STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

WASTEWATER:

4-1 Provide copies of any and all agreements or letters of intent with any and all facilities that will be accepting the Project's industrial wastewater for disposal.

RESPONSE 4-1: Clear River Energy LLC ("CRE") has not yet executed an agreement with any facility to treat the process wastewater. This will be evaluated before the operational phase of the Clear River Energy Center ("CREC" or "Project" or "Facility").

There are numerous entities that can provide this service, such as Clean Harbors, Tradebe and Mass Tank Disposal. Preliminary research based on discussion with licensed entities reveals that the quality of water discharged from the CREC is well within the permissible limits that the treatment facility would be able to process, and a budgetary proposal has been received from Clean Harbors.

For more information on the wastewater and waste water quality, please refer to Section 3.2 and Table 3.1(projected wastewater quality) of the revised Water Supply Plan ("Plan" or "Water Supply Plan"), filed with the Rhode Island Energy Facility Siting Board ("EFSB" or "Board") on January 11, 2017.

RESPONDENT: John Niland, Clear River Energy LLC

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-2 Referencing Table 3.1 of the Water Supply Plan for Clear River Energy Center dated January 11, 2017, provide the analysis used to establish the industrial wastewater composition for the Project.

RESPONSE 4:2: Table 3.1 of the Plan (page 17) provides a representative water analysis of the Town of Johnston Water Supply (Providence Water), the expected composition of wastewater from the CREC Facility and a list of the applicable Categorical Pretreatment Standards for discharges to publicly owned treatment works ("POTWs").

The CREC Wastewater Quality projection included in Table 3.1 was developed from a mass balance developed for the Project that utilized as input the quality of water from the Town of Johnston (Providence Water) water supply, the treated demineralized water quality expected from the on-site demineralizer trailer, and any wastewater treatment that may be applied within the Facility for each process water source. The CREC process water sources are shown in the Natural Gas Fired Water Mass Balance WMB-01 Sheet 1-4 Rev N3 (provided in Appendix C of the Water Supply Plan "Revised Facility Water Balances").

Exhibit 4-2 is the mass balance table developed for the Project that estimates the process water composition for each major process use within the CREC Facility.

Exhibit 4-2 identifies (on row three) the expected process water flow for each stream identified in the associated Natural Gas Fired Water Mass Balance WMB-01 Sheet 1-4 Rev N3, and under each flow the expected composition of each process water source within the CREC.

A modern combined cycle electric generating facility employing a dry cooling system for heat rejection and using an off-site regenerated mobile demineralizer trailer service has only a limited number of process wastewater sources, many of which can be recycled within the Facility for further treatment by the mobile demineralization trailer. The CREC Facility will employ various filtration systems for suspended solids removal (a condensate pre-coat polisher or similar filter for

the treatment of condensate), various types of filters for suspended solids removal, and an oil/water separator to remove oil that could be present in floor and equipment drains (labeled Miscellaneous Plant Services) to allow most of the process wastewater to be recycled within the facility.

CREC plans to discharge some process wastewater from the facility by truck, which provides the facility a method to balance the overall volume of water required. Any wastewater generated from the CREC Facility will be trucked to an offsite facility that is licensed to receive industrial wastewater for treatment and disposal.

To illustrate how each process wastewater composition was developed, a sample mass balance around the Service/Fire Water Tank is provided below. **Exhibit 4-2** identifies three process water flows into the Service/Fire Water Tank; those being (1) Providence Water Supply provided via trucking from the Town of Johnston (Column A, 11 gpm average flow), (2) the filtered HRSG Blowdown flow (Column H, 23 gpm average flow), and (3) Wastewater Recovery flow (Column J, 4 gpm average flow). There is also one process water flow out of the Service/Fire Water Tank to provide water to the overall facility (Column B, 38 gpm average flow).

To conduct a mass balance for Total Dissolved Salts ("TDS") around the Service/Fire Water Tank the following calculation is provided:

The overall mass of TDS into the Service/Fire Water Tank (each flow times its TDS concentration) divided by the Flow out of the Service/Fire Water Tank provides the TDS of the process flow out of the Service/Fire Water Tank - see calculation below and refer to the source descriptions above.

$$\frac{(11\text{ gpm}) \times (94\text{ ppm TDS}) + (4\text{ gpm}) \times (32\text{ ppm TDS}) + (23\text{ gpm}) \times (1.9\text{ ppm TDS})}{(38\text{ gpm out of the Service/Fire Water Tank})} = \mathbf{31.7\text{ ppm TDS}}$$

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

31.7 ppm TDS is rounded to 32 ppm in **Exhibit 4-2** (see Column B - TDS). 32 ppm TDS is the projection for the average TDS of the process water leaving the Service/Fire Water Tank under the operating conditions identified in the Natural Gas Fired Water Mass Balance WMB-01 Sheet 1-4 Rev N3. The balance of the process water composition projections included in **Exhibit 4-2** are based on the same mass balance calculation provided above.

RESPONDENT: George Bacon, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-3 Provide a detailed summary of all industrial wastes streams for the Project.

RESPONSE 4-3: See response to Data Request No. 4-2 above. A detailed summary of the CREC industrial wastewater stream is Column L of **Exhibit 4-2**.

RESPONDENT: George Bacon, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-4 Identify all specific USEPA effluent pretreatment discharge standards in 40 CFR 423 that are applicable to the Project. For any EPA requirement that was not determined to be applicable include a detailed reason why.

RESPONSE 4-4: CRE reviewed 40 CFR 423 to identify those effluent limitations that may be applicable to CREC's plans to transport CREC treated process wastewater from the Facility to POTWs for treatment and disposal. Sections 423.16 and 423.17 address pretreatment standards for sources that introduce pollutants to a publically owned treatment works.

- 423.16 Pretreatment standards for existing sources ("PSES") built after July 1, 1984. Part 423.16 applies to existing sources that introduce pollutants into a publicly owned treatment works. CREC is not an existing source, so this section does not apply.

- 423.17 Pretreatment standards for new sources ("PSNS") (a) applies to any new source discharging to publicly owned treatment works built after October 14, 1980. Part 423.17 (b) PSNS applies to any new source as of June 7, 2013 which introduces pollutants into a publicly owned treatment works. As a result, CREC with its plan to truck treated process wastewater to publicly owned treatment works for treatment and disposal and being constructed after June 7, 2013, this part of 40 CFR 423 is applicable to the CREC Facility.

The 423.17 Pretreatment Standards for new sources discharging to a publicly owned treatment works are applicable to a wide range of electric generating technologies, including coal, oil and nuclear facilities of all sizes and configurations. These pretreatment standards also apply to modern gas fired combined cycle generating facilities because combined cycle generating facilities.

40 CFR 423.17 (b) includes the following Pretreatment Standards for New Sources:

(1) "**PCBs**. There shall be no discharge of polychlorinated biphenyl compounds such as those used for transformer fluid."

The CREC Facility will have no transformers using polychlorinated biphenyl compounds and will not as a result discharge any PCBs in the wastewater discharged from the facility.

(2) "**Chemical metal cleaning wastes**. The pollutants discharged in chemical metal cleaning wastes shall not exceed the concentration listed in the following table."

	PSNS
Pollutant of pollutant property	**Maximum for 1 day (mg/L)**
Copper, total	1.0

Chemical metal cleaning wastes are typically generated by older coal and heavy oil based electric generating stations. These metal cleaning wastes are generally associated with the water side of the boilers employed in these older power plants. The copper identified as a concern in the table above is present in the boiler chemical metal cleaning wastes as these older power plants typically employed copper and copper alloy metals within their boiler steam and cooling water cycles which accumulates as a deposit on the water side of these older boilers.

Modern gas fired combined cycle electric generating facilities, such as CREC, because of the nature of the fuels fired and the materials of construction do not typically generate chemical metal cleaning wastes, and the materials of construction do not generally include copper or copper alloys in the steam boiler cycles.

The CREC, as a modern combined cycle electric generating station utilizing a dry cooling system, will not employ any copper or copper alloy materials in its steam boiler cycle. The dry cooling system will employ carbon steel and other steel alloys and will not include copper or copper alloy materials. As a result, CREC will not generate Chemical metal cleaning wastes containing copper exceeding 1.0 mg/L Total Copper limit.

(3) [Reserved]

(4) "(i) **Cooling tower blowdown.** The pollutants discharged in cooling tower blowdown shall not exceed the concentration listed in the following table.

	PSNS
Pollutant or pollutant property	**Maximum for any time (mg/L)**

The 126 priority pollutants (appendix A) contained in chemicals added for cooling tower maintenance, except:	([1])
Chromium, total	0.2
Zinc, total	1.0

[1] No detectable amount.

The above discharge limits only apply to wet cooling towers which require cooling tower blowdown to control the chemistry of the cooling water. CREC will employ a dry cooling system for waste heat rejection and as such will not employ any wet cooling tower systems and will have no associated cooling tower blowdown to which the above limits apply. As a result, the CREC Facility will not utilize any of the 126 priority pollutants contained in chemicals added for cooling tower maintenance and will not discharge any chromium or zinc contained in cooling tower blowdown as CREC will have no cooling tower blowdown.

(5) "**Fly ash transport water.** There shall be no discharge of wastewater pollutants from fly ash transport water."

The CREC Facility does not use any solid fuels and as a result will not generate any fly ash or fly ash transport water. Fly ash transport water is typically generated by facilities using coal, wood or other solid fuels as their source of heat.

(6) "**FGD wastewater**. The quantity of pollutants discharged in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed in the following table:"

	PSNS	
Pollutant or pollutant property	**Maximum for any 1 day**	**Average of daily values for 30 consecutive days shall not exceed**
Arsenic, total (ug/L)	4	
Mercury, total (ng/L)	39	24
Selenium, total (ug/L)	5	
TDS (mg/L)	50	24

The CREC Facility does not utilize any solid fuels and does not employ a Flue Gas Desulfurization system; as a result, CREC will not generate any Flue Gas Desulfurization system wastewater as these systems are only applicable to the combustion of coal or other solid fuels.

(7) "**Flue gas mercury control wastewater**." There shall be no discharge of pollutants in flue gas mercury control wastewater. Whenever flue gas mercury control wastewater is used in any other plant process or is sent to a treatment system at the plant, the resulting effluent must comply with the discharge standard in this paragraph."

The CREC Facility does not utilize any solid fuels and does not need to employ a flue gas mercury control system; as a result, CREC will not generate any flue gas mercury control wastewater. Mercury is not present in the natural gas and/or the ultra-low sulfur distillate oil that will be used as fuels for the facility.

(8) "**Bottom ash transport water**. There shall be no discharge of pollutants in bottom ash transport water. Whenever bottom ash transport water is used in any other plant process or is sent to a treatment system at the plant, the resulting effluent must comply with the discharge standard in this paragraph."

The CREC Facility does not utilize any solid fuels nor utilize any bottom ash collection systems; as a result, CREC will not generate any bottom ash transport water. Bottom ash and bottom ash transport water are only applicable to coal or heavy oil fired power plants.

(9) "**Gasification wastewater.** The quantity of pollutants discharged in gasification wastewater shall not exceed the quantity determined by multiplying the flow of gasification wastewater times the concentration listed in the following table."

Pollutant or pollutant property	**PSNS**	
	Maximum for any 1 day	**Average of daily values for 30 consecutive days shall not exceed**
Arsenic, total (ug/L)	4	
Mercury, total (ng/L)	1.8	1.3
Selenium, total (ug/L)	453	227

Total dissolved solids (mg/L)	38	22

The CREC Facility does not employ any gasification systems to convert solid fuels to gaseous fuels; as a result, CREC will not generate any gasification process wastewater. Gasification processes are only applicable to the production of gaseous fuels from coal or heavy oil.

(10) "**Combustion residual leachate**. The quantity of pollutants discharged in combustion residual leachate shall not exceed the quantity determined by multiplying the flow of combustion residual leachate times the concentration listed in the flowing table."

	PSNS	
Pollutant or pollutant property	**Maximum for any 1 day**	**Average of daily values for 30 consecutive days shall not exceed**
Arsenic, total (ug/L)	11	8
Mercury, total (ng/L)	788	356

The CREC Facility does not utilize any solid fuels and will not, as a result, have any combustion residual material piles from which combustion residual leachate could be formed. Combustion residual leachate is typically generated by coal or other solid fuel combustion where combustion residuals are collected in areas subject to rainfall resulting in combustion residual leachate wastewaters.

Although not part of 40 CFR 423.17, CRE believes that 423.15 (1) applies to discharges to POTWs as well and CRE addresses the pH requirement of Part 423.15 below.

"**pH**. The pH of all discharges, except once through cooling water, shall be within the range of 6.0 - 9.0." Although this requirement does not appear in the Pretreatment standards for discharges to publicly owned treatment works, CREC provides the following to address the pH of process wastewater trucked to POTWs for treatment and disposal.

CREC Facility water treatment systems do not employ strong acid or caustic chemicals on-site. Ammonia, which is alkaline, is added to the boiler/steam cycle

to adjust the pH of the steam/condensate in contact with steel and steel alloys to control corrosion of these materials to low levels. Ammonia is volatile and preferentially partitions into the steam phase; as a result HRSG blowdown contains only low concentrations of ammonia. CREC plans to recycle HRSG blowdown (with or without use of a cascading blowdown recovery system) to the Service/Fire Water Tank which will contain low levels of ammonia. Ammonia ion though is fully removed from the recycled process water by the demineralizer trailers which are then regenerated off-site. As a result wastewater to be transported to POTWs for treatment and disposal will be within the pH range of 6.0 - 9.0 as strong acid and caustic chemicals will not be used on site and ammonia will be removed by the demineralizer trailers.

RESPONDENT: George Bacon, ESS Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

DEM'S THIRD DATA REQUEST

4-5 DEM's data request 3-8 requested the Applicant to provide "more detail on the specific means of detection for each bird species noted as a probable breeder at the site (i.e. what evidence of breeding was noted for each species and where). Section 6.6.2.2 provides this information for black-throated blue warbler, but no other species." The Applicant responded by reiterating the criteria that warranted listing as a probable breeder and provided information on the relative frequency that these indicators were observed, but did not provide the requested level of detail for each species. Provide the requested level of detail for each species as set out in DEM's data request 3-8.

RESPONSE 4-5: As noted in the ESFB Application and the Application to Alter, prior wildlife observations were incidental in nature and were noted while on-site. Per Rhode Island Bird Atlas 2.0, the Breeding Evidence Code of possible breeding was assigned for a particular species of bird observed or heard singing once in suitable habitat during the nesting season, but with no other indication of breeding noted. Similarly, the Breeding Evidence Code of probable breeding was assigned based on the observation of a pair of a particular species being observed in suitable habitat during their breeding season. Prior to 2017, specific locations of individual species were not recorded.

As discussed further in response to Data Request No. 4-39, an inventory of the flora and fauna in the study area is being conducted for the purpose of gathering site-specific data on the faunal and floral communities present at the project site to supplement the scientific literature, GIS data review, and incidental observations which were included in the Clear River Energy Center – Rhode Island Energy Facility Siting Board Application – Addendum – Wetlands, dated August 29, 2016, filed with the EFSB on August 30, 2016 and the Application to Alter Freshwater Wetlands - Clear River Energy Center and Burrillville Interconnection Project, dated April 2017, filed with the RIDEM on April 26, 2017. The site-specific flora and fauna survey protocols were provided to RIDEM for comment prior to its implementation. The ongoing inventory of flora and fauna study will result in a list of bird species detected at the site, the number of detections of each species, the methodology used for their detection, whether each species is presumed to breed at the site and the methodology for making this determination, and specific locations within the site at which each bird species was detected. This report is expected to be provided to RIDEM in July 2017.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-6 DEM's data request 3-25 requested the distance into the forest at which the impacts from the Facility (both plants) do not contribute to an increased noise level. The Applicant responded that the CREC will contribute to an increase in noise level at a distance greater than 300 feet into the forest. However, the Applicant failed to indicate how far (distance) the noise level would travel. Provide this information.

RESPONSE 4-6: The distance from the CREC at which combined noise levels "do not contribute to an increased noise level" depends on a few assumptions. From a strict mathematical standpoint, a new source of noise in an environment does not contribute to existing noise levels when the noise level of the new source drops to 10 dBA below existing levels. There are many caveats to this concept. For example, this assumes that the frequency range of the source and the background sound are similar, and that source and background noise levels are constant (which they most often are not). To determine an estimated one-number distance, one must assume a source noise level, a set of propagation conditions, and a background noise level. If one assumes the CREC is producing 43 dBA at the distance of the nearest residences (~2,300 feet), good sound propagation conditions as described by ISO 9613-2, and a background noise level of 35 dBA (average of levels in Table 9 of the October 2015 CREC noise level evaluation report for M4 and M5 that are in the forest), the CREC would theoretically add to existing noise levels out to a distance of approximately 2.5 miles.

However, noise from the CREC will become inaudible to humans at a much closer distance. In general, humans cannot distinguish an increase in total noise levels of approximately 3 dBA or less. For example, if the ambient noise level is 35 dBA and the CREC produces 35 dBA, the logarithmic total of this is 38 dBA. This 3 dBA increase would be barely perceptible to the human ear. A lower CREC level would be imperceptible. Thus, referring to the noise level contour figures in my May 8, 2017 Memorandum, attached as **Exhibit 4-6**, and assuming a background sound level of 35 dBA, the 35 dBA noise level contour can be used as the dividing line between humans being able to discern operation of the CREC or not. Between the 35 dBA contour and the CREC, the facility would be audible. Beyond the 35 dBA contour the facility would not be audible. To the south this equates to approximately 4,500 feet.

If the concern is wildlife, one of the most recent and most applicable studies of the impact of manmade noise on wildlife is *The Effects of Highway Noise on Birds*, Robert J. Dooling and Arthur N. Popper, Environmental BioAcoustics LLC, which was prepared for The California Department of Transportation in 2007. This report

describes how 60 dBA is often used as a threshold for the impact of noise on bird communications. However, this is based on an assumed background noise level of 45 to 55 dBA. Assuming the average of this (50 dBA), this is 15 dBA louder than the ambient sound levels in the forest south of the CREC. Thus, the 60 dBA impact threshold should be reduced accordingly to 45 dBA. From the contour figures in my Memorandum, attached as **Exhibit 4-6**, this equates to about 2,000 feet to the south. In other words, within approximately 2,000 feet of the center of the CREC, noise levels could be high enough to potentially impact bird communication, but not beyond this distance.

With all of that said, bird communications take place in the 2,000 to 4,000 Hz portion of the frequency spectrum. In the 2,000 Hz octave band, existing noise levels, as measured at M4 and M5, are approximately 25 dBA at their lowest. CREC noise levels in this frequency range are predicted to range from 12 to 24 dBA at M4 and M5. Thus, CREC noise would not likely affect bird communication at all. In the 4,000 Hz octave band CREC noise levels are predicted to be less than the existing ambient level at that frequency and, therefore, imperceptible to birds.

RESPONDENT: Mike Hankard, Hankard Environment, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-7 DEM's data request 3-27 asked if venting/blowdowns and any other intermittent high-noise events were factored into the noise projections, and if so how (LCEQ)? In [sic] not, how much louder than the average noise levels are these events on the existing site and in adjacent forest, and how much louder than average can they be expected to be on the new site and in adjacent forest? The answers to these questions are not clear from the Applicant's response, which appears to relate only to predicted noise levels at the 5 selected residential "Noise Sensitive Areas" that range from approximately .3 to 1.3 miles from the proposed plant), despite the fact that Figures 5 through 8 of the Transient Noise Level Evaluation report (March 2016) that the Applicant referenced in its response (Exhibit 6) appear to indicate that data for the entire site vicinity and surrounding forest have already been modeled. Additionally, the data in the two tables that the Applicant referenced in its response and additional text from that same Transient Noise Level Evaluation report appear to contradict the Applicant's response, which indicated that "All regularly occurring venting has been silenced such at all plant operations, including venting, will be no louder than 43 dBA at residences at any time." The referenced tables, Tables 7 and 8, as well as Tables 5 and 6 and the text of the report all list CREC Noise Levels above 43 dBA at nearby residential properties, with some as high as 50 dBA. Provide the requested information and explain these discrepancies.

RESPONSE 4-7: There are no discrepencies or inconsistencies. The noise levels in Tables 5 and 6 of the March 2016 Transient Noise Level Evaluation report have been revised, as was testified to at the 2016 Town of Burrillville Planning Board meeting. Since publication of the March 2016 report, additional noise mitigation measures were added to the design of the CREC, and typical start-up and shut-down noise levels are now projected (and guaranteed) to be 43 dBA or less at the nearest residences. The noise levels in Tables 7 and 8 of the March 2016 report pertain to emergency shut down and emergency steam release operations that are projected to occur only once per year. Emergency release vents are silenced, just not to the degree of vents that open as part of regular operations. This is prudent given the infrequency of emergency vent operation, and given that emergency operations are exempt from the Town's noise ordinance.

With regard to our responding with information only at the five selected residential areas, this is because those are the only locations where existing noise levels were

measured, thus these are technically the only places where one can compare CREC noise levels with existing noise levels. Note that locations M4 and M5 are in the forest along Jackson Schoolhouse Road.

With regard to the information originally requested in Item 3-27 of RIDEM's Third Data Request, venting/blowdowns and all other high-noise events *were* factored into the noise levels evaluation. As described in the March 2016 transient noise report and testified to at the Town Planning Board meeting, all equipment associated with both typical transient operations and emergency transient operations were considered. In the design of the CREC, all equipment associated with regularly occurring transient operations, such as start-up, have been mitigated such that total facility noise levels will be 43 dBA or less at the nearest residences. All equipment associated with emergency operations has been silenced such that noise levels will be 50 dBA or less at all residential areas (again, this is expected to occur on the order of once per year). Thus, emergency operations could be approximately 7 dBA louder than typical start-up noise levels, and about 10 dBA louder than typical baseload noise levels. These values will hold true both at the residential locations, and in the forest around the CREC.

CRE agrees with RIDEM's statement that noise levels in the forest have been modeled. The contour figures presented in the Memorandum, dated May 8, 2017, attached as **Exhibit 4-6** can be used to determine noise levels in the forest.

RESPONDENT: Mike Hankard, Hankard Environmental

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-8 DEM's data request 3-30 asked about the timeline for the Applicant's claimed emissions reductions across the region. The Applicant indicated that the emissions reductions were calculated for 2019 through 2025. This is a short window and is likely to have shifted, both by a changing energy market and possible project delays. Does the Applicant still anticipate these benefits, and if so, is there any way to forecast whether there would be more than 7 years of benefits from such a large project?

RESPONSE 4-8: PA Consulting Group, Inc.'s ("PA's") timeframe for demonstrated emissions reductions was chosen in order to offer a representative window in which to observe the emissions-reducing potential of CREC on the New York and New England power markets with reasonable certainty. However, PA expects that CREC will continue to be one of the most efficient generators in New York and New England, with an emissions rate well below the average for all thermal generators in the market. Additionally, PA expects the marginal CO2 rate in the market to remain materially similar for 2025-2030 as in 2020-2024, with the impact from some increased renewable output offset by tighter supply-demand conditions. Thus, PA anticipates that CREC would continue to provide comparable emissions benefits beyond 2024, with continued CO2 and NOx reductions of ~1%, and SO2 reductions of ~3% compared to a case where CREC does not enter the market.

RESPONDENT: Ryan Hardy, PA Consulting Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-9 DEM's data request 3-39 asked the Applicant to conduct a more comprehensive cost-benefit analysis of the proposed power plant. The Applicant indicated in its response that its emissions and input-output analyses "were designed to determine both the positive and negative impact of Clear River — in short, they reflect 'net' benefits (i.e. they are net of costs)". The Applicant further states that "the impacts to forests, biodiversity, and ecosystem services are not readily quantifiable, although expected to be negligible compared to the significant net reduction of regional emissions." Provide justification, with citations as applicable, for the claim that the "not readily quantifiable" "impacts to forest, biodiversity, and ecosystem service" are "expected to be negligible" when "compared to the significant net reductions of regional emissions", particularly when the impacts to developing mature forest and displaced species are long-term (perhaps permanent) and the emissions reductions purported to outweigh this were projected for only seven years.

RESPONSE 4-9: The information filed in support of the CRE Project pending with the EFSB is to assist the EFSB with its determination that the "proposed facility will not cause unacceptable harm to the environment and will enhance the socio-economic fabric of the state." In the response to RIDEM 3-39, CRE described the analysis used for the evaluation of benefits associated with the emissions reductions anticipated by the Project. These emissions reductions are anticipated to last for many years beyond the period of time used for the study. A recent editorial in the Providence Journal best summarized the point:

> Natural gas is far less polluting than coal, and will help us meet crucial energy needs while humans develop the means to affordably move away from carbon-producing fossil fuels.
> ***
> The proposed $700 million, privately funded power plant in Burrillville would be New England's cleanest, making the region less reliant on older, dirtier, less efficient plants.

Editorial: *New England's energy challenges*, Providence Journal, June 10, 2017

Notably, in the past decade, for the first time ever, nationwide baseload retirements outpaced baseload additions, with 23 gigawatts of net retirements since 2010. Of the 84.2 gigawatts of retirements, 61 percent were coal and 29 percent gas steam

turbine plants, while the 61.1 gigawatts of additions have been 74 percent combined-cycle natural gas like the CREC. *The Scottmadden Energy Industry Update*, Volume 17, Issue 1.

These concepts apply with even greater force in New England. As noted in ISO New England's 2017 Regional Electricity Outlook:

> During the winter, generation that is not fueled by natural gas has been used to fill the gap, including resources that run on nuclear power, oil, and coal—the latter two of which have caused upticks in winter air emissions. However, these resources have begun to close down and leave the system because they are either less efficient, less profitable, or both. Replacing them will be even more natural-gas-fired generation, to a large extent.
>
> ***
>
> For the foreseeable future, the region will require resources such as natural-gas-fired units that can do what wind and solar resources cannot: make large contributions to meeting regional electricity demand; run in any type of weather and at any time of day; quickly change output levels; and provide essential grid-stability services. On frigid winter days in particular, the region has no alternative but to depend on fossil fuels and the remaining nuclear power stations, while also working to improve fuel accessibility for natural-gas-fired generators. The latter will be particularly vital after the summer of 2019, when two more major non-gas-fired generators will have retired.
>
> ***
>
> Resources powered by oil, coal, and nuclear energy have been critical for keeping the lights on during recent winters, but these units have begun to close, citing profitability and other factors. About 4,200 MW—an amount equal to almost 15% of the region's current generating capacity—will have shut down between 2012 and 2020 and is being replaced primarily by new natural-gas-fired plants. The upcoming closures of just two of those resources—Brayton Point Station in May 2017 and Pilgrim Nuclear Power Station by May 2019—will

> remove 2,200 MW of non-gas-fired capacity. Over 5,500 MW of additional oil and coal capacity are at risk for retirement in coming years, and uncertainty surrounds the future of 3,300 MW from the region's remaining nuclear plants.

ISO New England also pointed out the risks attendant to delays in approvals of new, highly efficient gas powered electric generation facilities like the CREC.

> Other emerging factors are also likely to push the ISO to rely more on higher-emitting, less efficient resources to meet regional electricity demand and will add to operational complexity during winter:
>
> - Siting challenges are causing delays in building some of the region's new power resources, particularly those running on natural gas. New transmission lines needed to maintain reliability, as well as elective transmission projects that can connect to clean-energy resources, are also often met with opposition.
> - Some states are considering tightening emission limits for all generators—even state-of-the-art units running on relatively low-emitting natural gas. This could force the ISO to run higher-emitting generators in other parts of the region.
> - Any additional closures of regional nuclear facilities will remove major sources of zero-emission energy for New England.

CRE emphasized that it used industry standard input-output models (IMPLAN and JEDI models). What CRE meant by "impacts to forests, biodiversity, and ecosystem services" not being readily quantifiable is that these resources are not, as far as CRE can determine, objectively understood in terms of a fixed monetary value by RIDEM. Asking for a comprehensive "cost benefit analysis" assumes that market based prices would need to be assigned to certain ecosystems and habitat, and RIDEM has no formula or model that CRE is aware of. Similarly, the EFSB rules do not provide a required formula or cost benefit model applicable for a licensing application that would assign a monetary value on environmental impacts.

As for particular permit programs with RIDEM, the RIDEM permitting rules have in place certain mitigation requirements that CRE must comply with, to account for the measured impacts of the application. For example, to support the request for an air permit, CRE may be required to purchase certain "offsets." For disturbance to wetlands habitat, CRE must propose a mitigation plan, for restoration and/or preservation of habitat, in accordance with set formula and metrics. In this way, RIDEM will be determining the required mitigation to account for the particular impacts of the Project on various aspects of the environment. Similarly, the EFSB will need to determine what conditions, if any, are appropriate in order to mitigate any of the environmental (or other) impacts of the Project.

CRE understands that the burden is on the applicant to describe both the Project benefits and the Project impacts in order to establish that the Project "will not cause unacceptable harm to the environment and will enhance the socio-economic fabric of the state." CRE is not aware of one global comprehensive cost benefit formula that would serve this purpose. Rather, CRE understands that it is CRE's burden to describe the Project's benefits and to describe the Project impacts to the environment. That is what the CRE application to the EFSB contains, as supplemented.

Accordingly, the benefits of the CREC Project were quantified and detailed extensively in the EFSB application, in supplemental filings, responses to data requests and in testimony before the Rhode Island Public Utilities Commission ("PUC") and were summarized again in the Application to Alter Freshwater Wetlands. These benefits include the following:

- Providing new highly advance generating technology that will be one of the most efficient generators in New England, helping increase the regional electric generation efficiency which will help lower regional energy costs.
- Reducing regional air emissions and improving air quality by displacing older, less efficient and more polluting generation through the application of the best available control technologies, which will also help achieve state, regional, and federal goals of reducing emissions of greenhouse gases and other air pollutants.
- Modernizing the electric generating infrastructure by providing new, highly efficient generation that has fast start and high ramp rate (flexible) generating capacity, replacing older, less flexible generation

- The fast start and flexible generating capacity will also help support the integration of new and existing renewable generation onto the power grid.
- Creating new employment for skilled local workers during construction and operation, as well as direct tax revenues and economic benefits to the Town of Burrillville and to local businesses.

While difficult to quantify on monetary terms, the impacts of the CREC Project on the environment, and the extensive mitigation measures being proposed to minimize those impacts, were detailed extensively in the EFSB application, the Wetlands Addendum and the Application to Alter Freshwater Wetlands. As detailed in these submittals, the impacts from the CREC Project have been minimized to the extent practicable, and in accordance with all applicable federal, state and local regulations.

RESPONDENT: Ryan Hardy, PA Consulting Group, Inc.
Michael Feinblatt, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-10 The Applicant's response to DEM's data request 3-46 indicated that Section 10.1.2 should be amended to strike reference to Pennsylvania and insert reference to Rhode Island, but that the remainder of the language of this section was correct. Please revisit the last sentence of the Applicant's response to this Item: "Recent opposition to wind farms has led to shutdowns and curtailments of operation for fear that bats might be killed", and explain where and to what this is in reference to.

RESPONSE 4-10: Attributing curtailments to "recent opposition to wind farms" is an inapt statement, and is hereby withdrawn. Where necessary, decisions to curtail and feather below cut-in speed are specifically the result of efforts by both the wind industry and federal and state agencies to minimize wildlife impacts. As an example, in 2011, the US Fish and Wildlife Service shut down nighttime operations at the North Alleghany wind project, located in Blair and Cambria counties, Pennsylvania, after a federally-listed Indiana bat was discovered near a turbine. In other locations, bat and bird monitoring at existing facilities has led to operational curtailment. Furthermore, in an effort to proactively reduce potential impacts on wildlife, in 2015 the American Wind Energy Association ("AWEA") established a voluntary operating protocol, limiting operations of turbines in low-wind speed conditions during the fall bat migration season, where necessary.

RESPONDENT: Mike Feinblatt, ESS Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-11 DEM's data request 3-47 asked why high priority wildlife habitat was not on the list of areas that merited buffering from the project. The Applicant responded by noting that no High Value/High Vulnerability Habitats or Natural Heritage Areas are mapped within the project area. It appears that the Applicant may have misunderstood the question. DEM's question was why land with high habitat and conservation value was valued as a buffer from the project for residences but was not itself deemed worthy of being buffered from the project. DEM was not asking solely about areas of known populations of rare species (represented by Natural Heritage Areas) or about High Value/High Vulnerability (HVHV) Habitats. HVHV Habitats represent a small and very specific subset of important habitats that are both highly threatened and not well captured by the other elements of the Rhode Island Wildlife Action Plan's Conservation Opportunity Area mapping. Conservation Opportunity Areas include three categories of elements: Core Natural Areas, Corridors, and Sites. The last of these, which includes HVHV Habitats, is a category of elements designed to identify areas that are important despite not being of particular size or connectivity value. The Applicant correctly notes in its Application to Alter Freshwater Wetlands that the property is in both a large Core Natural Area and a major Corridor, and the ROW expansion crosses four more Core Natural Areas. Additionally, with respect to Sites, there is a HVHV Habitat located along the TNEC ROW widening project where a hemlock/hardwood forest flanks the forested swamp along the Clear River. Other sites along the ROW include two Natural Heritage Areas and numerous wetlands and streams. In light of the above clarification, please address this question again. This mistaken assumption about High Value High Vulnerability Habitat appears to be repeated in the Application to Alter Freshwater Wetlands (p. 36).

RESPONSE 4-11: CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

It is important to note that CRE has been conducting an extensive survey of the flora and fauna that exists at the proposed project location. (See Response 4-39). Although CRE sought input from RIDEM on numerous occasions, starting in early March 2017, regarding the scope and extent of that survey, no input was provided until June 13, 2017, after the survey had been underway for an extended period of

time. With that said, recognizing that the Algonquin compressor station has been in place for many years, one of the reasons CRE selected this location was to minimize habitat loss and to site the Project near existing energy infrastructure, such as the long-existing Algonquin Compressor Station facility, the existing TNEC ROW and the existing gas pipeline. Additionally, this site was chosen due to its proximity to the existing Algonquin structure, in an effort to minimize any further fragmentation. Further, as noted in the EFSB Wetlands Addendum and Application to Alter, the entire Project area is proposed near the Algonquin Compressor Station, on property owned by Spectra and with substantial existing forested land buffering all around the CRE Project that is not, to CRE's knowledge, planned for any further development activities.

CRE explained the alternative analysis that it used for its site selection in its response to RIDEM 3-14 and 3-43. With regards to the CREC site associated with Docket No. SB-2015-06, CRE recognizes the value of the potential loss of habitat associated with construction activities on the Project site, which is why CRE is exploring an appropriate mitigation proposal, for consideration by RIDEM as part of its Freshwater Wetlands Application. As indicated in CRE's Response to RIDEM's Data Request No. 3-10, "there will be some impacts to biodiversity resulting from the clearing of forest and other vegetation within the Project impact area. The nature and potential extent of these impacts will be assessed in detail in the wetlands applications to be submitted for the Project to the USACE and RIDEM, as required. The Project has already been designed to minimize impacts to forested habitat areas. Invenergy will work with the USACE and RIDEM to identify mitigation measures to minimize the impacts of the Project to biodiversity both during construction and during operation." CRE has designed this Project so as to minimize impacts to habitat as much as reasonably possible, which means that the Project is being designed to provide for as much protection of existing habitat (buffering) as reasonably possible.

RESPONDENT: Michael Feinblatt, ESS Group, Inc.
Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-12 DEM's data request 3-53 asked if planting and seeding will consist of native stock with no cultivars. The Applicant did not address cultivars in its response, and the Application to Alter Freshwater Wetlands uses only common names. Address the use of cultivars and provide the full Latin name of any plant species proposed, including seed mixes.

RESPONSE 4-12: The full and precise Latin names of proposed species have been added to the Reforestation and Plant Quantity List, please see **Exhibit 4-12**. The goal of the Reforestation Plan is to use native plant material and minimize the use of cultivars. Due to the large quantity of plant material required, further coordination with suppliers will be necessary to determine what stock may be commercially available at the time of planting.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-13 Despite the Applicant's assertion that invasive species are relatively few on-site, Appendix P, Wetland Invasive Species Management Plan, lists twelve "common invasive species found in wetlands in the project area," at least two of which were also detected in the vicinity of wetlands on the CREC portion of the project. In the Applicant's response to DEM's data request 3-55, it indicated that it will implement a 10-year monitoring and management plan. The nature of invasive species is that they will flourish even after being managed for low numbers for an extensive period of time as soon as the control is removed. Assuming invasive plants on site are in low numbers, this could present a rare opportunity to eradicate invasive plants on site rather than participate in the unfortunate cycle described above where chemicals are often used to no long-term effect. Invasive plant numbers are likely low now due to the relatively low amount of disturbance on site and in the vicinity, and development will very likely encourage these species to expand their range. Will the Applicant commit to a removal plan rather than the described plan to ensure low levels of invasive species for the duration of the monitoring commitment?

RESPONSE 4-13: During the implementation of the Project, the Applicant will adopt the previously approved by RIDEM IRP Wetland Invasive Species Control Plan ("WISCP") to minimize the potential for the spread of invasive species along the ROWs as a result of construction activities (see Appendix P of Application to Alter). The proposed WISCP will identify the wetlands within the Facility Site that presently contain invasive species, and assign a comparative value to each wetland ("high," "moderate", and "low") based on wetland functions and quality. The overall goal of the WISCP will be to preserve the value of wetlands along the ROWs and in the vicinity of the Facility Site that are not presently dominated with invasive plant species, and to minimize the spread of invasive plant species. The WISCP will include measures that the Applicant proposes to implement during construction including to achieve this goal.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-14 Appendix P also commits to a plan to avoid cross-contamination of wetlands by cleaning equipment, etc., but neither this narrative nor section 5.1.7.3 of the Application to Alter Freshwater Wetlands addresses this same issue with invasives in uplands even though the latter calls out four species of "potential invasive species of the forest edge." This section also states that "due to this limited occurrence and distribution, a substantial introduction of invasive species is not anticipated," but disturbance in such areas of relatively low abundance are precisely how populations spread. Provide detailed information on if/how/where equipment movement and cleaning will be addressed to avoid tracking invasive seed and other plant materials from any one portion of the project (upland or wetland) to any other portion. Indicate whether designated vehicle washing stations will be identified or how transport of seed and other viable plant material will otherwise be avoided, particularly for invasive species that can expand into otherwise undisturbed forested areas.

RESPONSE 4-14 CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

The Wetland Invasive Species Management Plan found in Appendix P was prepared to address the U.S. Army Corps of Engineers ("USACE"), New England District's Invasive Species Policy and Invasive Species Control/ Management Plan ("ISCP") Guidance. The objective of the USACE's Invasive Species Control/ Management is to slow the spread of invasive plant populations which might prevent successful mitigation of impacts to wetlands and waters of the U.S. The Project Wetland Invasive Species Management Plan was also prepared to address the RIDEM's regulatory requirement for demonstrating that the Project will not result in any more than a minimal intrusion of, or increase in, less valuable, invasive or exotic plant species in wetlands.

TNEC's Vegetation Management Plan ("VMP"), provided in Appendix B, includes measures for the control of noxious plants (invasive plant species, nuisance and poisonous vegetation) in their ROWs to include both uplands and wetlands. The Narragansett Electric Company ("TNEC") VMP targets vegetation that interferes with access roads, access to structures and wire zones, in order to maintain safety and reliability of the transmission system.

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

TNEC and its contractors will adhere to the Project Wetland Invasive Species Control Plan included in Appendix P. Construction equipment and vehicles that may have a high likelihood of coming in contact with wetland soils or plant materials containing invasive plants will be inspected and cleaned. The types of equipment and vehicles to be targeted by the management plan include tree clearing and mowing equipment, equipment used in constructing access roads and work pads, drilling rigs (i.e., augers), machinery used to install erosion and sediment controls, and swamp mats. TNEC will require their contractors to certify that equipment is cleaned prior to being brought onsite and/or transferred to another location on the right-of-way (ROW). Other construction activities (e.g., foundation work, structure installation, conductor and wire stringing) typically will not require work outside of pre-established access roads and work pads. As a result, the equipment and vehicles involved in these activities are not expected to come into contact with wetland soils or plant materials, and therefore would not be subjected to the inspection and cleaning protocol described above.

TNEC is not proposing designated vehicle wheel washing stations for the work on the ROWs. TNEC considered vehicle wheel wash stations as a possibility but dismissed this option as a feasible alternative for the following reasons:

1. An increase in land disturbance would be required to excavate swales and temporary holding basins along the 6.8 miles of ROW to contain the water used at the vehicle wheel wash stations.
2. Various water sources would be required or continuous vehicle trips by water trucks would be needed to provide an adequate water supply.
3. Due to the linear nature of the Project, multiple vehicle wheel wash stations would be needed, thereby further increasing the disturbances listed above.

Furthermore, management of water used at the vehicle wheel wash stations would be a challenge. The "discharge" water could contribute to unstable soils and erosion on the ROW. Managing water during the winter months could pose a safety concern for icy conditions on the ROW. The "discharge" water could contribute to the spread of invasive seed sources off-ROW, or increased vehicular traffic would be required to containerize the "discharge" water for off-site disposal at a yet to be determined location. For all of the reasons listed above, the construction and use of multiple vehicle wheel wash stations on along this linear project was determined not to be not feasible.

RESPONDENT: Jamie Durand, POWER Engineers
Michael Feinblatt, ESS Group, Inc.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

WETLAND APPLICATION

4-15 Table 3-3 (p. 27) lists Potential Bird Species Found Within the Facility Site. Explain what the hash marks indicate under the Interior/Edge (I/E) Forest Species column. Also explain the methodology used to generate the results for this column. It is unclear, for example, why a species such as wood thrush that is very much impacted by forest fragmentation would be listed as I/E.

RESPONSE 4-15: An update of Table 3-3 has been provided in **Exhibit 4-15**. A draft version of Table 3-3 was inadvertently submitted as final. Table 3-3 has subsequently been finalized and provided in **Exhibit 4-15**. The results in the Interior/Edge Forest Species column were generated using species descriptions given in New England Wildlife: Habitat, Natural History, and Distribution (DeGraaf and Rudis 1986).

RESPONDENT: Mike Feinblatt, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-16 Where did the Applicant derive the distributions described in Table 3-7? Some appear to have come from the RI WAP, although they may have been misunderstood (e.g. black-throated blue warbler is only known to nest in the northwest corner of the state; it is only common along the coast as a migrant). Others appear to be from other sources and are either inaccurate or confusing (e.g. the description of Northern Goshawk). The RI WAP maps should not be used to depict range without the disclaimers and clarifying narratives associated with each species.

RESPONSE 4-16: The species distributions described in Table 3-7 were interpreted from the WAP SGCN Bird Profile Range Maps. Per the recommendation of RIDEM, the following footnote should be added to Table 3-7: ***Species Distribution are not a comprehensive inventory of the species, rather a guide to the locations in the state that are likely to benefit from the conservation actions described in the RI WAP. Refer to individual species profiles for distribution within the state.***

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-17 Section 3.1.9 Vernal Pools, indicates that a "limited number of spotted salamander (*Ambystoma maculatum*) egg masses" were found in both SAS's within the CREC portion of the Project. Appendix G, Vernal Pool Data Forms, indicate that one adult wood frog, 12 wood frog egg masses, and 13 spotted salamander egg masses were found at SAS 1 and that 13 wood frog egg masses and 5 spotted salamander egg masses were found in SAS 2. Why were wood frog egg masses excluded from the narrative? Was any follow up field work conducted to determine what other species might use the pools (e.g dipnetting, etc.)? If so, describe the survey nature and level of effort. Were any photographs taken of these SAS's (none appear in Appendix D with the photos of Wetlands 1-3 and some of the TNEC wetlands)? Additionally, explain why forms were not provided for the 14 additional vernal pools in the TNEC ROW?

RESPONSE 4-17: The information in Appendix G included a discussion of wood frogs. However, Section 3.1.9, in an attempt to summarize the more comprehensive findings reported on Vernal Pool Data Forms provided in Appendix G, did not include a discussion of wood frogs. A discussion of wood frogs was not intentionally omitted from the summary.

Supplemental data regarding the presence of vernal pools species on-site is being collected as part of an on-going flora and fauna inventory (see Response 4-39).

Photographs of SAS 1 and 2 are attached as **Exhibit 4-17**.

As established in early pre-application planning with RIDEM Wetland staff, information pertaining wetland resources along the TNEC ROW relied on the data provided in the IRP Wetland Application.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-18 The Applicant asserts in sections 3.2.8, 5.1.8, and throughout its wetland application that both USFWS and DEM "agreed with study results that Northern long-eared bats (NLEB) were not present in the survey area." On March 16, 2016, DEM indicated via email that "there are no known maternity roost trees in Rhode Island and there are no known hibernacula in Burrillville or Providence County." The USFWS determined that the Applicant had done its due diligence, and DEM DFW deferred to this conclusion. While the Applicant is under no further obligation with regard to this Federally-listed species, the USFWS's conclusions should not be construed to infer that DEM confirmed that no NLEB are on site or in the vicinity. Among the reasons is the fact that there is some level of error with differentiating bat species with bat detectors. Confirm DEM's understanding that the "survey area" appears to cover only the CREC portion of the project.

RESPONSE 4-18: The Northern long-eared bat survey covered both the CREC Facility Site and the CREC Right of Way.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-19 Section 3.2.8 of the Application to Alter Freshwater Wetlands indicates that "biological surveys had previously been completed for State-listed species for the IRP in 2011," that "biological surveys were completed for the identified State-listed plant species to document their presence and extent on the TNEC ROW" by POWER, on behalf of the Applicant, in August of 2016, and that "the Applicant will coordinate with the RIDEM and RINHS to report the findings of the biological surveys of listed species and to determine appropriate avoidance/protection measures that should be implemented during construction." Please provide the results of both surveys along with the survey protocol (i.e. times, locations, methods, and intensity of survey).

RESPONSE 4-19: CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

As described in Section 6.8.3.3 of the EFSB Environmental Report and in Section 3.2.8 of the RIDEM Application to Alter Freshwater Wetlands, field investigations were conducted by AECOM, on behalf of National Grid, initially in the spring and summer of 2008, in the summer of 2011, and again in the spring of 2012 in support of permitting for TNEC's Interstate Reliability Project ("IRP"), which was built on the TNEC ROW, comprising 6.0 miles of the 6.8 miles proposed for the Burrillville Interconnection Project. Field surveys of state-listed plant species were performed during the 2011 field season on the following dates: July 6 to 7, 2011; July 21, 2011; August 3, 2011; and September 13 to 14, 2011. During the 2011 field surveys, observations of Eastern box turtles (*Terrapene carolina*) were made in distinct locations within the TNEC ROW. Additional field surveys were performed on June 8, 2012 for Northern beech fern (*Thelypteris phegopteris*) and dewdrop (*Rubus dalibarda*).

The field investigations performed during the 2008, 2011, and 2012 field seasons confirmed the presence of a young American yew (*Taxus canadensis*) seedling, and pale corydalis (*Capnoides sempervirens*) or rock harlequin populations within the existing TNEC ROW. The field investigations were conducted within open upland grassy meadows and shrub-dominated habitats in the TNEC ROW and access roads. Adjacent upland and wetland habitats potentially impacted by the Project were also investigated and resulted in positive location or identification.

Several populations of state-listed plants were confirmed within the corridor.

Field investigations for additional rare species did not result in positive location or identification:

• No populations of dewdrop, previously documented in the forested community to the west of East Wallum Lake Road in Burrillville, RI, were located or confirmed, although suitable habitat remains present.
• No populations of Northern beech-fern were confirmed in the previously recorded area to the west of East Wallum Lake Road in Burrillville.

Biological surveys had previously been completed for state-listed species for the IRP in 2011 where populations of pale corydalis were found and documented on the TNEC ROW.

Biological surveys were completed for the identified state-listed plant species to document their presence and extent on the TNEC ROW. Surveys were conducted by POWER, on behalf of the Applicant, on August 19, 25 and 31 of 2016. POWER biologists walked transects through the areas identified as having populations of rare plants. Field surveys of state-listed plant species hobblebush (*Viburnum lantanoides*), northern beech fern, dewdrop, and additional populations of pale corydalis) were performed during the 2016 field season. The surveys were conducted within both Eastern hemlock (*Tsuga canadensis*) open and closed canopy forests in both wetlands and uplands, as well as in open upland grassy meadows and shrub dominated habitats on the TNEC ROW.

A hobblebush population, and northern beech fern population were identified on the TNEC ROW. Global Positioning Survey ("GPS") points of these plant populations were collected using a sub-meter accurate Trimble Global Positioning System unit. No new populations of pale corydalis and no populations of dewdrop were observed.

RESPONDENT: Jamie Durand, POWER Engineers

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-20 With respect to the CREC section of the Project, section 4.1.14 asserts that "Surveys and existing data have yielded no indication that state or federally-listed species are utilizing wetlands within the Facility Site." Is this statement limited to only fauna? Given that black-throated blue warbler was detected on-site, provide detailed information, with citations as applicable, which leads to the conclusion that this species does not utilize this habitat?

RESPONSE 4-20: The statement found in Section 4.1.14 stating "Surveys and existing data have yielded no indication that state or federally-listed species are utilizing wetlands within the Facility Site" was incorrect and should be *surveys and existing data have yielded no indication that federally-listed species are utilizing wetlands within the Facility Site.* The Applicant has previously noted the presence of the black-throated blue warbler observed during incidental observations as noted in Clear River Energy Center – Rhode Island Energy Facility Siting Board Application – Addendum – Wetlands," dated August 29, 2016, filed with the EFSB on August 30, 2016 and RIDEM Application to Alter Freshwater Wetlands, dated March 2017, filed with RIDEM on April 26, 2017.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-21 Section 4.2.15 states that "surveys and existing data have yielded no indication that State or Federally-listed species are utilizing wetlands within the TNEC ROW." Is this statement limited to only fauna? The Applicant's and DEM's records indicate the presence of several State-listed plant species in the TNEC ROW project footprint and vicinity. Clarify.

RESPONSE 4-21: CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

Surveys were performed to identify and document locations of state-listed and federally-listed flora, in addition to state-listed and federally-listed fauna that may occur on the TNEC ROW. Several populations of state-listed plants were identified. No federally-listed plant species were observed.

RESPONDENT: Jamie Durand, POWER Engineers

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-22 Section 5.1.7 states that direct impacts include the loss of wildlife habitat and plant communities and that these effects "were quantified by overlaying the limit of disturbance ("LOD") onto the vegetation cover type mapping provided by RIGIS." Provide the map.

RESPONSE 4-22: **Exhibit 4-22** depicts the Rhode Island Ecological Communities found within the Facility Site.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-23 Provide detailed justification, with applicable citations, for the Applicant's assertion in Section 5.1.7.3 that the development of a portion of one of the largest Core Natural Areas in the State is relatively harmless precisely because it is large and is in proximity to other large cores. This assertion runs contrary to everything that makes the largest intact blocks of forest (especially those in proximity to other such blocks) such high value, high priority habitats in a highly developed state and allows them to support more robust breeding populations of forest interior neotropical migrant birds and other species than other portions of the state. Another example is the marbled salamander, which according to the RI WAP is common "in certain rural western and southern portions of the state in forested habitat tracts greater than 400 hectares in extent". Further, the impact analysis is site-specific, and there are substantial impacts on site to important habitat.

RESPONSE 4-23: Section 5.1.7.3 provides a quantitative comparison of proposed impacts which would result from the Project, if authorized, to unfragmented forest in relation to the total unfragmented forest located in Burrillville and the Western Forest (Burrillville, Gloucester, Foster, Scituate and Coventry) of Rhode Island. Section 5.1.7.3 categorically did not assert that the proposed development is relatively harmless. Section 5.1.7.3 simply stated the fact that a broader review and analysis of the unfragmented forest blocks of 500 acres or more in Burrillville, Gloucester, Foster, Scituate and Coventry, shows there is approximately 15,178, 17,011, 15,280, 12,376, and 15,175 acres of this habitat, respectively. The proposed CREC is situated on a privately-owned parcel in Burrillville which would result in the clearing of approximately 35 acres of existing forested habitat. This proposed impact to unfragmented forest represents 0.23% and 0.045% of the total unfragmented forest location in Burrillville and the Western Forest (Burrillville, Gloucester, Foster, Scituate and Coventry), respectively.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-24 The Applicant asserts multiple times, including in the Application to Alter Freshwater Wetlands (sec. 5.1.7.3, p. 92) and Wetland Addendum (p. 15), that DEM and the RI Wildlife Action Plan assess indirect impacts to 100 feet from the nearest disturbance. The only reference to impacts at something close to that distance are contained in the RI WAP where DEM used a 30 meter buffer from roads to generate its Core Natural Habitat layer. This distance was utilized to eliminate roadsides and their immediate environs when developing the Core Natural Habitat layer, not to represent the full extent or even the area of most indirect impacts to wildlife. Is this the number that the Applicant is utilizing when it repeatedly refers to 100'? If not, provide the reference to 100' along with applicable citations.

RESPONSE 4-24: To obtain a clear understanding of the RI Wildlife Action Plan and its associated data layers, a data inquiry was sent to RIDEM seeking clarification regarding the GIS-based Conservation Opportunities Tool. Specifically, two questions were posed as follows:

1. Are all unfragmented forest blocks offset from developed areas by 30 meters?
2. Are utility ROWs, regardless of size, not considered developed areas and therefore do not interrupt unfragmented forest blocks?

The following verbal responses were provided to each of the questions on July 16, 2016:

1. F&W biologists had a strong opinion about the impacts of development spreading beyond the actual building foot print or backyard. So CRE did buffer development by 30 meters and used that as a mask.
2. Utility ROWs are not considered developed nor forest since the vegetation is managed regularly. Where they are mapped as brush or ROW they break up the forest.

Based on RIDEM's response to question 1 above, it is CRE's understanding that the 30 meter or approximately 100-foot buffer is not limited to roads as suggested in Question 4-24 and accurately represents how the RI WAP project team assessed indirect impacts from roads as well as other land uses. It should be noted the Applicant completed the aforementioned analysis with the data and GIS data layers publicly available.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-25 Section 5.2.7 discusses temporary impacts along the ROW corridor, and the RIDEM and USACE permit drawings identify "protected habitats" within and adjacent to this corridor. How will impacts to populations of State-listed species be avoided or minimized during construction in areas where rare plants are known to occur within the footprint of proposed overstory clearing and other work? What impacts will overstory clearing have on the longterm viability of these plant species? Will further survey in these areas be conducted to determine if additional populations exist?

RESPONSE 4-25: CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

Impacts to state-listed species will be avoided to the greatest extent practicable during tree clearing and construction activities by implementing several measures. Orange safety fencing will be installed around all known individuals or populations of state-listed species prior to the start of tree clearing and construction. Signage will be installed at these locations identifying the area is a "protected habitat" and that equipment encroachment is not permitted. If necessary, trees in the vicinity of state-listed plants will be felled using a method that will avoid damage to the rare plant populations. Clearing of overstory may impact the long-term viability of some of these state-listed plant populations. CRE and TNEC will develop appropriate mitigation measures, through consultation with the RIDEM, to determine if additional enhancements or mitigative steps may be effective. Additional surveys in the TNEC ROW areas are not currently proposed. Additional surveys of the CREC ROW on Spectra property are being performed, along with the Project site. Please see Response to Data Request No. 4-39.

RESPONDENT: Jamie Durand, POWER Engineers
Michael Feinblatt, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-26 Some site impacts could be minimized with proper time of year restrictions depending on what flora and fauna are on site (e.g. letting rare herbaceous plants go to seed, avoiding the nesting season for shrub and ground nesting birds and nesting turtles, etc.). Will the Applicant provide plans and time-of-year restrictions to minimize impacts to species during construction? The Applicant has stated that it will work with DEM to avoid impacts, but other than for NLEB, the anticipated timeline for this coordination is unclear. Additionally, such timelines would be best informed by the Applicant's floral and faunal survey results. However, most survey work has been scheduled such that it will be completed in a very short time before DEM will need to issue its amended Advisory Opinion to the EFSB.

RESPONSE 4-26: Currently, CRE has proposed to adhere to the time of year restrictions to avoid tree clearing during the June-July timeframe. As noted, flora and fauna surveys are on-going and are expected to extend through the end of June 2017 with the findings being memorialized in a technical report in July 2017. These findings will be made available to the Department. CRE reaffirms its willingness to work with RIDEM to revisit the proposed time of year restrictions to minimize site impacts following the completion of on-going surveys.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-27 Section 5.2.9 Vernal Pools, enumerates avoidance/minimization measures for three vernal pools within the TNEC ROW. Of the fourteen vernal pools in this portion of the project, do these three represent all of the vernal pools that would be impacted by project construction? If not, how will the additional impacts be addressed?

RESPONSE 4-27: CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

There are no proposed direct impacts to vernal pools on the TNEC ROW. The three vernal pools discussed in 5.2.9 are those that are within approximately 40 feet of proposed construction activities on the TNEC ROW. The other eleven vernal pools are not close to proposed tree clearing or construction activities. The minimization and mitigation measures to prevent adverse impacts to vernal pools outlined in Section 5.2.9 of the RIDEM application will be implemented during the tree clearing and construction phases of the Project.

RESPONDENT: Jamie Durand, POWER Engineers

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-28 Section 6.1.2.2 Construction Phase, lists "types of measures that may be implemented to minimize adverse impacts on vernal pools (special aquatic sites)." Why are the items listed here tentative and not included in the preceding list of commitments?

RESPONSE 4-28: CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

Section 6.1.2.2 is a discussion of CRE's Compliance with Avoidance and Minimization Measures during construction of the CREC and CREC ROW. The RIDEM question 4-27 appears to refer to the vernal pools within the TNEC ROW. The minimization and mitigation measures to prevent adverse impacts to vernal pools outlined in Section 5.2.9 of the RIDEM application will be implemented during the tree clearing and construction phases on the TNEC and CREC ROWs. The clause "may be implemented" is used in order to provide the on-site environmental compliance monitors with some flexibility in working with the contractor to address case-by-case field and weather conditions, and to consider any physical constraints that may affect the safety of the crews working on the ROWs.

RESPONDENT: Jamie Durand, POWER Engineers
Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-29 Section 7.1 indicates that compensatory mitigation will be necessary and lists the USACE requirements for mitigation, but does not propose any specific mitigation. Table 7-3: Anticipated Mitigation Obligations in the Form of Restoration or Preservation for the Project, appears to omit a substantial amount of acreage of wetland impacts on site. At least part of this discrepancy with site plans and narratives appears to be that shrub and forested wetlands that were not large enough to qualify as "swamps" under state regulation were not included. However, USACE thresholds for reporting and mitigation are based on overall square footage of wetland impacts rather than size thresholds for individual wetlands. Please revisit this table and expected mitigation requirements and either clarify or revise the chart.

RESPONSE 4-29: All temporary and permanent impacts to biological wetlands, regardless of the applicable state/federal classification, have been quantified and are proposed to be mitigated through restoration and/or preservation. As noted in Section 7.1, the proposed mitigation is consistent with the USACE requirements and does not include or propose mitigation for temporary or permanent impacts to the 50-Foot Perimeter Wetland or the 100-Foot Riverbank Wetland.

Table 7.3 has been revised to account for minor revisions to anticipated Project impacts to wetlands and to address an accounting discrepancy specific to edge effect categories and is attached as **Exhibit 4-29**.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-30 Section 7.1 and the Wetlands Addendum make numerous additional references to mitigation, but all of the measures discussed other than the hypothetical land conservation or wetland creation ratios are, in fact, avoidance or minimization measures. Does the Applicant anticipate that a true mitigation proposal will be submitted prior to DEM's deadline for submitting a revised Advisory Opinion to the EFSB? If so, what is the Applicant's anticipated timeline for submitting this proposal?

RESPONSE 4-30: As noted in Section 7.1 of the Application to Alter Freshwater Wetlands, the Applicant will develop a Compensatory Wetland Mitigation Plan following the NED Compensatory Mitigation Guidance in cooperation with resource agencies. Based on an inventory of parcels of conservation interest developed by RIDEM and provided to the IRP proponents as well as a GIS overlay of elements in the Rhode Island Conservation Opportunities and local Assessors Maps, the Applicant has generated a confidential comprehensive list of parcel potentially suitable for preservation. The Applicant is currently investigating the willingness of current land owners to sell their property. Once completed, the Applicant intends to work with RIDEM and the USACE to determine which parcel(s) appear best suited to offset Project related wetland impacts.

It is anticipated the Compensatory Wetland Mitigation Plan will include a description of Project impacts, objectives, mitigation site selection procedures, site protection information, and monitoring standards in addition to all required graphics and information. At this time, it is anticipated that the final mitigation package will primarily consist of land preservation and possibly some restoration should a viable Project be identified. CRE is working to supply the mitigation package prior to RIDEM's supplemental advisory opinion deadline, which is expected to be in the month of July.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-31 Section 8.1 indicates that "Overall, the adverse impacts of the project will be outweighed by the energy supply, environmental and local financial benefits that will result from the project." This conclusion is repeated in several of the Applicant's submitted materials, but the Applicant has also indicated that it could not easily quantify the forest and wildlife values and its assessment of benefits are speculative as well. Provide justification for this conclusion, with applicable citations; along with the information or accounting method supporting this conclusion.

RESPONSE 4-31: As explained in response to Data Request No. 4-9, asking for a comprehensive "cost benefit analysis" assumes that market based prices would need to be assigned to certain ecosystems and habitat, and RIDEM has no formula or model that CRE is aware of that would be required for any of the permitting applications pending. Similarly, the EFSB's rules do not have a required formula or cost benefit model that is mandated for a licensing application that would assign a monetary value on environmental impacts.

Again, the standard for the evaluation of the environmental impacts of the application is whether or not the Project will cause unacceptable harm to the environment. CRE does not understand what type of cost-benefit accounting analysis RIDEM is referring to in this question and the Board rules do not specify the form of a cost-benefit calculation that must be utilized. However, CRE understands that the burden is on the applicant to describe both the Project benefits and the Project impacts in order to establish that the Project will not cause unacceptable harm to the environmental.

Accordingly, the benefits of the CREC Project were quantified and detailed extensively in the EFSB Application and were summarized again in the Application to Alter Freshwater Wetlands. These benefits include the following:

- Providing new highly advance generating technology that will be one of the most efficient generators in New England, helping increase the regional electric generation efficiency which will help lower regional energy costs.
- Reducing regional air emissions and improving air quality by displacing older, less efficient and more polluting generation through the application of the best available control technologies, which will also help achieve state, regional, and federal goals of reducing emissions of greenhouse gases and other air pollutants.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

- Modernizing the electric generating infrastructure by providing new, highly efficient generation that has fast start and high ramp rate (flexible) generating capacity, replacing older, less flexible generation.
- The fast start and flexible generating capacity will also help support the integration of new and existing renewable generation onto the power grid.
- Creating new employment for skilled local workers during construction and operation, as well as direct tax revenues and economic benefits to the Town of Burrillville and to local businesses.

The impacts of the CREC Project and the extensive mitigation measures being proposed to minimize those impacts were also quantified and detailed extensively in the EFSB Application, the Wetlands Addendum and the Application to Alter Freshwater Wetlands. As detailed in these submittals, the impacts from the CREC Project have been minimized to the extent practicable, and in accordance with all applicable federal, state and local regulations.

RESPONDENT: Michael Feinblatt, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-32 The Limits of Clearing and Limits of Disturbance are confusing in the plan sheets the Applicant submitted (RIDEM and USACE Permit Drawings), and at times the Limit of Clearing appears to extend beyond the Limit of Disturbance. Provide permit drawings that accurately depict the Limits of Clearing and Limits of Disturbance.

RESPONSE 4-32: CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

A response to this request requires some details explaining the apparent confusion between the depictions of the Limits of Disturbance and the Limits of Tree Clearing. Where tree clearing is proposed on the ROW, the Limits of Tree Clearing will be the same as the Limits of Disturbance. The Plan Set submitted with the RIDEM application illustrates a significant amount of information. It is possible that the similarity in the line types, weights and thicknesses used to generate the Limits of Disturbance versus the Limits of Tree Clearing are a source of the confusion. CRE and TNEC tried to depict both the Limits of Disturbance and the Limits of Tree Clearing, but we may have off-set the lines slightly so that both boundaries are visible on the mapping. The proposed work activities are located entirely within the CREC and TNEC ROWs, and within the existing footprint of the Sherman Road Switching Station.

With Respect to the CREC Project; an overall site map has been provided that shows the final LOD. The limits of clearing are to be considered anything within the limits of disturbance. Please see attached **Exhibit 4-32** for details.

RESPONDENT: Jamie Durand, POWER Engineers
Chad Jacobs, HDR, Inc.
Mark Wiitanen, HDR, Inc.
Michael Feinblatt, ESS Group, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-33 Depict the locations of all culverts (wildlife crossings or otherwise) and nearby wetlands on a single page (similar to the Overall Site Arrangement Sheet) and further clarify the design and chosen locations of these culverts.

RESPONSE 4-33: CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

TNEC is proposing to install three new culverts on the TNEC ROW. No culverts are proposed on the CREC ROW. The objective of installing the culverts is to facilitate safe vehicular access to transmission line structures for construction, and for future operation and maintenance of the transmission facilities. These proposed culverts are designed to allow unimpeded flow of two Areas Subject to Storm Flowage ("ASSF") and one narrow finger-like projection of freshwater wetland. The locations and designs (pipe sizing) are based upon the engineering designs by POWER Engineers, Inc. provided in the Storm Water Management Plan for the Burrillville Interconnection Project found in Appendix K of the RIDEM application and the Project Site Plans (Appendix A of the RIDEM application).

With respect to the CREC Site, an overall site map has been provided that shows the locations of all culverts and nearby wetlands, see attached **Exhibit 4-32** for details. To improve the permeability of the access road for wildlife, the design incorporates an oversized three-sided box culvert to convey intermittent tributary to Iron Mine Brook. In addition, five-natural bottom three-sided box culvert locations were selected with input from RIDEM Wetland staff to allow further habitat connectivity and free access for wildlife movement under the proposed access road. As suggested by RIDEM staff, an at-grade ramp on either side of the access roadway is proposed allowing large wildlife (that may be deterred from using culverts ranging from four to six feet in height) to cross the access road. The wildlife passage culverts were distributed along the access road targeting the upland/wetland interface and/or interior portions of existing wetlands. While Rhode Island does not have specific stream crossing standards, each crossing would meet the General Standards of the Massachusetts River and Stream Crossing Standards, with a minimum openness values of 0.82 feet. Openness is determined by dividing the cross-sectional area of the structure by the length of the crossing (measured in the direction of stream flow) and does not include any embedded portion of the structure.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

RESPONDENT: Jamie Durand, POWER Engineers
Chad Jacobs, HDR, Inc.
Mark Wiitanen, HDR, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-34 Label all elements depicted in the Typical Wildlife Passage Section (SHEET 01C805).

RESPONSE 4-34: See attached **Exhibit 4-34** for details.

RESPONDENT: Mark Wiitanen, HDR, Inc.
Chad Jacobs, HDR, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-35 In accordance with DEM's earlier request to use RI native species and avoid cultivars, and given the confusion that can arise from the use of common names, provide a version of the Reforestation Plant Quantity List (SHEET 01C700) that lists the full and precise Latin names of proposed species (e.g. with any varieties and cultivars called out if they are being proposed for use).

RESPONSE 4-35: The full and precise Latin names of proposed species has been added to the Reforestation and Plant Quantity List, see attached **Exhibit 4-12**.

The goal of the Reforestation Plan is to use native plant material and minimize the use of cultivars. Due to the large quantity of plant material required, further coordination with suppliers will be necessary determine what stock may be commercially available at the time of planting.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-36 How does the Applicant propose to access their detention pond for maintenance if the area east of the SAS that is not to be filled is to be revegetated with tree species? (SHEET 01C306).

RESPONSE 4-36: The detention pond will be accessed from the access road that runs the perimeter of the Facility. The maintenance staff will drive across a flat grassed area and along the pond berm. Access into the pond bottom for maintenance is by concrete ramps as shown on 01C306.

The area of the East of the SAS will have no permanent function and can be revegetated per the plan

RESPONDENT: Chad Jacobs, HDR, Inc.
Mark Wiitanen, HDR, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-37 The only silt fence depicted appears to be around the topsoil stockpile area. Regarding the SESC Plan Phasing, explain/depict how areas downslope of the Limit of Disturbance will be protected (SESC PLAN PHASES I-IV, SHEETS 01C905 - 01C921).

RESPONSE 4-37: The perimeter erosion sediment controls are identified on 01C905. The plan specifies that the contractor shall offset the LOD by 3' and install the erosion sediment control barrier. In those areas, for access that cross the LOD, the plan calls out the use of rock construction entrances.

RESPONDENT: Chad Jacobs, HDR, Inc.
Mark Wiitanen, HDR, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-38 Appendix B: ROW Vegetation Management Plan and all its attendant appendices appear to repeatedly reference Massachusetts and Massachusetts law rather than Rhode Island. Is this the correct plan? If yes, then provide a corrected plan ensuring that all references are to Rhode Island. If not, then provide the ROW Vegetation Management Plan.

RESPONSE 4-38: CRE objects to this question on the grounds set forth in its motion dated May 31, 2017. Subject to and without waiving its objections, CRE provides the following response.

Yes, the Vegetation Management Plan ("VMP") submitted as Appendix B with the RIDEM Application to Alter Freshwater Wetlands and referenced in the EFSB Environmental Report is the correct Plan. The VMP is a regional plan that covers all of National Grid's New England Service territory. National Grid's New England service territory includes Rhode Island, New Hampshire, Vermont and Massachusetts. The regulations in Massachusetts require preparation of a VMP and Yearly Operational Plan ("YOP"); Rhode Island does not. However, National Grid applies the most stringent requirements, in terms of regulations, across its service territory, including Rhode Island.

National Grid's VMP is a Five-Year Plan developed by the company for Compliance with the Massachusetts' Pesticide Board State Code 333 CMR 11.00 (ROW Management). National Grid's VMP takes into account not only 333 CMR 11.00 and Chapter 132B, but all applicable state and federal regulations that mandate the management of utility rights-of-way including but not limited to: all pertinent clauses in Chapter 85 of the Acts of 2000; MESA; MGL c. 131 A and 321 CMR 10.00; 310 CMR 10.00 and 310 CMR 22.00; 310 CMR 40.0000; applicable Federal Energy Regulatory Commission standards including NERC Standard FAC-003-1, Commissioner Order 693, FAC-003-2 (effective July 1, 2014), and all applicable Federal Occupational Safety and Health Act, Department of Transportation and Department of Environmental Protection regulations. National Grid prepares and follows a single VMP for all their work in Rhode Island, New Hampshire, Vermont and Massachusetts.

RESPONDENT: Jamie Durand, POWER Engineers

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-39 Provide a map depicting locations of sample sites for each survey performed and a narrative explaining the placement of transects, spacing, habitats covered, etc.

RESPONSE 4-39: As noted in Response 4-11, an inventory of the flora and fauna in the study area is being conducted for the purpose of gathering site-specific data on the faunal and floral communities present at the Project site to supplement the scientific literature, GIS data review, and incidental observations which were included in the Clear River Energy Center – Rhode Island Energy Facility Siting Board Application – Addendum – Wetlands, dated August 29, 2016, filed with the EFSB on August 30, 2016 and the Application to Alter Freshwater Wetlands - Clear River Energy Center and Burrillville Interconnection Project, dated April 2017, filed with the RIDEM on April 26, 2017. As previously pointed out, CRE sought input from RIDEM on numerous occasions, starting in early March 2017 when the site specific flora and fauna survey protocols were provided to RIDEM. Unfortunately, no input was provided until RIDEM tendered a letter on June 13, 2017, after the survey had been underway for an extended period of time. A point by point response to that letter will be submitted shortly. In the interim, field programs listed below which comprise this flora and fauna inventory have been designed to inform an evaluation of the species richness, abundance, and diversity of the study area, and, when possible, document evidence of breeding activity at the site.

As noted in the protocol submitted to RIDEM prior to implementation, the field program associated with this inventory started in late- March 2017 and is anticipated to extend through late- June 2017. The following survey programs are being conducted:

- Winter track survey
- Remote field camera deployment
- Avian point counts
- Anuran call count surveys
- Owl broadcast surveys
- Small mammal trapping
- Pit fall trapping
- Cover board monitoring
- Amphibian and reptile time-constrained searches
- Diurnal insect survey
- Moth survey
- Benthic macroinvertebrate sampling
- Plant survey

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

To assist RIDEM with developing its response to the advisory opinion questions posted to RIDEM by the EFSB, ESS will attempt to incorporate RIDEM comments on the inventory methodology to the extent possible based on the seasonality of the surveys. CRE is planning to file its report of findings which will be provided to RIDEM in July 2017. The general location of these surveys is shown on **Exhibit 4-39**.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

WATER AND TRAFFIC

4-40 What does the term "Average Ambient Firing Natural Gas" represent in Appendix N: Water Supply Plan (i.e. does it represent an annual average or an average of some select portion of the season, is it a true average or a median across whatever timeframe it represents, etc.)?

RESPONSE 4-40: Average Ambient refers to the Annual Average Temperature and Relative Humidity (51.8 ^{O}F and 74 % RH) based on the 2013 ASHRAE fundamentals handbook for Providence, RI. So, the Average Ambient Firing Natural Gas water balance represents the average water usage over a 24 hour period at the average ambient weather condition with the turbine generators operating at one hundred per cent load (firing natural gas) during the entire 24 hour period. This water consumption is not the average water use throughout the year. The average water consumption over a one year period is expected to be lower, because the units are not expected to run 100% of the time.

RESPONDENT: Mark Wiitanen, HDR, Inc.

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-41 Appendix N Table 2-1 appears to only include the two biggest potential uses of water (i.e. evaporative cooling and oil firing) in the footnotes and not in the actual numbers. Either clarify and/or revise the 18,720 gpd Summer Firing Natural Gas Potential for Evaporative cooling to include the additional gallons that would be represented by the Applicant's estimated over 3.3 million additional gallons per year (assuming 4,600 gallons/hour at 8 hours/day for an estimated 90 days) and calculate the additional truck traffic that this represents. Likewise, do the same with the 15,840 gpd estimate for Winter Firing Natural Gas Potential for Oil Firing to include the additional over 3.6 million gallons per year represented by the estimated 724,000 gpd necessary to fire oil and the Applicant's assertion that such facilities have had to fire oil an average of five days per year for the previous five years.

RESPONSE 4-41: The water use estimate of 18,720 gpd for the summer ambient design condition firing natural gas represents the water use for a summer operating day (90 ^{o}F, 45% RH) with the turbine generators operating at one hundred per cent load (firing natural gas) during a full 24 hour period without the use of the evaporative coolers. It is rare in New England that the ambient air temperature stays at 90 ^{o}F, 45% RH for a 24 hour period; which is a very dry ambient air condition. In New England, more typically, the air temperature peaks during the daytime and falls quickly at night, often to as low as 60 ^{o}F at times with a corresponding increase in relative humidity that often approaches 100% RH at night.

Evaporative cooling is only effective when the air is under-saturated (less than 100% RH) and as a result evaporative cooling water use is highly dependent on the relative humidity and changes in relative humidity. As a result, evaporative cooling water use continuously changes during a typical day and falls at night with increasing relative humidity.

The summer design water balance was not intended to represent the average of all summer days as there are many more hours when the ambient air temperature is below 90 ^{o}F, than above 90 ^{o}F and since the ambient air temperature and relative humidity is continuously changing during any day and certainly throughout the summer there is no summer average evaporative cooler use that could be meaningfully identified in the water balance. As a result, a conservative evaporative cooler water use was provided as a footnote to Table 2.1 to address this water use.

A decision to operate the evaporative coolers is at the discretion of the facility and evaporative cooler use is not required to operate the facility.

The 4,600 gallons per hour rate of evaporator cooling water use is the expected water use based on using evaporative cooling when the ambient conditions are 90 ^{o}F/45% RH which as highlighted above is an unusually hot dry day in New England. It would be very unlikely that the evaporative coolers use would occur for 8 hours per day for as many as 90 days per year. Note as well that at lower temperatures and higher relative humidity, the water consumption rate for evaporative cooling will be lower. However, as a conservative measure those values were used in the safe yield analysis, Section 2.3.2 and Figure 2.3 of the Water Supply Plan to illustrate that even under the most extreme water use projection (certainly not an expected case) with evaporative cooling operating at 8 hours per day at the 4,600 gallons per hour for as many as 90 days per year that the CREC Facility annual water use even under this extreme assumption is insignificant relative to the safe yield analysis for the Providence Water supply Scituate Reservoir.

To better understand water use relative to evaporative cooling, CRE reviewed the historical weather data for the Providence area for temperatures above 80 ^{o}F, when it would be likely to operate evaporative cooling, and found that an ambient air temperature above 80 ^{o}F occurs approximately 400 hours a year. As stated in the response to Town of Burrillville Data Request 22, response 31, CREC expects to run the evaporative coolers for only 4-6 hours per day typically and evaporative cooling would only be used during the summer months (mid-June through mid-September).Under these circumstances, CREC evaporative cooling water needs can be met by up to 3 additional trucks per day maximum. For those times when consistently high temperatures warrant extended evaporative cooling operation over the course of the summer months CREC could choose to simply draw down its on-site water tanks to provide this additional water recovering this water when ambient air temperatures are cooler and the Facility uses less water to operate.

Similarly, the requirement to fuel the Facility by distillate oil is not a part of the normal operation of the Facility. Use of distillate oil is only expected at times when the regional natural gas supply is under a stressed condition in exceptionally cold winters when natural gas supplies are needed for residential and commercial heating requirements. Therefore it is important to look at the distillate oil firing as a separate case. As discussed on page 10 of the Water Supply Plan, "over the last five years with the current limited pipeline capacity into the region, there has been an average of only five days per year when gas fired electric generation were asked

to switch to distillate oil." The five days is historical data based on past years of operation that does not necessarily reflect future distillate oil firing requirements for New England.

This five day average for oil firing days is across all units in the region including those that are both favorably and non-favorably located on the natural gas supply lines (those less favorably located are more likely to run on oil in a shortage event). It also assumes that any time a unit was asked to run, that that unit ran a full day, regardless of the number of hours a facility actually operated on oil. Also, as discussed on page 10 of the Water Supply Plan, CRE believes that "the total annual days of oil firing should lessen with the increasing supplies of natural gas and renewables helping to reduce winter shortage of this critical fuel to the region." It is difficult to predict when natural gas shortage events might occur or how long they might last, in fact this past winter, there were none.

The 15,840 gpd water use represents the typical water use for winter operations on natural gas and oil. However, in the event of oil fired operation, additional water use is consumed to control emissions. This is illustrated in WMB-01 sheet 4 of the water supply plan as NOx water injection. This water injection is the 724,000 gpd that you refer to in the data request. The quantity of water and oil stored on site will only allow the CREC facility to operate continuously for three days assuming 24 hour per day of full load operation on oil. The 15,840 gpd water use estimate identified for the winter firing case is the amount of water that will continue to be delivered to the facility while the facility is drawing down its on-site water and oil storage tanks to support an oil firing operation. It is not possible to replenish the water and oil storage tanks at a rate to support continuous oil operations beyond three continuous days of distillate oil firing. To re-fill the on-site water and oil tanks, the water supply plan committed to re-fill these tanks on an extended schedule to limit truck traffic impacts. As a result, the winter water use estimate of 15,840 gpd correctly reflects the amount of water that will continue to be supplied to the facility during an oil firing event while drawing down the on-site water tanks to support up to three days of oil firing.

RESPONDENT: George Bacon, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-42 Explain, in detail, why the Applicant asserts that its estimate of 3 days of oil firing a year in Appendix N is conservative if the five-year average has been 5 days/year? Has this number been declining over the 5-year timeframe?

RESPONSE 4-42: As stated in the Water Supply Plan, in the last five years, there has been an average of five days per year where existing dual-fueled electric generating plants were called upon to fire distillate oil. However, with the expansion of the natural gas supply and increased growth of renewable energy in New England, whose output is not tied to the natural gas supply, the total annual days of oil firing should lessen.

Additionally, this average is across all generating units in the region including those that are both favorably and non-favorably located on the natural gas supply system (those less favorably located are more likely to run on oil in a shortage event). CRE believes that CREC is located more favorably on the natural gas supply system than many other existing electric generators in New England.

For these reasons, CRE believes that estimating annual water use assuming three full operating days on distillate oil is a reasonable approach. This combined with an annual water use estimate that assumed the CREC operates every day of the year at full load with a conservative approach to estimating evaporative cooling water use which assumed a water rate that represents a 90 ^{o}F and 45% RH day for a total of 90 days per year represents a very conservative approach to annual water use for the Facility.

Although CRE believes the above approach, used in the Water Supply Plan to develop Figure 2.3 *Comparison: CREC Annual Water Usage, Average Day Demand (Projected – 2030) and Safe Yield (83MGD),* was appropriate for estimating the total annual water use by the CREC Facility as a percentage of the Safe Yield of the Providence Water System, CRE has re-reviewed that estimate assuming that a total of 5 days of distillate oil firing occurs, the Facility operates every day of the year at full load and with an evaporative cooling water use assumed to occur at a rate that represents a 90F and 45% RH day for a total of 90 days per year.

That additional analysis has found that the percentage of CREC annual water use estimate with 3 days of oil firing was 0.038% of the Safe Yield of the Providence Water System and for 5 days of oil firing is 0.043% of the Safe Yield of the Providence Water System. Both these figures would round down to 0.04% used in Figure 2.3 of the Water Supply Plan.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

As a result, whether CREC were to experience 3 days or a conservative 5 days of distillate oil firing in any winter while operating the Facility the balance of the year at full power and applying a conservative evaporative cooling water use equivalent to that used on a 90 ^{o}F day with 45% RH for as many as 8 hours per day for 90 days per year, that the CREC annual water use only results under these conservative assumption to 0.04% to the Safe Yield analysis completed by Providence Water for its water supply system. Accordingly, CRE believes that its use of Providence Water via the Town of Johnston will have no impact on the Providence Water Supply System.

RESPONDENT: George Bacon, ESS Group, Inc.

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-43 Appendix N Section 2.4 indicates that "On those exceptional days when evaporative cooling might be needed, CREC will utilize on-site storage and replenish the on-site storage over time." It is understood that this is intended to indicate that these trips need not contribute to traffic congestion. However, DEM is concerned with total traffic as well and with times of day unrelated to congestion. Are these trips accounted for in traffic numbers? If so, indicate where.

RESPONSE 4-43: The truck count for this case, when the on-site water storage is being replenished, was not specifically addressed in the Traffic Impact Study ("TIS"). The TIS evaluated the normal operation and the replenishment period of the oil fired operation as a conservative estimate and the requirements of all the other cases were well below this replenishment case.

Based on information provided in the Traffic Analysis for Water Source Option memo dated January 10, 2017, normal site truck trip generation results in approximately three trucks (6 trips) per day accessing the site. There are two periods during the year where additional truck traffic is expected: the peak summer months when additional water would need to be delivered to the proposed site, and in extreme weather circumstances during the winter for a short duration when there is an oil fired event. The majority of the year is considered ambient weather and will not experience additional truck travel beyond the normal site operations.

As stated in Response 4-41 of this data request, EC water needs can be met by up to 3 additional trucks per day maximum, for those times when consistent high temperatures warrant extended EC operation over the course of the summer months (Mid-June – Mid-September). This results in a total of six trucks (12 trips) per day accessing the site.

The majority of truck traffic transporting materials to the CREC facility will do so outside of peak hours; however, to be conservative, it was assumed that approximately 25% of these truck trips will occur during the weekday morning peak hour and weekday afternoon peak hours, which is consistent with projections for normal operations of the site noted in the January 2017 Truck Traffic Analysis. This amounts to one truck in each of the peak hours (one truck entering and one truck exiting), resulting in two peak hour truck trips.

RESPONDENT: Maureen Chlebek, McMahon Associates,
George Bacon, ESS Group, Inc.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-44 Appendix E: McMahon Traffic Analysis includes a map of CREC Water Transport Routes. Is this the only additional truck traffic to the site since the original traffic analysis was performed? If not, provide any additional proposed routes. Also indicate what would cause trucks to use alternate routes.

RESPONSE 4-44 McMahon Associates ("McMahon") evaluated truck routes to the proposed CREC site and determined that the shortest and most efficient route to the proposed site from the Providence metro area is I-295 to Route 44 to Route 100 through Pascoag. This route is most likely to accommodate the majority of truck traffic accessing the site, including water deliveries. Depending on the origin of trucks bound for the site, other routes may occasionally also be utilized. The TIS focuses on the routes of construction traffic and assumes truck travel to the site originates in the Providence area. Additional information on expected truck routes has been researched for the full operation of the proposed site. As previously noted, water deliveries are expected to follow the truck route along Route 44/100. Other deliveries originating outside of Rhode Island would be expected to travel to/from the west and would not travel through the study area intersections in Pascoag.

At the request of the Burrillville Planning Board, McMahon investigated alternate truck routes and documented findings in the Alternate Truck Route report in August 2016. The report reviewed three major truck routes from I-295 to the proposed site, all of which are generally adequate for truck travel. The Routes reviewed are Route 44/Route 100 (Approximately 16 miles from I-295), Route 146 to South Street (approximately 28 miles from I-295), and Route 146 to Wallum Lake Road (approximately 25 miles from I-295). The two alternate truck routes noted in the report would not provide a route that is advantageous for truck traffic originating in the Providence area. While this is mainly due to the longer distances traveled on the alternate routes, the roadways also do not appear to present an overall upgrade in terms of ability to handle larger vehicles when compared to Route 44/Route 100. However, these routes may be advantageous for construction-related truck traffic originating from the Worcester area.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

RESPONDENT: Maureen Chlebek, McMahon Associates

DATE: June 19, 2017

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S FOURTH SET OF DATA REQUESTS

4-45 Appendix E under Oil Fired Events indicates that "approximately 11 trucks per day will access the CREC facility to replenish the water tanks and approximately 7 trucks per day will access the facility to replenish the oil tanks as well as an additional demineralization trailer for a total of 19 trucks." Then under peak hour truck traffic, the Applicant indicates "after the occurrence of an oil fired event, there will be approximately 22 trucks per day expected to access the site (11 water replenish, 7 oil, 2 ammonia/water discharge/demin trailers, and 2 typical water supply)." Is this latter estimate, which represents 44 total truck trips per day, a full accounting of truck traffic on site? How many days a year is this expected to be the volume of truck traffic and at what time(s) of day are these additional trips expected to occur? Also, explain why these number conflict with corresponding estimates in the Water Supply Plan?

RESPONSE 4-45: The scenario presented of a total of 22 trucks per day following an oil fired event as indicated in the traffic analysis, Appendix E to the Water Supply Plan is a full accounting of traffic on the site. The analysis assumes approximately 13 water trucks (2 for normal operation and 11 for water replenishment), 7 oil trucks, and 2 additional trucks consisting of either 1 aqueous ammonia truck, 1 wastewater truck or 1 mobile demineralizer trailer. The number of days per year that CREC would expect this level of truck traffic is highly dependent on the number of hours and the time of year of any oil fired operation. CRE estimates that on average there will be 30 day per year at this level.

Generally speaking, CRE would expect the truck traffic to be spread out over the daytime hours as both the water and oil trucks will be making round trip deliveries from the origin of their respective supplies. Table 2 of Appendix E of the revised water supply plan indicates that there will be a total of 22 trucks (water, oil, ammonia, demineralized water, and waste water) per day over the replenishment period and the table breaks down the traffic movement between peak hours (AM/PM) and non-peak hours. This table indicates that CRE would expect six truck trips during the peak AM and PM hours. Six trips during the peak hour is less than previously assumed as part of the initial Traffic Impact Study dated May 2016.

The data request is not entirely clear on which numbers conflict with corresponding estimates in the Water Supply Plan. The one area that may be confusing is the data presented in Table 2.5 that indicates the number of additional trucks required per day to re-fill water tanks after an oil fired event. This table

indicates that 9.1 trucks are required per day to re-fill the tanks over a one month period (note that Table 2.5 said additional water truck trips per day and should have just indicated additional water trucks per day). This calculation assumes that every day of the one month period would be viable for delivery without disruption. CRE recognizes that there may be some days where deliveries are not possible due to weather or other unexpected disruptions. So, for purposes of the traffic impact analysis, CRE has assumed 11 water trucks per day.

RESPONDENT: George Bacon, ESS Group, Inc.
Maureen Chlebek, McMahon Associates

DATE: June 19, 2017

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

GENERAL

4-46 There have been many changes to the Project since the initial application filed with the EFSB. Summarize, in detail, the changes to the Project that have been made from September 12, 2016, up to the date of this data request.

RESPONSE 4-46: Below is a list of a number of changes that were made to the Project between the original EFSB application and now:

1. The center line spacing between the two power blocks was reduced from 350 feet to 300 feet; this allowed relocation of the site perimeter road to be moved out of the wetland buffer area.
2. The fuel oil storage tanks were relocated from the southeast side of the site to the north west and the tank design was changed from two one-million gallon storage tanks to a single two-million gallon tank.
3. The switch yard design was modified at the request of National Grid.
4. The ammonia storage tank was re-sized from a 40,000 gallon to a 27,000 gallon capacity.
5. The demineralized water storage tank was previously designed for approximately 1 million gallons and the capacity is revised to approximately 1.85 million gallons.
6. The firewater/service water storage tank size was revised from 0.8 million gallons to approximately 1.05 million gallons.
7. The water treatment building was reconfigured per the new water supply plan to eliminate some of the permanent plant equipment and was replaced with an enclosure that will house the demineralization trailers and the water unloading station.
8. An onsite wastewater sewer treatment system is designed in lieu of discharging to the Burrillville waste water treatment plant.
9. The size of the air cooled condenser was reduced from 24 cells to 21 cells.
10. The stormwater detention pond was resized in accordance with the final stormwater management plan.
11. The property boundary has been shifted to accommodate 450' of frontage.
12. The property line boundary was re-located to avoid any portion of the site being located within a designated aquifer recharge zone (the A-80 Zone) based on comments and concerns raised by the Burrillville Building Inspector and Zoning Official.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND

DOCKET No. SB-2015-06

CLEAR RIVER ENERGY LLC'S RESPONSES TO
THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT'S FOURTH SET OF DATA REQUESTS

13. A potable water well is now a part of the plan to provide water to the Administration/Control building.
14. The Facility had previously committed to firing on distillate oil for no more than 30 days per unit and has now been reduced to 15 days per unit.
15. The source of process water for the facility per the previous plan was a supply line from PUD. The new water supply plan consists of trucking water to the Facility, and the new water source being the Town of Johnston, RI.
16. Clear River Energy LLC has selected General Electric Company to provide the power generation equipment.
17. The Facility had previously committed to meeting the noise levels of 43dBA for normal operating conditions. The Facility has made changes to the design that will now limit the start-up and shutdown noise levels to 43dBA.

RESPONDENT: John Niland, Clear River Energy LLC

DATE: June 19, 2017

CLEAR RIVER ENERGY LLC
By its Attorneys,

/s/ Alan M. Shoer
Alan M. Shoer, Esq. (#3248)
Richard R. Beretta, Jr. Esq. (#4313)
Nicole M. Verdi, Esq. (#9370)
ADLER POLLOCK & SHEEHAN, P.C.
One Citizens Plaza, 8th Floor
Providence, RI 02903-1345
Tel: 401-274-7200
Fax: 401-751-0604
Dated: June 19, 2017

CERTIFICATE OF SERVICE

I hereby certify that on June 19, 2017 I delivered a true copy of the foregoing responses to The Rhode Island Department of Environmental Management's Fourth Set of Data Requests to the Energy Facilities siting Board via electronic mail to the parties on the attached service list.

/s/ Alan M. Shoer

SB-2015-06 Invenergy CREC Service List as of 05/26/2017

Name/Address	E-mail	Phone/FAX
File an original and 10 copies with EFSB: Todd Bianco, Coordinator Energy Facility Siting Board 89 Jefferson Boulevard Warwick, RI 02888 Margaret Curran, Chairperson Janet Coit, Board Member Assoc. Dir., Div. of Planning Parag Agrawal Patti Lucarelli Esq., Board Counsel Susan Forcier Esq., Counsel Rayna Maguire, Asst. to the Director DEM Catherine Pitassi, Asst. to. Assoc. Dir. Plann. Margaret Hogan, Sr. Legal Counsel	Todd.Bianco@puc.ri.gov; Kathleen.Mignanelli@puc.ri.gov; Patricia.lucarelli@puc.ri.gov; Margaret.Curran@puc.ri.gov; janet.coit@dem.ri.gov; Catherine.Pitassi@doa.ri.gov; Margaret.hogan@puc.ri.gov; susan.forcier@dem.ri.gov; rayna.maguire@dem.ri.gov; Parag.Agrawal@doa.ri.gov;	401-780-2106
Parties (Electronic Service Only, Unless by Request)		
Invenergy Thermal Development LLC Alan Shoer, Esq. Richard Beretta, Esq. Elizabeth Noonan, Esq. Nicole Verdi, Esq. Adler, Pollock & Sheehan One Citizens Plaza, 8th Floor Providence, RI 02903 John Niland, Dir. Of Business Development Tyrone Thomas, Esq., Asst. General Counsel Mike Blazer, Esq., Chief Legal Officer Invenergy Thermal Development LLC One South Wacker Drive, Suite 1900 Chicago, IL 60600	ashoer@apslaw.com; rberetta@apslaw.com; enoonan@apslaw.com; nverdi@apslaw.com; jniland@invenergyllc.com; Tthomas@invenergyllc.com; mblazer@invenergyllc.com; generalcounsel@invenergyllc.com;	401-274-7200 312-224-1400
Town of Burrillville Michael McElroy, Esq., Special Counsel Leah Donaldson, Esq., Special Counsel Schacht & McElroy PO Box 6721 Providence, RI 02940-6721 William Dimitri, Esq., Acting Town Solicitor	Michael@mcelroylawoffice.com; leah@mcelroylawoffice.com; dimitrilaw@icloud.com;	401-351-4100 401-273-9092
Conservation Law Foundation Jerry Elmer, Esq. Max Greene, Esq. 55 Dorrance Street Providence RI, 02903	Jelmer@clf.org; Mgreene@clf.org;	401-351-1102
Ms. Bess B. Gorman, Esq. Assistant General Counsel and Director Legal Department, National Grid	Bess.Gorman@nationalgrid.com;	781-907-1834

40 Sylvan Road Waltham, MA 02451 Mark Rielly, Esq. Senior Counsel	Mark.rielly@nationalgrid.com;	
Office of Energy Resources Andrew Marcaccio, Esq. Nick Ucci, Chief of Staff Chris Kearns, Chief Program Development One Capitol Hill Providence, RI 02908 Ellen Cool Levitan & Associates	Andrew.Marcaccio@doa.ri.gov;	401-222-3417
	Nicholas.Ucci@energy.ri.gov;	401-574-9100
	Christopher.Kearns@energy.ri.gov;	
	egc@levitan.com;	
	Brenna.McCabe@doa.ri.gov;	
Rhode Island Building and Construction Trades Council Gregory Mancini, Esq. Sinapi Law Associates, Ltd. 2374 Post Road, Suite 201 Warwick, RI 02886	gmancinilaw@gmail.com;	401-739-9690
Residents of Wallum Lake Road, Pascoag, RI Dennis Sherman and Kathryn Sherman Christian Capizzo, Esq. Shechtman Halperin Savage, LLP 1080 Main Street Pawtucket, RI 02869	ccapizzo@shslawfirm.com;	401-272-1400
	kags8943@gmail.com;	
Residents of Wallum Lake Road, Pascoag, RI Paul Bolduc and Mary Bolduc Joseph Keough Jr., Esq. 41 Mendon Avenue Pawtucket, RI 02861 Paul and Mary Bolduc 915 Wallum Lake Road Pascoag, RI 02859	jkeoughjr@keoughsweeney.com;	401-724-3600
	oatyss1@verizon.net;	401-529-0367
Abutter David B. Harris Michael Sendley, Esq. 600 Putnam Pike, St. 13 Greenville, RI 02828	msendley@cox.net;	401-349-4405
Interested Persons (Electronic Service Only)		
Harrisville Fire District Richard Sinapi, Esq. Joshua Xavier, Esq. 2347 Post Road, Suite 201 Warwick, RI 02886	ras@sinapilaw.com;	401-739-9690
	jdx@sinapilaw.com;	
Residents of 945 Wallum Lake Road, Pascoag, RI (Walkers) Nicholas Gorham, Esq. P.O. Box 46 North Scituate, RI 02857	nickgorham@gorhamlaw.com;	401-647-1400
	edaigle4@gmail.com;	

Peter Nightingale, member Fossil Free Rhode Island 52 Nichols Road Kingston, RI 02881	divest@fossilfreeri.org;	401-789-7649
Sister Mary Pendergast, RSM 99 Fillmore Street Pawtucket, RI 02860	mpendergast@mercyne.org;	401-724-2237
Patricia J. Fontes, member Occupy Providence 57 Lawton Foster Road South Hopkinton, RI 02833	Patfontes167@gmail.com;	401-516-7678
Burrillville Land Trust Marc Gertsacov, Esq. Law Offices of Ronald C. Markoff 144 Medway Street Providence, RI 02906	marc@ronmarkoff.com;	401-272-9330
Paul Roselli, President Burrillville Land Trust PO Box 506 Harrisville, RI 02830	proselli@cox.net;	401-447-1560
Rhode Island Progressive Democrats of America Andrew Aleman, Esq. 168 Elmgrove Avenue Providence, RI 02906	andrew@andrewaleman.com;	401-429-6779
Fighting Against Natural Gas and Burrillville Against Spectra Expansion Jillian Dubois, Esq. The Law Office of Jillian Dubois 91 Friendship Street, 4th Floor Providence, RI 02903	jillian.dubois.esq@gmail.com;	401-274-4591
Burrillville Town Council c/o Louise Phaneuf, Town Clerk 105 Harrisville Main Street Harrisville, RI 02830	lphaneuf@burrillville.org;	401-568-4300
Christine Langlois, Deputy Planner Town of Burrillville 144 Harrisville Main Street Harrisville, RI 02830 Joseph Raymond, Building Official	clanglois@burrillville.org; jraymond@burrillville.org;	401-568-4300
Michael C. Wood, Town Manager Town of Burrillville 105 Harrisville Main Street Harrisville, RI 02830	mcwood@burrillville.org;	401-568-4300 ext. 115

Mr. Leo Wold, Esq. Department of Attorney General 150 South Main Street Providence, RI 02903	LWold@riag.ri.gov;	401-274-4400
Public Utilities Commission Cynthia Wilson Frias, Esq., Dep. Chief of Legal Alan Nault, Rate Analyst	Cynthia.Wilsonfrias@puc.ri.gov; Alan.nault@puc.ri.gov;	401-941-4500
Division of Public Utilities and Carriers John J. Spirito, Esq., Chief of Legal Steve Scialabba, Chief Accountant Tom Kogut, Chief of Information	john.spirito@dpuc.ri.gov; steve.scialabba@dpuc.ri.gov; thomas.kogut@dpuc.ri.gov;	401-941-4500
Matthew Jerzyk, Deputy Legal Counsel Office of the Speaker of the House State House, Room 302 Providence RI, 02903	mjerzyk@rilin.state.ri.us;	401-222-2466
Hon. Cale Keable, Esq., Representative of Burrillville and Glocester	Cale.keable@gmail.com;	401-222-2258
Nick Katkevich	nkatkevich@gmail.com;	
Avory Brookins	abrookins@ripr.org;	
Joseph Bucci, Acting Administrator Highway and Bridge Maintenance Operations RI Department of Transportation	joseph.bucci@dot.ri.gov;	
Jared Rhodes, Chief Statewide Planning Program Jennifer Sternick Chief of Legal Services RI Department of Administration	jared.rhodes@doa.ri.gov; Jennifer.sternick@doa.ri.gov;	
Doug Gablinske, Executive Director TEC-RI	doug@tecri.org;	
Tim Faulkner ecoRI News 111 Hope Street Providence, RI 02906	tim@ecori.org;	401-330-6276
Robert Tormey Conanicut Energy, LLC	rjtormey@conanicutenergy.com;	617-306-1601
Sally Mendzela	salgalpal@hotmail.com;	
Keep Burrillville Beautiful Paul LeFebvre	paul@acumenriskgroup.com;	401-714-4493
Mark Baumer	everydayyeah@gmail.com;	
Nisha Swinton Food & Water Watch New England	nswinton@fwwatch.org;	
Kaitlin Kelliher	Kaitlin.kelliher@yahoo.com;	

Joe Piconi, Jr.	jiggzy@hotmail.com;	
Hon. Aaron Regunberg Representative of Providence, District 4	Aaron.regunberg@gmail.com;	
Paul Ernest	paulwernest@gmail.com;	
Skip Carlson	scarlson@metrocast.net;	
Kathryn Scaramella	kscaramella@outlook.com;	
Diana Razzano	Dlrazzano13@verizon.net;	
David Goldstein	tmdgroup@yahoo.com;	
Douglas Jobling	djobling@cox.net;	
Claudia Gorman	corkyhg@gmail.com;	
Curt Nordgaard	Curt.nordgaard@gmail.com;	
Colleen Joubert	Colleenj1@cox.net;	
Matt Smith Food & Water Watch	msmith@fwwatch.org;	
Christina Hoefsmit, Esq. Senior Legal Counsel RI Department of Environmental Management	Christina.hoefsmit@dem.ri.gov;	
Steven Ahlquist, RIFuture	atomicsteve@gmail.com;	
Pascoag Utility District William Bernstein, Esq. Michael Kirkwood, General Manager Robert Ferrari, Northeast Water Solutions, Inc.	mkirkwood@pud-ri.org; Wlblaw7@gmail.com; rferrari@nwsi.net;	
Ben Weilerstein Toxics Action Center	ben@toxicsaction.org;	
Russ Olivo Woonsocket Call	rolivo232@gmail.com;	
Celine Schmidt	celine_schmidt@brown.edu;	
Suzanne Enser	svetromile@gmail.com;	
Rhode Island Student Climate Coalition	riscc@brown.edu;	

EXHIBIT 4-2

EXHIBIT 4-2

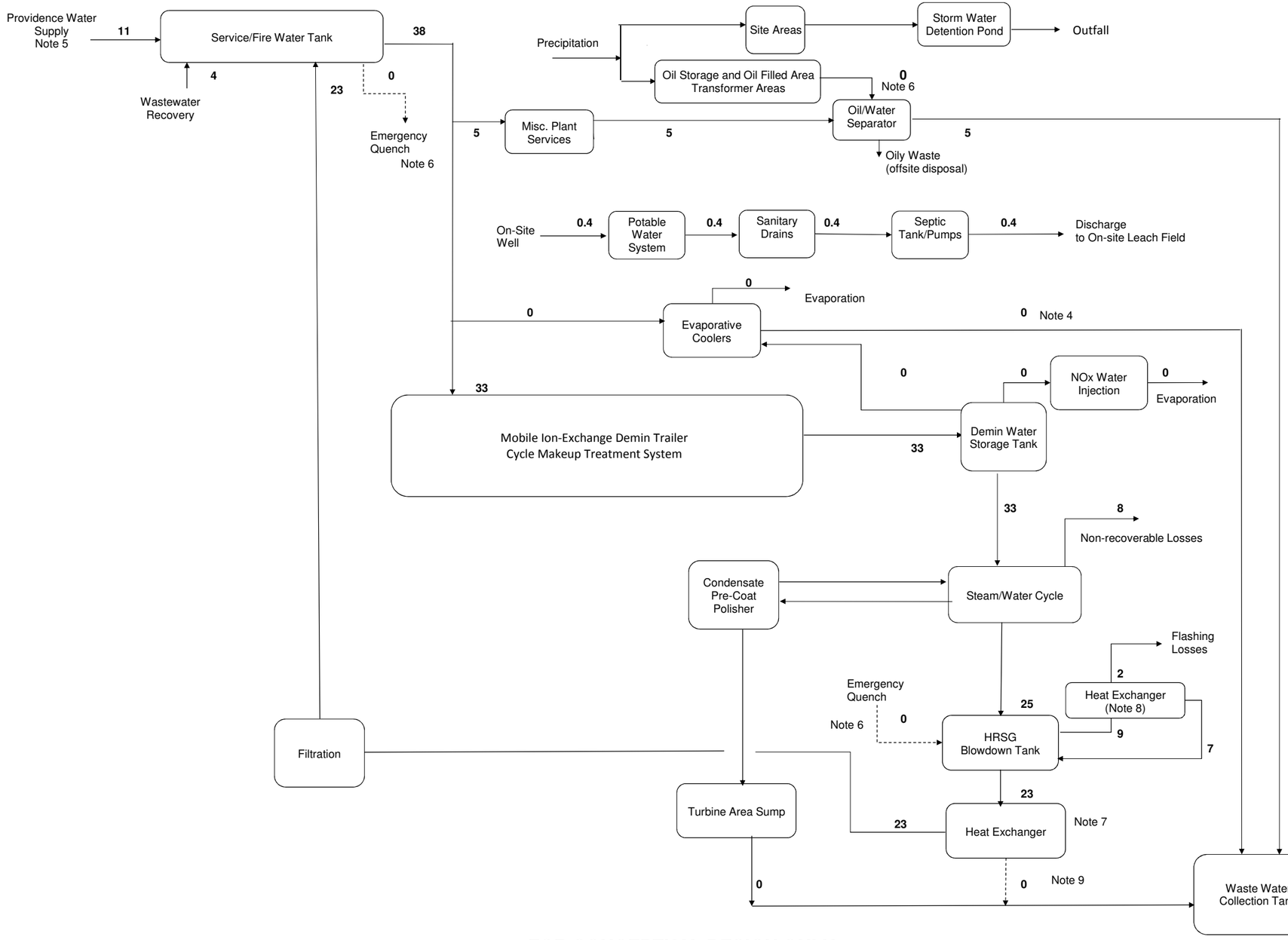
Clear River Energy Center

Summary of Estimated Water Quality through Various Plant Process Steps and Wastewater Discharge Quality for Average Annual Conditions

		A Raw Water Supply			B	C	D	E	F	G	H	I	J	K	L	M
Parameters	**Units**	**Lab Analysis**	**Adjusted Water Quality Fresh Water Supply to Service Water Tank (Note 1)**	**Well Water to Service/Fire Water Tank**	**Plant Service Water**	**OWS Discharge**	**DI Water Quality**	**Evaporative Cooler Makeup Water Quality**	**Evaporative Cooler Blowdown**	**HRSG Blowdown**	**Filtered HRSG Blowdown**	**Collected Wastewater for Treatment**	**Filtered Recycle Water**	**Wastewater Treatment Sysetm Blowdown**	**Projected CREC Wastewater Quality**	**Recommended Values for CREC Wastewater Discharge Permit**
Flows (Ref. 2)	**gpm**		**11**	**0**	**38**	**5**		**0**	**0**	**23**	**23**	**5**	**4**	**1**	**1**	**1**
Specific Conductivity	µS/cm	173	173	0	58	59	0.1000	0	0	3.0	3.0	59	59	59	59	59
TDS	mg/L as CaCO3	94	94	0	32	32	0.0191	0	0	1.9	1.9	32	32	32	32	32
pH	S.U.	10.2	10.2	0	9.8	9.8	7.0	0	0	9.6	9.6	9.8	9.8	9.8	6-9	6-9
Calcium	mg/L	15.0	15.0	0	4.9	4.9	0	0	0	0	0	4.9	4.9	4.9	4.9	4.9
Magnesium	mg/L	0.7000	0.7000	0	0.2282	0.2288	0	0	0	0	0	0.2288	0.2288	0.2288	0.23	0.2288
Potassium	mg/L	1.0	1.0	0	0.3097	0.3105	0	0	0	0	0	0.3105	0.3105	0.3105	0.31	0.3105
Sodium	mg/L	12.0	12.0	0	4.1	4.1	0.0030	0	0	0.3000	0.3000	4.1	4.1	4.1	4.1	4.1
Total Alkalinity	mg/L as CaCO3	16.5	16.5	0	5.4	5.4	0	0	0	0	0	5.4	5.4	5.4	5.4	5.4
Bicarbonate (HCO3)	mg/L	NA	49.2	0	16	16	0	0	0	0	0	16	16	16	16	16
Hardness	mg/L as CaCO3	42.0	42.0	0	14	14	0	0	0	0	0	14	14	14	14	14
Chloride	mg/L	20.5	20.5	0	6.9	6.9	0.0030	0	0	0.3000	0.3000	6.9	6.9	6.9	6.9	6.9
Fluoride	mg/L	0.7000	0.7000	0	0.7	0.7	0	0	0	0.7	0.7	0.7000	0.7000	0.7000	0.7	0.7000
Nitrate (N)	mg/L	<0.10	0.1000	0	0.1000	0.1000	0	0	0	0	0	0.1000	0.1000	0.1000	0.1	0.1000
Sulfate (SO4)	mg/L	23.5	23.5	0	7.7	7.7	0	0	0	0	0	7.7	7.7	7.7	7.7	7.7
Total Silica (SiO2)	mg/L	3.9	3.9	0	1.9	1.9	0.0100	0	0	1.0	1.0	1.9	1.9	1.9	1.9	1.9
Dissolved Silica (SiO2)	mg/L	3.9	3.9	0	1.3	1.3	0	0	0	0	0	1.3	1.3	1.3	1.3	1.3
Total Suspended Solids	mg/L	ND	1.0	0	1.0	10.0	0	0	0	5.0	1.0	10.0	1.0	66.7	66.7	**≤ 350**
Total Organic Carbon (TOC)	mg/L	1.8	1.8	0	0.6	0.6	0.1000	0	0	0	0	0.6	1.0	4.3	4.3	4.3
Oil/Grease	mg/L	NA	1.0	0	0.4013	10.0000	0	0	0	0	0	10.0	1.0	10.0	10.0	**≤ 25**
Ammonia - N (NH4)	mg/L	<0.02	0.0200	0	2.0	2.0	3.0	0	0	3.0	3.0	2.0	2.0	2.0	2.0	**≤ 30**
Nitrite (N)	mg/L	0.0002	0.0002	0	0.0006	0.0034	0	0	0	0	0	0.0034	0.0034	0.0034	0.00	0.0034
Ortho Phosphate (PO4)	mg/L	<0.10	0.1000	0	0.1000	0.1000	0	0	0	0	0	0.1000	0.1000	0.1000	0.1	0.1000
Residual Chlorine	mg/L	0.4400	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Biochemical Oxygen Demand	mg/L	NA	0.1500	0	0.1500	0.1500	0	0	0	0	0	0.1500	0.1500	0.1500	0.15	**≤ 300**
Total Aluminum	mg/L	<0.01	0.0100	0	0.0100	0.0100	0	0	0	0	0	0.0100	0.0100	0.0100	0.0	0.0100
Total Antimony	mg/L	<0.001	0.0010	0	0.0010	0.0010	0	0	0	0	0	0.0010	0.0010	0.0010	0.0	0.0010
Total Arsenic	mg/L	<0.004	0.0040	0	0.0040	0.0040	0	0	0	0	0	0.0040	0.0040	0.0040	0.0	0.0040
Total Barium	mg/L	0.0070	0.0070	0	0.0070	0.0070	0	0	0	0	0	0.0070	0.0070	0.0070	0.0	0.0070
Total Beryllium	mg/L	<0.001	0.0010	0	0.0010	0.0010	0	0	0	0	0	0.0010	0.0010	0.0010	0.0	0.0010
Total Cadmium	mg/L	<0.001	0.0010	0	0.0010	0.0010	0	0	0	0	0	0.0010	0.0010	0.0010	0.0	0.0010
Total Chromium	mg/L	<0.001	0.0010	0	0.0010	0.0010	0	0	0	0	0	0.0010	0.0010	0.0010	0.0	0.0010
Total Copper	mg/L	0.0320	0.0320	0	0.0300	0.0138	0	0	0	0	0	0.0138	0.0138	0.0138	0.0	0.0640
Total Manganese	mg/L	<0.01	0.0100	0	0.0100	0.0100	0	0	0	0	0	0.0100	0.0100	0.0100	0.0	0.0100
Total Iron	mg/L	0.0500	0.0500	0	0.6903	0.6895	0	0	0	5.0	1.0	0.6895	0.6895	0.6895	0.69	0.6895
Total Lead	mg/L	0.0160	0.0160	0	0.0152	0.0086	0	0	0	0	0	0.0086	0.0086	0.0086	0.0	0.0320
Total Mercury	mg/L	<0.0002	0.0002	0	0.0002	0.0002	0	0	0	0	0	0.0002	0.0002	0.0002	0.0	0.0002
Total Nickel	mg/L	<0.001	0.0010	0	0.0010	0.0010	0	0	0	0	0	0.0010	0.0010	0.0010	0.0	0.0010
Total Selenium	mg/L	<0.005	0.0050	0	0.0050	0.0050	0	0	0	0	0	0.0050	0.0050	0.0050	0.0	0.0050
Total Silver	mg/L	<0.001	0.0010	0	0.0010	0.0010	0	0	0	0	0	0.0010	0.0010	0.0010	0.0	0.0010
Total Thallium	mg/L	<0.001	0.0010	0	0.0010	0.0010	0	0	0	0	0	0.0010	0.0010	0.0010	0.0	0.0010

Note 1: For species that were not reported (denoted as NA), it is assumed the species are at 50% of the Non-Detection (ND) level

Note 2: Wastewater discharged from the facility will be less than 140 deg F.



Notes:

1. All flow rates depicted are based on conceptual design and preliminary water data.
2. Flows are in gallons per minute (gpm).
3. Flow rates represent the daily average flow rates and do not represent instantaneous maximum demand.
4. The evaporative coolers are only operational during summer. Therefore, there is no continuous blowdown stream.
5. Flow rates shown are total flows for both Units.
6. Under normal operating conditions, there is no continuous flow.
7. A heat exchanger (or alternate means) will be utilized to cool HRSG blowdown to 140 F.
8. An air cooled condenser (or other means) will be utilized to cool and recover a large percentage of the flashed steam.
9. HRSG blowdown will be routed to the wastewater collection tank only during startup and plant upset conditions.

FOR CONCEPTUAL DESIGN ONLY

Conceptual Design Basis	01/06/2017	
Demin Water Makeup Demand	1.0% of IP+HP Steam Flow	GE HB Case 7 (Issued 3/31/2016)
Potable Water Demand	20 personnel, 50 gal per day, 3 shifts	
Ambient Conditions	51.8°F / 74%RH	
Fuel Oil Injection	None	

Invenergy

RHODE ISLAND
Two 1 x 1 COMBINED CYCLE

NATURAL GAS FIRED WATER MASS BALANCE
Two 1 X 1 GE 7HA.02 - Dry Cooling
Average Ambient Conditions - Full Load

Project: **238926**

Drawing: **WMB-01 SHEET 1-4**

Rev: **N3**

EXHIBIT 4-6

HANKARD ENVIRONMENTAL
ACOUSTICS AND VIBRATION CONSULTING

CREC NOISE: SUPPLEMENTAL INFORMATION FOR RIDEM

TO:	John Niland – *Invenergy*	DATE:	May 8, 2017
FROM:	Mike Hankard – *Hankard Environmental*	PROJECT:	Clear River Energy Center
CC:	Dan Ewan – *Invenergy*		

SUBJECT: Supplemental information regarding noise issues raised by RIDEM

The following provides supplemental information regarding issues raised by the Rhode Island Department of Environmental Management (RIDEM) concerning noise emissions from the proposed Clear River Energy Center (CREC). The issues listed below were raised by RIDEM as part of the Energy Facilities Siting Board process. Some of the response information provided below was submitted previously to the EFSB, and some of the information is new or revised.

RIDEM Opinion: "Impacts are depicted in too large of a scale to show their full extent, but it appears that noise from typical daily operations would extend in the vicinity of 8000 feet from the proposed plant, with daily noise levels of 45dbA and above extending several thousand feet from the plant." (Page 13)

CREC Response: To address this, the attached figures were produced at a smaller scale to show more detail regarding predicted noise levels in the forest adjacent to the CREC. Figure 1 shows the noise level contours for the CREC in typical baseload operation. Figure 2 shows the noise levels for start-up conditions. They are very similar, because the start-up noise sources have been significantly mitigated. The levels shown are for atmospheric conditions conducive to sound propagation, and *do not* take into account losses that will occur when sound propagates through dense forest over long distances. Thus, actual levels in the forest will typically be lower than those shown here. As can be seen from the figures, noise levels will be greater than 50 dBA within only approximately 1,000 feet of the center of the plant. Noise levels drop to 45 dBA at a distance of approximately 1,600 feet from the center of the facility. Noise levels drop to 42 dBA or less at the nearest residences located 2,300 feet away. At a distance of 8,000 feet, noise from the CREC will likely be inaudible (~20 dBA).

Note that the noise level contours shown in the figures are based on the current (February 2017) design of the CREC.

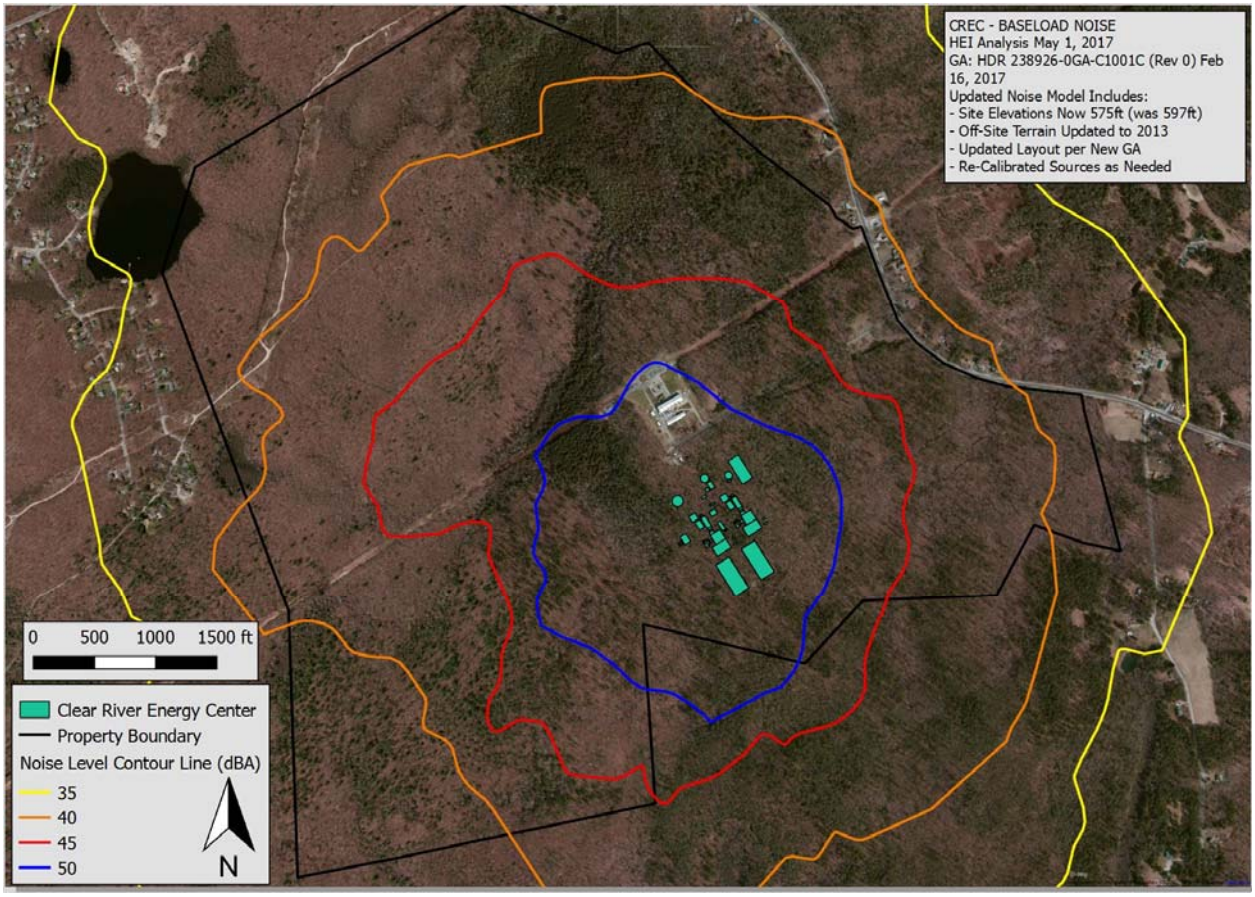


Figure 1 – Noise Level Contours for Baseload CREC Operation

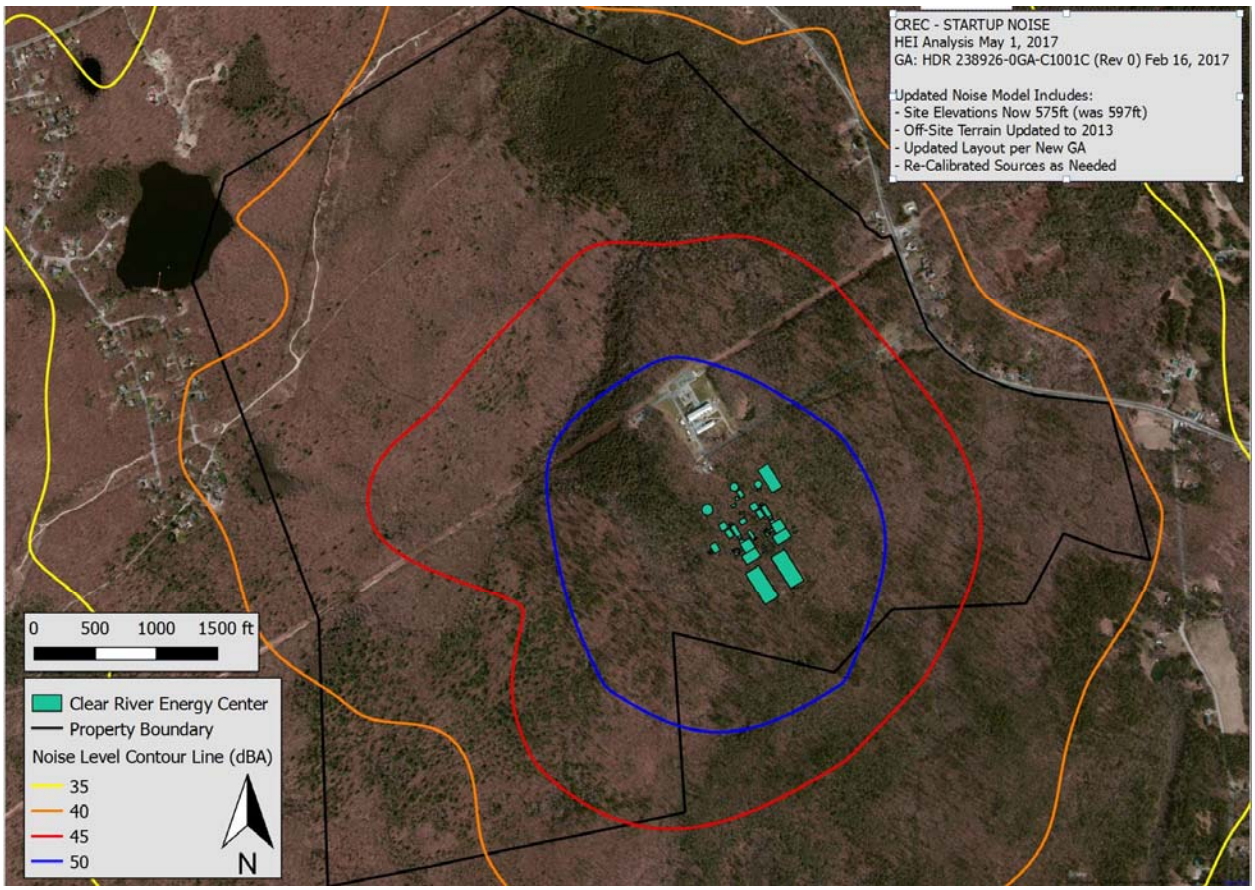


Figure 2 – Noise Level Contours for Start-up CREC Operation

RIDEM Opinion: "While the implications of a new noise source are unknown, what is clear is that the proposed location of the Facility and the forest clearing would extend noise impacts further into the surrounding intact forest to the south, whether it be from the addition from the proposed Facility, the increased penetration of noise from the existing compressor station due to clearing, or a combination of the two." (Page 13-14)

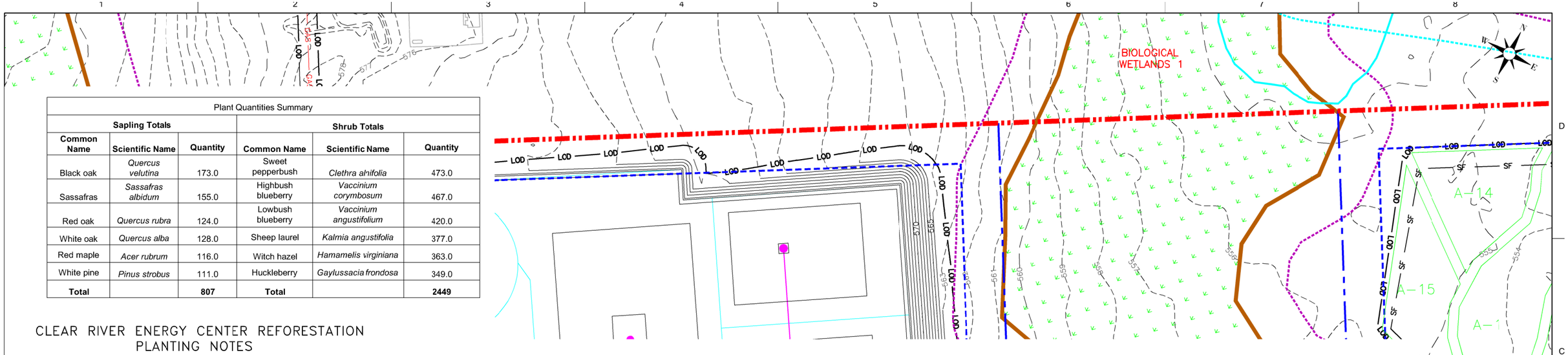
CREC Response: Again, RIDEM is referring to the forested land directly adjacent to the proposed CREC site, particularly to the south, and not to the location of residences. They are also referring to what happens to noise levels as the result of the combined operation of both the CREC and the Algonquin compressor station. Certainly, the CREC will add some noise to the forest. However, to the south the CREC will also act as a barrier and reduce noise from the existing compressor station. Close to the CREC (within approximately 1,000 feet), total noise levels in the forest to the south will increase as CREC emissions will overcome lower compressor station levels. Further south (more than 2,000 feet), the reduction of existing compressor noise will balance the addition of CREC emissions, and total levels may not change much at all. All of this will depend on line of sight, the operating condition of both the compressor station and the CREC, and atmospheric conditions.

EXHIBIT 4-12

Plant Quantities Summary					
Sapling Totals			**Shrub Totals**		
Common Name	**Scientific Name**	**Quantity**	**Common Name**	**Scientific Name**	**Quantity**
Black oak	*Quercus velutina*	173.0	Sweet pepperbush	*Clethra ahifolia*	473.0
Sassafras	*Sassafras albidum*	155.0	Highbush blueberry	*Vaccinium corymbosum*	467.0
Red oak	*Quercus rubra*	124.0	Lowbush blueberry	*Vaccinium angustifolium*	420.0
White oak	*Quercus alba*	128.0	Sheep laurel	*Kalmia angustifolia*	377.0
Red maple	*Acer rubrum*	116.0	Witch hazel	*Hamamelis virginiana*	363.0
White pine	*Pinus strobus*	111.0	Huckleberry	*Gaylussacia frondosa*	349.0
Total		**807**	**Total**		**2449**

CLEAR RIVER ENERGY CENTER REFORESTATION PLANTING NOTES

1. FINAL APPROVAL OF PLANT MATERIAL WILL NOT BE PROVIDED UNTIL DE LIVERY AND REVIEW ON SITE.
2. TREES WITH LARGE CIRCLING ROOTS OR TOO DEEP ROOT SYSTEMS WILL BE REJECTED. TREES WITH LARGE CIRCLING ROOTS OR TOO DEEP ROOT SYSTEMS WILL BE REJECTED.
3. ALL ROOT PACKAGES MUST BE FREE OF ANY WEEDS.
4. AT THE DIRECTION OF THE ENVIRONMENTAL SPECIATIST, PRUNING MAY BE REQUIRED TO REMOVE DAMAGED, CROSSING, MISSHAPEN OR LOW BRANNCHING LIMBS. TREES SHOULD NOT REQUIRE SIGNIFICANT PRUNING TO CORREC T HEALTH OR AESTHETIC DEFICIENCIES.
5. INSTALL 2" DEPTH DARK BROWN PINEBARK MULCH AROUND PLANTING PITS. INSTALL STRAW MULCH IN ALL REFORESTATION AREA.S.
6. ANY PLANT MATERIAL NOT MEETING THE SPECIFICATION'S REQUIREMENITS FOR QUALITY WILL BE REJECTED BY THE ENVIRONMENTAL SPECIALIST.
7. INSTALL MINIMUM 8" DEPTH SALVAGED TOPSOIL IN ALL REFORESTATIONI AREAS.
8. PLANT QUALITY, SIZE AND CONDITION AS DETERMINED BY STANDARDS S ET FORTH IN THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARD ANSI 260.11-1973. PLANT NAMES SHALL CONFORM TO LATEST EDITION OF "STANDARDIZED PLANT NAMES" AS ADOPTED BY AMERICAN JOINT COMMITTEE OF HORTICULTU RE NOMENCLATURE.
9. REFORESTATION PLANT SIZES: SAPLING SHALL BE A MINIMUM OF 5' HIGH AND "-3/4" CAL. BRANCHING ABOVE 2.5'. SHRUBS SHALL BE A MINIMUM OF 2 .5'-3' HIGH, FULL AND BUSHY.
10. PLANTING TIME: PLANTING OF THE REFORESTATION WORK WILL OCCUR FROM SEPTEMBER 1-OCTOBER 15TH TO ENSURE BEST ESTABLISHMENT.
11. TREE SHELTERS:TUBEX TREE GUARD SHALL BE PROVIDED FOR ALL SAPLINGS TO REDUCE RODENT BROWSING. TREE GUARDS SHALL BE REMOVED AFTER 2 YEARS.
12. MAINTENANCE: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAIINTAIN THE REFORESTATION AREA FOR A PERIOD OF ONE YEAR AFTER SUBSTAN TIAL COMPLETION. THEY WILL BE RESPONSIBLY FOR WATERING DURING THIS TIME WITH AN APPROVED METHOD.
13. SALVAGED TOPSOIL WILL BE ADDED AS BACKFILL IN A LL PLANTING PITS.
14. PLANTING WILL BE SUPPLEMENTED WITH AN CONSERVATION/WILDLIFE SEED MIX. SEEDING WILL OCCUR AFTER PLANTING IS COMPLETE TO STABILIZE SOIL, REDUCE WEED GROWTH AND PROVIDE AND HERBACEOUS FOREST FLOOR.
15. SEEDING: ALLENS CONSERVATION MIX, SEEDING RATE 5LB/1,000 SQ FT
16. NATIVE PLANTINGS ARE SELECTED TO THRIVE IN THE CLEAR RIVER ENERGiY SITE CONDITIONS. ANY ADDITIONAL FERTILIZER IN THE FORM OF A SLOW REL.EASE FERTILIZER SHALL BE USED ONLY DURING THE ESTABLISHMENT PERIOD OIF THE FIRST THREE YEARS, AND THEN ONLY AS NEEDED. SUPPLEMENTAL WATERING WILL ONLY BE USED DURING THE ESTABLISHMENT PERIOD..
17. AS DEER CAN BE AN ISSUE IN RURAL AREAS, PLANTS WERE SELECTED TO AVOID THOSE THAT ARE FREQUENTLY SEVERELY DAMAGED AND FOCUSED ON T HOSE THAT ARE RARELY, SELDOM OR OCCASIONALLY DAMAGED. MUCH OF TH IS DEPENDS ON THE SEVERITY OF THE WINTER MONTHS .



Reforestation Plant Quantity List															
Area Code	**Polygon Area (sq ft)**	**Saplings 1**	**Scientific Name**	**Quantity**	**Saplings 2**	**Scientific Name**	**Quantity**	**Total Saplings**	**Shrubs 1**	**Scientific Name**	**Quantity**	**Shrubs 2**	**Scientific Name**	**Quantity**	**Total Shrubs**
A-1	18,601	Black oak	*Quercus velutina*	27.0	Sassafras	*Sassafras albidum*	26.0	53.0000	Highbush blueberry	*Vaccinium corymbosum*	81.0	Sheep laurel	*Kalmia angustifolia*	80	161
A-2	9,974	White oak	*Quercus alba*	14.0	Red maple	*Acer rubrum*	14.0	28.0000	Lowbush blueberry	*Vaccinium angustifolium*	44.0	Huckleberry	*Gaylussacia frondosa*	43	87
A-3	15,944	Red oak	*Quercus rubra*	23.0	White pine	*Pinus strobus*	23.0	46.0000	Sweet pepperbush	*Clethra alnifolia*	69.0	Witch hazel	*Hamamelis virginiana*	69	138
A-4	20,488	White pine	*Pinus strobus*	30.0	Black oak	*Quercus velutina*	29.0	59.0000	Witch hazel	*Hamamelis virginiana*	89.0	Lowbush blueberry	*Vaccinium angustifolium*	88	177
A-5	14,478	Red maple	*Acer rubrum*	21.0	Red oak	*Quercus rubra*	20.0	41.0000	Huckleberry	*Gaylussacia frondosa*	63.0	Sweet pepperbush	*Clethra alnifolia*	63	126
A-6	16,063	Sassafras	*Sassafras albidum*	23.0	White oak	*Quercus alba*	23.0	46.0000	Sheep laurel	*Kalmia angustifolia*	70.0	Highbush blueberry	*Vaccinium corymbosum*	69	139
A-7	19,781	Black oak	*Quercus velutina*	29.0	White oak	*Quercus alba*	28.0	57.0000	Highbush blueberry	*Vaccinium corymbosum*	86.0	Huckleberry	*Gaylussacia frondosa*	85	171
A-8	20,013	White oak	*Quercus alba*	29.0	Sassafras	*Sassafras albidum*	28.0	57.0000	Lowbush blueberry	*Vaccinium angustifolium*	87.0	Witch hazel	*Hamamelis virginiana*	87	174
A-9	9,872	Red oak	*Quercus rubra*	14.0	Red maple	*Acer rubrum*	14.0	28.0000	Sweet pepperbush	*Clethra alnifolia*	43.0	Sheep laurel	*Kalmia angustifolia*	42	85
A-10	10,438	White pine	*Pinus strobus*	15.0	Red oak	*Quercus rubra*	15.0	30.0000	Witch hazel	*Hamamelis virginiana*	45.0	Huckleberry	*Gaylussacia frondosa*	45	90
A-11	9,249	Red maple	*Acer rubrum*	13.0	White pine	*Pinus strobus*	13.0	26.0000	Huckleberry	*Gaylussacia frondosa*	40.0	Sweet pepperbush	*Clethra alnifolia*	40	80
A-12	26,119	Sassafras	*Sassafras albidum*	38.0	Black oak	*Quercus velutina*	37.0	75.0000	Sheep laurel	*Kalmia angustifolia*	113.0	Sweet pepperbush	*Clethra alnifolia*	113	226
A-13	24,516	Black oak	*Quercus velutina*	35.0	Red maple	*Acer rubrum*	35.0	70.0000	Highbush blueberry	*Vaccinium corymbosum*	107.0	Lowbush blueberry	*Vaccinium angustifolium*	106	213
A-14	9,511	White oak	*Quercus alba*	14.0	White pine	*Pinus strobus*	13.0	27.0000	Lowbush blueberry	*Vaccinium angustifolium*	41.0	Witch hazel		41	82
A-15	11,441	Red oak	*Quercus rubra*	17.0	Sassafras	*Sassafras albidum*	16.0	33.0000	Sweet pepperbush	*Clethra alnifolia*	50.0	Highbush blueberry	*Vaccinium corymbosum*	49	99
A-16	7,203	White pine	*Pinus strobus*	10.0	Red oak	*Quercus rubra*	10.0	20.0000	Witch hazel	*Hamamelis virginiana*	32.0	Sheep laurel	*Kalmia angustifolia*	31	63
A-17	7,516	Red maple	*Acer rubrum*	11.0	Sassafras	*Sassafras albidum*	10.0	21.0000	Huckleberry	*Gaylussacia frondosa*	33.0	Lowbush blueberry	*Vaccinium angustifolium*	32	65
B-1	9,432	Sassafras	*Sassafras albidum*	14.0	White oak	*Quercus alba*	13.0	27.0000	Sheep laurel	*Kalmia angustifolia*	41.0	Huckleberry	*Gaylussacia frondosa*	40	81
B-2	11,241	Black oak	*Quercus velutina*	16.0	Red oak	*Quercus rubra*	16.0	32.0000	Highbush blueberry	*Vaccinium corymbosum*	49.0	Sweet pepperbush	*Clethra alnifolia*	48	97
B-3	4,972	White oak	*Quercus alba*	7.0	White pine	*Pinus strobus*	7.0	14.0000	Lowbush blueberry	*Vaccinium angustifolium*	22.0	Sweet pepperbush	*Clethra alnifolia*	21	43
CFS	6,009	Red oak	*Quercus rubra*	9.0	Red maple	*Acer rubrum*	8.0	17.0000	Sweet pepperbush	*Clethra alnifolia*	26.0	Highbush blueberry	*Vaccinium corymbosum*	26	52

MATCH LINE – SHEET 01C702 SWMP PLAN

ISSUE	DATE	DESCRIPTION
3	3/27/2017	REVISION
2	2/17/2017	REVISION
1	8/17/2016	SOIL EROSION SEDIMENT CONTROL PLAN

PROJECT MANAGER C. JACOBS
PROJECT NUMBER 10021318

CLEAR RIVER ENERGY LLC
CLEAR RIVER ENERGY CENTER
WALLUM LAKE ROAD LOT NO.
135-002, 137-002, 137-003, 137-021,
153-001, 153-002
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

PROPOSED REFORESTATION PLAN

0 1" 2"

FILENAME 01C700-REV.dwg
SCALE 1" = 50'

SHEET 01C700-REV

EXHIBIT 4-15

Table 3-3: Potential Bird Species Found Within the Facility Site

Common Name	Scientific Name	Upland	Wetland	Interior / Edge Forest Species[1]	State Rank/Status
Mallard	*Anas platyrhynchos*		X	E	
Hooded merganser	***Lophodytes cucullatus***		**X**	**I/E**	**S1B/ Concern**
Turkey Vulture	*Cathartes aura*	X		E	
Bald Eagle	***Haliaeetus leucocephalus***	**X**	**X**	**E**	**S1B, S1N/Endangered**
Sharp-shinned Hawk	*Accipiter stratus*	X		I/E	State Historical
Cooper's hawk	*Accipiter cooperii*	X		I/E	Concern
Northern Goshawk	***Accipiter gentilis***	**X**		**I**	**S1B, S1N/ Concern**
Red-shouldered hawk	*Buteo lineatus*	X	X	I/E	
Broad-winged hawk	*Buteo platypterus*	X		I	
Red-tailed hawk	*Buteo jamaicensis*	X	X	I/E	
American Kestrel	***Falco sparverius***	**X**	**X**	**E**	**S4B, SZN**
Peregrine Falcon	***Falco peregrinus***	**X**	**X**	**E**	**SZN/Endangered**
Wild turkey	*Meleagris gallopavo*	X		I/E	
Ruffed grouse	***Bonasa umbellus***	**X**		**E**	**S5B, S5N**
Northern bobwhite	*Colinus virginianus*	X		E	Extirpated?
American woodcock	***Scolopax minor***		**X**	**E**	**S4B, S4N**
Mourning dove	*Zenaida macroura*	X		E	
Yellow-billed cuckoo	***Coccyzus americanus***	**X**	**X**	**E**	**S5B, S5N**
Black-billed cuckoo	***Coccyzus erythrophthalmus***	**X**		**E**	**S5B, S5N**
Eastern screech owl	*Otus asio*	X		E	
Great horned owl	*Bubo virginianus*	X	X	I/E	
Barred owl	*Strix varius*	X	X	I	
Long-eared Owl	*Asio otus*	X	X	I	Concern
Northern Saw-whet Owl	*Aegolius acadicus*	X	X	I	Concern
Common Nighthawk	*Chordeles minor*	X		E	Concern
Eastern Whip-poor-will*	***Caprimulgis vociferus***	**X**		**E**	**S4B, SZN**
Chimney swift	***Chaetura pelagica***	**X**		**E**	**S5B, SZN**
Ruby-throated hummingbird	*Archilochus colubris*	X	X	I/E	
Belted kingfisher	*Ceryle alcyon*		X	E	
Red-bellied woodpecker	*Melanerpes carolinus*	X	X	I/E	
Red-headed Woodpecker	*Melanerpes erythrocephalus*	X	X	I/E	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	X	X	I/E	
Downy woodpecker	*Picoides pubescens*	X	X	I/E	
Hairy woodpecker	***Picoides villosus***	**X**	**X**	**I**	**S4B, S4N**
Northern flicker	*Colaptes auritus*	X		I/E	S5B, S5N
Pileated Woodpecker	***Hylatomus pileatus***	**X**	**X**	**I**	**S1B, S1N/ Concern**
Eastern Wood-pewee	*Contopus virens*	X	X	I/E	
Acadian Flycatcher*	***Empidonax virescens***	**X**	**X**	**I**	**S1B, S1N/ Concern**
Alder Flycatcher	*Empidonax alnorum*		X	E	
Willow Flycatcher	***Empidonax traillii***	**X**	**X**	**E**	**S3B, S3N**
Least Flycatcher	***Empidonax minimus***	**X**		**E**	**S3B, SZN**
Eastern phoebe	*Sayornis phoebe*	X	X	E	
Great crested flycatcher	***Myiarchus crinita***	**X**	**X**	**I/E**	**S5B, SZN**
Eastern kingbird	***Tyrannus tyrannus***	**X**	**X**	**E**	**S5B, S5N**
Tree swallow	***Iridoprocne bicolor***	**X**	**X**	**E**	**S5B**
Blue jay	*Cyanocitta cristata*	X	X	I/E	
American crow	*Corvus brachyrhynchos*	X	X	I/E	
Common Raven	*Corvus corax*	X	X	I/E	
Black-capped chickadee	*Parus atricapillus*	X	X	I/E	
Tufted titmouse	*Parus bicolor*	X	X	I/E	
Red-breasted nuthatch	*Sitta canadensis*	X		I	
White-breasted nuthatch	*Sitta carolinensis*	X	X	I/E	
Brown creeper	*Certhia americana*	X	X	I	
House wren	*Troglodytes aedon*	X	X	E	
Winter wren	*Troglodytes hiemalis*		X	I	Concern
Carolina wren	*Thryothorus ludovicianus*	X	X	E	
Golden-crowned Kinglet	*Regulus satrapa*	X	X	I/E	
Ruby-crowned Kinglet	*Regulus calendula*	X	X	I/E	
Blue-gray gnatcatcher*	*Polioptila caerulea*	X	X	I/E	
Eastern bluebird	***Sialia sialis***	**X**		**E**	**S3B**
Veery*	***Catharus fuscescens***		**X**	**I**	**S5B**
Hermit thrush	*Catharus guttatus*	X	X	I/E	
Wood thrush*	***Hylocichla mustelina***	**X**	**X**	**I**	**S5B, SZN**
American robin	*Turdus migratorius*	X	X	E	
Gray catbird	***Dumetella carolinensis***	**X**	**X**	**E**	**S5B**
Northern mockingbird	*Mimus polyglottus*	X		E	
Brown thrasher	***Toxostoma rufum***	**X**		**E**	**S4B, SZN**
Cedar waxwing	*Bombycilla cedrorum*	X		E	
European starling	*Sturna vulgaris*	X		E	
Warbling vireo	*Vireo gilvus*	X	X	I/E	
Yellow-throated vireo*	***Vireo flavifrons***	**X**	**X**	**E**	**S4B, SZN**
White-eyed vireo	*Vireo griseus*		X	I/E	
Red-eyed vireo*	*Vireo olivaceous*	X		I/E	
Blue-headed Vireo	***Vireo solitaries***	**X**		**I**	**S3B, SZN**
Philadelphia Vireo	*Vireo philadelphicus*	X	X	I/E	
Blue-winged warbler	***Vermivora pinus***	**X**	**X**	**E**	**S5B, SZN**
Golden-winged warbler	*Vermivora chrysoptera*		X	E	
Tennessee Warbler	*Leiothlypis peregrine*	X	X	I/E	
Nashville Warbler	***Leiothlypis ruficapilla***	**X**	**X**	**E**	**S3B, SZN**
Black-and-white warbler*	***Mniotilta varia***	**X**		**I**	**S5B, SZN**
Black-throated green warbler*	*Dendroica virens*	X		I	
Prairie warbler	***Dendroica discolor***	**X**		**E**	**S5B, SZN**
Pine warbler	*Dendroica pinus*	X		I	
Palm Warbler	*Setophaga discolor*		X	I/E	
Cerulean Warbler	***Setophaga cerulea***		**X**	**I**	**S1B, S2N/Endangered**
Yellow warbler	*Dendroica petechia*	X	X	E	
Black-throated Blue Warbler*	***Setophaga caerulescens***	**X**	**X**	**I**	**S1B, S3N/Threatened**
Yellow-rumped Warbler	***Setophaga coronata***	**X**		**I/E**	**S2B, SZN**
Canada warbler*	***Wilsonia canadensis***	**X**	**X**	**I/E**	**S4B, SZN**
Hooded warbler*	***Wilsonia citrina***		**X**	**I/E**	**S3B, SZN**
Worm-eating warbler*	*Helmitherus vermivorus*		X	I	Concern
Ovenbird*	*Seiurus aurocapillus*	X		I	
Northern waterthrush*	***Seiurus novaboracensis***		**X**	**I**	**S4B, SZN**
Yellow-breasted Chat	***Icteria virens***		**X**	**E**	**SHB, S1N/Endangered**
Common yellowthroat	*Geothlypis trichas*		X	E	

Common Name	Scientific Name	Upland	Wetland	Interior / Edge Forest Species[1]	State Rank/Status
American redstart*	***Setophaga ruticilla***	**X**	**X**	**I/E**	**S5B**
Scarlet tanager*	***Piranga olivacea***	**X**		**I**	**S5B, SZN**
Eastern towhee	***Pipilo erythophthalmus***	**X**		**E**	**S5B, SZN**
American Tree Sparrow	*Spizella arborea*	X	X	E	
Chipping sparrow	*Spizella passerina*	X	X	E	
Field sparrow	***Spizella pusilla***	**X**		**E**	**S4B, SZN**
Fox Sparrow	*Passerella illaca*	X		E	
Savannah sparrow	***Passerculus sandwichensis***	**X**	**X**	**E**	**S2S3B, SZN**
Song sparrow	*Melospiza melodia*	X	X	E	
White-throated Sparrow	*Zonotrichia albicollis*	X		E	Concern
Swamp sparrow	*Melospiza georgiana*		X	E	
Rose-breasted grosbeak	***Pheucticus ludovicianus***		**X**	**E**	**S4B, SZN**
Northern cardinal	*Cardinalis cardinalis*	X	X	I/E	
Indigo bunting	***Passerina cyanea***	**X**	**X**	**E**	**S4B, SZN**
Dark-eyed Junco	*Junco hyemalis*	X	X	I/E	Concern
Red-winged blackbird	*Agelaius phoeniceus*		X	E	
Common grackle	*Quiscalus quiscula*	X	X	E	
Brown-headed cowbird	*Molothrus ater*	X		E	
Orchard oriole	*Icterus spurius*	X		E	
Baltimore oriole	*Icterus galbula*	X	X	E	
Pine Grosbeak	*Pinicola enucleator*	X		E	
Pine Siskin	*Carduelis pinus*	X		I/E	
Purple finch	***Carpodacus purpureus***	**X**		**I/E**	**S3B, SZN**
House finch	*Carpodacus mexicanus*	X		I/E	
American goldfinch	*Carduelis tristis*	X	X	E	
House sparrow	*Passer domesticus*	X		E	

[1] I = Interior (nest only within forest interiors, rarely near forest edge); I/E = Interior/Edge – territories located entirely within the forest but can only use edges; E = Edge – species use forest perimeters, nearby fields or large clearings during breeding season.

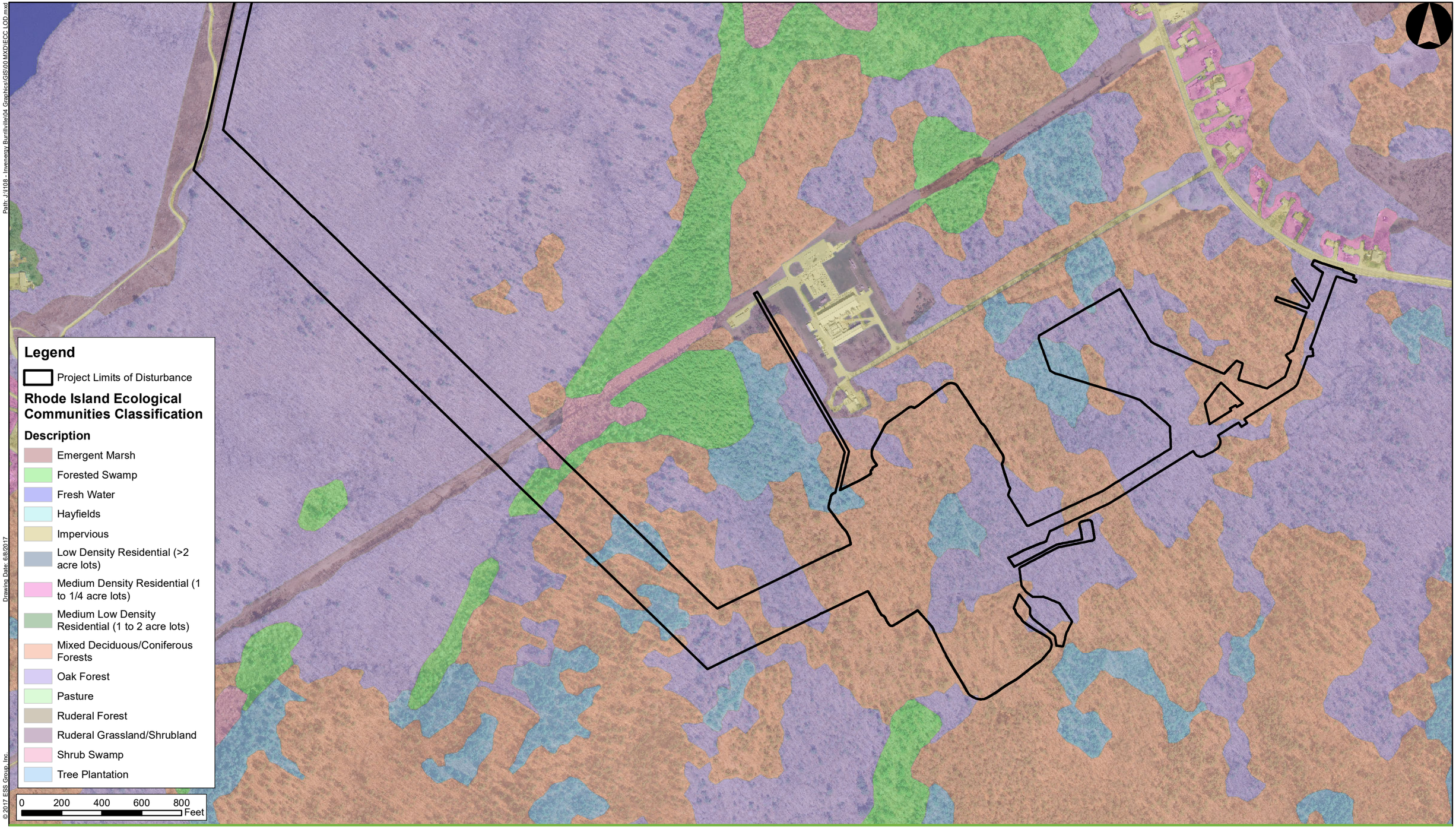
* Indicates forest interior species per G. D. Therres, Integrating Management of Forest Interior Migratory Birds with Game in the Northeast. Undated.
Gray highlight indicates species observed within the project area.
Bold species are those listed as Species of Greatest Conservation Need by the Rhode Island WAP.

EXHIBIT 4-17

EXHIBIT 4-22

Path: J:\4108 - Invenergy Burrillville\04 Graphics\GIS\00 MXD\ECC LOD.mxd

Drawing Date: 6/8/2017



ess group
environmental consulting & engineering services

Invenergy, LLC
Clear River Energy Center

Burrillville, Rhode Island

1 inch = 450 feet

Source: 1) USGS 2011 Imagery
2) RIGIS, Roads E-911 2016
3) RIGIS, ECC, 2011

Rhode Island Ecological Communities Classification

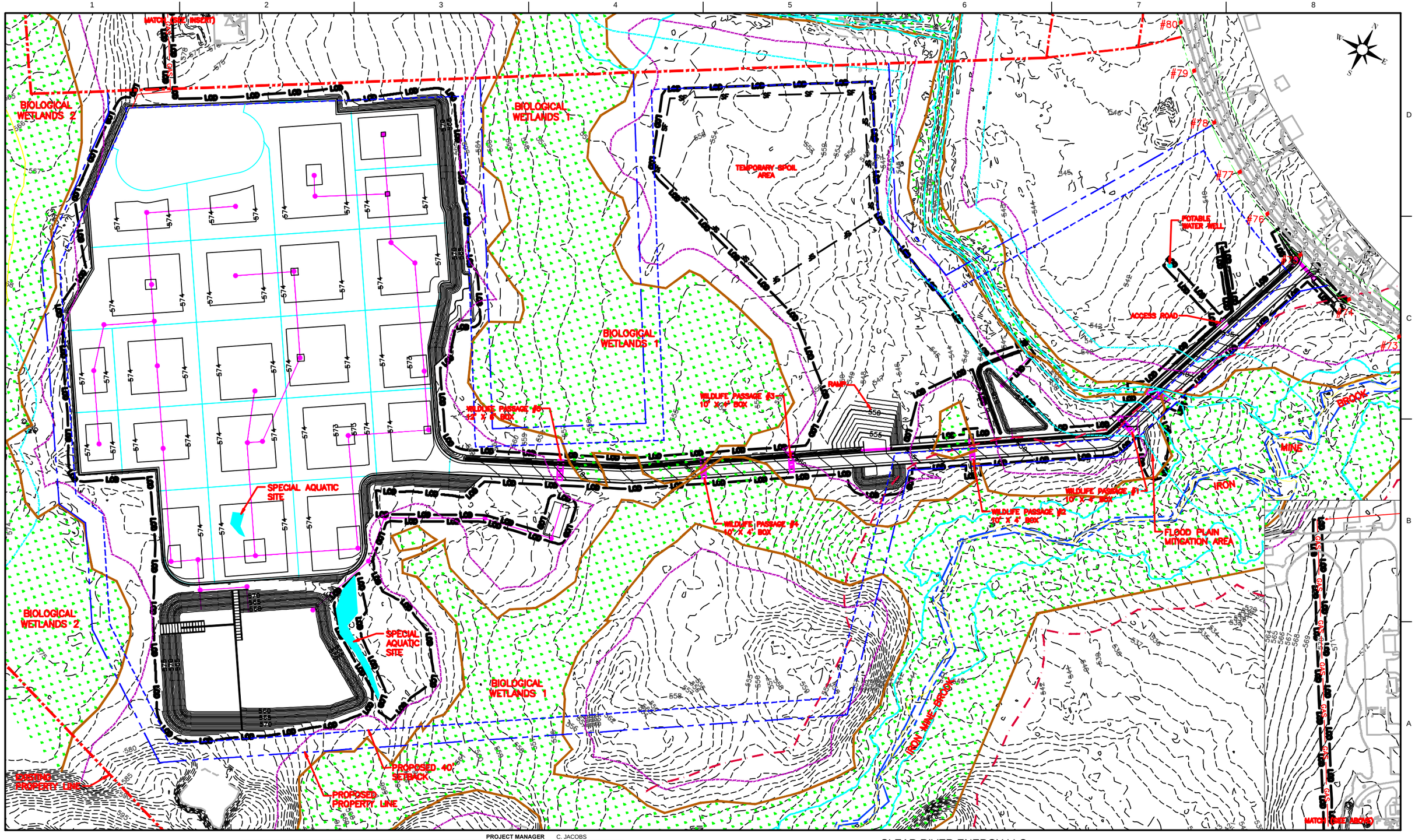
Figure 1

EXHIBIT 4-29

Table 7-3: Anticipated Mitigation Obligation in the Form of Restoration or Preservation for the Project

	Project Impact (sq ft)	Compensatory Mitigation Multipliers			Mitigation Obligation (sq ft)	
		Restoration	Preservation	% of Standard Amount	Restoration	Preservation
Direct Permanent Impacts						
PEM	885	2	20	-	1,770	17,700
PSS	391	2	20	-	782	7,820
PFO	30,687	3	20	-	92,061	613,740
Temporary/Secondary Impacts						
Temporary fill in PFO (will revert to PFO)	148,854	0.45	3	15	66,984	446,562
Temporary fill in PEM (will revert to PEM)	42,768	0.1	1	5	16,958	169,582
Temporary fill in PSS (will revert to PSS)	169,582	0.2	2	10	33,916.40	339,164
Permanent conversion of PFO to PEM	-	0.9	6	30	-	-
Permanent conversion of PFO to PSS	154,487	0.45	3	15	69,519	463,461
Permanent conversion of PSS to PEM	893	0.3	3	15	268	2,679
Removal of PFO for new corridor	-				-	-
Edge effect - high level impact zone - PEM (25')	13,353	0.5	5	25	6,677	66,765
Edge effect - high level impact zone - PSS (50')	77,291	0.5	5	25	38,646	386,455
Edge effect - high level impact zone - PFO (50')	244,282	0.75	5	25	183,212	1,221,410
Edge effect - remainder of impact zone - PEM (50')	48,315	0.2	2	10	9,663	96,630
Edge effect - remainder of impact zone - PSS (50')	135,526	0.2	2	10	27,105	271,052
Edge effect - remainder of impact zone - PFO (100')	1,018,140	0.3	2	10	305,442	2,036,280
				Total PEM	35,068	350,677
				Total PSS	100,717	1,007,170
				Total PFO	717,218	4,781,453
				Grand Total	**853,003**	**6,139,300**
				Grand Total (ac)	**19.6**	**140.9**

EXHIBIT 4-32



ISSUE	DATE	DESCRIPTION
3	3/27/2017	REVISION
2	2/17/2017	REVISION
1	8/17/2016	SOIL EROSION SEDIMENT CONTROL PLAN

PROJECT MANAGER C. JACOBS

PROJECT NUMBER 10021318

CLEAR RIVER ENERGY LLC
CLEAR RIVER ENERGY CENTER
WALLUM LAKE ROAD LOT NO.
135-002, 137-002, 137-003, 137-021,
153-001, 153-002
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

PROPOSED GRADING PLAN

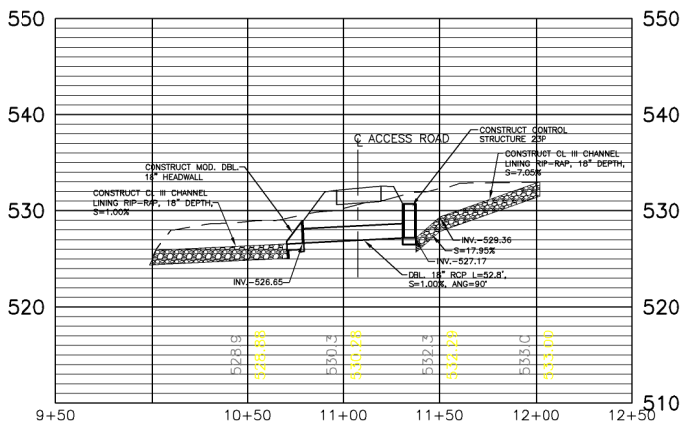
0 1" 2"

FILENAME 01C300-REV.dwg

SCALE 1" = 100'

SHEET 01C300-REV

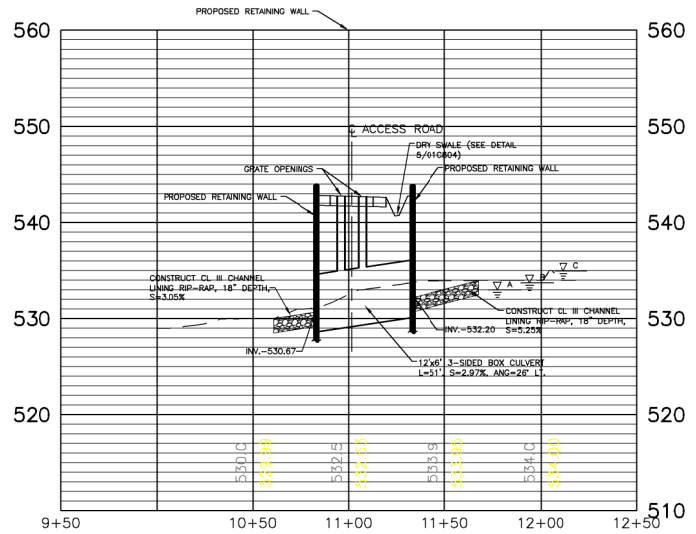
EXHIBIT 4-34



CULVERT #1 SECTION (15P)

SCALE: HOR- 1"=50' VER- 1"=5'

1 / 01C805

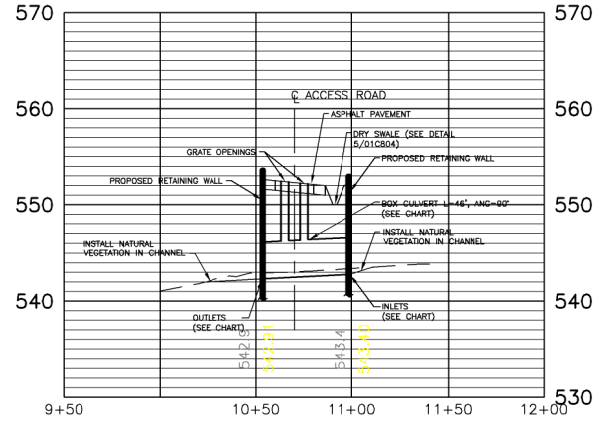


WATER DEPTH SCHEDULE		
	STORM EVENT	ELEVATION
A	1 YR PEAK	533.00
B	10 YR PEAK	533.76
C	100 YR PEAK	534.93

CULVERT #2 SECTION (17P)

SCALE: HOR- 1"=50' VER- 1"=5'

2 / 01C805

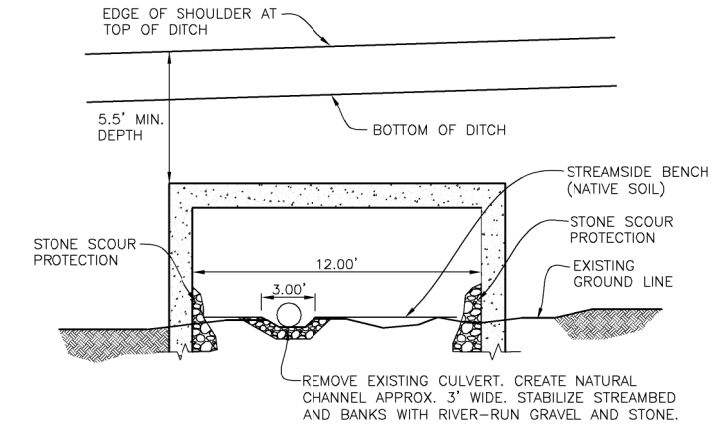


WILDLIFE PASSAGE			
NO.	SIZE	INVERT ELEV.	OUTLET ELEV.
1	10' x 4'	535.21	534.61
2	10' x 4'	542.39	541.93
3	10' x 4'	550.41	549.72
4	10' x 4'	554.00	553.79
5	12' x 6'	556.27	535.86

TYPICAL WILDLIFE PASSAGE SECTION

SCALE: HOR- 1"=50' VER- 1"=5'

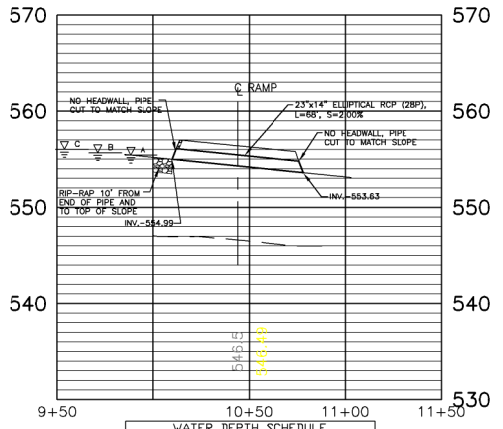
3 / 01C805



CULVERT #2 (17P) CONSTRUCTION DETAIL

SCALE: 1/4"=1'-0"

4 / 01C805

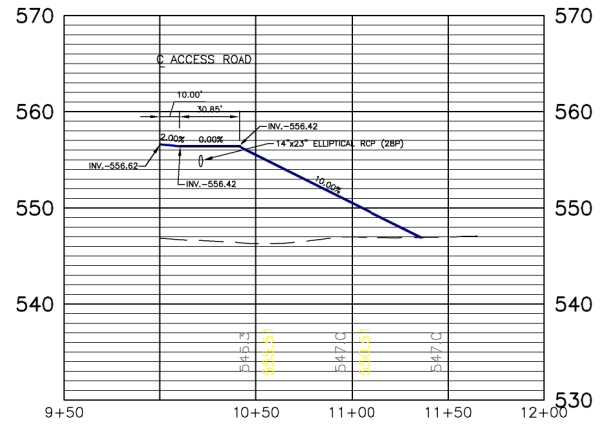


WATER DEPTH SCHEDULE		
	STORM EVENT	ELEVATION
A	1 YR PEAK	555.44
B	10 YR PEAK	555.69
C	100 YR PEAK	556.03

RAMP PIPE SECTION (28P)

SCALE: HOR- 1"=50' VER- 1'=5'

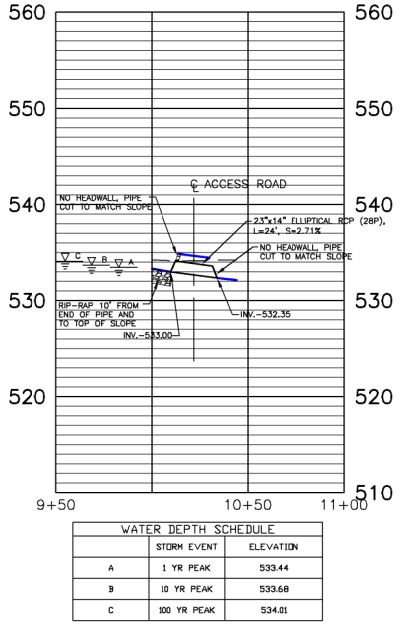
5 / 01C805



RAMP PIPE SECTION (28P)

SCALE: HOR- 1"=50' VER- 1"=5'

6 / 01C805

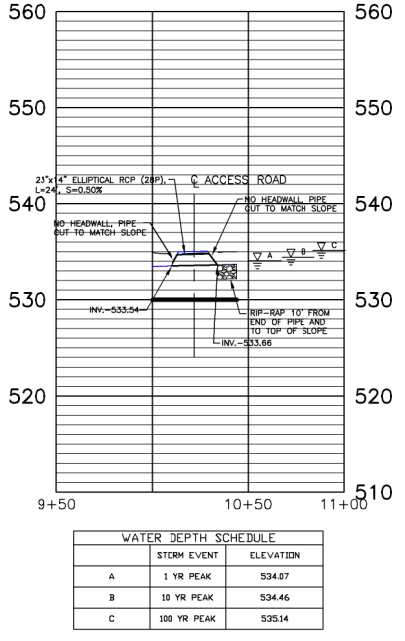


WATER DEPTH SCHEDULE		
	STORM EVENT	ELEVATION
A	1 YR PEAK	533.44
B	10 YR PEAK	533.68
C	100 YR PEAK	534.01

ACCESS ROAD PIPE SECTION (31P)

SCALE: HOR- 1"=50' VER- 1"=5'

7 / 01C805

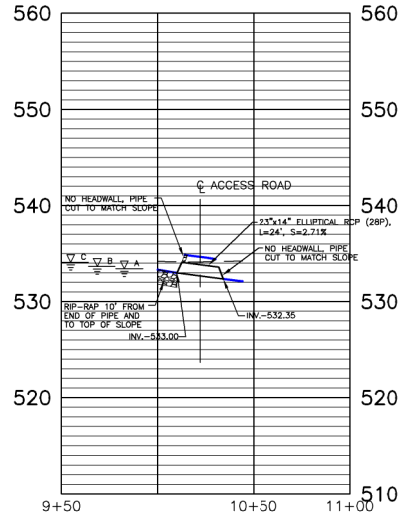


WATER DEPTH SCHEDULE		
	STORM EVENT	ELEVATION
A	1 YR PEAK	534.07
B	10 YR PEAK	534.46
C	100 YR PEAK	535.14

ACCESS ROAD PIPE SECTION (30P)

SCALE: HOR- '"=50' VER- 1"=5'

8 / 01C805



ACCESS ROAD

SCALE: HOR- 1"=50' VER- 1"=5'

9 / 01C805

ISSUE	DATE	DESCRIPTION
3	3/27/2017	REVISION
2	2/17/2016	REVISION
1	8/17/2016	SOIL EROSION SEDIMENT CONTROL PLAN

PROJECT MANAGER C. JACOBS

PROJECT NUMBER 10021318

CLEAR RIVER ENERGY LLC
CLEAR RIVER ENERGY CENTER
WALLUM LAKE ROAD LOT NO.
135-002, 137-002, 137-003, 137-021,
153-001, 153-002
TOWN OF BURRILLVILLE,
PROVIDENCE COUNTY, RHODE ISLAND

PROPOSED SITE DRAINAGE DETAILS

FILENAME 01C805-REV.dwg

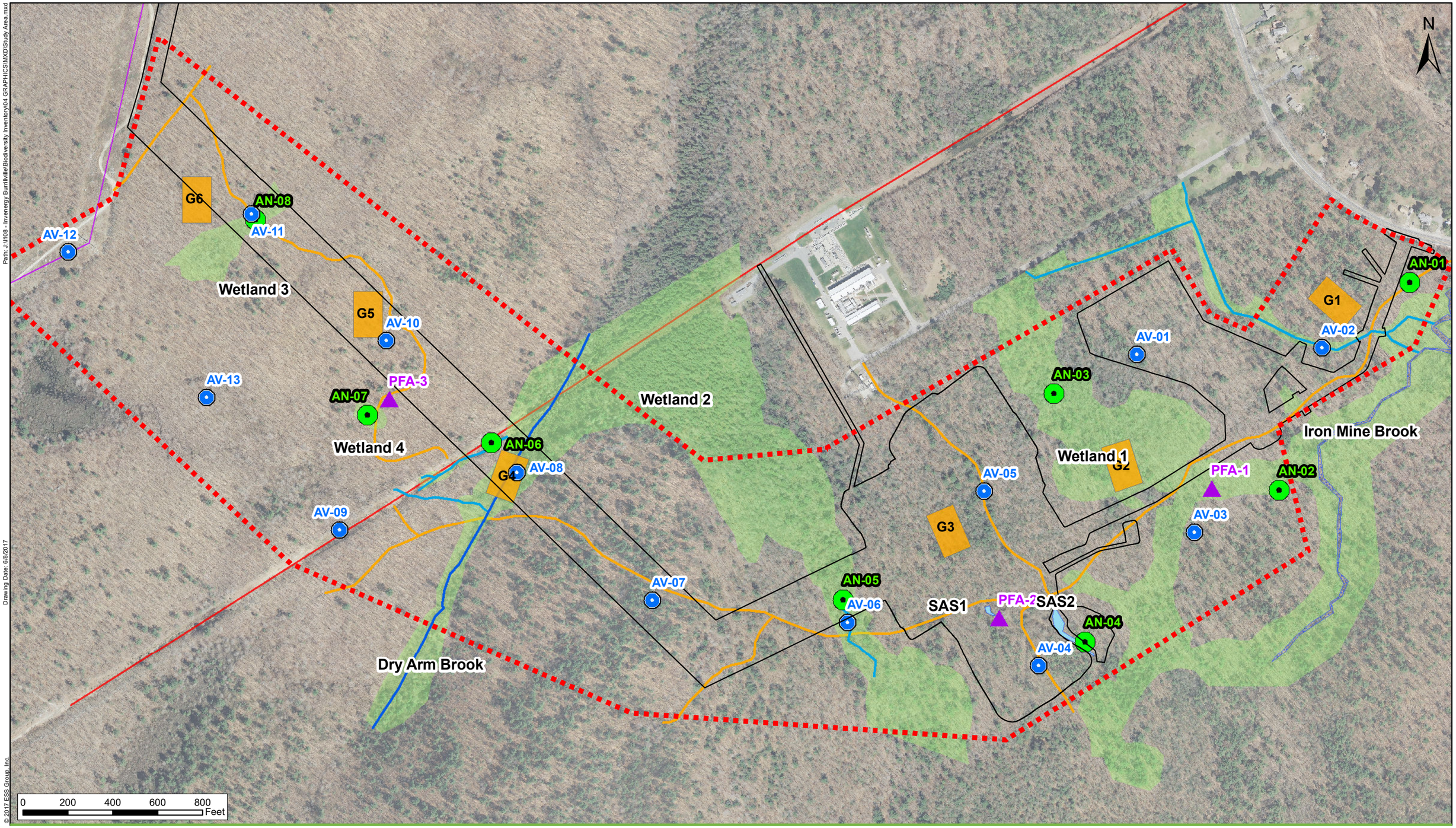
SCALE 1" = 20'

SHEET 01C805-REV

EXHIBIT 4-39

Path: J:\1108 - Invenergy Burrillville\Biodiversity Inventory\04 GRAPHICS\MXD\Study Area.mxd

Drawing Date: 6/8/2017



Invenergy, LLC
Clear River Energy Center

Burrillville, Rhode Island

1 inch = 400 feet

Source: 1) USGS 2011 Imagery
2) RIGIS, Roads E-911 2016
3) ESS, Delineated Wetlands 2015

- Avian Station (n=13)
- Anuran Station (n=8)
- Pit Fall Arrays (n=3)
- Mammal Trap Grid (n=6)
- Wetland Area
- Perennial Stream Centerline
- Intermittent Stream Centerline
- Woods Road
- Study Area
- Project Limits of Disturbance

Flora and Fauna Inventory Locations

Figure 1