NEW HAMPSHIRE DES WETLANDS BUREAU STANDARD DREDGE AND FILL APPLICATION *for the* LNG FACILITY SITE AND PIPELINE ROUTE *for* NEW HAMPSHIRE GAS CORPORATION KEENE, NH

Prepared By

NORTHSTAR INDUSTRIES

126 Merrimack Street
Methuen, MA 01844
(978) 975-5500
Fax (978) 975-9975

June 21, 2000

NHGas

June 21, 2000

New Hampshire Department
of Environmental Services
Wetlands Bureau
6 Hazen Drive
Concord, NH 03302-0095

SUBJECT: STANDARD DREDGE AND FILL PERMIT
LNG FACILITY SITE AND PIPELINE ROUTE
NEW HAMPSHIRE GAS CORPORATION

Dear Sirs:

The following is a Dredge and Fill Application by New Hampshire Gas Corporation (NHGC) for a proposed Liquefied Natural Gas (LNG) facility, to be located at Production Avenue in Keene, New Hampshire, and a proposed natural gas pipeline route connecting the proposed LNG facility to an existing distribution pipeline system near Emerald Street in Keene.

Please note the Application is filed in the name of and signed by the owners of the proposed LNG plant site property. The pipeline will be located on easements negotiated by NHGC with the respective property owners. Wetland impacts on both the proposed plant site and along the proposed pipeline are quantified in the application form and detailed in the application documents.

NHGC is a gas distribution company in Keene, NH, with approximately 1,000 customers. NHGC currently distributes a propane-air vapor with a heating value of 742 BTU/ft.^{3} to its customers through its 26-mile distribution network. The propane is purchased by NHGC from Shalldu Ltd., which owns and operates a propane air facility on Emerald Street in Keene.

NHGC is requesting a Wetland Permit and 401 Water Quality Certification because of impacts associated with the construction of the proposed LNG storage and vaporization facility located at the south end of Production Avenue and also for impacts associated with the construction of a proposed 1.94 mile long pipeline from the proposed facility to an existing distribution system near Emerald Street.

To compensate for wetland and floodplain impacts that will result from the proposed facility and pipeline construction, a plan has been developed that provides for wetland creation, restoration and preservation. Riparian corridor, vernal pool habitat, forested wetland and forested upland will be protected with a conservation easement. The State Historic

Preservation Officer and Natural Heritage Inventory have been contacted to confirm that there are no resources of concern in the project area.

NHGC proposes to begin construction September 1, 2000, and have the LNG facility and pipeline in operation by July 1, 2001.

Please find enclosed a check in the amount of $5,590.96 made out to the DES Wetlands Bureau for 139,774 sq. ft. of wetland impact on the plant site and along the pipeline.

Please provide any comments you may have to me at the following address:

Mark A. Cole
New Hampshire Gas Corporation
Corporate Drive, Kirkwood Industrial Park
P.O. Box 5224
Binghamton, NY 13902-5224

Our engineering and natural resource experts are available to respond to any questions or comments you may have. If you have any questions, please contact me at (607) 762-4294.

Sincerely,

Mark A. Cole
General Manager

/sb

Enc.

MAC:00-173

DEPARTMENT OF ENVIRONMENTAL SERVICES (DES)
WETLANDS BUREAU
6 Hazen Drive
Post Office Box 95
Concord, NH 03302-0095
603-271-2147 FAX 603-271-6588

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

STANDARD DREDGE AND FILL APPLICATION

Application for filling, dredging, or constructing structures under RSA 482-A and RSA 485-1:17

GENERAL INSTRUCTIONS: Type or print clearly; missing information may delay your application!

1. NAME OF OWNER: **Bauer, Clifford A. /Bunce, John E.** **(See Section 1)**
   Last, First, Middle

   MAILING ADDRESS: **11 Production Ave.** **Keene** **NH** **03431**
   Street/Road/Box# Town/City State Zip code

   TELEPHONE: (603) 352 - 1510 FAX (603) 357 - 7960

2. LOCATION OF PROPOSED CONSTRUCTION:

   a. **Production Avenue** **Keene**
   Street/road/highway Town/City

   TAX MAP #'s 702 LOT #'s 5, 6, 11 - 15 BLOCK #'s 1

3. Obtain Name of Waterbody from U.S. Geological Survey Map. If Waterbody is Unnamed, place and "X" in the appropriate box.
   ' IN, OR' ADJACENT TO, **Ash Swamp Brook** (name of waterbody)
   (X) Unnamed tributary to: **Ash Swamp Brook**
   ( ) Unnamed Pond ( ) Unnamed stream ( ) Unnamed wetland ( ) Tidal Buffer Zone

4. Mark appropriate box(es) to indicate landform type(s): ( ) Salt Marsh; ( ) Tidal Water; ( ) Sand Dune; ( ) Bog; ( ) Freshwater marsh; ( ) Swamp; (X) Wet meadow; ( ) River; ( ) Perennial stream; ( ) Seasonal stream; ( ) Lake: ( ) Upland (tidal buffer zone only);
   (X) Other: **See Section 4.1**

5. Provide a description of your proposed project. **See Narrative Statement Attached (See Section 1)**

6. Explain the need for the proposed project and why your approach has less environmental impact on the DES Wetlands Bureau's jurisdiction than other reasonable alternatives (use separate sheet if necessary). **See Narrative Statement Attatched (See Section 2)**

7. Desired Starting Date: **Sept. 2000** Estimated Completion Date: **June 2001**

8. AUTHORIZED "CONTRACTOR OR" AGENT (Optional): _____

   MAILING ADDRESS: _____
   Street/Road/Box# Town/City State Zip code

   TELEPHONE: (___) ___ - ____ FAX (___) ___ - ____

FOR DES OFFICE USE ONLY:

Fee received: _____ FILE# _____
check # amount init. date

Rev 08-01-97

9. Area and/or linear impact of proposed work within DES Wetlands Bureau jurisdiction (e.g., lakes, ponds, streams, wetlands, sand dunes, tidal buffer zone, etc.).

a. Estimated area to be dredged: 52,654 sq. ft

b. Volume of material to be removed from public waters: N/A cu. yds.

c. Is proposed disposal site in wetlands (yes/no)? No

d. Estimated area to be filled: 87,120 sq. ft.

e. Estimated total area (in DES Wetlands Bureau jurisdiction) of all proposed work: 139,774 sq. ft.

f. Estimated excavation and/or filling within the upland portion of the Tidal Buffer Zone: N/A sq. ft.

g. If a channel is to be constructed, or a culvert or a bridge is to be installed, give the distance the flow of water is to be impacted: N/A ft.

h. If the project involves shoreline, indicate the average length of shoreline frontage: N/A ft.

i. If dock or similar structure: length: N/A ft.; width: N/A ft.; total area of impact: N/A sq. ft.

j. If wall, rip-rap, beach, or similar project, indicate the proposed shoreline impact in: linear feet N/A , square feet N/A .

10. **FILING FEE: A check or money order out to the DES Wetlands Bureau shall accompany the application.** The minimum fee is $50. MINOR and MAJOR PROJECTS are charged at the rate of $0.04 per square foot of requested impact (if less then $50, the minimum fee applies); and/or $100 per requested boat slip. **The fee is based on the requested impact, not the approved impact.** If an applicant is unsure of the correct fee, the application may be submitted with a $50 minimum fee and the balance will be billed. The application will not be reviewed until the fee is paid in full.

The following are examples of projects that would qualify as minimum impact. A comprehensive definition of minimum impact is fount in Wt 303.04 of the New Hampshire Administrative Code.

1. A seasonal pier not to exceed 6' in width, or 30' in length (4' X 20' in lakes less than 1000 acres) provided it is the only structure on the frontage.
2. Repair or replacement of an existing structure with no change in size, location, or configuration.
3. Most driveway crossings of small streams (less than 10 feet wide bank to bank) or narrow freshwater wetlands (less than 50 feet wide; not in bogs or marshes) to access an isolated piece of property.
4. Maintenance dredging within original bounds of a legally constructed project.

APPLICANT SIGNATURE. SIGNATURE BELOW CERTIFIES THAT: 1.) all abutter have been identified in accordance with the definition given in the general instructions sheet; 2.) those abutters have been sent notice by CERTIFIED MAIL; 3.) the applicant has read, and provided, the REQUIRED INFORMATION outlined in rule Wt 302.04 and listed on the "Checklist for Preparing and NHDES Wetlands Bureau Application"; 4.) The applicant has read, and understands Rule Wt 302.03 and has chosen the least impacting alternative; 5.) the applicant(s) has reviewed the information to be submitted and that the information is, to their knowledge true and accurate; 6.) the applicant understands that the willful submission of falsified or misrepresentative information to the New Hampshire Department of Environmental Services is a criminal act which may result in fines or imprisonment.

signature of owner	print name	date
John E. Bunce	John E. Bunce	6-16-00
signature of authorized agent (if applicable)	print name	date

TOWN CLERK SIGNATURE. I hereby certify that the applicant has filed five applications, five detailed plans, and five U.S.G.S. location maps with the town/city of: _____ as required by Chapter 482-A:3 (amended 1991), and I have received and retained certified postal receipts (or copies) for all abutters identified by the applicant.

signature of town/city clerk	date

LIST OF ABUTTERS

The following is a list of abutters to Tax Maps 702-1-5, 702-1-6, 702-1-11, 702-1-12, 702-1-13, 702-1-14, and 702-1-15 on Production Avenue in Keene, NH. The above parcels are to be joined into one parcel on which the LNG facility will be built.

New Hampshire Gas Corporation
32 Central Square
PO Box 438
Keene, NH 03431

John E. Bunce
11 Production Ave.
Keene, NH 03431

City of Keene
3 Washington Street
Keene, NH 03431

State of New Hampshire
Loudon Road
Concord, NH 03301

AR-GE Properties
PO Box 1060
Keene, NH 03431

The Keene Group
400 Amherst Street, Suite 404
Nashua, NH 03063

Concord Laboratories, Inc.
15 Kits Street
Keene, NH 03431

Emile W. Bergeron
99 Cady Lane
Spoffard, NH 03462

Ranger A. Curran
PO Box 1060
Keene, NH 03431

LIST OF ABUTTERS

The following is the list of abutters to the pipeline route from the LNG facility to the tie-in near Emerald Street.

Tax Map Number	Property Owner
502-01-01 thru 14, 17	Aubrey W. & Ellis S. Barrett East Surry Road Keene, NH 03431
502-01-18	State of New Hampshire Department of Transportation 19 Base Hill Road West Swanzey, NH 03469 Attn: Peter Bensen, Utility Supervisor
912-26-09	George T. Kingsbury 700 West Street Keene, NH 03431
912-26-25	PSNH PO Box 330 Manchester, NH 03105-0330 Attn: James F. Mayo
912-26-12	State of New Hampshire Bureau of Rail & Transit PO Box 483 Concord, NH 03302-0483 Attn: Finn Posner, RR Operations Eng.
912-26-13	Roberts Communications, Inc. 13 Lamson Street Keene, NH 03431
63-01-016.01	New England Telephone & Telegraph Co. 1095 Avenue of the Americas New York, NY 10036

Tax Map Number	Property Owner
60-01-007	Kenneth M. King, Jr. PO Box 278 Southboro, MA 01772
912-26-11 50-01-08 49-02-02	City of Keene 3 Washington Street Keene, NH 03431
60-01-01	H. J. Heymen Sons, LLC Box 7002 Westport, CT 06881 Attn: Joseph Barile, Property Manager
56-01-01	Antioch University 40 Avon Street Keene, NH 03431
50-03-01	Philip & J. Robert Hof PO Box 423 82 Pearl Street Keene, NH 03431
50-03-29	Neil F. Collier 78 Pearl Street Keene, NH 03431
49-03-16	Clifton R. & Kathryn Huckins, Jr. 60 Pearl Street Keene, NH 03431
129-03-06	William G. Zimmerman 305 Singletary Lane Framingham, MA 01701
50-01-07	Jeffrey R. Migneault PO Box 1014 30 Hart Place Keene, NH 03431
50-01-06	Franklin C. Fisk 22 Hart Place

Keene, NH 03431

Tax Map Number

50-01-05

Property Owner

Robert C. Crossman
87 Pearl Street
Keene, NH 03431

Brickstone
MASONS, INC.
185 Winchester Street, Suite 1, Keene, NH 03431

CHARLES R. PHIPPARD
JAMES P. PHIPPARD
DAVID J. BERGERON

SITE PLANNERS
DEVELOPMENT CONSULTANTS
MASONRY & GENERAL CONTRACTING
(603) 357-0116 • FAX (603) 357-0118

June 21, 2000

To whom it may concern;

This letter is to inform you that NH Gas Corporation has applied for a NH DES wetlands permit to impact wetlands on property on Production Ave in Keene to construct a natural gas storage and distribution facility. Wetland impacts are also proposed along the former railroad corridor from Pitcher Street to Pearl Street. The impacts along the railroad corridor are temporary impacts associated with the construction of a pipeline from Production Avenue to Emerald Street in Keene, NH. As an abutter to one of these properties, you are being informed of your right to view and comment on this application which is now pending before the State of NH Wetlands Bureau and the City of Keene Conservation Commission. You may view a copy of the application by contacting me at the above address or by contacting the City of Keene Planning Department at City Hall, 3 Washington Street, Keene, NH 03431 - (603) 352 - 5474.

Sincerely,

James P. Phippard

James P. Phippard (agent)

Z 363 098 559

US Postal Service
Receipt for Certified Mail

911260550000
Bergeron
Emile W.
99 Cady Ln.
Spofford NH 03462

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom Date, & Addressee's Address	
TOTAL Postage & Fees	$ 1.73
Postmark or Date	

PS Form 3800, April 1995

Z 363 098 561

US Postal Service
Receipt for Certified Mail

702010090000
AR-GE Properties
PO Box 1060
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
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TOTAL Postage & Fees	$ 1.73
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Z 363 098 558

US Postal Service
Receipt for Certified Mail

060010010000
H.J. Heyman Sons LLC
333 Post Road West
Westport CT 06881

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
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TOTAL Postage & Fees	$ 1.73
Postmark or Date	

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Z 363 098 563

US Postal Service
Receipt for Certified Mail

702010040000
Concord Laboratories Inc.
25 Production Ave.
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
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TOTAL Postage & Fees	$ 1.73
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US Postal Service
Receipt for Certified Mail

912260120000
State of NH
PO Box 483
Concord NH 03302
ATTN: FINN POSNER

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
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TOTAL Postage & Fees	$ 1.73
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US Postal Service
Receipt for Certified Mail

912260090000
Kingsbury
George T.
700 West St.
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
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US Postal Service
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911260130000
Keene Group
The
400 Amherst St. Ste 404
Nashua NH 03063

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
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Curran
A. Ranger
PO Box 1060
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
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TOTAL Postage & Fees	$ 1.73
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Z 363 098 562

US Postal Service
Receipt for Certified Mail

702010050000
Bunce
John E.
11 Production Ave.
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
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TOTAL Postage & Fees	$ 1.73
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Z 363 098 564

US Postal Service
Receipt for Certified Mail

502010180000
State of NH
19 Base Hill Rd
Keene, NH 03431

Postage	$ .33
Certified Fee	1.40
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Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
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Z 363 098 567

US Postal Service
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129030060000
Zimmerman
William G.
51 Kendall Rd.
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
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Z 363 098 560

US Postal Service
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063010160100
New England Tel. & Tel. Co.
1095 Ave of the America
New York NY 10036

Postage	$ .33
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Z 363 098 574

US Postal Service
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050010050000
Crossmon
Robert G.
87 Pearl St.
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
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TOTAL Postage & Fees	$ 1.73
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Z 363 098 565

US Postal Service
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049030160000
Huckins
Clifton R.
60 Pearl St.
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
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US Postal Service
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056010010000
Antioch University
40 Avon St.
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
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Restricted Delivery Fee	
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NH Gas Corp
32 Central Square
Keene, NH 03431

Postage	$ .33
Certified Fee	1.40
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Restricted Delivery Fee	
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US Postal Service
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050010060000
Fisk
Franklin C.
22 Hart Place
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom Date, & Addressee's Address	
TOTAL Postage & Fees	$ 1.73
Postmark or Date	

Z 363 098 568

US Postal Service
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050010070000
Migneault
Jeffrey R.
30 Hart Pl.
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
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TOTAL Postage & Fees	$ 1.73
Postmark or Date	

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Z 363 098 547

US Postal Service
Receipt for Certified Mail

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City of Keene
3 Washington St.
Keene NH 03431

Postage	$ .33
Certified Fee	1.40
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Restricted Delivery Fee	
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Z 363 098 552

US Postal Service
Receipt for Certified Mail

912260130000
Roberts
Communications
PO Box 707
Keene NH 03431

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Postmark or Date	

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Z 363 098 553

US Postal Service
Receipt for Certified Mail

912260250000
DSNH
19 Production Ave.
Keene NH 03431

Postage	$ .33
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TOTAL Postage & Fees	$ 1.73
Postmark or Date	

Z 363 098 548

US Postal Service
Receipt for Certified Mail

050030010000
Hof
Philip a.
82 PO Box 423
Keene NH 03431

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Postmark or Date	

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Z 363 098 549

US Postal Service
Receipt for Certified Mail

050030290000
Collier
Neal F.
78 Pearl
Keene NH 03431

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Restricted Delivery Fee	
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Z 363 098 559

US Postal Service
Receipt for Certified Mail

060010070000
King
Kenneth M.
PO Box 278
Southboro MA 01772

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Postmark or Date	

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Z 363 098 566

US Postal Service

Receipt for Certified Mail

502010010000
Barrett
Aubrey W.
East Surry Rd.
Keene NH 03431

Postage	$ .33
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Restricted Delivery Fee	
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Return Receipt Showing to Whom, Date, & Addressee's Address	
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PS Form 3800, April 1995

TABLE OF CONTENTS

1.0 INTRODUCTION AND PROJECT SUMMARY

The New Hampshire Gas Corporation (NHGC) is a gas distribution company in Keene, NH, with approximately 1,000 customers. NHGC currently distributes a propane-air vapor with a heating value of 742 BTU/ft.^{3} to its customers through its 26-mile distribution network. The propane is purchased by NHGC from Shalldu Ltd., which owns and operates a production facility on Emerald Street in Keene.

1.1 INTRODUCTION

This application is for a wetland permit for a proposed liquefied natural gas (LNG) facility and natural gas pipeline. The site location, at the south end of Production Avenue in Keene, New Hampshire, shown on Figure 1, is approximately 3 miles from downtown Keene in an area with an industrial zoning classification. The facility will allow NHGC to distribute natural gas to its customers in place of the current propane-air vapor produced at the propane-air facility located on Emerald Street, which is owned and operated by Shalldu Ltd. LNG will be stored at the proposed facility and will then be vaporized to form natural gas. The natural gas will then be odorized prior to being sent to the point of interconnection with the existing distribution system near Emerald Street through a new 1.94-mile 8-inch pipeline. The proposed route of the pipeline is also shown on Figure 1.

At the point of interconnection near Emerald Street, a regulator station will lower the pressure of the gas sufficient for distribution through the existing distribution piping system. The proposed LNG facility location will reduce the number of tanker trucks in the downtown area and will replace the use of propane-air vapor with clean, efficient natural gas in Keene.

1.2 PROJECT DESCRIPTION

The proposed LNG facility consists of a control building, unloading and vaporization facilities, and a horizontal 70,000-gallon LNG storage tank. Space for three (3) additional LNG tanks and future area operations building has been included in the site layout. The proposed LNG facility will be located on Production Avenue in Keene and will be connected to the existing distribution system near Emerald Street, by a 1.94 mile, 8-inch natural gas pipeline.

Truck deliveries of LNG will be made at the Production Avenue site from interstate and state highway interconnects, eliminating the transport of fuel through downtown Keene on behalf of NHGC.

Mr. Clifford A. Baurer and Mr. John E. Bunce are the current owners of lots 5, 6, 11, 12, 13, 14, and 15 on Production Avenue (see Figure 1). After obtaining the required permits, NHGC will purchase lots 5, 6, 11, 12, 13, 14, and 15 from Mr. Baurer and Mr. Bunce and merge the seven (7) lots. NHGC is also proposing to discontinue the use of the existing cul-de-sac and approximately 335-ft of the end of Production Avenue. The discontinued portions of Production Avenue land will also be merged into the site.

The combined land areas of lots 5, 6, 11, 12, 13, 14, and 15 and the Production Avenue ROW will provide approximately 17.3 acres for the LNG facility.

The pipeline will be located on easements negotiated by NHGC with the respective property owners.

2.0 NEED

NHGC provides propane-air vapor to the City of Keene, NH, as an economical alternative to liquid propane and home heating oil. NHGC currently serves approximately 1000 customers in the City of Keene from a buried pipe distribution system. The propane-air vapor is purchased by NHGC from Shalldu Ltd., which owns a production facility on Emerald Street in Keene. The Shalldu facility on Emerald Street is the only supply into the NHGC distribution system and has been in operation for approximately 40 years without any major upgrades to its operating systems. NHGC is currently limited in the expansion of its customer base because of the limitations of the propane-air vapor production facility. The proposed LNG facility on Production Avenue would allow NHGC to add customers on its existing distribution system and to expand its distribution system to provide natural gas to new customers in currently unserved areas. The proposed facility would be equipped with the latest technology in safety, operating and monitoring systems. Also, the replacement of the facility on Emerald Street with the proposed facility on Production Avenue will eliminate tanker trucks that currently travel through downtown Keene for the benefit of NHGC.

3.0 ALTERNATIVE ANALYSIS

3.1 PROJECT ALTERNATIVES

NHGC proposes to build and operate a LNG facility at the southern end of Production Avenue. The proposed facility, which includes an aboveground LNG tank of 70,000-gallon capacity, will produce natural gas with a heating value of 1,000 BTU/ft^3 for distribution to its customers. An 8-inch plastic pipeline, 1.94 miles in length, will connect the proposed LNG facility at the end of Production Avenue to the distribution system near Emerald Street.

The proposed Production Avenue site includes space for three (3) additional 70,000-gallon LNG tanks to accommodate customer growth. Space has also been provided for a future building to house operations personnel and equipment.

NHGC's selection of a LNG facility was determined after a study of alternative fuel supply sources to replace the propane-air vapor source at Emerald Street. The alternatives studied, in addition to the LNG facility, included a propane-air facility and natural gas pipeline. An explanation of the alternatives is provided in the following sections.

3.1.1 Propane-Air Facility

A propane-air facility could be located at the site at the end of Production Avenue. It would initially consist of one (1) 60,000-gallon tank with space allocated for three (3) additional 60,000-gallon tanks. The propane-air facility was not selected because of the volatility of the propane liquids market, the inherently safer characteristics of natural gas versus propane vapor, and the increased compatibility of natural gas over propane-air vapor for peak shaving considerations in the event a natural gas transmission pipeline is built to Keene.

3.1.2 Natural Gas Pipeline

NHGC investigated the feasibility of extending a gas pipeline from the northern-most point on the Berkshire Gas Company natural gas system in Greenfield, MA, to Keene. An 8-inch diameter steel pipeline approximately 35 miles in length would be required to transport natural gas from Berkshire Gas's system to Keene. This alternative was not selected due to the high capital cost of the pipeline construction.

3.2 SITE ALTERNATIVE

A site search of the Keene, NH area was conducted to identify existing properties, which could accommodate a LNG facility for NHGC. This survey was conducted by Northstar Industries and Brickstone Masons personnel in cooperation with personnel from NHGC. The site search document is attached as Exhibit 1.

3.3 PIPELINE ROUTE ALTERNATIVES

NHGC's proposed LNG facility site at the end of Production Avenue is located remote from its existing distribution system. Accordingly, it is necessary to build a pipeline from the proposed LNG facility to interconnect it to the distribution system. NHGC reviewed several potential routes for the pipeline and selected the route that met the operational requirements of the existing system, afforded the opportunity to attach new customers along the proposed route, permits future system expansion into currently unserved areas and makes use of existing utility corridors while creating only short term impacts to the environment.

NHGC's distribution system originates at the current source of system supply, the propane air facility owned and operated by Shalldu, Ltd. at Emerald Street. From that location the system spreads throughout the city with the distribution piping reducing in size as it extends from Emerald Street. From an operational perspective, interconnecting at Emerald Street would allow NHGC to serve its existing customer base and add new customers without requiring system modifications. Establishing a point of interconnection at the south or west perimeter of the distribution system was investigated as it would require less pipe to interconnect the LNG facility but proved to be unfeasible operationally. Because the interconnection would occur at a point in the distribution system where the existing pipe diameter is reduced, adequate flows and pressures could not be maintained to serve the existing customer base.

The route selected is as shown on Figure 1. From the proposed LNG facility site, the pipeline will utilize the existing Production Avenue right-of-way for 0.34 miles, cross New Hampshire Route 9, traverse the proposed Konover development north of Route 9 for 0.57 miles, utilize an existing Public Service of New Hampshire electric transmission and distribution right-of-way for 0.19 miles, cross common Routes 9, 10 & 12, utilize an abandoned railroad right-of-way converted to a public trail by the City of Keene for 0.67 miles and then be located on private property for 0.16 miles. The proposed route will be 1.94 miles in total length. The route will allow NHGC to expand its distribution system in the future to serve the heavily populated area west of common Routes 9, 10 and 12.

Other alternatives investigated from the proposed LNG facility site to Emerald Street utilized

previously existing or proposed state highway rights-of-way and abandoned railroad beds. The state highway corridors considered consisted of Route 9 located north at the end of Production Avenue traveling in an east-west direction, common Routes 9, 10 and 12 located west of downtown Keene traveling in a north-south direction, and common Routes 10, 12 and 101 located south of downtown Keene traveling in an east-west direction. All three highway corridors are affected by the Keene bypass project proposed by the State of New Hampshire Department of Transportation and the scope of this project and final location remains undetermined at this time. For these reasons, these corridors were eliminated to avoid the possible future relocation of pipeline to accommodate potential project realignments. The abandoned Boston and Maine Railroad bed that extends south from Emerald Street and owned by the State of New Hampshire was reviewed but eliminated when it could not be accessed from the state highway rights-of-way.

3.4 NO-BUILD ALTERNATIVE

The no-build alternative is not a practical alternative. In order to permit NHGC to expand its customer base and provide clean, efficient natural gas to its new customers, NHGC has to build a new facility.

The no-build alternative would require that NHGC continue to purchase propane from Shalldu Ltd. at its facility on Emerald Street. This would necessitate the continued movement of liquid propane tanker trucks, storage of liquid propane and propane air products on behalf of NHGC in the downtown Keene area. The Safety Division of the New Hampshire Public Utility Commission, the regulatory agency under which NHGC operates, has encouraged and supports the elimination of the aforementioned activities in the downtown Keene area.

3.5 ONSITE ALTERNATIVES

Alternative site layouts for the proposed LNG facility were considered in an effort to avoid and minimize impacts to wetlands. Due to the physical size of the storage tank(s) and the design criteria governed by US DOT 49 CFR Part 193-Liquefied Natural Gas Facilities: Federal Safety Standards, and NFPA 59A-Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG), it was not possible to avoid wetland impacts. The site layout has been designed to meet the provisions of 49 CFR Part 193 and NFPA 59A, make the facility operationally functional, minimize the impact to adjacent property owners in the event of an incident, and minimize impact on wetlands.

4.0 DESCRIPTION OF EXISTING CONDITIONS

4.1 GENERAL

4.1.1 LNG Facility Site

The project site is bounded on the north by an existing industrial building and an undeveloped lot zoned industrial, on the east by an unnamed tributary of Ash Swamp Brook, on the west by Ash Swamp Brook and on the south by undeveloped land belonging to Emile Bergeron (see Drawing No. 039001, Sheet 1A).

Most of this combined lot is jurisdictional wetland that is periodically brush-hogged. Some of the area was previously in agriculture, but the fields have now reverted to native species (see Exhibits 4, 5 and 6). To facilitate agriculture and reduce downstream flooding the lot was drained by the construction of ditches. These drain to the east to a large unnamed tributary of Ash Swamp Brook, and to the west to Ash Swamp Brook. The City of Keene is required by maintenance agreements with the USDA Natural Resource Conservation Service to periodically dredge these waterways. To allow equipment access for dredging and maintenance, the banks of the unnamed tributary and Ash Swamp Brook are kept clear of woody vegetation.

4.1.2 Pipeline Route

The proposed route is shown on Figure 1. From the proposed LNG plant site, the pipeline will be buried in the road shoulder of the existing Production Avenue right-of-way and then follow the proposed shoulder of the permitted realignment of Production Avenue with the intersection of New Hampshire Route 9. The pipeline will be directionally drilled under Route 9. It will then traverse the proposed Konover development, north of Route 9. This route will impact emergent wetlands adjacent to Route 9 and jurisdictional drainage ditches on the Konover site, which will be altered for construction of the Keene-Swanzey Bypass and the Konover Development.

The pipeline will turn eastward on the north end of the Konover development, where it will utilize an existing Public Service of New Hampshire electric transmission and distribution right-of-way. In this segment of the corridor, construction will take place in three areas of jurisdictional wetland. The pipe will be directionally drilled under common Routes 9, 10 & 12. On the east side of the highway the pipeline will impact two more areas of jurisdictional wetland.

The pipeline will not impact any streams or rivers. It will be installed above the existing culvert of the tributary to the Ashuelot River near the K-mart plaza (see Exhibit 6, Photograph 15). For the crossing of the Ashuelot River, located between Pearl and Islands Streets, the pipeline will be

suspended from the existing footbridge (see Exhibit 6, Photograph 17). All equipment will operate from an existing graded area on the east bank of the stream, and no equipment will be permitted in the stream channel. Overall, 1,755 linear feet of pipeline will be installed in five wetland areas.

4.2 SOILS

4.2.1 LNG Facility Site

Soils on the project site are mineral soils that range in texture from fine sandy loam to loamy fine sand. They formed on an old glacial lake plain. Soil series mapped by the USDA Soil Conservation Service are shown on Figure 2, Portion of Sheet No. 22 of SCS Soil Survey. Soil unit 218, Raynham-Wareham complex, covers the entire lot. This complex consists of hydric soils that have low chroma horizons within twenty-four inches of the surface, and redox concentrations in root channels within 12 inches of the surface.

Open ditches that were constructed to improve the suitability of these soils for farming activities, now make commercial and industrial development practicable. Even though the water level has been artificially lowered, most of the soils on the site still contain sufficient moisture to be classified as hydric.

Upland soils on the site are located adjacent to Production Avenue, the drainage ditches, Ash Swamp Brook and the unnamed tributary. When Production Avenue was constructed, sand fill was placed on the site. This fill is high enough above the water table that the soils do not exhibit hydric characteristics. Areas adjacent to the ditches and waterways also do not exhibit hydric characteristics because they are underdrained by the ditch system, and the vertical accumulation of sidecast material places them above the water table.

4.2.2 Pipeline Route

Wetland soils along the pipeline corridor are similar to those on the facility site. Most are mapped as Raynham-Wareham complex. However, some of the hydric soils on the east side of Routes 9, 10 & 12 are hydric inclusions in well-drained Occum fine sandy loam. Textures range from silt loam to loamy fine sand.

4.3 VEGETATION

4.3.1 LNG Facility Site

The vegetation on the lot has been previously altered; it appears, by intensive agriculture. However, these agricultural practices have been abandoned and the lots are reverting to native species. The woody vegetation is removed on a regular basis so that vegetation is dominated by herbaceous species. The hydrology of the wetland areas can be characterized as predominantly saturated.

The wetlands are classified, using the Classification of Wetlands and Deepwater Habitats of the United States by L. M. Cowardin et al., 1979, as Palustrine Emergent Persistent, Saturated/Palustrine Scrub-Shrub, Broad-leaved Deciduous, Saturated (PEM1B/SS1B) and as Palustrine Emergent Persistent, Seasonally Flooded/Saturated (PEM1E). See the Drawing No. 039001, Sheet 1A, for the specific location of wetland communities.

The emergent wetland areas are dominated by goldenrod, aster, sedge and/or sensitive fern, and scrub shrub wetlands are dominated by willow and dogwood in association with the previously mentioned herbaceous species (see Exhibit 6).

If left undisturbed, most of the site would probably revert to floodplain forest dominated by quaking aspen, gray birch, black cherry, choke cherry, and elm in the overstory; silky dogwood, honeysuckle, arrowwood and broadleaf meadowsweet in the woody understory; and sedges, sensitive fern, goldenrod and soft rush in the herbaceous layer

4.3.2 Pipeline Route

Installation of the pipeline will impact five separate wetland areas. The location, size and community classification of each of these areas are shown on Drawing No. 039001, Sheets 2 and 3. Since all of these areas are within the powerline corridor, woody vegetation is periodically removed. Seventy-five species of plants were identified along the corridor (see Exhibit 4).

In general, the forested areas are dominated by gray birch and red maple. The scrub shrub areas are dominated by willow, dogwood, arrowwood, chokeberry and meadowsweet. And, the emergent areas are dominated by cattail, impatiens, goldenrod, asters, and interrupted fern (see Exhibit 6).

4.4 HYDROLOGY

4.4.1 LNG Facility Site

Some areas are seasonally flooded. However, the dominant hydrology within wetland areas can be described as saturated. Ditches along its periphery drain the lot and the water table is lower today than in previous decades. Water drains from the east side of the cul-de-sac to the east, where it enters one of two ditches, these ditches drain to the unnamed tributary of Ash Swamp Brook. Ash Swamp Brook is tributary to the Ashuelot River. Water on the west side of the cul-de-sac primarily drains into a north-flowing ditch. This ditch drains into a west-flowing ditch along the property boundary with Smith Industries Medical Systems. This ditch empties directly into Ash Swamp Brook.

4.4.2 Pipeline Route

Each of the five impact areas has a hydrological regime that is predominantly saturated. However, area #1 has a segment (see Exhibit 6, Photograph 12) that can be characterized as seasonally flooded. Standing water was observed in this area during site visits.

4.5 WETLANDS

4.5.1 LNG Facility Site

As previously mentioned, the site appears to have been altered by past agricultural practices and the construction of drainage ditches for flood control. Areas that are saturated or inundated for sufficient duration during the growing season, have hydrophytic vegetation, and hydric soils are jurisdictional wetlands. All of these parameters (hydric soil, wetland hydrology and wetland facility species) are necessary for delineation as jurisdictional wetland. All of the wetlands mapped on this site contain each of these three parameters.

Connecticut Valley Environmental Services delineated the wetlands on this site in April 2000. The Comprehensive Wetland Determination Methodology used to delineate the wetlands is described in the 1987 Federal Delineation Manual (Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, January 1987). The State of New Hampshire and the U. S. Army Corps of Engineers (ACOE) mandate the use of this methodology. The hydric soil component of delineations was determined in accordance with the manual, Field Indicators for Identifying Hydric Soils in New England, Version 2 (July 1998).

The wetlands on the lot were flagged in the field and the flags were surveyed onto the base map

by SVE. Two transects with observation points are shown on the Drawing No. 039001, Sheet 1A. The data forms for these points and associated documentation are included in Exhibits 4 and 5.

4.5.2 Pipeline Route

Connecticut Valley Environmental Services delineated the wetlands along the pipeline route in May 2000. The Comprehensive Wetland Determination Methodology used to delineate the wetlands is described in the 1987 Federal Delineation Manual (Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, January 1987). The State of New Hampshire and the U. S. Army Corps of Engineers (ACOE) mandate the use of this methodology. The hydric soil component of delineations was determined in accordance with the manual, Field Indicators for Identifying Hydric Soils in New England, Version 2 (July 1998).

The wetlands along the route were flagged in the field and the flags were surveyed onto the base map by SVE. Two transects with observation points are shown on the Drawing No. 039001s, Sheets 2 and 3. The data forms for transects 3 and 4 are included in Exhibits 4 and 5.

4.6 FLOODPLAINS

The LNG facility site lies within the limits of the 100-year floodplain, as identified in the Flood Insurance Rate Maps for the City of Keene. The stormwater detention pond is designed for a Type III, 24-hour, 4.9-inch rainfall event. The 100-year flood level has been determined to be approximately elevation 472.

4.7 WETLAND FUNCTIONS AND VALUES

4.7.1 LNG Facility Site

The overall value of the wetlands on the lot is low. The wetlands are degraded by human activities, fragmented by development, and surrounded by developed areas. The principal natural function of the wetland areas is flood flow alteration. Other functions and values are present, but they are not considered principal. These include ground water discharge, sediment/toxicant retention, production export and wildlife habitat. A wetland function-value evaluation form (from The Highway Methodology Workbook Supplement, ACOE, 1995) supporting the rationale for determining the wetland functions and values is included in the Wetland Report, Wetland Function-Value Evaluation Form.

Groundwater Recharge and Discharge

The wetland is associated with a perennial watercourse and a fragipan does not occur in the soils. However, fine-grained impervious soils, provide little opportunity for groundwater-surface water interactions. Some of the ditches provide an opportunity for groundwater discharge. The site is underlain by a stratified-drift aquifer (Moore et al., 1994). The quality of groundwater within the stratified drift aquifer meets drinking water standards, and public and private water wells occur downstream of the wetland.

Floodflow Alteration

Based on revised floodplain maps most of the wetlands on the site function in flood storage during the 100-year flood, but their watershed area is small. They contain hydric soil over a relatively flat area that is able to absorb and detain floodwaters from Ash Swamp Brook and the unnamed tributary, and they receive some sheet flow from impervious surfaces of Production Avenue. The drainage ditches and associated waterways retain higher volumes of water during flood events than under normal or average rainfall conditions but they do not store a significant volume of water relative to the floodplain cross section.

Fish & Shellfish Habitat

Not applicable. The drainage ditches have insufficient flow to support populations of fish.

Sediment and Toxicant Retention

The wetlands bordering the drainage ditches lack permanent vegetation due to periodic mowing and dredging. However, when vegetation is present, there is an opportunity to retain sediment and toxicants in shallow vegetated water. Most of the wetlands contain fine-grained mineral soils that have an opportunity to reduce or prevent the degradation of water quality by trapping toxicants that may wash into them. However, except for Production Avenue, there are few sources for excess sediment and toxicants, such as pesticides and fertilizers, in the watershed. Since the emergent/scrub shrub wetlands have little inflow, they are limited to trapping sediment or toxicants in the small amount of surface water runoff, which enters them.

Nutrient Removal

The slowly drained and fine-grained soils and emergent vegetation provide an opportunity to perform this function. However, since no excess source of nutrients is evident in the watershed above the wetland, it is given a low rating for this function.

Production Export

Several species of plants provide food sources for wildlife species and the dense vegetation produces a large amount of detritus. The presence of permanent outlets also provides an opportunity for periodic flushing of this detritus and nutrients. However, the wetland's proximity to development and the fact that it is periodically mowed reduces its usage by wildlife.

Sediment/Shoreline Stabilization

Wetland vegetation bordering the drainage ditches has an opportunity to help stabilize the banks against erosion. However, they are not very effective in this function as vegetation is not allowed to become permanently established in either the ditch or on the banks.

Wildlife Habitat

Wildlife usage of the wetland is limited because of its lack of vertical structure, low habitat interspersion, proximity to development, and degradation by human activity. The proximity to Ash Swamp Brook suggests the area may function as a travel corridor for some wildlife species. Areas with a high density of shrubs and saplings provide nesting cover for passerine birds and escape cover for small mammals. A number of plant species provide food for wildlife. These include quaking aspen, black cherry, choke cherry, silky dogwood, sedges and other herbaceous growth. The in-stream and stream side (riparian) habitats along Ash Swamp Brook, the unnamed tributary and the drainage ditches are degraded by periodic dredging and removal of vegetation along the banks. However, they do provide surface water throughout much of the year. But because of the steep sides, this water source may be unavailable to some wildlife species.

Recreation

The wetland area provides minimal recreational value.

Educational and Scientific Value

Because the wetlands have been significantly degraded by agricultural activities, they have minimal value as an "outdoor classroom" or as a location for scientific study or research.

Uniqueness and Heritage

The State Historic Preservation Officer was requested to comment on the value of the proposed site with respect to known properties of architectural, historical, archaeological, engineering, or cultural significance within the area of concern (see Exhibit 3). No response has been received as of this date.

Visual Quality and Aesthetics

Minimal. However, it has some value as open space.

Endangered Species Habitat

The New Hampshire Natural Heritage Inventory was contacted regarding rare, threatened, or endangered species, and exemplary natural communities that may be affected by this project. The Coordinator for the Natural Heritage Inventory has responded that no recorded occurrences for sensitive species are known near the project site (see Exhibit 3). No unusual elements were noted during site visits.

4.7.2 Pipeline Route

The overall value of the wetlands along the pipeline route is also low. The wetlands are degraded by periodic mowing, fragmented by development, and surrounded by developed areas. The principal natural function of these wetland areas is floodflow alteration. Other functions and values are present, but they are not considered principal. These include the same functions that are present on the facility site, which are ground water discharge, sediment/toxicant retention, production export, and wildlife habitat. In addition, educational, visual quality and aesthetic values are present due to the adjacent pedestrian/bicycle path, Antioch New England Graduate School, and dense commercial development. Overall, the functions and values of the wetlands will not be diminished. The proposed impacts are only temporary, for the construction of the pipeline.

The State Historic Preservation Officer was requested to comment on the value of the proposed site with respect to known properties of architectural, historical, archaeological, engineering, or cultural significance within the area of concern (see Exhibit 3). No response has been received as of this date.

The New Hampshire Natural Heritage Inventory was contacted regarding rare, threatened, or endangered species, and exemplary natural communities that may be affected by this project. The

Coordinator for the Natural Heritage Inventory has responded that no recorded occurrences for sensitive species are known near the project site (see Exhibit 3). No unusual elements were noted during site visits.

5.0 ENVIRONMENTAL IMPACTS

5.1 WETLAND IMPACTS

The total impact to resources under the jurisdiction of the New Hampshire Wetlands Bureau and the Army Corps of Engineers is 139,774 square feet or 3.21 acres.

The proposed LNG facility development will impact 87,120 square feet of wetland as shown on Drawing No. 039001, Sheet 1B. The plan calls for approximately 4,444 cubic yards of fill for the proposed structures. All of the proposed impact is under the jurisdiction of the New Hampshire Wetlands Bureau and the Army Corps of Engineers (see Drawing No. 039001, Sheet 1B).

The construction of the pipeline will have a temporary impact on 52,654 square feet of wetland as shown on Drawing No. 039001, Sheets 2 and 3. Installation of 1,755 linear feet of pipeline in wetland will require the removal of vegetation along a 30-foot wide right-of-way. Brush and small diameter trees (less than 6 inches) will be cut and chipped on site. Larger diameter trees (greater than 6 inches) will be cut with a chainsaw and disposed of off-site. Then, a trench approximately 1 ½ - 2 feet wide and 3 feet deep will be excavated. The top 12 inches of topsoil will be separately stockpiled from the rest of the trench spoil. The stockpile will be kept moist and protected against material loss. If the existing soil is stony, a 6-inch layer of sand will be added to the bottom of the trench. The lengths of pipe will then be fused and the pipe lowered into the trench. If necessary, the pipe will be covered with 6 inches of sand. The trench will then be completely backfilled with native material, with the top of the trench to be filled with the stockpiled topsoil. Any excess spoil will be disposed of off-site in upland areas. Following backfilling of the trench, the right-of-way will be graded to pre-construction contours and allowed to re-vegetate from the seed bank in the soil.

5.2 FLOODPLAIN IMPACTS

The proposed LNG facility development lies within the 100-year floodplain, which is at elevation 472 feet. A total volume of approximately 4,444 cubic yards of fill will be placed at or below elevation 472. Filling of the floodplain is proposed for the project. Compensatory flood storage is being provided onsite in compliance with local and federal floodplain regulations (see Drawing No. 039001, Sheet 1C).

Construction of the pipeline will not require any fill in the 100-year floodplain. All grades will be restored to their original contours.

6.0 MITIGATION MEASURES

Components of the mitigation plan include: 1) avoidance and minimization of wetland and floodplain impacts to the extent possible (see Sections 3.0 & 7.0), 2) protection of water quality and management of stormwater flows through the use of temporary and permanent erosion and sediment control measures (see Section 7.0), 3) replacement of any loss of flood storage for the 100-year flood, 4) construction/restoration of wetlands, and 5) conservation with an easement of riparian buffers, forested wetland, vernal pool and upland habitats adjacent to Ash Swamp Brook and its unnamed tributary. The proposed compensatory mitigation is offered for permanent wetland impacts of 87,120 square feet for the LNG storage facility and temporary impact of 52,654 square feet for construction of the pipeline.

6.1 Replacement of Flood Storage

Any decrease in flood storage for the 100-year flood will be compensated for, at or below the same elevation, to comply with City of Keene and FEMA requirements. The location of compensatory floodstorage areas are shown on Drawing No. 039001, Sheet 1C. Excavation of upland areas (Compensation Areas #1 – #11) provide for a total of 4,508 cubic yards of flood storage between elevations 469 and 472. This is more than sufficient to replace the 4,444 cubic yards of flood storage that will be lost. In addition, the excavation of these upland areas will also create a total of 46,842 square feet of new wetland (Wetland Creation Areas A – E).

6.2 Constructed/ Restored Wetland

A portion of the upland areas excavated for compensatory floodstorage will be excavated to an elevation that will allow the establishment of wetland hydrology. These five areas (A-E) are shown on Drawing No. 039001, Sheet 1C. Each of these areas will be excavated to 12 inches below final grade, and then backfilled with 12 inches of hydric soils that will be salvaged from wetland impact areas on the project site. A total of 46,842 square feet or 1.07 acres of wetland will be constructed in these areas.

Additional upland areas occur on the project site that could be converted to wetland. However, since upland habitat is rare on site, and in the general vicinity, we believe these areas should be preserved to provide greater habitat interspersion.

Within the proposed conservation parcel, areas F and G that are periodically mowed will be allowed to revert to scrub-shrub and forested wetland. These areas total approximately 83,952 square feet or 1.93 acres. Taken together, the total area of constructed/restored wetland is 3.00 acres.

6.3 CONSERVATION EASEMENT

Use restrictions will be placed on approximately 8.23 acres of riparian corridor, vernal pool habitat, forested wetland and forested upland (see Drawing No. 039001, Sheet 1C). The proposed easement area consists of disturbed riparian areas within the Production Avenue subdivision, and undisturbed forested wetland and forested upland on additional lands acquired by Production Realty on the opposite side of Ash Swamp Brook and the unnamed tributary. The easement area will overlap the existing 70-foot easement held by the City of Keene for the maintenance of these waterways. A copy of the proposed Covenant and Restrictions will be submitted under separate cover.

The value of in-stream and riparian habitats along Ash Swamp Brook and its unnamed tributary have been degraded by periodic dredging, removal of vegetation along the banks and the proximity of commercial activities. Nonetheless, portions of the wetland provide suitable habitat for migratory waterfowl and water dependent species. The proposed mitigation plan provides an opportunity to restore and enhance the wildlife value of these waterways.

The purpose of the easement is to allow the natural reestablishment of native vegetation to create a buffer between the proposed development and the waterways. The rationale for protecting a buffer is based on available research. A buffer's capacity to capture pollutants depends, in part, on the width of the buffer and the land use from which the stream is being buffered. A buffer removes total suspended sediment, nitrogen, phosphorus, and nitrate (Chase et al., 1995). Riparian forest buffers provide stream shading, which maintains beneficial low stream temperatures. Buffers also provide food, cover, breeding habitat and serve as a travel corridor for many species. A buffer protects species that are aquatic as well as those that inhabit upland habitats.

The easement is also intended to preserve the vernal pool habitat on the east side of the unnamed tributary, along with additional wetland and upland areas, as a habitat refuge for wildlife species. This easement will specifically restore and protect wildlife values, improve water quality, improve floodflow alteration, and enhance recreational and educational opportunities.

6.3.1 Wildlife Values

Reestablishing upland and wetland communities in riparian areas will compensate for any loss of wildlife habitat by the proposed project. Enhancement and protection of vegetated buffers along Ash Swamp Brook and its unnamed tributary will benefit wildlife for the following reasons: 1) trees possess root structures that can withstand cyclic flooding, ice scour, and natural erosion of the bank; 2) undercut banks are important for fish, and wood turtles hibernating on stream

bottoms are often protected from predators such as mink and otter by root tangles; 3) bird species richness and density is higher in riparian forests than in adjacent upland forests of similar vegetative structure and composition; 4) overhanging branches provide shade, lowering surface water temperatures, which is beneficial to many species and provide a screen between surface waters and upland activities; 5) rich plant life in riparian areas provides the base of the food web; and, 6) many mammals, birds, reptiles and amphibians are dependent on undeveloped, vegetated riparian areas along streams.

6.3.2 Water Quality

The proposed riparian buffer will help protect surface water quality by slowing runoff, allowing water to infiltrate, and by trapping sediment. Poor water quality can disrupt the life cycle of aquatic flora and fauna; excess deposited sediment can smother fish eggs, invertebrate bottom dwelling animals, and leaves of aquatic plants; suspended sediment can suffocate fish by damaging their gills; and, sediment can also transport pollutants by means of adsorption or temporary chemical attachment to soil particles.

Naturally vegetated buffers are recognized as superior to grass buffers. Forested buffers are more efficient than grass buffers in adsorbing excess nitrate and tree roots improve soil porosity by creating space, which promotes infiltration, and leaf litter provides a rough surface for slowing flow and a source of carbon for denitrification. Research also suggests that naturally vegetated buffers with leaf litter and a layer of humus retain some ability to slow runoff and trap sediment even when the ground is frozen.

6.3.3 Floodflow Alteration

Forested buffers assist in the retention of flood waters as tree roots improve the porosity of the soils. They also assist in the desynchronization of flood flows as naturally vegetated buffers slow runoff.

6.3.4 Recreation and Education

The proposed conservation area is adjacent to the mitigation area proposed by the Department of Transportation for the Keene-Swanzey roadway improvement project. This juxtaposition provides an opportunity to create a larger contiguous green belt and to enhance the recreational and educational value of the Ash Swamp Brook wetland system.

6.4 VEGETATION MANAGEMENT PLAN

6.4.1 Introduction

The following has been developed to provide the operators of the NHGC LNG Facility with goals for managing vegetation on the site. Much of the site is designated as wetland. Because of this, special consideration is given to selection of management techniques that will minimize the impact of vegetation management on the wetland values, while allowing the facility to function unimpeded by vegetation.

6.4.2 Short Term Vegetation Management Goals

The goal is to cut all woody vegetation that will interfere with grading, construction or mowing of the site in the future according to the following criteria:

- Cut woody vegetation from areas to be developed for the tanks, impoundment area, roadway, buildings, and the associated grading areas.
- Cut woody vegetation in the undeveloped area that is within the fence that will not be disturbed during construction.
- Cut woody vegetation from the fence line to 10-feet beyond the fence line.

6.4.3 Long Term Vegetation Management Goals

A. The goal is to manage vegetation on the site in a manner that does not present a fire hazard according to the following criteria:

- Maintain the containment area around the tanks and the impoundment area free of vegetation.
- Maintain the unpaved portions of the developed area in a low grass cover through regular mowing.
- Maintain the vegetation in the undeveloped area within the fence at a low height by annual mowing.

B. The goal is to manage vegetation on the site such that unobstructed line-of-sight visibility is maintained within and immediately outside of the fenced area to provide for security according to the following criteria:

- Mow vegetation in the undeveloped area, within the fence, to a height of 6-12 inches at least annually.

- Treat the area immediately under and within 18 inches of the fence with a herbicide to prevent vegetation from growing up or becoming entangled in the fence.

- Mow the perimeter outside of the fence, extending ten feet from the fence line.

C. The goal is to manage vegetation on the site in a manner to minimize both the disruption of undeveloped portions of the site, and the degradation of wetland values according to the following criteria:

- Carry out mowing activities when the site is either frozen or relatively dry. Utilize tracked or high flotation mowing equipment to minimize disturbance of wetland soils.

- Utilize low toxicity, non-persistent herbicides that will not leach through the soil with water, and are labeled by the Environmental Protection Agency for use in wetlands.

- Minimize the need to use herbicides to provide total vegetation control in the containment area and impoundment area, by installing a geotextile fabric under the stoned surface to inhibit germination.

- Leave the remainder of the site, outside the fence and mowed perimeter, undisturbed.

6.5 STORMWATER, SNOW AND ICE MANAGEMENT PLAN

6.5.1 General

The Keene LNG facility will be designed with the utmost care to maximize the safety of the public and NHGC employees. The removal of stormwater, snow and ice from the remote impoundment and the trench leading to the impoundment ensures that an LNG spill will have adequate impounding space and that any LNG spill can reach the remote impoundment area. Any stormwater removal system must be designed to ensure that the removal process would not remove LNG with the collected water and would not act as a source of ignition. This plan is established to comply with the requirements of 49 CFR 193.2173.

The LNG tank will be located within an impoundment and spill collection system. The system shall consist of earthen dikes at the rear and sides of the tank, a reinforced concrete slab on grade with concrete side curbing in the process area near the front of each tank, a reinforced concrete

remote impoundment area to collect spills, and a reinforced concrete channel to direct spills from the process area to the remote impoundment. The system will be laid out such that the highest elevation is located at the base of the earthen dike at the rear of the tank and the lowest elevation is located at the bottom of the sump in the remote impoundment.

The entire site drainage system has been developed in accordance with the "Erosion and Sediment Control Design Handbook for Developing Areas of New Hampshire". Runoff from areas outside the impoundment is addressed in Section 6.5.5.

6.5.2 Impoundment Water Removal

Explicit requirements for the removal of rain are set forth in 49 CFR 193.2173. The tank will be located within its own diked system and will have its own remote impoundment sized for 110% of the liquid in the tank. The remote impoundment will contain a sump into which the rain will collect. The sump will contain at least one water level activated pump, which is sized to remove rainfall collected in the impoundment at a rate equal to 25% of the maximum predictable collection rate from a storm of 10-year frequency and 1-hour duration. In order to ensure that LNG will not be removed from the sumps, a low temperature sensor will be installed in the channel leading to the impoundment downstream from the last potential source of a spill of LNG (i.e. truck unload area). This temperature sensor, set at a reasonably low temperature (e.g. -50° F), will send a signal which will shut off power to the pump.

6.5.3 Snow Removal

Snow removal will be accomplished by a combination of plowing (for the roads), mechanical snow blowing (for the remote impoundment and parts of the process area), and shoveling (for parts of the process area inaccessible to mechanical snow blowers and for the area outside the emergency gate in the fence perimeter).

Upon completion of the plowing of the road area within the vapor fence, any snow that has been inadvertently deposited into the spill collection channels will be removed by hand shovel to the maximum extent practicable.

Snow will be removed from the impoundment sump by hand shovel to the maximum extent practicable.

Snow will be removed from the impoundment and the process area by mechanical snow blower and hand shovel to the maximum extent practicable.

Snow will be removed from the area outside the emergency gates to ensure gates are operable in case of an emergency.

6.5.4 Ice Removal

Removing ice that has accumulated on walks and roadways will be by spreading calcium chloride on the surface of the ice.

6.5.5 Drainage

Floodplain Considerations

The project facilities are designed to provide enough elevation to protect the facility operations from the 100 and 500-yr. flood. The City of Keene's Floodplain Development Ordinance has been consulted and recommendations incorporated into the site drainage and sedimentation and erosion control plans where applicable. The site drainage system will not increase the peak flows or velocity of runoff above existing conditions.

An application for a Floodplain Permit will be filed with the City of Keene.

The wetland restoration and replacement program will provide the equivalent amount of flood storage as presently exists. A detention basin will be incorporated into the drainage system and any loss of flood storage will be replaced onsite.

The facilities have been designed to be 1 foot above the 100-year flood elevation and will remain operational at that level. The site survey has indicated that this level is approximately the 500-year flood elevation. This means that the project will also remain operational at that level. FEMA flood maps for the area were consulted and compared with the site survey data developed for the project. The survey data is felt to be more accurate than the FEMA map information and represents the site topography.

Structural components of the project affected by floodplain impacts will be designed to be capable of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy.

It has been determined that 4,444 cubic yards of the existing 100-year floodplain will be removed from the existing flood storage system by project fill. Adequate compensating flood storage capacity exists on site as shown in Drawing No. 039001, Sheet 1C.

Drainage System

The site drainage system has been developed in accordance with the "Stormwater Management and Erosion and Sediment Control Design Handbook for Urban and Developing Areas in New Hampshire". The program HydroCAD was used to develop a pre- and post-construction calculation of runoff from the project site. The calculation assumed a Type III, 24-hour, 4.9-inch rainfall event.

From this calculation it was determined that a detention basin is required to ensure that the peak flow and time of travel of runoff flows do not exceed existing conditions. This results in a detention basin with a storage capacity of 0.29 acre feet storage of the design storm flow. This design ensures that no changes in volumes and velocity of runoff flows on adjacent properties will occur.

The detention basin slopes and bottom will be grassed and will have an oil trap built into the outlet system. The basin will be periodically inspected, especially following a major rain event. No catch basins will be used in the site drainage system. This will ensure that no changes in water quality of adjacent waterbodies will take place.

7.0 EROSION AND SEDIMENTATION CONTROL PLAN

The "Erosion and Sediment Control Design Handbook for Developing Areas of New Hampshire" was consulted to develop the sediment and erosion control plan for this project. Silt fences, hay bales, swales and leveling systems will be placed either prior to, or during construction. The system will be periodically inspected during construction to ensure erosion and sedimentation control viability of the system, and any required repairs will be made as soon as feasible following the identification of an area that has been disturbed.

7.1 TEMPORARY EROSION AND SEDIMENT CONTROL

The objectives of the Erosion and Sedimentation Control Plan are to:

1) Minimize soil erosion by controlling runoff at the source through temporary stabilization measures;

2) Minimize and control runoff from disturbed areas through the use of temporary diversion ditches, and, seeding and mulching;

3) Remove sediment from stormwater runoff through the use of hay bale check dams, silt fences, level spreaders and sediment basins; and,

4) Control the discharge of stormwater runoff during construction through the use of level spreaders, or grassy swales prior to discharging to existing or created wetland areas and brooks.

Throughout the construction period, using temporary measures as described below will control erosion and sedimentation.

7.1.1 Silt Fences

Silt fences will be installed at the limit of disturbed areas where erosion and sediment could travel to existing streams or wetlands. Sediment will be cleaned from silt fences as needed to maintain more than 50% of the original height of the fence.

7.1.2 Hay Bale Check Dams

Hay bale check dams will be utilized to reduce the velocity of runoff and to capture sediment in the runoff from disturbed areas and soil stockpiles. Hay bales will be tightly baled, double staked,

embedded 4 inches below grade and installed with ends tightly abutting each other. Check dams will be regularly inspected to determine the need to replace deteriorated bales and to remove accumulated sediment.

7.1.3 Temporary Stabilization Measures

If required, areas will be mulched until permanent measures are put in place.

7.1.4 Wetland Material Stockpile

Prior to start of fill placement, wetland topsoil will be removed to a depth of 1-ft. minimum where possible, and stockpiled for use later in wetland restoration. The stockpile will be kept moist to protect against material loss. Stockpiled wetland material will be used to initiate wetland restoration.

7.1.5 Sedimentation Basin/Level Spreader

A level spreader will be constructed downstream of the proposed facility site. Runoff from the site area during construction will be directed to a level spreader. The purpose of the spreader is to reduce the velocity of the concentrated flow and to encourage sedimentation to occur prior to discharge of site flows into adjacent waterbodies.

A sedimentation basin will be installed on the site prior to construction. During construction, runoff will be directed to the sedimentation basin. Any increase in flow over the pre-construction conditions will be detained and discharged at a rate less than or equal to the pre-construction flow. During the stormwater detention process, settlement of sedimentation will occur. Water from the sedimentation basin will be discharged to a grassy swale and eventually to Ash Swamp Brook. During construction the sedimentation basin will be inspected and cleaned as necessary.

7.1.6 Slope Stabilization

As practical, all fill/cut slopes will be graded to 3:1 or flatter. All slopes steeper than 2:1 will be considered for stabilization with erosion control fabric or riprap.

7.1.7 Dust Control

Water will be applied as necessary to disturbed areas for dust control.

7.1.8 Stabilized Construction Entrance

A construction entrance consisting of crushed stone (or small riprap) will be installed at the point of egress from Production Avenue. It will be built at least 50 feet in length and 20 feet in width. The purpose of the construction entrance is to minimize the possibility of tracking material from the site onto Production Avenue.

7.1.9 Implementation of Construction Erosion and Sedimentation Control Measures

The contractor will be required to implement the following control measures:

1) Inspect the effectiveness and conditions of erosion control devices during storm events, after each significant rainfall event of 2 hours or more, prior to holidays and weekends, and prior to forecasted rainfall events;

2) Repair or replace all damaged erosion control devices immediately after observing deficiencies;

3) Make a final inspection of completed stabilization measures and clean all level spreaders and sedimentation basins;

4) In the event of an emergency during construction, the contractor will supply the City Engineer with the name and telephone number of a responsible representative of the contractor who may be contacted at night or on the weekend, if necessary.

7.2 PIPELINE CONSTRUCTION, AND EROSION AND SEDIMENTATION CONTROL

The gas pipeline will be installed in a manner that avoids and minimizes the impact on wetlands to the maximum extent possible. Vegetative clearing will be limited to the minimum needed to construct across the wetlands. Vegetation that needs to be removed will be cut off at ground level, and except along the trench line, stumps and root systems will be left in place. Construction access will be achieved from existing roads and trails, and no access roads will be constructed in wetlands. Construction equipment operation will be limited in wetlands to that needed to install the gas pipeline. Except for dewatering pumps, if needed, all other equipment will be refueled in upland areas. No fuels, lubricating oils, chemicals or hazardous materials will be stored within 100 feet of a wetland.

After clearing the right-of-way, silt fence will be installed along the edge of the right-of-way. Forty-foot long lengths of plastic pipe will be placed along the right-of-way in a continuous line.

Then, a trench approximately 1 ½ - 2 feet wide and 3 feet deep will be excavated. The top 12 inches of topsoil will be separately stockpiled from the rest of the trench spoil. The stockpile will be kept moist and protected against material loss. If the existing soil is stony, a 6-inch layer of sand will be added to the bottom of the trench. The lengths of pipe will then be fused and the pipe lowered into the trench. If necessary, the pipe will be covered with 6 inches of sand. The trench will then be completely backfilled with native material, with the top of the trench will be filled with the stockpiled topsoil. Any topsoil that has the potential of containing loosestrife seeds will not be used. Any excess spoil will be disposed of off-site in upland areas.

Any water pumped from trenches during the installation of the pipeline will be discharged into sediment containment structures or filter bags so that no heavily silt-laden water flows into wetlands. Trench plugs will be installed at the edges of wetlands as necessary to maintain the original wetland hydrology. Ditch de-watering will be spread to form sheet flow through a vegetation cover to trap sediment and reduce velocity.

Following backfilling of the trench, the right-of-way will be graded to pre-construction contours and allowed to naturally re-vegetate. Wetlands that may be subject to erosion will be seeded with a wetland seed mix. To facilitate future facility inspections, a 5-foot wide corridor centered on the pipeline will be mowed at approximately three-year intervals.

7.2.1 Wetland Material Stockpile

Prior to the start of pipeline trenching activities, wetland topsoil will be removed to a depth of 1-ft. minimum, where possible, and will be stockpiled for use later in restoration. The stockpile will be kept moist and protected against material loss.

Ditch de-watering will be spread to form sheet flow through a vegetation cover to trap sediment and reduce velocity.

7.3 POST CONSTRUCTION EROSION AND SEDIMENT CONTROL AND WETLAND MONITORING

Following construction, all disturbed areas will be stabilized by vegetation or crushed stone. Except in wetland areas, hydroseeding will be the primary method for establishing permanent vegetative cover in disturbed areas. Seed mix, water, fertilizer and mulch will be applied by machine. Dye will be added to identify coverage during application. Areas not exhibiting satisfactory growth will be re-seeded as necessary until satisfactory growth is established. Seed mixtures will be as outlined in the USDA SCS Erosion and Sediment Control Design Handbook.

Temporary erosion control measures will be left in place until the vegetation cover is adequate. Sedimentation basins, level spreaders and grassy swales that are left in place will be inspected and cleaned as necessary and any required stabilization applied.

The sedimentation basin installed prior to construction will be left in place. Runoff will be directed to the sedimentation basin. Any increase in flow over the existing conditions will be detained and discharged at a rate less than or equal to the existing flow. During the stormwater detention process, settlement of the sedimentation will occur. Water from the sedimentation basin will be discharged to a grassy swale and eventually to Ash Swamp Brook. During operation the sedimentation basin will be inspected and cleaned as necessary.

Wetland restoration shall be inspected for at least 2 years to determine the success of proposed mitigation measures.

8.0 REFERENCES

Applied Microcomputer Systems, 1998. HydroCAD, Stormwater Modeling System. Version 5.

Chase, V. P., L. S. Deming, and F. Latawiec. 1995. Buffers for Wetlands and Surface Waters: A Guidebook for New Hampshire Municipalities. Audubon Society of New Hampshire, 80 pp.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. Laroe. 1979. Classification of Wetlands and Deepwater Habitats of the United States, U.S. Government Printing Office. Washington D.C., 103 pp.

Gonthier, Andre L., Northstar Industries. "New Hampshire Gas, Production Avenue Drainage Calculations", June 2000.

Moore, R.B., C.D. Johnson, and E.M. Douglas. 1994. Geohydrology and Water Quality of Stratified-Drift Aquifers in the Lower Connecticut River Basin, Southwestern New Hampshire, U.S. Geological Survey Water Resources Investigations Report 92-4013, 68 pp.

NEIWPCC, 1998. Field Indicators for Identifying Hydric Soils in New England, Version 2 (July 1998)

New Hampshire Department of Environmental Services. U.S.D.A. 1992. Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire. Rockingham County Conservation District. 260 pp.

USACOE. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1.

USACOE, 1995. The Highway Methodology Workbook Supplement, U.S. Army Corps of Engineers New England Division, 32 pp. NEDP-360-1-30a.

USDA, Soil Conservation Service. 1989. Soil Survey of Cheshire County, New Hampshire. 263 pp.

USDA, Soil Conservation Service. 1989. Soil Survey of Cheshire County, New Hampshire. 263 pp.

9.0 FIGURES, EXHIBITS AND DRAWINGS

FIGURES:

Figure 1: LNG Facility Site and Pipeline Route

Figure 2: Portion of Sheet No. 22 of SCS Soil Survey

DRAWINGS:

Drawing No. 039001, Key Plan

Drawing No. 039001, Sheet 1A: Existing Conditions Plan

Drawing No. 039001, Sheet 1B: Grading and Drainage Plan

Drawing No. 039001, Sheet 1C: Mitigation Plan

Drawing No. 039001, Sheet 2: Proposed Natural Gas Distribution Pipe Location

Drawing No. 039001, Sheet 3: Proposed Natural Gas Distribution Pipe Location

EXHIBITS:

Exhibit 1: Site Search for Liquefied Natural Gas Facility for New Hampshire Gas Corporation, Keene, New Hampshire

Exhibit 2: Letter – Site Visit – SVE Associates

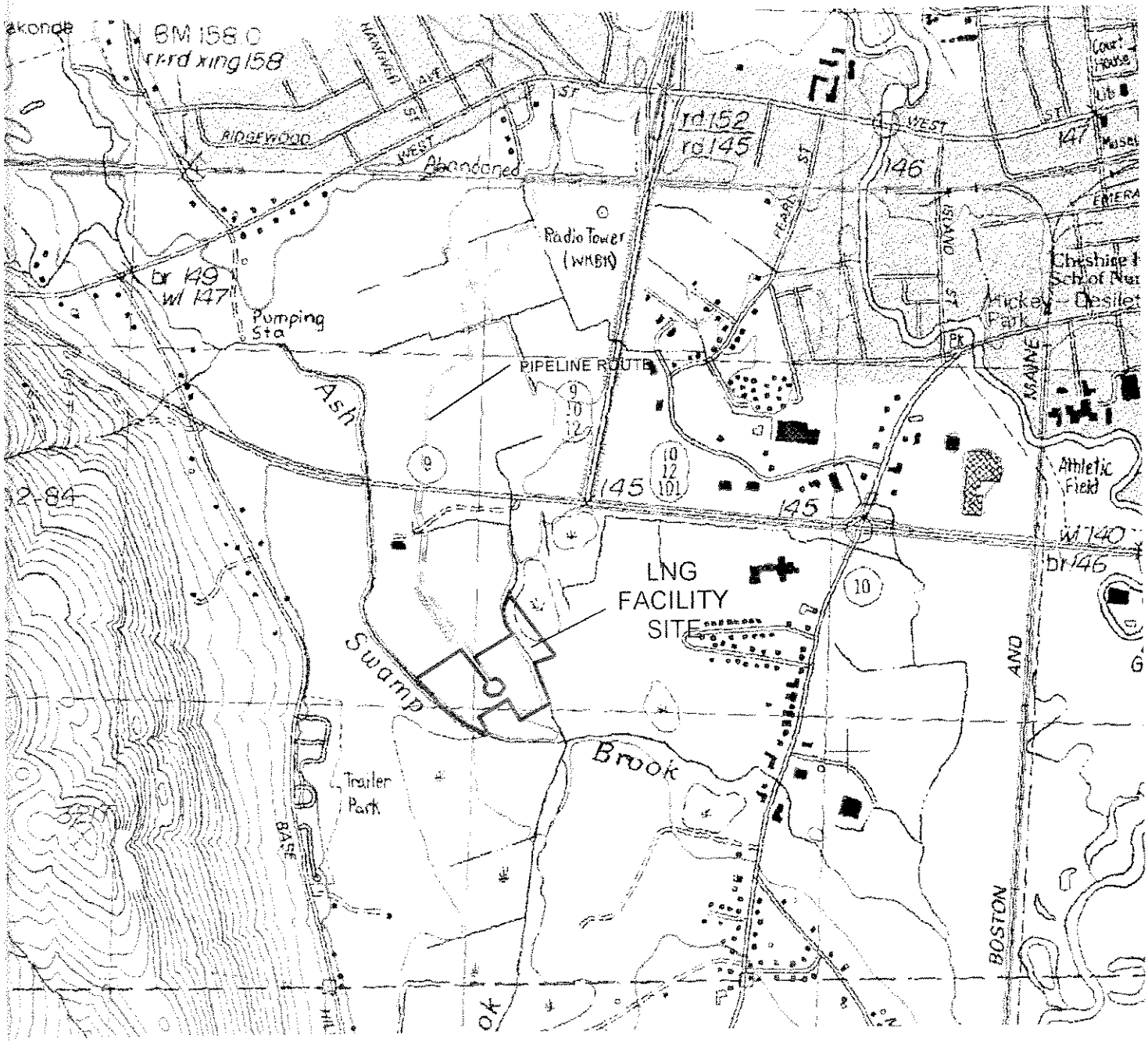
Exhibit 3: Agency Correspondence

Exhibit 4: Wetland Data Sheets

Exhibit 5: Wetlands Function – Value Evaluation

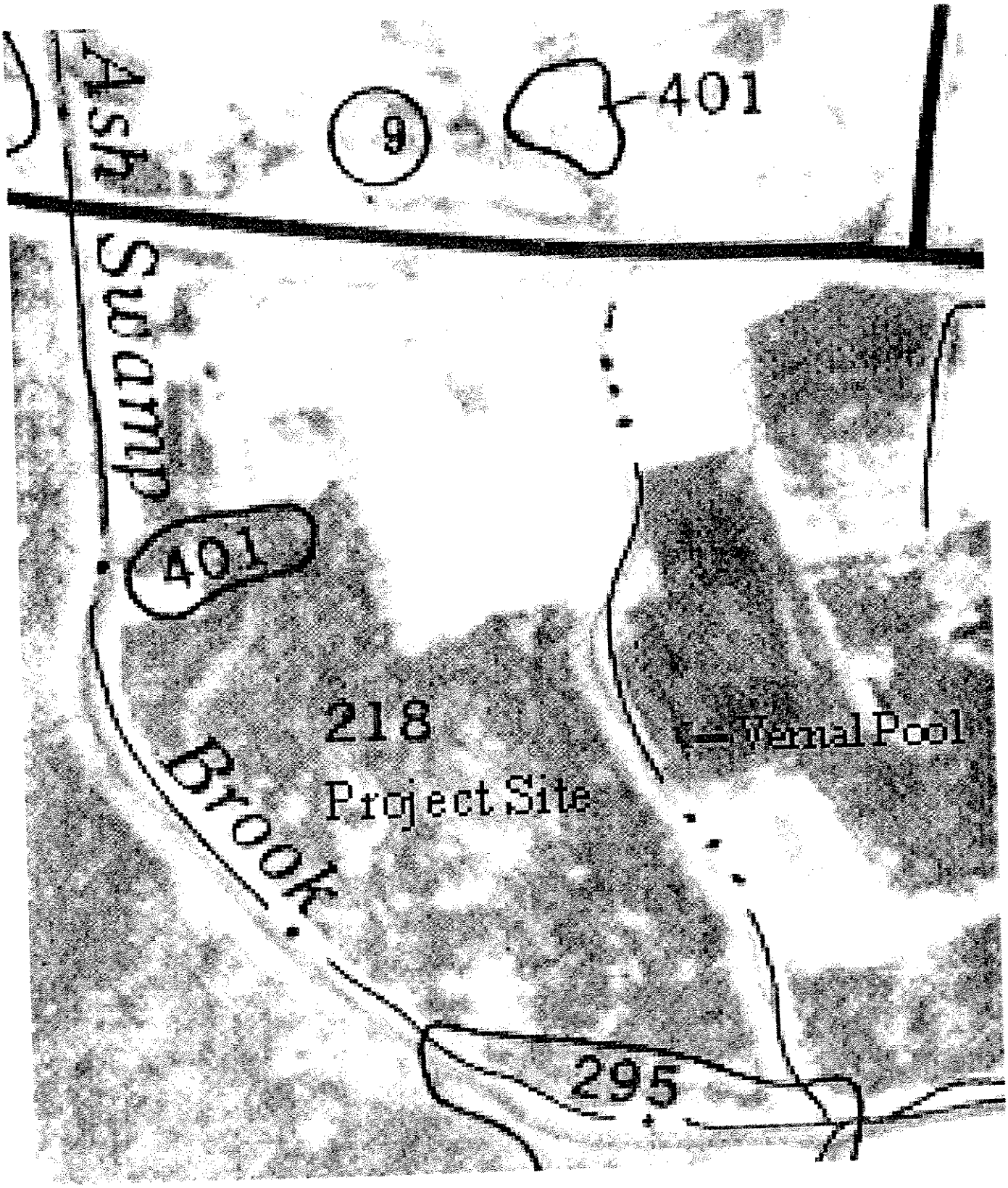
Exhibit 6: Wetland Photographs

LNG FACILITY SITE & PIPELINE ROUTE
NEW HAMPSHIRE GAS CORP.
KEENE, NEW HAMPSHIRE



LEGEND		
PROPOSED PIPELINE PROPERTY LINE	SCALE: 1"=1000'	FIGURE 1 PROJECT LOCATION (FROM: KEENE,NH USGS TOPO MAP)

FIGURE 2
PORTION OF SHEET NO. 22 OF SCS SOIL SURVEY



SITE SEARCH

FOR

LIQUEFIED NATURAL GAS SATELLITE FACILITY

FOR

NEW HAMPSHIRE GAS CORPORATION

KEENE , NEW HAMPSHIRE

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Revision 1.0
June 22, 1999

NORTHSTAR INDUSTRIES

SITE SEARCH FOR LIQUEFIED NATURAL GAS FACILITY FOR NH GAS CORPORATION

A site search of the Keene, New Hampshire area was conducted to identify existing properties, which could accommodate a liquefied natural gas (LNG) facility for New Hampshire Gas Corporation. This survey was conducted by Northstar Industries and Brickstone Masons personnel in cooperation with personnel from New Hampshire Gas and New York State Electric and Gas. The appropriate site would allow for bulk storage of LNG, a control building for odorization, water/glycol heating and control, and onsite parking. The primary search focused on properties in Keene which are large enough to accommodate the proposed facility and close enough to the existing Emerald Street facility to tie into the distribution system.

Twenty-two properties were identified in Keene and Swanzey for review. *Figure 1* displays the names and locations of each property. Sites known to be too small, unavailable and sites located in residential areas were eliminated from further consideration. The seven remaining sites for consideration are displayed in *Figure 2* and are as follows:

SITE NO.	LOCATION
2	Gravel pit off Rose Lane
4	Krif Road Industrial Park
5	Vincent Land, Lower Winchester Street
6	Bardwell Farm, Rt. 10 West Swanzey
7	Production Realty, Production Ave.
19	Former Sewer Treatment Plant, Rose Lane
22	Gravel pits - Whitcombs Mill Road

These properties will be reviewed and compared using the site selection criteria listed below.

NORTHSTAR INDUSTRIES

PRELIMINARY FINDINGS

Based on the information available to date the preliminary finding is that sites 2, 4, 5, 6, 7, 19 and 22 should be further evaluated to determine their suitability for the proposed LNG facility. Specifically, detailed information should be collected to determine:

- the availability of the site,
- the potential costs for acquisition,
- the route and cost to link to the Emerald Street plant,
- potential historic resources,
- potential ecological resources,
- onsite soil conditions and potential development costs,
- airport approval data for each location,
- 100 year flood analysis including both depth and extent of flooding on site and viability of access to the site during the 100-year flood,
- site access.

SITE SELECTION CRITERIA

A. Site Size and Geometry: The ideal site should be approximately 10 acres in size and generally square in shape.

B. Proximity to Emerald Street Site: The site should be a reasonable distance from the existing plant at Emerald street and be able to connect to the existing distribution system.

C. Visibility: The site should be well screened from any nearby residential areas and public ways or have the ability to be screened effectively.

D. Topography: The site should be reasonably flat or be able to be graded nearly flat.

E. Wetlands: The site should have minimal wetlands or contain low value wetlands where impacts are likely to be permitted.

F. Land Use: The site should be in an area where adjacent land users will not object to the addition of an LNG facility.

G. Transportation Access: The site should be accessible by tanker trucks from the state highway.

H. Proximity to Sensitive Receptors: The site should be remote from schools, hospitals, nursing homes, offices, residential areas and any other land user likely to object.

I. Historic Resources: The site should not be located in or adjacent to an area identified as historic or containing historic resources.

J. Archeological Factors: The property should not contain known archeological sites.

K. Community Acceptance: The site should be in an area likely to be accepted by the community.

L. Ecological Resources: The site should not be listed by the Natural Heritage Inventory as a known location of an endangered species.

M. Utilities: The site should have access to city water, telephone and three phase electric power.

N. Zoning: The site should be zoned to allow bulk storage and distribution of LNG or have the ability to rezoned.

O. Geology: The site should have appropriate soil conditions to allow construction of the facility.

P. Floodplain: The site should be above the 100-year floodplain or have the ability to provide onsite compensatory flood storage to allow the proposed facility. Access to the site by emergency vehicles must be possible during the 100-year flood.

Q. System Expansion Potential: Site should be large enough to accommodate expansion of the facility in the future.

R. Airport Approval Data: The site should be in a location acceptable to state and federal authorities regarding proximity to the flight paths for the Keene Dillant Hopkins Airport.

S. Land Cost: The site acquisition costs should be reasonable for an industrial site.

DISCUSSION OF INDIVIDUAL SITES

Site 2: Gravel Pit off Rose Lane This is a 22.4-acre +/- site owned by Lane Construction. It is located in the Industrial zone. An LNG facility is a permitted use in this zone (bulk storage and distribution of goods including flammable materials). Portions of the property lie within the 100-year floodplain of the Branch River. It is unknown if the gravel pit operation is active at this time or if the property is available. There are no buildings on the property. City utilities are not currently extended to the property but are accessible from Route 12 to this location. Access to this property is through an existing residential area on Route 12. Access to the Emerald Street plant is difficult and would be approximately 12,000 feet along the former railroad corridor, Optical Avenue and across the Branch River to Rose Lane. The 1999 assessment for this site is $65,800.

This is a possible site for an LNG facility. The major limitations to this site are the questions of availability, the proximity to the airport, the proximity to a residential area, the distance to Emerald Street, and 100-year flood concerns.

Site 4: **Krif Road Industrial Park.** This is an existing industrial park off lower Winchester Street which is zoned Industrial. An LNG facility is a permitted use in this zone (bulk storage and distribution of goods including flammable materials). There are currently five undeveloped lots that are all owned by Krif Road Associates. Lot 1 is 7.01 acres +/-, Lot 4 is 13.72 acres +/-, Lot 5 is 6.68 acres +/-, Lot 7 is 5.85 acres +/- and Lot 8 is 5.94 acres. All of the lots are located entirely within the 100-year floodplain of the Ashuelot River. Lots 5, 7 and 8 contain extensive wetland areas. Lots 4 and 1 contain small wetland areas and an existing drainage ditch. All of the lots are serviced by city utilities including three-phase electricity. Access to the existing Emerald Street plant is good via the former railway corridor (approximately 5,000 feet). The 1999 assessment for Lot 1 is $399,900; Lot 4 is $586,300; Lot 5 is $29,300; Lot 7 is $45,600; Lot 8 is $77,900.

Lots 1 and 4 are possible sites for an LNG facility. The major limitations are floodplain and cost of acquisition. Compensatory flood storage is available onsite, however the landowner is believed to be asking $150,000 per acre for the undeveloped lots.

Site 5: **Vincent Property.** This is a site with multiple tracts including an undeveloped tract of 4.55 acres +/-. Three other smaller tracts contain small commercial buildings and an auto body repair shop. The entire property is available. The property is owned by George Vincent. It is located on lower Winchester Street and is in the Industrial zone. An LNG facility is a permitted use in this zone (bulk storage and distribution of goods including flammable materials). The entire property is located within the 100-year floodplain of the Ashuelot River. City water, city sewer and three phase electric exist at the site. Access to the site is via Winchester Street. A residential area is located adjacent to this site to the north. The Emerald Street plant is approximately 5500 feet from this site via Winchester Street and Island Street to Emerald Street. The 1999 assessment for the undeveloped tract is $63,500.

This site has limited suitability for an LNG facility. The major limitations include the size of the useable area, the adjacent residential neighborhood, the floodplain, and the existing commercial uses on the adjoining tracts. It may be possible to acquire adjacent land areas to this site.

Site 6: **Bardwell Farm.** This is a 15-acre +/- site in West Swanzey, just over the Keene line. It is located on Route 10 in the Commercial/Industrial zone and Melrose Development Corporation owns it. Site plan approval for this property was granted in 1997 for a movie theater and grocery store complex. Nothing has been built, and the status of the site plan approval is unknown. The availability of the site is unknown. The property contains wetland areas on the central and southern portions of the lot. An LNG facility is a permitted use in this zone (Treatment or distribution of products including primary product production from raw materials). The site is an open pasture and is very visible from Route 10. City water, city sewer and three phase electric are available to the site. Access to the site is excellent via Route 10. The closest residential area is approximately 200 feet to the north. The Emerald Street plant is approximately 8500 feet from this site via Winchester Street

and Island Street to Emerald Street. The 1999 assessment is $121,500.

This site has limited suitability as a possible location for an LNG facility. The major limitations are availability, visibility, a nearby residential area, onsite wetlands, and the probable cost of acquisition.

Site 7: **Production Realty.** This is an existing industrial park off Route 9 which is zoned Industrial. An LNG facility is a permitted use in this zone (bulk storage and distribution of goods including flammable materials). There are four undeveloped lots that are currently available. Lot 5 is 4.53 acres +/-; Lot 6 is 4.43 acres +/-; Lot 11 is 3.14 acres +/-; Lot 12 is 3.85 acres +/-. All of the lots contain extensive wetland areas and are partially within the 100-year floodplain of Ash Swamp Brook. Onsite compensatory flood storage is available. Production Realty is in the process of combining these lots into one 16-acre lot in an effort to create a useable area of approximately 5 acres. A wetlands permit application is now pending before the NHDES Wetlands Bureau to make this possible. City water, city sewer and three phase electric exist at the site. Access to the site is excellent via Route 9. There are no residential areas nearby. The site is well screened from Route 9. The Emerald Street plant is approximately 8000 feet from the site via Route 9, Route 12 and the former railroad corridor. The 1999 assessment of the combined lots is $ 12,700.

The combined lots are a suitable site for an LNG facility. The site is isolated yet has excellent access from a state highway. The major limitation are wetlands and 100-year flood plain issues. A wetlands permit is now pending and the application would be enhanced if this were the selected site for the LNG facility.

Site 19: **Old Sewer Treatment Plant.** This is a 12.8-acre +/- site that is owned by the City of Keene. It is located on Rose Lane in the Industrial zone. An LNG facility is a permitted use in this zone (bulk storage and distribution of goods including flammable materials). The sewer treatment was closed several years ago and the site has been cleared of the old tanks. The availability of the site is unknown. City water, city sewer and three phase electric are existing at the site. A portion of the property lies within the 100-year floodplain of the Branch River. Access to the property is from Route 12 through an existing residential area. However the site is well screened from both the residences and the public right of way. The Emerald Street plant is approximately 12,000 feet from the site across the Branch River and via Optical Avenue and the former railroad corridor to Emerald Street. The 1999 assessment is $365,800.

This is a possible site for an LNG facility. The major limitations to this site are the questions of 100-year flood plain, availability, the proximity to the airport, the proximity to a residential area, and the distance to Emerald Street.

Site 22: **Whitcombs Mill Road.** Two potential sites exist at this location. The site north of the former railroad corridor is a 12.5-acre +/- site that is in the Rural zone. An LPG facility is not a permitted use in this zone. The site is a former gravel pit and is owned by Whitco Associates. The property is undeveloped and it is available. City water and city sewers are accessible to the site from Arch Street. Three-phase electricity is available at the site. A large portion of the lot is wetlands. Residential uses, including a nursing home, abut the property on the north and east. Access to the

site is marginal since Whitcombs Mill Road is a narrow road and is very steep as it approaches Route 9. The Emerald street plant is approximately 14,000 feet from the site via the former railroad corridor. The 1999 assessment is $ 52,500.

The second site at this location is south of the railroad corridor on Whitcombs Mill Road. This is a 24-acre +/- tract owned by the Hathorn family. It is also in the Rural zone. The availability of the site is not known. The site is a former gravel pit and it remains undeveloped. City water and city sewers are accessible to the site from Arch Street. Three-phase electricity exists at the site. A PSNH transmission line crosses the property from east to west. Residential uses are approximately 500 feet from the site. Most of the site slopes steeply down from Route 9 providing difficult access and limiting the useable land area. The Emerald street plant is approximately 14,000 feet from the site via the former railroad corridor. The 1999 assessment is $ 35,500.

Both of these sites have limited suitability for an LNG facility. The major limitations are the steep slopes, the use is not permitted in the zone, nearby residential uses, and the distance from the Emerald Street plant.