

**FINAL
ENVIRONMENTAL ASSESSMENT**

FOR THE

**RHODE ISLAND LFG GENCO, LLC
COMBINED CYCLE ELECTRICITY
GENERATION PLANT
FUELED BY LANDFILL GAS
JOHNSTON, RHODE ISLAND**

**U.S. Department of Energy
National Energy Technology Laboratory**



August 2010

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ACRONYMS AND ABBREVIATIONS

| | |
|---------|--|
| CFR | <i>Code of Federal Regulations</i> |
| CHP | combined heat and power |
| dBA | A-weighted decibel |
| DOE | U.S. Department of Energy (also called the Department) |
| EA | environmental assessment |
| EPA | U.S. Environmental Protection Agency |
| MW | megawatt |
| NAAQS | National Ambient Air Quality Standards |
| NEPA | <i>National Environmental Policy Act</i> , as amended |
| RIDEM | Rhode Island Department of Environmental Management |
| RI-LFGG | Rhode Island LFG Genco, LLC |
| RIRRC | Rhode Island Resource Recovery Corporation |
| RRP | Ridgewood Renewable Power, LLC |
| Stat. | <i>United States Statute at Large</i> |
| U.S.C. | United States Code |

Note: Numbers in this EA generally have been rounded to two or three significant figures. Therefore, some total values might not equal the actual sums of the values

COVER SHEET

Responsible Agency: U.S. Department of Energy (DOE)

Title: *Final Environmental Assessment for the Rhode Island LFG Genco, LLC Combined Cycle Electricity Generation Plant Fueled By Landfill Gas, Johnston, Rhode Island* (DOE/EA-1742)

Contact: For additional copies or more information concerning this environmental assessment (EA), please contact:

Mr. Mark W. Lusk
U.S. Department of Energy
National Energy Technology Laboratory
P.O. Box 880
3610 Collins Ferry Road
Morgantown, WV 26507-0880
Telephone: (304) 285-4145
Email: mark.lusk@netl.doe.gov.

Abstract: DOE prepared this EA to evaluate the potential environmental consequences of providing an *American Recovery and Reinvestment Act of 2009* (Recovery Act; Public Law 111-5, 123 Stat.115) financial assistance grant to Rhode Island LFG Genco, LLC (RI-LFGG) to facilitate expansion of an existing landfill gas collection system and construction and operation of a combined cycle power generation plant at the Central Landfill in Johnston, Rhode Island.

DOE's Proposed Action is to provide \$15 million in financial assistance in a cost-sharing arrangement with the project proponent, RI-LFGG. The total cost of the project is estimated to be about \$100 million. The primary objective of RI-LFGG's proposed project is to maximize the productive use of waste landfill gas generated at the Central Landfill in Johnston, Rhode Island. RI-LFGG would expand the existing gas collection system at the landfill and construct a landfill gas recovery and treatment plant and a 42-megawatt landfill gas-to-electric generating power plant. The power generated from the proposed project would be distributed to the local power grid via a new 2,000-foot electric transmission line to connect to the existing grid.

This EA evaluates 14 resource areas and identifies no significant adverse environmental impacts for the proposed project. Beneficial impacts to the nation's energy efficiency and local economy could be recognized. The proposed project would generate about 366,000 megawatt-hours per year of electricity. By destroying the methane in the landfill gas, the proposed project would generate carbon dioxide equivalent reductions of greater than 1.4 million tons annually and the avoidance of over 165,000 tons of carbon dioxide per year from not using fossil fuels for generating a similar amount of electricity.

Availability: DOE encourages public participation in the NEPA process. A Notice of Availability was placed in *The Providence Journal* on July 10, 11, and 12, 2010. The Draft EA

was made available for public review on DOE's National Energy Technology Laboratory web site and at the Marian J. Mohr Library, 1 Memorial Avenue, Johnston, Rhode Island, beginning July 10, 2010. This Final EA is available on DOE's National Energy Technology Laboratory web site, <http://www.netl.doe.gov/publications/others/nepa/ea.html>.

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SUMMARY

The U.S. Department of Energy (DOE) proposes to award a financial assistance grant under the *American Recovery and Reinvestment Act of 2009* (Recovery Act) to Rhode Island LFG Genco, LLC (RI-LFGG) to facilitate expansion of an existing landfill gas collection system and construction and operation of a combined cycle power generation plant at the Central Landfill in Johnston, Rhode Island. DOE's Proposed Action in this environmental assessment (EA) is to provide RI-LFGG with \$15 million in financial assistance in a cost-sharing arrangement.

At present, RI-LFGG operates three reciprocating engine plants utilizing landfill gas to generate up to approximately 20.4 megawatts of electricity. The remaining gas is destroyed using several flares located within the landfill. As the result of an unrelated action, two of the existing plants, with a combined capacity of approximately 14.4 megawatts, face potential decommissioning because they are located in areas now slated for landfill expansion. The proposed project would expand the utilization of landfill gases for energy production at the Central Landfill and result in a reduction in the amount of gas flaring.

In compliance with the *National Environmental Policy Act* (NEPA) (42 United States Code Section 4321 et seq.) and DOE's *National Environmental Policy Act* implementing procedures (10 *Code of Federal Regulations* Part 1021), this EA examines the potential environmental impacts of DOE's Proposed Action, RI-LFGG's proposed project, and the No-Action Alternative. Its purpose is to inform DOE and the public of the potential environmental consequences of DOE's Proposed Action, the proposed project, and its alternatives.

DOE evaluated 14 environmental resource areas and identified no significant adverse impacts from RI-LFGG's proposed project. For five of the resource areas, DOE concluded that impacts would be temporary, not likely to occur, or would not be detectable and, therefore, did not carry these forward for additional analysis. DOE focused its analyses on those resources that would require a new or amended permit or have the potential for significant impacts or controversy. DOE performed more detailed analyses of potential impacts to air quality, noise, aesthetics and visual resources, water resources, biological resources, cultural resources, socioeconomics, energy and utilities, and waste. The following paragraphs summarize the analyses.

Air Quality. The proposed project would have the beneficial impact of producing energy more efficiently than current operations permit, with a decrease in the amount of flaring. The proposed project would generate about 366,000 megawatt-hours per year of electricity, and there would be a net reduction in greenhouse gas emissions. By destroying the methane in the landfill gas, the proposed project would generate carbon dioxide equivalent reductions of 1.4 million tons annually and the avoidance of over 164,000 tons of carbon dioxide per year from not using fossil fuels for generating a similar amount of electricity. Emissions from the plant would not result in adverse effects on air quality.

Noise. The proposed project is located at an existing landfill and on commercial/light industrial property adjacent to the landfill. Three landfill gas-to-energy installations are already in operation in the area, and local noise sources include truck traffic and heavy equipment operation at the landfill. Noise levels resulting from construction and operation of the plant would not cause adverse impacts at the proposed locations.

Aesthetics and Visual Resources. The proposed project locations are within previously developed industrial and commercial/light industrial areas. Proposed facilities would not be substantially different from current visual conditions and would not adversely affect the aesthetic character of the area.

Water Resources. The proposed project would have little, if any, effect on water resources. Other than installation of a small storm water detention/infiltration pond, the project would not discharge to nor receive water from surface or groundwater bodies. The RI-LFGG plant would not use groundwater for operations and there would be no underground storage tanks for the proposed project. Therefore, impacts to groundwater availability and quality would be unlikely from normal operations. RI-LFGG would prevent or mitigate potential impacts from accidental spills of contaminants by following a spill prevention and mitigation plan.

None of the proposed construction activities would occur in a 100-year floodplain, and the proposed project would not disturb existing wetlands within the plant boundary. Some restoration activities, such as removal of waste, would be conducted at the edge of the wetlands adjacent to the Upper Simmons Reservoir; however, these activities would neither increase nor decrease the areal extent of the wetlands.

Biological Resources. The proposed project would be constructed and operated primarily on previously developed commercial/light industrial land. Some activities are within the 200-foot riverbank wetlands and 50-foot perimeter wetlands, but no construction would occur within the wetlands themselves. A small amount of this land, adjacent to the Upper Simmons Reservoir, would be converted to a wildlife corridor and planted with berry-producing trees and shrubs as well as native grasses. Other than this minor beneficial effect, no impacts to biological resources are anticipated.

Cultural Resources. Demolition and construction activities would be located in previously disturbed commercial and industrial locations; therefore, the proposed project would not impact cultural resources.

Socioeconomics. The proposed project would have the beneficial impact of creating new direct and indirect jobs during construction and operations, aiding in the retention of jobs in energy production, and stimulating the economic base of the community. DOE expects that members of the community's existing labor force would fill the new jobs, so there would be no adverse impacts to the existing infrastructure or social services.

Energy and Utilities. The proposed project would include construction of electrical transmission lines to conduct electricity from the gas-to-energy facility to the nearest grid-connected transmission lines. Connections to, and use of, water and sewer systems would also be required. None of these utility connections would result in use of a substantial percentage of existing capacity; therefore, little or no effect would result from the proposed project.

Waste. Construction of the proposed project would generate construction-related debris, including wood, metal, and concrete; most of which would be deposited in the Central Landfill. During normal operations, the facility would generate nonhazardous and municipal waste in small quantities that would not affect regional landfills or wastewater treatment plants. Although hazardous waste generation would be very small, RI-LFGG would send all hazardous waste to a certified treatment, storage, or disposal facility under the *Resource Conservation and Recovery Act*.

Cumulative impact considerations included the development of other commercial and industrial projects along Shun Pike in the vicinity of the proposed project. Because these projects would be compatible with the surroundings and with the proposed project and due to the minimal long-term impacts of the proposed project, DOE determined there would be no or minimal cumulative effects from these projects.

Under the No-Action Alternative, DOE would not provide funding to RI-LFGG for its proposed project. DOE assumes for purposes of this analysis that the facility would not be built or would be delayed as RI-LFGG looked for other funding sources. No impacts to the existing environment would occur, and beneficial impacts of the proposed project would not be realized.

1. INTRODUCTION

As part of the *American Recovery and Reinvestment Act of 2009* (the Recovery Act; Public Law 111-5, 123 Stat. 115), as amended, the U.S. Department of Energy's (DOE's or the Department's) National Energy Technology Laboratory (NETL), on behalf of the Office of Energy Efficiency and Renewable Energy's Industrial Technologies Program, is providing up to \$156 million in federal funding for competitively awarded grants for the deployment of projects for district energy systems, combined heat and power (CHP) systems, waste energy recovery systems, and energy-efficient industrial equipment and processes at single installations or multiple installations at multiple sites. The funding of these projects requires compliance with the *National Environmental Policy Act of 1969* (NEPA), as amended (NEPA; 42 U.S.C. 4321 et seq.), Council on Environmental Quality regulations (40 CFR Parts 1500 to 1508), and DOE NEPA implementing regulations (10 CFR Part 1021).

The Department selected a project proposed by Rhode Island LFG Genco, LLC (RI-LFGG) for funding under the Industrial Technologies Program. To comply with NEPA, DOE prepared this *Final Environmental Assessment for the Rhode Island LFG Genco, LLC Combined Cycle Electricity Generation Plant Fueled by Landfill Gas, Johnston, Rhode Island*. The Environmental Assessment (EA) examines the potential environmental consequences of DOE's Proposed Action, to provide a financial assistance grant, and RI-LFGG's proposed project, to expand an existing landfill gas collection system and construct and operate a combined cycle power generation plant at the Central Landfill in Johnston, Rhode Island. The proposed facility would maximize the productive use of substantial quantities of waste landfill gas. The EA also examines the No-Action Alternative, under which DOE assumes that, as a consequence of DOE's denial of financial assistance, RI-LFGG would not proceed with the project.

This chapter explains NEPA and related procedures (Section 1.1), the background of this project (Section 1.2), its purpose and need (Section 1.3), and the environmental considerations DOE did not carry forward to detailed analysis (Section 1.4). Chapter 2 discusses DOE's Proposed Action, RI-LFGG's proposed project, and the No-Action Alternative. Chapter 3 details the affected environment and potential environmental consequences of the Proposed Action, proposed project, and of the No-Action Alternative. Chapter 4 addresses cumulative impacts, and Chapter 5 provides DOE's conclusions from the analysis. Chapter 6 lists the references for this document. Appendix A contains the distribution list for this document, and Appendix B lists consultations with other agencies.

1.1 National Environmental Policy Act and Related Procedures

In accordance with DOE's NEPA implementing procedures, DOE must evaluate the potential environmental impacts of its funding decisions. Therefore, this EA examines the potential direct, indirect, and cumulative environmental impacts of the proposed project and of the No-Action Alternative. The No-Action Alternative provides a basis of comparison between the proposed project's impacts and those that would occur if DOE did not provide funding to support the

construction and operation of a combined cycle power generation facility at the Central Landfill, Johnston, Rhode Island.

DOE must comply with the requirements of NEPA before it can make a decision to proceed with a proposed federal action that could cause adverse impacts to human health or the environment. This EA fulfills DOE's obligations under NEPA and provides DOE with the information necessary to make an informed decision about whether to provide a grant to RI-LFGG.

1.2 Background of the Industrial Technologies Program

DOE's National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Industrial Technologies Program for the Office of Energy Efficiency and Renewable Energy. The mission of the Industrial Technologies Program is to establish U.S. industry as a world leader in energy efficiency and productivity. The program leads the national effort to reduce industrial energy intensity and carbon emissions, and strives to transform the way U.S. industry uses energy by supporting cost-shared research and development that addresses the top energy challenges facing industry. In addition, the Industrial Technologies Program fosters the adoption of advanced technologies and energy management best practices to produce meaningful progress in reducing industrial energy intensity.

Congress appropriated significant funding for the Industrial Technologies Program in the Recovery Act to stimulate the economy and reduce unemployment in addition to furthering the objectives of the existing program. DOE solicited applications for this funding by issuing a competitive Funding Opportunity Announcement (DE-FOA-0000044), *Recovery Act: Deployment of Combined Heat and Power (CHP) Systems, District Energy Systems, Waste Energy Recovery Systems, and Efficient Industrial Equipment*, in June 2009. The announcement invited applications in four areas of interest:

- Area of Interest 1 – Combined Heat and Power; the generation of electric energy and heat in a single, integrated system, with an overall thermal efficiency of 60 percent or greater on a higher-heating-value basis.
- Area of Interest 2 – District Energy Systems; systems providing thermal energy from a renewable energy source, thermal energy source, or highly efficient technology to more than one building or fixed energy-consuming use from one or more thermal energy production facilities through pipes or other means to provide space heating, space conditioning, hot water, steam, compression, process energy, or other end uses.
- Area of Interest 3 – Industrial Waste Energy Recovery; the collection and reuse of energy from sources such as exhaust heat or flared gas from any industrial process; waste gas or industrial tail gas that would otherwise be flared, incinerated, or vented; or a pressure drop in any gas, excluding any pressure drop to a condenser that subsequently vents the resulting heat.

- Area of Interest 4 – Efficient Industrial Equipment; any proven commercially available technology that can provide a minimum 25-percent efficiency improvement to the industrial sector.

The Department announced its selections on November 3, 2009, with multiple awards in three of the four areas of interest. DOE selected nine projects based on the evaluation criteria in the funding opportunity announcement and gave special consideration to projects that promoted the objectives of the Recovery Act—job preservation or creation and economic recovery—in an expeditious manner.

The proposed project considered in this EA, expansion of an existing landfill gas collection system and construction and operation of a combined cycle power generation plant at the Central Landfill in Johnston, Rhode Island, was one of the nine projects DOE selected for funding. DOE's Proposed Action would provide a \$15 million financial assistance grant under a cost-sharing agreement with RI-LFGG. The total cost of the project is estimated at \$100 million.

1.3 Purpose and Need

The purpose of the Proposed Action is to support the mission of DOE's Industrial Technologies Program and the goals of the Recovery Act. The mission of the Industrial Technologies Program is to have U.S. industry lead the world in energy efficiency and productivity. The Program leads the national effort to reduce industrial energy intensity and carbon emissions, and strives to transform the way U.S. industry uses energy by supporting cost-shared research and development that addresses the top energy challenges facing industry. Additionally, the Program fosters the adoption of today's advanced technologies and energy management best practices to produce meaningful progress in reducing industrial energy intensity.

The Industrial Technologies Program's three-part strategy pursues this mission by:

- Sponsoring research, development, and demonstration of industry-specific and crosscutting technologies to reduce energy and carbon intensity;
- Conducting technology delivery activities to help plants access today's technology and management practices; and
- Promoting a corporate culture of energy efficiency and carbon management within industry.

To align with its mission, the program has established a goal of achieving a 25-percent reduction in industrial energy intensity by 2017, guided by the *Energy Policy Act of 2005*. The strategy also calls for an 18-percent reduction in U.S. carbon intensity by 2012. The Department seeks to identify projects and technologies that it can fund to meet this goal.

In June 2009, DOE initiated a process to identify suitable projects by issuing Funding Opportunity Announcement DE-FOA-00000044, “*Recovery Act: Deployment of Combined Heat and Power (CHP) Systems, District Energy Systems, Waste Energy Recovery Systems, and Efficient Industrial Equipment.*” This Funding Area Announcement is funded by the Recovery Act.

The Recovery Act seeks to create jobs, restore economic growth, and strengthen America's middle class through measures that modernize the nation's infrastructure, enhance America's energy independence, expand educational opportunities, preserve and improve affordable health care, provide tax relief, and protect those in greatest need. Provision of funds under this Funding Opportunity Announcement would achieve these objectives.

The capital cost of new equipment is often a roadblock for use of more efficient equipment and processes. Although the newer technologies would provide lower energy requirements and operating costs, the payback period for some technologies does not meet internal business goals. DOE's provision of financial assistance allows companies to reduce the payback period, making these new technologies an acceptable option for them.

1.4 Environmental Resource Areas Not Carried Forward

Chapter 3 of this EA describes the affected environment and examines the potential environmental impacts of the proposed project and No-Action Alternative for the following environmental resource areas:

- Air Quality
- Noise
- Aesthetics and Visual Resources
- Water Resources
- Biological Resources
- Cultural Resources
- Socioeconomics
- Energy and Utilities
- Waste

DOE EAs commonly address the environmental resource areas listed in Table 1-1. However, in an effort to streamline the NEPA process and enable timely financial awards to the selected projects, DOE is not examining the areas in the table at the same level of detail as the above-mentioned nine resource areas. Table 1-1 describes the Department's screening evaluation of these other resource areas. In each case, no impacts are anticipated. Therefore, DOE determined that further analysis is unnecessary. In terms of the No-Action Alternative, the impacts would not occur because DOE assumes the proposed project would not proceed.

The focus of the more detailed analyses in Chapter 3 is on those environmental resource areas that would require new or revised permits, have the potential for significant adverse environmental impacts, or have the potential for controversy.

Table 1-1. Environmental resource areas not carried forward.

| Environmental resource area | Impact consideration and conclusions |
|--------------------------------|--|
| Land Use | Current land uses at the sites proposed for the project include commercial, light industrial, storage, and transportation support (a bus company and an auto repair shop). Locations have already been extensively developed and/or landscaped. Gas transmission pipelines and electrical transmission lines would be constructed within existing easements. The proposed project would not affect land use at surrounding properties. |
| Geology and Soils | The proposed project is within a disturbed area devoid of agricultural resources and would not require any modifications that would convert any classification of farmland to non-agricultural use. The proposed project sites have been industrially developed, and in many cases covered with construction fill by past development. |
| Transportation | <p>The proposed project would not alter the current existing transportation setting by adding 26 additional full-time permanent employees, which would increase daily vehicle commuter trips to and from the affected facility, but have little impact on operational vehicle trips. Truck deliveries would not increase.</p> <p>One hundred construction workers are expected during peak daily construction activities. The proposed project is not expected to cause short-term construction-related impacts on circulation patterns or the capacity of the street system.</p> |
| Occupational Health and Safety | All site modifications initiated by the facility would be implemented without impacting operational safety procedures or practices regarding the transportation, use and disposal of hazardous materials. Standard Occupational Safety and Health Administration (OSHA) procedures would be followed during construction and operations. |
| Environmental Justice | Executive Order 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations</i> , directs federal agencies to “promote nondiscrimination in federal programs substantially affecting human health and the environment, and provide minority and low-income communities with access to public information on, and an opportunity for public participation in, matters relating to human health or the environment.” Executive Order 12898 also directs agencies to identify and consider disproportionately high and adverse human health or environmental impacts of their actions on minority and low-income communities and American Indian tribes, as well as provide opportunities for community input to the NEPA process, which includes input on potential impacts and mitigation measures. Executive Order 12898 and its associated implementing guidance establish the framework for characterization of the affected environment for environmental justice. According to the 2000 U.S. Census data, no minority or low-income communities occur in the vicinity of the proposed project. |

1.5 Consultations and Public Comment-Response Process

1.5.1 CONSULTATIONS

DOE consulted with the Narragansett Indian Tribe of Rhode Island and the Rhode Island State Historic Preservation Officer to comply with the review requirements of Section 106 of the *National Historic Preservation Act*, as amended (16 U.S.C. 470 et seq.). DOE also communicated with the U.S. Fish and Wildlife Service (USFWS) to meet the requirements in the *Endangered Species Act of 1973*, as amended (16 U.S.C. 1531 et seq.). Copies of DOE's consultation correspondence are in Appendix B.

Narragansett Indian Tribe of Rhode Island

On April 13, 2010, DOE sent a letter to the Narragansett Indian Tribe of Rhode Island requesting information on properties of traditional religious and cultural significance within the vicinity of the proposed combined cycle power generation plant at the Central Landfill in Johnston, Rhode Island. DOE also requested any comments or concerns the tribe might have on the potential for the proposed project to affect the properties. This information was requested to aid in the preparation of this EA and to meet the Department's obligations under Section 106 of the *National Historic Preservation Act* to take into account the effects of undertakings by federal agencies on historic properties and cultural resources. DOE has not received a response from the Tribe.

Rhode Island State Historic Preservation Officer

DOE sent a letter to the Rhode State Historic Preservation and Heritage Commission on April 13, 2010, requesting information on historic properties within and near the proposed site at the Central Landfill in Johnston, Rhode Island. The Deputy State Historic Preservation Officer responded in a letter dated April 12, 2010, with its conclusion that the proposed project would have no effect on historic resources – those listed in or eligible for listing in the National Register of Historic Places. The Office stated it had no objection to the project as proposed.

U.S. Fish and Wildlife Services

On April 13, 2010, DOE sent a letter to the USFWS stating that it had obtained a list of federally listed threatened, endangered, proposed, and candidate species that occur within Rhode Island and potentially near the proposed project site:

- Eskimo curlew (*Numenius borealis*)
- Piping plover (*Charadrius melodus*)
- Roseate tern (*Sterna dougallii dougallii*)
- Gray wolf (*Canis lupus*)
- Eastern puma (*Puma concolor cougar*)
- American burying beetle (*Nicrophorus americanus*)

- Northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*)
- Sandplain gerardia (*Agalinis acuta*)
- Small whorled pogonia (*Isotria medeoloides*)

This information was obtained from the U.S. Fish and Wildlife Service's (USFWS) Northeast Regional website (http://www.fws.gov/northeast/endangered/endangered_species_listing.html).

DOE concluded that the construction and operation of the proposed landfill gas and recovery facility in Johnston, Rhode Island, would have no impact on federally listed species or habitats for the following reasons: (1) no rare, threatened, or endangered species or natural communities of concern are known to occur in or near the project site; and (2) the project would be constructed within an area that is already a disturbed industrial area.

On May 10, 2010, the USFWS responded that it agreed with DOE's conclusion that no rare, threatened, or endangered species or critical habitat under the USFWS's jurisdiction are known to occur in the project area(s) and that further consultation under Section 7 of the *Endangered Species Act* is not required.

1.5.2 COMMENT-RESPONSE PROCESS

DOE issued the Draft EA for comment on July 10, 2010, and advertised its release in *The Providence Journal* on July 10, 11, and 12. In addition, the Department sent a copy of the Draft EA for public review to the Marian J. Mohr Library, 1 Memorial Avenue, Johnston, Rhode Island. The Department established a 15-day public comment period that began July 10 and ended July 24, 2010. The Department announced it would accept comments by mail, email, or fax. DOE received no comments on the Draft EA.

2. DOE PROPOSED ACTION AND ALTERNATIVES

This chapter describes DOE's Proposed Action (Section 2.1), RI-LFGG's proposed project (Section 2.2), the No-Action Alternative (Section 2.3), and DOE alternative actions (Section 2.4).

2.1 DOE's Proposed Action

DOE's Proposed Action is to award a \$15 million financial assistance grant to RI-LFGG through the Recovery Act to facilitate modification and expansion of an existing landfill gas collection system and the construction and operation of a combined cycle power generation facility at the Central Landfill in Johnston, Rhode Island. The total cost of the project is estimated at approximately \$100 million.

2.2 RI-LFGG's Proposed Project

RI-LFGG proposes to construct a landfill gas recovery and treatment plant (gas conditioning plant), a 42-megawatt landfill gas-to-electric generating power plant (combined cycle plant), landfill gas pipelines, electrical transmission lines, and landfill gas collection system upgrades at the Central Landfill, in Johnston, Rhode Island. The landfill location is shown on Figure 2-1. The Rhode Island Resource Recovery Corporation (RIRRC) operates the Central Landfill, a solid waste landfill that receives approximately 2,500 tons of residential and commercial solid waste per day. The facility serves approximately 97 percent of the state's residents. The landfill occupies approximately 230 acres of the 1,200-acre RIRCC site. The landfill accepts waste from 6:00 a.m. to 3:45 p.m. Monday to Friday, and from 6:00 a.m. to noon on Saturday. Central Landfill accepts residential and commercial solid waste, yard waste, construction and demolition waste, and clean wood waste. Recyclable materials are removed from commercial solid waste by landfill personnel for sale. The associated recycling center receives approximately 330 cubic yards of recyclable materials per day.

The proposed facilities would be located on properties currently owned by RIRRC. Figure 2-2 shows the proposed site plan and utilities. The proposed location for the gas conditioning plant is on a 3.9-acre parcel within the boundaries of the landfill property. As part of an agreement with RIRRC, RI-LFGG would construct, own, and operate the new combined cycle plant to replace and expand upon the existing landfill gas control devices currently operating at the Central Landfill. The proposed combined cycle plant would be located to the southeast of the existing landfill gas control devices across Shun Pike, on a 4.5-acre parcel currently occupied by commercial and light industrial operations.

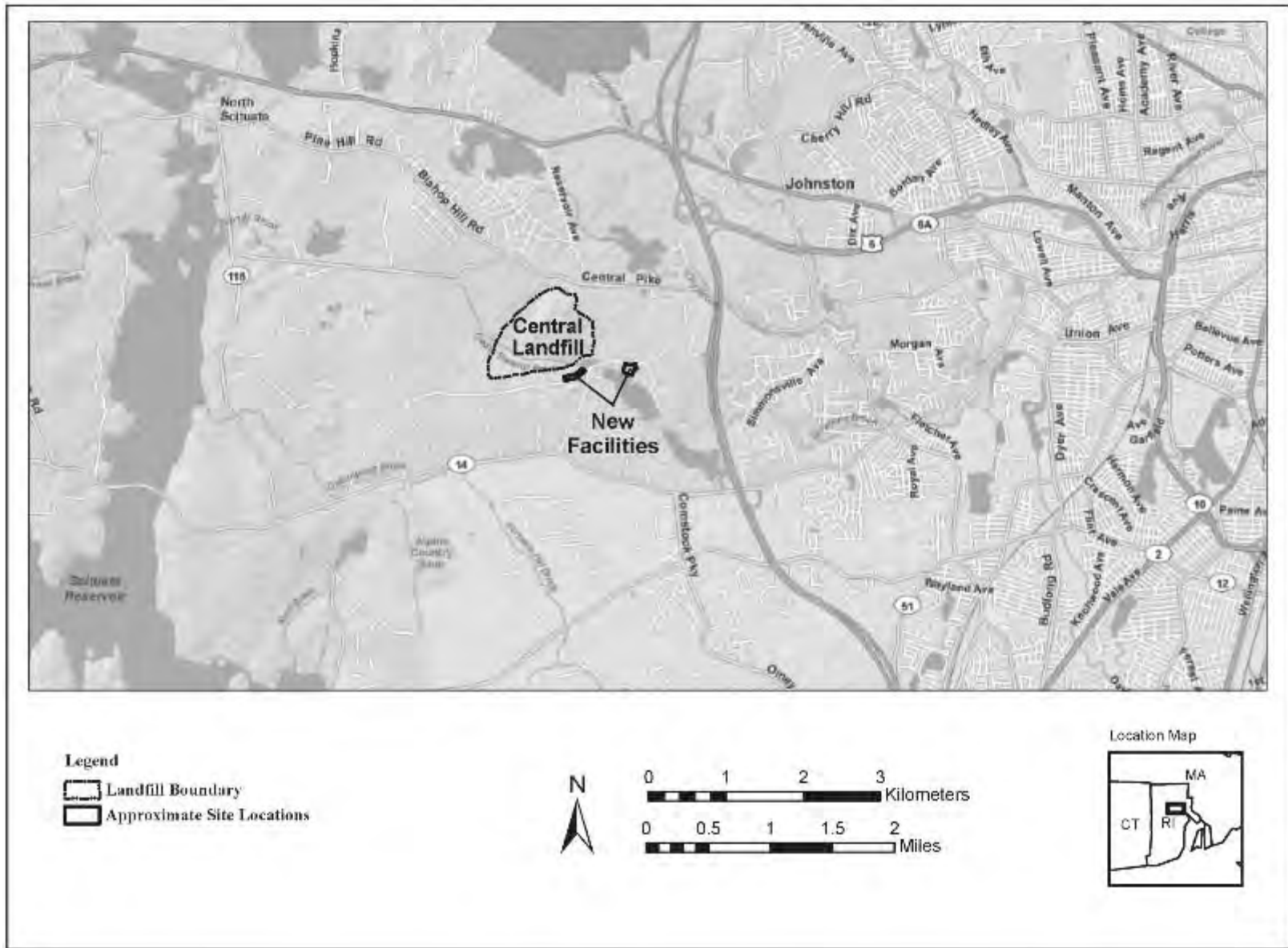


Figure 2-1. Proposed project location.

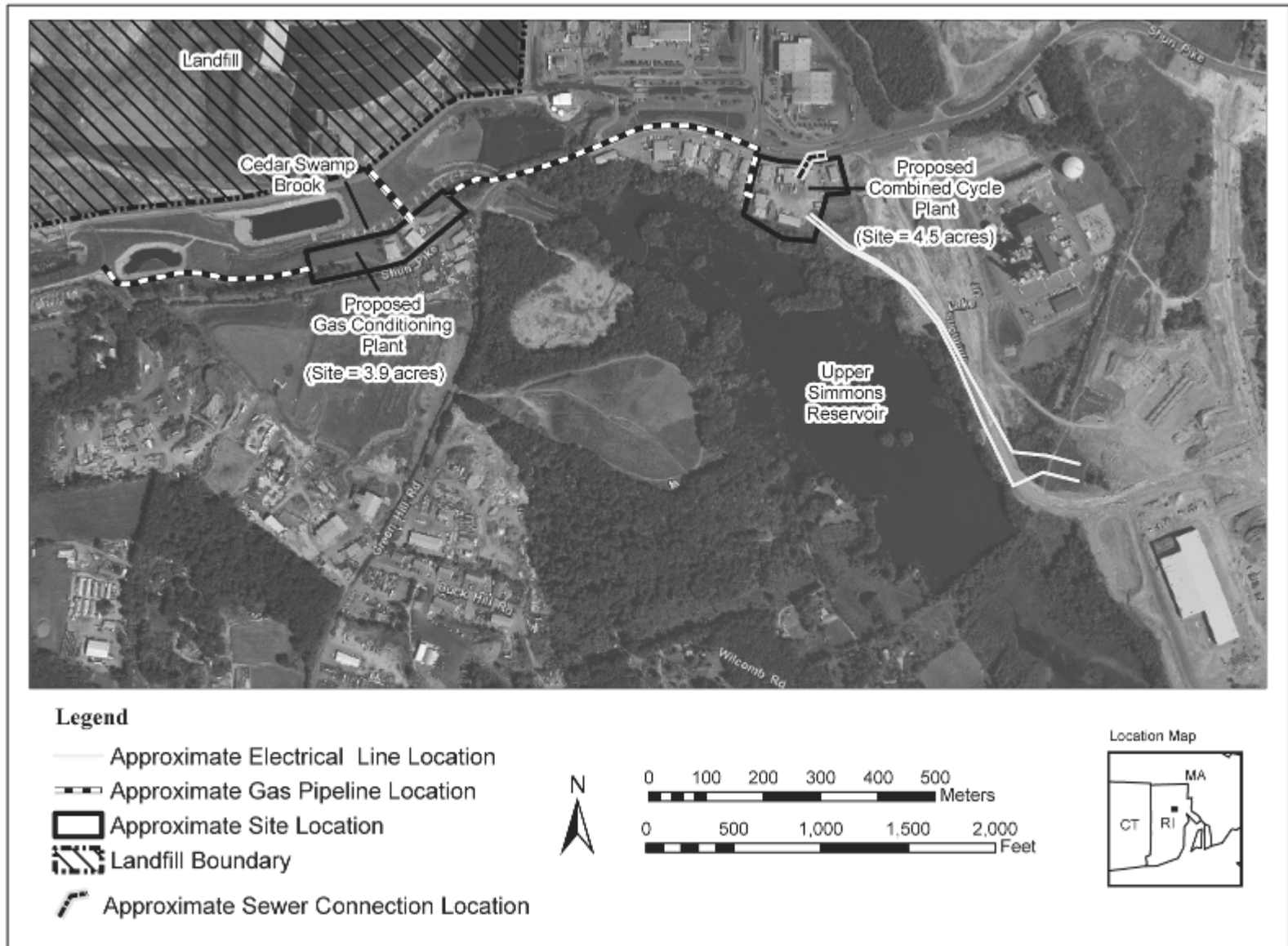


Figure 2-2. Proposed site plan and utilities.

A new twin pipeline would connect the landfill's existing gas collection system to the new gas conditioning plant, which would remove impurities prior to use to generate energy. Gas would then travel through two other gas lines to the new combined cycle plant as well as to an existing landfill gas-to-electric plant. The combined cycle plant would use a combination of gas turbines and a steam turbine to generate electricity. A new electrical transmission line would be constructed to connect the combined cycle plant with existing transmission lines to the east.

RI-LFGG currently owns three generation facilities located at the Central Landfill:

- 12-megawatt (MW) Waukesha reciprocating engine plant
- 2.4-MW Deutz reciprocating engine plant
- 6-MW Caterpillar reciprocating engine plant

The Waukesha and Deutz plants, with a combined capacity of 14.4 MW, are directly in the path of the landfill expansion and must be decommissioned and demolished regardless of the implementation of the proposed project. In addition, both Deutz engines recently experienced catastrophic failures and are unlikely to be recommissioned. Accordingly, for the purposes of this analysis it has been assumed that the landfill gas that is currently utilized by these plants would be flared in the absence of the proposed project.

2.2.1 PROPOSED GAS CONDITIONING PLANT

The proposed gas conditioning plant would treat the landfill gas and prepare it for transport to the existing destructive devices and the proposed combined cycle plant. The gas conditioning plant would be located on the north side of Shun Pike, within the 200-foot riverbank wetlands for Cedar Swamp Brook, but outside of the 50-foot perimeter wetlands, except for a storm water outlet. Two large metal storage buildings, an impermeable parking area, and vegetation are currently present at this site. The site is currently used for equipment storage. A portion of the site slopes toward Shun Pike, away from Cedar Swamp Brook. The remainder of the site discharges to the northeast in the direction of Cedar Swamp Brook. The two existing buildings would be used to house portions of the recovery/treatment system, which would not be one continuous unit; rather, it would consist of individual modules. Proposed construction at the gas conditioning plant includes a storm water management system consisting of a catch basin, an underground pipe system, and a detention pond.

2.2.2 PROPOSED COMBINED CYCLE PLANT

The proposed 42-MW combined cycle plant would be constructed southeast of the gas conditioning plant, between Shun Pike and the northern shore of the Upper Simmons Reservoir. The combined cycle plant would use five Taurus 60 gas turbine generators, manufactured by Solar Turbines, fueled with landfill gas to generate a portion of the 42 MW. Excess heat generated by the turbines would be harnessed to generate steam and produce additional electricity. Three metal buildings and a large impervious parking lot cover the majority of the site. The proposed project would involve demolition of the existing buildings and parking area;

installation of the five gas turbines and a steam turbine; construction of a storage facility and access drive; and installation of a concrete pad to accommodate the associated electrical transmission lines.

The proposed project would include rehabilitation of part of the site to benefit the wetlands to the south. This would involve removal of invasive trees and replacement with native species, removal of a concrete rubble pile and other debris, re-grading, distribution of high-organic content topsoil, and re-vegetation with a conservation grass mix and native trees. A narrow, vegetated and mowed travel way would be developed between the combined cycle plant and the wooded area along the southern boundary of the property.

The proposed project would generate approximately 80,000 gallons per day of non-contact cooling water blow down and 57,000 gallons per day of drain discharge and process blow down water. The cooling water would be sent to an onsite collection tank. Process water would be sent to an onsite oil/water separator and, once separated, sent to the same collection tank as the cooling water. Water from the collection tank would be used for dust suppression, and any excess water would be discharged to the city sewer.

2.2.3 PROPOSED LANDFILL GAS PIPELINES

RI-LFGG would construct three new gas pipelines as follows (Figure 2-2):

- One new 10-inch, high-pressure line running from the proposed gas conditioning plant to the proposed combined cycle plant. This steel high-pressure pipeline would be constructed along the northern shoulder of Shun Pike within the road right of way. This line would require two stream crossings: one over Cedar Swamp Brook and one over the outfall of Sedimentation Pond 2. Much of this line would be located within the 200-foot riverbank wetlands of Cedar Swamp Brook, and a small portion would be located within the 50-foot perimeter wetlands associated with the Upper Simmons Reservoir. This pipeline would be approximately 3,300-feet long and buried at a depth of approximately 24 to 36 inches.
- One new 10-inch line running from the proposed gas conditioning plant to the existing 6-MW Caterpillar reciprocating engine plant. This high-density polyethylene pipeline would be constructed within the shoulder of an existing gravel maintenance road. The entire line would be constructed within the 200-foot riverbank wetlands or Cedar Swamp Brook. No stream crossings would be required. This pipeline would be approximately 2,000-feet long and buried at a depth of approximately 24 to 36 inches.
- New twin 36-inch vacuum lines running from the existing landfill gas extraction system to the proposed gas conditioning plant. These lines would be constructed within the shoulder of an existing dirt access road, would be largely within the 200-foot riverbank wetlands for Cedar Swamp Brook, and would require one crossing of Cedar Swamp

Brook. This pipeline would be approximately 350-feet long and would be above ground. The pipeline would be insulated to provide freeze protection.

2.2.4 PROPOSED ELECTRICAL TRANSMISSION LINES

New electrical transmission lines and a switchyard would be constructed to connect the new combined cycle plant to existing transmission lines at a location approximately 2,000 feet southeast of the proposed project location (Figure 2-2). The power plant would be connected to the New England Power transmission system by constructing two 115-kilovolt taps to loop transmission line S171S through the switchyard, which is located approximately 2,600 feet from the right-of-way. The switchyard would occupy an area of about 200 feet by 200 feet within RIRRC-owned property. Construction of the transmission lines would require installation of eight poles between the plant and the existing National Grid transmission corridor and an additional four structures in the same transmission corridor.

2.2.5 PROPOSED LANDFILL GAS COLLECTION SYSTEM UPGRADES

The reconfigured site-wide gas collection system would have the capacity to handle upwards of 16,000 standard cubic feet per minute for consumption by the new combined cycle plant. Upgrades would include installing lines connecting the existing collection system to the gas conditioning plant; installing lines to provide an alternate route for gas currently transported through an old 18-inch header that is not accessible for repairs; upgrading or supplementing parts of the system to accommodate peak flows; and expanding the system to allow for collection of gas from landfill cells to be filled in the future. The new lines would be of varying diameters from 4 inches to 36 inches, would total approximately 103,475 feet, and would be buried under 2 to 3 feet of cover material. The system would collect gas from approximately 199 acres of the landfill.

2.2.6 SEWER CONNECTION

The proposed project would require construction of an approximately 300-foot sewer line (4-inch diameter) from the combined cycle plant along Shun Pike to connect to the existing sewer system (Figure 2-2). The line would not cross any wetlands or surface water features. Wastewater from the gas conditioning plant would be routed through existing lines to the landfill's leachate treatment system prior to discharge to the sewer system. Wastewater from both locations would be processed at the City of Cranston wastewater treatment facility.

2.3 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funds to the proposed project. As a result, this project would be delayed as RI-LFGG looked for other funding sources to meet its need, or abandoned if other funding sources could not be obtained. Furthermore, DOE's ability to achieve its objectives to deploy sustainable energy infrastructure projects and energy efficient industrial technologies would potentially be impaired.

Although this and other selected projects might proceed if DOE decided not to provide financial assistance, DOE assumes for purposes of this EA that the project would not proceed without DOE assistance. If the project does proceed without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's Proposed Action (that is, providing assistance that allows the project to proceed). In order to allow a comparison between the potential impacts of a project as implemented and the impacts of not proceeding with a project, DOE assumes that if it decided to withhold assistance from this project, the project would not proceed.

2.4 DOE Alternative Actions

The Department's alternatives to its Proposed Action for the Industrial Technologies Program consist of the other technically acceptable applications received in response to Funding Opportunity Announcement DE-FOA-0000044, "*Recovery Act: Deployment of Combined Heat and Power (CHP) Systems, District Energy Systems, Waste Energy Recovery Systems, and Efficient Industrial Equipment.*" Prior to selection, DOE made preliminary determinations regarding the level of review required by NEPA based on potentially significant impacts identified during reviews of the technically acceptable applications. DOE conducted these preliminary environmental reviews pursuant to 10 CFR 1021.216 and a variance to certain requirements in that regulation granted by the Department's General Counsel (74 FR 41693, August 12, 2009). These preliminary NEPA determinations and environmental reviews were provided to the selecting official for consideration during the selection process.

Because DOE's Proposed Action under the Industrial Technologies Program is limited to providing financial assistance in cost-sharing arrangements to projects submitted by applicants in response to a competitive funding opportunity, DOE's decision is limited to either accepting or rejecting the project as proposed by the proponent, including its proposed technology and selected sites. DOE's consideration of reasonable alternatives is therefore limited to the technically acceptable applications and the No-Action Alternative for each selected project.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

In this chapter, DOE assesses the following resources: air quality; noise; aesthetics and visual resources; water resources; biological resources; cultural resources; socioeconomics; energy, utilities, and materials; and waste. The “environmental baseline” for each of these resource areas is described first, followed by an assessment of the potential consequences of the proposed project and of the No-Action Alternative.

3.1 Air Quality

3.1.1 AFFECTED ENVIRONMENT

This section describes the existing air quality conditions at and surrounding the project site. Ambient air quality conditions are discussed first followed by a discussion of air quality conformity, and greenhouse gas emissions.

3.1.1.1 Ambient Air Quality Conditions

The ambient air quality in an area can be characterized in terms of whether it complies with the primary and secondary National Ambient Air Quality Standards (NAAQS). The *Clean Air Act* (42 U.S.C. 7401 et seq.) requires the U.S. Environmental Protection Agency (EPA) to set NAAQS for pollutants considered harmful to public health and the environment. National primary ambient air quality standards define levels of air quality which the EPA has determined as necessary to provide an adequate margin of safety to protect public health, including the health of “sensitive” populations such as children and the elderly. National secondary ambient air quality standards define levels of air quality which are deemed necessary to protect the public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. NAAQS have been established for six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter (which includes both particulate matter with an aerodynamic size less than or equal to 10 microns and less than or equal to 2.5 microns), and sulfur dioxide. Table 3-1 lists the NAAQS primary standards for each criteria pollutant. There are no ambient standards for volatile organic compounds, although volatile organic compounds and nitrogen oxides are considered precursor emissions responsible for the formation of ozone in the atmosphere.

Table 3-1. National Ambient Air Quality Standards.

| Pollutant | Primary Standard |
|---|------------------------|
| Carbon monoxide (CO) | |
| 8-hour average | 9 ppm |
| 1-hour average | 35 ppm |
| Lead (Pb) | |
| Quarterly average | 1.5 µg/m ³ |
| Nitrogen dioxide (NO ₂) | |
| Annual arithmetic mean | 0.053 ppm |
| 1-hour | 0.100 ppm |
| Ozone (O ₃) | |
| 8-hour average (2008 standard) | 0.075 ppm |
| Particulate matter less than 10 microns (PM ₁₀) | |
| 24-hour average | 150 µg/m ³ |
| Particulate matter less than 2.5 microns (PM _{2.5}) | |
| Annual arithmetic mean | 15.0 µg/m ³ |
| 24-hour average | 35 µg/m ³ |
| Sulfur dioxide (SO ₂) | |
| Annual arithmetic mean | 0.03 ppm |
| 24-hour average | 0.14 ppm |

Source: 40 CFR 50.4 through 50.13.
 µg/m³ = micrograms per cubic meter.
 ppm = parts per million.

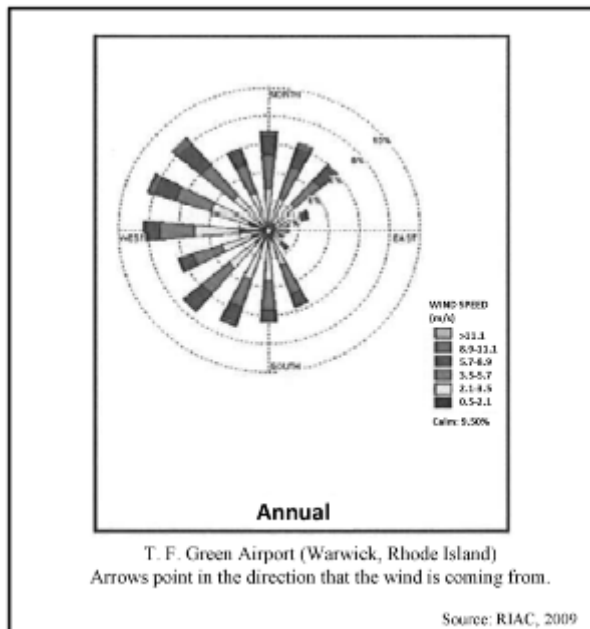


Figure 3-1. Regional wind rose.

Figure 3-1 illustrates the general direction and average wind speeds in the region of the project site in wind rose format. The annual wind rose is for the T.F. Green Airport in Warwick, Rhode Island, approximately 7 miles southeast of the project site. The prevailing winds are quite variable for the year and range from the southwest to the northwest. The climate is humid, with cold winters and short summers. In Providence, the average annual precipitation is over 46 inches per year.

Regions in compliance with the NAAQS are designated as attainment areas. Nonattainment status is designated for areas where the applicable NAAQS are not being met. Maintenance status is designated for areas with a history of nonattainment but now consistently

meet the NAAQS. Maintenance areas can be re-designated by the EPA from “nonattainment” to “attainment with a maintenance plan.”

The proposed project site is located within Providence County, Rhode Island, in EPA Region 1. Providence County is designated as in attainment for all NAAQS except ozone. The county is designated as a moderate non-attainment area for the ozone 8-hour standard. This designation requires the State of Rhode Island to develop and implement plans to improve air quality.

3.1.1.2 Air Quality Conformity

Section 176(c)(1) of the *Clean Air Act* requires federal agencies to ensure that their actions conform to applicable implementation plans for the achievement and maintenance of the NAAQS for criteria pollutants. To achieve conformity, a federal action must not contribute to new violations of standards for ambient air quality, increase the frequency or severity of existing violations, or delay timely attainment of standards in the area of concern (for example, a state or a smaller air quality region). Federal agencies prepare written Conformity Determinations for federal actions that are in or that affect NAAQS nonattainment or maintenance areas and are not exempt from the general conformity requirements.

One exempt action is defined for those projects that have no, or only *de minimis*, increases in emissions of nonattainment pollutants (or their precursors in the case of ozone). Conformity with the EPA-approved state implementation plan is demonstrated if the project emissions fall below the threshold value *de minimis* emissions. The proposed project in Providence County, Rhode Island is located in an area that has been designated as a moderate nonattainment area for ozone (8-hour standard) and is part of an ozone transport region. The *Clean Air Act* conformity threshold values for this area are 100 tons per year for the ozone precursor nitrogen oxides and 50 tons per year for the ozone precursor volatile organic compounds.

Conformity with the EPA-approved state implementation plan is also demonstrated for those projects exempt from the general conformity requirements for reasons other than having emissions below the *de minimis* thresholds. Projects related to other environmental regulations and objectives meet the exemption. For example, major new or modified stationary sources that require a permit under the *Clean Air Act* new source review and Prevention of Significant Deterioration programs are defined as exempt actions [40 CFR 93.153(d)].

3.1.1.3 Greenhouse Gas Emissions

Landfill gas, often referred to inaccurately as methane (usually its main component), is a source of greenhouse gases. Global warming is the observed increase in average temperature of the earth’s surface and atmosphere. The primary cause of global warming is an increase of greenhouse gas emissions in the atmosphere. The six major greenhouse gases are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, haloalkanes, and perfluorocarbons. The Intergovernmental Panel on Climate Change, in its Fourth Assessment Report issued in 2007, stated that warming of the earth’s climate system is unequivocal, and that most of the observed

increase in globally averaged temperatures since the mid-20th Century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations (IPCC 2007). Greenhouse gases are well mixed throughout the lower atmosphere, such that any anthropogenic emissions would add to cumulative regional carbon dioxide emissions and to global concentrations of carbon dioxide. The effects from any individual source of greenhouse gases therefore cannot be determined. The proposed project would convert a nuisance (landfill gas) into a resource (energy).

The EPA does not currently regulate the greenhouse gas pollutants that could contribute to global warming. However, in April 2007, in the case of *Massachusetts vs. Environmental Protection Agency*, the United States Supreme Court held that the EPA had a mandatory duty to enact rules regulating mobile emissions of greenhouse gas pursuant to the *Clean Air Act*. The Court held that greenhouse gases do fit the definition of an air pollutant that causes and contributes to air pollution that may reasonably be anticipated to endanger public health or welfare. On December 7, 2009, the EPA signed two findings regarding greenhouse gases under Section 202(a) of the *Clean Air Act*: (1) An Endangerment Finding, which stated that the projected concentrations of greenhouse gases in the atmosphere threaten public health and welfare of current and future generations; and (2) a Cause or Contribute Finding, which stated that the combined emissions of these greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare. Accordingly, in the future, the EPA can promulgate regulations pertaining to emissions of greenhouse gases under the authority of the *Clean Air Act*.

No clearly defined significance threshold has been identified for analyzing greenhouse gas emissions generated by a proposed project, nor has a standard methodology been developed for analyzing cumulative effects related to global warming. The effect of greenhouse gas emissions as they relate to global climate change is inherently a cumulative impact issue. While the emissions of one single project would not cause global climate change, greenhouse gas emissions from multiple projects throughout the world could result in a cumulative effect with respect to global climate change.

3.1.2 ENVIRONMENTAL CONSEQUENCES

3.1.2.1 Proposed Project

The proposed project is not anticipated to result in adverse impacts to air quality. Prior to construction, the proposed project would require demolition of existing buildings and a parking area at the site of the proposed combined cycle plant. Demolition and construction activities would be temporary and would occur in a localized area. Short-term air quality impacts would be associated with the movement of heavy equipment during demolition and construction. Emissions generated during demolition and construction would include particulate matter, vehicle emissions, and increased wind-borne dust (that is, fugitive dust). Fugitive dust emissions would be reduced by best management practices such as fencing and water suppression strategies. These practices reduce dust emissions by reducing wind speed and by wetting areas

of soil disturbance and debris. A temporary increase in vehicle traffic on local streets would occur during the demolition and construction periods due to truck traffic and the private vehicles of workers. During peak construction activities, commuter travel by about 100 construction workers, travel between the gas conditioning plant and the combined cycle plant, and equipment deliveries would result in approximately 250 vehicle trips per day (Solomon 2010). The emissions from the vehicles would be minor compared to the total existing vehicular emissions in the area.

The proposed project would cause emissions from the combined cycle plant and flares, and vehicular emissions from the commute of approximately 26 employees. The estimated annual emissions for the project, excluding vehicle emissions, would be 56.9 tons of sulfur oxides, 162 tons of nitrogen oxides, 42 tons of volatile organic compounds, 44 tons of particulate matter, 706 tons of carbon monoxide, 195,000 tons of carbon dioxide, 0.6 tons of hydrogen sulfide, and 4.1 tons of hydrochloric acid, a hazardous air pollutant (RI-LFGG Undated-a).

The proposed project would require compliance with the Prevention of Significant Deterioration provision of the *Clean Air Act*. The Prevention of Significant Deterioration applies to new major sources or major modifications at existing facilities in areas that are in attainment or are unclassifiable with the NAAQS. The proposed combined cycle plant is not within any of the named categories for which the Prevention of Significant Deterioration major source threshold is 100 tons per year. Therefore, the major source threshold for attainment pollutants is 250 tons per year (GZA 2007). The Prevention of Significant Deterioration major source threshold for non-attainment pollutants nitrogen oxides and volatile organic compounds (as precursors of ozone) is 50 tons per year. The estimated annual emissions for the facility are 162 tons for nitrogen oxides and 42 tons for volatile organic compounds (GZA 2008a). The facility would be considered a major source for Prevention of Significant Deterioration purposes and is a major source of nitrogen oxides and volatile organic compounds for non-attainment New Source Review purposes (GZA 2007). As a result, the Lowest Achievable Emission Rate is required for both nitrogen oxides and volatile organic compounds. Lowest Achievable Emission Rate requires the most stringent emission limitation in any state implementation plan for a particular category of source or the most stringent emission limitation achieved in practice for a particular category of source (GZA 2008a). The proposed facility is also subject to Best Available Control Technology for carbon monoxide (GZA 2008a). Best Available Control Technology refers to an emission limitation, work practice, design, or operational standard that reflects the maximum degree of emission reduction for each pollutant from a stationary source. The Best Available Control Technology for particulate matter would have treatment equivalent to a fuel filter and knockout (GZA 2008a).

As stated previously, the proposed project in Providence County, Rhode Island, is located in an area that has been designated as a moderate nonattainment area for ozone (8-hour standard) and is part of an ozone transport region. The *Clean Air Act* conformity threshold values for this area are 50 tons per year for the ozone precursor volatile organic compounds and 100 tons per year for the ozone precursor nitrogen oxides. The estimated annual volatile organic compounds

emissions are 42 tons, so volatile organic compounds emissions would be less than the *de minimis* threshold and would meet the conformity exemption. The estimated annual nitrogen oxides emissions are 162 tons, so nitrogen oxides emissions would be above the *de minimis* threshold and would not satisfy the conformity *de minimis* exemption. However, the proposed facility would be a major modification of an existing major source and would require a major source permit from the Rhode Island Department of Environmental Management (RIDEM). Because the project would require a permit under the *Clean Air Act* New Source Review and Prevention of Significant Deterioration programs, the project would be defined as exempt from the general conformity requirements [40 CFR 93.153(d)].

The RIDEM, Office of Air Resources reviewed and approved an application for a major source permit for installation of a landfill gas fired combustion turbine and combined cycle power plant at the existing landfill (RI DEM 2009). The approval date was May 12, 2009. The permit was for the installation of five Solar Taurus 60 combustion turbines, five heat recovery steam generators, one steam turbine, five selective catalytic reduction systems to reduce nitrogen oxides emissions prior to discharge to the atmosphere, and a four-cell cooling tower. The permit was also for installation of a gas treatment plant with auxiliary cooling tower, an ultra-low emissions flare, and two enclosed flares. The permit lists the conditions and emission limitations that must be followed for the proposed project.

Emission offsets are required for each non-attainment pollutant for which there is a significant net emissions increase. An emission offset allows owners of new sources of criteria pollutants to obtain emissions reduction credits from other companies that operate facilities located in the same air quality control region. Companies that have a surplus of emissions reduction credits can sell their credits to those companies that are required to offset emissions from new emission sources. The offsets must be provided at a ratio of 1.2 to 1. The proposed project would have nitrogen oxides emissions of 162 tons, which is a net increase of about 97 tons over the existing facility, and would have volatile organic compounds emissions of 42 tons, which is a net increase of 30 tons over the existing facility (GZA 2008a). As a result, 116 nitrogen oxides offsets and 36 volatile organic compounds offsets must be obtained for the project. RI-LFGG procured an option to purchase 117 nitrogen oxides offsets, which have been reviewed and found to be acceptable by the Rhode Island Office of Air Resources (GZA 2008a). RI-LFGG expects to obtain volatile organic compounds offsets from the operator of the Central Landfill, RIRRC, which holds sufficient excess offsets to meet the requirements of this project (GZA 2008a).

Landfill gas consists largely of methane, which is a very potent greenhouse gas. The potential destructive capacity of methane is 22 times worse than carbon dioxide. The proposed project would convert a nuisance (landfill gas) into a resource (energy). By using over 66,000 tons per year of methane from the landfill gas, the project would generate carbon dioxide equivalent reductions of greater than 1.4 million tons annually (RI-LFGG Undated-b). Additionally, an indirect benefit would be an avoidance of greater than 160,000 tons per year of carbon dioxide from not using fossil fuels for generating a similar amount of electricity by standard means.

3.1.2.2 **No-Action Alternative**

Under the No-Action Alternative, DOE would not provide funding to RI-LFGG and the facility would not be constructed or operated. No changes or impacts would occur to the existing air quality in the vicinity of the proposed project.

3.2 Noise

3.2.1 **AFFECTED ENVIRONMENT**

This section describes the existing noise conditions in the area of the project site. The proposed project site is located at the Central Landfill on Shun Pike in a commercial and light industrial area of Johnston, Rhode Island. Adjacent properties to the location proposed for the combined cycle plant include an active solid waste landfill, vacant land, the Simmons Upper Reservoir, and a wrecking company. Adjacent properties to the location proposed for the gas conditioning plant include an auto repair business, a truck liner business, an equipment repair business, and a solid waste disposal company. No data exist for ambient noise in the area. Sources of noise include traffic noise on Shun Pike, and noise from landfill operations and light industrial activities. The landfill operations include trash truck traffic, earth removal equipment, and existing power generating plants. Five residences have been identified within a 0.5-mile radius from the site boundaries. The residences are about 1,300 feet to 2,500 feet away from the site boundaries (Solomon 2010). No other noise-sensitive receptors (e.g. hospitals, schools, or places of worship) are located in the immediate vicinity.

3.2.2 **ENVIRONMENTAL CONSEQUENCES**

3.2.2.1 **Proposed Project**

The proposed project is not anticipated to result in noticeable adverse impacts related to noise. Federal, state and local agencies regulate environmental, occupational, and other aspects of noise. Occupational exposure to noise is regulated by the Occupational Safety and Health Administration at 29 CFR 1910.95. The standard stipulates that protection against the effects of noise exposure shall be provided when sound levels exceed 90 A-weighted decibels (dBA) over an 8-hour exposure period. Protection shall consist of feasible administrative or engineering controls. If such controls fail to reduce sound levels to within acceptable levels, personal protective equipment shall be provided and used to reduce exposure of the employee. Additionally, a hearing conservation program must be instituted by the employers whenever employee noise exposure equals or exceeds the action level of an 8-hour time-weighted average sound level of 85 dBA. The hearing conservation program requirements consist of periodic area and personal noise monitoring, performance and evaluation of audiograms, provision of hearing protection, annual employee training, and recordkeeping.

Demolition and construction activities associated with the proposed project would generate temporary noise from heavy equipment; however, most noise would be localized to the

immediate area within the proposed project site. Construction would last approximately 22 months. Construction is planned to occur during the day shift for most of the construction period. However, it might be necessary to use a second shift and/or third shift to meet project schedule obligations. Five residences have been identified within 0.5 mile of the site. The residences are about 1,300 to 2,500 feet away from the site boundaries. These residences may experience annoyance from demolition and construction noise. These impacts would be lessened by confining demolition and construction activities to normal working hours and employing noise-controlled equipment to the extent possible. Noise levels are expected to comply with all local noise ordinances.

Noise from operations would include noise from equipment, such as gas turbine generator sets, cooling towers, gas collection blowers, gas compressors, and chillers. The plant is designed for continuous operation. Noise from operations would not be substantially different from the current ambient conditions. The project site is located in a light industrial area and the proposed project would be compatible with its surroundings.

3.2.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to RI-LFGG and the facility would not be constructed or operated. No new sources of noise at the proposed project site would occur.

3.3 Aesthetics and Visual Resources

3.3.1 AFFECTED ENVIRONMENT

This section describes the existing aesthetic and visual resource conditions in the area of the proposed project site. Visual resources include natural and manmade physical features that provide the landscape its character and value as an environmental resource.

The proposed project site is located in a commercial and light industrial area. The Upper Simmons Reservoir is adjacent to the south. Figure 2-2 shows an aerial photograph of the proposed site. The site proposed for the gas conditioning plant, on the north side of Shun Pike, currently contains two large metal storage buildings. The site proposed for the combined cycle plant has three metal buildings and a large parking lot. The two sites are located on Shun Pike Road and are visible to scarcely populated industrial occupants across and adjacent to the sites. The majority of the area is zoned industrial with some residential units. Five residences have been identified within 0.5 mile of the site boundaries.

3.3.2 ENVIRONMENTAL CONSEQUENCES

3.3.2.1 Proposed Project

The proposed project would result in little or no effect on visual resources or aesthetics. The proposed combined cycle plant would involve demolition of the existing buildings and parking

area, installation of the five gas turbines and a steam turbine, construction of a storage facility and access drive, and installation of a concrete pad to accommodate the associated electrical transmission lines. The two existing buildings at the proposed gas conditioning plant site would be used to house portions of the recovery/treatment system. As part of the landfill gas system expansion, three new gas pipelines would be constructed. Pipelines would be along existing roads and underground where possible; where underground pipelines are not practicable, pipelines would be situated above ground. Minor short-term visual impacts would result from ground disturbance; the presence of workers, vehicles, and equipment; and the generation of dust and vehicle exhaust associated with demolition and construction of the proposed facility. RI-LFGG estimates the construction period would last 22 months. During peak construction activities, commuter travel by about 100 construction workers, travel between the gas conditioning plant and the combined cycle plant, and equipment deliveries would result in approximately 250 vehicle trips per day (Solomon 2010). Once construction is complete, the reclamation of disturbed areas would remove these visual impacts.

In the long term, the aesthetics of the area are expected to remain the same. The proposed project is located in an existing commercial and light industrial area and would be compatible with the surrounding aesthetics of the area. Five residences have been identified within 0.5 mile of the site. The residences are about 1,300 feet to 2,500 feet away from the site boundaries. Accordingly, the residences would have no, or limited visual exposure of the site. In addition, the residences should be less sensitive to the visual impacts of the proposed project due to existing, similar conditions. Potential impacts to aesthetics caused by traffic to the proposed facility would be negligible. Twenty-six employee commuters and an additional ten vehicle trips per day by employees between the combined cycle plant and the gas conditioning plant are expected. The proposed project would not introduce substantial new light sources to the area. Nighttime lighting would be limited to provide safe access to operation and maintenance areas within the facility (Solomon 2010).

The proposed project would include rehabilitation of part of the site to benefit the wetlands to the south. This would involve removal of invasive trees and replacement with native species, removal of a concrete rubble pile and other debris, re-grading, distribution of high-organic content topsoil, and re-vegetation with a conservation grass mix and native trees. A narrow, vegetated and mowed travel way would be developed between the combined cycle plant and the wooded area along the southern boundary of the property.

3.3.2.2 **No-Action Alternative**

Under the No-Action Alternative, DOE would not provide funding to RI-LFGG and the facility would not be built or operated. No changes to aesthetics or visual resources would occur.

3.4 Water Resources

3.4.1 AFFECTED ENVIRONMENT

This section describes the existing water resources on and in the area of the project site. Surface water includes lakes, rivers, and streams while groundwater comprises the subsurface hydrogeologic resources of the physical environment. Wetlands and floodplains are also discussed.

The Central Landfill is listed as a Superfund site. (Note: The Superfund was established by the *Comprehensive Environmental Response, Compensation and Liability Act of 1980* to allow the EPA to clean up abandoned hazardous waste sites.) Analysis of samples collected by the Rhode Island Solid Waste Management Corporation (now the RIRRC) under the supervision of the EPA as part of the Superfund investigation revealed that surface water and groundwater in the vicinity of the proposed project contained a variety of contaminants associated with Phase I of the landfill, when the landfill was unlined and accepted industrial and other wastes (EPA 1994). The EPA identified two operable units during the Superfund investigation. Operable Unit 1 encompasses the main landfill operations, and Operable Unit 2 consists of a 1,333-acre area that surrounds but does not include Operable Unit 1. A human health risk assessment conducted for Operable Unit 1 indicated that there were no complete exposure pathways for human receptors under existing conditions but that such pathways might exist under hypothetical future conditions. The risk assessment concluded that such risks could arise from ingestion and dermal contact with groundwater beyond the toe of the landfill but still within RIRRC-owned property. The selected remedy for Operable Unit 1 was capping the solid and industrial hazardous wastes and controlling the source of groundwater contamination. The human health risk assessment for Operable Unit 2, which assumed that residents downgradient of the site would not be using groundwater as a drinking water source, concluded that contaminants present in soil, surface water, and sediment within Operable Unit 2 would not pose a significant risk to human health. An ecological risk assessment performed for Operable Unit 2 concluded that there was no significant risk to aquatic biota or significant indirect effects to fish and wildlife. No remedial action was required for Operable Unit 2 (EPA 2008).

3.4.1.1 Surface Water

Several surface water features are located in the vicinity of the project site (Figure 3-2). The Central Landfill is a Superfund site, and contamination associated with the landfill has been detected in surface and groundwater. Surface water contamination appears to have been a result of groundwater contaminant migration to surface water bodies. Volatile organic compounds,

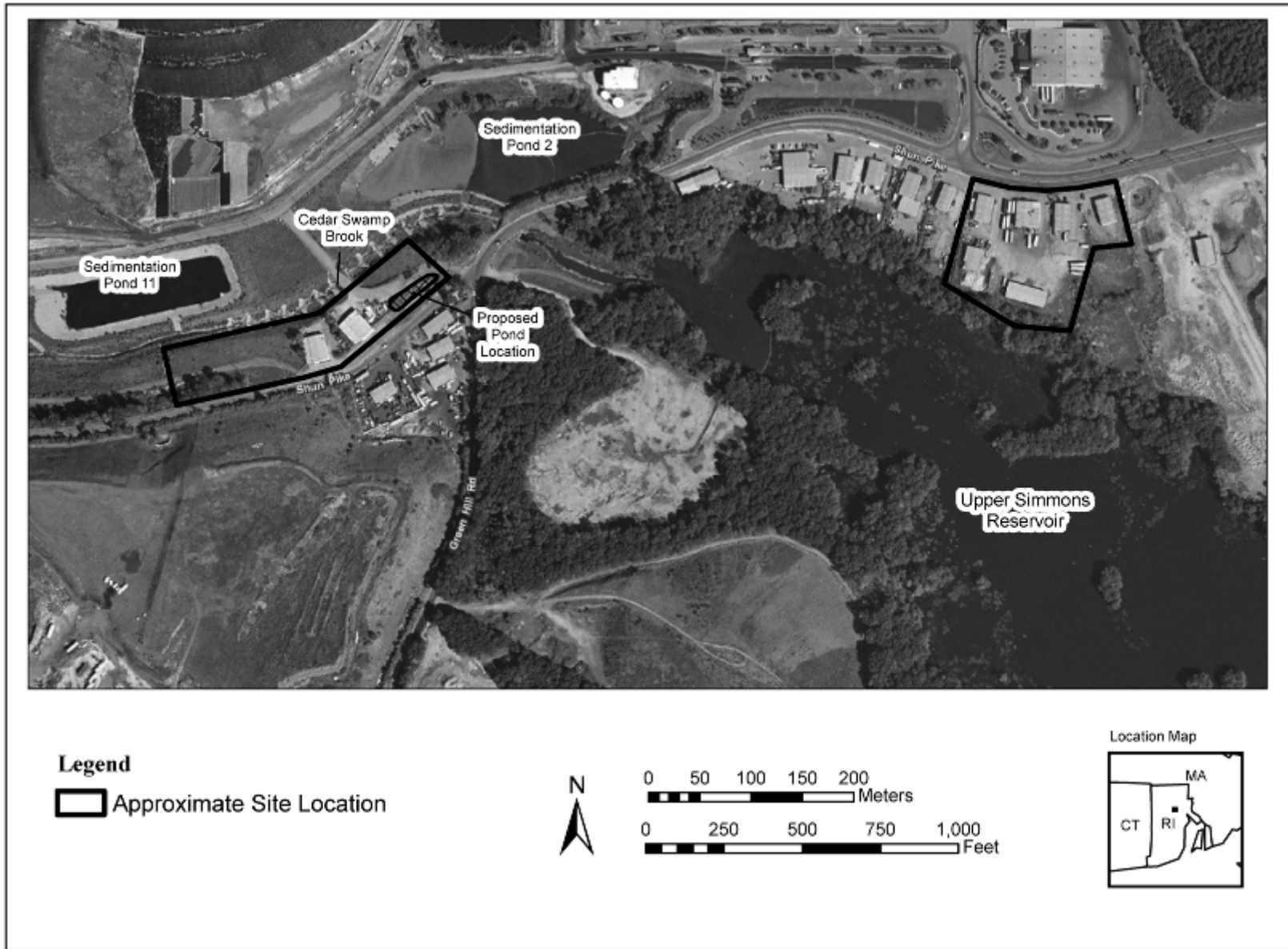


Figure 3-2. Surface water features.

semi-volatile organic compounds, pesticides, polychlorinated biphenyls and metals have historically been detected in both the water and sediments of the surface water bodies in the vicinity of the proposed project (EPA 2008).

Surface water features include:

- Cedar Swamp Brook traverses the landfill property in an approximately east-west direction and is located north of the gas conditioning plant location. Cedar Swamp Brook was relocated as part of past expansion of the landfill. The brook flows through the landfill property before discharging into the Upper Simmons Reservoir. Surface water samples are collected on a quarterly basis at five locations: one upstream, three onsite, and one where the brook runs offsite (EPA 2008).
- The Upper Simmons Reservoir bounds the combined cycle plant site to the south, and is southwest and west of the proposed electrical transmission lines. Simmons Upper Reservoir discharges into Simmons Lower Reservoir to the southeast. The Upper Simmons Reservoir is designated as a Class B surface water body, which means that water is designated for fish and wildlife habitat and recreational activities and is not to be used as drinking water.
- Four of the landfill's sedimentation ponds are located in the immediate vicinity of the proposed project. The easternmost of these is designated as wetlands on the National Wetlands Inventory.

3.4.1.2 **Groundwater**

The 2008 Phase I environmental site assessment for the combined cycle plant location states that, “based on review of the U.S. Geological Survey topographic map, the anticipated direction of groundwater is southeast toward Upper Simmons Reservoir (GZA 2008b)”. The Phase I environmental site assessment for the gas conditioning plant states that the anticipated direction of groundwater flow is to the northeast, toward Cedar Swamp Brook/Upper Simmons Reservoir (GZA 2008c). Groundwater in the vicinity of the Central Landfill has been found to contain volatile organic compounds, semi-volatile organic compounds, and inorganic contaminants. Groundwater near the Phase I area contained much higher levels of volatile organic compounds and semi-volatile organic compounds than those taken near the property line, which contained only slightly elevated levels of a few volatile organic compounds, semi-volatile organic compounds, and inorganics. Ongoing treatment includes extraction of groundwater to hydraulically contain potential contaminant migration. Extracted water is transmitted to the City of Cranston wastewater treatment plant (EPA 2005).

3.4.1.3 **Wetlands and Floodplains**

3.4.1.3.1 **Wetlands**

Wetlands are discussed in Section 3.5.1.4.

3.4.1.3.2 ***Floodplains***

According to Federal Emergency Management Agency floodplain maps, the proposed project sites are not located within a 100-year floodplain (FEMA 2009a, 2009b).

3.4.2 **ENVIRONMENTAL CONSEQUENCES**

3.4.2.1 **Proposed Project**

3.4.2.1.1 ***Surface Water***

No effects on surface water are anticipated to result from the proposed project. The combined cycle plant location is currently covered nearly entirely by impervious surfaces, and no increase in runoff from the site would occur. Development of the gas conditioning plant location would result in an increase in impervious surfaces at that location; however, plans include a detention/infiltration pond to ensure that development of the property does not result in a substantial increase in storm water runoff to Cedar Swamp Brook.

3.4.2.1.2 ***Groundwater***

Little or no effect on groundwater is anticipated to result from the proposed project. The project would neither use groundwater nor discharge water to the subsurface. A minor beneficial effect could result from infiltration of storm water into the subsurface from the detention/infiltration pond associated with the gas conditioning plant, which could conceivably result in local dilution of contaminants to a small extent. However, this would not actually remove the contaminants, and the pond is being constructed to prevent an increase in surface water runoff that might result from an increase in impermeable surfaces at the gas conditioning plant location. Precipitation currently falls on permeable surfaces at the gas conditioning plant location; therefore, a substantial increase in infiltration is not anticipated.

3.4.2.1.3 ***Wetlands and Floodplains***

Wetlands

Environmental consequences associated with wetlands are discussed in Section 3.5.2.1.

Floodplains

The proposed locations of facilities and associated infrastructure are not within 100-year floodplains; therefore, no impacts to floodplains are anticipated.

3.4.2.2 **No-Action Alternative**

Under the No-Action Alternative, DOE would not provide funding to RI-LFSG and the facility would not be built or operated. No changes to or effects on water resources would occur.

3.5 Biological Resources

3.5.1 AFFECTED ENVIRONMENT

This section describes existing biological resources at the proposed project site. It focuses on plant and animal species or habitat types that are typical or are an important element of the ecosystem, are of special category importance (of special interest due to societal concerns), or are protected under state or federal law or statute regulatory requirement. Vegetation is discussed first, followed by wildlife, sensitive species, and wetlands.

3.5.1.1 Vegetation

Both locations along Shun Pike Road for the proposed project occur in disturbed areas with limited vegetation, except along the perimeter. Large metal buildings and parking lots cover the majority of the sites (GZA 2009). The area south of Shun Pike Road where the proposed combined cycle plant would be constructed is bounded on the south by the Upper Simmons Reservoir and associated wetlands habitat. The wooded slope at the edge of the reservoir supports native tree and shrub species such as red oak (*Quercus ruba*), hickory (*Carya* sp.), black cherry (*Prunus serotina*), Northern arrow wood (*Viburnum dentatum*), and staghorn sumac (*Rhus typhina*) (GZA 2009). Understory herbaceous species in the area include hay-scented fern (*Dennstaedtia punctilobula*) and New York fern (*Thelypteris noveboracensis*). Non-native black locus (*Robinia pseudoacacia*) is also prevalent in the area (GZA 2009). Upland areas near Cedar Swamp Brook contain white oak (*Quercus alba*), black cherry, eastern white pine (*Pinus strobus*), green ash (*Fraxinus pennsylvanica*), gray birch (*Betula populifolia*), sweet birch (*B. lenta*), and quaking aspen (*Populus tremuloides*). Understory vegetation is comprised of nannyberry (*Viburnum lentago*), arrow-wood, oblong-leaf service-berry (*Amelanchier laevis*), common winterberry (*Ilex verticillata*), sensitive fern (*Onoclea sensibilis*), bull thistle (*Cirsium vulgare*), Carolina wood vetch (*Vicia cracca*) and several other herbaceous species (Ecotones 2008). Vegetation observed in the delineated wetlands areas is described in Section 3.5.1.4.

3.5.1.2 Wildlife

Based on the proposed project site's lack of natural habitat and its proximity to industrial disturbance, potential wildlife use of the site is low. Furthermore, most wildlife species are likely to be transients through the area. The riverbank wetlands, which extends on both the northern and southern bank of the relocated Cedar Swamp Brook, was developed to create and maintain a wildlife migration corridor in this otherwise industrialized area as part of the condition of approval application submitted by the RIRRC (dated January 24, 2003) to alter approximately 3,100 linear feet of a freshwater wetlands (GZA 2010). White-tailed deer (*Odocoileus virginianus*), and other opportunistic species likely to exist in this developed-rural interface include: coyotes (*Canis latrans*), opossums (*Didelphis virginiana*), raccoons (*Procyon lotor*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), and skunks (*Mephitis mephitis*).

3.5.1.3 Sensitive Species

The U.S. Fish and Wildlife Service develops internal guidance and national policies for implementation of the *Endangered Species Act* of 1973, as amended. This law provides federal protection for species designated as federally endangered or threatened. An endangered species is “in danger of extinction throughout all or a significant portion of its range,” and a threatened species “is likely to become an endangered species within the foreseeable future” (USFWS 1988). Special status species are listed as threatened or endangered, are proposed for listing, or are candidates for listing by the state and/or federal government.

Nine species classified as threatened or endangered under the *Endangered Species Act* occur in Rhode Island (Table 3-2). However, the preferred habitat does not exist for any of the species at the proposed project site due to historical disturbances of the area and unsuitable habitat.

Table 3-2. Federally listed plant and animal species in Rhode Island.

| Common name | Scientific name | Federal status | Habitat |
|---------------------------------|------------------------------------|----------------|---|
| American burying beetle | <i>Nicrophorus americanus</i> | Endangered | Oak-pine woodlands, open fields, and open grasslands |
| Northeastern beach tiger beetle | <i>Cicindela dorsalis dorsalis</i> | Threatened | Sand dunes |
| Eskimo curlew | <i>Numenius borealis</i> | Endangered | Herbaceous wetlands, tidal flats. |
| Piping plover | <i>Charadrius melodus</i> | Threatened | Riparian and sand dune. |
| Roseate tern | <i>Sterna dougallii dougallii</i> | Endangered | Seacoasts, bays, estuaries |
| Gray wolf | <i>Canis lupus</i> | Endangered | Variety of habitats with large prey |
| Eastern puma | <i>Puma concolor cougar</i> | Endangered | Swamps, riparian woodlands, mountainous country with good cover |
| Sandplain gerardia | <i>Agalinis acuta</i> | Endangered | Dry, sandy, short grass plains |
| Small whorled pogonia | <i>Isotria medeoloides</i> | Threatened | Dry east or southeast facing hillsides in mixed oak forests |

Note: Oceanic species are not considered in the list.
 Source: USFWS 2010a.

Fifty-three plant species and twenty-two animal species classified as endangered or threatened by the state of Rhode Island are known to occur in Providence County. Of these species, 40 are state threatened and 35 are listed as state endangered species. Coastal and forested or grassland habitats precludes the occurrence of most of the state-listed bird, invertebrate, reptile/amphibian, and mammal species. The majority of the sensitive plant species occur in habitats not available at the proposed site, except for potential wetlands species. Species-specific wetlands habitat characteristics (for example, bogs, and moist hardwoods) are supported at the proposed project site. A few general wetlands species, such as green-headed coneflower (*Rudbeckia laciniata*), tall beaked rush (*Rhynchospora macrostachya*), and variable sedge (*Carex polymorpha*), have

the potential to occur in the area; however, none of the state-listed wetlands plant species were documented during the wetlands delineations (Ecotones 2008).

On April 13, DOE sent a consultation letter to the U.S. Fish and Wildlife Service requesting input into the flora and fauna of the area. DOE's letter is provided in Appendix B. In a May 19, 2010 letter, also provided in Appendix B, the U.S. Fish and Wildlife Service concluded its review of the project and found that "no federally listed or proposed, threatened or endangered species or critical habitat are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under Section 7 of the Endangered Species Act is not required."

3.5.1.4 Wetlands

DOE regulations at 10 CFR Part 1022, "*Compliance with Floodplain and Wetland Environmental Review Requirements*," implement the requirements of Executive Order 11990, "Protection of Wetlands." These regulations require, among other things, that the Department notify appropriate government agencies and interested parties of a proposed wetlands action; conduct a wetlands assessment to evaluate the impacts of that action to wetlands in an EA or environmental impact statement; consider alternatives that would avoid or minimize impacts to wetlands; design or modify the action to minimize potential harm to wetlands; and allow for public review and comment of the analysis. The analysis in this EA meets the requirements of 10 CFR Part 1022 and Executive Order 11990.

Wetlands are classified by the U.S. Army Corps of Engineers based on three criteria: hydrology, soil type, and vegetation. Specifically, wetlands are defined as those areas that are saturated or inundated by water that is sufficient to support vegetation typically adapted to saturated soils (USACE 1987). Wetlands and other surface water features, which may include intermittent and perennial streams, are generally considered "waters of the United States" by the U.S. Army Corps of Engineers, and under their definition of "jurisdictional waters/features," are protected under Section 404 of the *Clean Water Act*.

Two terms specific to the Rhode Island rules and regulations governing the administration and enforcement of the *Freshwater Wetlands Act* are critical in discussing wetlands issues associated with the proposed project:

- Perimeter wetlands: consist of the land area within 50 feet of the edge of any freshwater wetlands consisting in part, or in whole, of a bog, marsh, swamp, or pond.
- Riverbank wetlands: consist of the area of land within 200 feet of the edge of any flowing body of water having a width of 10 feet or more, and that area of land within 100 feet of the edge of any flowing body of water having a width of less than 10 feet during normal flow.

When discussing wetlands issues, it is important to note that activities could affect a perimeter wetlands or riverbank wetlands, but would not affect areas the U.S. Army Corp of Engineers has categorized as wetlands.

The proposed facilities would be developed on RIRRC-owned property and in proximity to freshwater wetlands (Figure 3-3; USFWS 2010b). Cedar Swamp Brook is located along the northern portion of the proposed site for the gas conditioning plant. To provide additional landfill capacity until the year 2012, Phase V expansion of the landfill required the relocation of 3,100 linear feet of Cedar Swamp Brook (PARE 2009). A wetlands delineation was completed in June 2008 for the area within 200 feet of the proposed gas pipeline route in the Cedar Swamp Brook area. Many of the areas along Cedar Swamp Brook have been disturbed in the past from relocation efforts (Ecotones 2008), although restoration efforts and additional plantings were conducted in the created riverbank wetlands—a condition of an approved application to alter a freshwater wetlands (dated January 24, 2003) submitted by the RIRRC regarding the proposed relocation of Cedar Swamp Brook (GZA 2010). This relocation was completed in 2003 and additional restoration efforts were conducted in 2008 (RIDEM 2008; PARE 2009).

Nine wetlands, composed of four wetlands types, were delineated and include shrub wetlands, swamp, emergent plant communities, and ordinary high water mark area near Cedar Swamp Brook. Common tree species observed in the wetlands include red maple (*Acer rubrum*) and American elm (*Ulmus americana*). Black willow (*Salix bebbiana*), quaking aspen, silky dogwood (*Cornus amomum*) and common winterberry comprised the shrub layer. A variety of herbaceous vegetation occurs in the area and includes skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmunda cinnamomea*), common reed (*Phragmites australis*), field horsetail (*Equisetum arvense*), narrow-leafed cattail (*Typha latifolia*), wrinkled goldenrod (*Solidago rugosa*), soft rush (*Juncus effusus*), pointed broom sedge (*Carex scoparia*), purple loosestrife (*Lythrum salicaria*), and spotted touch-me-not (*Impatiens capensis*) (Ecotones 2008). A portion of the property for the combined cycle plant lies within the 50-foot perimeter wetlands of the Upper Simmons Reservoir.

3.5.2 ENVIRONMENTAL CONSEQUENCES

3.5.2.1 Proposed Project

The proposed project area encompasses areas currently void in vegetation and/or previously disturbed and efforts described below to restore vegetation would improve the quality of the habitat in the 50-foot perimeter wetlands associated with the Upper Simmons Reservoir. Minimal short-term impacts to wildlife would result from disturbance during construction of the proposed facility. No adverse impacts to any federally listed threatened or endangered species would occur, for no such species are known to occur on the proposed project site. Minor beneficial potential impacts to wetlands may however, occur.

Ridgewood Renewable Power LLC (a partner in RI-LFGG) submitted on November 12, 2008, a wetlands permit application Request for Preliminary Determination to the RIDEM (RIDEM; No.

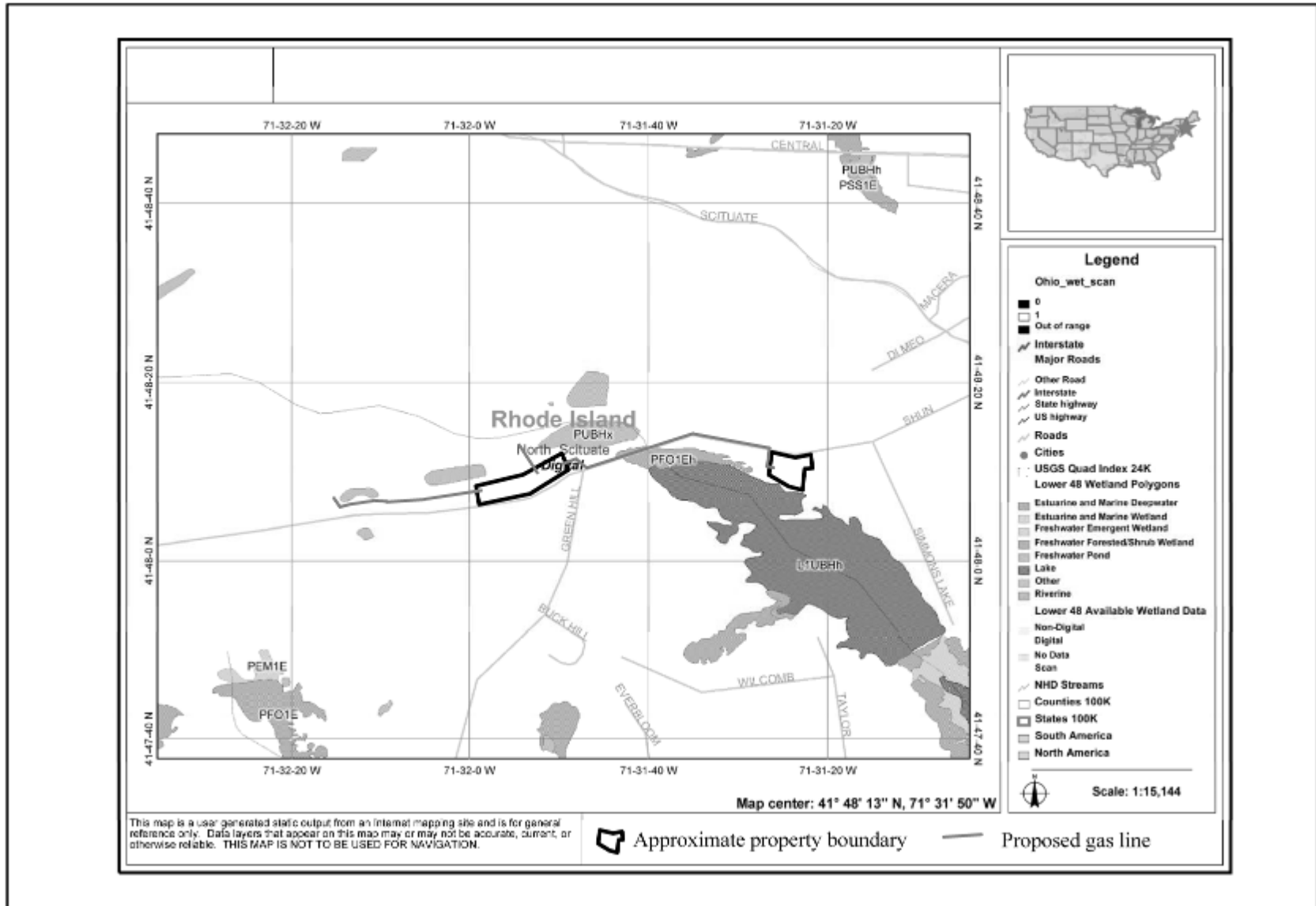


Figure 3-3. Wetlands inventory map.

08-0356) for expansion of a landfill gas-to-energy facility at the Central Landfill (GZA 2009). Additional material was requested by RIDEM and submitted on October 5, 2009 to supplement the permit application. Comments were received from RIDEM on November 16, 2009 and Ridgewood Renewable Power, LLC (RRP) responded to the comments on January 26, 2010. The electrical transmission lines were not considered in the original permit and an additional wetlands permit application has been drafted but not submitted for the electric transmission lines. Consultation with RIDEM concerning the wetlands areas is ongoing and specific impacts and proposed mitigation for each area of the project are discussed below.

The proposed combined cycle plant footprint is designed to remain outside of the areas regulated under the *Freshwater Wetlands Act* and no wetlands acreage is expected to be affected. However, a portion of the property itself lies within the 50-foot perimeter wetlands associated with the Upper Simmons Reservoir but is not affected by the proposed project. RRP submitted a Request to Verify the Delineated Freshwater Wetlands to RIDEM, and in a response letter dated April 14, 2009, RIDEM suggested "... that due to unauthorized alteration of wetlands... RIDEM recommends that future project proposals incorporate restoration measures to perimeter wetlands" (GZA 2009). The area proposed for the combined cycle plant has been subject to historical dumping of mixed construction and demolition debris, and as part of the current project, RRP proposed in their additional materials application (dated October 5, 2009), that selected areas of the site be restored as a riverbank wetlands. The proposed area for wetlands restoration is located along the southern boundary of the proposed combined cycle plant site, adjacent to the Upper Simmons Reservoir. Restoration would include removal of the rubble pile, additional soil to rebuild the area, and re-vegetation of the area with native plants (GZA 2009). In accordance with RIDEM wetlands regulations, RRP also proposes a vegetated screen of evergreen saplings, placed at 25 feet on center spacing, on the outside of the fence line along the northern edge of the proposed combined cycle plant (GZA 2010).

The gas conditioning plant would encroach on the vegetated sections of the 200-foot riverbank wetlands for Cedar Swamp Brook, but outside the 50-foot perimeter wetlands except for a storm water outlet. Initial review comments received from RIDEM on January 22, 2010 (GZA 2010), on the submitted wetlands permit application, noted concern about the encroachments of the gas conditioning plant's footprint into the vegetated sections of the southern created/replanted Cedar Swamp Brook riverbank wetlands. DOE understands that the intent of this requirement was to create and maintain a wildlife migration corridor in this otherwise industrialized area. The facility site design has been substantially revised to reduce encroachment into the migration corridor and any areas disturbed would be re-vegetated. Also, as suggested by RIDEM in comments dated November 16, 2009, additional improvements would be added to portions of the corridor area to enhance its effectiveness as a wildlife migration corridor and habitat value. These improvements would take the form of groupings of berry-producing shrubs and bushes to increase vegetation density and provide improved habitat for wildlife (GZA 2010). In accordance with RIDEM wetlands regulations, RRP also proposes a vegetated screen of evergreen saplings, placed at 25 feet on center spacing, on the outside of the fence line along the

northern edge of the proposed gas conditioning plant site between developed areas and remaining natural areas (GZA 2010).

Three stream crossings are required for the three proposed gas pipelines and all would be within the existing roadway crossings and therefore, would not require dedicated bridges. The steel high-pressure line that allows the combined cycle plant to treat landfill gas from various landfill phases would be constructed along the northern shoulder of Shun Pike within the road right of way. Two stream crossings are required: one over Cedar Swamp Brook and one over the outfall of Sedimentation Pond No. 2. A small portion of the line is also within the 50-foot perimeter wetlands associated with the Upper Simmons Reservoir. The transmission line that runs from the proposed gas conditioning plant to the existing 6-MW Caterpillar reciprocating engine plant would be constructed within the shoulder of the existing gravel maintenance road. The entire gas pipeline would be within the 200-foot riverbank wetlands of Cedar Swamp Brook. Finally, the twin lines that allow for the collection and treatment of the landfill gas would also be constructed within the shoulder of an existing dirt access road. The lines would be within the 200-foot riverbank wetlands of Cedar Swamp Brook and would require one crossing. Based on the location of the transmission lines within existing road right of ways, the proposed lines constitute an insignificant alteration and pose no impacts to regulatory wetlands.

On March 17, 2010, RIDEM approved an Insignificant Alteration to Freshwater Wetlands permit for the proposed construction of the combined cycle plant, gas conditioning plant, and gas pipelines. The approval was contingent on RRP compliance with the terms and conditions outlined in the permit letter and the approved modifications to the site plans by RIDEM. A copy of the permit letter is included in Appendix B of this EA. In summary, the conditions required for the permit included those measures previously outlined above, with some modification, as well as additional conditions listed below:

- Materials used must be clean and free of matter that may pollute the wetlands.
- Temporary erosion and sediment control used on the approved site plans must be installed prior to site alteration and the silt fencing should be removed after permanent stabilization of disturbed soils.
- All plantings listed on the approved site plans must be completed as soon as possible after the final grading.
- Buffer zone planting between the project site and wetlands are allowed to grow naturally.
- Approved site plans contain species-specific vegetation planting requirements, proposed limit of disturbance, plant spacing and density requirements, which must be followed for restoration and enhancement at the project site.

The initial proposed location of the electrical transmission lines was northeast of the power plant, outside of all freshwater wetlands, and was not incorporated into the initial wetlands permit

application. Logistical and safety considerations required that the proposed location of the lines be moved further south and east, toward Upper Simmons Reservoir and require vegetation removal in some areas near the Upper Simons Reservoir wetlands area. Permanent clearing and maintenance of vegetation (1,350 square feet) within the 50-foot perimeter wetlands is required for the installation of the transmission lines. Some areas of permanent clearing and maintenance are also necessary within 40 feet of the transmission lines, but occur outside the 50-foot perimeter wetlands. Once construction is completed, these areas would be replanted with low-growing trees and shrubs approved by National Grid for planting within electrical transmission line easement zones. Areas of clearing would not encroach into flagged wetlands areas and no structures associated with the transmission lines would be constructed within the 50-foot perimeter wetlands. No fill would be placed as part of construction, either within or outside the 50-foot perimeter wetlands. The “Request for Preliminary Determination per the Rhode Island” *Freshwater Wetlands Act* for the electrical transmission line is still under review by the RIDEM.

No federally listed species or critical habitats are present on the site. In addition, insignificant wetlands impacts are expected along the Cedar Swamp Brook and Upper Simmons Reservoir as a result of the construction of the gas conditioning plant and combined cycle plant, and terms and conditions listed in the RIDEM Insignificant Wetland Alteration Permit would mitigate those impacts and have positive, long-term effects on biological resources. Installation of the electrical transmission lines would require approximately 1,350 square feet of vegetation removal within the 50-foot wetlands perimeter. Consultation with RIDEM on the impacts to wetlands from this portion of the project is ongoing.

3.5.2.2 **No-Action Alternative**

Under the No-Action Alternative, DOE would not provide funding to RI-LFGG and the facility would not be built. No impacts to biological resources would occur.

3.6 Cultural Resources

3.6.1 **AFFECTED ENVIRONMENT**

This section describes the existing cultural resources in the area of the proposed project site. The area of potential effect for cultural resources includes the property within and immediately adjacent to the proposed project site that would be affected by the action, either during construction only or permanently. Cultural resources include historic properties, as defined by the *National Historic Preservation Act*; cultural items, as defined by the *Native American Graves and Repatriation Act*; archaeological resources, as defined by *Archaeological Resources Protection Act*; sacred sites, as defined in Executive Order 13007, to which access is afforded under the *American Indian Religious Freedom Act*; and collections and associated records, as defined in 36 CFR Part 79. The prehistoric and historic background of the area is summarized first, followed by the status of cultural resource inventories and Section 106 consultations, and American Indian resources.

3.6.1.1 Prehistoric and Historic Background

The Narragansett Indians are the descendants of the aboriginal people of the State of Rhode Island, who have occupied the region for more than 30,000 years (Narragansett Indian Tribe 2009). The Narragansetts occupied the area of Rhode Island from Warwick southward along Narragansett Bay to the present towns of South Kingstown and Exeter, prior to the establishment of the permanent white settlements in New England in 1635 (Hurd 2004). Other Algonquin tribes, including the Narragansett's enemy, the Wampanoag, populated the rest of Rhode Island. In 1663, Rhode Island received a royal charter, which strengthened Rhode Island's territorial claim by guaranteeing complete religious liberty and establishing a self-governing colony with local autonomy (Hurd 2004). As settlers looked for more territory, clashes between the colonists and the native Indians in Rhode Island escalated, culminating in King Philip's War. The Narragansett at first remained neutral in the war. However, in December 1675, a Puritan force staged an attack on the Narragansett's principal village in the Great Swamp located in present-day South Kingstown, killing mostly women, children, and elderly men (Hurd 2004; Narragansett Indian Tribe 2009). The Narragansett joined forces with the Wampanoag, and the following spring retaliated with the massacre of a company of approximately 65 Englishmen and 20 friendly Indians on the banks of the Blackstone River in present-day Central Falls followed by the burning of most of the buildings in Providence (Hurd 2004).

The killing of King Philip in 1676 effectively ended the war, and the remnants of the Narragansett, Wampanoag, and Pequot sought refuge with the peaceful Niantic, who had remained neutral (Hurd 2004). This aggregate of tribal groups became the foundation of a new Indian community in Rhode Island that ultimately assumed the name Narragansett (Hurd 2004).

By the mid-18th century, the spacious farm plantations of South County, utilizing the labor of black and Indian slaves, reached the peak of their prosperity cultivating commodities such as apples, sheep, onions, flax, and dairy products (Hurd 2004). Commodities also included sea products, such as whales and fish, and timber products such as lumber for boards, planks, timber, and barrels (Hurd 2004). Rhode Island became a prominent exporter of goods not only to the colonies, but also England, Africa, South America, and the West Indies. In the 1800s, the state's economy began to change from an agrarian-commercial to an industrial base market (Hurd 2004). Providence ranked first among the cities of the nation by 1900 in the production of woolen and worsted goods. Base- and precious-metals trade in the state also became prominent. Brown and Sharpe, a company in Providence, was the largest producer of machine tools in the nation (Hurd 2004). The Gorham Manufacturing Company was the country's largest producer of silverware, and its statues, memorials, and architectural bronze work were famous nationwide. For a century these four industries steadily expanded and dominated the state's economic life (Hurd 2004).

A fifth major area of manufacturing, rubber goods, especially footwear, joined the other four big industries as an important part of the Rhode Island economy in the late 19th century (Hurd 2004). The move towards industrialization and urbanization was closely tied to the increase in

immigration and the search for employment. Irish, English, Swedes, and Germans were among the first immigrants to Rhode Island and were joined later in the 19th century by refugees from French-speaking Canada and southern and eastern Europe. Italians comprised the largest number of immigrants to Rhode Island by the early 20th century (Hurd 2004).

Rhode Island's industrial economy continued through the early 20th century as a major supply provider during both World Wars. Articles of war included boots, knives, parachutes, gauges, blankets, and, most importantly, the Liberty ships and combat cargo vessels that were constructed at the Walsh-Kaiser Shipyard by a workforce that numbered 21,000 in early 1945 (Hurd 2004). At the conclusion of the Second World War, the workforce at the Walsh-Kaiser Shipyard had been nearly disbanded and the state's textile industry, supported by the war, returned to the decline that began in the 1930s as companies began to move their factories to the south and imports increased.

By the latter part of the 20th century, the populous of Rhode Island began making the transition from urban to suburban life. Even though the textile industry declined as the leading industry, it was still a factor in Rhode Island's economy. The growing metals and machinery industry dominated manufacturing and employed well over 30 percent of the industrial workforce by the mid-20th century, followed by jewelry and silverware (Hurd 2004). Newer growth industries now include electronics, plastics, instrumentation, chemicals, transportation equipment, and tourism.

3.6.1.2 **Status of Cultural Resource Inventories and Section 106 Consultations**

On April 13, 2010, DOE sent a letter to the Rhode Island State Historic Preservation Office requesting any additional information that office had developed or obtained on historic properties in the vicinity of the proposed project site. On April 12, 2010, the Rhode Island Historical Preservation and Heritage Commission responded to the letter stating that the "...proposed project will have no effects on historic resources...", and that the commission has "... no objections to the project as proposed..." Appendix B contains a copy of DOE's letter and the Commission's response.

DOE conducted a search of the State of Rhode Island, Historic Property Search database. Thirty-one historical properties were recorded for the city of Johnston, but no properties listed in the National Register of Historical Places were recorded for the area (within 1 mile) around Shun Pike or Green Hill roads (State of Rhode Island 2010).

3.6.1.3 **American Indian Resources**

No American Indian concerns regarding the proposed project have been identified. DOE sent a request to the federally recognized tribe listed by the U.S. Department of Housing and Urban Development – Office of Community Planning and Development – Environmental Planning Division (one of several listings of tribes and tribal contacts), the Narragansett Indian Tribe of Rhode Island, for information they may have and are interested in sharing on properties of

traditional religious and cultural significance within the vicinity of the project site, and any comments or concerns they have on the potential for this project to affect those properties. A copy of DOE's letter is included in Appendix B. A response is pending.

3.6.2 ENVIRONMENTAL CONSEQUENCES

3.6.2.1 Proposed Project

DOE does not expect the proposed project to affect historic properties or other cultural resources. No historic properties are known to occur on the project site. There are no historic structures on the site and soils have been disturbed in the past for construction. All cultural and historical resources known to occur in Johnston are distant from the project site and would not be affected.

In the event that cultural resources (such as, human remains, lithics, pottery, or remnants of older construction) are discovered during construction of the facility, work would cease in the area of the discovery, and the Office of the State Archaeologist would be notified. A qualified archaeologist or a designated representative of the State Archaeologist, Rhode Island Historical Preservation and Heritage Commission, would evaluate any such discovery, and, in consultation with the State Historic Preservation Office and the Narragansett Indian Tribe, implement appropriate mitigation measures before construction activities would resume.

3.6.2.2 No-Action Alternative

Under the No-Action Alternative, DOE would not provide funding to RI-LFEG and the facility would not be built. No impacts to historic properties or other cultural resources would occur.

3.7 Socioeconomics

3.7.1 AFFECTED ENVIRONMENT

This section describes the existing socioeconomic conditions, including population, employment, housing, and fire protection, and medical services in Johnston, Rhode Island.

3.7.1.1 Population and Unemployment

Johnston's estimated population in 2008 was 29,523 people (U.S. Census Bureau 2010). The number of people in the workforce in Johnston during the 2006-2008 census period was 14,896. The per capita income of Johnston was \$26,240 and median household income for the city was \$70,408. Unemployment during this time was 3.8 percent, compared to nationwide unemployment of 4.1 percent.

3.7.1.2 Housing

During the 2006-2008 census period, there were 11,712 housing units in Johnston, 96.4 percent of which were occupied. Owner occupancy accounted for 74.6 percent of occupied homes,

while renter occupancy accounted for the remaining 25.4 percent (U.S. Census Bureau 2010). The median house value in the city was \$262,600, which was substantially higher than the nationwide median of \$192,400. These values may be lower today as a result of depressed housing prices across the country.

3.7.1.3 **Fire Protection and Medical Services**

There are four fire departments located within 5 miles of Johnston: North Providence Fire Department, Smithfield Fire Department, Providence Fire Department, and Cranston Fire Department. The fire departments provide fire response and emergency services and a number of other services to nearby communities.

Roger Williams Hospital is located approximately 3 miles from Johnston in Providence, Rhode Island. Both St. Joseph Health Services and Rhode Island Hospital are located approximately 4 miles from Johnston in North Providence and Providence, respectively. Roger Williams Hospital is a 220-bed facility; St. Joseph Health Services has 366 beds; and Rhode Island Hospital is a large, 719-bed facility (Hospital-Data 2010).

3.7.2 **ENVIRONMENTAL CONSEQUENCES**

3.7.2.1 **Proposed Project**

The proposed project would not induce substantial growth in the area, displace existing housing, or displace people. The proposed project would not directly or indirectly induce population growth, adversely affect population, or affect population distribution. Construction on the project is estimated to preserve or create 112 local jobs in the following labor categories: welders, steel workers, carpenters, mechanics, millwrights, electricians, heavy equipment operators, painters, and laborers. Another 341 domestic manufacturing jobs would be preserved or created in the following areas: designers, machinists, unskilled labor, welders, and millwrights. Long-term employment created through implementation of this project to maintain operation of the plant/equipment and infrastructure is estimated to be approximately 25 to 30 full-time equivalents from the local area (RI-LFGG Undated-b). The project is an extension of the existing facility; therefore, local construction workers from the existing workforce would experience short-term benefit during initial construction, while there would be negligible long-term effects on employment and housing.

The fire department and medical service providers near Johnston currently serve adjacent commercial/industrial facilities in this general area. Therefore, there would be no need to expand the training or capabilities of those organizations. The proposed project would have little or no impact on the local emergency service providers.

3.7.2.2 **No-Action Alternative**

Under the No-Action Alternative, DOE would not provide funds to RI-LFGG. Socioeconomic impacts would not occur.

3.8 Energy, Utilities, and Materials

3.8.1 AFFECTED ENVIRONMENT

This section describes the existing electric, natural gas, water, sewer, and storm water systems at the project site. RI-LFGG has not identified any materials required for construction or manufacturing operations that would be considered unique or limited resources. Therefore, this section addresses only those materials that would be used in relatively large quantities during the construction or power generation processes and that would present potential hazards to the environment or public health.

3.8.1.1 Energy Sources

RI-LFGG currently owns three generating facilities located at the Central Landfill: 12 MW Waukesha reciprocating engine plant, 2.4 MW Deutz reciprocating engine plant, and 6 MW Caterpillar reciprocating engine plant. The Waukesha and Deutz plants are directly in the path of the landfill expansion and must be decommissioned and demolished regardless of the implementation of the proposed project. In addition, both Deutz engines recently experienced catastrophic failures and are unlikely to be recommissioned.

No natural gas service is available at the project sites. Heating at the combined cycle plant location is fueled by oil, stored in above ground storage tanks at the individual business locations, or by propane also stored in above ground tanks (GZA 2008b, 2008c).

3.8.1.2 Water and Sewer

Water and sewer service are available at the site. Providence Water provides water service at the site via the Johnston Water Control Facility. Providence Water provides an average of 67 million gallons per day of water to approximately 60 percent of Rhode Island's water customers in 17 cities, including Johnston (PWSB 2010).

Wastewater for operations currently present at the proposed combined cycle plant site is discharged to onsite septic systems. Sewage generated in the vicinity of the proposed project is treated at the City of Cranston Water Pollution Control Facility. In July 2008, this facility served an estimated population of 77,000, with an average daily flow of approximately 13.2 million gallons per day. The design flow for the facility is 19.0 million gallons per day (RIDEM 2010). No wastewater is currently generated at the proposed location for the gas conditioning plant.

3.8.1.3 Storm Water System

No storm water collection systems are present at the sites. Storm water flow at the combined cycle plant location likely follows land contours, flowing approximately southwest toward the Upper Simmons Reservoir. Storm water at the gas conditioning plant location currently flows in an approximate northeast direction toward Cedar Swamp Brook.

3.8.2 ENVIRONMENTAL CONSEQUENCES

3.8.2.1 Proposed Project

This section examines potential effects to energy, utilities, and materials resulting from construction and operation of the proposed facilities and infrastructure.

3.8.2.1.1 *Energy Sources*

The proposed project would result in generation of up to 42 MW of electricity. Current generation capacity at the landfill is approximately 20.4 MW, with approximately 14.4 MW scheduled to be decommissioned to facilitate expansion of the landfill. The proposed project would therefore result in an increase in energy production capacity of approximately 21.6 MW over current production levels and 36 MW over projected production.

No natural gas systems are present at the proposed project location; therefore, no impacts to natural gas systems would result from the proposed project. The above-ground storage tanks and lines for oil and propane that heat existing structures at the proposed combined cycle plant location would be removed.

3.8.2.1.2 *Water and Sewer*

The proposed project would use approximately 630,720 gallons of water per day during operations, the bulk of which would be utilized as part of the cooling tower and steam generation processes. Both processes require makeup water, which is treated with chemicals to obtain balanced pH and oxidation, and a blowdown system to prevent accumulation of dissolved solids and chemicals used to treat the water. This is equivalent to approximately 1 percent of the total amount of water (67 million gallons per day) produced and distributed by Providence Water.

Wastewater generated by gas conditioning plant operations would flow through two existing lines to the landfill's leachate system treatment plant, and from there to the City of Cranston Water Pollution Control Facility. Disposition of wastewater from the combined cycle plant would require an approximately 100-foot connection (to be constructed in existing road easements with no stream crossings) to a landfill-owned wet well on Shun Pike that feeds a third-party-owned sewer line running under Shun Pike. From there, wastewater would be transmitted to the City of Cranston facility. Given that the Cranston facility has a capacity of 19 million gallons per day and as of July 2008 was receiving only 13.2 million gallons per day, the approximately 169,920 gallons per day of wastewater that would be generated by the proposed project would represent approximately 3 percent of the remaining capacity of the facility. Therefore, no substantial effect on the wastewater treatment plant's operations is anticipated.

The proposed project would also generate approximately 5,760 gallons per day of landfill gas condensate, which would be treated, if necessary, at the existing treatment facility at the landfill before discharge to the sewer system.

3.8.2.1.3 **Storm Water System**

No storm water system currently exists at the project locations, so no effect on such systems would result. A small detention/infiltration pond would be constructed at the gas conditioning plant location to ensure that any increase in impervious surface area would not adversely affect Cedar Swamp Brook.

3.8.2.1.4 **Hazardous Materials**

No hazardous materials would be used in the operation of the proposed landfill gas-to-energy facilities. The nitrogen oxides reduction system includes selective catalytic reduction, and ammonia injection system. Aqueous ammonia would be 19 percent ammonia solution, which is not a regulated hazardous material. The aqueous ammonia storage tank is expected to contain 12,000 gallons of the solution. The tank would be equipped with spill containment, which would be accomplished by enclosing it either in a basin or a double-walled vessel.

3.8.2.2 **No-Action Alternative**

Under the No-Action Alternative, DOE would not provide funding to RI-LFGG and the facility would not be built. No impacts to energy, utilities, or materials would occur, including any beneficial impacts. No new generation of wastewater would result, nor would new connections to the existing sewer system be put in place.

3.9 Waste

3.9.1 **AFFECTED ENVIRONMENT**

This section describes existing hazardous and solid waste conditions at the project site.

3.9.1.1 **Hazardous Waste**

Hazardous waste, as defined under the *Resource Conservation and Recovery Act*, is waste that poses substantial or potential threats to public health or the environment and, as a result, is tightly regulated from its point of generation to its point of ultimate treatment or other disposition.

Small quantities of hazardous waste are generated by existing operations at the proposed combined cycle plant location. Waste oil and other spent automotive fluids are stored in a 275-gallon above ground storage tank and in 55-gallon drums on the concrete floor in the auto maintenance area of the 40 Shun Pike building. Waste oil and spent antifreeze are also generated in small quantities by operations at 38 Shun Pike (Ocean State Thermo King), which is listed by EPA as a very small quantity generator of hazardous waste. The hazardous waste is removed from the site by a licensed removal contractor. Several other businesses previously located at the proposed combined cycle plant site are also listed, but are no longer present (GZA 2008b). No

hazardous waste would be generated by storage activities at the proposed gas conditioning plant location.

3.9.1.2 **Solid Waste**

Solid waste generated by current occupants at the proposed combined cycle plant location is stored in outdoor containers and collected by an independent solid waste removal company (GZA 2008b). No solid waste would be generated by storage activities at the proposed gas conditioning plant location.

3.9.2 **ENVIRONMENTAL CONSEQUENCES**

3.9.2.1 **Proposed Project**

Sources of potential environmental consequences would include generation of hazardous and solid waste during construction and operation of the proposed facilities and associated infrastructure.

3.9.2.1.1 **Hazardous Waste**

Equipment used during demolition and construction would generate used oil. A 200-gallon waste oil tank would be located at the site, and used oil would be removed by a licensed contractor on a monthly basis. Buildings currently located at the site were constructed during the 1980s and 1990s, and are not anticipated to contain asbestos.

The plant would use standard industrial chemicals such as:

- Lubricating oil for machinery
- Aqueous ammonia for nitrogen oxides reduction
- Paints
- Solvents
- Chemicals required for treatment of cooling tower water (pH control, corrosion control, and biocides)
- Chemicals required for reverse osmosis system
- Chemicals required for hydrogen sulfide removal system
- Chemicals required for siloxane removal system

Typical hazardous wastes generated by operations would include used lubricating oil for machinery and landfill gas condensate. Approximately 2,500 gallons of used lubricating oil would be generated annually and removed for disposal by a licensed disposal contractor at a certified treatment, storage, or disposal facility in compliance with the *Resource Conservation and Recovery Act*. Condensate would be treated at the landfill's existing facility for treating leachate prior to discharge to the sanitary sewer; this would include a total of approximately 22,000 gallons per day of primary and secondary condensate. Other wastes, including desiccant from the siloxane removal system and air compressor dryers, activated carbon from the siloxane

polishing system, wet sulfur cake generated by the hydrogen sulfide removal system, and selective catalytic reduction systems are not expected to be hazardous. Ocean State Thermo King, currently operating at the combined cycle plant location, would likely relocate and continue to operate as a very small quantity generator at another location.

3.9.2.1.2 **Solid Waste**

Demolition of existing buildings and associated infrastructure would generate approximately 3,500 cubic yards of solid waste over the life of the project. Construction activities would likely generate approximately 2,300 cubic yards of solid waste over the life of the project. Demolition and construction wastes would be deposited in the Central Landfill. As discussed in Section 2.2, the landfill receives approximately 2,500 tons of waste per day. No adverse effect on landfill operations or capacity would result from deposition of the demolition and construction waste. Because the oldest buildings to be affected were built in the mid-1980s, generation of asbestos waste is not anticipated.

3.9.2.2 **No-Action Alternative**

Under the No-Action Alternative, DOE would not provide funding to RI-LFGG and the facilities would not be constructed. No impacts to hazardous or solid wastes would occur.

3.10 The Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Council on Environmental Quality regulations that implement the procedural requirements of NEPA require consideration of the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity (40 CFR 1502.16).

Construction and operation of the facility would require short-term uses of land and other resources. Short-term use of the environment, as used here, is that used during the life of the project, whereas long-term productivity refers to the period of time after the project has been decommissioned, the equipment removed, and the land reclaimed and stabilized. The short-term use of the project site for the proposed facility would not affect the long-term productivity of the area. If it is decided at some time in the future that the project has reached its useful life, the facility and foundations could be decommissioned and removed, and the site reclaimed and revegetated to resemble pre-disturbance conditions. Alternatively, given that the project locations were previously disturbed, other land and facilities could be used for other industrial purposes.

3.11 Irreversible and Irrecoverable Commitments of Resources

The use of land as a resource to support the construction and operation of the proposed facilities and infrastructure would be irretrievable in the short-term. There would be a commitment of construction materials, such as steel and concrete, but would represent a small fraction of available materials. Some unrecyclable construction materials and the fuel for plant construction

and operation would be irreversible and irretrievable commitments of resources. DOE would also have expended the finances associated with the funding for the proposed project.

3.12 Unavoidable Adverse Impacts

Construction and operation of the proposed facility would cause unavoidable emissions of some criteria air pollutants. In addition, small quantities of wastewater and construction and demolition solid waste would be generated. Short-term adverse impacts from noise generated during demolition and construction activities would occur; however, activities would comply with all local noise ordinances.

4. CUMULATIVE IMPACTS

Council on Environmental Quality regulations stipulate that the cumulative impacts analysis in an EA consider the potential environmental impacts resulting from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions (40 CFR 1508.7). Because the impacts of the proposed project generally would be minor and localized (see Section 3), DOE focused this evaluation of cumulative impacts on activities at the project site and other past, present, and reasonably foreseeable actions on and around the site.

Conditions resulting from past and ongoing activities are included in the descriptions of the affected environment in Chapter 3 of this EA. The following sections describe reasonably foreseeable future actions (Section 4.1) and the incremental cumulative impacts of installation and operation of the proposed CHP system (Section 4.2).

4.1 Past, Present, and Reasonably Foreseeable Actions

Until the middle of the 19th century, Johnston was primarily a farming community. However, the importance of farming was replaced by manufacturing and retail trade establishments. The proposed project site is located in a commercial and light-industrial area. The site was vacant land until the mid-1980s/early to mid-1990s, when the existing buildings were constructed. The proposed project site historically had been occupied by auto repair businesses, auto body businesses, a concrete form business, a construction/wrecking company, an asbestos and lead paint abatement company, and a portable rest room business. Retail properties to the west along Shun Pike and the adjoining landfill were developed in the mid-1980s.

Current and planned development projects along Shun Pike in the vicinity of the proposed project include a bus depot, an industrial storage and maintenance garage, commercial construction business, manufacturing facility, and a construction and demolition facility. In addition, Phase VI expansion of the Central Landfill is planned to the east of Phase V.

4.2 Cumulative Impacts Summary

Short-term impacts to the affected environment, as described in Chapter 3, would occur during construction of the proposed project and include increased exhaust emissions and noise from machinery, traffic, and visual impacts at the construction site. These impacts would be temporary and best construction management practices would be used to lessen these impacts to the extent practicable. Short-term cumulative impacts to air quality, noise, traffic, and visual resources during construction could occur if the proposed project occurred simultaneously with other nearby construction projects. These impacts would be temporary and could be lessened with proper implementation of construction best management practices. The proposed project and other foreseeable projects are compatible with the commercial and light-industrial setting. DOE expects there would be no or minimal cumulative effects from these projects.

Significant long-term cumulative impacts would not result from the operation of the proposed facilities. Purchase of criteria pollutant offsets would allow the plant to operate without adverse, long-term impacts to air quality. The project's water and sewer needs are a minor fraction of available capacity. The minor beneficial impacts to wetlands and biological resources are of a very small scale. Generation of solid wastes, including hazardous wastes, would be minor in comparison to existing capacity to handle such wastes.

5. CONCLUSIONS

The construction and operation of RI-LFGG's combined cycle power generation plant would take place at the Central Landfill (owned and operated by RIRRC) in Johnston, Rhode Island. The proposed project would occupy two parcels of previously disturbed land totaling about 8.4 acres. In this EA, DOE evaluated the potential impacts of its Proposed Action of providing a financial assistance grant through the Recovery Act, RI-LFGG's proposed project, and the No-Action Alternative.

The proposed project would have the beneficial impact of recovering waste landfill gas and converting it into electricity. Because the combined cycle plant would use waste heat from the landfill gas turbines to produce steam, and thereby produce more electricity, the plant would be among the most efficient landfill gas-to-electricity plants in the world. With energy production substantially greater than under the No-Action Alternative, gas flaring would occur only intermittently, ensuring the greatest practicable benefit from collecting gas from the landfill. Air emissions from the facility would increase as a result of the proposed project, but would be offset by the benefit of generating up to 42 MW of electricity and the fact that the landfill gas would be used for energy production. There would be no increase in greenhouse gas emissions; in fact, there would be a net decrease because the plant would use landfill gas that would otherwise be released to the atmosphere or flared.

The proposed project would not use, nor discharge wastewater to, surface water or groundwater. Wastewater would be transmitted to and processed at the wastewater treatment facility at Cranston, Rhode Island. Projected wastewater generated by the proposed project would represent less than 2 percent of the treatment facility's unutilized capacity. None of the proposed construction activities would occur in a 100-year floodplain, and the proposed project would not disturb existing wetlands within the plant boundary.

The proposed project includes some rehabilitation of the edge of the wetlands associated with Upper Simmons Reservoir to address minor impacts that resulted from past commercial and light industrial operations located at the proposed combined cycle plant site. No other effects on wetlands or biological resources are anticipated. Similarly, the proposed project would not affect cultural resources.

During construction of the proposed project, construction- and demolition-related debris would be generated, including wood, metal, asphalt, and concrete. Most of these waste materials would be sent to the Central Landfill for disposal. Hazardous waste generation would be minor, and RI-LFGG would send all hazardous waste to a certified treatment, storage, or disposal facility in compliance with the *Resource Conservation and Recovery Act*.

The proposed project would have the beneficial impact of creating new direct and indirect jobs during construction and operations, aiding in the retention of jobs in a critical manufacturing process, and stimulating the economic base of the community. Because members of the

community's existing labor force would likely fill the new jobs, there would be no adverse impacts to the existing infrastructure or social services.

6. REFERENCES

Ecotones. 2008, November 3. Letter report to GZA GeoEnvironmental, Inc.: RE: Revised Freshwater Wetlands Letter of Findings Shun Pike Site-wide LFG Collection Main, Johnston, RI.

EPA (U.S. Environmental Protection Agency). 1994. EPA Superfund Record of Decision: Central Landfill Site, Johnston, RI, 6/17/1994. EPA/ROD/RO1-94-088. U.S. Environmental Protection Agency, Boston, Massachusetts.

EPA (U.S. Environmental Protection Agency). 2005. Declaration for the Explanation of Significant Differences, Central Landfill Superfund Site, Operable Unit 1. U.S. Environmental Protection Agency, Office of Site Remediation and Restoration, Boston, Massachusetts.

EPA (U.S. Environmental Protection Agency). 2008. Second Five-Year Review Report for the Central Landfill Superfund Site, Johnston, Providence County, Rhode Island 02919. U.S. Environmental Protection Agency, Boston, Massachusetts.

FEMA (Federal Emergency Management Agency). 2009a. Flood Insurance Rate Map, Providence County, Rhode Island (All Jurisdictions), Panel 292 of 451, Map Number 44007C0292G. Federal Emergency Management Agency, National Flood Insurance Program.

FEMA (Federal Emergency Management Agency). 2009b. Flood Insurance Rate Map, Providence County, Rhode Island (All Jurisdictions), Panel 295 of 451, Map Number 44007C0295G. Federal Emergency Management Agency, National Flood Insurance Program.

GZA (GZA GeoEnvironmental, Inc.). 2007. Air Pollution Control Permit Application for Proposed Landfill Gas-Fired Combustion Turbine Combined Cycle Power Plant, Rhode Island Central Genco, LLC., Johnston, Rhode Island.

GZA (GZA GeoEnvironmental, Inc.). 2008a. Addendum to Air Pollution Control Permit Application for Proposed Landfill Gas-Fired Combustion Turbine Combined Cycle Power Plant, Rhode Island Central Genco, LLC., Johnston, Rhode Island.

GZA (GZA GeoEnvironmental, Inc.). 2008b. Phase I Environmental Site Assessment, 36-42 Shun Pike, Johnston, Rhode Island. GZA GeoEnvironmental, Inc., Providence, Rhode Island.

GZA (GZA GeoEnvironmental, Inc.). 2008c. Phase I Environmental Site Assessment, 73-75 Shun Pike, Johnston, Rhode Island. GZA GeoEnvironmental, Inc., Providence, Rhode Island.

GZA (GZA GeoEnvironmental, Inc.). 2009. Wetlands permit.

GZA (GZA GeoEnvironmental, Inc.). 2010. Response to comments. Freshwater Wetlands Program. Rhode Island Department of Environmental Management. Letter dated January 26, 2010.

Hospital Data. 2010. Data for hospitals near Johnston, RI. Available at <http://www.hospital-data.com/hospitals/ROGER-WILLIAMS-HOSPITAL-PROVIDENCE.html>;

<http://www.hospital-data.com/hospitals/ST-JOSEPH-HEALTH-SERVICES-OF-RI-NORT693.html>; and <http://www.hospital-data.com/hospitals/RHODE-ISLAND-HOSPITAL-PROVIDENCE.html>. Accessed March 16, 2010.

Hurd, B. 2004. *History of the State of Rhode Island with Illustrations*. Available at <http://www.rilin.state.ri.us/RhodeIslandHistory>. Accessed March 24, 2010.

IPCC (Intergovernmental Panel on Climate Change). 2007. *Climate Change 2007: Synthesis Report*.

Narragansett Indian Tribe. 2009. *Historical Perspective of the Narragansett Indian Tribe*. Available at <http://www.narragansett-tribe.org/history.html>. Accessed March 26, 2010.

Natural Heritage Program. 2010. *State listed – Species Rhode Island Natural Heritage Program*. Available at <http://www.dem.ri.gov/programs/bpoladm/plandev/heritage/>. Accessed March 8, 2010.

PARE Corporation. 2009. *Cedar Swamp Brook Relocation*. Available at <http://www.parecorp.com/Portfolio/Wetlands+Permitting/Cedar-Swamp-Brook-Relocation>. Accessed May 8, 2010.

PWSB (Providence Water Supply Board). 2010. *Providence Water Supply Board – Introduction*. Available at <http://www.provwater.com/introduction.htm>. Accessed April 12, 2010.

RIAC (Rhode Island Airport Corporation). 2009. *Proposed Amendments to the Air Quality Monitoring Work Plan for T.F. Green Airport, September 28, 2009. Appendix*.

RIDEM (Rhode Island Department of Environmental Management). 2008. *Office of Compliance & Inspection. August 2008 Enforcement Action Summary*. Available at <http://www.dem.ri.gov/programs/benviron/compinsp/enfact/aug2008.htm>. Accessed May 6, 2010.

RIDEM (Rhode Island Department of Environmental Management). 2009. *Major Source Permit, Rhode Island Central Genco, LLC, RI-PSD-8*.

RIDEM (Rhode Island Department of Environmental Management). 2010. *Board of Certification of Operators of Wastewater Treatment Facilities, Wastewater Treatment Facilities/Locations and Officials In Charge*. State of Rhode Island Department of Environmental Management, Office of Water Resources. Available at <http://www.dem.ri.gov/programs/benviron/water/permits/wtf/potwops.htm>. Accessed April 12, 2010.

RI-LFGG (Rhode Island LFG Genco, LLC). Undated-a. *Environmental Questionnaire*.

RI-LFGG (Rhode Island LFG Genco, LLC). Undated-b. *Project Narrative*.

Solomon, N (Ridgewood Power Management). 2010, March 22. "Johnston Project - Questions" Email to J. Weckerle (JAD Environmental, LLC).

State of Rhode Island. 2010. State of Rhode Island, Historic Property Search. Historical Preservation and Heritage Commission. Rhode Island National Register Search- Johnston. Available at <http://www.ri.gov/preservation/search/search.php?town=JONS&streetname=&name1=&style=&hfunc=&cfunc=&x=36&y=16> Accessed March 24, 2010.

U.S. Census Bureau. 2010. Johnston, RI census information. Available at http://factfinder.census.gov/servlet/ACSSAFFacts?_event=Search&geo_id=&_geoContext=&_street=&_county=Johnston&_cityTown=Johnston&_state=04000US44&_zip=&_lang=en&_sse=on&pctxt=fph&pgsl=010. Accessed March 15, 2010.

USACE (U.S. Army Corps of Engineers). 1987. Wetland Delineation Manual. Available at <http://www.wetlands.com/regs/tlpge02e.htm>. Accessed November 25, 2008.

USFWS (U.S. Fish and Wildlife Service). 1988. *Endangered Species Act* of 1973, as amended though the 100th Congress. U.S. Department of the Interior. Washington, D.C.

USFWS (U.S. Fish and Wildlife Service). 2010a. Species listed in Rhode Island based on published historic range and population. Available at http://ecos.fws.gov/tess_public/pub/stateListingIndividual.jsp?state=RI&status=listed. Accessed March 3, 2010.

USFWS (U.S. Fish and Wildlife Service). 2010b. "National Wetlands Inventory, Wetlands Mapper." Available at <http://www.fws.gov/wetlands/> Accessed November 6, 2009.

APPENDIX A. DISTRIBUTION LIST

This appendix contains the list of persons and agencies who received a copy of this environmental assessment.

State and Local Offices

Jared Rhodes, II
Chief, Statewide Planning
One Capitol Hill
Providence, RI 02908-5870

Michael Sullivan
Director
Department of Environmental Management
235 Promenade Street
Providence, RI 02908

Jeffery Emidy
Rhode Island Historical Preservation &
Heritage Commission
Old State House
150 Benefit Street
Providence, RI, 02903

Federal Offices

Anthony Tur
U.S. Fish and Wildlife Service- Northeast
Region
70 Commercial St., Ste 300
Concord, NH 03301-5087

American Indian Tribes

Matthew Thomas, Chief Sachem
Narragansett Indian Tribe of Rhode Island
P.O. Box 268
Charlestown, RI 02813

Other Interested Parties

Michael O'Connell
Executive Director
Rhode Island Resource Recovery
Corporation
65 Shun Pike
Johnston, RI 02919

APPENDIX B. CONSULTATIONS

This appendix contains consultation correspondence between DOE and the U.S. Fish and Wildlife Service, Office of Historic Preservation, and the Narragansett Indian Tribe. NOTE: The attachments containing the proposed project location and the location of site utilities were identical in all three letters and are included here only with the letter sent to the U.S. Fish and Wildlife Service.



NATIONAL ENERGY TECHNOLOGY LABORATORY
Advanced Energy Research and Development



April 13, 2010

Anthony Tur
U.S. Fish and Wildlife Service- Northeast Region
70 Commercial St., Ste 300
Concord, NH 03301-5087

Dear Mr. Tur:

SUBJECT: U.S. Department of Energy Conclusion of No Impacts for the Proposed Rhode Island LFG Genco Combined Cycle Electricity Generation Plant Fueled by Landfill Gas in Johnston, Rhode Island

The U.S. Department of Energy's (DOE or the Department) Proposed Action would provide a financial assistance grant under the *American Recovery and Reinvestment Act of 2009* (Recovery Act; Public Law 111 5, 123 Stat. 115) to Rhode Island LFG Genco, LLC (RI-LFGG). RI-LFGG proposes to construct a landfill gas-to-energy facility in Johnston, Rhode Island. If funded, RI-LFGG, in cooperation with the Rhode Island Resource Recovery Corporation (RIRRC), would construct and operate a landfill gas recovery and treatment plant (gas conditioning plant), a 42-megawatt landfill gas-to-electric generating power plant [combined cycle plant (CCP)], landfill gas transmission lines with three stream crossings, and electrical transmission lines connecting the new CCP to nearby existing transmission lines at the Central Landfill at Johnston, Rhode Island. Attachment 1 shows the location of the proposed project.

This letter announces the Department's intent to use the *National Environmental Policy Act* (NEPA) process to comply with the provisions of NEPA (42 U.S.C. 4321 et seq.), Council on Environmental Quality regulations (40 CFR Parts 1500 to 1508), and DOE NEPA implementing procedures (10 CFR Part 1021). The Department's National Energy Technology Laboratory is preparing an environmental assessment (EA) to meet these requirements. A copy of this EA will be sent to your office later this year.

Project Location and Description: RIRRC is the owner of the Central Landfill, and RI-LFGG is the owner of the gas rights for the existing waste cells. The proposed gas conditioning plant would treat the landfill gas and prepare it for transport to the existing destructive devices and the proposed CCP. The gas conditioning plant would be located on the north side of Shun Pike, where two large metal storage buildings and an impermeable parking area make up the existing site. The CCP would incorporate turbines filled with landfill gas to generate a portion of the 42 megawatts of electricity and is anticipated to be the most efficient and lowest emissions landfill

3510 Collins Ferry Road, P.O. Box 690, Morgantown, WV 26507

gas-to-electric generating plant in the world. Excess heat generated by the turbines would be harnessed to generate steam and produce additional electricity. The CCP would be located on the south side of Shun Pike near the main entrance to the Central landfill. As part of the expansion project, three new gas transmission lines (Attachments 2 and 3) would be constructed as well as electrical transmission lines. The power plant would be connected to the New England Power transmission system by constructing two 115-kilovolt taps to loop transmission line S171S through the switchyard, which is located approximately 2,600 feet from the right-of-way. The switchyard would occupy an area of about 200 feet by 200 feet within RIRRC-owned property (Attachment 3). Construction of the transmission lines would require installation of eight poles between the plant and the existing national grid transmission corridor and an additional four structures in the same transmission corridor. Construction of the interconnection facilities is necessary to connect the power plant to the transmission grid. A 100-foot line connecting the CCP to the existing sewer system would also be installed along Shun Pike. The exact position of the lines would be determined during final design, but the line would be located within the previously disturbed right-of-way.

Listed species: To comply with Section 7(a)(2) of the *Endangered Species Act*, DOE obtained from the U.S. Fish and Wildlife Service's (USFWS) Northeast Regional website (http://www.fws.gov/northeast/endangered/endangered_species_listing.html) a list of federally listed threatened, endangered, proposed, and candidate species that occur within Rhode Island and potentially near the proposed project site. The list includes five vertebrate, two invertebrate, and two plant species, as follows respectively:

- Eskimo curlew (*Numenius borealis*)
- Piping plover (*Charadrius melodus*)
- Roseate tern (*Sterna dougalli dougalli*)
- Gray wolf (*Canis lupus*)
- Eastern puma (*Puma concolor cougar*)
- American burying beetle (*Nicrophorus americanus*)
- Northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*)
- Sandplain gerardia (*Agalinis acuta*)
- Small whorled pogonia (*Isotria medeoloides*)

DOE concludes that the construction and operation of the proposed landfill gas and recovery project facility in Johnston, Rhode Island, would have no impact on federally listed species or habitats for the following reasons: (1) no rare, threatened, or endangered species or natural communities of concern are known to occur in near the project site, and (2) the project would be constructed within an area that is already a disturbed industrial area.

Wetlands: The proposed facilities would be on RIRRC-owned property and in proximity to freshwater wetlands (Attachment 2). The gas conditioning plant would be located within the 200-foot riverbank buffer for Cedar Swamp Brook, but outside the 50-foot perimeter wetlands except for a storm water outlet. A wetlands application has been submitted to Rhode Island

Department of Environmental Management (RIDEM, No. 08-0356) for expansion of a landfill gas-to-energy facility at the Central Landfill. This area has been subject to historical dumping of mixed construction and demolition debris, and as part of the proposed project, selected areas of the site would be restored as a riverbank wetland. The proposed wetlands area to be restored is located along the southern boundary of the proposed power plant site, adjacent to Upper Simmons Reservoir. No disturbance of existing wetlands is proposed.

The proposed CCP location and footprint are designed to remain outside of the areas regulated under the *Freshwater Wetlands Act*. However, a portion of the property, itself, lies within the 50-foot perimeter buffer associated with the Upper Simmons Reservoir. Initial review comments received from the RIDEM on January 22, 2010, on the submitted wetlands permit application noted concern about the encroachments of the gas conditioning facility's footprint into the vegetated sections of the southern created/replanted Cedar Swamp Brook riverbank wetlands. DOE understands that the intent of this requirement was to create and maintain a wildlife migration corridor in this otherwise industrialized area. The facility site design has been significantly revised as much as possible to reduce encroachment into the migration corridor. As suggested by RIDEM, additional enhancements would be added to portions of the wetlands area to enhance its effectiveness as a wildlife migration corridor and habitat value. These enhancements would take the form of groupings of berry-producing shrubs and bushes to increase vegetation density and provide improved habitat for wildlife.

Three stream crossings are required for the three proposed gas transmission lines and all would occur within the existing roadway crossings and not require dedicated bridges. The steel high-pressure line that would allow the CCP to treat landfill gas from various landfill phases would be constructed along the northern shoulder of Shun Pike within the road right-of-way. Two stream crossings are required, one over Cedar Swamp Brook and one over the outfall of Sedimentation Pond No. 2. A small portion of the proposed pipeline is also within the 50-foot buffer of wetlands associated with the Upper Simmons Reservoir. The transmission line that would run from the proposed gas conditioning plant to the Stage 2 power plant would be constructed within the shoulder of the existing gravel maintenance road. The entire transmission line would be within the 200-foot riverbank wetlands buffer of Cedar Swamp Brook. Finally, the twin lines that would allow for the collection and treatment of the landfill gas would also be constructed within the shoulder of an existing dirt access road. The lines would lie within the 200-foot wetlands buffer of Cedar Swamp Brook and would require one crossing. Based on the location of the gas transmission lines within existing road rights-of-way, the proposed lines constitute an insignificant alteration and pose no impacts to regulatory wetlands.

DOE plans to solicit public comments during a 15-day public comment period, advertise the availability of the Draft EA in a local newspaper of record, and place the Draft EA in a local library(s). DOE will include your office in the distribution of the Draft EA. Any correspondence from your office will be reproduced in the appendix of the Final EA and will incorporate any specific comments you may have on the Draft EA. Should you have any questions or require clarification, please contact me at the following:

Mr. Mark Lusk
U.S. Department of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road
P. O. Box 880, MS B07
Morgantown, WV 26507-0880
Telephone: (304) 285-4145
Email: Mark.Lusk@netl.doe.gov

Thank you for taking the time to review this letter. Since this is a Recovery Act project, selected on its technical merits and to assist with the Nation's economic recovery, we would appreciate a quick response to our request for consultation. If you have any questions or require clarification, please contact me at (304) 285-4145 or at mark.lusk@netl.doe.gov.

Thank you in advance for your consideration. DOE looks forward to working with you on this and future projects.

Sincerely,

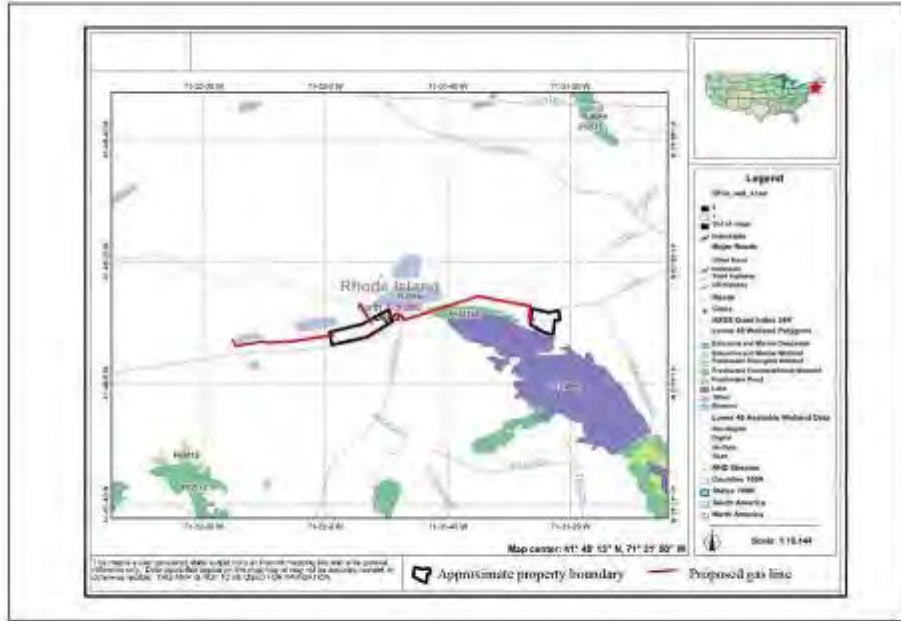


Mark W. Lusk
NEPA Document Manager

Enclosed:

- Attachment 1: Map of the project location
- Attachment 2: USFWS Wetlands Inventory Map
- Attachment 3: Location of site utilities





Attachment 2. Wetlands inventory map.



Attachment 3. Location of site utilities.



NATIONAL ENERGY TECHNOLOGY LABORATORY
A Division of the U.S. Department of Energy



April 13, 2010

Jeffery Emidy
Rhode Island Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI, 02903

Dear Mr. Emidy:

SUBJECT: Consultation for U.S. Department of Energy's Proposed Funding for the Rhode Island LFG Genco Combined Cycle Electricity Generation Plant Fueled by Landfill Gas in Johnston, Rhode Island

The U.S. Department of Energy (DOE) is proposing to provide funding under the *American Recovery and Reinvestment Act of 2009* (Recovery Act, Public Law 111 5, 123 Stat. 115) to Rhode Island LFG Genco, LLC (RI-LFGG) for construction of a landfill gas-to-energy facility in Johnston, Rhode Island. If funded, RI-LFGG, in cooperation with the Rhode Island Resource Recovery Corporation (RIRRC), would construct and operate a landfill gas recovery and treatment plant (gas conditioning plant), a 42-megawatt landfill gas-to-electric generating power plant (Combined Cycle Plant [CCP]), landfill gas transmission lines with three stream crossings, and electrical transmission lines connecting the new CCP to nearby existing transmission lines at the Central Landfill at Johnston, Rhode Island. Attachment 1 provides a summary of information that is typically required for Section 106 reviews under the *National Historic Preservation Act*. The attached Figures 1 and 2 provide supporting information, including the project location and location of proposed facilities, gas pipelines, and electrical transmission lines.

Based on DOE's analysis and as documented in this letter and its attachments, DOE has determined that no historic properties would be affected by this proposed project. In compliance with 36 CFR Part 800.4(d) (1), the Department asks the Office of Historic Preservation for its concurrence of this finding. DOE's National Energy Technology Laboratory is in the process of preparing a draft environmental assessment (EA) for this project. DOE will include correspondence with your office in an appendix to the EA. DOE will send a copy of the draft EA to your office and respond to any specific comments you may have. At this time, we anticipate implementing a 15-day public comment period for this proposed project.

3610 Collins Ferry Road, P.O. Box 880, Morgantown, WV 26507

Please forward the results of your review and any requests for additional information or clarifications to Mark Lusk of the Department's National Energy Technology Laboratory using the contact information provided below:

Mr. Mark Lusk
U.S. Department of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road
P. O. Box 880, MS B07
Morgantown, WV 26507-0880
Telephone: (304) 285-4145
Email: Mark.Lusk@netl.doe.gov

Since this is a Recovery Act project, selected on its technical merits and to assist with the Nation's economic recovery, we would appreciate a quick response to our request for consultation.

Thank you for taking the time to review this letter. DOE looks forward to working with you on this and future projects.

Sincerely,



Mark W. Lusk
NEPA Document Manager

Enclosed:

Attachments:

Proposed Project Description

Figure 1 - Site Location Map

Figure 2 - Location of site utilities

**DOE'S PROPOSED FINANCIAL ASSISTANCE TO RHODE ISLAND LFG GENCO, LLC
COMBINED CYCLE ELECTRICITY GENERATION PLANT FUELED BY LANDFILL GAS IN
JOHNSTON, RHODE ISLAND**

Project Location and Description. The proposed project site at the Central Landfill in Johnston, Rhode Island is owned by Rhode Island Resource Recovery Corporation (RIRRC). The Central Landfill is located just west of I-295, approximately 5 miles west of Providence, in Providence County and receives approximately 2,500 tons of residential and commercial waste per day. The landfill occupies approximately 230 acres of the 1,200-acre RIRRC site. Two sites are proposed for the project site south (parcels 36-42) and north (parcels 73 and 75) of Shun Pike Road near the Central Landfill. The six contiguous parcels south of Shun Pike Road and the landfill cover approximately 4.6 acres of land. The south site is improved with six freestanding one-story corrugated steel buildings of slab on grade construction surrounded by pavement and unpaved areas used for parking and for the storage of equipment and materials. The second site (73 and 75 Shun Pike), covering 3.4 acres, is located off the north side of Shun Pike in a light industrial area. The north site consists of two freestanding single-story, slab on grade corrugated steel buildings surrounded by pavement and unpaved areas. Each building has a footprint of approximately 4,000 square feet. Exterior portions of the Site are used for the storage of construction equipment and other materials.

Rhode Island LFG Genco, LLC (RI-LFGG) owns the gas rights for the existing waste cells at the Central Landfill. The proposed gas conditioning plant would treat the landfill gas and prepare it for transport to the existing destructive devices and the proposed Combined Cycle Plant (CCP). The gas conditioning plant would be located on the north side of Shun Pike, where two large metal storage buildings and an impermeable parking area make up the existing site. The CCP incorporates turbines fueled with landfill gas to generate a portion of the 42 megawatts and is anticipated to be the most efficient and lowest emissions landfill gas-to-electric generating plant in the world. Excess heat generated by the turbines would be harnessed to generate steam and produce additional electricity. The CCP would be located on the south side of Shun Pike near the main entrance to the Central landfill. As part of the expansion project, three new gas transmission lines would be constructed as well as electrical transmission lines (Attachment 2). The power plant would be connected to the New England Power transmission system by constructing two 115-kilovolt taps to loop transmission line 5171S through the switchyard, which is located approximately 2,600 feet from the right-of-way. The switchyard would occupy an area of about 200 feet by 200 feet within RIRRC-owned property. Construction of the transmission lines would require installation of eight poles between the plant and the existing national grid transmission corridor and an additional four structures in the same transmission corridor. Construction of the interconnection facilities is necessary to connect the power plant to the transmission grid. A 100-foot line connecting the CCP to the existing sewer system would also be installed along Shun Pike. The exact position of the lines would be determined during final design, but the line would be located within the previously disturbed right-of-way.

Area of Potential Effect. The Area of Potential Effect (APE) for the proposed undertaking would be the 4.6 acres south of Shun Pike Road and the 3.4 acres north of Shun Pike Road and the linear area along the alignments for utilities. The potential for the project to cause direct and indirect effects on historical, archaeological, or paleontological resources is negligible for the following reasons:

- The proposed facility is partially located on property developed in the 1980s and occupied by auto repair businesses, auto body businesses, and a concrete form business. The other portion of

the facility north of Shun Pike Road was developed in the 1990s when the two existing buildings were constructed and initially occupied by a construction/wrecking company and, an asbestos and lead paint abatement company.

- Construction activities would be located on the properties where buildings currently occur and the gas transmission lines would be constructed within the shoulders of the existing roads except where they cross the Cedar Swamp Brook.
- The property records of the State of Rhode Island Historic Preservation and Heritage Commission were searched for the area proposed for the construction of the property. No registered historic properties were located in the vicinity of the proposed project site.
- The transmission line construction crew shall be given standard instructions to stop work in the unlikely event of a resource or human remains discovery and seek guidance from Ridgewood Renewable Power, LLC.

DOE Determination of No Potential Effect. To comply with Section 106 of the National Historic Preservation Act, DOE has evaluated the potential impacts of this proposed project and determined that no historic properties would be affected.



NATIONAL ENERGY TECHNOLOGY LABORATORY
ADVANCING ENERGY EFFICIENCY • BUILDING THE FUTURE



April 13, 2010

Matthew Thomas, Chief Sachem
Narragansett Indian Tribe of Rhode Island
P.O. Box 268
Charlestown, RI 02813

Dear Mr. Thomas:

SUBJECT: Consultation for U.S. Department of Energy's Proposed Funding for the Rhode Island LFG Genco Combined Cycle Electricity Generation Plant Fueled by Landfill Gas in Johnston, Rhode Island

The U.S. Department of Energy (DOE or the Department) is proposing to provide a financial assistance grant under the *American Recovery and Reinvestment Act of 2009* (Recovery Act; Public Law 111 5, 123 Stat. 115) to Rhode Island LFG Genco, LLC (RI-LFGG). RI-LFGG proposes to construct a landfill gas-to-energy facility in Johnston, Rhode Island. If funded, RI-LFGG, in cooperation with the Rhode Island Resource Recovery Corporation (RIRRC), would construct and operate a landfill gas recovery and treatment plant (gas conditioning plant), a 42-megawatt landfill gas-to-electric generating power plant [combined cycle plant (CCP)], landfill gas transmission lines with three stream crossings, and electrical transmission lines connecting the new CCP to nearby existing transmission lines at the Central Landfill at Johnston, Rhode Island. Attachment 1 shows the location of the proposed project.

Project Location and Description: RIRRC is the owner of the Central Landfill, and RI-LFGG is the owner of the gas rights for the existing waste cells. The proposed gas conditioning plant would treat the landfill gas and prepare it for transport to the existing destructive devices and the proposed CCP. The gas conditioning plant would be located on the north side of Shun Pike, where two large metal storage buildings and an impermeable parking area make up the existing site. The CCP incorporates turbines filled with landfill gas to generate a portion of the 42 megawatts and is anticipated to be the most efficient and lowest emissions landfill gas-to-electric generating plant in the world. Excess heat generated by the turbines would be harnessed to generate steam and produce additional electricity. The CCP would be located on the south side of Shun Pike near the main entrance to the Central Landfill. As part of the expansion project, three new gas transmission lines would be constructed as well as electrical transmission lines (Attachment 2). The power plant would be connected to the New England Power transmission system by constructing two 115-kilovolt taps to loop transmission line S171S through the

3610 Collins Ferry Road, P.O. Box 880, Morgantown, WV 26507

switchyard, which is located approximately 2,600 feet from the right-of-way. The switchyard would occupy an area of about 200 feet by 200 feet within RIRRC-owned property.

Construction of the transmission lines would require installation of eight poles between the plant and the existing national grid transmission corridor and an additional four structures in the same transmission corridor. Construction of the interconnection facilities is necessary to connect the power plant to the transmission grid.

Three stream crossings are required for three proposed gas transmission lines and all would occur within the existing roadway crossings and not require dedicated bridges. The steel high-pressure line that would allow the CCP to treat landfill gas from various landfill phases would be constructed along the northern shoulder of Shun Pike within the road right-of-way. Two of the three stream crossings are required for this line, one over Cedar Swamp Brook and one over the outfall of Sedimentation Pond No. 2. A small portion of the proposed pipeline is also within the 50-foot buffer of wetlands associated with the Upper Simmons Reservoir. The transmission line that would run from the proposed gas conditioning plant to the Stage 2 power plant would be constructed within the shoulder of the existing gravel maintenance road. The entire transmission line would be within the 200-foot riverbank wetlands buffer of Cedar Swamp Brook. Finally, the twin lines that would allow for the collection and treatment of the landfill gas would also be constructed within the shoulder of an existing dirt access road. The lines would lie within the 200-foot wetlands buffer of Cedar Swamp Brook and would require one crossing.

A 100-foot line connecting the CCP to the existing sewer system would also be installed along Shun Pike. The exact position of the lines would be determined during final design, but the line would be located within the previously disturbed right-of-way. No stream crossings would be required.

DOE has no reason to believe the proposed project would cause any impacts to tribal resources or artifacts since the site has previously been disturbed and several buildings are in current use on the property. All crossings or encroachments of streams or other sensitive features would occur within existing rights-of-way, and appropriate measures would be taken to minimize potential impacts. The Department's National Energy Technology Laboratory is preparing an environmental assessment (EA) for this project to meet the requirements of the *National Environmental Policy Act*. A copy of this EA will be sent to you for your review and comment.

DOE is initiating consultation and requesting information your tribe may have on properties of traditional, religious, and cultural significance near the proposed project and any comments or concerns you have on the potential for this project to affect these properties. This information is being requested to aid in the preparation of the environmental assessment and to meet DOE's obligations under Section 106 of the *National Historic Preservation Act* and the *Native American Graves Protection and Repatriation Act of 1990*. If you have such information, require additional information, or have any questions or comments about this project, please contact me at the following:

Mr. Mark Lusk
U.S. Department of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road
P. O. Box 880, MS B07
Morgantown, WV 26507-0880
Telephone: (304) 285-4145
Email: Mark.Lusk@netl.doe.gov

Since this is a Recovery Act project selected on its technical merits and to assist with the nation's economic recovery, we would appreciate a quick response to our request for consultation.

Thank you for taking the time to review this letter. DOE looks forward to working with you on this and future projects.

Sincerely,



Mark Lusk
NEPA Document Manager

Enclosed:

- Attachment 1: Map of the project location
- Attachment 2: Location of site utilities



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
<http://www.fws.gov/newengland>



May 19, 2010

Reference: Project Location
Landfill gas-to-electric generating power plant Johnston, RI

Mark Lusk
U.S. Dept. of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road
P.O. Box 880, MS B07
Morgantown, WV 26507-0880

Dear Mr. Lusk:

This responds to your recent correspondence requesting information on the presence of federally-listed and/or proposed endangered or threatened species in relation to the proposed activity(ies) referenced above.

Based on information currently available to us, no federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required.

This concludes our review of listed species and critical habitat in the project location(s) and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

In order to curtail the need to contact this office in the future for updated lists of federally-listed or proposed threatened or endangered species and critical habitats, please visit the Endangered Species Consultation page on the New England Field Office's website:

www.fws.gov/newengland/endangeredspec-consultation.htm

In addition, there is a link to procedures that may allow you to conclude if habitat for a listed species is present in the project area. If no habitat exists, then no federally-listed species are present in the

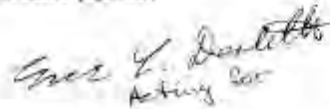
Mark Lusk
May 19, 2010

2

project area and there is no need to contact us for further consultation. If the above conclusion cannot be reached, further consultation with this office is advised. Information describing the nature and location of the proposed activity that should be provided to us for further informal consultation can be found at the above-referenced site.

Thank you for your coordination. Please contact Anthony Tur at 603-223-2541 if we can be of further assistance.

Sincerely yours,



Thomas R. Chapman
Acting Sor

Thomas R. Chapman
Supervisor
New England Field Office



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
HISTORICAL PRESERVATION & HERITAGE COMMISSION

Old State House • 150 Benefit Street • Providence, R.I. 02903-4209

TEL (401) 222-2678 FAX (401) 222-2968
TTY (401) 222-3700 Website: www.preservation.ri.gov

12 April 2010

Mark Lusk
U.S. Department of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road
P.O. Box 880, MS B07
Morgantown, West Virginia 26507-0880

RE: Rhode Island LFG Genco Combined Cycle Electricity Generation Plant
Central Landfill
73 and 75 Shun Pike
Johnston, Rhode Island

Dear Mr. Lusk:

The Rhode Island Historical Preservation and Heritage Commission has reviewed the information that you provided regarding the above-referenced project. The project proposes to construct a gas conditioning plant to treat landfill gas and prepare it for use at a proposed Combined Cycle Plant (CCP). The CCP converts the gas to electricity, which will then be fed to existing electrical lines via a proposed switchyard connected to the existing S171S transmission line by approximately 2,600 feet of new transmission lines.

Based on the information that was submitted, it is our conclusion that the proposed project will have no effect on historic resources – those listed in or eligible for listing in the National Register of Historic Places. Therefore, we have no objections to the project as proposed.

These comments are provided in accordance with Section 106 of the National Historic Preservation Act. If you have any questions please contact Jeffrey Emdin, Project Review Coordinator of this office.

Very truly yours,

For Edward Sanderson
Executive Director
Deputy State Historic Preservation Officer

1004121896

**FINDING OF NO SIGNIFICANT IMPACT
FOR THE
RHODE ISLAND LFG GENCO, LLC COMBINED CYCLE ELECTRICITY
GENERATION PLANT FUELED BY LANDFILL GAS
JOHNSTON, RHODE ISLAND**

RESPONSIBLE AGENCY: U.S. Department of Energy (DOE)

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: DOE completed the *Final Environmental Assessment for the Rhode Island LFG Genco, LLC Combined Cycle Electricity Generation Plant Fueled by Landfill Gas, Johnston, Rhode Island* (DOE/EA-1742). Based on the analyses in the Environmental Assessment (EA), DOE determined that its proposed action – awarding a federal grant to Rhode Island LFG Genco, LLC (RI-LFGG) to facilitate expansion of an existing landfill gas collection system and construction and operation of a combined cycle landfill gas-to-electricity generating plant – would result in no significant adverse impacts. DOE further determined that the proposed project would have potential beneficial impacts to the nation’s energy efficiency and local air quality. Additionally, beneficial local socioeconomic impacts could occur as a result of increased employment opportunities and spending in the project area.

BACKGROUND: As part of the *American Recovery and Reinvestment Act of 2009* (Recovery Act; Public Law 111-5, 123 Stat. 115), DOE’s National Energy Technology Laboratory (NETL), on behalf of the Office of Energy Efficiency and Renewable Energy’s Industrial Technologies Program, is providing up to \$156 million in federal funding for competitively awarded agreements to facilitate the deployment of district energy systems, combined heat and power systems, waste energy recovery systems, and energy-efficient industrial equipment and processes at single or multiple installations and sites.

The federal action of providing funding for these Industrial Technologies Program projects requires compliance with the *National Environmental Policy Act of 1969* (NEPA; 42 U.S.C. 4321 et seq.), the Council on Environmental Quality regulations (40 CFR Parts 1500 to 1508) and DOE’s NEPA implementing procedures (10 CFR Part 1021). DOE prepared an EA to evaluate the potential environmental consequences of providing a grant for this proposed project under the Industrial Technologies Program.

PURPOSE AND NEED: The overall purpose and need for DOE action pursuant to the Industrial Technologies Program and the funding opportunity under the Recovery Act is to set up U.S. industry as the world leader in energy efficiency and productivity. The program’s goal is to facilitate a 25-percent reduction in industrial energy intensity by 2017. The Industrial Technologies Program’s three-part strategy intends to achieve this objective by:

- Sponsoring research, development, and demonstration of industry-specific and crosscutting technologies to reduce energy and carbon intensity;
- Conducting technology delivery activities to help plants access today’s technology and management practices; and

- Promoting a culture of energy efficiency and carbon management within industry.

The strategy also calls for an 18-percent reduction in U.S. carbon intensity by 2012. DOE seeks to identify projects and suitable technologies that it can fund to meet this goal. RI-LFGG's proposed project in Johnston, Rhode Island, would also contribute to the nation's economic recovery by creating or helping to retain manufacturing jobs in the United States in accordance with the objectives of the Recovery Act.

DESCRIPTION OF THE PROPOSED ACTION: DOE's proposed action is to provide a grant to partially fund RI-LFGG's proposed project – expansion of an existing landfill gas collection system and construction and operation of a combined cycle (gas turbine and steam turbine) landfill gas-to-electricity generating plant. The project would include: (1) removal of several metal buildings from a previously developed commercial site; (2) construction of a combined cycle power generation plant at that site; (3) reuse of two existing buildings as a gas conditioning plant to remove impurities from the gas prior to use to produce electricity; (4) upgrade/expansion of the landfill gas collection system; and (5) production of steam and electricity from gas generated by the landfill. DOE would provide a \$15 million financial assistance grant in a cost-sharing arrangement in order to facilitate construction and operation of the project. The cost of the project is estimated at \$100 million.

ALTERNATIVES CONSIDERED: In addition to the Proposed Action, DOE considered the No-Action Alternative as required under NEPA. Under the No-Action Alternative, DOE would not provide funds for the proposed project. For the purposes of the EA, DOE assumed that the project would not proceed without DOE funding. This assumption established a baseline against which the potential environmental impacts of the proposed project were compared.

ENVIRONMENTAL CONSEQUENCES: DOE evaluated the potential environmental consequences of the proposed project and the No-Action Alternative. DOE considered 14 environmental resource areas in the EA. However, not all areas were evaluated at the same level of detail. For five of the resource areas, DOE determined there would be no impacts or the potential impacts would be small, temporary, or both, and therefore did not carry these areas forward for additional analysis. DOE focused its more detailed analyses on those resources that could require new or amended permits, have the potential for significant impacts or controversy, or interest the public. These resource areas included: air quality; noise; aesthetics and visual resources; water resources; biological resources; cultural resources; socioeconomics; energy, utilities, and materials; and waste.

The proposed project would be operated in a nonattainment area for ozone. More than 56.9 tons of sulfur oxides, 162 tons of nitrogen oxides, 42 tons of volatile organic compounds, 44 tons of particulate matter, 706 tons of carbon monoxide, 0.6 tons of hydrogen sulfide, and 4.1 tons of hydrochloric acid would be emitted per year during operation of the facility. The Rhode Island Department of Environmental Management approved an application for a major source permit for installation of a landfill gas fired combustion turbine and combined cycle power plant at the existing landfill in 2009. DOE concludes that operation of the system would conform to the State's implementation plan and would be in compliance with federal and Rhode Island air quality regulations. As required, air emissions credits would be purchased to offset any emissions resulting from power generation at the proposed facility.

The proposed project would have a net beneficial impact on air quality in the region, as operation of the new system would convert a nuisance (landfill gas) into a resource (energy). By using over 66,000 tons per year of methane from the landfill gas, the project would generate carbon dioxide equivalent reductions of greater than 1.4 million tons annually. Additionally, an indirect benefit would be an avoidance of greater than 160,000 tons per year of carbon dioxide from not using fossil fuels for generating a similar amount of electricity by standard means. The proposed plant would generate 366,000 megawatt-hours per year of electricity, with a net reduction in greenhouse gases.

Demolition and construction activities associated with the proposed project would generate temporary noise from heavy equipment; however, most noise would be limited to the immediate area of the proposed project site. A handful of nearby residences may experience a short-term annoyance from demolition and construction noise. These impacts would be lessened by confining demolition and construction activities to normal working hours and employing noise-controlled equipment to the extent possible. Noise from operations would not be substantially different from the current ambient conditions.

The proposed facilities and required utility connections would be developed in proximity to freshwater wetlands. Although aspects of the proposed project would occur adjacent to these wetlands, only very minor impacts are anticipated. Specifically, construction of the Gas Conditioning Plant and Combined Cycle Plant may result in minor wetland impacts along Cedar Swamp Brook and Upper Simmons Reservoir. However, terms and conditions listed in an approved Insignificant Wetland Alteration Permit, issued by the Rhode Island Department of Environmental Management, would mitigate those minor impacts and provide positive, long-term effects on biological resources.

The proposed project would result in a 42 MW increase in generation capacity. Current capacity at the landfill is approximately 20.4 MW, with approximately 14.4 MW scheduled to be decommissioned to facilitate expansion of the landfill. The proposed project would therefore increase energy production capacity approximately 21.6 MW over current capacity and 36 MW over projected capacity.

Wastewater generated by the gas conditioning plant would flow through two existing lines to the landfill's leachate system treatment plant, and from there to the City of Cranston's Water Pollution Control Facility. Based on the anticipated volume to be produced and the city's capacity, no substantial effect on the wastewater treatment plant's operation is anticipated.

DOE also evaluated socioeconomic impacts with respect to potential benefits of the proposed project on the surrounding communities. The project is anticipated to result in small increases in local employment and local spending, potentially providing a minor beneficial impact to the local communities. Minor benefits to biological resources would also result from planned restoration related to minor impacts to an adjacent wetland from previous operations at the combined cycle plant location.

DOE determined that there would be no adverse impacts for the other resource areas evaluated in detail in the EA, or the impacts would be small, temporary or both.

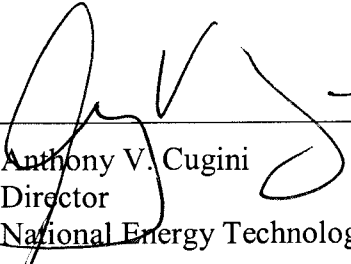
Under the No-Action Alternative, DOE assumed the project would either be delayed, as RI-LFGG sought other funding sources, or abandoned altogether. The potential environmental consequences, if the project was delayed, could be different if the project was modified. If abandoned, the potential environmental consequences would not occur. Furthermore, the potential beneficial impacts would change or not occur.

PUBLIC AVAILABILITY: DOE issued the Draft EA on July 9, 2010, and advertised its availability in the *Middletown Journal* on July 10, 11, and 12. In addition, DOE sent a copy of the Draft EA for public review to the Marian J. Mohr Library in Johnston, Rhode Island. DOE established a 15-day public comment period that began July 10, 2010, and ended July 25, 2010; and announced it would accept comments by mail, email, and facsimile. Copies of the Final EA and this FONSI are available at DOE's National Energy Technology Laboratory web site at <http://www.netl.doe.gov/publications/others/nepa/ea.html>.

The Draft EA was distributed to various federal, state, and local agencies with jurisdiction or special expertise. DOE conducted formal consultations by mail with the responsible U.S. Fish and Wildlife Service (USFWS) field office, the Rhode Island Department of Environmental Management (RIDEM), the State Historic Preservation Office (SHPO), and the Narragansett Indian Tribe of Rhode Island. The USFWS concluded that no threatened or endangered species were known to occur in the project area; and that preparation of a biological assessment or further consultation was not required. The SHPO concurred with DOE's determination that no historic properties would be affected. No public comments or other correspondence were received.

DETERMINATION: On the basis of the evaluations in the Final EA, DOE determined that its proposed action, to provide a \$15 million Recovery Act financial assistance grant, and RI-LFGG's proposed project, expansion of an existing landfill gas collection system and construction and operation of a plant to generate electricity using landfill gas, would have no significant impact on the human environment. Although the proposed project would require purchase of emissions credits to offset air emissions, power generation operations would comply with and operate within all amended permit requirements. The proposed facility would be developed in proximity to freshwater wetlands and, although aspects of the project may result in some minor wetland impacts, approved permit conditions would provide mitigation and positive, long-term effects on any impacted biological resources. All other potential environmental impacts DOE identified and analyzed in the EA would be small, temporary or both. Therefore, preparation of an environmental impact statement is not required and DOE is issuing this Finding of No Significant Impact.

Issued in Pittsburgh, Pennsylvania, this 26 day of August 2010.



Anthony V. Cugini
Director
National Energy Technology Laboratory