

Verification Report for Greater New Bedford Landfill Gas Utilization Project Dartmouth, Massachusetts American Carbon Registry / CCX

Verification Period: July 1, 2008 to December 31, 2008

February 2009

**Prepared by: First Environment, Inc.
91 Fulton Street
Boonton, New Jersey 07005**



1. Introduction

This report is provided to CommonWealth New Bedford Energy LLC (CNBE), a wholly owned subsidiary of CommonWealth Resource Management Corporation (CRMC), as a deliverable of the Chicago Climate Exchange (CCX®) and the American Carbon Registry (ACR) project verification processes. This report covers the verification of landfill gas (LFG) destruction emissions reduction estimates for the period from July 1, 2008 through December 31, 2008 for the Greater New Bedford LFG Utilization Project (the Project). First Environment, Inc. (First Environment) completed the verification in February 2009.

2. Objectives

The purpose of this verification was, through review of appropriate evidence, to establish that:

- the project conforms to the requirements of the verification criteria discussed in Section 6; and
- the data reported are accurate, complete, consistent, transparent, and free of material error or omission.

3. Verification Scope

The scope of the verification is outlined in the table below:

Geographic Boundaries	Crapo Hill Landfill, Dartmouth, MA
Greenhouse Gases Verified	Emissions Offsets (expressed in units of Carbon Dioxide equivalents (CO ₂ -e)) resulting from the capture and destruction of methane
Reporting Years	July 1, 2008 through December 31, 2008
Data Sources	Metered Data and Emissions Offset Estimates

4. Standards Used to Certify Emissions

The following table outlines the guidance and protocols used to conduct this verification:

Verification Process	CCX® Rulebook: Environmental Audits and Offset Project Verification, 2004 ISO 14064-Part 3
Standards of Verification	CCX® Project Guidelines: Landfill Gas Version 1, February 2, 2004 as amended by CCX (See Appendix A) ERT Monitoring, Reporting and Verification Protocol, MRV CNBE 2005 12, December 2005
Level of Assurance	Reasonable assurance
Materiality	Misstatements greater than 5% of the GHG assertion are considered material

5. Overview of the Verification Process

The verification process for the Project was as follows:

- conflict of interest review,
- selection of audit team,
- kick-off meeting with CNBE contact,
- development of the verification plan,
- review of the data collection process,
- review of the raw data and calculations for the data period under review,
- follow-up interaction with CNBE for corrective action or supplemental data as needed, and
- final statement and report development.

The verification process was utilized to gain an understanding of the project's emission sources and reductions (including the risk for leakage), to evaluate and verify the collection and handling of data, the calculations that lead to the results, and the means for reporting the associated data and results.

Conflict of Interest Review

Prior to beginning any verification project, First Environment conducts an evaluation to identify any potential conflicts of interest associated with the project. No potential conflicts were found for this Project either in the initial verification in 2006, during subsequent verifications, or in this verification.

Audit Team

First Environment's audit team consisted of the following individuals who were selected based on their verification experience as well as familiarity with landfill operations. In addition, members of the audit team had specific experience verifying GHG reductions from the Project on prior occasions.

B. Tod Delaney, Ph.D., P.E., BCEE – Senior Management Oversight
Jay Wintergreen - Independent Internal Reviewer
Greg Kozak – Lead Auditor
Iris Caldwell – Auditor

Audit Kick-off

The verification audit was initiated with a conference call between First Environment and the primary CRMC contact, Thomas Yeransian, on January 21, 2009. The communication focused on confirming the verification scope and process, team members, schedule for the verification, as well as a discussion of the data required for the verification and changes that occurred in operations at the Site since First Environment's initial visit in 2006.

First Environment previously verified emissions reduction credits from this Site for both CCX® and Environmental Resources Trust for crediting periods January 1, 2003 through June 30, 2008. Because the LFG collection system, flare, and generating facility were reviewed during the site visit conducted in June 2006 and interviews with CRMC representatives confirmed that no equipment or procedure changes have occurred at the site since the original visit, an additional site visit was not conducted for this verification.

Development of the Verification Plan

The team formally documented its verification plan as well as determined the data-sampling plan. Both the verification plan and sampling plan were developed and provided to the CRMC on February 2, 2009.

Emissions Reduction Data and Calculation Assessment

This assessment used information and insights gained during the previous steps to evaluate the collected data and the reported emissions reduction quantities, and identify if either contained material or immaterial misstatements.

Corrective Actions and Supplemental Information

The team did request supplemental information regarding the SCADA system calculations in order to confirm that the system properly rolled data up in the daily reports. The evidence was provided by CNBE. The team was prepared to request corrective actions as needed. No such request was necessary as part of this verification.

Verification Reporting

Verification reporting, represented by this report and additional audit statements, documents the verification process and identifies its finding and results. Verification reporting consists of this report and a project attestation for Environmental Resources Trust, as well as this report and a verification statement and attestation to the Chicago Climate Exchange.

6. Site's Conformance with Verification Protocols

Site Overview

The landfill is owned and operated by the Greater New Bedford Regional Refuse Management District (the District) and, as permitted by the Massachusetts Department of Environmental Protection (MDEP), consists of 69.8 acres of a 152-acre parcel of land located in the Town of Dartmouth, Massachusetts. The landfill began receiving municipal solid waste and construction and demolition debris in 1995 and currently encompasses approximately 30 acres of the 69.8 permitted acres. The landfill does not fall under the Federal New Source Performance Standards (NSPS) regulation or other local, state, or federal regulations requiring the collection of the landfill gas as evidenced by documentation included in Appendix B.

CRMC is having this verification conducted on behalf of CNBE. CNBE wholly owns all environmental attributes associated with landfill gas destruction associated with this project. Evidence of credit ownership is included as Appendix C.

The MDEP permit governing the Site requires passive venting of landfill gas to the atmosphere. The District voluntarily installed an active landfill gas collection system consisting of lateral and vertical landfill gas extraction wells, header pipes connecting the wells, and a flare to combust

the landfill gas in order to prevent odor issues and to provide a means for productive use of the landfill gas in the future. Two vacuum blowers were installed to pull the landfill gas to the flare. This initial system was completed and became operational in early 2000. Evidence confirming the start date of the project is included in Appendix D.

The on-site generating facility came online in October 2005. The same collection system is used to provide landfill gas to the generating facility where landfill gas is converted to electrical power via combustion in four Caterpillar 3516 gas engine generator sets. The gas collection system is located outside of the building that houses the power facility. The landfill gas passes through a knock-out tank to remove the condensate, passes through a blower, a gas cooler, a gas filter and coalescing filter, and then moves into the building. Inside the building, the gas moves through an orifice plate that records the flow rate and then is distributed to each of the Caterpillar 3516 engines. A probe located at the orifice plate inside the building measures the methane gas concentration. The facility records all of the relevant data in real time, which is monitored by site staff using a Supervisory Control and Data Acquisition (SCADA) device developed for the Site by TVC Systems.

Data Collection and Monitoring Processes

The audit team discussed the following topics with site staff during the initial site visit and confirmed the information during this verification process:

- the data collection process to generate reports,
- internal documents and protocols that set guidelines for the data collection process.

The information gathered during these discussions was used to assess the project's GHG information system and its controls for sources of potential errors, omissions, and misrepresentations.

Since data is collected in real time and recorded in a database on and off site by the SCADA system, there is a high level of confidence in the data collection and storage process. The system is designed to trigger alarms when parameters fall outside a specified range. Each day the data is reviewed by CRMC staff to assess operating performance and to identify any additional issues that may not have been caught by the SCADA system.

The flow meter was calibrated upon installation and four times during the verification period. The landfill gas flow rate was calibrated using a pitot tube and manometer at a sample port located near the orifice plate. These measurements were compared to the recorded measurements from the flow meter to ensure it was operating correctly. The calibrations occurred during this period on July 21, 2008; September 9, 2008; October 3, 2008; and December 2, 2008. The instrument that measures methane content is calibrated weekly by site staff.

Emissions Reduction Calculation Assessment

As part of the emissions reduction calculation assessment, the Project's assumptions and calculations were reviewed. The additionality arguments presented in the ERT Project Protocol were reviewed and found to be valid based on the information and evidence provided by CNBE. The Project meets the eligibility dates set forth in the CCX guidelines. The Project used justifiable assumptions when defining the baseline scenario according to the ERT Project Protocol as the unmitigated release of methane from the landfill. The pre-2000 system was

used for the baseline calculations according to the CCX guidelines (1998 is the baseline year for purposes of the CCX calculations).

The emission reduction calculations, provided by CNBE and included in Appendix E, were reviewed to ensure accuracy in both the formulas used and the raw data used as input. Copies of the raw data used in the calculations, including flow data, methane content data, and combustion efficiency data (provided by CNBE) were compared with the data used in the final calculations and tested for transcription or mathematical errors. The short timeframe being verified allowed for inclusion of all raw data sources over the entire verification period. Additionally, three months of SCADA system's gas flow and methane content chart data (i.e., screen shots) were compared against the raw data used in the calculations to ensure the SCADA system rolled up data correctly. The calculations for the entire period were reviewed.

CCX® Project Standards

The Chicago Climate Exchange provides project guidance for landfill gas offsets and early action credit projects. This guidance document, CCX® Project Guidelines: Landfill Gas Version 1, outlines specific requirements that acceptable projects must meet in order to qualify for credits. The following table lists these specific requirements and identifies how this site meets those requirements:

	Guideline Requirement	Site Compliance	Comments
<i>LFG Flow Rate</i>			
	Measurement at control device not individual wells	Yes	--
	Flow meter type and date of installation		The flow is measured using an orifice plate located downstream of the blower. The plate was installed prior to Project startup in 2005.
	Flow meter upstream of control device and downstream of blower	Yes	Placement is sufficient to ensure laminar gas flow through the orifice plate.
	Records on flow meter calibration	Yes	The first calibration of the flow meter occurred at Project startup and records are kept on and off-site. The flow meter was regularly calibrated using a pitot tube attached to a manometer that is inserted into the LFG flow near the orifice plate. The flow meter was calibrated four times during this six-month period.
	Capable of recording flow every 15 min.	Yes	Flow data is monitored continuously and all data is captured electronically by the SCADA system.
	Shutdown hours recorded and flow data adjusted	Yes	Shutdown of an engine does not stop the operation of the other engines, so the flow to the facility does not stop. If there is a stoppage of all of the

	Guideline Requirement	Site Compliance	Comments
			engines, landfill gas goes to a flare that is managed by the landfill operator. The data for flare flow is captured by the SCADA system.
	Monthly tabulations of daily LFG flow rate	Yes	Site equipment continuously records LFG flow, and a monthly report is produced that captures the LFG flow for the period.
<i>Methane Concentration</i>			
	LFG Concentration measured	Yes	The methane concentration is measured at the same point as LFG flow, by a California Analytical Instruments 602P Digital non-dispersive infrared analyzer (NDIR).
	Concentration measured on monthly basis	Yes	The LFG concentration of oxygen, carbon dioxide and methane is measured and recorded continuously.
	Measuring instrument calibrated	Yes	The NDIR was first calibrated at Project kick-off in October 2005, and has been calibrated periodically (weekly or bi-weekly) since then.
<i>Electricity Generation</i>			
	Engine performance is monitored and recorded	Yes	The facility uses four Russ Electric controllers to monitor current, voltage, frequency, power factor, apparent power, active power and active energy for each engine, and an additional controller that captures and totals the data for all four.

ERT Protocol MRV CNBE 2005 12

The MRV CNBE 2005 12 document outlines specific requirements that the project must meet in order to be verified. The following table lists these requirements and identifies how this Site meets them:

Project Boundaries:	The project boundaries are consistent with those described in the MRV protocol.
Additionality & Leakage:	First Environment verified that the project is not required by NSPS regulations. All other additionality assertions made by the project were verified by ERT and are outlined in the MRV.
Baseline:	The baseline is unmitigated release of all methane.

Monitoring, Data Collection, & Methodology:	Procedures were in keeping with the MRV protocol. These procedures were discussed in greater detail in previous sections of this report.
Quality Control, Reporting, Documentation, & Uncertainties:	Quality control, reporting, and documentation procedures followed were in keeping with the MRV protocol.

7. Audit Results

CNBE provided good documentation for their emissions estimates as well as its programs around the data collection process. The verification process focused on verifying the data that was used by CNBE to calculate the emissions reductions, as shown on the spreadsheets in Appendix E. The calculations on the spreadsheet were consistent with the CCX[®] and MRV CNBE 2005 12 protocols.

Verified results show 64,200 mT of CO₂e eligible for registration with the American Carbon Registry and 64,430 mT of CO₂e eligible for registration with the CCX[®].

8. General Conclusion

Based on the assessments performed and the evidence collected, First Environment concludes that the Project GHG emissions reductions due to the combustion of landfill gas for the period of July 1, 2008 through December 31, 2008, can be considered:

- consistent with the CCX[®] Project Guidelines for Landfill Gas projects as amended in Appendix A and Environmental Resources Trust, Inc. Monitoring, Reporting and Verification Protocol, MRV CNBE 2005 12;
- without material discrepancy; and
- meeting the minimum level of accuracy of at least 95 percent.

First Environment provides reasonable assurance as to the accuracy of the numbers for this period.

CCX[®] Methane Project Reporting Form

CCX Project Owner: CommonWealth New Bedford Energy LLC

Reporting Period: July 1, 2008 through December 31, 2008			
Location	Confirmation	Column 1	Column 2
CCX [®] Registered Methane Project Site Name and Address	Site Meets CCX [®] Project Eligibility Rules	Total Metric Tonnes of Methane Combusted During Period	CCX Early Action Credit Issuance
Crapo Hill Landfill, Dartmouth, MA	Yes	3,068 Metric Tonnes CH₄	644 Hundred Metric Tonnes CO₂

CCX[®] Approved Verifier Name: First Environment, Inc.

Signature of Verified Representative:



Name and Contact Number: B. Tod Delaney, 973-334-0003

Methane Project Attestation by CCX® Project Owner

Reporting period: July 1, 2008 through December 31, 2008

Reporting facility: Crapo Hill Landfill, Dartmouth, MA

I hereby warrant:

that the methane collection and combustion facilities identified in this filing caused the collection and combustion of methane in the quantities reported by First Environment, Inc. (verifier);

that the methane collection and combustion facilities identified in this filing meet CCX® eligibility rules for such Projects – e.g., the facility was exempt from NSPS requirements during the reporting period;

that CommonWealth New Bedford Energy LLC (Project Owner) continues to hold full legal title to the Greenhouse Gas mitigation rights associated with the capture and combustion of methane at the facility noted above - i.e., they have not gone into contracts with any other firm for their sale.

Signed and attested by a duly authorized representative of:

Project Owner: CommonWealth New Bedford Energy, LLC



Signature: _____

Print Name: Thomas Yeransian

Title: Principal, Commonwealth Resource Management Corporation
Sole Member, Commonwealth New Bedford Energy, LLC.

Date: February 19, 2009

Verified by First Environment, Inc.

Name: Greg Kozak

Signature: 

American Carbon Registry Attestation Statement

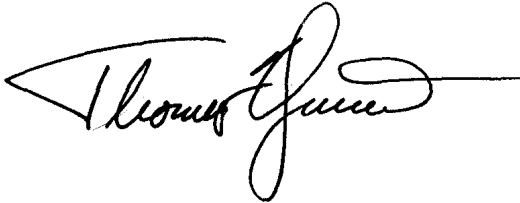
As an officer of CommonWealth New Bedford Energy LLC (CNBE), I hereby certify that the emissions reductions reported in connection with methane capture and combustion have been calculated according to the methods and procedures as outlined and described in the MRV Protocol and are a true representation of the emission performance of the Project.

Thomas Yeransian

Name

Principal of CRMC, the sole member of CNBE

Title

A handwritten signature in black ink, appearing to read 'Thomas Yeransian', written over a horizontal line.

February 19, 2009

Signature

Date

APPENDIX A



Chicago Climate Exchange

CCX Advisory 2008 - 15

MEMO TO: CCX Members

FROM: Nathan Clark, Director – Emission Offsets

DATE: October 2, 2008

Re: Revisions to CCX Rulebook Chapter 9

Chicago Climate Exchange (CCX) has recently made several changes and clarifications to Chapter 9 of the CCX Rulebook. These rule changes are effective as of September 9, 2008. The following is a summary of those modifications:

- Entities with emissions greater than 10,000 metric tons of CO₂ equivalent per year during their most recent complete calendar year must enroll in CCX as an emitting Member and commit to the CCX reduction schedule in order to be eligible to earn CCX Offsets. Entities with emissions less than 10,000 metric tons CO₂ equivalent per year may register offsets with CCX without committing to the reduction commitment. (Reference: Rulebook section 9.1)
- The project accounting approach has been amended for methane capture and destruction projects where project related CO₂ emissions from the combustion of methane are biogenic in nature. As a result, the emission reductions for affected project types increases from 18.25 to 21 metric tons CO₂ per metric ton of methane captured and destroyed. (Reference: Rulebook section 9.7.1)
- At this time hydropower projects are ineligible in CCX. A methodology to address eligibility, sustainability and project accounting for hydro-electric power projects was considered by CCX. Included in the methodology for hydropower projects was a requirement for a sustainability assessment. With a view to adopting a sustainability protocol with broad acceptance, CCX continues to monitor the stakeholder consultation efforts of the International Hydropower Association. CCX will notify members should a determination on the eligibility of hydropower projects be made.
- The scope of eligible projects for the capture and destruction of Ozone Depleting Substances (ODS) has been expanded to include ODS from any country where production of ODS is phased out, importation is not allowed, and destruction is not required by law. These requirements match the existing circumstances found in the U.S. (Reference Rulebook section 9.13.1)
- The crediting rate for renewable energy generation projects has been changed from a standard value of 0.4 metric tons per MWh to region-specific values as determined by



Chicago Climate Exchange

the U.S. EPA's Emissions and Generation Resource Integrated Database (eGRID) tool. (Reference Rulebook section 9.12.5)

- The rule regarding issuance of offsets produced by eligible facilities using renewable fuel along with, or in place of, non-renewable fuel has been clarified to establish a methodology for determining emission reductions on an energy equivalent basis. (Reference Rulebook section 9.12.3.1)
- In reference to CDM project and methodology eligibility, the following project types are not eligible to be registered on CCX unless the project also satisfies the CCX project methodologies:
 - Hydro power
 - Forestry
 - Other CDM-approved projects or methodologies that result in net increases in emissions to the atmosphere relative to the pre-project period.(Reference Rulebook section 9.6.1.4)
- The rulebook now contains revised language on the eligibility requirements for the capture of methane at active and abandoned coalmine operations (Reference Rulebook section 9.7.3), and a correction of the listing of fallow-eligible counties in Montana (Reference Rulebook section 9.3A)
- Finally, CCX added/amended language in certain rules or their related footnotes to provide clarification. (Reference: Rulebook section 9.1, 9.7.1.1 and 9.12.2)

The CCX Rulebook is available to Members in their registries and Chapter 9 is also posted on the CCX [webpage](#).

APPENDIX B

151 Campanelli Drive, Suite B
Middleborough, MA 02346

Tel: (508) 923-0879
Fax: (508) 923-0894



February 11, 2009

Director, Air Management Division
U. S. Environmental Protection Agency
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Re: Design Capacity Report, Crapo Hill Landfill, Dartmouth, MA
40 CFR Part 60, Subpart WWW

Dear Sir or Madam:

The Greater New Bedford Regional Refuse Management District has recently received an operating permit (Authorization to Operate) from the Massachusetts Department of Environmental Protection that increases the design capacity of the Crapo Hill Sanitary Landfill. Identifying information is as follows:

Name and address of landfill:

Crapo Hill Sanitary Landfill
300 Samuel Barnet Boulevard
New Bedford, MA 02745
508-998-5674

(Note: Landfill is located in Dartmouth, MA but the mail address is New Bedford, MA)

Name and address of landfill owner and operator:

Greater New Bedford Regional Refuse Management District
300 Samuel Barnet Boulevard
New Bedford, MA 02745
508-763-5924
Hank Van Laarhoven, Director of Operations

Permits issued by the Massachusetts Department of Environmental Protection for the construction and operation of the Crapo Hill Landfill include the following:

- Solid Waste Facility Permit and Authorization to Construct Phase 1, January 26, 1993, approving 69.8 acres of sanitary landfill and specifically authorizing construction of 18.6 acre Phase 1.
- Authorization to Operate Phase 1, December 28, 1994.
- Landfill Major Modification, Phase 1 Grades, February 3, 2000, authorizing a re-configuration of the Phase 1 final elevations.
- Authorization to Construct New Phase of Permitted Landfill, July 12, 2000, authorizing construction of 10 acre Phase 2, Cells #1 and #2.
- Authorization to Operate Phase 2 Cells #1 and #2, April 22, 2002.
- Authorization to Construct New Phase of Permitted Landfill, December 15, 2006, authorizing construction of 9.5 acre Phase 2, Cells #3 and #4.
- Authorization to Operate Phase 2 Cells #3 and #4, September 8, 2008.

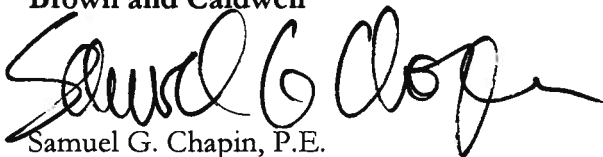
The total permitted capacity of the landfill is 1,886,904 cubic meters. A calculation of this permitted capacity is attached. Also attached is a site locus map and a drawing depicting areas where landfilling is authorized.

The Crapo Hill Landfill is currently provided with an active landfill gas collection and control system comprising 37 vertical extraction wells, approximately 10,000 feet of horizontal gas collectors, a 2,000 scfm open flare, and a landfill gas-fueled electric power generating plant. In addition, passive vent flares are used on the landfill to provide localized landfill gas control. The landfill gas collection and control system is fully approved by the Massachusetts Department of Environmental Protection.

Please contact Hank Van Laarhoven Director of Operations, Crapo Hill Sanitary Landfill, or me if you have any questions.

Very truly yours,

Brown and Caldwell



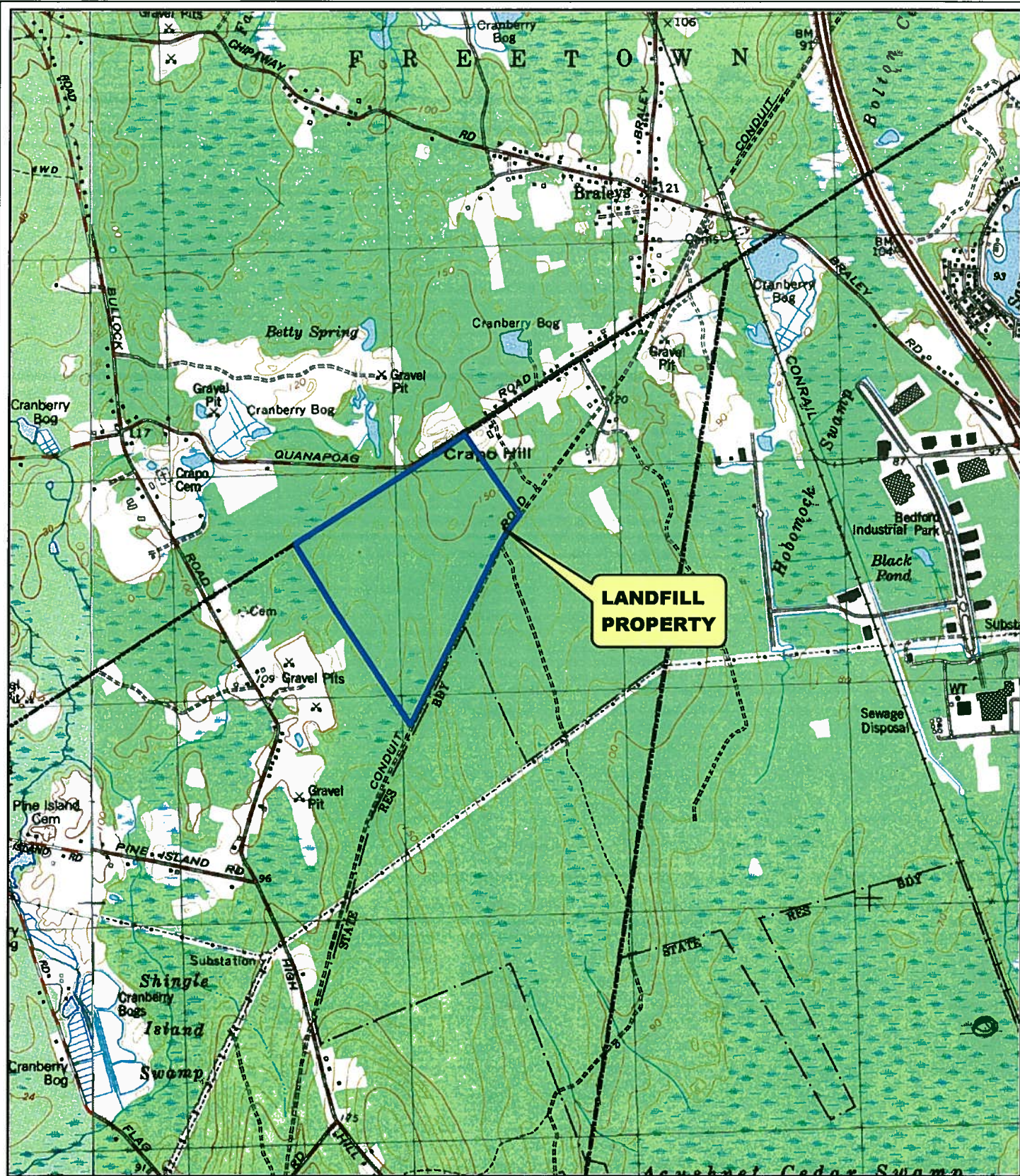
Samuel G. Chapin, P.E.
Supervising Engineer

SGC/
135761 Design Capacity Report NSPS 2009

Enclosure

Copy: Greater New Bedford Regional Refuse Management District

Crapo Hill Landfill		
Dartmouth, MA		
Design Capacity		
Landfill Area	Volumes in cubic yards	Notes/Data Source
Phase 1		
Gross Volume	1,286,000	Camp, Dresser & McKee Permit Documents
Final Cover	63,243	2 foot thick over 19.6 acre slope area
Net Usable Volume	1,222,757	
Daily and Intermediate Cover	330,144	Average 27% by volume over life of landfill
Net Waste Volume	892,613	
Phase 1 Permit Modification		
Gross Volume	275,000	CGK Environmental calculation
Final Cover		no increase in final cover
Net Usable Volume	275,000	
Daily and Intermediate Cover	74,250	Average 27% by volume over life of landfill
Net Waste Volume	200,750	
Phase 2 Cells #1 and #2		
Gross Volume	977,638	Brown and Caldwell digital modeling
Final Cover	33,880	2 foot thick over 10.5 acre slope area
Net Usable Volume	943,758	
Daily and Intermediate Cover	254,815	Average 27% by volume over life of landfill
Net Waste Volume	688,943	
Phase 2 Cells #3 and #4		
Gross Volume	971,500	Brown and Caldwell digital modeling
Final Cover	32,423	2 foot thick over 10.0 acre slope area
Net Usable Volume	939,077	
Daily and Intermediate Cover	253,551	Average 27% by volume over life of landfill
Net Waste Volume	685,526	
Total Waste Volume		
(Design Capacity)	2,467,832	
Waste Volume in cubic meters		
(Design Capacity)	1,886,904	1 cu. yd. = 0.7646 cu. meter
Gross Volume, cubic yards	3,510,138	
Gross Volume, cubic meters	2,683,852	



BROWN AND CALDWELL

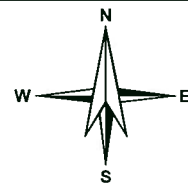
151 Campanelli Drive, Suite B
Middleborough, Massachusetts, 02346
Tel. (508) 923-0879 Fax. (508) 923-0894

Note: USGS Quad Maps obtained from MassGIS scanned 5-CDset, dated July 1996. All other data from MassGIS Data Viewer software, updated Mayr 2008.

FIGURE 1 SITE LOCATION MAP

**Crapo Hill Sanitary Landfill
Dartmouth, Massachusetts**

Prepared for:
Greater New Bedford Regional
Refuse Management District



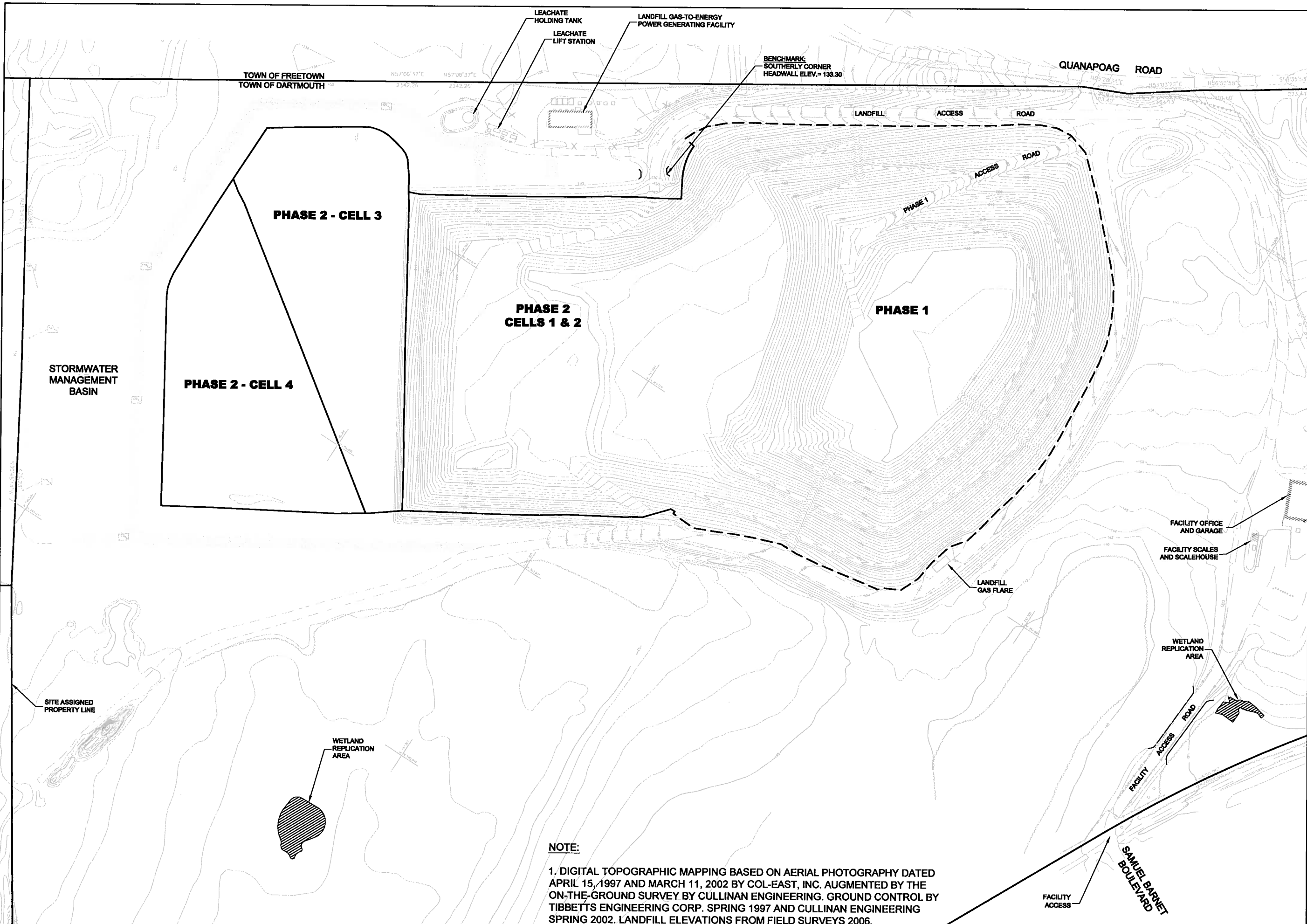
0 500 1,000 2,000
Feet

Date: 01/2009

Project: 135761

Scale: 1" = 2000'

File: Site Locus



NOTE:
1. DIGITAL TOPOGRAPHIC MAPPING BASED ON AERIAL PHOTOGRAPHY DATED APRIL 15, 1997 AND MARCH 11, 2002 BY COL-EAST, INC. AUGMENTED BY THE ON-THE-GROUND SURVEY BY CULLINAN ENGINEERING. GROUND CONTROL BY TIBBETTS ENGINEERING CORP. SPRING 1997 AND CULLINAN ENGINEERING SPRING 2002. LANDFILL ELEVATIONS FROM FIELD SURVEYS 2006.

BROWN AND CALDWELL 48 Leona Drive, Suite C Middleborough, Massachusetts 02346 Tel. (508) 923-0879 • Fax. (508) 923-0894	PROJECT:	135761	FILE:	135761_NSPS Site Plan
	SCALE:	1"=200'	DATE:	FEBRUARY 2009
	DRAWN:	R.J.F.	CHECKED:	S.G.C.
SITE PLAN				
CRAPO HILL SANITARY LANDFILL DARTMOUTH, MASSACHUSETTS				
PREPARED FOR: GREATER NEW BEDFORD REGIONAL REFUGE MANAGEMENT DISTRICT				

APPENDIX C

SITE LEASE AGREEMENT

BETWEEN

GREATER NEW BEDFORD REGIONAL REFUSE MANAGEMENT DISTRICT

and

COMMONWEALTH NEW BEDFORD ENERGY LLC

Dated as of December 31, 2003

SITE LEASE AGREEMENT

This Site Lease Agreement (the "*Lease Agreement*") is made as of the 31st day of December, 2003, by and between **GREATER NEW BEDFORD REGIONAL REFUSE MANAGEMENT DISTRICT**, a Massachusetts regional refuse district with principal offices at 300 Samuel Barnet Boulevard, New Bedford, Massachusetts ("*Lessor*"), and **COMMONWEALTH NEW BEDFORD ENERGY LLC**, a Delaware limited liability company, with principal offices at 199 Corey Street, Boston, Massachusetts ("*Lessee*"). Lessor and Lessee are referred to herein together as the "*Parties*" and singly as a "*Party*".

RECITALS

WHEREAS, Lessor owns and operates the Crapo Hill Sanitary Landfill located at Samuel Barnet Boulevard, New Bedford, Massachusetts (as further defined herein, the "*Landfill*");

WHEREAS, Lessor and Lessee have entered into that certain Landfill Gas Purchase & Sale Agreement (the "*Landfill Gas Purchase & Sale Agreement*") contemporaneous with the execution of this Lease Agreement, whereby Lessee will purchase any and all gas elements developed through the decomposition of waste deposited in the Landfill and collected and produced by Lessor (the "*Landfill Gas*") to fuel a planned electric generation facility (the "*Generating Facility*"); and

WHEREAS, in order to carry out the purposes of the Landfill Gas Purchase & Sale Agreement, Lessor wishes to lease to Lessee and Lessee wishes to accept from Lessor, land within or adjacent to the Landfill on which Lessee may construct, operate and maintain the Generating Facility, together with other appurtenant rights.

NOW THEREFORE, in consideration of the premises and mutual covenants set forth herein and subject to the terms and conditions hereof, the Parties hereby agree as follows:

Article 1. Definitions

Capitalized terms when used herein shall have the meanings set forth below:

"*Access and Performance Easements*" shall have the meaning set forth in Section 2.2 hereof.

"*Additional Contingent Payments*" shall have the meaning set forth in Section 5.3 hereof.

"*Applicable Laws*" shall mean any act, statute, law, regulation, permit, license, ordinance, rule, judgment, order, decree, or written directive, guideline or policy (to the extent mandatory) or any similar form of decision or determination by any governmental

authority with jurisdiction over the LFGMS, the Landfill, the Generating Facility or the performance of the work hereunder and the transaction contemplated hereunder.

"Base Rent" shall have the meaning set forth in Section 5.1 hereof.

"Contingent Payments" shall have the meaning set forth in Section 5.2 hereof.

"Contract Year" shall mean every twelve (12) month period which begins at 12:01 a.m. Eastern Standard Time on January 1 and on every anniversary thereof during the Term.

"Day" shall mean a calendar day.

"Delivery Point" shall have the meaning set forth in the Landfill Gas Purchase & Sale Agreement.

"Easements" shall mean the Access and Performance Easements, the Lessee Electric Easements and the Other Utility Easements.

"Effective Date" shall mean the date on which both Parties have executed this Lease Agreement.

"Electric Utility" means NSTAR, its predecessors, successors and affiliates.

"Electric Utility Easement" shall have the meaning set forth in Section 2.3 hereof.

"Environmental Attributes" shall have the meaning set forth in Section 6.4 hereof.

"Force Majeure" shall mean acts of God, strikes, lockouts or other industrial disturbances, epidemics, landslides, lightning, earthquakes, fires, storms, hurricanes, floods, high-water washouts, acts of the public enemy, wars, blockades, insurrections, riots, arrests and restraints by governments, civil disturbances, catastrophic events such as explosions, breakage or accident to machinery or lines of pipe caused by the foregoing and governmental actions such as the enactment of statutes, laws or regulations frustrating the purpose of this Lease Agreement, not within the control of the Party claiming Force Majeure and which, by the exercise of reasonable diligence, such Party is unable to prevent or overcome. Force Majeure shall not include increases in the costs associated with the construction or operation of the Generating Facility or the LFGMS or a change in market conditions or any other event not specifically enumerated above which makes uneconomic the operation of the Generating Facility or the LFGMS or the sale of Landfill Gas or any component thereof or the sale of electricity generated by the Generating Facility.

"Gap" shall have the meaning set forth in Section 2.3 hereof.

| *

to confirm or restate the provisions of this Section 5.7 or substantially similar provisions or evidence the senior status of any Lender Security Interest or any debt to Lender so long as such documents or instruments are consistent with the expressed intent of this Section 5.7, including but not limited to any intercreditor or subordination agreements with any Lender or prospective Lender.

If, having made commercial reasonable efforts, Lessee is unable to obtain debt financing due in whole or in part to the existence of the Lessor Security Interest, then at the request of Lessee the Parties shall negotiate in good faith another equivalent form of security assuring Lessor that Lessee will make the Secured Payments, such as a payment bond in favor of Lessor or prepayment of some or all of the Secured Payments.

Article 6. Taxes and Environmental Benefits

6.1. Income Taxes. Each Party shall be responsible for any federal, state and local taxes based upon or measured by its income, and any franchise taxes based upon its corporate existence.

6.2 Property Taxes. Lessor shall be responsible for any taxes and assessments against the Landfill and the Site as and when they become due. Lessee shall pay all taxes (real and personal) and assessments allocable to the Generating Facility, the Site Lease or Easements. Lessor and Lessee shall make reasonable efforts to ensure that the Site and Generating Facility are separately assessed by any taxing authorities. Lessee shall have the right but not the obligation, to contest the validity of any assessment of such taxes or assessment and/or any relevant authority's failure to separately assess the Generating Facility. Lessor shall reasonably cooperate with and assist Lessee in any contest at Lessee's sole cost.

6.3 Lessee Tax Credits.

(a) As between the Parties, Lessee shall have sole title to any tax credits under Section 45 of the Internal Revenue Code or any other similar state, federal or local credits or deductions, payments or benefits arising from the purchase of Landfill Gas or the generation and sale of electricity using Landfill Gas as a fuel (as opposed to the production, extraction and sale of Landfill Gas) shall belong to Lessee.

(b) The Parties recognize that the LFGMS presently does not qualify for tax credits under Section 29 of the Internal Revenue Code. If Section 29 is amended or extended in a manner that allows the LFGMS to qualify for Section 29 tax credits and Lessee exercises its option under Section 7.3 hereof and takes an ownership interest in the LFGMS, it is the intent of the Parties that Lessee will be entitled to claim the Section 29 tax credits.

(c) All tax credits referenced in subparagraphs (a) and (b) above are referred to collectively herein as "*Lessee Tax Credits*".


6.4 Environmental Attributes. Lessee and/or its designees, successors and assigns, shall have the right, beginning on the date that the Generating Facility becomes operational and so long as this Lease Agreement is in effect thereafter, to all attributes of an environmental or other nature, known or unknown at the time of this Lease Agreement, including but not limited to allowances, certificates, RECs or other green power price premiums or similar constructs generated by or attributable to the Generating Facility by virtue of its classification as a renewable energy project under Applicable Laws, emissions credits and all other credits, offsets, tradable renewable certificates (sometimes referred to as "green tags"), and all similar rights issued, recognized, created or otherwise arising from use or disposition of the Landfill Gas delivered to Lessee, including but not limited to the generation and/or sale of electricity at the Generating Facility using Landfill Gas, the delivery and/or sale of capacity (the Generating Facility's capability to reliably generate a specific amount of electricity at a given point in time) and electricity to any purchaser thereof, the production of thermal energy or other energy products as a by-product of generating electricity at the Generating Facility, and the destruction of such Landfill Gas ("*Environmental Attributes*"). Environmental Attributes include but shall not be limited to those that are created by regulations, statutes, or other governmental action enacted before or after the Effective Date. Environmental Attributes include but shall not be limited to those that can be used to (1) claim responsibility for the reduction of emissions and/or pollutants, (2) claim ownership of emission and/or pollution reduction rights, and (3) claim reduction or avoidance of emissions or pollutants. Emissions and pollutants include, but are not limited to, acid rain precursors, carbon dioxide, carbon monoxide, chlorinated hydrocarbons, greenhouse gases, mercury, metals, methane, nitrogen oxides, nitrogen-oxygen compounds, ozone precursors, particulate matter, sulfur dioxide, toxic air pollutants, other carbon and sulfur compounds, and similar pollutants or contaminants of air, water or soil, under any governmental, regulatory or voluntary program, including but not limited to the United Nations Framework Convention on Climate Change and related Kyoto Protocol or any other program. Environmental Attributes exclude Section 45 tax credits, Section 29 tax credits and any and all other tax credits or benefits associated with the ownership or operation of the Generating Facility or production of Landfill Gas. Prior to the date that the Generating Facility becomes operational, Lessor shall have the right to any Environmental Attributes attributable to the Landfill or the LFGMS.

6.5 Protection of Environmental Attributes and Lessee Tax Credits. The provisions of this Lease Agreement are intended to ensure that, as between Lessor and Lessee, Lessee shall have all right, title and interest in any Environmental Attributes and Lessee Tax Credits beginning on the date that the Generating Facility becomes operational. Lessor shall not, under any circumstances, take or claim credits, deductions, payments or benefits that would in any way reduce the amount or diminish or impair the value of the Environmental Attributes or any Lessee Tax Credits, or take any other avoidable action that Lessee reasonably demonstrates would reduce, diminish or impair any Environmental Attributes or Lessee Tax Credits. Lessor and Lessee shall also avoid taking any action that would undermine the claim of Lessee Tax Credits. However, Lessor shall have no duty hereunder to affirmatively enhance or improve Lessee's ability to realize Environmental Attributes or Lessee Tax Credits except for Lessor's duty to

35

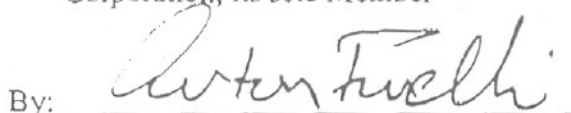
WHEREFORE, Lessor and Lessee have set their hands and seals as of the date
at above.

LESSOR: Greater New Bedford Regional Refuse
Management District

By: 
David L. Vincent, Chairperson

LESSEE: Commonwealth New Bedford Energy LLC

By: Commonwealth Resource Management
Corporation, its sole Member

By: 
Anton Finelli, President

Signed before me on
12/31/03

Deborah L. Piva

DEBORAH L. PIVA

Notary Public

My Commission Expires July 31, 2009

LANDFILL GAS PURCHASE & SALE AGREEMENT

between

GREATER NEW BEDFORD REGIONAL REFUSE MANAGEMENT DISTRICT

and

COMMONWEALTH NEW BEDFORD ENERGY LLC

Dated as of December 31, 2003

LANDFILL GAS PURCHASE & SALE AGREEMENT

THIS LANDFILL GAS PURCHASE & SALE AGREEMENT (the "*Agreement*") dated as of December 31, 2003 is by and between **GREATER NEW BEDFORD REGIONAL REFUSE MANAGEMENT DISTRICT**, a Massachusetts regional refuse district with principal offices at 300 Samuel Barnet Boulevard, New Bedford, Massachusetts ("*Seller*"), and **COMMONWEALTH NEW BEDFORD ENERGY LLC**, a Delaware limited liability company, with principal offices at 199 Corey Street, Boston, Massachusetts ("*Purchaser*"). Seller and Purchaser are referred to herein together as the "*Parties*" and singly as a "*Party*".

RECITALS

WHEREAS, Seller owns and operates the Landfill;

WHEREAS, Seller owns and operates Landfill Gas extraction facilities and management systems at the Landfill;

WHEREAS, pursuant to the Lease Agreement (defined below) Seller has granted to Purchaser certain rights in the Site for the purposes of constructing, owning and operating the Generating Facility that will be designed to use Landfill Gas for fuel; and

WHEREAS, Seller wishes to deliver and sell to Purchaser, and Purchaser wishes to purchase from Seller, all of the Landfill Gas extracted by Seller from the Landfill in accordance with the terms and conditions hereof, for the purpose of using such Landfill Gas as a fuel source for the Generating Facility.

NOW, THEREFORE, in consideration of the mutual agreements contained herein, and other good and valuable consideration, the receipt of which is hereby acknowledged, Seller and Purchaser agree as follows:

Article 1. Definitions

Capitalized terms when used herein shall have the meanings set forth below. Capitalized terms not defined below are as defined in the Lease Agreement.

"*Agreement*" shall mean this Landfill Gas Purchase & Sale Agreement, including all exhibits and schedules hereto, as the same may be amended from time to time.

"*BTU*" shall mean British Thermal Unit.

"*Delivery Commencement Date*" shall mean the date on which Seller commences delivery of Landfill Gas to Purchaser and Purchaser accepts initial delivery of Landfill Gas from Seller, in accordance with the terms hereof, which shall occur on the Day specified by Purchaser in a notice to Seller by at least ten (10) Days advance notice;

three (3) consecutive Days, after which Purchaser's obligation to pay for Landfill Gas shall resume. Thereafter, any further deficiency will require a new notice.

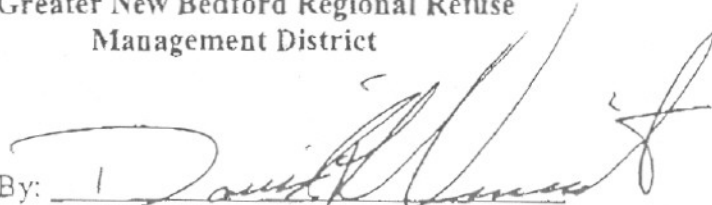
2.5 Suspension of Delivery and Purchase Obligation for Force Majeure, Scheduled Outages and Failure of Electricity Purchaser to Accept Electricity. The delivery and purchase obligations described in Section 2.1 hereof shall be suspended (a) during events of Force Majeure affecting Seller or Purchaser, (b) during scheduled outages of the LFGMS or of the Generating Facility, or (c) during any period of time not to exceed ninety (90) Days within any twelve (12) month period that any purchasers of electricity from the Generating Facility are not accepting electricity from Purchaser, unless the failure to take electricity is caused by the actions or inaction of Purchaser (Purchaser shall notify Seller in writing within two (2) business Days of such event and shall make good faith diligent efforts to sell the electricity from the Generating Facility). Each Party shall notify the other Party of a scheduled outage of the first Party's facilities at least thirty (30) Days in advance of the scheduled commencement of the outage. No scheduled outage of the LFGMS shall exceed one (1) Day. Seller's scheduled outages shall be limited to a total of three (3) Days in any Contract Year. Each Party shall coordinate its scheduled outages with the other Party to avoid interference with the operation of the other Party's facility.

2.6 Environmental Attributes. Seller acknowledges and agrees that Purchaser shall have the right to all Environmental Attributes, as that term is defined and described in Section 6.4 of the Lease Agreement. / *

2.7 Purchaser-Funded Improvements to LFGMS. If Seller does not deliver Landfill Gas meeting the Minimum Methane Content requirement on an average basis over three (3) consecutive days, and if Purchaser determines that capital improvements or adjustments to the LFGMS are required to maintain the Minimum Methane Content, Purchaser may send written notice to Seller that capital improvements or adjustments to the LFGMS are required, including all information describing the improvements or adjustments. If Seller does not agree within ten (10) Days after receipt of Purchaser's written notification to undertake such capital improvements or adjustments within forty (40) Days of such notification, then Purchaser may undertake such capital improvements or adjustments including recalibration of the LFGMS. Purchaser shall make all such improvements or adjustments in a good and workmanlike manner in accordance with Applicable Laws and generally accepted industry practice. Purchaser shall then be entitled to offset up to \$50,000 of the reasonable cost incurred by Purchaser to make such capital improvements or adjustments attributable to the failure to meet Minimum Methane Content against any payments due to Seller hereunder until Purchaser has been fully reimbursed for such reasonable costs up to \$50,000. If the Parties mutually agree, the \$50,000 ceiling on reimbursable capital improvements or adjustments may be increased. In no event shall the amount of such capital improvements or adjustments setoff against Seller's payment exceed \$100,000 in any one Contract Year. With respect to any substantial capital improvements, Purchaser shall (a) provide Seller with copies of the contractor's certificates of insurance in compliance with Section 9.1 of the Lease Agreement, (b) provide Seller with copies of any as-built drawings delivered to Purchaser

WHEREFORE, the Parties hereto have caused the execution of this Agreement by the officers whose names appear below as of the Effective Date.

Greater New Bedford Regional Refuse
Management District

By: 
David L. Vincent, Chairperson

Commonwealth New Bedford Energy LLC

By: Commonwealth Resource Management
Corporation, its sole Member

By: 
Anton Finelli, President

Signed before me on 12/31/03

Deborah L. Piva

DEBORAH L. PIVA

Notary Public

My Commission Expires July 31, 2009

ENGINEER CERTIFICATE

The undersigned engineer hereby issues this certificate to the best of its knowledge after due inquiry and review in connection with Section 3.3(a)(iv) of the Construction and Term Loan Agreement dated February 18, 2005 between Hudson United Bank and Commonwealth New Bedford Energy, LLC (the "Loan Agreement"). (Capitalized terms defined herein that are in the Loan Agreement shall have the meaning therein provided):

1. the Project has been completed in accordance with the Construction Contracts and the Operations and Maintenance (other than Punch List Items, the completion of which will not interfere with the commercial operation of the Project or cause it to operate at levels material different than those forming the basis of the projections in the Closing Pro Forma);
2. all tests required for Final Performance Acceptance have been successfully completed, except for the gross heat rate test, which required adjustment of the Closing Pro Forma;
3. the Project has commenced Commercial Operation under the Power Purchase and Sales Agreement, the Operations and Maintenance Agreement, and the Landfill Gas Purchase and Sale Agreement;
4. the Project appears to be capable of achieving the operating revenue as projected in the Closing Pro Forma (dated November 23, 2005), which incorporates a revised heat rate value estimated during the Performance Test;
5. all Approvals required to commission and operate the Project are in full force and effect; and
6. all necessary fuel and utility services are available for the Project.

Executed as of this 5th day of December, 2005.

SCS ENGINEERS, P.C.

By: 

Name: Gregory P. McCarron

Title: Vice President

APPENDIX D

Information documenting the start of the operation of the flare at the Crapo Hill Landfill.

The start of operation of the flare at the Crapo Hill Landfill commenced soon after June 23, 2000. This start date corresponds to the installation and connection of the local utility's electrical service to the flare station to power the equipment that allows the flare to operate, which equipment includes the blowers, ignition device, condensate pump and controls and monitoring systems. Specifically, the Greater New Bedford Regional Refuse Management District (the District), which owns and operates the landfill, landfill gas collection system and flare, contracted sometime during the last quarter of 1999 with R.M. Pacella, Inc. to design and install the electrical service to the flare. R.M. Pacella Inc. prepared and submitted the design of the electrical service to the local utility, Commonwealth Electric Company (the predecessor to NStar). In a letter dated January 17, 2000 (see attached), the utility acknowledges receipt of the materials from R.M. Pacella, Inc. and based on the utility's review raised a couple areas of concern and made specific recommendations on the design and type of materials to be used prior to the installation of the electrical service. Sometime between January 17, 2000 and June 21, 2000, the electrical service was installed. During that time period, underground concrete encasement, power cables, and manholes along a 2,000 linear feet distance were installed from the entrance of the landfill to the flare station. At the entrance of the landfill the power cable was connected to existing utility service. At the flare, the utility installed a transformer and electric switch to connect the end of the power cable. The transformer stepped down the electric power in order to provide the flare station equipment the proper voltage. In an inspection report dated June 21, 2000 (see attached), the District's engineer of record for the landfill noted that Commonwealth Electric Company would be on-site June 23, 2000 to install the electric switch and transformer at the flare station. These two items are the last two pieces of equipment that allowed electric power to be supplied to the flare, which enabled the flare to start operating. Therefore, electric service to the flare was provided sometime after the installation work performed by Commonwealth Electric Company. Subsequently, the As-Built Plans for the electrical service to the flare was completed on August 2, 2000 by United Consultants Inc.

COM Electric

Commonwealth Electric Company
2421 Cranberry Highway
Wareham, Massachusetts 02571
Telephone (508) 291-0950

January 17, 2000

Mr. David Baker, Jr.
R.M. Pacella, Inc.
P.O. Box 2233
Plainville, MA 02762

RE: Crapo Hill Landfill
Dartmouth, MA

Dear Mr. Baker:

As requested, an engineer at Com/Electric has looked at the submittals of materials and equipment for the above project. There are a couple areas of concern that I would like to mention.

1. The term "power ducts" for the schedule 40 is misleading. Please be sure that the conduit is schedule 40, electrical grade.
2. Also, please be sure that the manhole access hole is no larger than 28" per our specifications. A larger access hole would require a larger cover the use of a crane if the cover needed to be removed.

Although there is no problem with using Rotondo Precast as your supplier, I have enclosed a copy of our specification sheet, for a typical manhole, to use as a guideline for your purchase.

If you have any questions or need further assistance, please contact me at (508) 291-0950, extension 3465.

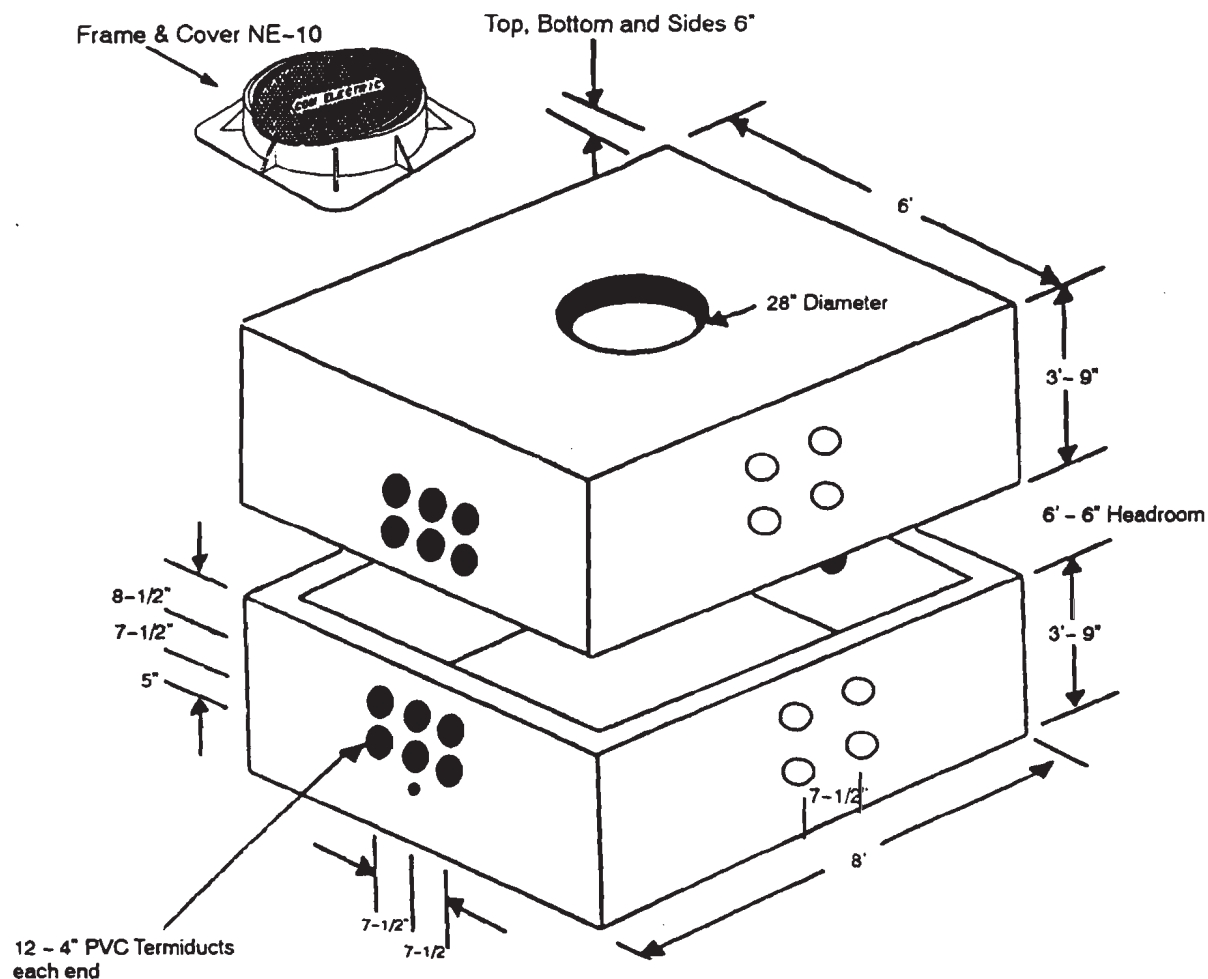
Sincerely yours,



Lorraine T. Durgin
Mid-Account Representative

Enclosure

Cc: S. Chapin/CGK ✓

**Notes:**

1. Concrete is 6" thick all around.
2. End walls on base drilled for 1 1/4" eyebolts.
3. AcmeLite sealant used between shiplap joint.
4. Vault reinforced with steel.
5. 5000# high early strength concrete.
6. Concrete compacted with vibrator.
7. Not to be buried more than 18" below finished grade.
8. Inserts for racking included.
9. Frame and cover, refer to CUDS NE-10.

Supplier & Catalog #

Fruen FE-7
Linhares 6-14

COM Electric**CONSTRUCTION STANDARD**

STD NO

PAGE

Originator: G. H. Freeman
Revised by: G. H. Freeman
Approved: R. A. Lawrence

Date: March 18, 1997
Date: May 15, 1998
Date: March 18, 1997

CUDS**28**

ITEM: Primary Underground Distribution Cable – EPR Insulated
SITE: COM/Electric – All Districts

#02-0196
rev. 1

1.0 SCOPE

- 1.1 This specification applies to 15, 25, and 35 kilovolt class primary Underground Distribution (UD) cable suitable for installation in duct or directly buried, in wet or dry environments. Maximum continuous conductor operating temperature is 90°C.
- 1.2 Basic construction: Conductor shall be 1350 aluminum alloy; conductor shield shall be semiconducting material; insulation shall be low loss ethylene propylene rubber (EPR); insulation shield shall be semiconducting thermoset material. Concentric neutral shall be bare, round copper wires applied over the insulation shield. Insulating jacket shall be a black linear low density polyethylene (LLDPE).

2.0 GENERAL

- 2.1 Compliance with the following specifications is required unless otherwise indicated in this specification or on an individual purchase order.
- 2.1.1 Association of Edison Illuminating Companies (AEIC) Cable Spec. CS-6, latest edition.
- 2.1.2 Insulated Cable Engineers Association (ICEA) Publication No. S-68-516, latest edition.
- 2.1.3 American Society for Testing and Materials (ASTM) B609, B3, B5, and others if relevant.
- 2.2 The manufacturer will notify COM/Electric in writing of any significant formulation or process changes which may affect the performance or appearance of the finished cable product. COM/Electric reserves the right to witness any production or final testing being done on any cable that may be shipped to us.
- 2.3 The finished cable product shall be designed to withstand a 90°C maximum continuous conductor operating temperature, 130°C emergency overload and 250°C short circuit temperature as detailed in ICEA S-68-516.

3.0 MAIN CONDUCTOR

- 3.1 Main conductor metal and size shall be as specified, and shall meet ICEA S-68-516.
- 3.2 Stranding shall be class B, compressed round. Strand fill material used only when specified.
- 3.3 When core conductor is 1/0 AWG solid 1350 aluminum, it shall be H-26 or 3/4 hard temper. Nominal 1/0 solid conductor DC resistance is 0.164 Ω /1000 ft at 25°C, diameter is 0.325".

4.0 CONDUCTOR SHIELD EXTRUSION

- 4.1 Conductor shield shall be black extruded semiconducting thermoset polymeric material. It shall be easily strippable from conductor. Conductor shield shall be firmly bonded to and have temperature and material compatibility with the insulation.
- 4.2 Minimum point thickness shall be 12 mils, or more for larger conductors per ICEA S-68-516.

COM/Electric

CONSTRUCTION STANDARD

STD. NO.

PAGE

Originator: RMP / EDL
 Revised by: G. H. Freeman
 Approved: R. A. Lawrence

Date: March 11, 1985
 Date: June 15, 1998
 Date: April 18, 1997

UDS

1 of 4

ITEM: Primary Underground Distribution Cable – EPR Insulated
SITE: COM/Electric – All Districts

#02-0196
rev. 1

5.0 INSULATION EXTRUSION

- 5.1 Insulation material shall be ethylene propylene based rubber (EPR or EP), ICEA Type I material.
- 5.2 Thicknesses shall be 100% insulation level for stated voltage with dimensions listed in Table 1. The minimum point thickness shall not be less than 90% of the average wall thickness.
- 5.3 If 133% insulation is required as special order, appropriate test voltages shall be used.
- 5.4 Insulation color shall contrast with the black semiconducting layers. Insulation wall shall be coextruded with conductor semiconducting shield.
- 5.5 Insulation shall be free of any voids larger than 5 mils, or any contaminants larger than 10 mils.
- 5.6 The maximum dissipation factor of the finished cable is 1.5% at 90° C.
- 5.7 Maximum permissible partial discharge during testing shall conform to AEIC CS-6, Table E1.

Table 1 – AC Testing with 200 Volts/mil

Cable Class (kv)	Minimum Avg. Wall (kv)	5 Min. AC Test (kv)
15	175	35
25	260	52
35	345	69

6.0 INSULATION SHIELD EXTRUSION

- 6.1 Insulation shield shall be an extruded black semiconducting thermoset material. It must be firmly and evenly bonded to the insulation following its extrusion, but shall be removable without applied heat as required in AEIC CS-6.
- 6.2 A legend shall be surface printed to remind the installer to "Remove this semiconductive layer prior to splicing or terminating".
- 6.3 The insulation shield minimum point thickness shall be 30 mils, or more for larger conductors per ICEA S-68-516. This minimum does not apply to points directly under concentric neutral wires.
- 6.4 The maximum indentation by the concentric neutral wires is 15 mils.

7.0 CONCENTRIC NEUTRAL CONDUCTORS

- 7.1 The concentric neutral shall be evenly, helically wound over the insulation shield after curing.
- 7.2 The uncoated copper wires shall meet the requirements of ASTM B3 and B5.
- 7.3 For 1/0 aluminum conductor, a full neutral shall consist of 16 round 14 AWG copper wires. When cable is triplex or parallel lay configuration, a one-third neutral (when specified) shall consist of 6 round 14 AWG copper wires.
- 7.4 The lay of the neutral shall be between six and ten times the diameter over the concentric wires.

COM/Electric

CONSTRUCTION STANDARD

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Date: March 11, 1985
 Date: June 15, 1998
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UDS

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ITEM: Primary Underground Distribution Cable - EPR Insulated
SITE: COM/Electric - All Districts

#02-0196
rev. 1

8.0 OVERALL JACKET

- 8.1 The nonconductive overall jacket shall be a linear low density polyethylene (LLDPE) extrusion that encapsulates the neutral wires. It shall not adhere to the insulation shield when removed.
- 8.2 The minimum average thickness over the neutral wires shall be 50 mils, or as required by ICEA.
- 8.3 The overall jacket shall be permanently indented with the manufacturers name, rated voltage, conductor type and size (i.e. 1/0 solid Alum), insulation material (EPR or EP), wall thickness (mils), and year of manufacture.
- 8.4 A "lightning bolt" shaped indentation is required every 40", as required by NESC rule 350G.
- 8.5 Three equally spaced red stripes shall be extruded along the length of the cable. The stripes shall be approximately 0.3 inches wide by 5 mils deep and shall not affect the jacket integrity.
- 8.6 Sequential footage markings (inked) are required on the outside jacket, spaced 24" apart.
- 8.7 A 4.5kV spark test is required to ensure the integrity of the 50 mil thick overall jacket.
- 8.8 Paralleled or triplexed cables shall be individually marked on their jackets for phase identification. Permanent white ink, 0.25" high lettering shall be spaced 40" apart. Cables shall be separately imprinted: "ONE - BLACK", "TWO - RED", "THREE - BLUE".

9.0 NOMINAL PHYSICAL CHARACTERISTICS FOR 25kV, 1/0 SOLID CABLE

- 9.1 Dimensions for 1/0 solid aluminum conductor shall be approximately as listed in Table 2.
- 9.2 Finished cable shall have a maximum puffing tension of 630 pounds.

Table 2

Cable Class (kv)	Avg. Wall Thickness (mils)	Avg. Diam. Over Insul (in.)	Avg. Diam. Over Ins. Shld. (in.)	Avg. Diam. Over Jacket (in.)
25	260	0.91	0.98	1.22

10.0 QUALIFICATION AND CERTIFIED TESTING

- 10.1 The manufacturer's cable design must pass AEIC CS-6 (section L) qualification tests.
- 10.2 The manufacturer must submit certified electrical and dimensional test reports prior to shipment to the following address:

COM/Electric Company
 Manager of Engineering Support Services
 Cable Test Reports
 2421 Cranberry Highway
 Wareham, MA 02571

COMElectric

CONSTRUCTION STANDARD

STD NO

PAGE

Originator: RMP / EDL
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 Approved: R. A. Lawrence

Date: March 11, 1985
 Date: June 15, 1998
 Date: April 18, 1997

UDS

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ITEM: Primary Underground Distribution Cable – EPR Insulated
SITE: COM/Electric – All Districts

#02-0196
rev. 1

10.3 All test reports shall indicate the COM/Electric purchase order number and reel number. Unless the reports indicate full compliance with this specification, cable shall not be shipped except on the written authorization of COM/Electric.

11.0 SHIPMENT REQUIREMENTS

- 11.1 Cable shipping lengths and maximum reel sizes shall be as listed in Table 3. Reels shall have a durable (weatherproof) tag to record reductions in cable footage on reel.
- 11.2 Cable ends shall be sealed to prevent moisture entry.
- 11.3 Deliveries are to be made to designated stockrooms by 3:00 PM on regular week days. Other arrangements are possible by contacting the appropriate stockroom supervisor at phone number (508) 291-0950.

Table 3

	Cambridge P.O. #CB...	Cape & Vineyard P.O. #CV...	New Bedford P.O. #NB...	Plymouth P.O. #PL...
Single Conductor (ft / reel)	2,500	2,500	5,000	5,000
Parallel / Triplx (ft / reel)	2,500	2,500	2,500	2,500
Max Reel Width (inches)	54	54	54	54
Max Reel Diameter (inches)	78	92	78	92

12.0 WARRANTY

The manufacturer shall provide written warranty information when submitting quotations.

COM/Electric

CONSTRUCTION STANDARD

STD NO

PAGE

Originator: RMP / EDL
 Revised by: G. H. Freeman
 Approved: R. A. Lawrence

Date: March 11, 1985
 Date: June 15, 1988
 Date: April 18, 1997

UDS

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CUSHING, GOINS & KIRSCHNER, INC.
Engineering Consulting - Planning

Daily Work Summary

Date: 6/21/00 **Report No.:** 46 **Project No.:** 97-129 **Sheet** 1 of 1

Project: Leachate Lift Station

Location: Crapo Hill Landfill

Client: Greater New Bedford District

Contractor: R. M. Pacella, Inc.

Inspector: Roy Piatelli

Weather: Warm / dry, 75 deg F

Arrival Time: 12:00 pm

Departure Time: 1:00 pm

Equipment Used: N/A

Sketch Attached: No

WORK SUMMARY AND RESULTS

- Arrived at the Landfill to inspect the leachate aboveground storage tank, and confirm no leakage. The tank is within 2 feet of the overflow line, and there are no signs of leakage on any of the tank panels. Paul, of Crapo Hill Landfill, anticipates the tank will be filled today. Once the tank has been filled he will notify David Baker, of Pacella, so that further testing can be initiated on the pumps, and the delivery of water to the sewer system can be checked.
- ComElectric will be on-site tomorrow (6/23), to install the electric switch and transformers at the flare station and the leachate pump station.



0 0

Project No.	UC 151
Scale:	1" = 80'
Field By:	CDS/RRG
Drm. By:	JS
Chkd. By:	
Appd. By:	
Date:	8/2/2000

Figure 8
Electric utility conduits

AS-BUILT PLAN
CRAPO HILL SANITARY LANDFILL
DARTMOUTH, MASSACHUSETTS

UNITED
CONSULTANTS
INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508-384-6580 FAX 508-384-6586

APPENDIX E

EXHIBIT 1						
CommonWealth New Bedford Energy LLC						
Greater New Bedford LFG Utilization Project						
Dartmouth, Massachusetts						
Calculation of Verified Emission Reduction Credits in CO2 equivalent tons						
Key parameters used in calculations						
Parameter		ERT assumptions		CCX assumptions		
Methane oxidation efficiency electricity generation		99.9%		100.0%		
Methane oxidation efficiency LFG flaring		98.0%		100.0%		
Molare weight methane		16		16		
Pounds per metric ton		2,205		2,205		
Gas constant		385		385		
Global Warming Potential (GWP) methane		21		21		
Summary results						
	Unit	Value with ERT Formula		Value with CCX Formula		
Electricity generation						
Start date		1-Jul-08		1-Jul-08		
End date		31-Dec-08		31-Dec-08		
Methane delivered	scf	162,368,878		162,368,878		
VERs generated	metric tons CO2e	64,200		64,430		
Flaring						
Start date		1-Jul-08		1-Jul-08		
End date		31-Dec-08		31-Dec-08		
Methane delivered	scf	-		-		
Emission Reductions	metric tons CO2e	-		-		
Total						
Methane delivered	scf	162,368,878		162,368,878		
Emission Reductions	metric tons CO2e	64,200		64,430		
Baseline	metric tons CO2e	64,265				
Emissions	metric tons CO2e	64				

EXHIBIT 2																			
CommonWealth New Bedford Energy LLC																			
Calculation of Verified Emission Reduction in CO2 equivalent tons per the TGNB Protocol, 2005																			
Emission Reductions from methane oxidation during energy generation																			
Begin period - date	End period - date	Totalizer reading end period	Totalizer reading start period	Total in period	Methane content end period	Methane content start period	Methane delivered to engines	Methane delivered cumulative	Methane oxidation efficiency	Molar weight methane	Pounds to metric tons conversion	Gas constant	Mass methane destroyed in	Mass methane destroyed	Global warming potential methane	Emission reduction	Emission reduction cumulative	Baseline cumulative	Emissions cumulative
mm/dd/yy	mm/dd/yy	scf	scf	scf	%	%	scf	scf	%	Pounds per mole	Pounds per ton	scf per pound mole	metric tons	metric tons	tons CO2 equivalent per ton methane	CO2 equivalent metric tons	CO2 equivalent metric tons	CO2 equivalent metric tons	CO2 equivalent metric tons
1-Jul-08	31-Jul-08	47,756,000	-	47,756,000	52.16%	52.16%	24,909,530	24,909,530	99.9%	16	2,205	385	469	469	21	9,849	9,849	9,859	10
1-Aug-08	31-Aug-08	95,064,000	47,756,000	47,308,000	53.08%	53.08%	25,111,086	50,020,616	99.9%	16	2,205	385	473	942	21	9,929	19,778	19,798	20
1-Sep-08	30-Sep-08	144,192,446	95,064,000	49,128,446	52.81%	52.81%	25,944,732	75,965,348	99.9%	16	2,205	385	489	1430	21	10,259	30,037	30,067	30
1-Oct-08	31-Oct-08	198,379,965	144,192,446	54,187,519	53.42%	53.42%	28,946,973	104,912,321	99.9%	16	2,205	385	545	1975	21	11,446	41,482	41,524	42
1-Nov-08	30-Nov-08	250,024,056	198,379,965	51,644,091	55.80%	55.80%	28,817,403	133,729,724	99.9%	16	2,205	385	543	2518	21	11,394	52,877	52,930	53
1-Dec-08	31-Dec-08	301,266,056	250,024,056	51,242,000	55.89%	55.89%	28,639,154	162,368,878	99.9%	16	2,205	385	539	3057	21	11,324	64,200	64,265	64

EXHIBIT 4																			
CommonWealth New Bedford Energy LLC																			
Calculation of Verified Emission Reduction in CO2 equivalent tons per the TGNB Protocol, 2005																			
Emission Reductions from methane oxidation from LFG flaring																			
Begin period - date	End period - date	Totalizer reading end period	Totalizer reading start period	Total in period	Methane content end period	Methane content start period	Methane delivered to flare	Methane delivered cumulative	Flare efficiency	Molar weight methane	Pounds to metric tons conversion	Gas constant	Mass methane destroyed in the period	Mass methane destroyed cumulative	Global warming potential methane	Emission reduction	Emission reduction cumulative	Baseline cumulative	Emissions cumulative
mm/dd/yy	mm/dd/yy	scf	scf	scf	%	%	scf	scf	%	Pounds per mole	Pounds per ton	scf per pound mole	metric tons	metric tons	tons CO2 equivalent per ton methane	CO2 equivalent tons	CO2 equivalent tons	CO2 equivalent metric tons	CO2 equivalent metric tons
1-Jul-08	31-Jul-08	-	-	-	-	-	-	-	98.0%	16	2,205	385	0	0	21	-	-	-	-
1-Aug-08	31-Aug-08	-	-	-	-	-	-	-	98.0%	16	2,205	385	0	0	21	-	-	-	-
1-Sep-08	30-Sep-08	-	-	-	-	-	-	-	98.0%	16	2,205	385	0	0	21	-	-	-	-
1-Oct-08	31-Oct-08	-	-	-	-	-	-	-	98.0%	16	2,205	385	0	0	21	-	-	-	-
1-Nov-08	30-Nov-08	-	-	-	-	-	-	-	98.0%	16	2,205	385	0	0	21	-	-	-	-
1-Dec-08	31-Dec-08	-	-	-	-	-	-	-	98.0%	16	2,205	385	0	0	21	-	-	-	-

EXHIBIT 5																
		CommonWealth New Bedford Energy LLC														
		Calculation of Verified Emission Reduction in CO2 equivalent tons per the CCX Formula														
CCX Formula Calculations		Emission Reductions from methane oxidation from LFG flaring														
Begin period date	End period date	Totalizer reading end period	Totalizer reading start period	Total in period	Methane content end period	Methane content start period	Methane delivered to flare	Cumulative methane delivered to engines	Molecular weight of Methane	Conversion to tons	Gas Constant	Conversion Factor	Methane Destroyed in Engines	Global warming potential methane	CO2 equivalent	CO2 equivalent cumulative
mm/dd/yy	mm/dd/yy	scf	scf	scf	%	%	scf	scf	g/mole	MT/g	mole/L	L/cf	Metric Tons	tons CO2 equivalent per ton methane (as allowed by CCX)	Metric tons	Metric tons
1-Jul-08	31-Jul-08	-	-	-	0.0%	0.0%	-	-	16.04	1,000,000	0.041597	28.32	-	21	-	-
1-Aug-08	31-Aug-08	-	-	-	0.0%	0.0%	-	-	16.04	1,000,000	0.041597	28.32	-	21	-	-
1-Sep-08	30-Sep-08	-	-	-	0.0%	0.0%	-	-	16.04	1,000,000	0.041597	28.32	-	21	-	-
1-Oct-08	31-Oct-08	-	-	-	0.0%	0.0%	-	-	16.04	1,000,000	0.041597	28.32	-	21	-	-
1-Nov-08	30-Nov-08	-	-	-	0.0%	0.0%	-	-	16.04	1,000,000	0.041597	28.32	-	21	-	-
1-Dec-08	31-Dec-08	-	-	-	0.0%	0.0%	-	-	16.04	1,000,000	0.041597	28.32	-	21	-	-