBS
1	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	4.34	our contratedade - 1 decembration decima de l'étacente Alice de con	ND	2706-90-3	αλόγια το πορογραφικό το πολογιατικό την πορογιατική την παραγούν το πορογιατικό την παραγορηματική την παραγο Το πορογιατικό την πραγοληματική προσποιοματική προσποιοματική παραγορηματική την παραγορηματική την παραγορηματ	PFPeA
	14-Jan-19 20:52	0.115 L	11-Jan-19	B9A0082	4.34		ND	375-22-4		PFBA
Dilution	Analyzed	Samp Size	Extracted	Batch	RL Qualifiers		Conc. (ng/L)	CAS Number	and when a set of the	Analyte
	BEH C18	Column:)2 11:01	1900084-02 09-Jan-19 11:01	Laboratory Data Lab Sample: Date Received:	Aqueous 07-Jan-19 10:25	Matrix: Date Collected:		Eastern Analytical, Inc. 190927 NH	Client Data Name: Project:
Method	PFAS Isotope Dilution Method	PFAS Iso							Well C	Sample ID: Well C

225

 B9A0082
 11-Jan-19
 0.115 L
 14-Jan-19
 20:52

 When reported, PFHxS, PFOA, PFOS, MeFOSAA and EdFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other
 analytes.

RL - Reporting limit

Results reported to RL.

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B9A0082 11-Jan-19 0.117 L 14-Jan-19 21;(B9A0082 11-Jan-19 0.117 L 14-Jan-19 21;(When reported, PFHxS, PFOA, PFOS, MeFOSAA and EffOSAA include both
60 - 150
Qualifiers
4.28
4.28
4.28
4.28
4,28
4.28
4.28
4.28
4:28
RL Qualifiers
Laboratory Data Lab Sample: Date Received:

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

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DATA QUALIFIERS & ABBREVIATIONS

В	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
Н	Recovery and/or RPD was outside laboratory acceptance limits
Ι	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
М	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
Р	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	18-008-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Vista Analytical Laboratory Certifications

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA 23
Dibenzofurans	
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA TO-9A
Dibenzofurans	

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B
Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA
	1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

Page 1 of 2

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A



Vista Work Orde	r#:1900(Page # _\						
Samples Arrival:	Date/Time 61)09)19	llo	s.	Initials:		L S	ocation: M helf/Rack:	2 H		
Logged In:	Date/Time	133E		Initials: WUS		Location: WP-2 Shelf/Rack: <u>8-3,6-3</u>				
Delivered By:	FedEx U	PS)	On Tra	c GSO	DHI	L Hand Other				
Preservation:	lce		Blu	e Ice		Dry Ice None				
Temp °C: 0.1 Temp °C: 0.0	(uncorrected)	" P	robe use	d: Y /N		Thermometer ID: IF-Y				

				YES	NO	NA					
Adequate Sample Volume Re	1	-									
Holding Time Acceptable?											
Shipping Container(s) Intact?	\checkmark										
Shipping Custody Seals Intac		V	$\overline{\mathcal{A}}$								
Shipping Documentation Pres	sent?										
Airbill Trk #	12746 599	019341	01279	J							
Sample Container Intact?				1							
Sample Custody Seals Intact	?					1					
Chain of Custody / Sample D	ocumentation Pre	sent?									
COC Anomaly/Sample Accep	tance Form comp	leted?			1	1					
If Chlorinated or Drinking Wat	er Samples, Acce	ptable Pres	servation?								
Preservation Documented:	Na₂S₂O₃ Other	Trizma	None	Yes	No	NA					
Shipping Container Vista Client Retain Return Dispose											
comments:-sample was or loaling all samples reconciled per handwritten label.											

اب من	Address City Phone 603-877-0116 Fax	State NH Client (Pro Mgr) Joel Banaszak Customer Horizons Engineering, Inc. (NL)	Project Name None Result	se ensure this auto COC is accurate, ac	Sampler confirms ID and parameters are accurate <i>Circ</i>	MW-11 $l/\frac{3}{2}/l^9$ aqueous AqTc l/Z Grab or Comp $\frac{AqDi}{24}$	Sampler confirms ID and parameters are accurate Circ.	MW-14 $1/7/1^{eq}$ aqueous AqTc $1/7/1^{eq}$ Grab or Comp AqDi	Sampler confirms ID and parameters are accurate Circ	Well C // 7/// aqueous AqTc /0:25 Grab or Comp AqDi	Sampler confirms ID and parameters are accurate <i>Circ</i>	Cooling Tower $1/7/19$ aqueous AqTo 10:35 Grab or Comp	Date/Time Composites need start Sample IDs and stop dates/times Matrix Paral	tastern Analytical, Inc.	lora la- ista
A □ A+ □ B □ B+ □ C □ MA MCP			s Needed by: Preferred date	res to permit or sampling requirements for th	Circle preservative/s: HCL_HNO, H,SO, NaOH_MEOH_Na,S,O,	AqTouSø4Jøllyko2/Nø3/NyH3/TKK/TPKos/Bob/coD/pH/Speecon/ICPMets.Hardfot AqDis/ICPMets.As: Se. Sb. Be. oa. oa. or. ou. Fe. Pb. Mg. Mn. Hg. Mo. Mi. K. Ag. Na, Trizh www.h.J	ไฟน์ร่าไสเสม ิ - Arc <u>Circle preservative/</u> s: HCL_HNO, H₂SO₄ NaOH_MEOH_Na₂S₂O₄	AqTot/SO4/Cl/NO2/NO3/NH3/TKN/TPhos/BOD/COD/pH/SpecCon/ICPMets.U. HardTot/PFCsSubVAL/V8260SIM14DIOXANE <br AqDis/ICPMets.As.Se.Sb.Be.Ca.Cd.Cr.Cu.Fe.Pb.Mg.Mn.Hg.Mo.Ni.K.Ag.Na.TI.Zn </td <td>میں المال المال Circle preservative/s: HCL_HNO, H,SO, NaOH_MEOH_Na,S,O, ICE</td> <td>AqTot/S@4/@l/W@2/W@3/WH3/TKKI/TPK6s/B@D/C@D/pH/SpecCon/ICPMets.U. HardTot/PFCsSybVAL//8260SIM14D/OXANE AqDis/ICPMets.Ac.ScSb/BerCatCatCatCatCatFer.pbf-Mgf.Mfr.Hgf.McJNf.K-Agf.Nat.FHZn ArcC-</td> <td><u>Circle preservative/s: HCL_HNO, H,SO,</u> NaOH_MEOH_Na,S,O,</td> <td>AqTot/ICPMets.Sb.A.s.B.g.Ga.Gd.Gt.Gt.Gt.Fe:Pb.Mg.Mh.Hd.Mó.Ni/K.Ad.Se.Na.Tl.Zh.Jt.WS HardTot/COD/pH/NH3/N922NDSTIKN/SpecCon/TP/Kos/S04/PFCsSubVAL/V8260SIM14DIOXANE</td> <td>Parameters and Sample Notes</td> <td></td> <td></td>	میں المال المال Circle preservative/s: HCL_HNO, H,SO, NaOH_MEOH_Na,S,O, ICE	AqTot/S@4/@l/W@2/W@3/WH3/TKKI/TPK6s/B@D/C@D/pH/SpecCon/ICPMets.U. HardTot/PFCsSybVAL//8260SIM14D/OXANE AqDis/ICPMets.Ac.ScSb/BerCatCatCatCatCatFer.pbf-Mgf.Mfr.Hgf.McJNf.K-Agf.Nat.FHZn ArcC-	<u>Circle preservative/s: HCL_HNO, H,SO,</u> NaOH_MEOH_Na,S,O,	AqTot/I CPMets.Sb.A.s.B.g.Ga.Gd.Gt.Gt.Gt.Fe:Pb.Mg.Mh.Hd.Mó.Ni/K.Ad.Se.Na.Tl.Zh.Jt.WS HardTot/COD/pH/NH3/N922NDSTIKN/SpecCon/TP/Kos/S04/PFCsSubVAL/V8260SIM14DIOXANE	Parameters and Sample Notes		
Relinquished by	Samples Collected by: 73	 ☑ EDD PDF ☑ EDD email ☑ PDF prelim, NO FAX ☑ e-mail Login Confirmation 		ts for this sampling event, and modify as necessary.	S,O, ICE	SpeeCon/ICPMets.HaraTot Hg.Mo.M.K.Ag.Na.TriZn	S,O, ICE	SpecCon/ICPMets.U.	S,O, ICE	SpeeCon/ICPMets.U. Hatwo-wijk-Agtwa-Thizn Aru	S203 ICE	M b.NiKAGSENATIZAJU MUS 04/PFCsSybVAL/V8260SJM14[
Date/Time	Adam Car 75aulor VoUS Date/Time	☐ Partial FAX ⊠ PDF Invoice ☐ EQUIS	I NO FAX	dify as necessa	Dissolved Sample Field Filtered		Dissolved Sample Field Filtered		Dissolved Sample Field Filtered		Dissolved Sample Field Filtered	DIOXANE			
Received by	Received by	# w	PO# Verbal	ary.	e Field Filtered		e Field Filtered		e Field Filtered		e Field Filtered		# of containers	190927 ныллт 23	

www.easternanalytical.com | 800.287.0525 | customerservice@easternanalytical.com

Email: jbanaszak@horizonsengineering.com Direct 877-0116	Please ensure this auto COC is accurate, a EAI Project ID Project Name None State NH Client (Pro Mgr) Joel Banaszak Customer Horizons Engineering, Inc. (NL) Address City Phone 603-877-0116	Sampler confirms ID and parameters are accurate	Trip Blank - 1,4 diox <i>ii//ミ// 没</i> aqueous <i>?: 3a</i> Grab or Comp	Sampler confirms ID and parameters are accurate	MW-16 $l/\mathcal{F}/l^{2}$ aqueous $l/\ell'/l^{2}$ Grab or Comp	Composites need start Sample IDs and stop dates/times Matrix	Eastern Analytical, Inc.
QC deliverables ⊠ A □ A+ □ B □ B+ □ C □ MA MCP	Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary. et ID Results Needed by: Preferred date ReportingOptions Iame None Results Needed by: Preferred date Importing event, and modify as necessary. State NH Notes: Import Notes: Import Port Port Import Port Port Import Port Port Port Port Port Port Port P	I <u>Circle preservative/s:</u> HCL_HNO ₃ _H,SO ₄ _NaOH_MEOH_Na,S ₂ O ₃	AqTot/V8260SIM14DIOXANE	Circle preservative/s: HCL_HNO, H,SO, NaOH_MEOH_Na,S,O,	AqTot/SO4/CI/NO2/NO3/NH3/TKN/TPhos/BOD/COD/pH/SpecCon/ICPMets.HardTot AqDis/ICPMets.As.Se.Sb.Be.Ca.Cd.Cr.Cu.Fe.Pb.Mg.Mn.Hg.Mo.Ni.K.Ag.Na.TI.Zn かいぞけよーイルとく	Parameters and Sample Notes	CHAIN-OF-CUSTODY RECORD
Relinquished by	nis sampling event, and n ReportingOptions □ HC ⊠ EDD PDF ⊠ EDD email ⊠ PDF prelim, NO FAX ⊠ e-mail Login Confirmation Samples Collected by:	S,0, ICE		S ₂ O ₃ ICE	SpecCon/ICPMets.HardTot Hg.Mo.Ni.K.Ag.Na.TI.Zn		
Date/Time	modify as necessa □ NO FAX □ Partial FAX □ PDF Invoice □ EQUIS □ EQUIS □ Date/Time	Dissolved Sample Field Filtered		Dissolved Sample Field Filtered			
Received by	PO# Verbal Quote#: Temp 3,3°C Ice Y ⊑NI□	e Field Filtered		e Field Filtered		# of containers	190927 HEnh1 24

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professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 190930 Client Identification: None Date Received: 1/7/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

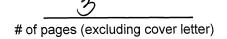
If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director





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SAMPLE CONDITIONS PAGE

EAI ID#: 190930

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

•	ture upon receipt (°C): temperature range (°C): 0-6	3.3		Received	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received		Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
190930.01	Well C	1/7/19	1/7/19	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

Eastern Analytical, Inc.

LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

Sample ID:	Well C				
Lab Sample ID:	190930.01				
Matrix:	aqueous				
Date Sampled:	1/7/19	Analytical		Date of	
Date Received:	1/7/19	Matrix	Units	Analysis	Method Analyst
Antimony	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Arsenic	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Beryllium	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Calcium	5.5	AqDis	mg/L	1/8/19	200.8 DS
Cadmium	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Chromium	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Copper	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Iron	0.056	AqDis	mg/L	1/8/19	200.8 DS
Lead	0.0043	AqDis	mg/L	1/8/19	200.8 DS
Magnesium	0.74	AqDis	mg/L	1/8/19	200.8 DS
Manganese	0.017	AqDis	mg/L	1/8/19	200.8 DS
Mercury	< 0.0001	AqDis	mg/L	1/8/19	200.8 DS
Molybdenum	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Nickel	0.0014	AqDis	mg/L	1/8/19	200.8 DS
Potassium	1.2	AqDis	mg/L	1/8/19	200.8 DS
Selenium	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Silver	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Thallium	< 0.001	AqDis	mg/L	1/8/19	200.8 DS
Zinc	0.0081	AqDis	mg/L	1/8/19	200.8 DS
Sodium	23	AqDis	mg/L	1/10/19	200.8 DS

Date/Fine and stop dates/times Matrix and stop dates/times Matrix and stop dates/times Matrix $10:35$ Grab or Comp $10:35$ Grab or Comp $1/7/12$ Grab or Comp $1/7/12$ Grab or Comp $1/7/12$ Grab or Comp $1/7/12$ Grab or Comp Imfirms ID and parameters are accurate Grab or Comp $1/7/12$ Grab or Comp Imfirms ID and parameters are accurate Grab or Comp $1/7/12$ Grab or Comp firms ID and parameters are accurate Grab or Comp Imfirms ID and parameters are accurate Grab or Comp Imfirms ID and parameters are accurate Grab or Comp Imfirms ID and parameters are accurate Grab or Comp Imfirms ID and parameters are accurate Grab or Comp Imfirms ID and parameters are accurate Grab or Comp Imfirms ID and parameters are accurate Grab or Comp Imfirms ID and parameters are accurate Grab or Comp Imfirms ID and parameters are accurate Grab or Comp Imfirms ID and parameters are accurate Grab or Comp <	M East	Eastern Analytical, Inc.	al, Inc.	CHAIN-OF-CUSTODY RECORD	-	1	190930 _თ
Sample IDs Composition need start Matrix Parameters and Sample Notes Conversion need start Arrange Matrix Parameters and Sample Notes Conversion need start 10:35 Grab or Comp HagdGauCoDhpElinyLsDarOchapSongAG Sampler confirms ID and parameters are accurate Circle preservative/s: HCL. HNO, H.S. HagdGauCoDhpElinyLsDarOchapSongAG Well C 1/7/1/1 aqueous HagdGauCoDhpElinyLsDarOchapSongAG Sampler confirms ID and parameters are accurate Circle preservative/s: HCL. HNO, H.S. Well C 1/7/1/2 aqueous Sampler confirms ID and parameters are accurate Circle preservative/s: HCL. HNO, H.S. MW-L1 1/2/1/2 Grab or Comp Sampler confirms ID and parameters are accurate Circle preservative/s: HCL. HNO, H.S. MW-L1 1/2/1/2 Grab or Comp MW-L4 1/2/1/2 Grab or Comp Multi-Sample confirms ID and parameters are accurate Circle preservative/s: HCL. HNO, H.S. MM-L1 MagdGady Gady GargAge Agrae accurate <			·				
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WellC (1/7/17) aqueous AqT-outpot/synthis fight/figh	Sampler confirm	s ID and parameters	are accurate	Circle preservative/s: HCL HNO, H.SO, NaOH MEOH Na.S.O.	S.O. ICF	Dissolved Sample Field Filtered	Field Filtered
Image: Instant State Image: Instant State Image:	Well C	81/4/1	aqueous	<u>کْلُا</u>	SpeconticPMets.U.		
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MW-14. 1/1/1/1 aqueous rapieous rapieous<	Sampler confirm	s ID and parameters	are accurate	Circle preservative/s: HCL HNO, H,SO, NaOH MEOH Na,S.O, ICE	,S,O, ICE	Dissolved Sample Field Filtered	Field Filtered
Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: Sampler confirms ID and parameters are accurate Circle preservative/S: HCL_HNO, H_3C Image: State NH Results Needed by: Preferred date Customer Horizons Engineering, Inc. (NL) A Science FATE 1/QCGAT Science Address City Image: State State Science Science A Science State Science Science City <	MW-14	1/			Born HCDWoto II] [
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MMX 11 I / 1/1/1 aqueous I / 2.10 AqTeusodiperionsengineering.com AqTeusodiperionsengineering.com Sampler confirms ID and parameters are accurate Grab or Comp AqDielicPhilesis As \$6\$Bigefdargdiperionsengineering.com Please ensure this auto COC is accurate, adheres to permit or sampling relevant of the preservative/s: HCL HNO, H, so Please ensure this auto COC is accurate, adheres to permit or sampling relevant EAI Project ID Project Name None State NH Client (Pro Mgr) Joei Banaszak Results Needed by: Preferred date Customer Horizons Engineering, Inc. (NL) Address City Phone 603-877-0116 Fax QC deliverables Email: Jbanaszak@horizonsengineering.com QC deliverables	Sampler confirm	s ID and parameters	are accurate	Circle preservative/s: HCI HNO H SO NOOH MEOH NO		Dissolved Sample Field Filtered	Field Filtered
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professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London NH 03257 Subject: Laboratory Report Eastern Analytical, Inc. ID: 178262 Client Identification: Pinetree Power - Tamworth Date Received: 1/29/2018 Report revision/reissue: Revision, replaces report dated February 9, 2018

Revision information: Report revised to include sulfate analysis.

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted

- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:% Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director Date



of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: 178262

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power - Tamworth

•	ture upon receipt (°C): temperature range (°C): 0-6	1.2		Received	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received		Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
178262.01	Influent - Well-C	1/29/18	1/25/18	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis. Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th Edition, 1998 and 22nd Edition, 2012

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 2nd edition, 1992

Eastern Analytical, Inc.

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LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL) Client Designation: Pinetree Power - Tamworth

Sample ID:	Influent - Well-C		
Lab Sample ID:	178262.01		
Matrix:	aqueous		
Date Sampled:	1/25/18	Analysis	
Date Received:	1/29/18	Units Date Time M	ethod Analyst
Solids Dissolved	82	mg/L 1/30/18 11:25 254	0C-97 ATA
Nitrate/Nitrite-N	0.6	mg/L 1/31/18 13:35 30	00.0 KD
Specific Conductance		uS/cm 2/06/18 12:30 12	20.1 AMB
Sulfate	3	mg/L 2/13/18 12:05 30	00.0 KD

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LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power - Tamworth

Sample ID:	nfluent - Well-C					
Lab Sample ID:	178262.01					
Matrix:	aqueous					
Date Sampled:	1/25/18	Analytical		Date of		
Date Received:	1/29/18	Matrix	Units	Analysis	Method Ar	nalyst
Arsenic	< 0.001	AqDis	mg/L	1/30/18	200.8	DS
Barium	0.007	AqDis	mg/L	1/30/18	200.8	DS
Cadmium	< 0.001	AqDis	mg/L	1/30/18	200.8	DS
Chromium	< 0.001	AqDis	mg/L	1/30/18	200.8	DS
Lead	0.006	AqDis	mg/L	1/30/18	200.8	DS
Mercury	< 0.0001	AqDis	mg/L	1/30/18	200.8	DS
Selenium	< 0.001	AqDis	mg/L	1/30/18	200.8	DS
Silver	< 0.001	AqDis	mg/L	1/30/18	200.8	DS
Total Hardness (as C	aCO3) 19	AqTot	mg/L	1/30/18	200.8	DS
Silica (calculated)	12	AqDis	mg/L	2/2/18	200.8	DS

Silica (calculated): Silicon (Si) was analyzed by Method 200.8 and converted to silica (SiO2) by calculation. All the silicon was assumed to be tied up as silica therefore the silicon concentration in mg/L was multiplied by 2.139 to convert to silica. mg/L silicon * 2.139 = mg/L silica.

Eastern Analytical, Inc.

professional laboratory and drilling services	M Eastern Analytical, Inc.	5;30TE #:	ATORY PROGRAM: NPDES: RGP GWP, OIL FUND, BROWNF	STATE ANTE MA ME VT	SITE NAME: PETTETUSE VOWER-		PHONE: <u>814-350-3510</u>	NEWLONDAN	ADDRESS: 176 NEW PORT	1ANAGER: SOLA BAI	PRESERVATIVE: H-HCL; N-HNO3; S-H2SO4; Na-NaOH; M-MEOH	Matrix: A-Air; S-Soil; GW-Ground Water; SW-Surface Water; DW-Drinking Water; WW-Waste water				14NFUL- NEC-0 1/23	D SAMPLE I.D.	6		Page of	
		P0 #:	Stormwater or MPA- Other:	OTHER:	R- PANNONI	honfrong ENGENGENSNU.com	EXT.:	SHATE: 1/1-1 ZIP: 03257	Nertherents -	MASZIAK	: M-MEOH	RFACE WATER; DW-DRINKING WATER;				1	TARE & FINISH DATE / TIME START & FINISH MATRIX (SEE BE GRAB/*COMPA 524.2 52 52 52 52 52 52 52 52 52 5	OSITE E only		BOLD FIELDS REQUIRED.	
(WHITE: ORIGINAL	I NELINQUISHED BY: Concord, NH 03301 Tel: 603		RELINQUISHED BY:	And Born	SAMPLER(S): JOE	PRESUMPTIVE CERTAINTY	OR		- QA/QC	DATE NEEDED:							8021 BTEX HALOS 8015 GRO MAVPH 8270 625 SVTICS EDB ABN A BN PAH TPH8100 L1 L2 8015 DRO MAEPH	DBCP			CHAIN-OF-CUSTODY RECO
GREEN: PROJECT MANAGER)	DALE: IME:)3.228.0525 I.800.287.0			118 0	NYCHNAG 25	$\overline{\mathbf{N}}$	ELECTRONIC OPTIONS									X	PEST 8081 PCB 8082	1664		PLEASE CIRCLE REQUE	STODY RECOR
r Manager)	Neceived dy: 0525 E-Mail:: CustomerService@Ea			\vdash	ALC U ZA	Equis Excel	PTIONS			TEMP. 1 % °C							TS TSS TDS SPEC. BR CI F SO4 NO2 NO3 NO2NO BOD CBOD T. ALK. TKN NH3 T. PHOS. PH T. RES. CHLORINE COD PHENOLS TOC TOTAL CYANIDE TOTAL SULFID	O. Phos. DOC	NORGANICS	UESTED ANALYSIS.	ORD
_	25 Chenell Drive Concord, NH 03301 Tel: 603.228.0525 1.800.287.0525 E-Mail: CustomerService@EasternAnalytical.com www.EasternAnalytical.com	Suspected Contamination:	- Site History:		on 2/12/18	SUN avoud per cluv	NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)	SAMPLES FIELD FILTERED?	OTHER METALS: SILICA	METALS: (8 RCRA) 13 PP FE, MN						r	Reactive Cyanide Reactive Flashpoint Ignitability Total Coliform E. Coli Fecal Coliform Enterococci Heterotrophic Plate Count Heterotrophic Plate Co	Sulfide			178282
	LYTICAL.COM					unt	0, IF DIFFERENT)	NO NO		IN PB, CU							Notes MeOH Vial #			14	



professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 191366 Client Identification: Groundwater Date Received: 1/17/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

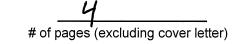
If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

<u>1·28·19</u> Date



SAMPLE CONDITIONS PAGE

EAI ID#: 191366

Client: Horizons Engineering, Inc. (NL)

Client Designation: Groundwater

-	ture upon receipt (°C): 0. temperature range (°C): 0-6	5		Received	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received	Date Sampled	Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
191366.01	MW-11	1/17/19	1/17/19	aqueous	Adheres to Sample Acceptance Policy
191366.02	MW-14	1/17/19	1/17/19	aqueous	Adheres to Sample Acceptance Policy
191366.03	MW-16	1/17/19	1/17/19	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

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LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL) Client Designation: Groundwater

Sample ID:	MW-11	MW-14	MW-16					
Lab Sample ID:	191366.01	191366.02	191366.03					
Matrix:	aqueous	aqueous	aqueous					
Date Sampled:	1/17/19	1/17/19	1/17/19		Ana	alysis		
Date Received:	1/17/19	1/17/19	1/17/19	Units	Date	Time	e Method A	Analyst
Sulfate	2.7	< 1	< 1	mg/L	1/23/19	15:31	300.0	KD
Chloride	110	150	15	mg/L	1/18/19	16:05	4500CLE-11	KD
Nitrite-N	< 0.5	< 0.5	< 0.5	mg/L	1/18/19	15:36	353.2	KD
Nitrate-N	< 0.5	0.59	< 0.5	mg/L	1/18/19	15:36	353.2	KD
Ammonia-N	< 0.05	< 0.05	< 0.05	mg/L	1/23/19	,12:02	TM NH3-001	SEL
TKN	0.60	0.74	< 0.5	mg/L	1/24/19	13:34	4500N _{org} C/N	SEL
Total Phosphorus-P	1.6	1.3	3.8	mg/L	1/24/19	11:29	365.1	SEL
BOD	< 6	< 6	< 6	mg/L	1/18/19	10:31	5210B-11	ATA
COD	< 10	< 10	21	mg/L	1/23/19	9:10	H8000	JCS
рН	5.32	5.19	5.69	SU	1/18/19	15:10	4500H+B-11	KL
Specific Conductance	410	530	71	uS/cm	1/23/19	15:15	120.1	KL

LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL)

Client Designation: Groundwater

Sample ID:	MW-11	MW-14	MW-16				
Lab Sample ID:	191366.01	191366.02	191366.03				
Matrix:	aqueous	aqueous	aqueous				
Date Sampled:	1/17/19	1/17/19	1/17/19	Analytical		Date of	
Date Received:	1/17/19	1/17/19	1/17/19	Matrix	Units	Analysis	Method Analyst
Antimony	< 0.001	< 0.001	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Arsenic	0.0033	0.0025	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Beryllium	0.0012	0.0017	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Calcium	20	21	6.4	AqDis	mg/L	1/23/19	200.8 DS
Cadmium	0.0019	0.0015	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Chromium	< 0.001	< 0.001	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Copper	0.0042	0.0029	0.0043	AqDis	mg/L	1/23/19	200.8 DS
Iron	< 0.05	< 0.05	< 0.05	AqDis	mg/L	1/23/19	200.8 DS
Lead	< 0.001	< 0.001	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Magnesium	2.8	2.9	0.82	AqDis	mg/L	1/23/19	200.8 DS
Manganese	0.051	0.027	0.091	AqDis	mg/L	1/23/19	200.8 DS
Mercury	< 0.0001	< 0.0001	< 0.0001	AqDis	mg/L	1/23/19	200.8 DS
Molybdenum	< 0.001	< 0.001	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Nickel	< 0.001	< 0.001	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Potassium	3.1	2.9	0.90	AqDis	mg/L	1/23/19	200.8 DS
Selenium	0.0085	0.0072	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Silver	< 0.001	< 0.001	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Sodium	53	71	5.3	AqDis	mg/L	1/23/19	200.8 DS
Thallium	< 0.001	< 0.001	< 0.001	AqDis	mg/L	1/23/19	200.8 DS
Zinc	0.013	0.011	0.011	AqDis	mg/L	1/23/19	200.8 DS
Total Hardness (as CaCO3)	61	64	19	AqDis	mg/L	1/23/19	200.8 DS

Direct 877-0116 Eastern Analytical, Inc.	Email: jbanaszak@horizonsengineering.com		Please ensure this auto COC is accurate, ac	Sampler confirms ID and parameters are accurate		Sampler confirms ID and parameters are accurate	MW-14 $\frac{1}{17/2019}$ aqueous $\frac{1}{17/2019}$ Grab or Comp	Sampler confirms ID and parameters are accurate	MW-11 $i/1 \neq /2 \circ i q$ aqueous $I/2 = 1/2 \circ i q$ Grab or Comp	Date/Time Composites need start Sample IDs and stop dates/times	Eastern Analytical, Inc.
-	⊠А □А+ □В □В+ □С □МАМСР	Results Needed by: Preferred date Notes: OC deliverables	Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.	Circle preservative/s: HCL_HNO, H,SO, NaOH_MEOH_Na,S,O,	AqTot/SO4/Cl/NO2/NO3/TKN/NH3/TPhos/BOD/CBOD/PH/SpecCon AqDis/ICPMets.As.Se.Sb.Be.Ca.Cd.Cr.Cu.Fe.Pb.Mn.Mo.Mg.Hg.Ni.K.Ag.Na.Tl.Zn.HardTot	Circle preservative/s: HCL_HNO ₃ _H ₂ SO ₄ _NaOH_MEOH_N <u>a</u> 2S ₂ O ₃	AqTot/SO4/CI/NO2/NO3/TKN/NH3/TPhos/BOD/CBOB/pH/SpecCon AqDis/ICPMets.As.Se.Sb.Be.Ca.Cd.Cr.Cu.Fe.Pb.Mn.Mo.Mg.Hg.Ni.k	Circle preservative/s: HCL_HNO3_H,SO4_NaOH_MEOH_Na2S2O3_ICE	AqTot/SO4/CI/NO2/NO3/TKN/NH3/TPhos/BOD/SBOD/	Parameters and Sample Notes	CHAIN-OF-CUSTODY RECORD
www.easternanalytical.com 800.287.0525 customerservice@easternanalytical.com	Relinquished by Date/Time	ReportingOptions INO FAX HC IPartial FAX EDD PDF PDF Invoice PDF prelim, NO FAX IPAF Invoice PDF prelim, NO FAX IEQUIS Samples Collected by: Hannon Image: Source of the second secon	this sampling event, and modify as n	ICE	y hH/SpecCon 5.Mg.Hg.Ni.K.Ag.Na.Tl.Zn.HardTot	ICE	ලුනුයුදා පිම්මිව්/pH/SpecCon b.Mn.Mo.Mg.Hg.Ni.K.Ag.Na.TI.Zn.HardTot		GBOD/pH/SpecCon b.Mn.Mo.Mg.Hg.Ni.K.Ag.Na.TI.Zn.HardTot	3	0
ll.com	Received by	PO# Verbal AX Quote#: oice Temp O.5°C Ice Y MN Received by	ecessary.	Dissolved Sample Field Filtered	V ⁴	Dissolved Sample Field Filtered	$\overline{\mathbb{W}}$	Dissolved Sample Field Filtered	W	# of containers	191366 4

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professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 195545 Client Identification: None Date Received: 5/16/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

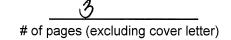
The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director



SAMPLE CONDITIONS PAGE

EAI ID#: 195545

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

•	ture upon receipt (°C): 3. temperature range (°C): 0-6	7		Received	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received	Date Sampled	Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
195545.01	MW-11	5/16/19	5/16/19	aqueous	Adheres to Sample Acceptance Policy
195545.02	MW-14	5/16/19	5/16/19	aqueous	Adheres to Sample Acceptance Policy
195545.03	MW-16	5/16/19	5/16/19	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

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LABORATORY REPORT

Client: Horizons Engineering, Inc. (NL)

Client Designation: None

Sample ID:	MW-11	MW-14	MW-16				
Lab Sample ID:	195545.01	195545.02	195545.03				
•							
Matrix:	aqueous	aqueous	aqueous				
Date Sampled:	5/16/19	5/16/19	5/16/19	Analytical		Date of	
Date Received:	5/16/19	5/16/19	5/16/19	Matrix	Units	Analysis	Method Analyst
Antimony	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Arsenic	0.040	0.026	0.0011	AqDis	mg/L	5/17/19	200.8 DS
Beryllium	< 0.001	0.0027	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Calcium	1.6	61	6.4	AqDis	mg/L	5/17/19	200.8 DS
Cadmium	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Chromium	0.016	0.0097	0.0061	AqDis	mg/L	5/17/19	200.8 DS
Copper	0.0022	0.0012	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Iron	< 0.05	< 0.05	< 0.05	AqDis	mg/L	5/17/19	200.8 DS
Lead	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Magnesium	0.34	8.6	0.76	AqDis	mg/L	5/17/19	200.8 DS
Manganese	0.0066	0.037	0.016	AqDis	mg/L	5/17/19	200.8 DS
Mercury	< 0.0001	< 0.0001	< 0.0001	AqDis	mg/L	5/17/19	200.8 DS
Molybdenum	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Nickel	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Potassium	1.3	7.6	1.0	AqDis	mg/L	5/17/19	200.8 DS
Selenium	< 0.001	0.016	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Silver	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Sodium	< 5	290	8.5	AqDis	mg/L	5/17/19	200.8 DS
Thallium	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/17/19	200.8 DS
Zinc	0.011	0.026	0.0052	AqDis	mg/L	5/17/19	200.8 DS



professional laboratory and drilling services

Joel Banaszak Horizons Engineering, Inc. (NL) 176 Newport Road New London, NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 195860 Client Identification: Pinetree Power Date Received: 5/24/2019

Dear Mr. Banaszak:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

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- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R:%Recovery

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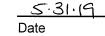
The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director





SAMPLE CONDITIONS PAGE

EAI ID#: 195860

Client: Horizons Engineering, Inc. (NL)

Client Designation: Pinetree Power

-	ture upon receipt (°C): 2. temperature range (°C): 0-6	1		Received	on ice or cold packs (Yes/No): Υ
Lab ID	Sample ID	Date Received	Date Sampled	Sample % Dry Matrix Weight	Exceptions/Comments (other than thermal preservation)
195860.01	MW-11	5/24/19	5/24/19	aqueous	Adheres to Sample Acceptance Policy
195860.02	MW-14	5/24/19	5/24/19	aqueous	Adheres to Sample Acceptance Policy
195860.03	MW-16	5/24/19	5/24/19	aqueous	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples. References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 4th edition, 1992

Eastern Analytical, Inc.

LABORATORY REPORT

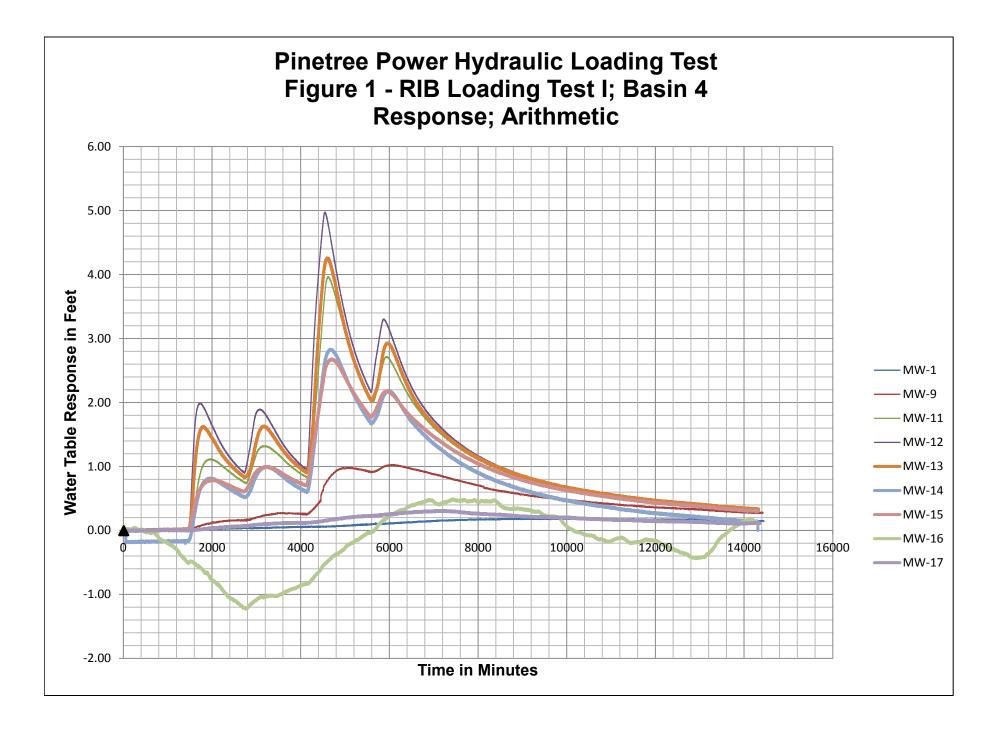
Client: Horizons Engineering, Inc. (NL)

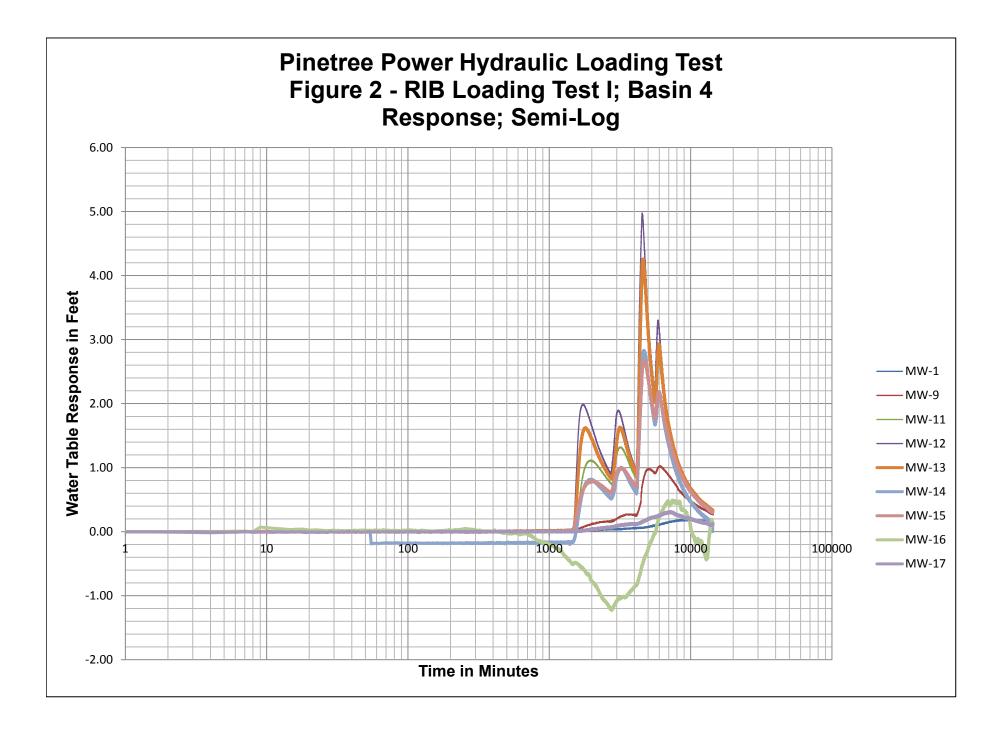
Client Designation: Pinetree Power

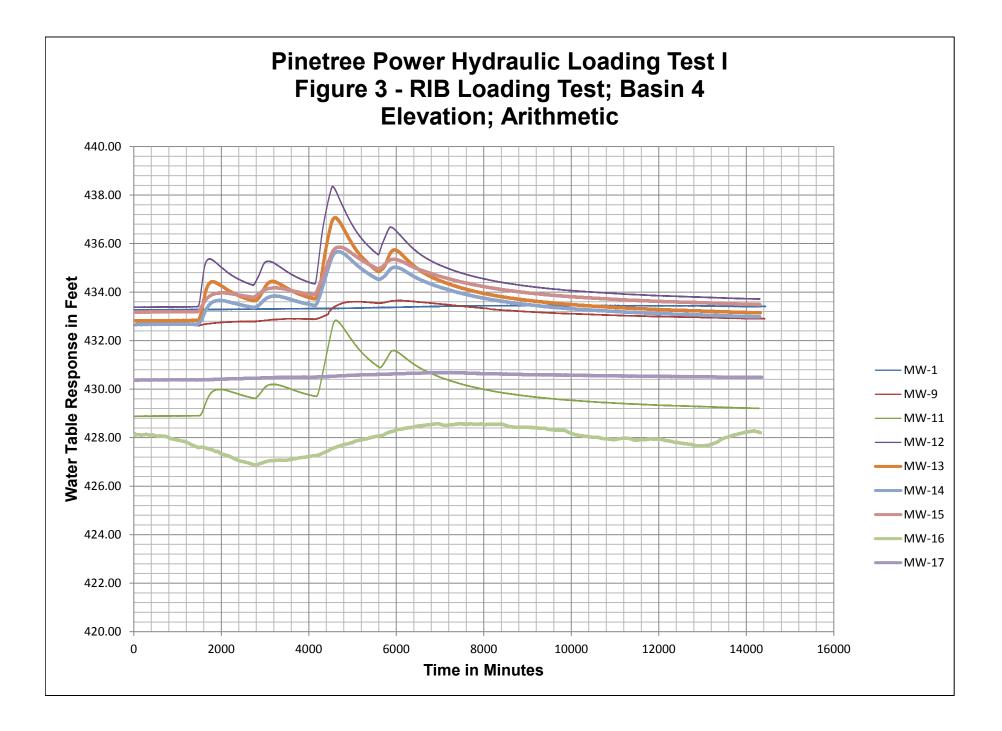
Sample ID:	MW-11	MW-14	MW-16		. •		
Lab Sample ID:	195860.01	195860.02	195860.03				
Matrix:	aqueous	aqueous	aqueous				
Date Sampled:	5/24/19	5/24/19	5/24/19	Analytical		Date of	
Date Received:	5/24/19	5/24/19	5/24/19	Matrix	Units	Analysis	Method Analyst
Antimony	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Arsenic	< 0.001	0.011	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Beryllium	< 0.001	0.0024	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Calcium	2.1	54	7.3	AqDis	mg/L	5/28/19	200.8 DS
Cadmium	< 0.001	0.0020	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Chromium	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Copper	0.0094	0.0028	0.0030	AqDis	mg/L	5/28/19	200.8 DS
Iron	< 0.05	< 0.05	< 0.05	AqDis	mg/L	5/28/19	200.8 DS
Lead	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Magnesium	0.31	7.8	0.86	AqDis	mg/L	5/28/19	200.8 DS
Manganese	0.0055	0.043	0.020	AqDis	mg/L	5/28/19	200.8 DS
Mercury	< 0.0001	< 0.0001	< 0.0001	AqDis	mg/L	5/28/19	200.8 DS
Molybdenum	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Nickel	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Potassium	0.74	6.1	0.97	AqDis	mg/L	5/28/19	200.8 DS
Selenium	< 0.001	0.011	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Silver	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Sodium	11	270	11	AqDis	mg/L	5/28/19	200.8 DS
Thallium	< 0.001	< 0.001	< 0.001	AqDis	mg/L	5/28/19	200.8 DS
Zinc	0.012	0.031	0.0086	AqDis	mg/L	5/28/19	200.8 DS

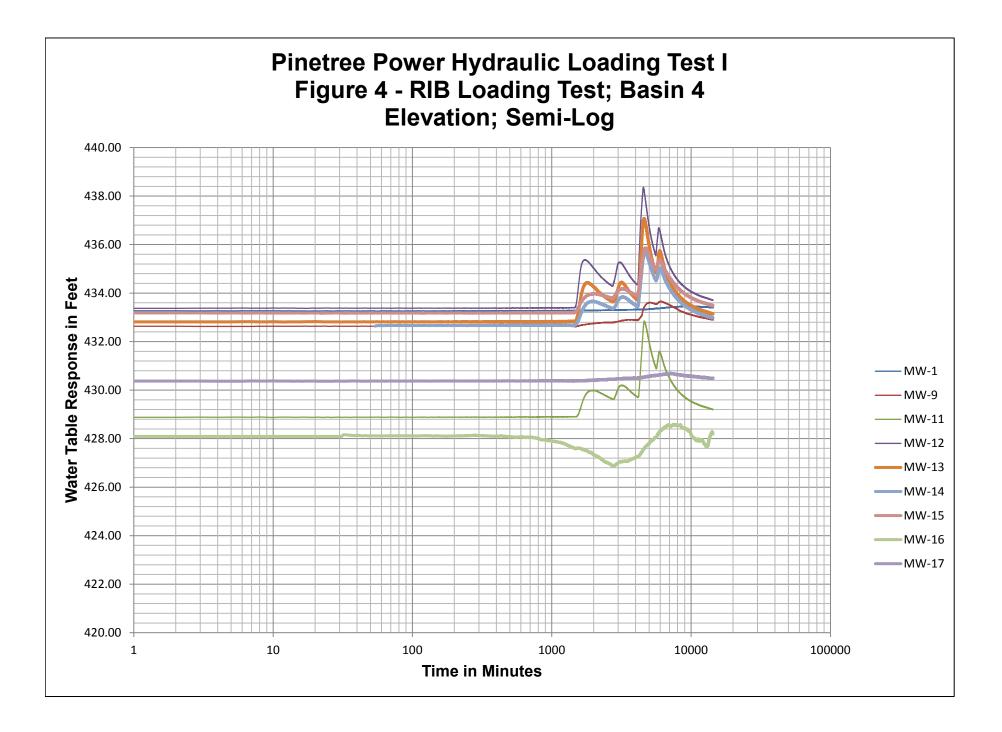
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APPENDIX J Loading Test I, Graphical Response

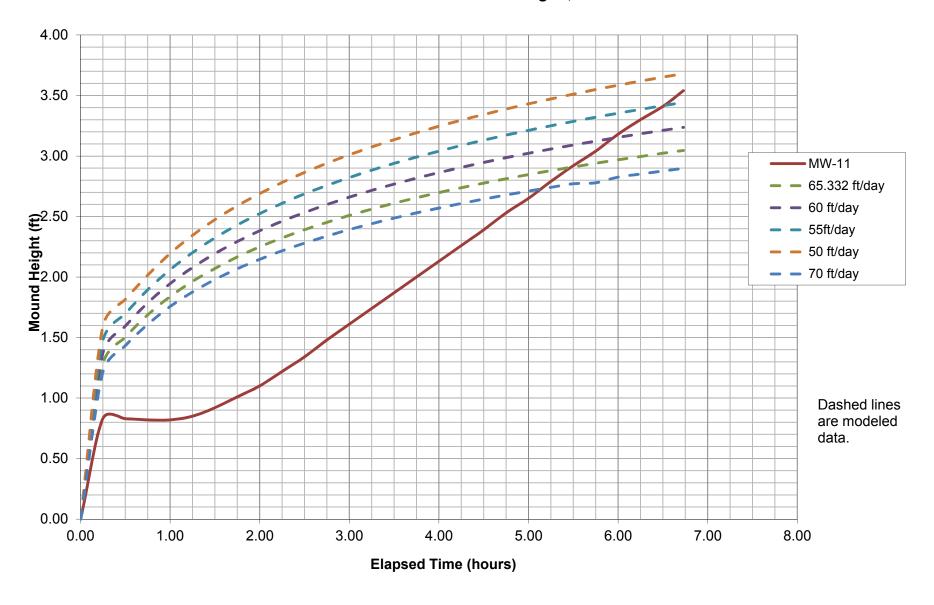




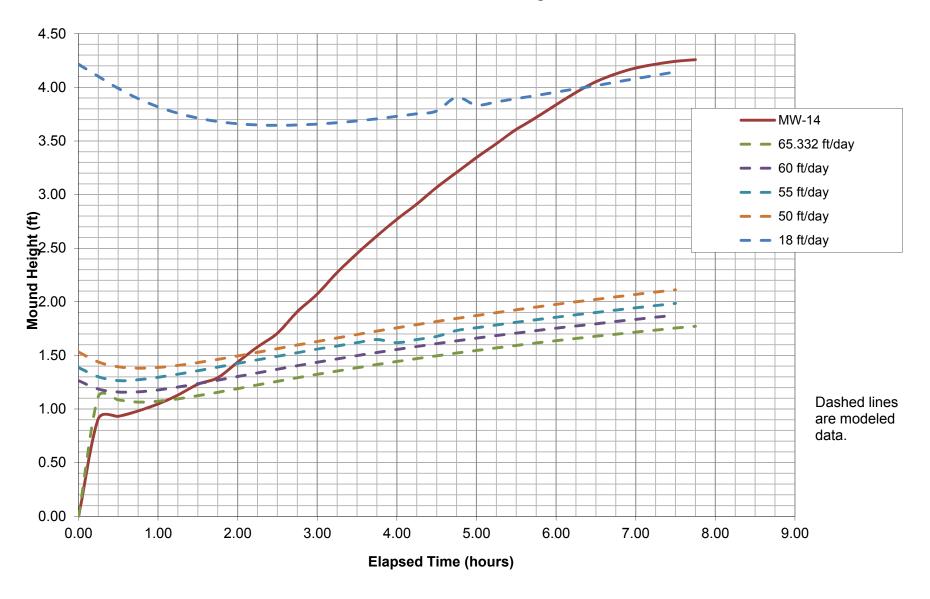




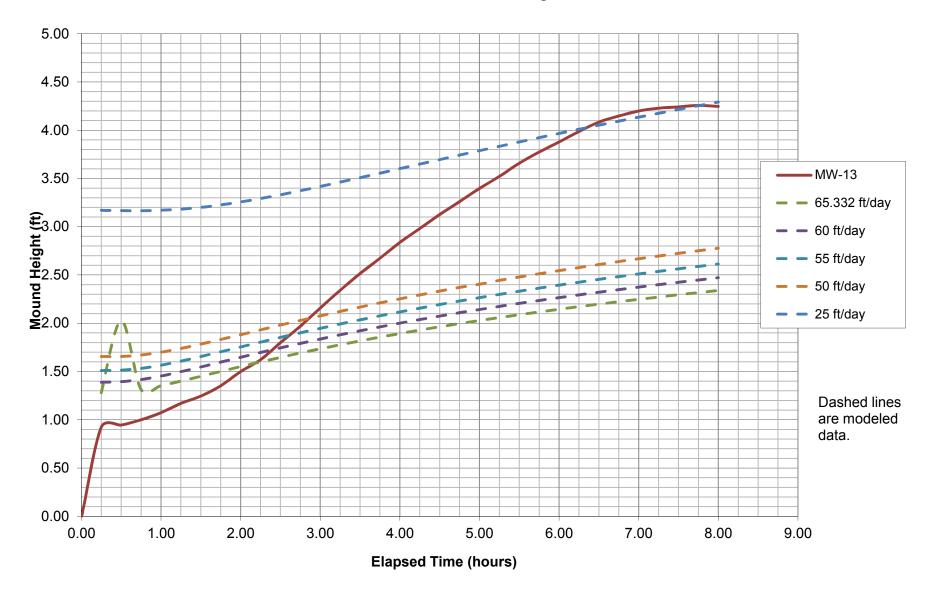
Pine Tree Power Figure 5 - RIB Test Data Modeled vs. Actual Mound Height ; MW-11



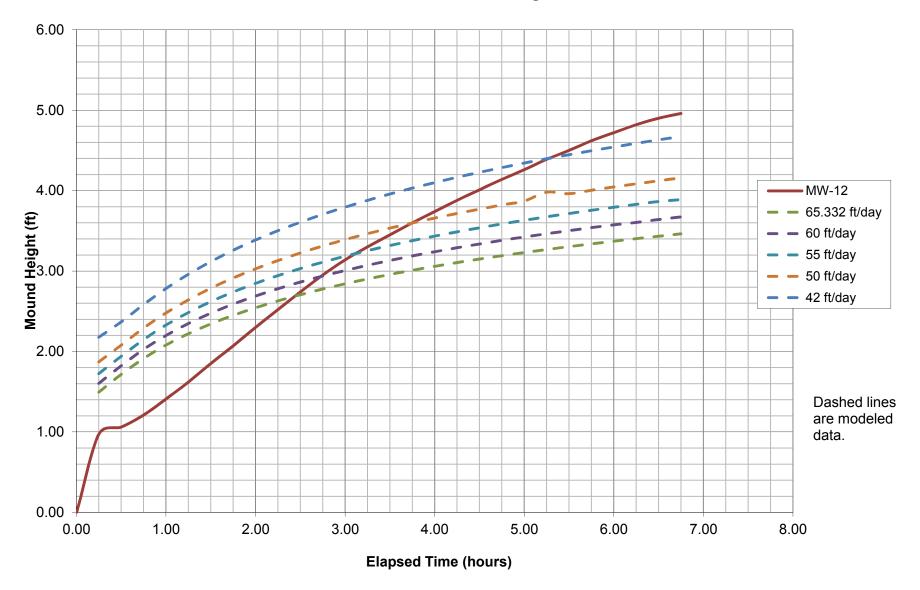
PineTree Power Figure 6 - RIB Loading Test Data Modeled vs. Actual Mound Height ; MW-14



Pine Tree Power Figure 7 - RIB Loading Test Data Modeled vs. Actual Mound Height ; MW-13



Pine Tree Power Figure 8 - RIB Loading Test Data Modeled vs. Actual Mound Height; MW-12



3.00 2.50 2.00 MW-15 Mound Height (ft) 1.50 65.332 ft/day 60 ft/day _ 55 ft/day 50 ft/day - 42 ft/day _ 1.00 Dashed lines are modeled 0.50 data. 0.00 0.00 5.00 10.00 15.00 20.00 25.00 30.00 35.00 Elapsed Time (hours)

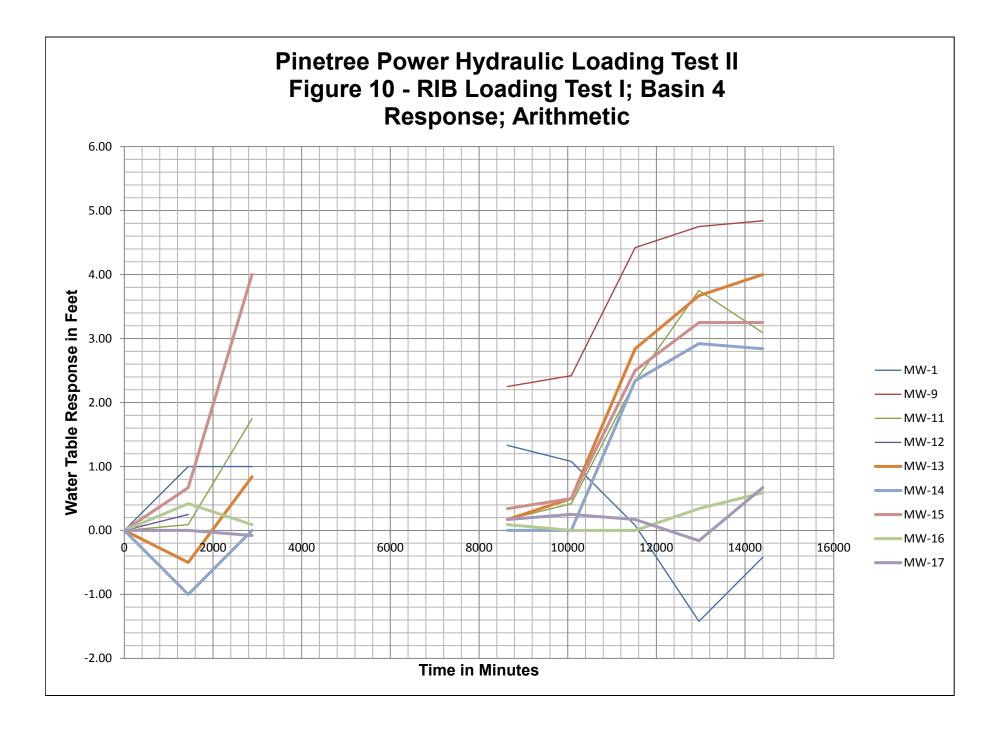
Pine Tree Power Figure 9 - RIB Loading Test Data Modeled vs. Actual Mound Height; MW-15

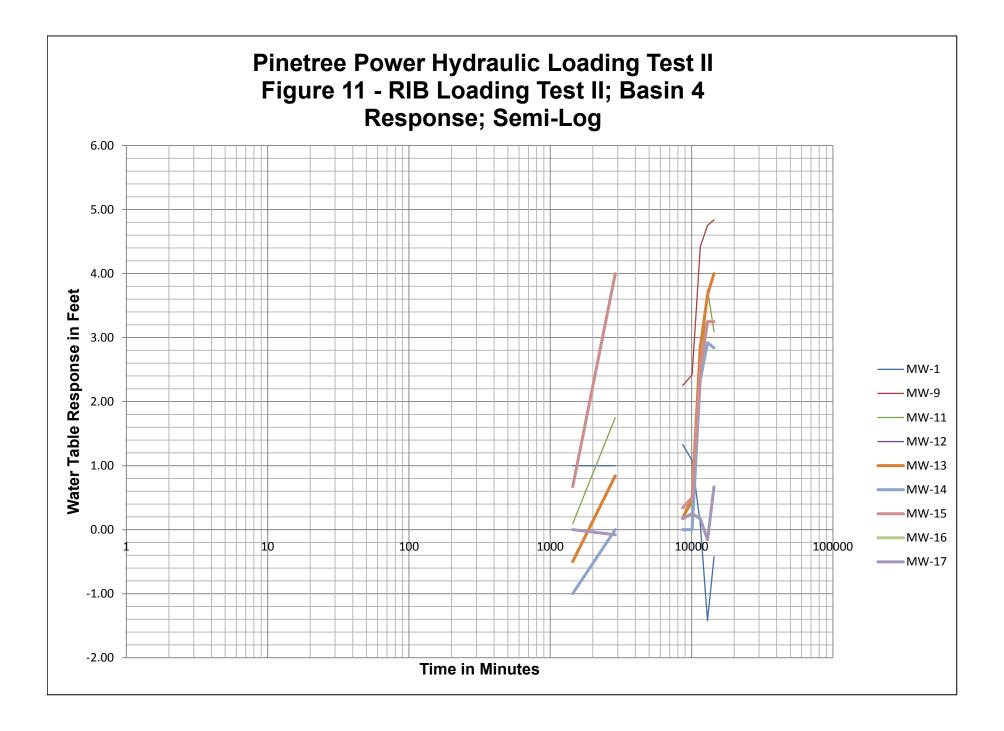
APPENDIX K Loading Test II, NOAA Data and Graphical Response

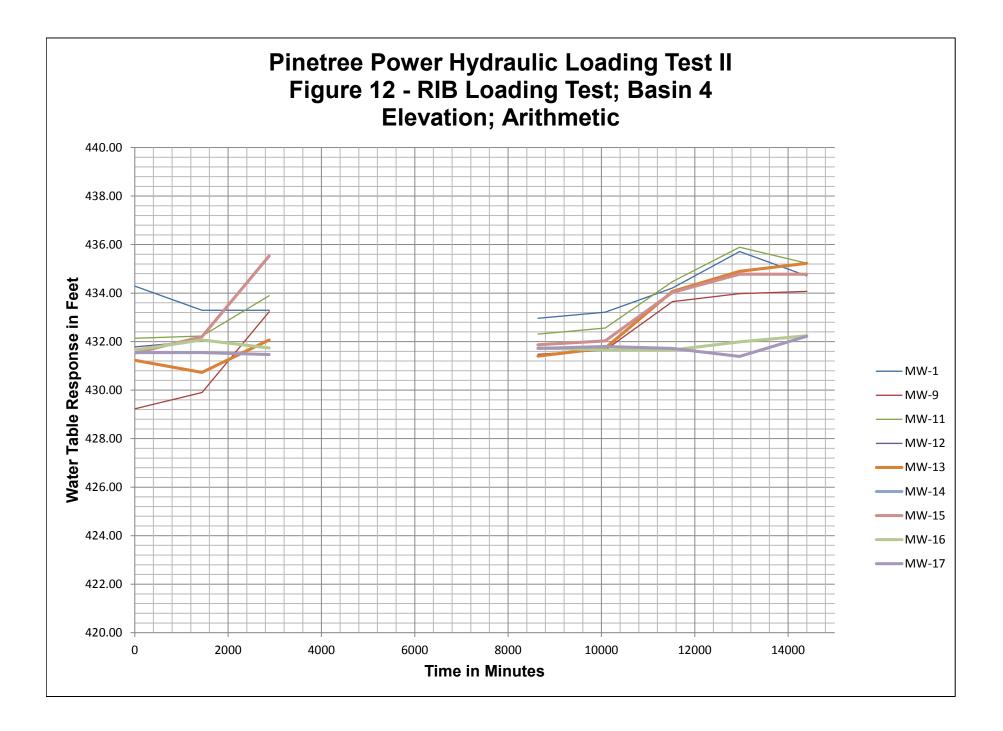
Climatological Data for TAMWORTH 4, NH - April 2019									
Date		Temper	ature		HDD	HDD CDD	Precipitation	New Snow	Snow Depth
Date	Maximum	Minimum	Average	Departure		CDD	Trecipitation	New Show	Silow Deptil
2019-04-01	54	27	40.5	4.4	24	0	0.37	0.0	20
2019-04-02	37	15	26.0	-10.5	39	0	Т	Т	20
2019-04-03	47	16	31.5	-5.5	33	0	0.03	Т	18
2019-04-04	54	28	41.0	3.6	24	0	Т	Т	17
2019-04-05	54	18	36.0	-1.9	29	0	0.00	0.0	16
2019-04-06	45	19	32.0	-6.3	33	0	0.22	0.7	16
2019-04-07	52	24	38.0	-0.7	27	0	0.00	0.0	13
2019-04-08	58	25	41.5	2.3	23	0	0.39	0.6	12
2019-04-09	31	26	28.5	-11.1	36	0	0.93	4.1	14
2019-04-10	31	26	28.5	-11.6	36	0	0.25	1.5	15
2019-04-11	38	21	29.5	-11.0	35	0	0.00	0.0	13
2019-04-12	49	25	37.0	-4.0	28	0	0.00	0.0	11
2019-04-13	44	30	37.0	-4.4	28	0	0.03	0.0	9
2019-04-14	68	31	49.5	7.6	15	0	0.00	0.0	7
2019-04-15	54	33	43.5	1.2	21	0	0.30	0.0	5
2019-04-16	51	34	42.5	-0.3	22	0	0.20	Т	3
2019-04-17	45	26	35.5	-7.7	29	0	0.00	0.0	3
2019-04-18	58	24	41.0	-2.6	24	0	0.00	0.0	2
2019-04-19	43	27	35.0	-9.1	30	0	0.05	0.0	1
2019-04-20	64	41	52.5	8.0	12	0	0.22	0.0	Т
2019-04-21	61	42	51.5	6.6	13	0	0.49	0.0	Т
2019-04-22	65	38	51.5	6.2	13	0	0.01	0.0	Т
2019-04-23	70	40	55.0	9.2	10	0	0.28	0.0	Т
2019-04-24	53	39	46.0	-0.2	19	0	0.32	0.0	Т
2019-04-25	50	29	39.5	-7.1	25	0	Т	0.0	0
2019-04-26	60	33	46.5	-0.5	18	0	0.00	0.0	0
2019-04-27	42	36	39.0	-8.4	26	0	2.15	0.0	0
2019-04-28	48	33	40.5	-7.3	24	0	0.05	0.0	0
2019-04-29	51	31	41.0	-7.1	24	0	0.00	0.0	0
2019-04-30	53	36	44.5	-4.0	20	0	0.00	0.0	0
Sum	1530	873	-	-	740	0	6.29	6.9	-
Average	51.0	29.1	40.1	-2.3	-	-	-	-	7.2
Normal	54.3	30.6	42.4	-	678	1	4.66	М	-

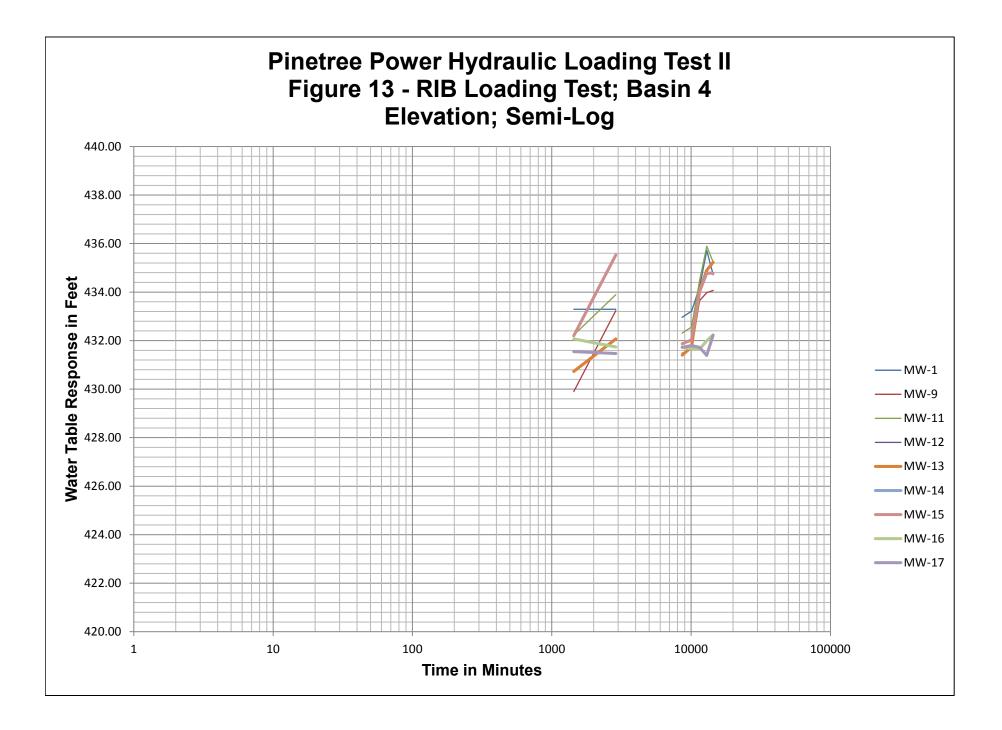
Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).	
Max Temperature · 7am	

Max Temperature . /am	
Min Temperature : 7am	
Precipitation : 7am	
Snowfall : unknown	
Snow Depth : 7am	

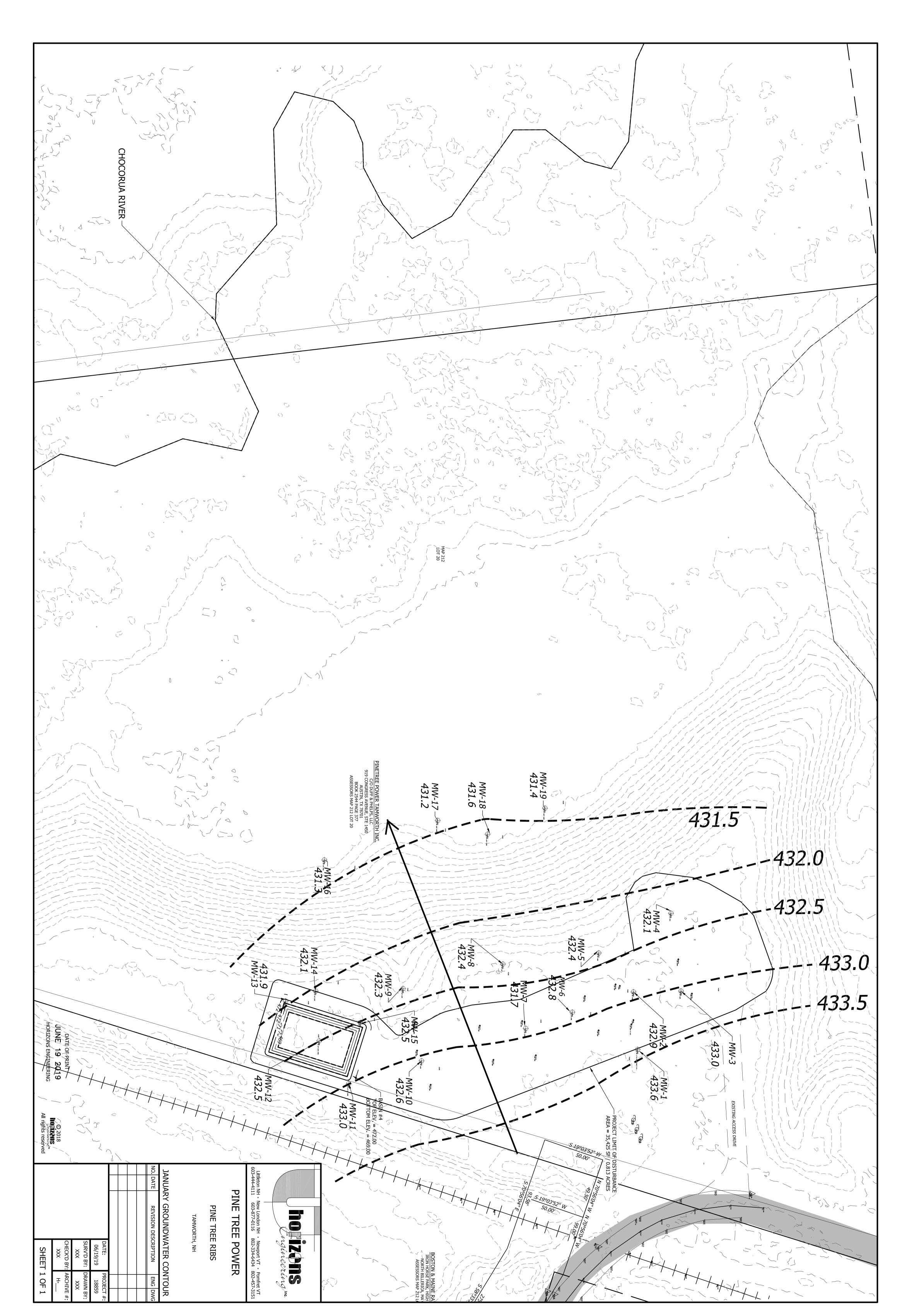








APPENDIX L Groundwater Contour Plan



Appendix M Groundwater Discharge Permit Application



GROUNDWATER DISCHARGE PERMIT FORM Drinking Water and Groundwater Bureau Groundwater Discharge Program



RSA/Rule: RSA 485-A:6, VII; 485:3, X; Env-Wq 402

The GROUNDWATER DISCHARGE PERMIT is a permit issued under RSA 485-A:13 and Env-Wq 402 for the discharge of wastewater to the ground or groundwater. Examples of facilities needing a groundwater discharge permit include rapid infiltration basins, unlined wastewater, septage and sludge lagoons, septic systems not meeting applicable nitrate setback requirements, spray irrigation using treated wastewater and facilities discharging wastewater containing regulated contaminants that are treated with Best Available Technology.

SUBMIT

- ONE SIGNED AND COMPLETED APPLICATION (Applicant shall provide a copy to town/city clerk)
- □ SUPPORTING INFORMATION
- □ \$1,000 APPLICATION FEE (in the form of a check payable to the "Treasurer-State of NH". (State and local government including counties and political subdivisions are exempt)

TO:	NHDESWater Division
	Groundwater Discharge B

Groundwater Discharge Permit Coordinator Drinking Water & Groundwater Bureau P.O. Box 95 Concord, NH 03302-0095

FOR STATE USE ONLY
Date Received:
Site No:
Rivers Coordinator Notified Date:

If you have any questions, please contact the Groundwater Discharge Permit Coordinator at (603) 271-2858.

CERTIFICATION OF NOTICE TO LOCAL TOWN/CITY CLERK

In order to meet the requirements of Env-Wq 402.16(b), the undersigned certific	es that on(date) a copy of this
completed permit application was given to the Town/City Clerk of	(the town in which the
facility for which a permit is needed or is proposed to be located).	

Date:	:Signed:	
		Applicant

I. Activity Type

- Discharge from an unlined domestic wastewater lagoon.
- Discharge from an unlined septage or sludge lagoon.
- Land application of domestic wastewater.
- Discharge of domestic wastewater from a subsurface disposal system with a design flow equal to or greater than 20,000 gallons per day.
- Discharge of domestic wastewater from subsurface disposal systems with aggregate design flows equal to or greater than 1,000 gpd for a single lot where minimum nitrate setback distances are not met.
- Discharge of nondomestic wastewater which contains a regulated contaminant and which has received treatment by Best Available Technologies before discharge.

dwgbinfo@des.nh.gov PO Box 95, Concord, NH 03302-0095 www.des.nh.gov

II. Applicant Information

Name: Pine Tree Power, Inc.	Daytime Phone:	
Mailing Address: 469 Plains Road		
City: Tamworth	State: New HampshireZip: 03886	
Contact Person Name: Jason Joubert	Email: jason.joubert@engie.com	
Contact Person: Phone Number (603) 323-8187	Fax Number:	

III. Facility Information

Name: Pine Tree Power, Inc.		
Address: 469 Plains Road		
City: <u>Tamworth</u>		State: New Hampshire Zip: 03886
Property Tax Map: 212	Lot Number 20	
Latitude & Longitude of discharge point(s)	43°50'13.00"N 71°12'1.50"V	N
Deed Reference (if applicable): County Car		e: Book 2544 Page 0377

IV. Facility Owner (complete only if different then Applicant)

	Daytime Pho	ne:	
	_State:	ZIP:	
Email:			
	Fax Number:		
	Email:_	State: Email:	2(ute:2:: :

V Property Owner (complete only if different then Applicant)

Name:	Daytime Pho	ne:	
Mailing Address:			
City:	State:	Zip:	
Contact Person Name:	Email:		
Contact Person: Phone Number:	Fax Number:		

[* NOTE: The permit shall be obtained by the property owner unless a deeded easement, for a minimum of 20 years, has been granted by the property owner to the applicant for exclusive use of the groundwater as a receiving medium for discharged wastewater.]

VI. Facility Operator (complete only if different from facility owner)

Facility Operator Name:	Daytime Phone:	
Mailing Address:		
City:	State:	Zip:

VII. Facility Activity Information

Briefly describe the facility, its intended capacity and types of waste or wastewater handled, together with supporting information describing the process involved in the pretreatment, treatment, storage or disposal of the waste or wastewater (attach additional sheets as necessary). See Attached Report

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NHDES-W-03-072

VIII. Discharge

- A. Type of discharge (primary or secondary domestic wastewater effluent, septage, etc.). Attach analytical results, if available:_______
 Volume of discharge (GPD): <u>up to 100,000</u> Septage (GPY) <u>0</u>
 Proposed Discharge Schedule: <u>Daily with cycling of basins</u>
 Total number of designed discharge points (i.e. leachfield, dry wells): (4) rapid infiltration basins
 Latitude & Longitude of all Discharge Points: <u>43°508.32'N 71°122.36'W</u>
 Hydraulic loading rate(s) (attach calculations, if applicable): <u>See Attached Report</u>
 Estimated construction time and projected start-up date (for new facilities only): <u>3 basins to be constructed and put</u>
 into use upon permit approval
- B. In the case of industries, all pertinent information relating to processes, production and associated waste streams and treatment shall be included with this application.

IX. Supporting Information

Use this check list as a guide to submitting all needed information, check "Y' (Yes), or "NA" (Not Applicable). If your activity is not directly described, submittal requirements will be determined on a case by case basis. If you check "NA" in the following checklist, please submit a comprehensive narrative of the activities to be permitted.

Y N/A

X

X

X

XX

Х

X X X X

Χ

- A. An original or color photocopy of a USGS map (7½ minute series if available) which clearly identifies the facility location or a map that depicts equivalent features at a similar scale.
- X
 B. For discharges of domestic wastewater, a groundwater discharge zone map, using a tax map as a base, which identifies and locates the following:
 - 1. Groundwater discharge zone boundary;
 - 2. Deeded easements which restrict the use of the groundwater;
 - 3. Streets within 1,000 feet of the groundwater discharge zone;
 - 4. Properties (including tax map and lot, ownership and land use information) within 1,000 feet of the groundwater discharge zone;
 - 5. Surface water bodies within 1,000 feet of the groundwater discharge zone including their designated river classification;
 - 6. Boundary of the 100-year flood zone and identification of the 100-year base flood elevation if within 1,000 feet of the discharge area;
 - 7. Water supply sources (including type of use) within 1,000 feet of the groundwater discharge zone; and
 - 8. Source water protection areas within 1,000 feet of the groundwater discharge zone.
 - C. Detailed scaled facility plan prepared in accordance with the following:
 - 1. The plan shall include a title, a legend and a true north arrow;
 - 2. The plan shall be drawn to scale and the scale shall be noted on the plan and include a graphic scale bar;
 - 3. The base plan sources from which the facility plan was derived shall be noted on the plan;
 - 4. The location, elevation and datum of a bench mark shall be included. If a bench mark referenced to the National Geodetic Vertical Datum (NGVD) is within 1,000 feet of the facility, the elevation shall be recorded using NGVD, and the source of the NGVD bench mark information shall be noted on the plan;
 - 5. Ground surface spot elevations and appropriate contours shall be shown.
 - 6. The facility plan shall identify and locate the following:
 - a. Wastewater application and unlined lagoon areas including total land area available and area to be used;
 - b. Existing/proposed groundwater monitoring wells/piezometers that will be monitored;
 - c. Surface water sampling points;
 - d. Groundwater contours within 100 feet of the groundwater discharge zone;
 - e. Surface water bodies within 100 feet of the groundwater discharge zone;

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NHDES-W-03-072

Y	N∕A [X]	f. Deeded easements which restrict the use of groundwater;
Χ		g. Groundwater discharge zone boundaries;
X X X		h. Land surface contours within 100 feet of the groundwater discharge zone;
Δ		i. A table of groundwater elevations from monitoring wells and piezometers used to develop the groundwater contours and/or used to develop groundwater contours and estimate mounding;
X		j. Soil borings and test pits within 100 feet of the groundwater discharge zone;
X		k. Physical structures and buildings associated with the facility;
Χ		I. Surface and underground storage tanks associated with the facility;
X		m. Underground utilities at the facility; and
XXXXXX		n. Subsurface drains at the facility.
		7. All plans and specifications shall be dated, signed, and sealed by the engineer of record, as that term is defined in RSA 310-A:2, III.
X		D. In addition to the facility plan, a copy of the plan scaled to fit on an 8½" x 11" or 11" x 17" sheet and modified to make the items in Part IX (C) above legible.
	X	E. For existing facilities, a table summarizing all monitoring results from the existing monitoring points from 5 years previous to application date.
Χ		F. A list of reports on land use history, activities, water quality and hydrogeology associated with the property on which the facility is located.
Х		 G. A detailed proposal for a water quality monitoring program, including proposed monitoring schedule, parameters to be analyzed and monitoring locations, with supporting information justifying the locations, frequency and
57		parameters selected.
X		H. A table of locational coordinates for monitoring wells and surface water quality points that are proposed in the water quality monitoring program for the facility, referenced to North American datum of 1983 (NAD83) or world geodetic surfaces of 1084 (WCS84) in degrees minutes seconds, designal degrees or equivalent state plane secritizate units.
	Χ	systems of 1984 (WGS84) in degrees-minutes-seconds, decimal degrees or equivalent state plane coordinate units. I. A nitrate migration study for domestic wastewater or a regulated contaminant movement study for a discharge
Χ		of other than domestic wastewater. J. For a new discharge site or an existing discharge site that is being expanded:
Χ		1. A site specific soil map of the proposed groundwater discharge zone prepared in accordance with the site
	_	specific soil mapping standards for New Hampshire and Vermont; and
X		2. A hydrogeologic site assessment and study that includes a description of the geology of the site, including a description of surficial geologic materials and thickness, estimates of hydraulic conductivity, hydraulic gradients, seepage velocity, groundwater flow, ambient groundwater quality, estimated infiltration rates, and intended loading rates; and
Χ		3. All supporting site specific data, documentation and calculation to support the estimates and descriptions provided.
X		K. Verification from the Department of Resources & Economic Development that no presence of threatened or endangered species exists on the site.
Χ		L. Test pit data and boring log data as outlined and in accordance with Env-Wq 402.15 (d) (1)-(3) including textural description, drilling methods, blow counts and water table observation.
Χ		M. Well construction details of existing monitoring wells, top of well casing elevations, measured depth to water table from top of casing.
	Χ	N. Documentation, filed in the registry of deeds, which acknowledges that the use of groundwater within the groundwater discharge zone for drinking water wells shall be restricted by easement ownership rights, (if the applicant does not own all applicable land).
	X X	 O. Status of Division approval of design plans and operations manual for the wastewater treatment system. P. If a certified wastewater treatment plant operator is required under RSA 485-A, a copy of the certification or
	ت	status or the operator/applicant.
	Χ	Q. A copy of the permit, or application if a permit is not yet issued, for:
Ц	X X	1. A site specific permit for drainage and erosion control measures;
	X X	 A septage or sludge management permit; and A dam permit for bermed or dammed structures.

X. Permit Issuance Information

- A. Within 90 days from the receipt of a complete permit application the Department of Environmental Services (the department) shall issue a permit for a period of five years subject to renewal or deny the application. The department shall notify the applicant of its decision in writing.
- B. The department shall place conditions upon a groundwater discharge permit as required to assure conformance with these rules.
- C. The department may enter any permitted facility for the purpose of collecting information, examining records, collecting samples or undertaking other action associated with the permit.
- D. The permittee shall submit to the department before facility start-up, an as-built site plan on an 8½" x 11" or 11" x 17" sheet, boring logs and well construction details of wells installed after permit issuance.
- E. The permittee shall submit one complete set of water quality results to the department before facility start-up.
- F. The permittee shall apply for the renewal of the permit 90 days prior to its expiration date. The permittee shall continue to comply with all conditions in the original permit until permit renewal or facility closure. (See Env-Wq 402.28 for renewal criteria and Env-Wq 800 for closure requirements).
- G. A permittee may request a permit modification or permit termination by submitting a written request to the department, including the reasons for the modification or termination and a table (in a format prescribed by the department) summarizing all monitoring results to date from existing monitoring points. The department shall modify or terminate the permit or deny the request, stating the reasons for the denial in writing, within 90 days of receipt of the request. (See Env-Wq 402.29 for further information).
- H. Prior to transfer of ownership of a facility, the permittee shall file a written request with the department for a transfer of the permit to the new owner. The request shall include a summary of all monitoring results to date in a format prescribed by the department. Within 90 days of receiving a request for transfer, the department shall notify the present permittee and the new permittee of its decision in writing. Within 90 days from the date of approval of transfer, the new permittee shall notify the department in writing of its acceptance of the permit. (See Env-Wq 402.30 for further information).

XI. Applicant/Owner Certification Statement and Signature

By signing this application the signer certifies that the information contained in or otherwise submitted with this application is true, complete and not misleading to the best of the signer's knowledge and belief.

By signing this application the signer understands that submission of false, incomplete or misleading information is grounds for:

- Denying the application;
- Revoking any application that is granted based on the information; and

- If the signer is acting as, or on behalf of, a listed engineer as defined in Env-C 502.10, debarring the listed engineer from the roster.

By signing the application, the signer and applicant agree to comply with all applicable rules and conditions of this permit and to not discharge to the holding tank(s) until written permission from the department has been received.

Signature of Facility Owner or Agent

Date

No liability is incurred by the State by reason of any approval for a Groundwater Discharge Permit. Approval by the Department is based on information supplied by the applicant. No guarantee is intended or implied by reason of any advice given by the department or its staff.



To: Andrew Godfrey 176 Newport Rd. PO Box 1825 New London, NH 03257 Date: 6/19/2019

Applicant: Andrew Godfrey

From: NH Natural Heritage Bureau

Re: Review by NH Natural Heritage Bureau of request dated 6/19/2019

VALID ONLY FOR NOTIFICTION OR MINIMUM EXPEDITED APPLICATIONS SUBMITTED TO THE NHDES WETLANDS BUREAU

NHB File ID: NHB19-1938

Location: Tax Map(s)/Lot(s): Tamworth

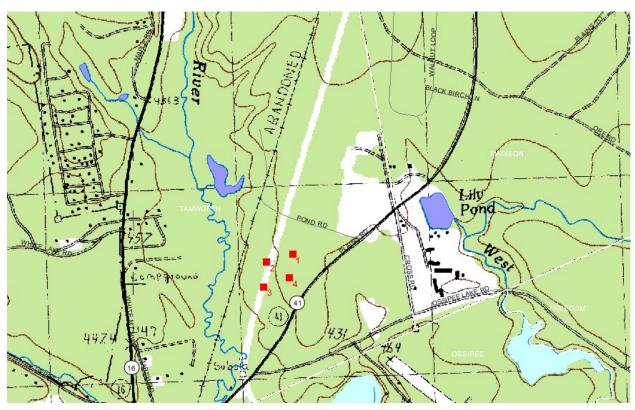
Project Description: Rapid infiltration basins to treat wastewater from power plant

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

This report is valid through 6/18/2020.





MAP OF PROJECT BOUNDARIES FOR NHB FILE ID: NHB19-1938