UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

VECTOR PIPELINE L.P.	}	**DOCKET NO. CP98-133-~~000~~ 007** **DOCKET NO. CP06-29-000**

ORIGINAL

REQUEST FOR CLARIFICATION, OR IN THE ALTERNATIVE, APPLICATION TO AMEND CERTIFICATE AND ABBREVIATED APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY AND FOR CONSTRUCTION AUTHORIZATION

VECTOR EXPANSION PROJECT

Volume II of IV
NON-INTERNET PUBLIC

CONTENTS
Exhibits F and F-1 (in part)

Non-Internet Public

Non-Internet Public

November 30, 2005

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

VECTOR PIPELINE L.P.	}	**DOCKET NO. CP98-133-000** 007 **DOCKET NO. CP06-29-000**

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Volume II of IV
NON-INTERNET PUBLIC

TABLE OF CONTENTS

VECTOR PIPELINE L.P.

DOCKET NO. CP06- -000

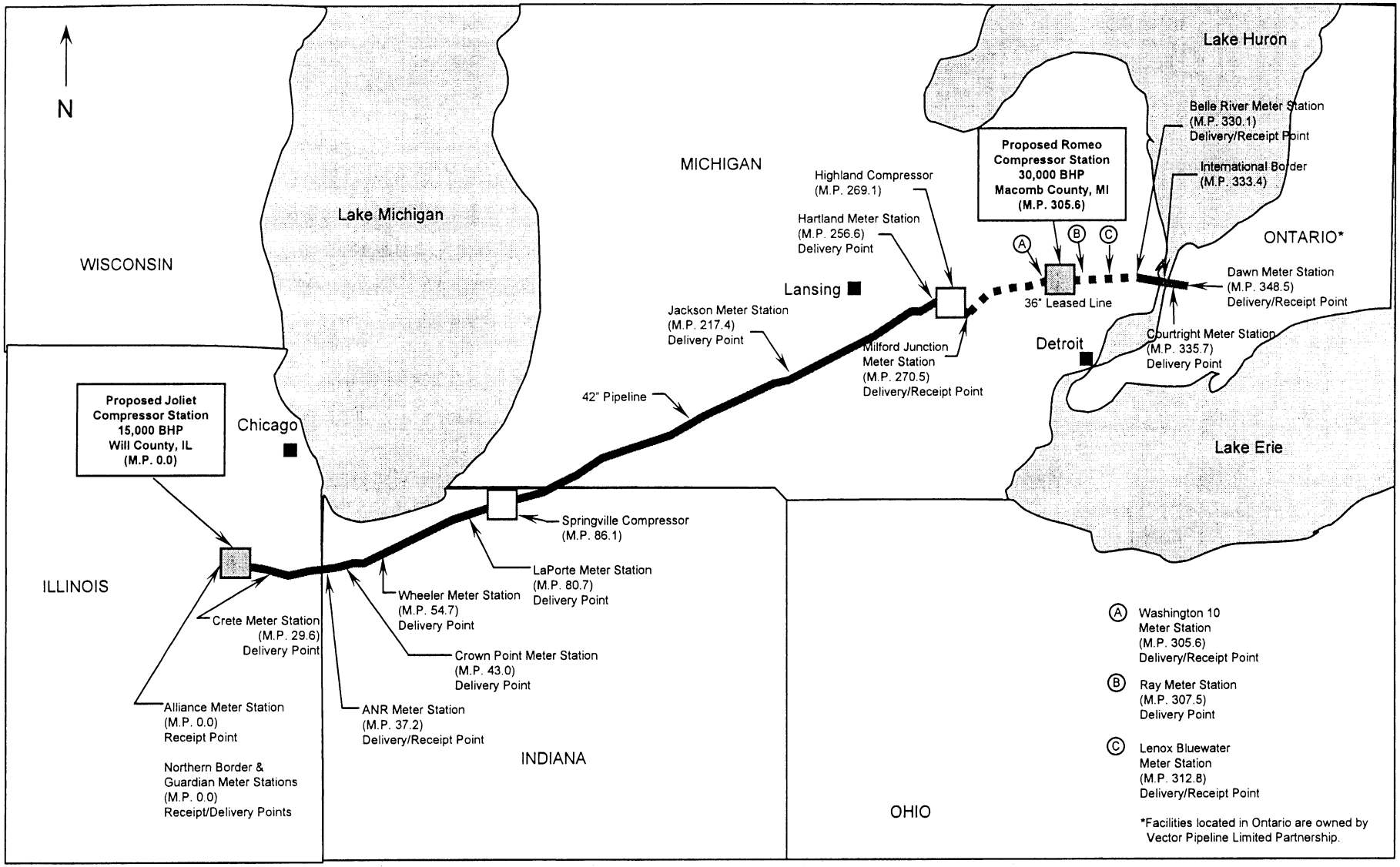
EXHIBIT F

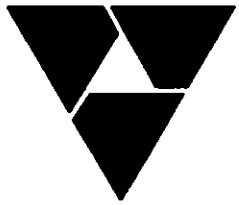
Location of Facilities

Vector Pipeline™

Vector Pipeline L.P.
CP06-___-000
Exhibit F

Non-Internet Public
Do Not Release





Vector Pipeline™

VECTOR COMPRESSION EXPANSION PROJECT

Docket No. CP06-___-000

EXHIBIT F-1: NON-INTERNET PUBLIC INFORMATION

November 2005

Prepared by

Vector Compression Expansion Project

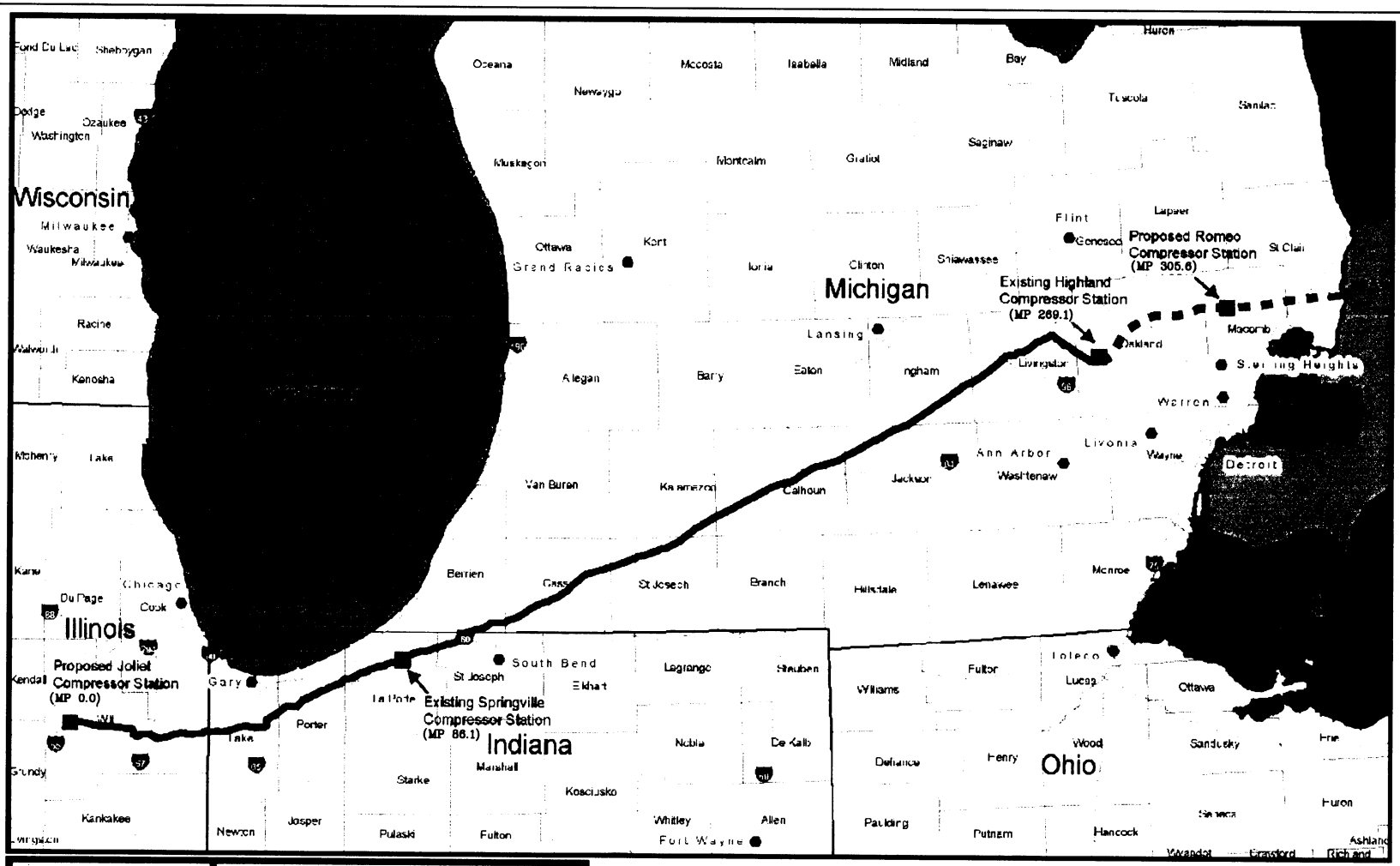
Appendix A
Mapping Supplement

NON-INTERNET PUBLIC

Vector Pipeline

TABLE OF CONTENTS

NON-INTERNET PUBLIC



NON–INTERNET PUBLIC

REFERENCE DRAWINGS		REVISION					
DESCRIPTION	DWG NO.	NO.	DESCRIPTION	DATE	BY	CHK	APPR
		A	ISSUED FOR FERC FILING		MA	BB	JS

ENGINEER AND PERMIT STAMPS

DESIGNED MA	DATE 10/24/05
DRAWN MA	SCALE NOTED
CHECKED	APPROVED
APPROVED	APPROVED

Vector Pipeline™

VECTOR COMPRESSION EXPANSION PROJECT
SYSTEM OVERVIEW MAP
U.S. PORTION

JOB NO.	DRAWING NUMBER	SHEET
	FIG. 1	1 OF 1

LARGE-FORMAT IMAGES

One or more large-format images (over 8½" X 11") go here. These images are available in E-Library at:

For Large-Format(s):
Accession No.: 20051214-0263

Security/Availability:

- ☐ PUBLIC
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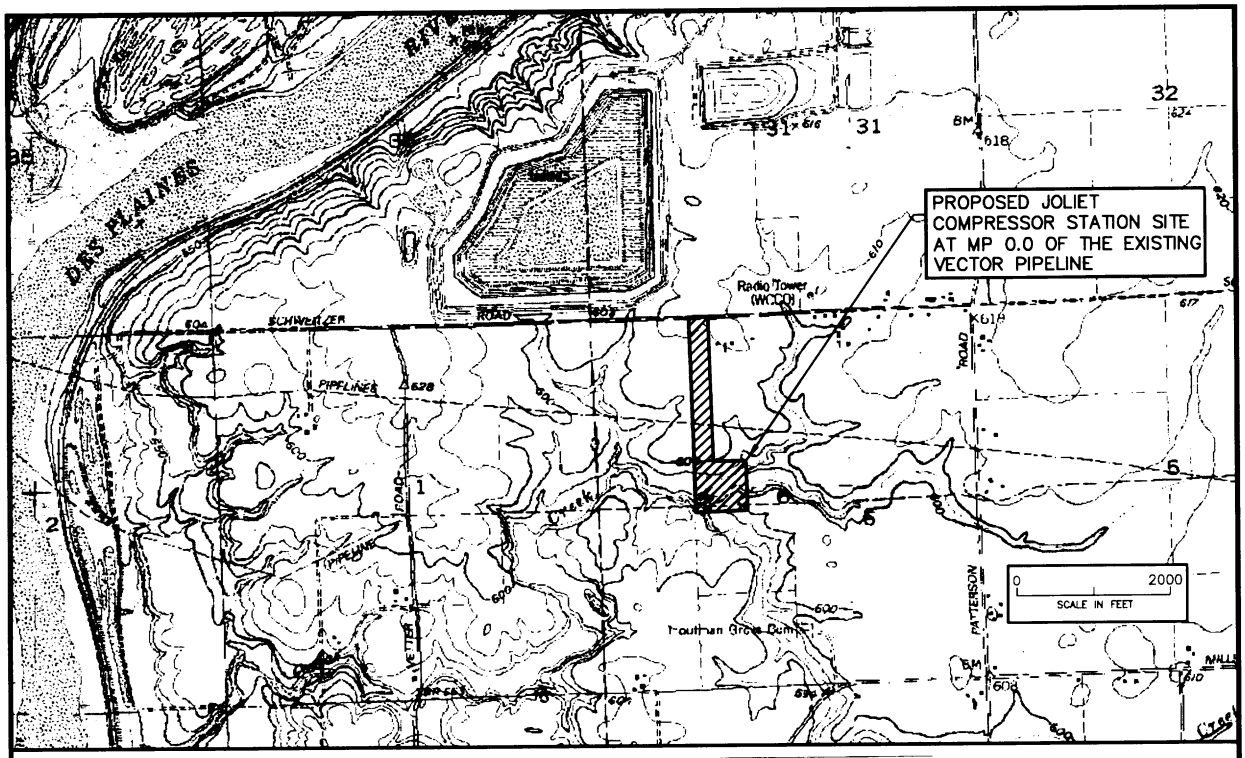
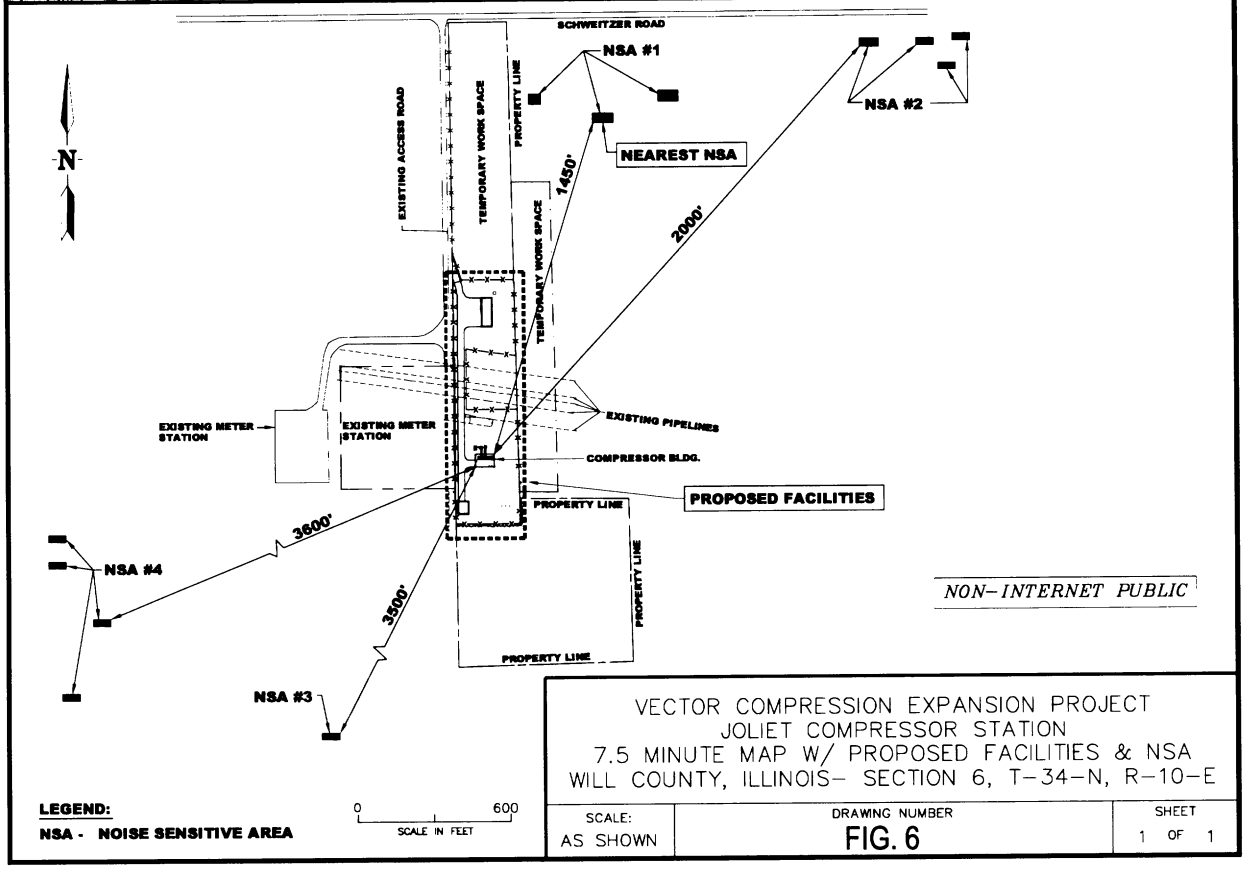
File Date: 11/30/05 Docket No.: CP98-133

Parent Accession No.: 20051214-0262

Set No.: 1 of 1

Number of page(s) in set: _____





NON-INTERNET PUBLIC

VECTOR COMPRESSION EXPANSION PROJECT
JOLIET COMPRESSOR STATION
7.5 MINUTE MAP W/ PROPOSED FACILITIES & NSA
WILL COUNTY, ILLINOIS- SECTION 6, T-34-N, R-10-E

SCALE:	DRAWING NUMBER	SHEET
AS SHOWN	FIG. 6	1 OF 1

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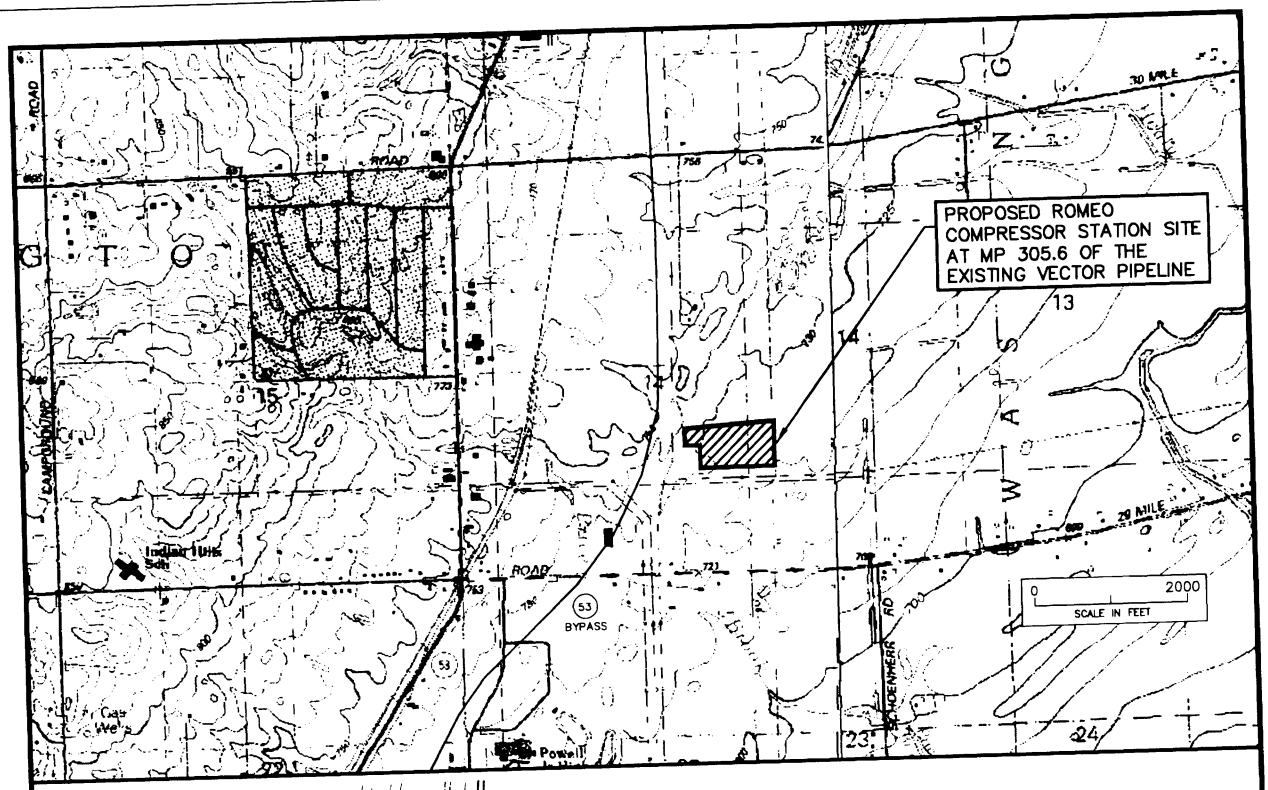

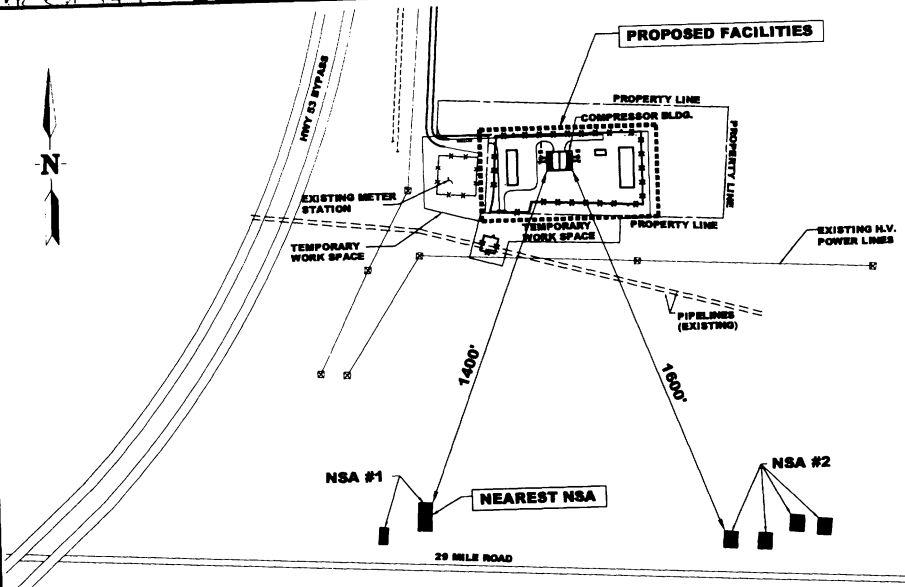

NON-INTERNET PUBLIC

VECTOR COMPRESSION EXPANSION PROJECT
ROMEO COMPRESSOR STATION
7.5 MINUTE MAP W/ PROPOSED FACILITIES & NSA
MACOMB COUNTY, MICHIGAN- SECT. 14, T-4-N, R-12-E

LEGEND:
NSA - NOISE SENSITIVE AREA

0 600
SCALE IN FEET

SCALE:	DRAWING NUMBER	SHEET
AS SHOWN	FIG. 12	1 OF 1

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Vector Compression Expansion Project

Appendix B
Affected Landowners/
Local Public Official Consultations

NON-INTERNET PUBLIC

Joliet Affected Landowners 10-25-05

Name 1	Name 2	Address 1	Address 2	City	State	Zip	Adjacent landowner	Tenant	Residence within 1/2 mile	Directly Affected
Albert Namen		21101 Schweitzer Road		Elwood	IL	60421			X	
Alliance Pipeline LP		6385 Old Shady Oak Road	Suite 150	Eden Prairie	MN	55344	X			
Billy Sylvia McPherson		P.O. Box 30		Elwood	IL	60421			X	
Current Resident		20959 West Schweitzer Road		Elwood	IL	60421		X	X	
David J. Roth	Nancy S. Roth Nie	21141 W. Schweitzer Road		Elwood	IL	60421			X	
Dean Dome		21325 West Schweitzer Road		Elwood	IL	60421				X
Guardian Pipeline LLC		P.O. Box 542500		Omaha	NE	68154	X			
International Union Operating Engineers		6200 Joliet Road		Countryside	IL	60525	X			
James Frank		21041 Schweitzer Road		Elwood	IL	60421			X	
Joyce A Korbecki		21057 West Schweitzer Road		Elwood	IL	60421			X	
Natural Gas Pipeline		500 Dallas Street		Houston	TX	77002	X			
Ray Dome	Margaret Dome	21301 Schwietzer Road		Elwood	IL	60421				X
Robert J. Baitinger		1412 Sugar Creek Drive		Joliet	IL	60433				X
St. Coletta's of IL Foundation	George E. Miller	18350 Crossing Drive		Tinley Park	IL	60477			X	
Susan Gerrit Bles		0 S 475 Old York Road		Elmhurst	IL	60126			X	

Non-Internet Public

Name	Address 1	Address 2	City	State	Zip	Adjacent landowner	Residence within 1/2 mile	Directly Affected	Other Landowners
Angele Kirovski	39226 Heyden Court		Sterling Heights	MI	48310	X			
Autumn Creek, LLC	6303 26 Mile Road	Suite 200	Washington	MI	48094		X		
Cornerstone Land Development	44480 Mound Road		Sterling Heights	MI	48312		X		
Dave Wojcik	13189 29 Mile Road		Washington	MI	48095		X		
Dennis Hotchkiss	13060 30 Mile Road		Washington	MI	48095	X			
Diane Crumb (MI Dept. of Transportation)	38257 Mound Road		Sterling Heights	MI	48310	X			
DTE Energy	12700 30 Mile Road		Romeo	MI	48065			X	
Edward and Jill Olmeda	12889 Columbia Court		Washington	MI	48094		X		
Ellis Tolliver	13100 30 Mile Road		Washington	MI	48095	X			
Gary and Cynthia House	12620 29 Mile Road		Washington	MI	48094		X		
Graubner Family Investment Co.	P.O. Box 570		Romeo	MI	48065	X			
International Transmission Company	39500 Orchard Hill Place	Suite 200	Novi	MI	43875			X	
Jehovah's Witness	6292 Old Coach Trail		Washington	MI	48094				X
John S. Leahy, Jr.	12621 29 Mile Rd.		Washington	MI	48095		X		
Julia and Jivco Erdelean	12758 29 Mile Road		Washington	MI	48094		X		
Kenneth Hollewa	12884 Columbia Court		Washington	MI	48094		X		
Leonardi Vincent Trust	47600 Romeo Plank Rd.		Macomb	MI	48044	X			
Michael Sasseen	13000 29 Mile Rd.		Washington	MI	48094		X		
MJC Washington Investments, L.L.C.	46600 Romeo Plank Road		Macomb	MI	48044		X		
Nautica Construction Company	44444 Mound Road		Sterling Heights	MI	48312		X		
Petar Ljekocevic	13299 29 Mile Rd.		Washington	MI	48095		X		
Pherlin Brucaj	62508 Jewell		Washington	MI	48094		X		
Richard and Susan Wranosky	13167 29 Mile Road		Washington	MI	48095		X		
Romeo Community Schools	316 North Main Street		Romeo	MI	48065				X
Trina M. Yohe	13201 29 Mile Road		Washington	MI	48095		X		
Unity Properties, LLC	44480 Mound Road		Sterling Heights	MI	48312		X		
Wiegand Family Limited Partnership	37580 Mound		Sterling Heights	MI	48310	X			
William and Stacey Graves	12610 29 Mile Road		Washington	MI	48094		X		

Appendix B

Vector Compression Expansion Project
Local Public Official Consultations

Public Official Consultation Visits/Contacts

Fname	Lname	Title	Organization	Address	City	ST	Zip	Date of Visit	Vector Reps
Dennis	Duffield, PE	Dir Of Public Works & Utilities	City of Joliet	921 E. Washington	Joliet	IL	60433-1267	11/01/05	Larry Springer; Mike Price
Aimee	Ingalls	Village Administrator	Village of Elwood	PO Box 435	Elwood	IL	60421	11/01/05	Larry Springer, Mike Price
Gary	Kirsh	Supervisor	Washington Township	57900 Van Dyke, P.O. Box 94067	Washington	MI	48094	11.03/05	Larry Springer; Lynn Downey
Marian	McLaughlin	Administrator	Village of Romeo	121 W. St. Clair	Romeo	MI	48065	11/02/05	Larry Springer; Lynn Downey
Cynthia	Schwark	Exec. Dir. Of Business Affairs	Romeo Community Schools	316 N. Main St.	Romeo	MI	48065	11/02/05	Larry Springer; Lynn Downey
Steve	Cassin	Planing Director	Planning & Economic Development Dept.	Macomb County, 1 S. Main	Mt Clemens	MI	48043	11/16/05	Larry Springer

Requests For Visits / Additional Officials To Visit

Fname	Lname	Title	Organization	Address1	City	ST	Zip	Date of Visit	Vector Reps Making Visit
Larry	Walsh	County Executive	Will County		Joliet	IL			
Tim	Vanderheyden	Supervisor	Jackson Township	PO Box 355	Elwood	IL	60421		

Non-Internet Public

Vector Compression Expansion Project

Appendix C
Wetland Survey Reports

NON-INTERNET PUBLIC

Wetland Survey Report
Joliet Compressor Station
Vector Pipeline Compression Expansion Project

Introduction

Natural Resource Group, Inc. (NRG) conducted a wetland survey of the proposed Joliet Compressor Station site in Will County, Illinois. The proposed site is located at the western end of the Vector pipeline at MP 0.0. The compressor station property is approximately 20.0 acres in size (see attached figure).

Desktop Analysis

NRG reviewed County Soil Survey data, National Wetland Inventory (NWI) maps, USGS topographic maps, Federal Emergency Management Agency (FEMA) Floodplain maps, aerial photography, and reports from the Vector Pipeline Project prior to conducting the field investigation to identify potential wetlands within the proposed work area. Analysis of existing data indicated that the proposed compressor station is located within an upland area with no mapped wetlands or waterbodies.

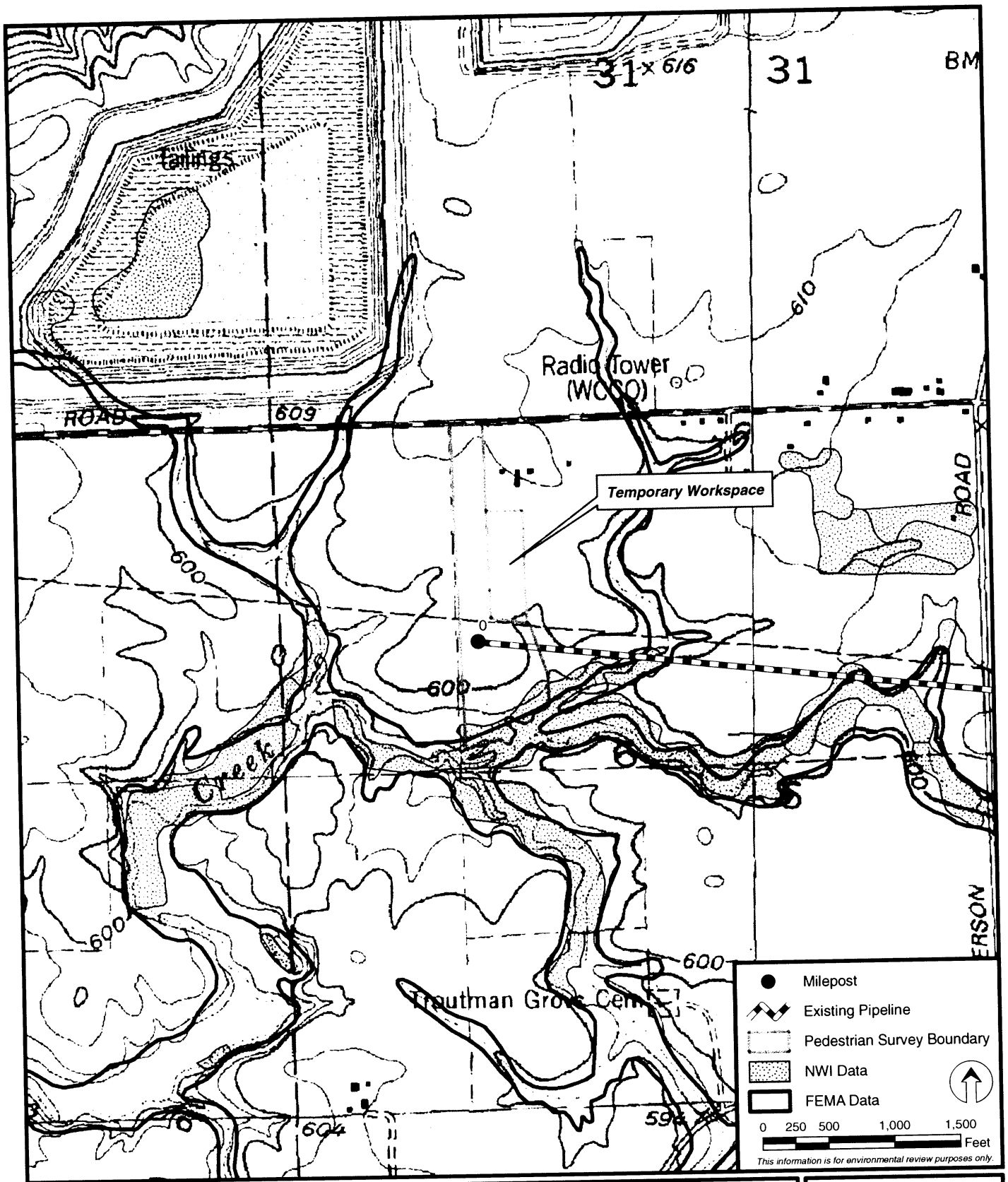
Field Survey

NRG conducted a field survey of the compressor station property during September 2004 to confirm the presence or absence of wetlands. On August 15, 2005 NRG conducted a field survey of a temporary workspace located west of the compressor station property to confirm the presence or absence of wetlands. The temporary workspace is approximately 4.2 acres in size. A meandering pedestrian survey was performed using the methodologies set forth in the *Army Corps of Engineers Wetlands Delineation Manual (1987 Manual)*. The northern bank of Cedar Creek and an intermittent tributary to Cedar Creek formed the southern/southeastern limits of the wetland delineation survey.

Survey Results

With the exception of the forested area located on the south end of the compressor station property, the majority of the property is actively cultivated. The northern half of the temporary workspace appears to have been actively cultivated in the past, but now supports wild carrot (*Daucus* carota), goldenrod (*Solidago spp.*), smooth brome (*Bromus inermis*), and thistle (*Cirsium spp.*). The southern half of the temporary workspace is actively cultivated.

According to the 1987 Manual, a positive wetland determination typically requires evidence that a minimum of one positive wetland indicator from each of three separate categories (hydrology, soils, and vegetation) must be present. This approach is referred to as the "three parameter approach" to wetland delineation. Based on the results of the field survey, no wetlands were identified.



Vector Pipeline

Joliet Compressor Station
Vector Compression Expansion Project

DATE: 10/29/04
REVISED: 11/21/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\D-F\EEL\VCSP_ArcGIS\2004\08\Waterbodies_EEL_VSX_Wet_WA_Topo.mxd

JJR

DTE Energy Gas
Washington-10 Facility
PROJECT NAME

Romeo, Michigan
Section 14, T4N, R12E
LOCATION

Terry S. Heatlie, PWS
Aquatic Biologist
ISSUED BY

PARTICIPANTS

August 5, 2004
DATE

August 30, 2004
ISSUE DATE

24534.000
PROJECT NUMBER

SIGNATURE

Brad Surface, DTE Energy Gas
DISTRIBUTION

Lara Treemore Spears, JJR

Paul Evanoff, JJR

Introduction

The purpose of the field inspection was to identify the extent and character of wetlands on four parcels of vacant property comprising 74 acres. Wetlands on the property were mapped in the field on aerial photography provided by DTE. The wetland boundaries were graphically illustrated on the aerial photograph relative to their size, shape and general location on the vacant property. The boundaries of the wetland were not flagged and a survey was not performed. Therefore, the wetland boundaries depicted on the attached graphic are for general planning purposes only. The boundaries should be flagged and surveyed in order to determine the specific aerial extent of wetlands on the property.

Wetland Identification Methodology, Documentation and Limiting Conditions

Methodology used to identify wetlands, including evaluation of plant species and evidence of periods of temporary or seasonal surface water, was typical of Michigan Department of Environmental Quality (MDEQ) wetland determinations as described in the Michigan Department of Natural Resources Wetland Determination Manual Draft for Field Testing. Application of the procedures described in this manual are typically used in all JJR wetland determinations.

Wetlands *may* be regulated by the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers and, in some cases, state and local units of government. These agencies make the final determination as to what is and what is not wetland, and the extent of regulatory authority the agency has over the wetland. Their determination can vary from time to time depending upon many factors including, but not limited to, the agency representative conducting the determination, wetland policy, and the time of the year the site is examined. In addition, the wetland boundaries and extent on the site can change from time to time depending upon numerous factors including, but not limited to, changes in vegetation,

drainage, weather patterns, and activities on adjacent properties that may alter the pattern of wetland on the subject property. Our opinion of the extent of wetland on the subject property is based on the condition of the site at the time of our site investigation, our past experiences with regulatory agencies, and current policy regarding the procedures used to delineate wetlands.

Property Description

The property which was examined is comprised of four parcels totaling 74 acres. The property is south of an existing DTE Energy gas storage facility (DTE facility) on the south side of 30 Mile Road, outside the town of Romeo, Washington Township, in west-central Macomb County. The property is approximately 0.5 miles south of the intersection of 30 Mile Road and M-53. About the northern half of the subject property is wooded. The southern portion was apparently farmed in the past, but the former agricultural fields are now fallow with extensive shrubby areas developing. The topography is flat throughout the site. Several drains/ditches run through the property. Some of the ditches contained flowing water while others were shallow and dry.

An open grassy area is located between the subject property and the DTE facility. A dry ditch runs from the DTE facility through the grassy area and into a forested area which extends into the subject property. This ditch obviously directs enough water from the DTE facility into the woodland at particular times of the year to result in the sand and gravel accumulations observed at the end of the ditch within the woodland edge. A quarry operation is located east of the DTE facility and north of the property being examined. A drain, carrying a significant amount of water at a fairly rapid rate is located just off the northeast corner of the property It flows from the direction of the quarry (north) then east just off the property corner. The water in the drain had the 'milky' appearance typical of water discharged from such an operation.

The Macomb County Soil Survey indicates the following soil mapping units are on the site: Boyer sandy loam, Conover loam, Ensley-Parkhill complex, Gilford sandy loam, Lupton muck, Parkhill loam, and Wasepi sandy loam. The Ensley-Parkhill, Gilford, Lupton, and Parkhill series are considered hydric soils by the USDA Natural Resource Conservation Service. These soils cover a large part of the site. Hydric soils are those that have developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation.

Wetland Area Descriptions

There is essentially a single wetland complex on the property associated with a drain which runs from the northwest side of the forested part of the site and through the southern one-third of the former agricultural part of the property to the southeast corner, where it flows off site A smaller drain enters the property from the west, immediately north of the existing small gas facility in the southwest corner of the site, and joins the drain described above about 450 feet downstream. Small, shallow agricultural drains were observed throughout the former agricultural fields. The different wetland types making up the complex are described below.

Woodlands:
A forested wetland comprises the majority of the wooded portion of the property. The dominant plant species of this wetland includes green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), silver maple (*Acer saccharinum*), swamp white oak (*Quercus bicolor*), common buckthorn (*Rhamnus cathartica*), gray dogwood (*Cornus foemina*), spicebush (*Lindera benzoin*), poison ivy (*Toxicodendron radicans*), skunk cabbage (*Symplocarpus foetidus*), spotted jewelweed (*Impatiens capensis*), fowl manna grass (*Glyceria striata*), rice cut grass (*Leersia oryzoides*), sensitive fern (*Onoclea sensibilis*), and several sedge species (*Carex spp.*). Along the north edge of the wooded area adjacent to the gravel quarry is a strip of emergent wetland dominated by joe-pye weed (*Eupatorium maculatum*), boneset (*E. perfoliatum*), blue vervain (*Verbena hastata*), and reed canary grass (*Phalaris arundinacea*).

A significant part of the forested portion of the property is mapped as Ensley-Parkhill complex, Lupton muck, and Parkhill loam, which are considered hydric soils. The soil profiles examined within the forested wetland had low chroma colors and, in general, matched the description of the hydric soils mapped there. At the time of the investigation, the soils of the west half of the forested area were saturated to the surface. There were no direct observations of inundation or saturation in the eastern portion of the forested wetland. However, evidence of wetland hydrology was documented throughout the entire forested wetland and includes water marks on trees, drift lines, water-stained leaves, buttressed tree bases, surficial roots, and bare soil where water apparently accumulates and stands.

Field Area:
The wetlands within the former agricultural fields are either extensions of the wetlands within the forested area or are associated directly with the drain running through the site. The wetland types in this location are scrub shrub and emergent. The dominant vegetation here includes sandbar willow (*Salix exigua*), red-osier dogwood (*Cornus stolonifera*), silky dogwood (*C. amomum*), gray dogwood (*C. foemina*), reed canary grass, grass-leaved goldenrod (*Euthamia graminifolia*), late goldenrod (*Solidago gigantea*), purple loosestrife (*Lythrum salicaria*), rushes (*Juncus spp.*), bulrush (*Scirpus atrovirens*), and cat-tail (*Typha angustifolia*).

A number of shallow ditches running parallel to each other in an east-west and north-south alignment were apparent in the east half (Parcels 5 and 6) of the former agricultural portion of the property. This network of shallow ditches is interconnected with shallow pockets of bare soil where water appears to accumulate. These ditches were probably intended to drain into the larger stream/ditch to the south, although no direct connections are now apparent. Surface scour, water-stained leaves, crayfish chimneys (aquatic life), and bare soil are indicators of wetland hydrology observed in this part of the site.

Wildlife Observations

In general, wetlands adjacent to agricultural fields in a rural setting provide wildlife with nesting and feeding habitat as well as cover for a variety of amphibians, reptiles, birds, and

mammals. During the wetland delineation, the following wildlife species, their scat, tracks, or calls were documented: white-tailed deer (*Odocoileus virginianus*), Eastern cottontail rabbit (*Sylvilagus floridanus*), red-tailed hawk (*Buteo jamaicensis*), crow (*Corvus brachyrhynchos*), woodcock (*Philohela minor*), yellow-shafted flickers (*Colaptes auratus*), red-winged blackbirds (*Agelaius phoeniceus*), black-capped chickadees (*Parus atricapillus*), American goldfinch (*Carduelis tristis*), cedar waxwings (*Bombycilla cedrorum*), downy woodpecker (*Picoides villosus*), and American toad (*Bufo americanus*).

Stream and Wetland Regulation by the MDEQ

Under P.A. 451, Part 301, a stream is defined as a body of water that has "definite banks, a bed, and visible evidence of a continued flow or continued occurrence of water." The drain that enters the northwest side of the property and eventually flows out of the southeast corner meets the definition of a stream and, therefore, is regulated by the MDEQ under Part 301. In a regulated stream, an MDEQ permit is required to (a) dredge or fill bottomland, (b) construct, enlarge, extend, remove, or place a structure on bottomland, (c) erect, maintain, or operate a marina, (d) create, enlarge, or diminish an inland stream, (e) structurally interfere with the natural flow of an inland stream, (f) construct, dredge, commence, extend, or enlarge an artificial canal, channel, ditch, lagoon, pond, lake, or similar waterway where the purpose is ultimate connection with an existing inland lake or stream, or where any part of the artificial waterway is located within 500 feet of the ordinary high-water mark of an existing inland lake or stream.

The wetlands described above would be subject to MDEQ regulation under part 303 of P.A. 451 because they are within 500 feet of the stream described above. Under Part 303, the following activities require a permit from the MDEQ in regulated wetlands: (a) depositing or permitting the placement of fill material in a wetland, (b) dredging, removing, or permitting the removal of soil or minerals from a wetland, (c) constructing, operating, or maintaining any use or development in a wetland, and (d) draining surface water from a wetland.

Drain Regulation by County

According to the Macomb County Drain map, there are no legally established county drains on the property.

Recommendations

Work within wetlands and the streams on site will require prior authorization from the MDEQ. Therefore, the wetlands within the areas of the property where work is proposed must be flagged and surveyed. The surveyed wetland boundaries should be used to guide the planning process so as to minimize impacts to the stream and wetlands to the maximum extent practicable. Unavoidable impacts to wetlands and streams can also be determined at that time.

If wetland impacts are proposed to be 1/3 of an acre or greater, wetland mitigation will be required by the MDEQ. Therefore, a permit application to the MDEQ should include a mitigation plan if impacts of 1/3 of an acre or greater are proposed. If mitigation is proposed on-site, consideration should be given to the area immediately south of the existing DTE facility. This grassy, upland area has a drainage ditch running through it apparently directing storm water from the facility to the forested area to the south. Further analysis of this area would be required with regard to the existing soils, amount of excavation required, and the amount of hydrology which could be expected from the ditch to be provided to a mitigation wetland. A constructed wetland in this location would filter the storm water from the DTE facility before it enters the forested wetland.

Attachment

p :24534\000\reports\4-0805wdr doc

References:

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Hurt, G.W., Whited, P. M., and Pringle, P. M. (eds.). 1998. Field Indicators of Hydric Soils in the United States [Version 4.0]. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, TX.

Kurta, A. 2001. Mammals of the Great Lakes Region. Revised Ed. University of Michigan Press. Ann Arbor, MI. 376 pp.

Peterson, R.T. 1980. A Field Guide to the Birds East of the Rockies. Houghton Miflin Co. Boston, MA. 384 pp.

Reed, P.B., Jr. 1988. National List of Plants Species that Occur in Wetlands: North Central (Region 3). U.S. Fish and Wildlife Service Biological Report 88 (26-3). 99 pp.

US Army Corps of Engineers. 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Waterways Experiment Station. Vicksburg, MS. 169 pp.

U..S Department of Agriculture. Soil Conservation Service. 1980. Soil Survey of Dodge County (Excerpts provided by the local NRCS office).

U.S. Department of Agriculture, Natural Resources Conservation Service. 1993. Hydric Soil List for Dodge Co. of Michigan.

Wisconsin Department of Natural Resources, Bureau of Water Regulation and Zoning. September 19, 1994. Wetland Inventory Maps.

Wisconsin Department of Transportation Project No. 6060-02-60 Plans for STH 73 in Dodge County.

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, LAND AND WATER MANAGEMENT DIVISION

PART 303 – WETLAND DATA FORM

This information is collected pursuant to Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Applicant: DTE Romeo

For DEQ Use: File: ___-___-_____-__

County: Macomb T4N R12E S14 Date: 8/05/2004

Form Completed By: ~~TSA~~ Wetland Area: A (west)

INSTRUCTIONS:

Fill out all pertinent information on the following worksheets to substantiate your review. All methods should be in accordance with the *MDEQ Wetland Identification Manual: A Technical Manual for Identifying Wetlands in Michigan* and Part 303. Nomenclature shall follow Voss (1972, 1985, and 1996) or Gleason and Cronquist (2004).

SITE REVIEW:

N (Y/N) Is the site significantly disturbed? If yes, describe: _____

N (Y/N) Is there a potential Problem Area as described in the MDEQ Wetland Identification Manual?

If yes, describe: _____

VEGETATION AND AQUATIC LIFE:

Dominant Vegetation *on Wetland Side* of the Boundary (use additional sheets if necessary)

Genus/Species	Common Name	Stratum*	Indicator Status
Fraxinus pennsylvanica	Green Ash	O/S	FACW
Ulmus americana	American Elm	O/S	FACW-
Acer saccharinum	Silver Maple	O	FACW
Quercus bicolor	Swamp white Oak	O	FACW+
Cornus foemina	Gray dogwood	S	FACW-
Lindera benzoin	Spicebush	S	FACW-
Toxicodendron radicans	Poison-ivy	H	FAC+
Alliaria petiolata	Garlic Mustard	H	FAC
Onoclea sensibilis	Sensitive Fern	H	FACW
urtica dioica	Stinging Nettles	H	FAC+
Phragmites australis	Common Reed	H	FACW+

Aquatic Life Observed Symplocarpus foetida - Skunk-cabbage - H - OBL
Rhamnus cathartica - Com. Buckthorn - S - FACU

Dominant Vegetation *on Upland Side* of the Boundary
(use additional sheets if necessary)

Genus/Species	Common Name	Stratum*	Indicator Status
Acer saccharum	Sugar maple	O	FACU
Q. macrocarpa	Bur Oak	O	FAC-
Q. alba	white Oak	O	FACU
Q. rubra	Red oak	O	FACU
Prunus serotina	Black Cherry	O	FACU
Zanthoxylum americanum	Prickly-Ash	S	NOT INTERNET PUBLIC
Tilia americana	Basswood	O	FACU

*Stratum: H = Herbaceous (woody and herbaceous plants <3.2 ft. tall); S = Sapling/Shrub (≥3.2 ft. tall AND <3" DBH); O = Overstory (≥3" DBH)

HYDROLOGY (Requires One Primary or Two Secondary Indicators):

Primary Indicators:
- ☐ (√) Visible observation of Inundation (Depth ____ in.)
- ☑ (√) Visible observation of soil saturation (Depth Surf. In.)
- ☐ (√) Hydric Soils (√ below)
- ☑ (√) Watermarks
- ☑ (√) Drift lines
- ☐ (√) Sediment deposits
- ☐ (√) Drainage patterns within wetlands

Other: ____

Secondary Indicators:
- ☐ (√) Oxidized rhizospheres in upper 12"
- ☑ (√) Water stained leaves
- ☐ (√) Confirm soil profile matches hydric soil list
- ☐ (√) FAC-Neutral Test
- ☑ (√) Bare soil areas
- ☑ (√) Morphological Plant Adaptations (√ below)

Hydric Indicators for Non-Sandy Soils
- ☐ (√) Organic soils (Histosols)
- ☐ (√) Histic epipedon
- ☐ (√) Sulfidic material (H_2S odor)
- ☑ (√) Soil color (immediately below A-horizon or within 10 inches of the surface, whichever is shallower)
  - ☐ (√) Gleyed (gray) soil (i.e. matches Gley page)
  - ☑ (√) Matrix chroma of 2 or less in mottled soils
  - ☐ (√) Matrix chroma of 1 or less in unmottled soils
  - ☐ (√) Black mineral soil with gray mottles at ≤ 10 inches
- ☐ (√) Confirm soil profile matches local hydric soil list
- ☐ (√) Iron and manganese concretions
- ☐ (√) Reducing soil conditions (ferrous iron test)
- ☐ (√) Aquic or peraquic moisture regime

Additional Hydric Indicators for Sandy Soils
- ☐ (√) High organic matter in the surface horizon
- ☐ (√) Streaking of subsurface horizons by organic matter
- ☐ (√) Organic pans: at depth of ____ inches

Supplemental Indicators of Hydric Soils:
(e.g., NRCS Field Indicators of Hydric Soils):

Morphological Plant Adaptations Observed(√):
- ☐ Adventitious roots
- ☑ Shallow root system
- ☐ Floating leaves
- ☐ Inflated leaves, stems, or root
- ☐ Polymorphic leaves
- ☐ Oxygen pathway to roots
- ☐ Floating stem
- ☐ Hypertrophied lenticels
- ☐ Multiple trunks or stooling
- ☑ Buttressed tree trunks
- ☐ Pneumatophores

SOIL PROFILE NOTES:

Soil Profile on *Wetland Side* of the Boundary

Map Unit from Soil Survey:

Depth (inches)	Matrix color (hue/value/chroma)	Mottle Color (if present)	Texture (e.g., sandy loam, etc.)	Notes
0-10"	10YR 2/0	—	loam	
10-15	10YR 2/0	—	loam w/ gravel	- Low Chroma

Soil Profile on *Upland Side* of the Boundary

Map Unit from Soil Survey (if different than above):

Depth (inches)	Matrix color (hue/value/chroma)	Mottle Color (if present)	Texture (e.g., sandy loam, etc.)	Notes

WETLAND DETERMINATION

- ☑ (√) Predominance of wetland vegetation (Fac, Fac+, FacW-, FacW, FacW+, OBL) or aquatic life
- ☑ (√) Wetland hydrology and/or hydric soil present
- Y (Y/N)Is the area wetland (both wetland hydrology/soils and a predominance of wetland vegetation present)?
- Y (Y/N) Is the area REGULATED wetland (refer to *Part 303 - Wetland Jurisdictional Determination Form*)?

Wetland Types (√ all that are present):
- ☐ (√) Emergent Marsh
- ☑ (√) Wet Meadow
- ☐ (√) Wet Prairie
- ☐ (√) Deciduous Swamp
- ☐ (√) Coniferous Swam
- ☑ (√) Deciduous Forest
- ☐ (√) Fen
- ☐ (√) Bog/Muskeg
- ☐ (√) Great Lakes Marsh
- ☑ (√) Shrub Swamp
- ☐ (√) Floodplain Forest
- ☐ (√) Submergent Marsh

Other (e.g. rare and imperiled community, reed canary grass dominated, highly disturbed): ____

Comments: Woodcock, deer, cotton-tail rabbits, flickers, cedar waxwings, hairy/downy woodpeckers, crow, black-capped chickadees, red-tailed hawk, Goldfinches, various sparrows, ticks(!).

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, LAND AND WATER MANAGEMENT DIVISION

PART 303 – WETLAND DATA FORM

This information is collected pursuant to Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Applicant: DTE Romeo

For DEQ Use: File: ___-___-_____-___

County: Macomb T 4N R 12E S 14 Date: 8/05/2004

Form Completed By: TSA Wetland Area: A (East)

INSTRUCTIONS:

Fill out all pertinent information on the following worksheets to substantiate your review. All methods should be in accordance with the *MDEQ Wetland Identification Manual: A Technical Manual for Identifying Wetlands in Michigan* and Part 303. Nomenclature shall follow Voss (1972, 1985, and 1996) or Gleason and Cronquist (2004).

SITE REVIEW:

N (Y/N) Is the site significantly disturbed? If yes, describe: _____

N (Y/N) Is there a potential Problem Area as described in the MDEQ Wetland Identification Manual?

If yes, describe: _____

VEGETATION AND AQUATIC LIFE:

Dominant Vegetation *on Wetland Side* of the Boundary (use additional sheets if necessary)

Genus/Species	Common Name	Stratum*	Indicator Status
F. pennsylvanica	Green Ash	O/S	FACW
U. americana	Am. Elm	O/S	FACW-
A. saccharinum	Silver Maple	O	FACW
Q. bicolor	Swamp white oak	O	FACW+
R. cathartica	Com. Buckthorn	S	FACU
Salix exigua	Sandbar willow	S	Obl
Cornus stolonifera	Red-Osier dogwood	S	FACW
C. amomum	Silky dogwood	S	FACW+
T. radicans	Poison-ivy	H	FAC+
A. petiolata	Garlic mustard	H	FAC
Geum canadense	white avens		FAC

Aquatic Life Observed Euthamia graminifolia - Grass-leaved Golden Rod - H - FAC; Lythrum salicaria - Purple loosestrife - H - OBL; Solidago gigantea - Late Goldenrod - H - FACW; Phalaris arundinacea - Reed Canary Grass - H - FACW+

Dominant Vegetation *on Upland Side* of the Boundary (use additional sheets if necessary)

Genus/Species	Common Name	Stratum*	Indicator Status
See wetland	Area A (West)		

*Stratum: H = Herbaceous (woody and herbaceous plants <3.2 ft. tall); S = Sapling/Shrub (≥3.2 ft. tall AND <3" DBH); O = Overstory (≥3" DBH)

HYDROLOGY (Requires One Primary or Two Secondary Indicators):

Primary Indicators:
- ☐ (√) Visible observation of Inundation (Depth ____ in.)
- ☐ (√) Visible observation of soil saturation (Depth ____ in.)
- ☐ (√) Hydric Soils (√ below)
- ☑ (√) Watermarks
- ☐ (√) Drift lines
- ☐ (√) Sediment deposits
- ☐ (√) Drainage patterns within wetlands

Secondary Indicators:
- ☐ (√) Oxidized rhizospheres in upper 12"
- ☑ (√) Water stained leaves
- ☐ (√) Confirm soil profile matches hydric soil list
- ☐ (√) FAC-Neutral Test
- ☑ (√) Bare soil areas
- ☑ (√) Morphological Plant Adaptations (√ below)

Other: _____

Hydric Indicators for Non-Sandy Soils
- ☐ (√) Organic soils (Histosols)
- ☐ (√) Histic epipedon
- ☐ (√) Sulfidic material (H_2S odor)
- ☑ (√) Soil color (immediately below A-horizon or within 10 inches of the surface, whichever is shallower)
  - ☐ (√) Gleyed (gray) soil (i.e. matches Gley page)
  - ☑ (√) Matrix chroma of 2 or less in mottled soils
  - ☐ (√) Matrix chroma of 1 or less in unmottled soils
  - ☐ (√) Black mineral soil with gray mottles at ≤ 10 inches
- ☐ (√) Confirm soil profile matches local hydric soil list
- ☐ (√) Iron and manganese concretions
- ☐ (√) Reducing soil conditions (ferrous iron test)
- ☐ (√) Aquic or peraquic moisture regime

Additional Hydric Indicators for Sandy Soils
- ☐ (√) High organic matter in the surface horizon
- ☐ (√) Streaking of subsurface horizons by organic matter
- ☐ (√) Organic pans: at depth of _____ inches

Supplemental Indicators of Hydric Soils:
(e.g., NRCS Field Indicators of Hydric Soils):

Morphological Plant Adaptations Observed(√):
- ☐ Adventitious roots
- ☑ Shallow root system
- ☐ Floating leaves
- ☐ Inflated leaves, stems, or root
- ☐ Polymorphic leaves
- ☐ Oxygen pathway to roots
- ☐ Floating stem
- ☐ Hypertrophied lenticels
- ☐ Multiple trunks or stooling
- ☑ Buttressed tree trunks
- ☐ Pneumatophores

SOIL PROFILE NOTES:

Soil Profile on *Wetland Side* of the Boundary

Map Unit from Soil Survey:

Depth (inches)	Matrix color (hue/value/chroma)	Mottle Color (if present)	Texture (e.g., sandy loam, etc.)	Notes
0-8	10YR 2/1		Sandy loam	
8-14	10YR 4/2	10YR 4/6	Coarse Sandy loam	(mottles @ 40%)

Soil Profile on *Upland Side* of the Boundary

Map Unit from Soil Survey (if different than above):

Depth (inches)	Matrix color (hue/value/chroma)	Mottle Color (if present)	Texture (e.g., sandy loam, etc.)	Notes

WETLAND DETERMINATION

- ☑ (√) Predominance of wetland vegetation (Fac, Fac+, FacW-, FacW, FacW+, OBL) or aquatic life
- ☑ (√) Wetland hydrology and/or hydric soil present
- Y (Y/N)Is the area wetland (both wetland hydrology/soils and a predominance of wetland vegetation present)?
- Y (Y/N) Is the area REGULATED wetland (refer to *Part 303 - Wetland Jurisdictional Determination Form*)?

Wetland Types (√ all that are present):
- ☐ (√) Emergent Marsh
- ☑ (√) Wet Meadow
- ☐ (√) Wet Prairie
- ☐ (√) Deciduous Swamp
- ☐ (√) Coniferous Swam
- ☑ (√) Deciduous Forest
- ☐ (√) Fen
- ☐ (√) Bog/Muskeg
- ☐ (√) Great Lakes Marsh
- ☑ (√) Shrub Swamp
- ☐ (√) Floodplain Forest
- ☐ (√) Submergent Marsh

Other (e.g. rare and imperiled community, reed canary grass dominated, highly disturbed): _____

Comments: Wetland includes both forested + 'field' areas

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, LAND AND WATER MANAGEMENT DIVISION

PART 303 – WETLAND DATA FORM

This information is collected pursuant to Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Applicant: DTE Romeo

For DEQ Use: File: ___-___-_____-___

County: Macomb T 4N R 12E S 14 Date: 10/13/2004

Form Completed By: TSA Wetland Area: A (Supplemental Data Form for field area south of woodlot prior to flagging)

INSTRUCTIONS:

Fill out all pertinent information on the following worksheets to substantiate your review. All methods should be in accordance with the *MDEQ Wetland Identification Manual: A Technical Manual for Identifying Wetlands in Michigan* and Part 303. Nomenclature shall follow Voss (1972, 1985, and 1996) or Gleason and Cronquist (2004).

SITE REVIEW:

N (Y/N) Is the site significantly disturbed? If yes, describe: _____

N (Y/N) Is there a potential Problem Area as described in the MDEQ Wetland Identification Manual?

If yes, describe: _____

VEGETATION AND AQUATIC LIFE:

Dominant Vegetation *on Wetland Side* of the Boundary (use additional sheets if necessary)

Genus/Species	Common Name	Stratum*	Indicator Status
Populus tremuloides	Quaking Aspen	O	FAC
F. pennsylvanica	Green Ash	O/S	FACW
Salix sp.	Willow	S	—
C. amomum	Silky dogwood	S	FACW+
C. stolonifera	Red-osier dogwood	S	FACW
C. foemina	Gray dogwood	S	FACW-
V. americana	Am. Elm	S	FACW-
E. graminifolia	Grass-leaved goldenrod	H	FACW-
Juncus tenuis	Path Rush	H	FAC
Carex spp.	Sedges	H	—
P. arundinacea	Reed Canary Grass	H	FACW+

Aquatic Life Observed Aster novae-angliae - N.E. Aster - H - FACW

Dominant Vegetation *on Upland Side* of the Boundary
(use additional sheets if necessary)

Genus/Species	Common Name	Stratum*	Indicator Status
Solidago altissima	Tall goldenrod	H	FACU
R. cathartica	Com. Buckthorn	S	FACU

NON-INTERNET PUBLIC

*Stratum: H = Herbaceous (woody and herbaceous plants <3.2 ft. tall); S = Sapling/Shrub (≥3.2 ft. tall AND <3" DBH); O = Overstory (≥3" DBH)

HYDROLOGY (Requires One Primary or Two Secondary Indicators):

Primary Indicators:
- ☐ (√) Visible observation of inundation (Depth ____ in.)
- ☐ (√) Visible observation of soil saturation (Depth ____ in.)
- ☐ (√) Hydric Soils (√ below)
- ☐ (√) Watermarks
- ☐ (√) Drift lines
- ☑ (√) Sediment deposits *
- ☐ (√) Drainage patterns within wetlands

Secondary Indicators:
- ☑ (√) Oxidized rhizospheres in upper 12"
- ☐ (√) Water stained leaves
- ☐ (√) Confirm soil profile matches hydric soil list
- ☑ (√) FAC-Neutral Test
- ☐ (√) Bare soil areas
- ☐ (√) Morphological Plant Adaptations (√ below)

Other: * water appeared to 'stand' in rutted + low areas observed there.

Hydric Indicators for Non-Sandy Soils
- ☐ (√) Organic soils (Histosols)
- ☐ (√) Histic epipedon
- ☐ (√) Sulfidic material (H_2S odor)
- ☑ (√) Soil color (immediately below A-horizon or within 10 inches of the surface, whichever is shallower)
  - ☐ (√) Gleyed (gray) soil (i.e. matches Gley page)
  - ☑ (√) Matrix chroma of 2 or less in mottled soils
  - ☐ (√) Matrix chroma of 1 or less in unmottled soils
  - ☐ (√) Black mineral soil with gray mottles at ≤ 10 inches
- ☐ (√) Confirm soil profile matches local hydric soil list
- ☐ (√) Iron and manganese concretions
- ☐ (√) Reducing soil conditions (ferrous iron test)
- ☐ (√) Aquic or peraquic moisture regime

Additional Hydric Indicators for Sandy Soils
- ☐ (√) High organic matter in the surface horizon
- ☐ (√) Streaking of subsurface horizons by organic matter
- ☐ (√) Organic pans: at depth of _____ inches

Supplemental Indicators of Hydric Soils:
(e.g., NRCS Field Indicators of Hydric Soils):

Morphological Plant Adaptations Observed(√):
☐ Adventitious roots ☐ Shallow root system ☐ Floating leaves
☐ Inflated leaves, stems, or root ☐ Polymorphic leaves ☐ Oxygen pathway to roots ☐ Floating stem
☐ Hypertrophied lenticels ☐ Multiple trunks or stooling ☐ Buttressed tree trunks ☐ Pneumatophores

SOIL PROFILE NOTES:

Soil Profile on *Wetland Side* of the Boundary

Map Unit from Soil Survey:

Depth (inches)	Matrix color (hue/value/chroma)	Mottle Color (if present)	Texture (e.g., sandy loam, etc.)	Notes
0-7	10YR 3/1	10YR 5/8	sandy loam	oxidized rhizospheres
7-14	10YR 5/2	10YR 5/8	coarse sand	redox @ 10%

Soil Profile on *Upland Side* of the Boundary

Map Unit from Soil Survey (if different than above):

Depth (inches)	Matrix color (hue/value/chroma)	Mottle Color (if present)	Texture (e.g., sandy loam, etc.)	Notes

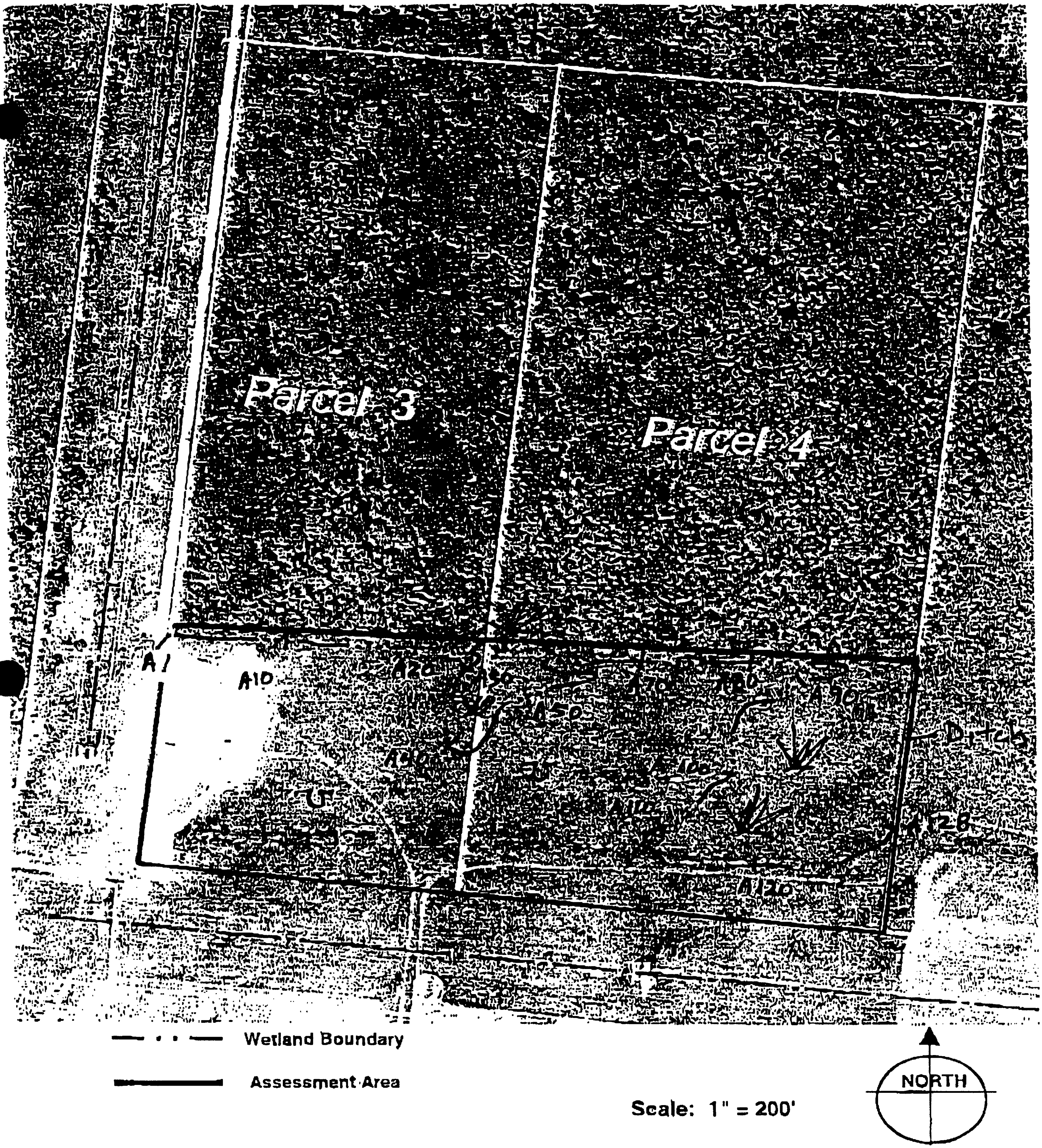
WETLAND DETERMINATION

☑ (√) Predominance of wetland vegetation (Fac, Fac+, FacW-, FacW, FacW+, OBL) or aquatic life
☑ (√) Wetland hydrology and/or hydric soil present
Y (Y/N)Is the area wetland (both wetland hydrology/soils and a predominance of wetland vegetation present)?
Y (Y/N) Is the area REGULATED wetland (refer to *Part 303 - Wetland Jurisdictional Determination Form*)?

Wetland Types (√ all that are present):
- ☐ (√) Emergent Marsh
- ☑ (√) Wet Meadow
- ☐ (√) Wet Prairie
- ☐ (√) Deciduous Swamp
- ☐ (√) Coniferous Swam
- ☐ (√) Deciduous Forest
- ☐ (√) Fen
- ☐ (√) Bog/Muskeg
- ☐ (√) Great Lakes Marsh
- ☑ (√) Shrub Swamp
- ☐ (√) Floodplain Forest
- ☐ (√) Submergent Marsh

Other (e.g. rare and imperiled community, reed canary grass dominated, highly disturbed): _____

Comments: Deer, cottontail rabbit, numerous songbirds, pheasant



Wetland Boundary Map

DTE Energy - Romeo, MI

JJR File No. 24534.000

NON-INTERNET PUBLIC

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

January 19, 2005

Mr. Terry S. Heatlie
JJR, LCC
110 Miller Avenue
Ann Arbor, MI 48104

Dear Mr. Heatlie:

SUBJECT: Wetland Assesament Report - Wetland Assessment File Number: 04-50-0018-WA

The Department of Environmental Quality (DEQ) conducted a Level 3 Wetland Assessment on property (property tax identification number 24-04-14-400-007) located in Town 04 North, Range 12 East, Section 14, Washington Township, Macomb County on December 14, 2004. The assessment was conducted in accordance with Part 303, Wetland Protection of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); and Rule 4, Wetland Assessments (R 281.924) of the Administrative Rules for Part 303. This is a report of our findings in response to your wetland assessment application.

The DEQ staff walked the flagged boundaries with you as requested in your wetland assessment application. Based on our on-site investigation, which included review of plant communities, hydrologic indicators, and soils of the assessment area, and an in-office review of other pertinent information, the DEQ confirms, in part, the wetland boundaries observed during the site inspection. Staff noted two areas where the boundaries of Wetland A needed to be expanded.

We flagged the modified boundaries with pink DEQ flagging tape and documented the new boundaries on the enclosed site map. The flags were labeled B1 through B5 and C1 through C5. Flag A114 ties into B1 and B5 ties back into A117. Flag A120 ties into C1 and C5 ties back into A123. The site map of the assessment area was created by combining the information you provided and the DEQ. The new map identifies the areas containing regulated wetland and non-wetland (i.e. upland areas) of the assessment area. A new delineation is not necessary

For those areas identified as regulated wetland on the site map, specifically Wetland A, please be advised that any of the following activities require a permit under Part 303:

a) Deposit or permit the placing of fill material in a regulated wetland.

b) Dredge, remove, or permit the removal of soil or minerals from regulated wetland.

c) Construct, operate, or maintain any use or development in a regulated wetland.

d) Drain surface water from a regulated wetland.

For those areas identified as upland on the site map, the DEQ lacks jurisdiction under Part 303 for activities occurring in those areas.

You may request the DEQ reassess the subject parcel or any portion of the parcel within 60 days of the date of this report should you disagree with its the findings. A written request to reassess the parcel must be accompanied by supporting evidence with regard to wetland vegetation, soils or hydrology different from, or in addition to, the information relied upon by DEQ staff in preparing this report and sent to:

Wetland Assessment Program
Wetlands and Submerged Lands Unit
Land and Water Management Division
Department of Environmental Quality
P.O. Box 30458
Lansing, Michigan 48909-7958

Please be aware that this assessment report does not constitute a determination of the presence of wetland that may be regulated under local ordinances or federal law. The U.S. Army Corps of Engineers (USACE) retains regulatory authority over certain wetlands pursuant to Section 404 of the Clean Water Act (CWA), and specifically those wetlands associated with traditionally navigable waters of the state. Traditionally, navigable waters are generally the Great Lakes, their connecting waters, and river systems and lakes connected to these waters. In other areas of Michigan, the DEQ is responsible for determination of wetland boundaries for purposes of compliance with the CWA under an agreement with the U.S. Environmental Protection Agency.

Your assessment area does not appear to be within those areas also regulated by the USACE. However, should you desire more information, please contact the USACE at 313-226-2218.

This assessment report is limited to findings pursuant to Part 303 and does not constitute a determination of jurisdiction under other DEQ administered programs. Any land use activities undertaken on the assessed parcel may be subject to regulation pursuant to the NREPA under the following programs:

Part 91, Soil Erosion and Sedimentation Control

The findings contained in this report do not convey, provide, or otherwise imply approval of any governing act, ordinance, or regulation, nor does it waive the obligation to acquire any applicable state, county, local, or federal approval or authorizations necessary to conduct any possible activities. This assessment report is not a permit for any activity that requires a permit from the DEQ.

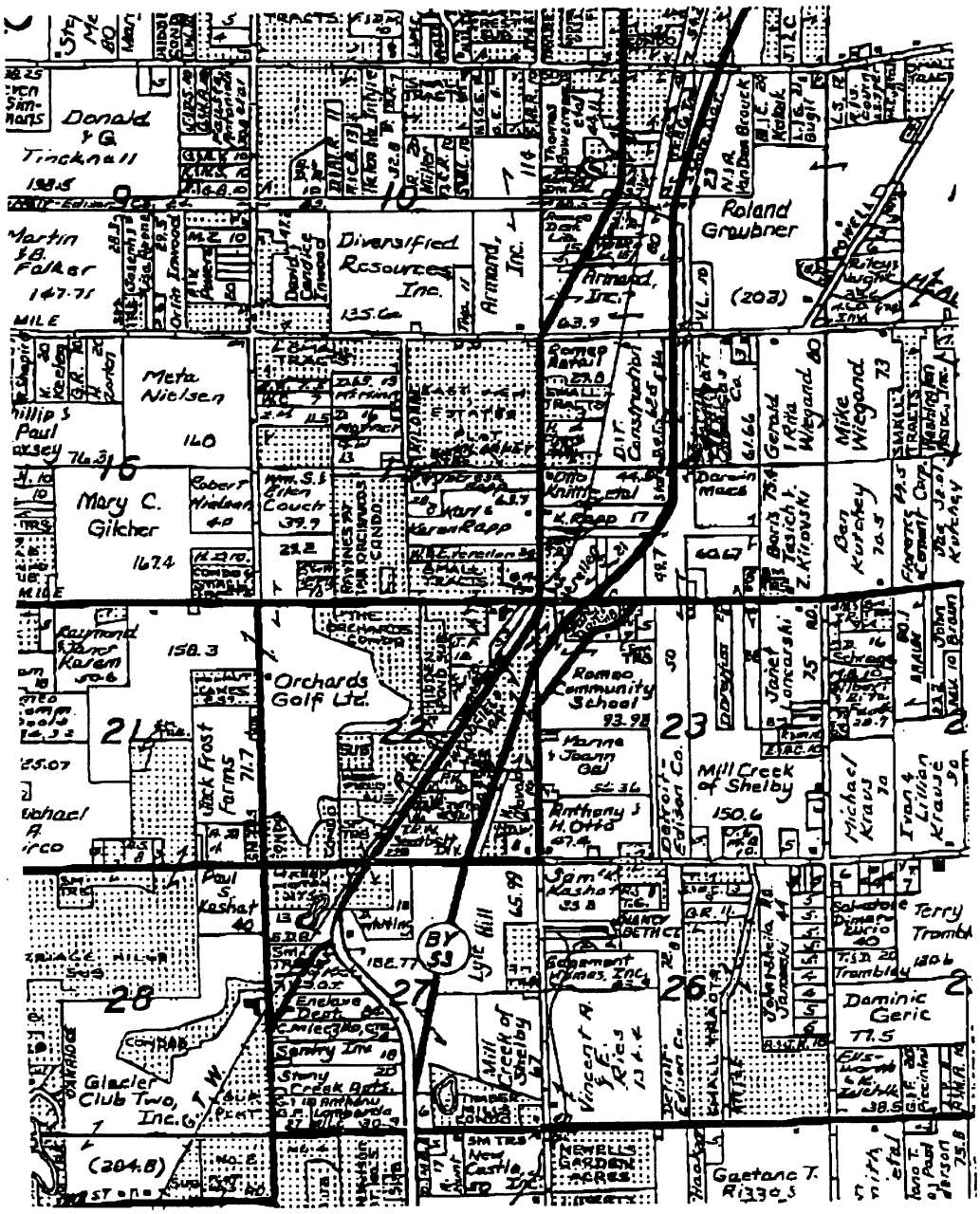
The findings contained in this report are binding on the DEQ until December 14, 2007; a period of three years from the date of the assessment unless a reassessment is conducted. Please contact me if you have any questions regarding this assessment report.

Sincerely,

Mary Vanderlaan
Land and Water Management Division
Southeast Michigan District Supervisor
734-953-1465

Enclosures

cc: Washington Township Clerk
Ms. Tracy Jones, DEQ
Ms. Wendy Veltman, DEQ



SITE LOCATION MAP

Legend:

WR = Wetland- Regulated
WN =Wetland- Not Regulated
UPL = Upland (non-wetland)

Map drawn by Erica Staton on 1/13/05
Scale: not to scale

This drawing showing those areas containing wetland and not containing wetland is an approximation of the boundaries flagged on-site.

This drawing does not authorize or permit activities requiring a permit in accordance with Part 303 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

JJR landscape architecture planning urban design civil engineering environmental science

TRANSMITTAL

www.jjr-us.com

Brad Surface (TO)	December 15, 2004 (DATE)
Michigan Consolidated Gas Co. (COMPANY)	313.235.1132 (TELEPHONE NO.)
2000 Second Avenue, GO-513	
Detroit, MI 48226	
Terry S. Heatlie (FROM)	734.669.2730 (TELEPHONE NO.) FAX NO.
Washington-10 Storage Corp. (PROJECT)	24534.000 (PROJECT NO.)

WE ARE SENDING YOU: ATTACHED ☒ UNDER SEPARATE COVER ☐

VIA: Regular US Mail

THE FOLLOWING

Modified wetland boundary drawing.

REMARKS

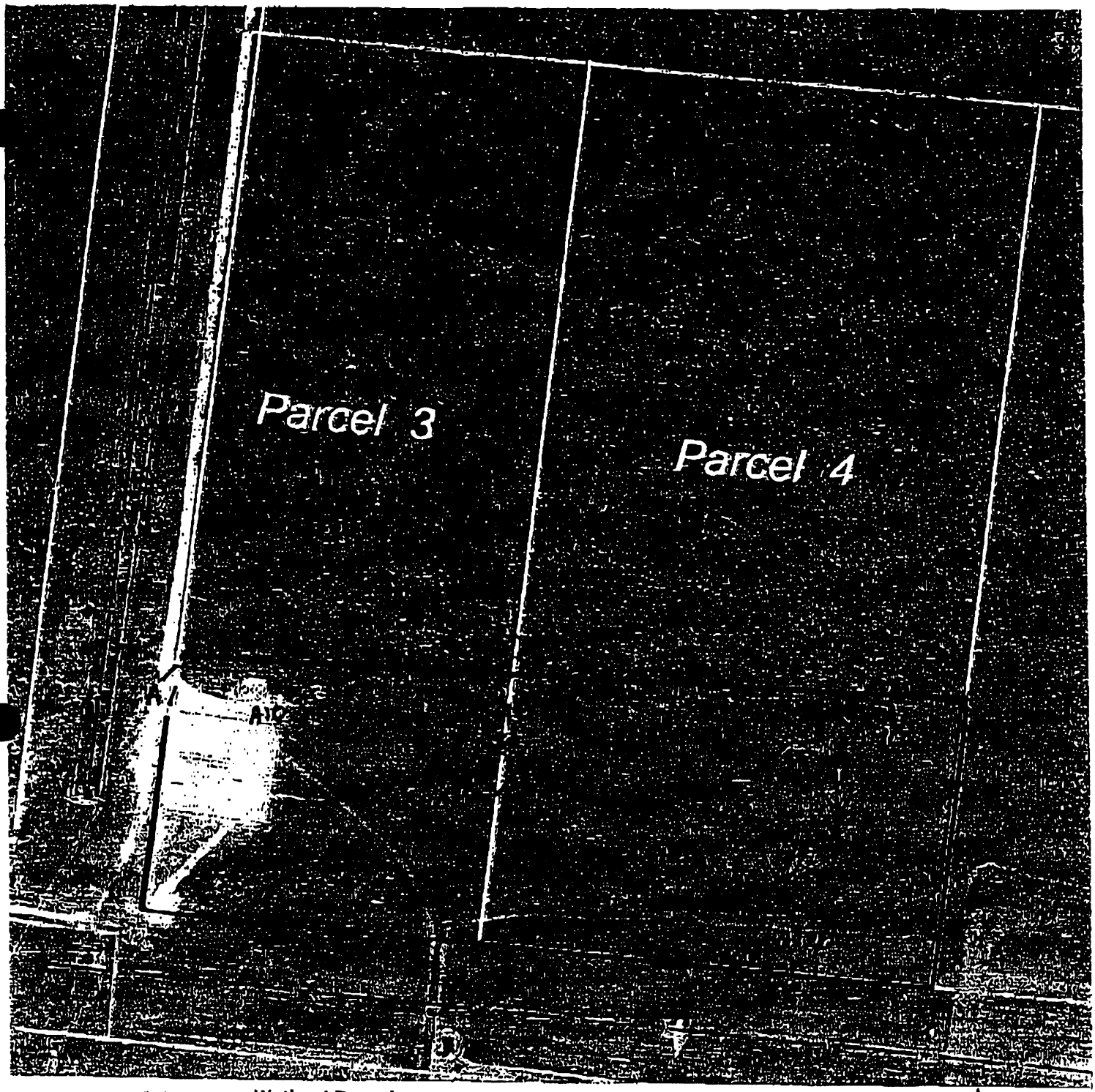
After meeting with the MDEQ on site on Tuesday (14 Dec 2004) a modification to the wetland boundary line was made. The MDEQ and I agreed to the change after observing where standing water (in the form of ice now) accumulated between the east-west access road and the power lines south of the property line. The exact property line was not apparent here so the modified boundary line may extend off the property to the south. The change results in a minor extension of the boundary in the south part of Parcel 4. The modified drawing shows where flags A114 connects to Flag B1; A117 connects to B5; A121 connects to C1; and A123 connects to C6. The flags are all still in place and visible on the property. Therefore, a survey can take place at anytime now.

CC:

X:\Forms\transmittal.doc

JJR, LLC | 110 MILLER AVENUE, ANN ARBOR, MICHIGAN 48104 | T 734.662.4457 F 734.662.0779

NON-INTERNET PUBLIC



Wetland Boundary

Assessment Area

NORTH

Scale: 1" = 200'

Wetland Boundary Map

DTE Energy - Romeo, MI

JJR File No. 24534.000

NON-INTERNET PUBLIC

JJR

DTE Energy Gas – Proposed Vector Compressor Station PROJECT NAME	**September 15, 2005** DATE	**October 31, 2005** ISSUE DATE
Washington, Michigan Section 14, T4N, R12E LOCATION	**24699.000** PROJECT NUMBER	
Carol Schulte Environmental Specialist ISSUED BY	SIGNATURE	
PARTICIPANTS	**Ryan Dodd, DTE Energy** DISTRIBUTION	

Introduction

The purpose of the field inspection was to identify the extent and character of wetlands adjacent to an existing utility access road that needs to be widened for passage of construction vehicles. Wetlands on the property were flagged and surveyed.

Wetland Identification Methodology, Documentation and Limiting Conditions

Methodology used to identify wetlands, including evaluation of plant species and evidence of periods of temporary or seasonal surface water, was typical of Michigan Department of Environmental Quality (MDEQ) wetland determinations as described in the MDEQ Wetland Identification Manual. MDEQ wetland data forms were used in the field to collect data and are attached to this report. Application of the procedures described in this manual are typically used in all JJR wetland determinations.

Wetlands *may* be regulated by the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers and, in some cases, state and local units of government. These agencies make the final determination as to what is and what is not wetland, and the extent of regulatory authority the agency has over the wetland. Their determination can vary from time to time depending upon many factors including, but not limited to, the agency representative conducting the determination, wetland policy, and the time of the year the site is examined. In addition, the wetland boundaries and extent on the site can change from time to time depending upon numerous factors including, but not limited to, changes in vegetation, drainage, weather patterns, and activities on adjacent properties that may alter the pattern of wetland on the subject property. Our opinion of the extent of wetland on the subject property is based on the condition of the site at the time of our site investigation, our past experiences with regulatory agencies, and current policy regarding the procedures used to delineate wetlands.

JJR

15 September 2005

Property Description

The area that was examined is located in Washington Township in Macomb County, on the site of a DTE Energy (DTE) gas storage facility. The investigated site was approximately 3 acres of a 50-acre parcel. It is comprised of a north-south running high-power electrical utility corridor owned by International Transmission Company (ITC) that also contains gas pipelines owned by DTE within its easement. A utility access road that terminates at an existing metering station runs along the corridor parallel to the overhead lines and pipelines, and is bordered on one side by a forested area (sparse upland, mostly forested wetland) and the other by the utility corridor. The area to the west of the utility corridor consists of MDOT road easement for M-53 Business Loop. A ditch runs east-west along the southern border of the investigated property and runs through a culvert into the adjacent forest. The site slopes gradually south toward the southerly ditch. A shallow ditch runs north-south along the access drive and empties into a culvert, which in turn empties into the east-west ditch. The area is frequently mowed to allow access to utilities.

The utility access road is being considered for construction access for proposed construction of a compressor station that is to be built on adjacent land. The road will only be widened toward the west side to avoid impacts within the forested wetland. The site for the compressor station was the subject of a previous wetland delineation (August 4, 2004), wetland report (August 30, 2004), and wetland assessment by the MDEQ (January 19, 2005, MDEQ File No. 04-50-0018-WA). A wetland application and mitigation plan are being assembled for the small wetland impacts that will result from that construction.

The boundaries of the delineation for widening the road were determined to be the road on the east side and the centerline of the overhead power lines on the west.

The Macomb County Soil Survey indicates that the site is mapped as Lupton Muck soil mapping unit. Lupton Muck is considered a hydric soil by the USDA Natural Resource Conservation Service. Hydric soils are those that have developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation.

Wetland Description

The flagged wetland area is comprised of a wet meadow wetland almost completely dominated by common reed (*Phragmites australis*). Between mowings, other wetland species appear to get short opportunities to establish. The delineation was performed just after a portion of the site was mowed. However, the area was examined 2 weeks prior to the mowing, which had not occurred for quite some time. Other wetland species observed included New England aster (*Aster novae-angliae*), boneset (*Eupatorium perfoliatum*), Joe-Pye weed (*Eupatorium maculatum*), fragrant goldenrod (*Euthamia graminifolia*) and late goldenrod (*Solidago gigantea*). The area along the southerly ditch and other non-mowed areas included silky dogwood (*Cornus amomum*), willow species (*Salix sp.*), Torrey's rush (*Juncus torreyi*), mountain mint (*Pycnanthemum virginianum*), and shrubby cinquefoil (*Potentilla fruticosa*).

The entire investigated area is made up of Lupton muck, and the examined soil profile showed low chroma color, and, in general, matched the description of the hydric soils mapped there. The southerly ditch contained soil saturated at the surface and inundation to 2". Inundation was observed in the ruts left by the mower, which appeared to have become mired in the soil. No precipitation had been received by this area for quite some time.

Wetland Regulation by the MDEQ

The examined site is part of a larger wetland system that runs northeast into the wooded area and southwest toward the highway. At one time (according to the Macomb County Soil Survey) a drainage swale or ditch ran along the northern edge of the investigated site into the forested wetland, but the installation of the power lines and the business loop has caused this swale to diminish due to alteration of topography and diversion by various culverts. However, on the other side of the road in the forested wetland the ditch still exists and was deemed a regulated stream in a previous JJR wetland determination report.

Under P.A. 451, Part 301, a stream is defined as a body of water that has "definite banks, a bed, and visible evidence of a continued flow or continued occurrence of water." The drain in the forest to the east meets the definition of a stream and, therefore, is regulated by the MDEQ under Part 301. The wetland described above would be subject to MDEQ regulation under part 303 of P.A. 451 because it is within 500 feet of the stream described above. Moreover, this wetland was likely historically connected to a wetland system that is larger than 5 acres in size in a county with a population greater than 100,000, and is regulated by the MDEQ under part 303 of P.A. 451 for that reason too. Under Part 303, the following activities require a permit from the MDEQ in regulated wetlands: (a) depositing or permitting the placement of fill material in a wetland, (b) dredging, removing, or permitting the removal of soil or minerals from a wetland, (c) constructing, operating, or maintaining any use or development in a wetland, and (d) draining surface water from a wetland.

Drain Regulation by County

According to the Macomb County Drain map, there are no legally established county drains on the property.

Recommendations

Work within the wetland on this site will require prior authorization from the MDEQ. The surveyed wetland boundaries should be used to guide the planning process so as to minimize impacts to the adjacent stream and wetlands to the maximum extent practicable.

If wetland impacts are proposed to be 1/3 of an acre or greater, wetland mitigation will be required by the MDEQ. Therefore, a permit application to the MDEQ should include a mitigation plan if impacts of 1/3 of an acre or greater are proposed. The permit application that is being assembled for the impacts on the adjacent property for the same compressor

station construction project contains a mitigation plan. This plan can easily be modified to include any additional mitigation required for impacts resulting from widening of the utility road.

Attachment

P:/24699/000/Reports/Wet Delin 9-2005.doc

References:

Michigan Department of Environmental Quality. 2001. MDEQ Wetland Identification Manual: A Technical Manual for Identifying Wetlands in Michigan.

Munsell Color. 1994. Munsell Soil Color Charts. GretagMacbeth, New Windsor, New York.

US Department of Agriculture, Natural Resources Conservation Service. 1993. Hydric Soils of Michigan.

US Department of Agriculture, Natural Resources Conservation Service. 2003. Field Indicators of Hydric Soils in the United States [Version 5.01]. G. W. Hurt, Whited, P. M., and Pringle, P. M. (eds.). USDA, NRCS, Fort Worth, TX.

U..S Department of Agriculture, Soil Conservation Service. 1995. Soil Survey of Macomb County.

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, LAND AND WATER MANAGEMENT DIVISION

PART 303 – WETLAND DATA FORM 9-15-2005

This information is collected pursuant to Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Applicant: _____ *For DEQ Use:* File: __-__-__-_____-__

County: _____ T____ R____ S____ Date: __/__/_____

Form Completed By: _____ Wetland Area: _____

INSTRUCTIONS:

Fill out all pertinent information on the following worksheets to substantiate your review. All methods should be in accordance with the *MDEQ Wetland Identification Manual: A Technical Manual for Identifying Wetlands in Michigan* and Part 303. Nomenclature shall follow Voss (1972, 1985, and 1996) or Gleason and Cronquist (2004).

SITE REVIEW:

N (Y/N) Is the site significantly disturbed? If yes, describe: a portion of site was recently mowed

N (Y/N) Is there a potential Problem Area as described in the MDEQ Wetland Identification Manual?

If yes, describe: _____

VEGETATION AND AQUATIC LIFE: AR 1-28

Dominant Vegetation *on Wetland Side* of the Boundary (use additional sheets if necessary)

Genus/Species	Common Name	Stratum*	Indicator Status
Phragmites australis	Common Reed	H	FACW+
aster novae-angliae	new england aster	H	FACW
Eupatorium perfoliatum	Boneset	H	FACW+
Eupatorium maculatum	Joe Pye weed	H	OBL
Cornus amomum	Silky dogwood	S	FACW+
Salix sp	Willow species	S	?
Euthamia graminifolia	Fragrant goldenrod	H	FACW-
Solidago gigantea	Late goldenrod	H	FACW

Aquatic Life Observed _____

Dominant Vegetation *on Upland Side* of the Boundary
(use additional sheets if necessary)

Genus/Species	Common Name	Stratum*	Indicator Status
Daucus carota	Queen anne's lace	H	UPL
Cirsium arvense	Canada thistle	H	FACU

NON-INTERNET PUBLIC

*Stratum: H = Herbaceous (woody and herbaceous plants <3.2 ft. tall); S = Sapling/Shrub (≥3.2 ft. tall AND <3" DBH); O = Overstory (≥3" DBH)

HYDROLOGY (Requires One Primary or Two Secondary Indicators):

Primary Indicators:
- X (√) Visible observation of inundation (Depth 2 in.)
- X (√) Visible observation of soil saturation (Depth 0 in.)
- X (√) Hydric Soils (√ below)
- _____ (√) Watermarks
- _____ (√) Drift lines
- _____ (√) Sediment deposits
- _____ (√) Drainage patterns within wetlands

Secondary Indicators:
- _____ (√) Oxidized rhizospheres in upper 12"
- _____ (√) Water stained leaves
- X (√) Confirm soil profile matches hydric soil list
- _____ (√) FAC-Neutral Test
- _____ (√) Bare soil areas
- _____ (√) Morphological Plant Adaptations (√ below)

Other: standing water in tractor ruts; no rain recently

Hydric Indicators for Non-Sandy Soils
- _____(√) Organic soils (Histosols)
- _____(√) Histic epipedon
- _____(√) Sulfidic material (H_2S odor)
- _____(√) Soil color (immediately below A-horizon or within 10 inches of the surface, whichever is shallower)
  - _____(√) Gleyed (gray) soil (i.e. matches Gley page)
  - _____(√) Matrix chroma of 2 or less in mottled soils
  - X (√) Matrix chroma of 1 or less in unmottled soils
  - _____(√) Black mineral soil with gray mottles at ≤ 10 inches
- X (√) Confirm soil profile matches local hydric soil list
- _____(√) Iron and manganese concretions
- _____(√) Reducing soil conditions (ferrous iron test)
- _____(√) Aquic or peraquic moisture regime

Additional Hydric Indicators for Sandy Soils
- _____(√) High organic matter in the surface horizon
- _____(√) Streaking of subsurface horizons by organic matter
- _____(√) Organic pans: at depth of _____ inches

Supplemental Indicators of Hydric Soils:
(e.g., NRCS Field Indicators of Hydric Soils):

Morphological Plant Adaptations Observed(√):
- ____Adventitious roots
- ____Shallow root system
- ____Floating leaves
- ____Inflated leaves, stems, or root
- ____Polymorphic leaves
- ____Oxygen pathway to roots
- ____Floating stem
- ____Hypertrophied lenticels
- ____Multiple trunks or stooling
- ____Buttressed tree trunks
- ____Pneumatophores

SOIL PROFILE NOTES:

Soil Profile on *Wetland Side* of the Boundary

Map Unit from Soil Survey:

Depth (inches)	Matrix color (hue/value/chroma)	Mottle Color (if present)	Texture (e.g., sandy loam, etc.)	Notes
0-12"	10YR 2/2		MUCK	
12-16"	10YR 2/1		"	

Soil Profile on *Upland Side* of the Boundary

Map Unit from Soil Survey (If different than above):

Depth (inches)	Matrix color (hue/value/chroma)	Mottle Color (if present)	Texture (e.g., sandy loam, etc.)	Notes

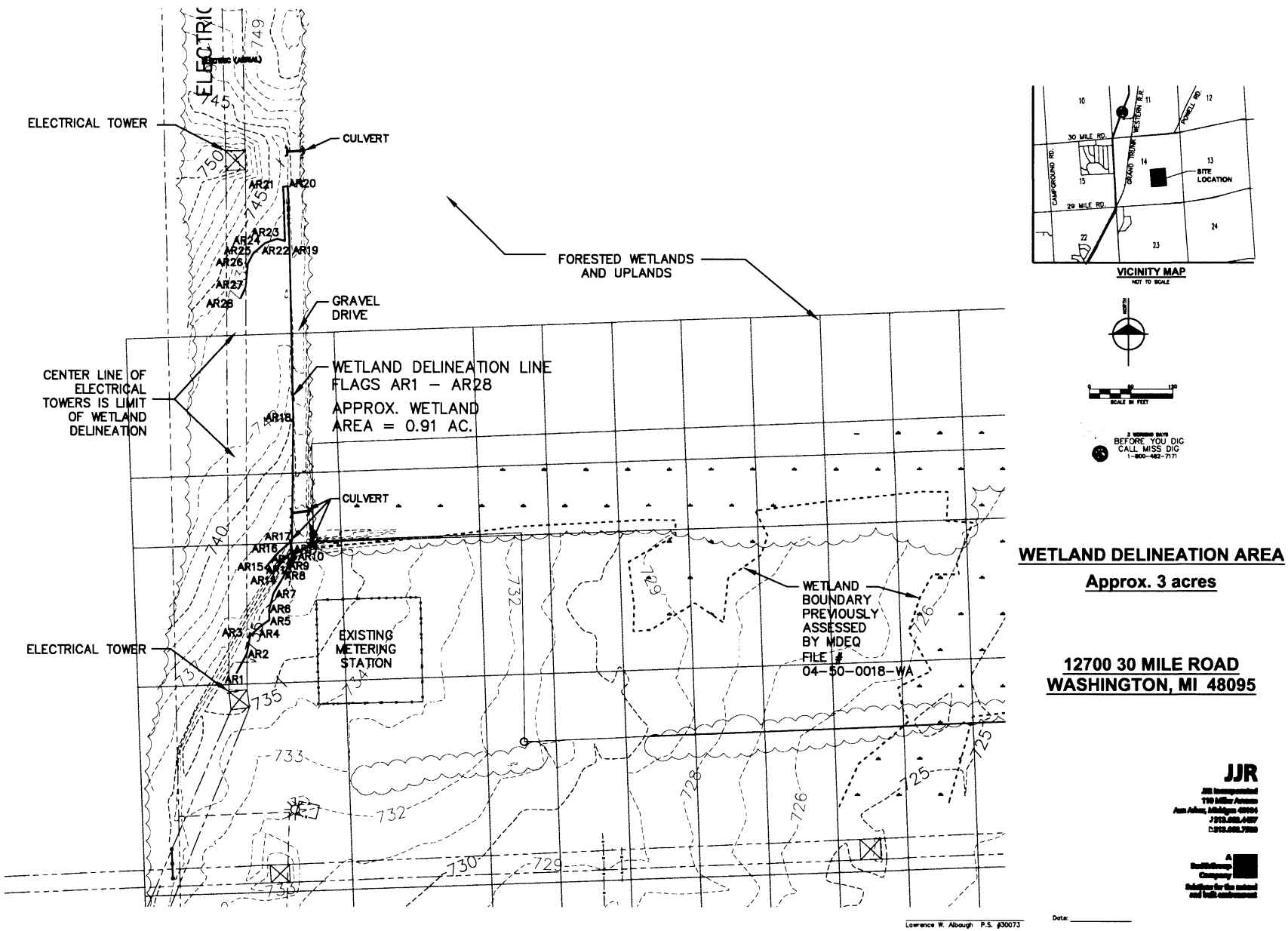
WETLAND DETERMINATION

- X (√) Predominance of wetland vegetation (Fac, Fac+, FacW-, FacW, FacW+, OBL) or aquatic life
- X (√) Wetland hydrology and/or hydric soil present
- Y (Y/N)Is the area wetland (both wetland hydrology/soils and a predominance of wetland vegetation present)?
- Y (Y/N) Is the area REGULATED wetland (refer to *Part 303 - Wetland Jurisdictional Determination Form*)?

Wetland Types (√ all that are present):
- _____ (√) Emergent Marsh
- X (√) Wet Meadow
- _____ (√) Wet Prairie
- _____ (√) Deciduous Swamp
- _____ (√) Coniferous Swam
- _____ (√) Deciduous Forest
- _____ (√) Fen
- _____ (√) Bog/Muskeg
- _____ (√) Great Lakes Marsh
- _____ (√) Shrub Swamp
- _____ (√) Floodplain Forest
- _____ (√) Submergent Marsh

Other (e.g. rare and imperiled community, reed canary grass dominated, highly disturbed): almost 100% Phragmites dominated

Comments: _____



STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
SOUTHEAST MICHIGAN DISTRICT OFFICE

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

November 10, 2005

JJR, LLC
Ms. Carol Schulte
110 Miller Avenue
Ann Arbor, MI 48104

Dear Ms. Schulte,

SUBJECT: Wetland Assessment Report - Wetland Assessment File Number: 05-50-0009-WA

The Department of Environmental Quality (DEQ) conducted a Level 3 Wetland Assessment on property (Property Tax Identification Number 04-14-300-025) located in Town 04N, Range 12E, Section 14, Washington Township, Macomb County on October 28, 2005. The assessment was conducted in accordance with Part 303, Wetland Protection of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); and Rule 4, Wetland Assessments (R 281.924) of the Administrative Rules for Part 303. This is a report of our findings in response to your wetland assessment application.

The DEQ staff walked the flagged boundaries as requested in your wetland assessment application. Based on our on-site investigation, which included review of plant communities, hydrologic indicators, and soils of the assessment area, and an in-office review of other pertinent information, the DEQ confirms, in part, the wetland boundaries observed during the site inspection. Staff noted a few areas of disagreement with your consultants boundaries, in particular flags AR22, AR23, and AR24.

We flagged the modified boundaries with pink DEQ flagging tape and documented the new boundaries on the enclosed site map (see attached Sheet 6). The site map of the assessment area was created by combining information from your consultant and the DEQ. The new map identifies the areas containing wetland and the upland areas of the assessment area. A new delineation is not necessary.

For those areas identified as regulated wetland on the site map, please be advised that any of the following activities require a permit under Part 303:

a) Deposit or permit the placing of fill material in a regulated wetland.

b) Dredge, remove, or permit the removal of soil or minerals from regulated wetland.

c) Construct, operate, or maintain any use or development in a regulated wetland.

d) Drain surface water from a regulated wetland.

For those areas identified as upland on the site map, the DEQ lacks jurisdiction under Part 303 for activities occurring in those areas.

You may request the DEQ reassess the subject parcel or any portion of the parcel within 60 days of the date of this report should you disagree with its the findings. A written request to reassess the parcel must be accompanied by supporting evidence with regard to wetland vegetation, soils or hydrology different from, or in addition to, the information relied upon by DEQ staff in preparing this report and sent to:

Wetland Assessment Program
Submerged Lands and Wetlands Unit
Land and Water Management Division
Department of Environmental Quality
P.O. Box 30458
Lansing, Michigan 48909-7756

Please be aware that this assessment report does not constitute a determination of the presence of wetland that may be regulated under local ordinances or federal law. The U.S. Army Corps of Engineers (USACE) retains regulatory authority over certain wetlands pursuant to Section 404 of the Clean Water Act (CWA), and specifically those wetlands associated with traditionally navigable waters of the state. Traditionally, navigable waters are generally the Great Lakes, their connecting waters, and river systems and lakes connected to these waters. In other areas of Michigan, the DEQ is responsible for determination of wetland boundaries for purposes of compliance with the CWA under an agreement with the U.S. Environmental Protection Agency.

Your assessment area does not appear to be within those areas also regulated by the USACE. However, should you desire more information, please contact the USACE at 313-226-2218.

This assessment report is limited to findings pursuant to Part 303 and does not constitute a determination of jurisdiction under other DEQ administered programs. Any land use activities undertaken on the assessed parcel may be subject to regulation pursuant to the NREPA under the following programs:

Part 91, Soil Erosion and Sedimentation Control
Part 301, Inland Lakes and Streams

The attached map depicts an approximation of the location of the non-wetland/wetland areas within the assessment area. If a more exact boundary of the wetland/non-wetland areas is needed for site development or planning purposes, we recommend you hire a certified site surveyor to map the flags on site. Once the survey is complete, please supply a copy to the DEQ to supplement our files.

The enclosed map depicts an approximation of the location of the non-wetland/wetland areas within the assessment area. If the more exact boundary of the wetland/non-wetland areas flagged on site will be needed next year. or will be needed for site development and/or planning purposes, we recommend you hire a certified site surveyor to map the flags. The DEQ recommends any survey be done **as soon as possible** as plastic survey ribbon deteriorates over time with exposure to the elements and is susceptible to vandalism. Surveying the

boundaries may save the expense of redoing a wetland assessment where the line is no longer obvious. Once the survey is complete, please send a copy to the DEQ for our files.

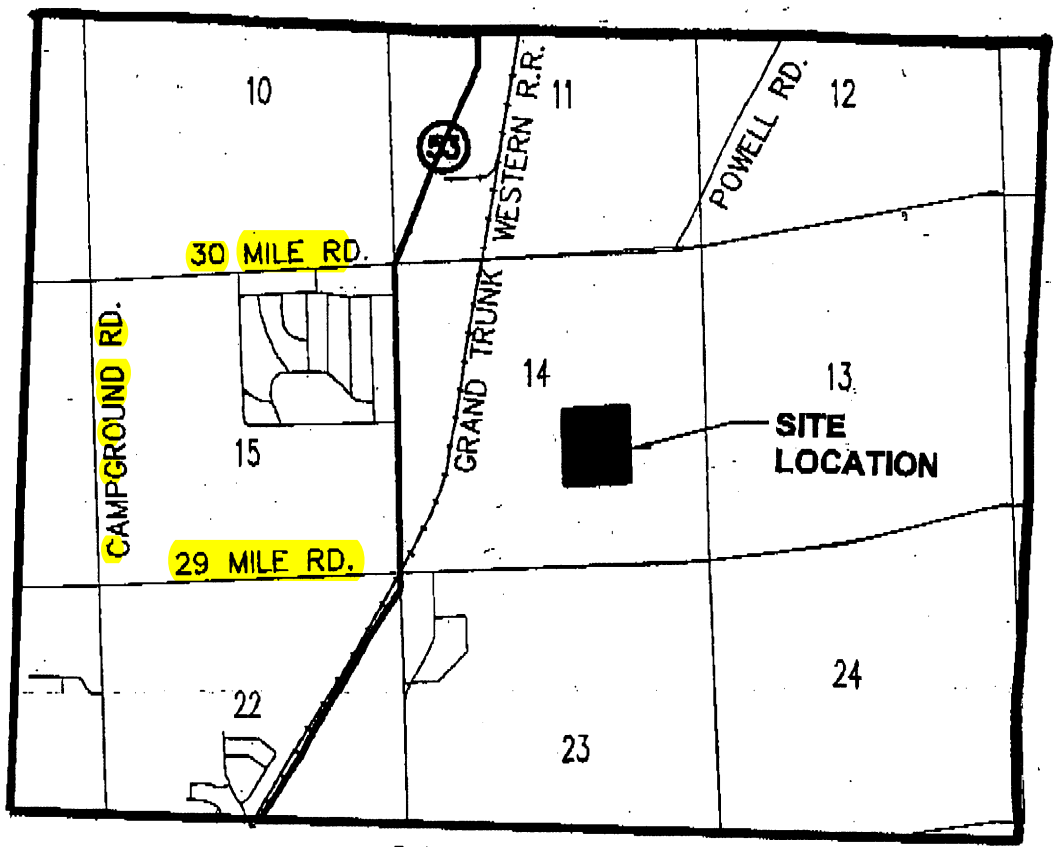
The findings contained in this report are binding on the DEQ until October 28, 2008; a period of three years from the date of the assessment unless a reassessment is conducted. Please contact me if you have any questions regarding this assessment report.

Sincerely,

Mary Vanderlaan
District Supervisor
Land and Water Management Division
586-753-3860

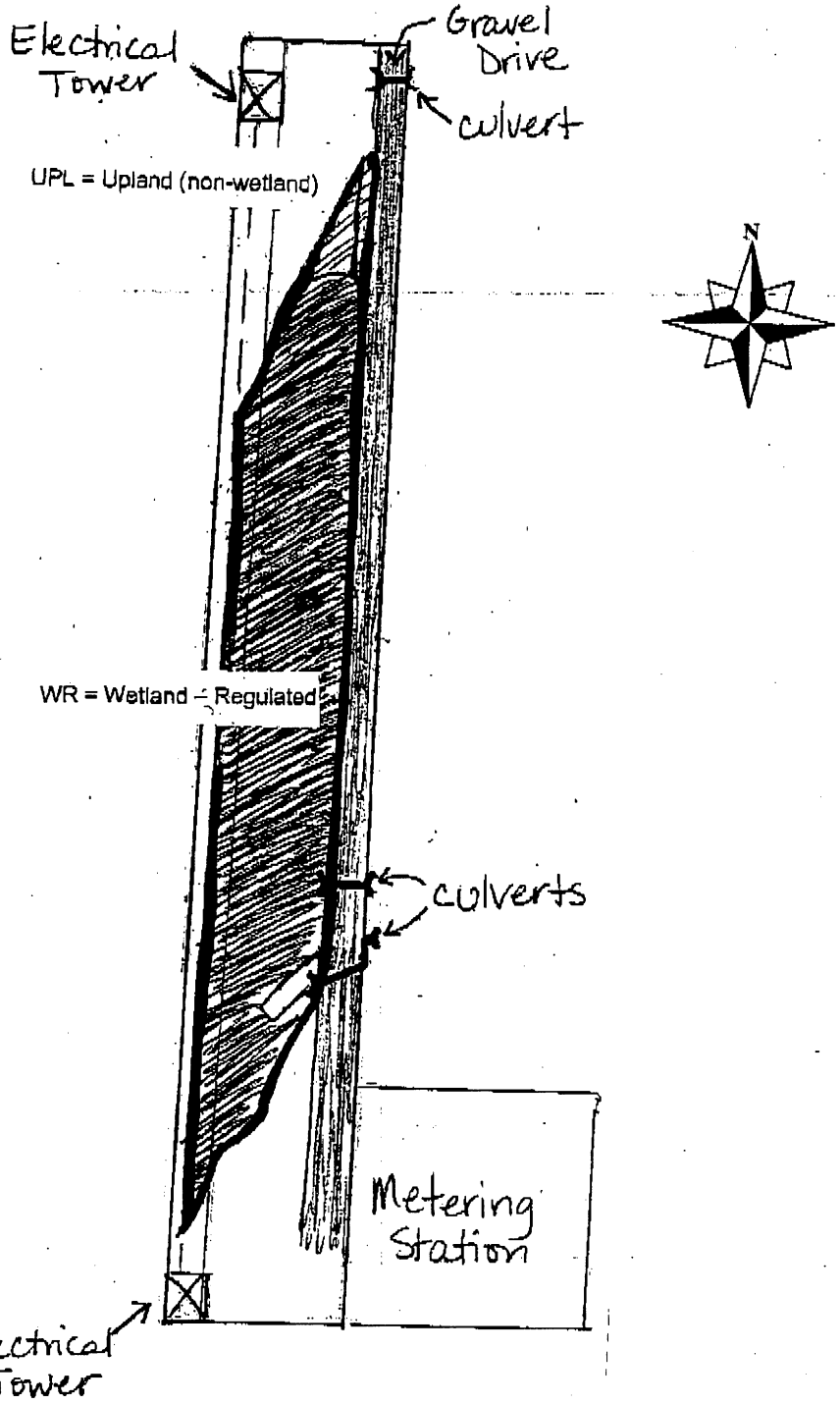
Enclosure

cc: Oakland CEA
Washington Township Clerk
Ms. Elaine Clifford, ITC
Ms. Wendy Veltman, DEQ
Ms. Tracy Jones, DEQ



VICINITY MAP
NOT TO SCALE

JJR, LLC
Page 5
October 28, 2005



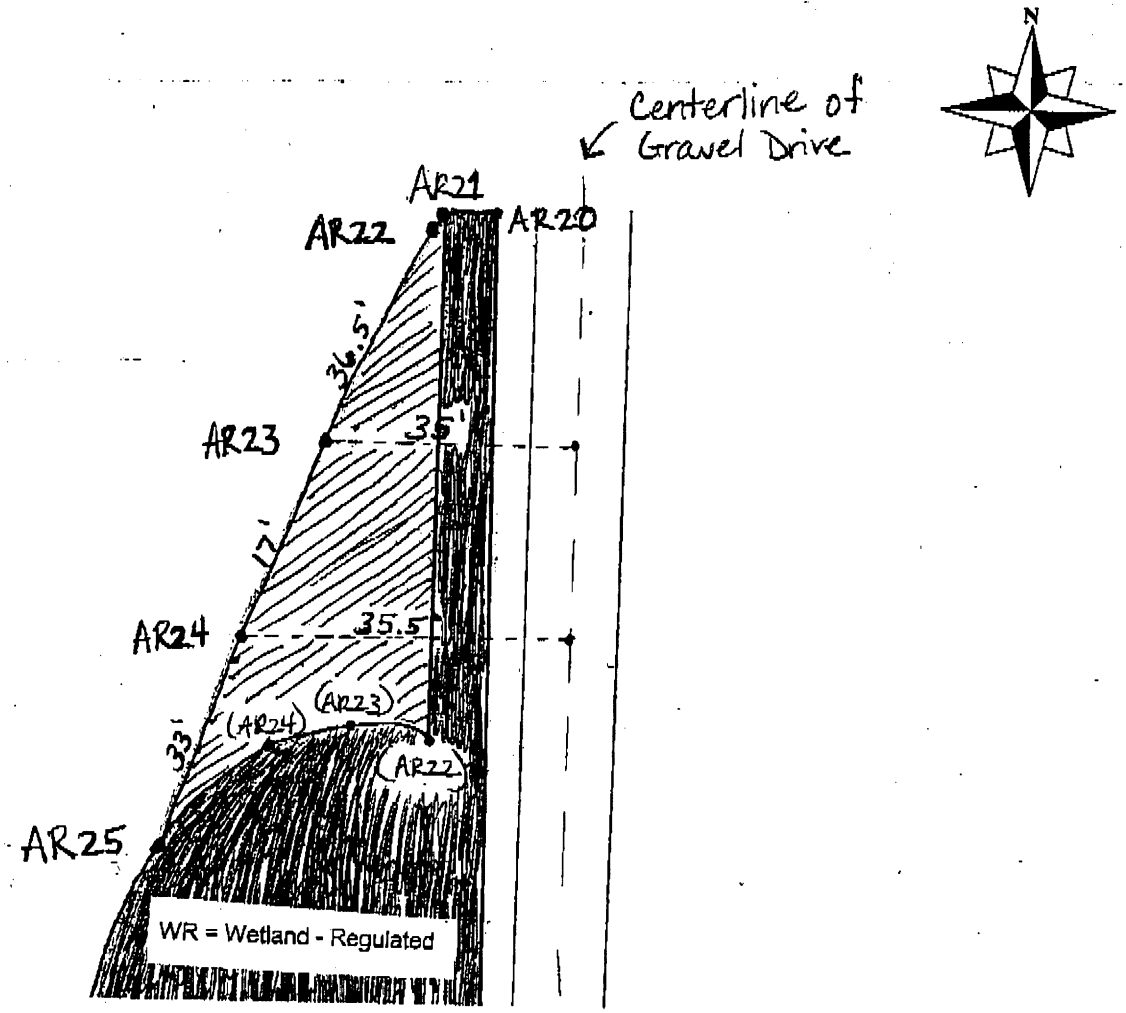
Legend:

WR = Wetland- Regulated
UPL = Upland (non-wetland)

NOT TO SCALE, USE DIMENSIONS.

This drawing showing those areas containing wetland and not containing wetland is an approximation of the boundaries flagged on-site.

This drawing does not authorize or permit activities requiring a permit in accordance with Part 303 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.



Legend:

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This drawing showing those areas containing wetland and not containing wetland is an approximation of the boundaries flagged on-site.

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Vector Compression Expansion Project

Appendix D
Agency Correspondence Regarding Special Status Species

NON-INTERNET PUBLIC

Tower One, Suite 580
1515 Arapahoe Street
Denver, CO 80202

telephone 720.956.5300
facsimile 720.956.5310
www.NRGINC.com

August 24, 2005

Ms. Cathy Pollack
U.S. Fish and Wildlife Service - Ecological Services
Chicago Field Office
1250 S. Grove, Suite 103
Barrington, IL 60010

RE: Vector Compressor Station Expansion Project
Threatened and Endangered Species Review

Dear Ms. Pollack:

Vector Pipeline (Vector) operates an interstate natural gas pipeline between Joliet, Illinois and Dawn, Ontario. Vector is proposing to expand transmission capacity on its pipeline system by constructing a compressor station in Section 6, Township 34N, Range 10E, Will County, Illinois. The proposed compressor station site is approximately 20 acres in size. The existing land use includes actively cultivated agricultural land, grassland, and forestland. Based on preliminary plans, Vector anticipates constructing the compressor station on agricultural land adjacent to the existing pipeline infrastructure. The proposed site is identified on the enclosed project location map. Vector plans to begin construction of the compressor station during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and is subject to review under Section 7 of the Endangered Species Act. Natural Resource Group, Inc., on behalf of Vector, requests your review of the proposed project for potential effects on federally listed threatened or endangered species. If your review indicates that the proposed project may adversely affect protected species, please provide information on the life history and location. Enclosed for your reference is a response letter from the U.S. Fish and Wildlife Service (FWS) dated August 3, 2004 regarding another Vector project recently completed in this same area. In the response letter, the FWS indicated concern regarding the federally endangered leafy prairie clover (*Dalea foliosa*), which is known to grow on prairie remnants that occur on thin-soil areas overlying dolomite. Construction of the proposed compressor station site will not disturb areas that would be suitable leafy prairie clover habitat..

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions regarding the Vector Compressor Station Expansion Project, please contact me by telephone at (720) 956-5302, by email at lahughes@nrginc.com, or by letter at the address listed above.

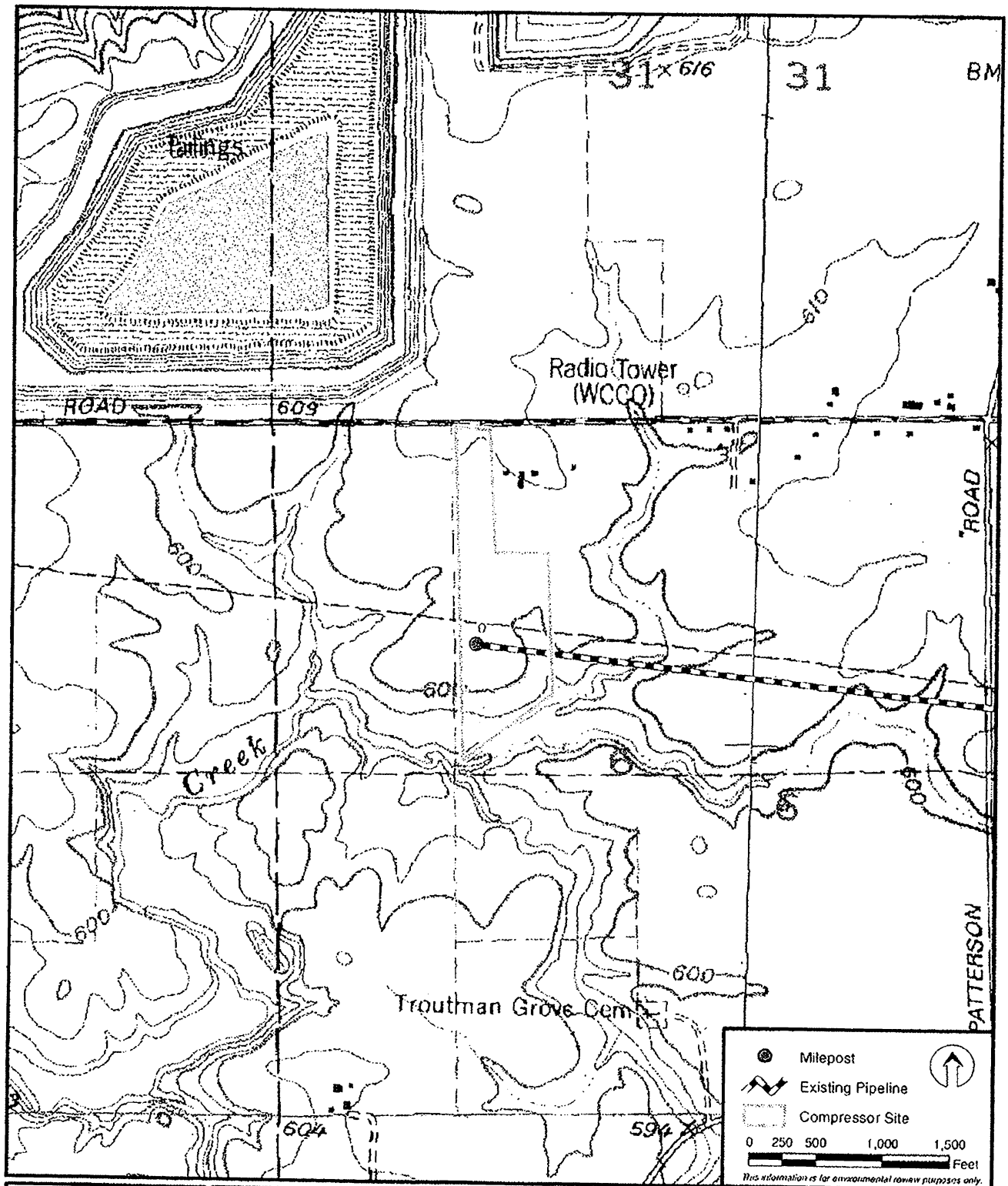
Sincerely,

Natural Resource Group, Inc.

Lisa A. Hughes
Resource Technician

Enclosure: Project Location Map
FWS response letter dated August 3, 2005

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project

Will County Site

DATE: 10/29/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\D-F\EEL\VCSP_ArcGIS\2004\08 Waterbodies_EEL_VSX_Wel_WA_Topo.mxd

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chicago Ecological Services Field Office
1250 South Grove Avenue, Suite 103
Barrington, Illinois 60010
Phone: (847) 381-2253 Fax: (847) 381-2285

IN REPLY REFER TO:
FWS/AES-CIFO/4-1849

August 3, 2004

Ms. Michele Richter
Natural Resource Group, Inc.
1000 IDS Center
80 South Eight Street
Minneapolis, Minnesota 55402

Dear Ms. Richter:

This responds to your letter dated July 1, 2004 requesting information on endangered or threatened species on or near the proposed installation of a approximately 810 feet of 24-inch diameter gas pipeline to interconnect two existing pipeline systems, located at T34N, R10E, Section 6 in or near the Township of Jackson, Will County, Illinois as depicted on the map you enclosed.

Please note, the area of the proposed project could encompass habitat for the federally endangered leafy prairie clover (*Dalea foliosa*). This endangered plant grows in prairie remnants that occur on thin-soil areas overlying dolomite. If any prairie remnants are found within the project area, we request that searches for this species be conducted from late July through the end of August, as this is when the clover typically flowers and is most identifiable.

Also, this information is valid only for one year or until new information develops that indicates endangered or threatened species may be affected.

This letter only addresses federally listed species; the Illinois Department of Natural Resources should be contacted for information on State-listed species. Any impacts to wetlands or waters of the United States may require a permit from the U.S. Army Corps of Engineers. This letter does not preclude separate evaluation and comment the U.S. Fish and Wildlife Service on wetland impacts proposed for section 404, Clean Water Act authorization.

If you have any questions, please contact Ms. Chivia Horton at 847/381-2253 ext. 216, or Ms. Karla Kramer at 847/381-2253 ext. 230.

Sincerely,

John D. Rogner

John D. Rogner
Field Supervisor

cc: ACOE, Melyssa Cruz (applicant: Vector Pipeline, L.P.)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chicago Ecological Services Field Office
1250 South Grove Avenue, Suite 103
Barrington, Illinois 60010
Phone: (847) 381-2253 Fax: (847) 381-2285

IN REPLY REFER TO:
FWS/AES-CIFO/(4-0276/4-1849)/5-2145

September 15, 2005

Ms. Lisa A. Hughes
Natural Resource Group, Inc.
Tower One, Suite 580
1515 Arapahoe Street
Denver, Colorado 80202

Dear Ms. Hughes:

This responds to your letter dated August 24, 2005 requesting information on endangered or threatened species on or near the proposed compressor station expansion project located at T34N, R10E Section 6 in Will County, Illinois as depicted on the map you enclosed.

Please note, the endangered Indiana bat (*Myotis sodalis*) is known to occur in several Illinois counties. Potential habitat for this species occurs statewide, therefore, Indiana bats are considered to potentially occur in any area with forested habitat.

Indiana bats migrate seasonally between winter hibernacula and summer roosting habitats. Winter hibernacula include caves and abandoned mines. Females form nursery colonies under the loose bark of trees (dead or alive) and/or cavities, where each female gives birth to a single young in June or early July. A single colony may use a number of roost trees during the summer, typically a primary roost tree and several alternates. The species or size of tree does not appear to influence whether Indiana bats utilize a tree for roosting provided the appropriate bark structure is present. Indiana bats exhibit a high degree of site fidelity, and will return to the same maternity roost year after year. Maternity colonies have been found in areas where remaining forest cover was as little as 5 to 10 %.

During the summer, the Indiana bat frequents the corridors of small streams with riparian woods as well as mature upland forests. It forages for insects along stream corridors, within the canopy of floodplain and upland forests, over clearings with early successional vegetation (old fields), along the borders of croplands, along wooded fencerows, over farm ponds and in pastures.

Indiana bats may forage up to 2.5 miles from their roost tree. Summer habitat in Illinois consists of:

1) Dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches which may be used as maternity roost areas.
2) Live trees (such as shagbark hickory and oaks) which have exfoliating bark.
3) Stream corridors, riparian areas, and upland woodlots which provide forage sites.

There are no current records of Indiana bats near the site but to our knowledge the area has not been surveyed. Due to forested habitat along Cedar Creek we believe suitable habitat may be present. If project plans can assure that potential Indiana bat habitat would not be affected then even if Indiana bats are present, the project could be completed without adversely affecting existing Indiana bats. If this is not an option, we request that surveys for the Indiana bat be conducted during the mist netting season (May 15th through August 15th). If Indiana bats are found on the project site or within its vicinity, further consultation in accordance with section 7 of the Endangered Species Act of 1973, as amended, may be required.

This information is valid only for one year or until new information becomes available that indicates endangered or threatened species may be affected.

This letter only addresses federally listed species; the Illinois Department of Natural Resources should be contacted for information on State-listed species. Any impacts to wetlands or waters of the United States may require a permit from the U.S. Army Corps of Engineers. This letter does not preclude separate evaluation and comment by the U.S. Fish and Wildlife Service on wetland impacts proposed for section 404, Clean Water Act authorization.

If you have any questions, please contact Ms. Cathy Pollack at 847/381-2253 ext. 239, or Ms. Karla Kramer at 847/381-2253 ext. 230.

Sincerely,

John D Rogner

John D. Rogner
Field Supervisor

NATURAL RESOURCE GROUP, INC.

LOG

LOG OF TELEPHONE CONVERSATION

CALL TO/FROM WHOM:	PHONE NO.:
Karla Kramer	(847) 381-2253 x 230

COMPANY:
U.S. Fish and Wildlife Service – Chicago Field Office

NRG CONTACT:	PHONE NO.:
Lisa A. Hughes	(720) 956-5302
DATE:	NRG OFFICE LOCATION:
9/22/2005	Denver

RE:
Vector Compression Expansion Project – Mitigation measure for Indiana Bat

LOG OF CONVERSATION:

Ms. Hughes contacted Ms. Kramer regarding the U.S. Fish and Wildlife Service (FWS) response to initial consultation dated September 15, 2005. In its letter the FWS identified the Indiana bat as a federally listed endangered species which is likely to occur in the project area. Indiana bats frequent corridors of small streams with riparian woods as well as mature upland forests in summer roosting season (May 15th through August 15th).

Ms. Hughes asked Ms. Kramer if clearing trees in the project area outside of the May 15th to August 15th summer roosting period would be acceptable mitigation. Ms. Kramer stated that Vector would need to ensure that there would be enough suitable habitat adjacent to the project area prior to clearing to accommodate any Indiana bats in the area.

Ms. Kramer indicated that project details should be submitted in writing as they are finalized so the FWS can make a better decision regarding potential impacts to the Indiana bat.

Tower One, Suite 580
1515 Arapahoe Street
Denver, CO 80202

telephone 720.956.5300
facsimile 720.956.5310
www.NRGINC.com

October 28, 2005

Ms. Cathy Pollack
U.S. Fish and Wildlife Service - Ecological Services
Chicago Field Office
1250 S. Grove, Suite 103
Barrington, IL 60010

RE: Vector Compression Expansion Project
Joliet Compressor Station

Dear Ms. Pollack:

As you are aware, Vector Pipeline, L.P. (Vector) is proposing to expand transmission capacity on its existing pipeline system by constructing a compressor station in Section 6, Township 34N, Range 10E, Will County, Illinois. In a letter dated August 24, 2005, Vector requested information on threatened and endangered species in the vicinity of the Joliet Compressor Station. In a letter dated September 15, 2005, the U.S. Fish and Wildlife Service (FWS) reported that the endangered Indiana bat may occur in the project area. During a September 22, 2005 phone conversation, Ms. Karla Kramer indicated that the FWS would be concerned with tree clearing and the amount of suitable habitat that would remain following construction and requested that site layouts of the proposed facilities be provided to the FWS once they are finalized. On behalf of Vector, Natural Resource Group, Inc. (NRG) is submitting this letter to provide you with the requested information and also to request your concurrence with the determination of effect as presented below.

Existing Site Conditions

Vector is proposing to construct the Joliet Compressor Station within a 20 acre site. The 20-acre Joliet Compressor Station site includes approximately 10.5 acres of actively cultivated agricultural land in the northern portion, and approximately 9.0 acres of forestland in the southern portion. The remaining 0.5 acre of the compressor station site consists of the existing pig launcher that is covered with gravel. The forestland is dominated by oak species (*Quercus spp.*), American elm (*Ulmus americana*), silver maple (*Acer saccharinum* L.), green ash (*Fraxinus pennsylvanica*), and cottonwood (*Populus* L.). Cedar Creek runs diagonally across the southern half of the forested portion of the property.

On September 29, 2005, Vector conducted a site reconnaissance within the forested area of its property located north of Cedar Creek to identify dead or live trees and snags with peeling or exfoliating bark. Based on the results of the reconnaissance, 12 roost trees were identified within this area.

Potential Impacts/Proposed Mitigation

In order to minimize impacts on potential Indiana Bat habitat, Vector modified the layout of the Joliet Compressor Station to reduce the amount of trees that will be cleared. The highlighted area on the attached project location map indicates the area where trees will be cleared. Of the

12 trees identified as potential Indiana bat roosting trees, four are located within the area that will be cleared.

While construction of the Joliet Compressor Station will require some tree clearing, there is plenty of suitable habitat in the vicinity of the compressor station site and along Cedar Creek. Moreover, Vector will clear the trees prior to May 15th or after August 15th to avoid the time period when Indiana Bats may be present. Vector is requesting concurrence that with the adoption of its proposed mitigation measures, the proposed project is not likely to adversely affect Indiana Bats.

Thank you for your continued assistance with this project. If you have any questions regarding the Vector Compression Expansion Project, please contact me by telephone at (720) 956-5302, by email at lahughes@nrginc.com, or by letter at the address listed above.

Sincerely,

Natural Resource Group, Inc.

Lisa A. Hughes

Lisa A. Hughes
Resource Technician

Enclosure: Project Location Map

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.

Tower One, Suite 580
1515 Arapahoe Street
Denver, CO 80202

telephone 720.956.5300
facsimile 720.956.5310
www.NRGINC.com

August 24, 2005

Mr. Todd Rettig
Illinois Department of Natural Resources
Division of Resource Review and Coordination
One Natural Resources Way
Springfield, IL 62702

RE: Vector Compressor Station Expansion Project
Threatened and Endangered Species Review

Dear Mr. Rettig:

Vector Pipeline (Vector) operates an interstate natural gas pipeline between Joliet, Illinois and Dawn, Ontario. Vector is proposing to expand transmission capacity on its pipeline system by constructing a compressor station in Section 6, Township 34N, Range 10E, Will County, Illinois. The proposed compressor station site is approximately 20 acres in size. The existing land use includes actively cultivated agricultural land, grassland, and forestland. Based on preliminary plans, Vector anticipates constructing the compressor station on agricultural land adjacent to the existing pipeline infrastructure. The proposed site is identified on the enclosed project location map. Vector plans to begin construction of the compressor station during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission under Section 7(c) of the Natural Gas Act (15 USC 717). Natural Resource Group, Inc., on behalf of Vector, requests your review of the proposed project for potential effects on state-listed threatened or endangered species. Enclosed is the completed Consultation Agency Action Report, as required. If your review indicates that the proposed project may adversely affect protected species, please provide information on the life history and location.

Thank you for your assistance. I look forward to hearing from you. If you have any questions regarding the Vector Compressor Station Expansion Project, please contact me by telephone at (720) 956-5302, by email at lahughes@nrginc.com, or by letter at the address listed above.

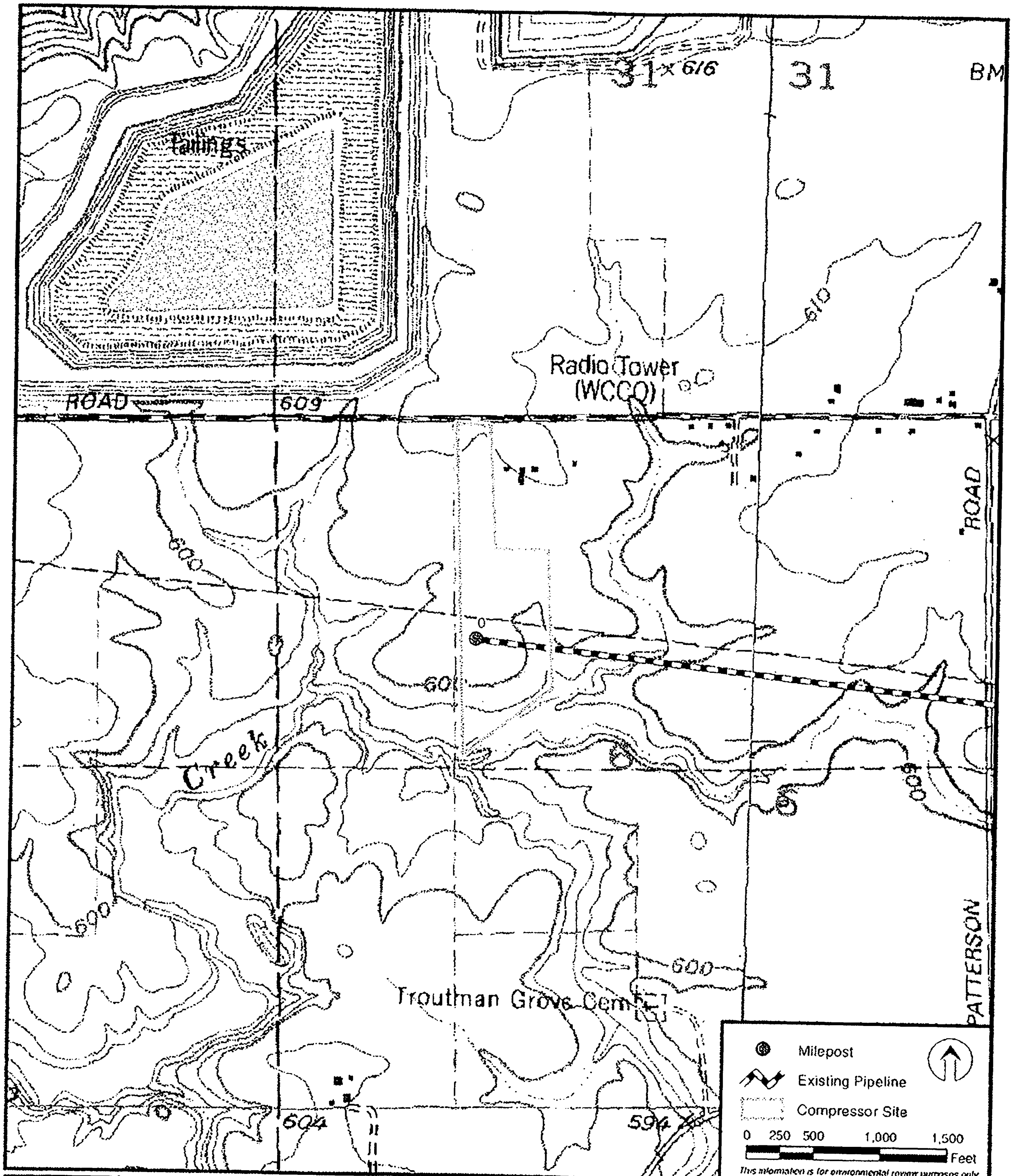
Sincerely,

Natural Resource Group, Inc.

Lisa A. Hughes
Resource Technician

Enclosure: Project Location Map
Consultation Agency Action Report

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



This information is for environmental review purposes only.

Vector Pipeline

Vector Compressor Station Expansion Project
Will County Site

DATE: 10/29/04	
REVISED: 08/12/05	
SCALE: 1:12,000	
DRAWN BY:KJANDERSON	

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Illinois Department of
Natural Resources
One Natural Resources Way • Springfield, Illinois 62702-1271
http://dnr.state.il.us

Rod R. Blagojevich, Governor
Joel Brunsvold, Director

CONSULTATION AGENCY ACTION REPORT

(Illinois Administrative Code Title 17 Part 1075)
Division of Resource Review and Coordination
Todd Rettig, Division Manager

Date Submitted: 08/24/2005
If this is a resubmittal, include previous IDNR response if available.

FOR DEPARTMENT USE ONLY
PROJCODE: _____ DUE DATE: _____

Applicant: Vector Pipeline
Contact Person: Paul Meneghini
Applicant Address: 119 N. 25th Street East
Superior, WI 54880

Phone: (715) 394-1576
Fax: (715) 394-1570
Email: paul.meneghini@enbridge.com

LOCATION OF PROPOSED ACTION
A MAP SHOWING LOCATION OF PROPOSED ACTION IS REQUIRED

Project Name: Vector Compressor Station Expansion Project County: Will County
Project Address (if available): _____
City,State,Zip: _____
Township/Range/Section (e.g. T45N,R9E,S2): T34N, R10E, S6
Brief Description of Proposed Action: Vector is proposing to construct a natural gas compressor station. Please see cover letter and project location map for details.

Projected Start Date and End Date of Proposed Action: Summer 2006
Will state funds or technical assistance support this action? [No

Local/State Agency with Project Jurisdiction: Federal Energy Regulatory Commission
Contact: _____ Phone: (202) 502-6088
Address: 888 First Street, NE; Washington, D.C. 20426 Fax: _____

FOR DEPARTMENT USE ONLY

Are endangered/threatened species or Natural Areas present in the vicinity of the action? [Yes | No]
Could the proposed action adversely affect the endangered/threatened species or Natural Area? [Yes | No]
Is consultation terminated? [Yes | No]
Comments: _____

Evaluated by:

_____ _____
Division of Resource Review & Coordination (217)785-5500 Date

Visit our website at http://dnr.state.il.us/orep/NRRC

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Rod R. Blagojevich, Governor
Joel Brunsvold, Director

CONSULTATION AGENCY ACTION REPORT

(Illinois Administrative Code Title 17 Part 1075)
Division of Resource Review and Coordination
Todd Rettig, Division Manager

Date Submitted: 08/24/2005
If this is a resubmittal, include previous IDNR response if available.

FOR DEPARTMENT USE ONLY
PROJCODE: _____ DUE DATE: _____

Applicant: Vector Pipeline
Contact Person: Paul Meneghini
Applicant Address: 119 N. 25th Street East
Superior, WI 54880

Phone: (715) 394-1576
Fax: (715) 394-1570
Email: paul.meneghini@enbridge.com

LOCATION OF PROPOSED ACTION
A MAP SHOWING LOCATION OF PROPOSED ACTION IS REQUIRED

Project Name: Vector Compressor Station Expansion Project County: Will County
Project Address (if available): _____
City,State,Zip: _____
Township/Range/Section (e.g. T45N,R9E,S2): T34N, R10E, S6
Brief Description of Proposed Action: Vector is proposing to construct a natural gas compressor station. Please see cover letter and project location map for details.

Projected Start Date and End Date of Proposed Action: Summer 2006
Will state funds or technical assistance support this action? I No

Local/State Agency with Project Jurisdiction: Federal Energy Regulatory Commission
Contact: _____ Phone: (202) 502-6088
Address: 888 First Street, NE; Washington, D.C. 20426 Fax: _____

FOR DEPARTMENT USE ONLY

Are endangered/threatened species or Natural Areas present in the vicinity of the action? [Yes I No]
Could the proposed action adversely affect the endangered/threatened species or Natural Area? [Yes I No]
Is consultation terminated? [Yes I No]
Comments: _____

Evaluated by:

_____ _____
Division of Resource Review & Coordination (217)785-5500 Date

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Rod R. Blagojevich, Governor
Joel Brunsvold, Director

CONSULTATION AGENCY ACTION REPORT

(Illinois Administrative Code Title 17 Part 1075)
Division of Resource Review and Coordination
Todd Rettig, Division Manager

Date Submitted: 08/24/2005
If this is a resubmittal, include previous IDNR response if available.

FOR DEPARTMENT USE ONLY
PROJCODE: 0000921 DUE DATE: 9/24/05

Applicant: Vector Pipeline
Contact Person: Paul Meneghini
Applicant Address: 119 N. 25th Street East
Superior, WI 54880

Phone: (715) 394-1576
Fax: (715) 394-1570
Email: paul.meneghini@enbridge.com

LOCATION OF PROPOSED ACTION
A MAP SHOWING LOCATION OF PROPOSED ACTION IS REQUIRED

Project Name: Vector Compressor Station Expansion Project County: Will County
Project Address (if available): _____
City,State,Zip: _____
Township/Range/Section (e.g. T45N,R9E,S2): T34N, R10E, S6
Brief Description of Proposed Action: Vector is proposing to construct a natural gas compressor station. Please see cover letter and project location map for details.

Projected Start Date and End Date of Proposed Action: Summer 2006
Will state funds or technical assistance support this action? No

Local/State Agency with Project Jurisdiction: Federal Energy Regulatory Commission
Contact: _____ Phone: (202) 502-6088
Address: 888 First Street, NE; Washington, D.C. 20426 Fax: _____

FOR DEPARTMENT USE ONLY

Are endangered/threatened species or Natural Areas present in the vicinity of the action? [Yes (No)]
Could the proposed action adversely affect the endangered/threatened species or Natural Area? [Yes (No)]
Is consultation terminated? [(Yes) No]
Comments: _____

Evaluated by:

Rich Lewis
Division of Resource Review & Coordination (217)785-5500

9-30-05
Date

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Tower One, Suite 580
1515 Arapahoe Street
Denver, CO 80202

telephone 720.956.5300
facsimile 720.956.5310
www.NRGINC.com

August 24, 2005

Mr. Craig Czarnecki
U.S. Fish and Wildlife Service - Ecological Services
East Lansing Field Office
2651 Coolidge Road
East Lansing, MI 48823

RE: Vector Compressor Station Expansion Project
Threatened and Endangered Species Review

Dear Mr. Czarnecki:

Vector Pipeline (Vector) operates an interstate natural gas pipeline between Joliet, Illinois and Dawn, Ontario. Vector is proposing to expand transmission capacity on its pipeline system by constructing a compressor station in Section 14, Township 4N, Range 12E, Macomb County, Michigan. The proposed compressor station site is approximately 10 acres in size and is dominated by grasses and shrubs. The proposed site is bound to the north by forestland, to the west by overhead transmission lines and State Route 53, to the east by grassland and agricultural land, and to the south by transmission lines/pipelines and agricultural land. The proposed site is identified on the enclosed project location map. Vector plans to begin construction of the compressor station during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and is subject to review under Section 7 of the Endangered Species Act. Natural Resource Group, Inc., on behalf of Vector, requests your review of the proposed project for potential effects on federally listed threatened or endangered species. In order to ensure a comprehensive environmental review and to allow flexibility in the planning process, please examine a 0.25-mile radius around the proposed site. If your review indicates that the proposed project may adversely affect protected species, please provide information on the life history and location. A similar request was submitted to the Michigan Department of Natural Resources, Wildlife Division – Natural Heritage Program (MI DNR). In a letter dated August 23, 2005 the MI DNR stated that federal and state endangered, threatened, special concern species, exemplary natural plant communities, or unique natural features are not known to occur at or near the proposed project site. I have enclosed a copy of MI DNR response letter for reference.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions regarding the Vector Compressor Station Expansion Project, please contact me by telephone at (720) 956-5302, by email at lahughes@nrginc.com, or by letter at the address listed above.

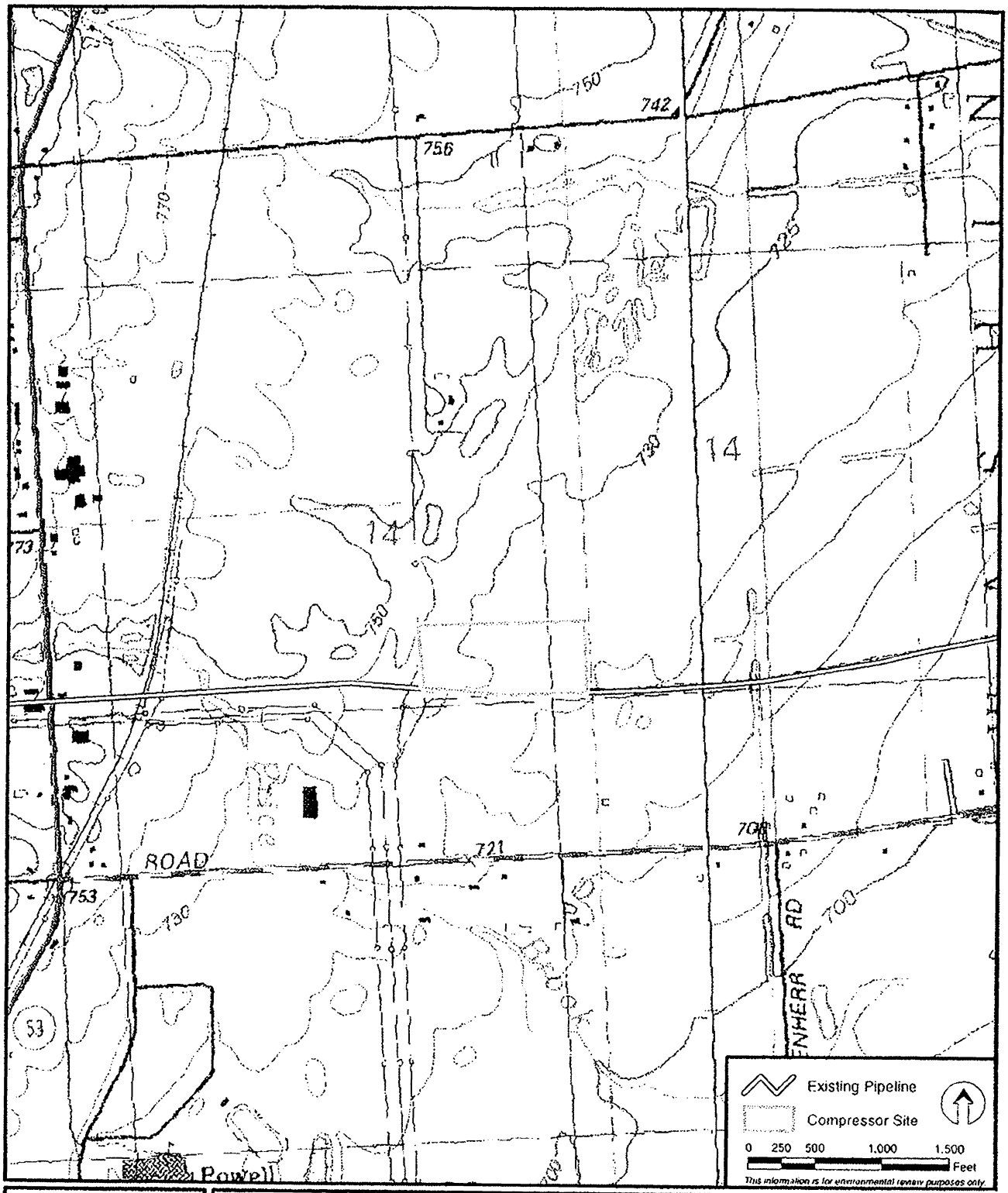
Sincerely,

Natural Resource Group, Inc.

Lisa A. Hughes
Resource Technician

Enclosure: Project Location Map
MI DNR clearance letter dated August 23, 2005

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project
Macomb County Site

DATE: 09/22/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\EEL\VCSP_ArcGIS\2004\09\VCSP_Expansion\Ray_Comp_St

NON-INTERNET PUBLIC

STATE OF MICHIGAN

JENNIFER M. GRANHOLM
GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LANSING

REBECCA A. HUMPHRIES
DIRECTOR

August 23, 2005

Mr Bart M Jensen
Natural Resource Group, Inc.
1000 IDS Center, 80 South 8th Street
Minneapolis MN 55402

RE: **Vector Compressor Station Expansion Project**

Dear Mr Bart M Jensen:

Thank you for using the Michigan DNR Endangered Species Assessment website. Based on the information you have provided, project activities may proceed. It has been determined that federal and state endangered, threatened, special concern species, exemplary natural plant communities, or unique natural features are **not known to occur** at or near the location specified:

Macomb County, T04N R12E Section 14.

The location of the request was checked against known localities for rare species and unique natural features, which are recorded in a statewide database. This continuously updated database is a comprehensive source of information on Michigan's endangered, threatened and special concern species, exemplary natural communities and other unique natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features at a site. The absence of records may mean that a site has not been surveyed. Records may not always be up-to-date. In some cases, the only way to obtain a definitive statement on the presence of rare species is to have a competent biologist perform a field survey.

Michigan's endangered and threatened species are protected under Part 365 of the Natural Resources and Environmental Protection Act, Act 451 of the Michigan Public Acts of 1994. Federally listed species are protected under the United States Endangered Species Act of 1973. Special concern species, exemplary natural communities and other unique natural features are not legally protected by state or federal endangered species legislation, but they are considered to be rare and should be protected to prevent future listing.

Thank you for your advance coordination in addressing the protection of Michigan's natural resource heritage. Responses and correspondence can be sent to: Endangered Species Review, Michigan Department of Natural Resources, Wildlife Division - Natural Heritage Program, PO Box 30180, Lansing, MI 48909. If you have further questions, please call 517-373-1263 or e-mail DNR-EndangeredSpecies@michigan.gov.

STEVENS T. MASON BUILDING * P.O. BOX 30028 * LANSING, MICHIGAN 48909-7528
www.michigan.gov * (517)373-2329

United States Department of the Interior

FISH AND WILDLIFE SERVICE
East Lansing Field Office (ES)
2651 Coolidge Road, Suite 101
East Lansing, Michigan 48823-6316

IN REPLY REFER TO:

September 28, 2005

Ms. Lisa A. Hughes
Natural Resource Group, Inc.
Tower One, Suite 580
1515 Arapahoe Street
Denver, CO 80202

Re: Endangered Species List Request, Proposed Vector Compressor Station Expansion Project, Washington Township (T4N, R12E, Sec. 14), Macomb County, Michigan

Dear Ms. Hughes:

Thank you for your August 24, 2005 request for information regarding federally listed and proposed threatened and endangered species, candidate species, or critical habitat near your proposed project. Your request and this response are made pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act). Under this Federal Energy Regulatory Commission (FERC) regulated project, Vector Pipeline proposes to construct a compressor station to expand transmission capacity.

This project is within the breeding range of the endangered Indiana bat (*Myotis sodalis*). Although there are no documented records of Indiana bats in the vicinity of the proposed project, survey information for this species is lacking and it is likely that maternity colonies within their breeding range are yet to be discovered. Thus, for projects within the species breeding range where potential habitat is present, we recommend that project proponents assess potential effects to Indiana bats.

The summer range of Indiana bats in Michigan includes the southern half and most of the western coastal counties of the Lower Peninsula. Suitable habitat typically consists of highly variable forested landscapes in riparian, bottomland and upland areas composed of roosting trees. In Michigan, Indiana bats area often found in palustrine forested wetlands with an open understory. Roost trees generally are large (greater than 9 inches in diameter), dead, dying, or live trees with peeling or exfoliating bark, which allows the bat to roost between the bark and bole of the tree. Favored roost trees are usually exposed to the sun. Female Indiana bats typically form colonies that use several alternate roost trees in addition to primary roost trees. Individual bats are known to travel up to 7.8 kilometers (4.8 miles) between roosts in a single night and at least 2 to 4 kilometers from roost trees while foraging. We have enclosed additional information concerning the distribution, life history, and habitat requirements of the Indiana bat.

Pursuant to section 7 of the Act, the FERC should assess the proposed action and determine if there may be effects, positive or negative, to the listed species. If the FERC determines that the proposed action will have "no effect" on the Indiana bat, please supply a copy of the determination to this office. If the FERC determines that the proposed action "may affect" the Indiana bat, a written request for section 7 consultation must be submitted. With the request, the FERC should provide this office with a copy of the biological assessment and any other relevant information used to reach a determination. Additional information regarding requirements for federal agencies under section 7 can be found in enclosure A (attached). Although the FERC may designate a non-federal representative to conduct an informal consultation or prepare a biological assessment, the ultimate responsibility for compliance with the Act remains with the FERC.

For the FERC or its designee to address ESA section 7 obligations described above, we suggest a survey of the proposed project area. If suitable habitat is present, and direct effects are possible, an approved survey for the presence of the species by a qualified, permitted specialist should be conducted and the results incorporated as appropriate in the determination of effects.

Since endangered species data changes continuously, we recommend you contact this office for an updated species list if more than six months have passed prior to commencement of proposed activities. In addition, if the projects require modifications or new information becomes available that indicates the presence of listed species or species proposed for listing, or their critical habitat, you should consult with this office.

The Michigan Department of Natural Resources (MDNR) protects endangered and threatened species through Part 365, Endangered Species Protection, of the Natural Resources and Environmental Protection Act, 1994, P.A. 451. For a preliminary check of your project areas for any State protected species, please refer to the MDNR Endangered Species Assessment website located at www.michigan.gov. Click on Online Services, scroll down to Business Online Services and select Endangered Species Assessment. Upon completing the website search, contact the Endangered Species Coordinator of the MDNR at 517/373-3337 for information regarding the protection of threatened and endangered species under State law. State law requires a permit in advance of any work that could potentially damage, destroy, or displace State-listed species.

The opportunity to provide comments is appreciated. Any questions can be directed to Tameka Dandridge of this office at Tameka_Dandridge@fws.gov or 517/351-8315.

Sincerely,

Craig A. Czarnecki
Field Supervisor

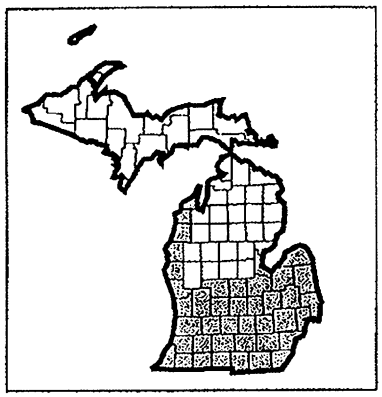
Enclosures

cc: MDNR, Wildlife Division, Lansing, MI (Attn: Todd Hogrefe)
FERC

g: admin/archives/sep05/sc list/nrg-vectorpipeline-ibat.tnd.doc

Indiana Bat Life History

Since listing as endangered in 1967, the range-wide Indiana bat population has declined by nearly 60%. Several factors have contributed to its decline including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, fragmentation of forest habitat, and loss and degradation of forested habitat, particularly stands of large, mature trees.



Indiana bat range in shaded areas.

In Michigan, summering Indiana bats roost in trees in riparian, bottomland, and upland forests from approximately April 15 to September 15. Indiana bats may summer in a wide range of habitats, from highly altered landscapes to intact forests. Roost trees are typically found in patches of forests of varying size and shape, but have also been found in pastures, hog lots, fence rows, and residential yards.

Male Indiana bats are dispersed throughout the range in the summer, roosting individually or in small groups, but may favor areas near hibernaculum. In contrast, reproductive females form larger groups, referred to as maternity colonies. Female Indiana bats exhibit strong site fidelity to summer roosting and foraging areas, tending to return to the same summer range annually to bear their young. These traditional summer sites are essential to the reproductive success and persistence of local populations.

Indiana bats are known to use a wide variety of tree species for roosting, but structure (i.e., crevices or exfoliating bark) is probably most important in determining if a tree is a suitable roost site. Roost trees generally are dead, dying or live trees (e.g. shagbark hickory and oaks) with peeling or exfoliating bark which allows the bat to roost between the bark and bole of the tree, but Indiana bats will also use narrow cracks, split tree trunks and/or branches as roosting sites. Southern Michigan maternity roost trees are typically in open areas exposed to solar radiation. Roost trees vary considerably in size, but those used by Indiana bat maternity colonies usually are large relative to other trees nearby, typically greater than 9 inches dbh. Male Indiana bats have been observed roosting in trees as small as 3 inches dbh.

Maternity roosts of the Indiana bat can be described as "primary" or "alternate" based upon the proportion of bats in a colony consistently occupying the roost site. Maternity colonies typically use 10–20 different trees each year, but only 1–3 of these are primary roosts used by the majority of bats for some or all of the summer. It is not known how many alternate roosts must be available to assure retention of a colony within a particular area, but large, nearby forest tracts appear important. Although the Indiana bat appears to be adaptable to changes in its roosting habitat, it is essential that a variety of suitable roosting trees exist within a colony's summer area to assure the persistence of the colony.

FEDERAL AGENCY RESPONSIBILITIES UNDER SECTION 7(a)(2) OF THE ENDANGERED SPECIES ACT

Section 7 of the Endangered Species Act of 1973, as amended (Act) directs Federal agencies in their responsibilities to listed species and critical habitat. Section 7(a)(2) of the Act directs all Federal agencies to consult with the FWS to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of listed species or critical habitat. This process is referred to as "section 7 consultation".

Section 7 consultation is typically initiated by a Federal action agency (action agency) by requesting a list of proposed and listed species and critical habitat that may be present in the action area. Based on this list, the action agency must provide the FWS with an analysis and determination of the effects of proposed actions that *may affect* listed species or critical habitat. Actions that are *not likely to adversely affect* listed species and critical habitat require informal section 7 consultation, while actions that are *likely to adversely affect* listed species and critical habitat require formal section 7 consultation. All decisions made under section 7 require the FWS and action agencies to employ the best available scientific and commercial data in their analysis.

The action agency or its designee must assess the potential effects on listed species and critical habitat. The assessment is called a Biological Assessment (BA). By regulation, a BA is prepared for "major construction activities" as defined under the National Environmental Policy Act (NEPA). Although a BA is technically not required for "non-major" construction activities, the action agency must still supply the FWS with an analysis and determination of effects for all Federal actions that *may affect* listed species or critical habitat. The FWS uses the BA, along with any other available information, to decide if concurrence with the determination of effects as made by the action agency is warranted. The BA should be completed within 180 days after initiation of consultation. If work on the BA has not been initiated within 90 days of receipt of the species list, you should verify the accuracy of the species list with the FWS.

To complete the BA, the action agency or its designee should, at a minimum:

1. determine whether suitable habitat exists if the species is likely to be present, which may include an onsite inspection and of the area to be affected by the proposal (should be documented in BA);
2. review literature and scientific data to determine species distribution, habitat needs, and other biological requirements;
3. consult experts including those within the FWS, state conservation departments, universities, and others who may have information not yet published in scientific literature;
4. review and analyze the effects of the proposal on the species in terms of individuals and populations present in the action area;
5. analyze alternative actions that may provide conservation measures;
6. make a determination of effects as directed by section 7 of the Act; and
7. prepare a report (the BA) documenting the analysis, including a discussion of study methods used, any problems encountered, and other relevant information.

Note that section 7(d) of the Act states action agencies shall not make any irreversible or irretrievable commitment of resources during the consultation process which would result in violation of the requirements under section 7(a)(2). Planning, design, and administrative actions may be taken; however, no irrevocable actions (e.g., construction) may begin.

We strongly encourage coordination with the FWS early and often in the consultation process. Not only will this save time by minimizing re-drafts of BAs, but we may also have the opportunity to work with the action agency in the development of a project that avoids or eliminates adverse effects before final decisions are made.

NATURAL RESOURCE GROUP, INC.

LOG

LOG OF TELEPHONE CONVERSATION

CALL TO/FROM WHOM:	PHONE NO.:
Tameka Andrews	(517) 351-8315

COMPANY:
U.S. Fish and Wildlife Service – East Lansing Field Office

NRG CONTACT:	PHONE NO.:
Lisa A. Hughes	(720) 956-5302
DATE: 9/27/2005	NRG OFFICE LOCATION: Denver

RE:
Vector Compression Expansion Project

LOG OF CONVERSATION:

Ms. Andrews contacted Ms. Hughes to ask if the project would require clearing of trees. Ms. Hughes indicated that the client had not yet provided finalized project plans, and therefore she could not confirm whether or not the project would require clearing of trees. Ms. Andrews stated that the U.S. Fish and Wildlife Service (FWS) is concerned with the federally endangered Indiana bat, which roosts in trees in Michigan from late March to late October. Ms. Hughes indicated that she would forward final project plans on to the FWS as soon as they were available to facilitate a decision of potential impact on the Indiana bat.

Tower One, Suite 580
1515 Arapahoe Street
Denver, CO 80202

telephone 720.956.5300
facsimile 720.956.5310
www.NRGINC.com

October 25, 2005

Mr. Craig Czarnecki
U.S. Fish and Wildlife Service - Ecological Services
East Lansing Field Office
2651 Coolidge Road
East Lansing, MI 48823

RE: Vector Compression Expansion Project
Romeo Compressor Station

Dear Mr. Czarnecki:

As you are aware, Vector Pipeline, L.P. (Vector) is proposing to expand transmission capacity on its existing pipeline system by constructing a compressor station in Section 14, Township 4N, Range 12E, Macomb County, Michigan. In a letter dated August 24, 2005, Vector requested information on threatened and endangered species in the vicinity of the Romeo Compressor Station. In a letter dated September 28, 2005, the U.S. Fish and Wildlife Service (FWS) reported that the endangered Indiana bat may occur in the project area. During a September 27, 2005 phone conversation, Ms. Tameka Dandridge indicated that the FWS would be concerned with tree clearing and the amount of suitable habitat that would remain following construction and requested that site layouts of the proposed facilities be provided to the FWS once they are finalized. On behalf of Vector, Natural Resource Group, Inc. is submitting this letter to provide you with the requested information and also to request your concurrence with the determination of effect as presented below.

Existing Site Conditions

The proposed Romeo Compressor Station will be located on a 9-acre parcel. The site appears to have been cultivated in the past, but is now dominated by upland and wetland grasses and shrubs. Part of the proposed site consists of a scrub shrub and emergent wetland dominated by sandbar willow (*Salix exigua*), red-osier dogwood (*Cornus stolonifera*), silky dogwood (*C. amomum*), gray dogwood (*C. Foemina*), reed canary grass (*Phalaris arundinacea*), grass-leaved goldenrod (*Euthamia graminifolia*), late goldenrod (*Solidago gigantean*), purple loosestrife (*Lythrum salicaria*), rushes (*Juncus spp.*), bulrush (*Scirpus atrovirens*), and cat-tail (*Typha angustifolia*). The remaining areas are dominated by upland species consisting of goldenrod (*Solidago spp.*), Russian olive (*Elaeagnus angustifolia*), heath aster (*Aster ericoides*), and Canada thistle (*Cirsium arvense*). The proposed site is bound to the north by forestland, to the west by overhead transmission lines and State Route 53, to the east by grassland and agricultural land, and to the south by transmission lines/pipelines and agricultural land. The proposed site is identified on the enclosed project location map.

Potential Impacts/Proposed Mitigation

Vector sited its proposed facilities at the Romeo Compressor Station to avoid impacting forestland. Construction of the compressor station and the suction and discharge pipelines on the south side of the compressor station property line will require removing the existing tree line.

However, there is plenty of suitable habitat in the vicinity of the compressor station site. In addition, Vector will clear the trees prior to April 15th or after September 15th to avoid the time periods when Indiana Bats may be present. Vector is requesting concurrence that with the adoption of its proposed mitigation measures, the proposed project is not likely to adversely affect Indiana Bats.

Thank you for your continued assistance with this project. If you have any questions regarding the Vector Compression Expansion Project, please contact me by telephone at (720) 956-5302, by email at lahughes@nrginc.com, or by letter at the address listed above.

Sincerely,

Natural Resource Group, Inc.

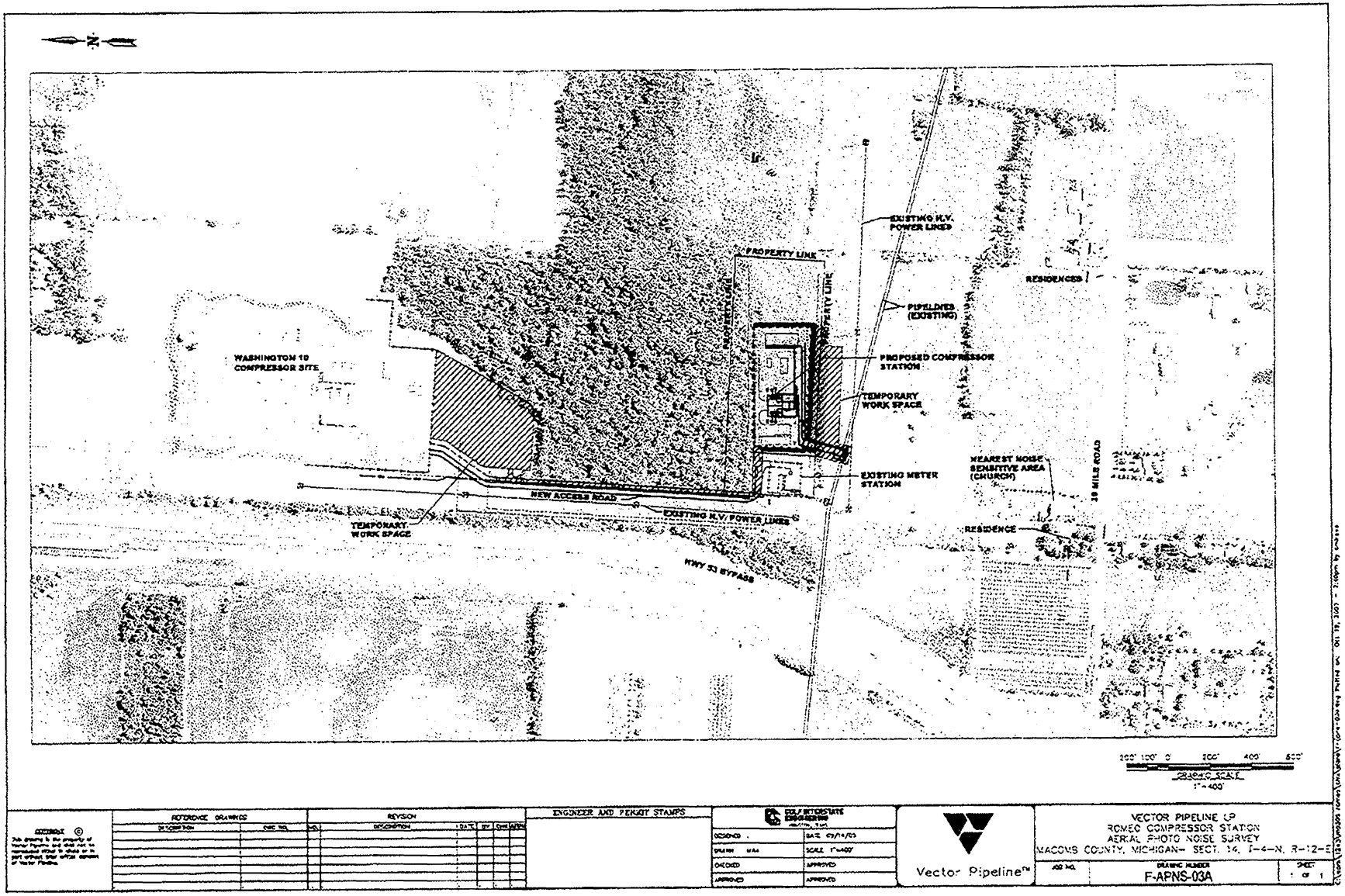
Lisa A. Hughes

Lisa A. Hughes
Resource Technician

Enclosure: Project Location Map

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.

= tree line to be removed



REFERENCE DRAWINGS

DESCRIPTION	DWG. NO.

REVISION

NO.	DESCRIPTION	DATE	BY	CHK'D	APP'D

ENGINEER AND PERMIT STAMPS

DESIGNED	DATE 03/14/03
DRAWN MAA	SCALE 1"=400'
CHECKED	APPROVED
APPROVED	APPROVED

Vector Pipeline™

VECTOR PIPELINE LP
ROMEO COMPRESSOR STATION
AERIAL PHOTO NOISE SURVEY
MACOMB COUNTY, MICHIGAN- SECT. 14, T-4-N, R-12-E

JOB NO.

DRAWING NUMBER F-APNS-03A

SHEET 1 OF 1

NON-INTERNET PUBLIC

Department of Natural Resources

Michigan

Michigan Gov Home

Home FAQ Help

- Find a Location
- Browse the Map
- Related Links

Michigan Natural Features Inventory

ENDANGERED SPECIES ASSESSMENT

Request a Review

Request Formal MDNR Response

Please complete the form below to request a review. Fields that are highlighted in yellow are required.

Project Location

Macomb County

Lat:42.765141, Lon:-83.008402

Town: 04N, Range: 12E and Section: 14

LOON A

Applicant Information

Mr	Bart	Jensen	M
Honorific	First Name	Last Name	Initial

Natural Resource Group, Inc.

Company Name

1000 IDS Center, 80 South 8th Street

Mailing Address

Minneapolis	MN	55402
City	State	Zip

bmjensen@nrginc.c	(612) 359-5686
E-Mail	Phone

Project Information

Vector Compressor Station Expansion P	
Project Name	Ref Number

Other

Project Activity I

Install pipeline

Project Activity II

Additional Activity

Project Activity III

Construct Natural Gas Compressor Station

If Other Project Type please specify

NON-INTERNET PUBLIC

Additional Project Information

Grassland/Old field

Dominant Habitat

Waterbody

→SUBMIT

Department of Natural Resources

Michigan

Michigan Gov Home

Home FAQ Help

→ Find a Location
→ Browse the Map
→ Related Links

Michigan Natural Features Inventory

Â ENDANGERED SPECIES ASSESSMENT

Welcome!

Thank you for submitting your endangered species assessment request.

Your Tracking ID Number is: *3858616390195.* Print this page and record this number for future reference. Please refer to this Tracking ID Number in any correspondence concerning this request.

If you do not receive a confirmation e-mail within 1 business day please contact us.

LOON A

NON-INTERNET PUBLIC

STATE OF MICHIGAN

JENNIFER M. GRANHOLM
GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LANSING

REBECCA A. HUMPHRIES
DIRECTOR

August 23, 2005

Mr Bart M Jensen
Natural Resource Group, Inc.
1000 IDS Center, 80 South 8th Street
Minneapolis MN 55402

RE: **Vector Compressor Station Expansion Project**

Dear Mr Bart M Jensen:

Thank you for using the Michigan DNR Endangered Species Assessment website. Based on the information you have provided, project activities may proceed. It has been determined that federal and state endangered, threatened, special concern species, exemplary natural plant communities, or unique natural features are **not known to occur** at or near the location specified:

Macomb County, T04N R12E Section 14.

The location of the request was checked against known localities for rare species and unique natural features, which are recorded in a statewide database. This continuously updated database is a comprehensive source of information on Michigan's endangered, threatened and special concern species, exemplary natural communities and other unique natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features at a site. The absence of records may mean that a site has not been surveyed. Records may not always be up-to-date. In some cases, the only way to obtain a definitive statement on the presence of rare species is to have a competent biologist perform a field survey.

Michigan's endangered and threatened species are protected under Part 365 of the Natural Resources and Environmental Protection Act, Act 451 of the Michigan Public Acts of 1994. Federally listed species are protected under the United States Endangered Species Act of 1973. Special concern species, exemplary natural communities and other unique natural features are not legally protected by state or federal endangered species legislation, but they are considered to be rare and should be protected to prevent future listing.

Thank you for your advance coordination in addressing the protection of Michigan's natural resource heritage. Responses and correspondence can be sent to: Endangered Species Review, Michigan Department of Natural Resources, Wildlife Division - Natural Heritage Program, PO Box 30180, Lansing, MI 48909. If you have further questions, please call 517-373-1263 or e-mail DNR_EndangeredSpecies@michigan.gov.

Vector Compression Expansion Project

Appendix E
Tribal Consultation Letters

NON-INTERNET PUBLIC

VCEP PROJECT

APPENDIX E

Non-Internet Public

Illinois Tribal Consultations

Consultation Index

Prairie Band Potawatomi Nation

Prairie Band Potawatomi Nation. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to Z. Pahmahmie (Prairie Band Potawatomi Nation).

Prairie Band Potawatomi Nation. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to Z. Pahmahmie (Prairie Band Potawatomi Nation).

Citizen Potawatomi Nation

Citizen Potawatomi Nation. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to J. Finch (Citizen Potawatomi Nation).

Citizen Potawatomi Nation. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to J. Finch (Citizen Potawatomi Nation).

Forest County Potawatomi Community

Forest County Potawatomi Community. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to M. Alloway. (Forest County Potawatomi Community).

Forest County Potawatomi Community. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to M. Alloway (Forest County Potawatomi Community).

Sac and Fox Nation of Oklahoma

Sac and Fox Nation of Oklahoma. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to S. Massey (Sac and Fox Nation of Oklahoma).

Sac and Fox Nation of Oklahoma. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to S. Massey (Sac and Fox Nation of Oklahoma).

Sac and Fox Nation of Missouri

Sac and Fox Nation of Missouri. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to D. Bahr (Sac and Fox Nation of Missouri).

Sac and Fox Nation of Missouri. 2005. Letter dated September 8, from D. Bahr (Sac and Fox Nation of Missouri) to P. Robblee (Natural Resource Group, Inc.).

Sac and Fox Nation of Missouri. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to D. Bahr (Sac and Fox Nation of Missouri).

Sac and Fox of the Mississippi in Iowa

Sac and Fox of the Mississippi in Iowa. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to J. Buffalo (Sac and Fox of the Mississippi in Iowa).

Sac and Fox of the Mississippi in Iowa. 2005. Letter dated September 1, from J. Buffalo (Sac and Fox of the Mississippi in Iowa) to P. Robblee (Natural Resource Group, Inc.).

Iowa Tribe of Oklahoma

Iowa Tribe of Oklahoma. 2005. Letter dated September 13, from J Rice (Iowa Tribe of Oklahoma) to P. Robblee (Natural Resource Group. Inc.)

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Zach Pahmahmie
Tribal Chairman/NAGPRA Representative
Prairie Band Potawatomi Nation
16281 Q Road
Mayeta, Kansas 66509

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Will County, Illinois
Section 106 Consultation

Dear Chairman Pahmahmie:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in Will County, Illinois. The proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. An excerpt from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station is enclosed. Vector plans to begin construction of the compressor station during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and it is subject to review under Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470). Vector is contacting you as a designated non-Federal representative for the FERC.

To assist the FERC in meeting its obligations under the NHPA, Vector retained the Public Service Archaeology Program (PSAP) of the University of Illinois in Urbana, Illinois to conduct a field survey and compile an inventory of archaeological sites and other historic resources within its project area. The field investigation was conducted in October of 2004 and August of 2005. No cultural resources were identified as a result of this survey.

If you have any concerns regarding the Vector Compressor Station Expansion Project and its potential to affect traditional cultural properties or historic properties, please contact me by telephone at 612-359-5671, by email at pprobblee@nrginc.com, or by letter at the address listed above.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

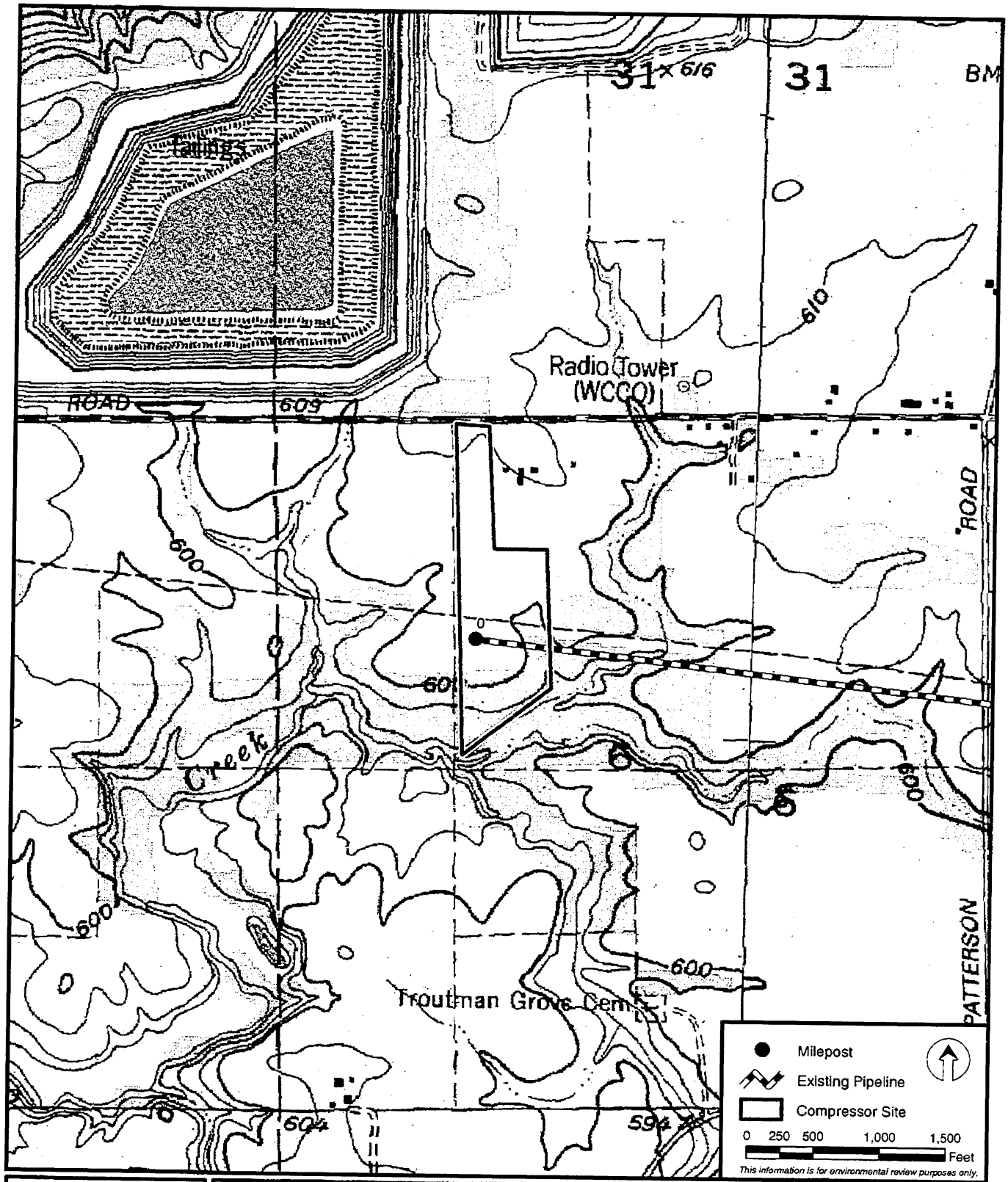
Sincerely,

Natural Resource Group, Inc.

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangle

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project
Will County Site

DATE: 10/29/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\D-F\EEL\VCSP_ArcGIS\2004\08\Waterbodies_EEL_VSX_Wet_WA_Topo.mxd

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Sent To: Zach Pahmahmie/Prairie Band Potawatomi
Street, Apt. No.; or PO Box No.: 16281 Q Rd
City, State, ZIP+4: Mayetta, KS 66509

PS Form 3800, June 2002 — See Reverse for Instructions

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1. Article Addressed to:
Zach Pahmahmie, Tribal Chmn
Prairie Band Potawatomi Nation
16281 Q Rd
Mayetta, KS 66509

COMPLETE THIS SECTION ON DELIVERY

A. Signature: X Cheryl Heller ☐ Agent ☐ Addressee

B. Received by (Printed Name): Cheryl Heller C. Date of Delivery: 8-17-05

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? ☐ Yes

2. Article Number (Transfer from service label) 7004 2510 0002 0332 6328

PS Form 3811, February 20[illegible] Domestic Return Receipt 102595-02-M-1540

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 12:13 PM
To: 'zachp@pbpnation.org'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Tracking:

Recipient	Delivery
'zachp@pbpnation.org'	
Patrick Robblee	Delivered: 9/9/2005 12:13 PM

Chairman Pahmahmie:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to you regarding the proposed Vector Pipeline (Vector) Compressor Expansion Project in Will County, Illinois. The project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and is subject to review under Section 106 of the National Historic Preservation Act. Accordingly, Vector is working to document cultural resources that may be affected by this project. As part of that process, Vector is consulting with federally recognized tribes historically known to have occupied the project area.

For this project, Vector proposes to construct an aboveground compressor station along its existing pipeline corridor in Will County. The station would measure approximately 25 acres in size and include an access road, compressor building and a compressor unit. Excerpts from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station were included with our August 15 letter. Vector conducted an archaeological survey of the project area, and no sites were discovered.

The purpose of our August 15 letter was to invite your comments regarding the potential of this project to cause effects to significant historic or cultural properties. I am writing to you today to confirm that you received our letter and to enquire whether you require additional information and/or have comments on this project. Your response to this inquiry is greatly appreciated.

Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From: System Administrator

To: Monika Hagebak;

CC:

Subject: Delivered: Vector Pipeline Compressor Expansion Project

Date: Friday, September 09, 2005 12:13:13 PM

Attachments: Vector Pipeline Compressor Expansion Project

<<Vector Pipeline Compressor Expansion Project>> Your message

To: zachp@pbpnation.org
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project
Sent: Fri, 9 Sep 2005 12:13:06 -0500

was delivered to the following recipient(s):

Zach Pahmahmie on Fri, 9 Sep 2005 12:07:41 -0500

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Jeremy Finch
Director
Citizen Potawatomi Nation
1601 South Gordon Cooper Drive
Shawnee, Oklahoma 74801

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Will County, Illinois
Section 106 Consultation

Dear Mr. Finch:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in Will County, Illinois. The proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. An excerpt from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station is enclosed. Vector plans to begin construction of the compressor station during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and it is subject to review under Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470). Vector is contacting you as a designated non-Federal representative for the FERC.

To assist the FERC in meeting its obligations under the NHPA, Vector retained the Public Service Archaeology Program (PSAP) of the University of Illinois in Urbana, Illinois to conduct a field survey and compile an inventory of archaeological sites and other historic resources within its project area. The field investigation was conducted in October of 2004 and August of 2005. No cultural resources were identified as a result of this survey.

If you have any concerns regarding the Vector Compressor Station Expansion Project and its potential to affect traditional cultural properties or historic properties, please contact me by telephone at 612-359-5671, by email at pprobblee@nrginc.com, or by letter at the address listed above.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

Sincerely,

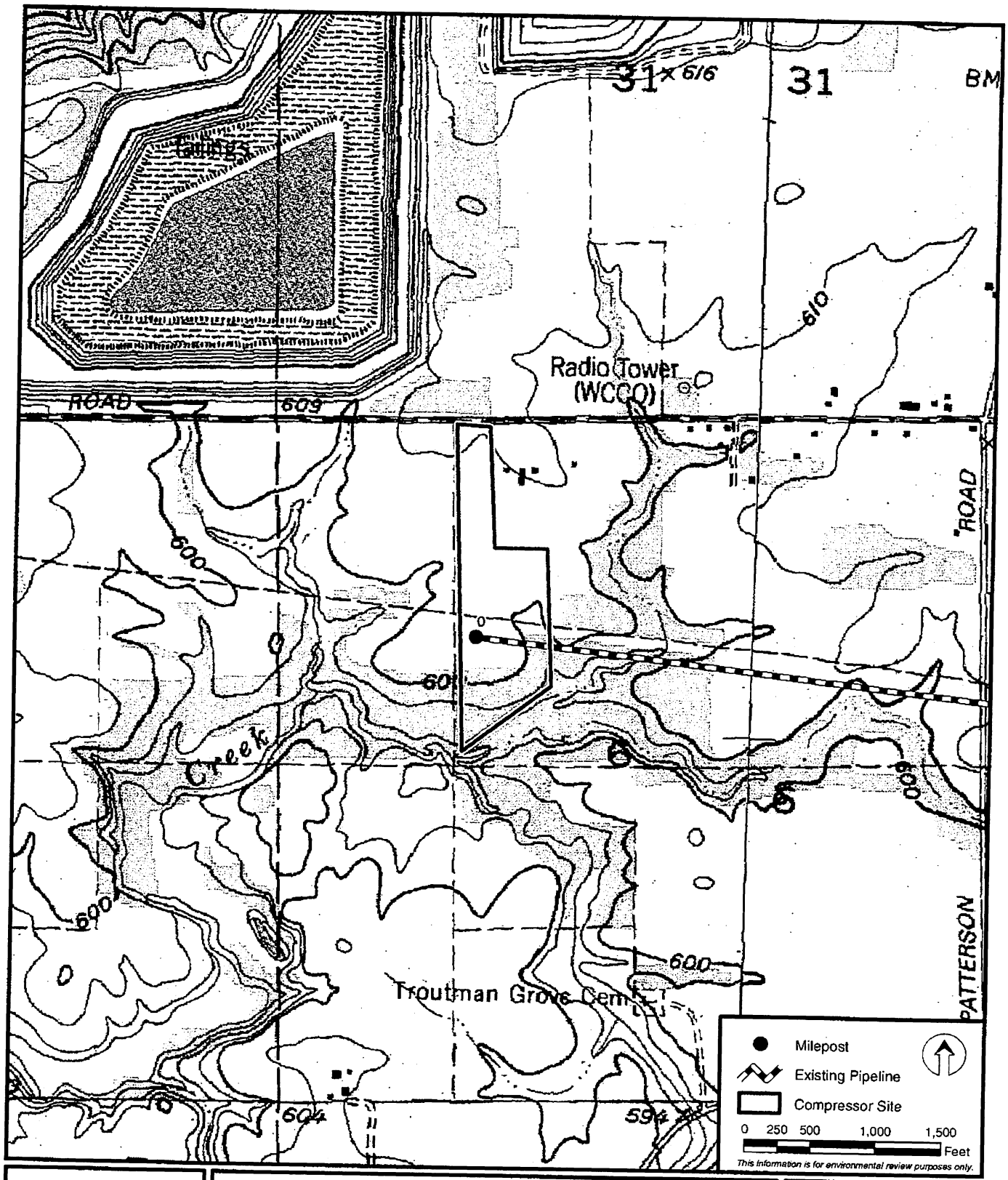
Natural Resource Group, Inc.

Patrick D. Robblee

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangle

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project
Will County Site

DATE: 10/29/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\D-F\EEL\VCSP_ArcGIS\2004\08\Waterbodies_EEL_VSX_Wet_WA_Topo.mxd

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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Sent To: Jeremy Finch/Citizen Potawatomi Nation
Street, Apt. No.; or PO Box No.: 1601 South Gordon Cooper Dr
City, State, ZIP+4: Shawnee, OK 74801

PS Form 3800, June 2002 — See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Jeremy Finch, Director
Citizen Potawatomi Nation
1601 South Gordon Cooper Dr.
Shawnee, OK 74801

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Linda Lacey ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery 8-16

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 2510 0002 0332 6342

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 12:15 PM
To: 'jfinch@potawatomi.org'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Tracking:

Recipient	Delivery
'jfinch@potawatomi.org'	
Patrick Robblee	Delivered: 9/9/2005 12:15 PM

Dear Mr. Finch:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to you regarding the proposed Vector Pipeline (Vector) Compressor Expansion Project in Will County, Illinois. The project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and is subject to review under Section 106 of the National Historic Preservation Act. Accordingly, Vector is working to document cultural resources that may be affected by this project. As part of that process, Vector is consulting with federally recognized tribes historically known to have occupied the project area.

For this project, Vector proposes to construct an aboveground compressor station along its existing pipeline corridor in Will County. The station would measure approximately 25 acres in size and include an access road, compressor building and a compressor unit. Excerpts from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station were included with our August 15 letter. Vector conducted an archaeological survey of the project area, and no sites were discovered.

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Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From: System Administrator

To: Monika Hagebak;

CC:

Subject: Delivered: Vector Pipeline Compressor Expansion Project

Date: Friday, September 09, 2005 12:15:12 PM

Attachments: Vector Pipeline Compressor Expansion Project

<<Vector Pipeline Compressor Expansion Project>> Your message

To: jfinch@potawatomi.org
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project
Sent: Fri, 9 Sep 2005 12:14:41 -0500

was delivered to the following recipient(s):

Jeremy Finch on Fri, 9 Sep 2005 12:15:47 -0500

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Michael L. Alloway, Sr.
Director
Forest County Potawatomi Community Cultural Center and Museum
P.O. Box 340
Crandon, Wisconsin 54520

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Will County, Illinois
Section 106 Consultation

Dear Mr. Alloway:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in Will County, Illinois. The proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. An excerpt from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station is enclosed. Vector plans to begin construction of the compressor station during the summer of 2006.

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If you have any concerns regarding the Vector Compressor Station Expansion Project and its potential to affect traditional cultural properties or historic properties, please contact me by telephone at 612-359-5671, by email at pprobblee@nrginc.com, or by letter at the address listed above.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

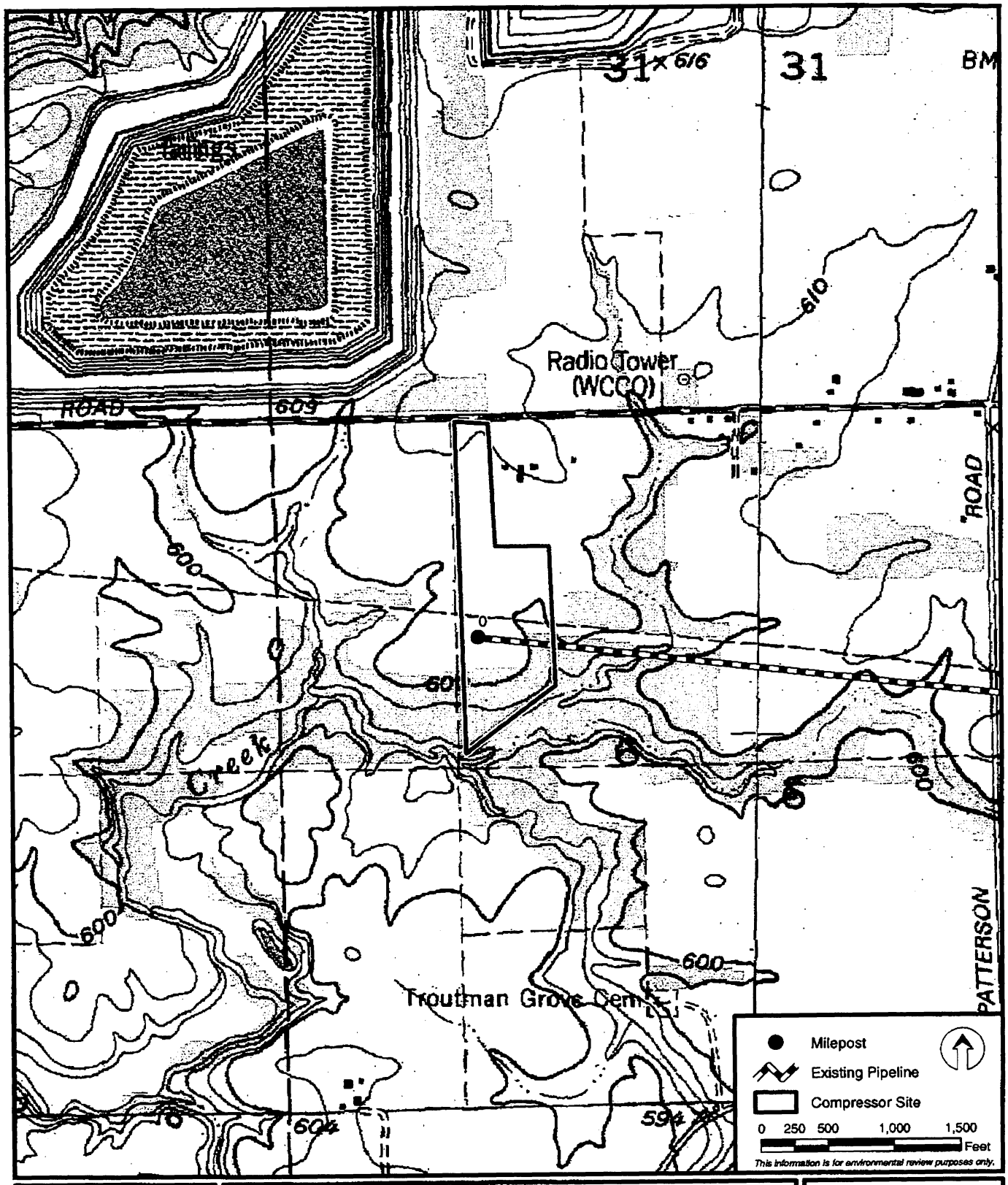
Sincerely,

Natural Resource Group, Inc.

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangle

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project
Will County Site

DATE: 10/29/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\D-FEEL\VCSP_ArcGIS\2004\08\Waterbodies_EEL_VSX_Wet_WA_Topo.mxd

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Sent To: Mallonay/Forest County Potawatomi Community
Street, Apt. No.; or PO Box No. PO Box 340
City, State, ZIP+4 Crandon, WI 54520

PS Form 3800, June 2002 See Reverse for Instructions

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1. Article Addressed to:

Michael Alloway, Sr., Museum Director
Forest County Potawatomi Community
P.O. Box 340
Crandon, WI 54520

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Monica Michael ☒ Agent ☒ Addressee

B. Received by (Printed Name) Monica Michael C. Date of Delivery 8-17-05

D. Is delivery address different from item 1? ☐ Yes
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2. Article Number (Transfer from service label) 7004 2510 0002 0332 6335

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 12:18 PM
To: 'mikea@fcpotawatomi.com'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Dear Mr. Alloway:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to you regarding the proposed Vector Pipeline (Vector) Compressor Expansion Project in Will County, Illinois. The project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and is subject to review under Section 106 of the National Historic Preservation Act. Accordingly, Vector is working to document cultural resources that may be affected by this project. As part of that process, Vector is consulting with federally recognized tribes historically known to have occupied the project area.

For this project, Vector proposes to construct an aboveground compressor station along its existing pipeline corridor in Will County. The station would measure approximately 25 acres in size and include an access road, compressor building and a compressor unit. Excerpts from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station were included with our August 15 letter. Vector conducted an archaeological survey of the project area, and no sites were discovered.

The purpose of our August 15 letter was to invite your comments regarding the potential of this project to cause effects to significant historic or cultural properties. I am writing to you today to confirm that you received our letter and to enquire whether you require additional information and/or have comments on this project. Your response to this inquiry is greatly appreciated.

Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From:	ExchangePostmaster
To:	Monika Hagebak;
CC:	
Subject:	Delivery Status Notification (Relay)
Date:	Friday, September 09, 2005 12:40:49 PM
Attachments:	ATT3033916.txt Vector Pipeline Compressor Expansion Project

---

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mikea@fcpotawatomi.com

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Sandra Massey
NAGPRA Representative
Sac & Fox Nation of Oklahoma
RR1, Box 721
Perkins, Oklahoma 74059

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Will County, Illinois
Section 106 Consultation

Dear Ms. Massey:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in Will County, Illinois. The proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. An excerpt from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station is enclosed. Vector plans to begin construction of the compressor station during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and it is subject to review under Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470). Vector is contacting you as a designated non-Federal representative for the FERC.

To assist the FERC in meeting its obligations under the NHPA, Vector retained the Public Service Archaeology Program (PSAP) of the University of Illinois in Urbana, Illinois to conduct a field survey and compile an inventory of archaeological sites and other historic resources within its project area. The field investigation was conducted in October of 2004 and August of 2005. No cultural resources were identified as a result of this survey.

If you have any concerns regarding the Vector Compressor Station Expansion Project and its potential to affect traditional cultural properties or historic properties, please contact me by telephone at 612-359-5671, by email at pprobblee@nrginc.com, or by letter at the address listed above.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

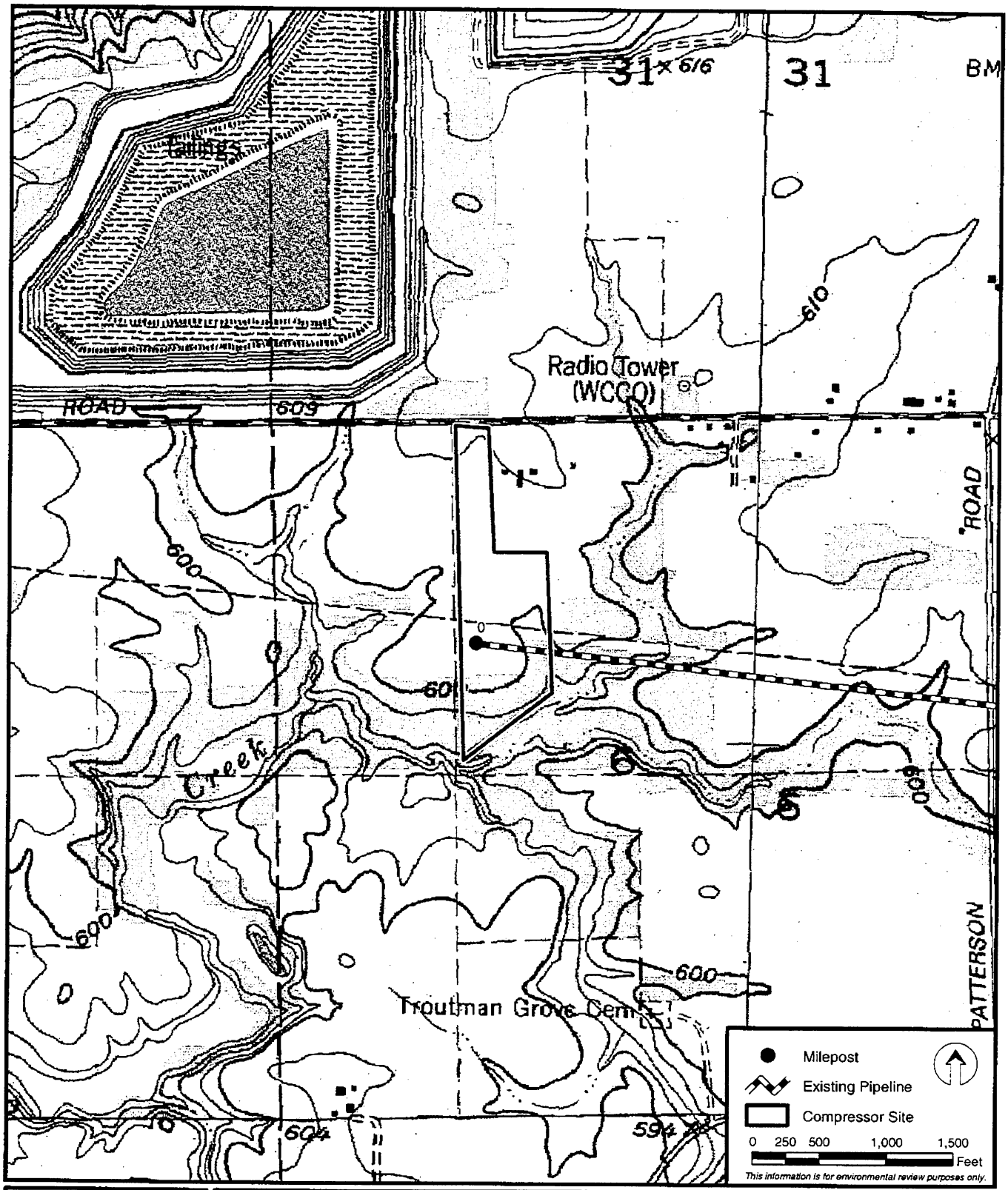
Sincerely,

Natural Resource Group, Inc.

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangle

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project

Will County Site

DATE: 10/29/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\D-F\EEL\VCSP_ArcGIS\2004\08\Waterbodies_EEL_VSX_Wet_WA_Topo.mxd

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Sent To: Sandra Massey / Sac+Fox Nation of OK
Street, Apt. No.; or PO Box No.: RR 1, Box 721
City, State, ZIP+4: Perkins, OK 74059

PS Form 3800, June 2002 — See Reverse for Instructions

PM 2005

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1. Article Addressed to:

Sandra Massey
Sac+Fox Nation of Oklahoma
RR1, Box 721
Perkins, OK 74059

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☒ Agent ☐ Addressee

B. Received by (Printed Name): [illegible] C. Date of Delivery: 8-18-05

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
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4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number (Transfer from service label): 7004 2510 0002 0332 6311

PS Form 3811, February 2004 — Domestic Return Receipt — 102595-02-M-1540

NON-INTERNET PUBLIC

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 12:10 PM
To: 'wahnesh@yahoo.com'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Tracking:

Recipient	Delivery
'wahnesh@yahoo.com'	
Patrick Robblee	Delivered: 9/9/2005 12:10 PM

Dear Ms. Massey:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to you regarding the proposed Vector Pipeline (Vector) Compressor Expansion Project in Will County, Illinois. The project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and is subject to review under Section 106 of the National Historic Preservation Act. Accordingly, Vector is working to document cultural resources that may be affected by this project. As part of that process, Vector is consulting with federally recognized tribes historically known to have occupied the project area.

For this project, Vector proposes to construct an aboveground compressor station along its existing pipeline corridor in Will County. The station would measure approximately 25 acres in size and include an access road, compressor building and a compressor unit. Excerpts from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station were included with our August 15 letter. Vector conducted an archaeological survey of the project area, and no sites were discovered.

The purpose of our August 15 letter was to invite your comments regarding the potential of this project to cause effects to significant historic or cultural properties. I am writing to you today to confirm that you received our letter and to enquire whether you require additional information and/or have comments on this project. Your response to this inquiry is greatly appreciated.

Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From:	ExchangePostmaster
To:	Monika Hagebak;
CC:	
Subject:	Delivery Status Notification (Relay)
Date:	Friday, September 09, 2005 12:10:04 PM
Attachments:	ATT3033249.txt Vector Pipeline Compressor Expansion Project

---

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wahnesh@yahoo.com

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Deanne Bahr
Museum Director
Sac & Fox Nation of Missouri
305 N. Main Street
Reserve, Kansas 66434

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Will County, Illinois
Section 106 Consultation

Dear Ms. Bahr:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in Will County, Illinois. The proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. An excerpt from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station is enclosed. Vector plans to begin construction of the compressor station during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and it is subject to review under Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470). Vector is contacting you as a designated non-Federal representative for the FERC.

To assist the FERC in meeting its obligations under the NHPA, Vector retained the Public Service Archaeology Program (PSAP) of the University of Illinois in Urbana, Illinois to conduct a field survey and compile an inventory of archaeological sites and other historic resources within its project area. The field investigation was conducted in October of 2004 and August of 2005. No cultural resources were identified as a result of this survey.

If you have any concerns regarding the Vector Compressor Station Expansion Project and its potential to affect traditional cultural properties or historic properties, please contact me by telephone at 612-359-5671, by email at pprobblee@nrginc.com, or by letter at the address listed above.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

Sincerely,

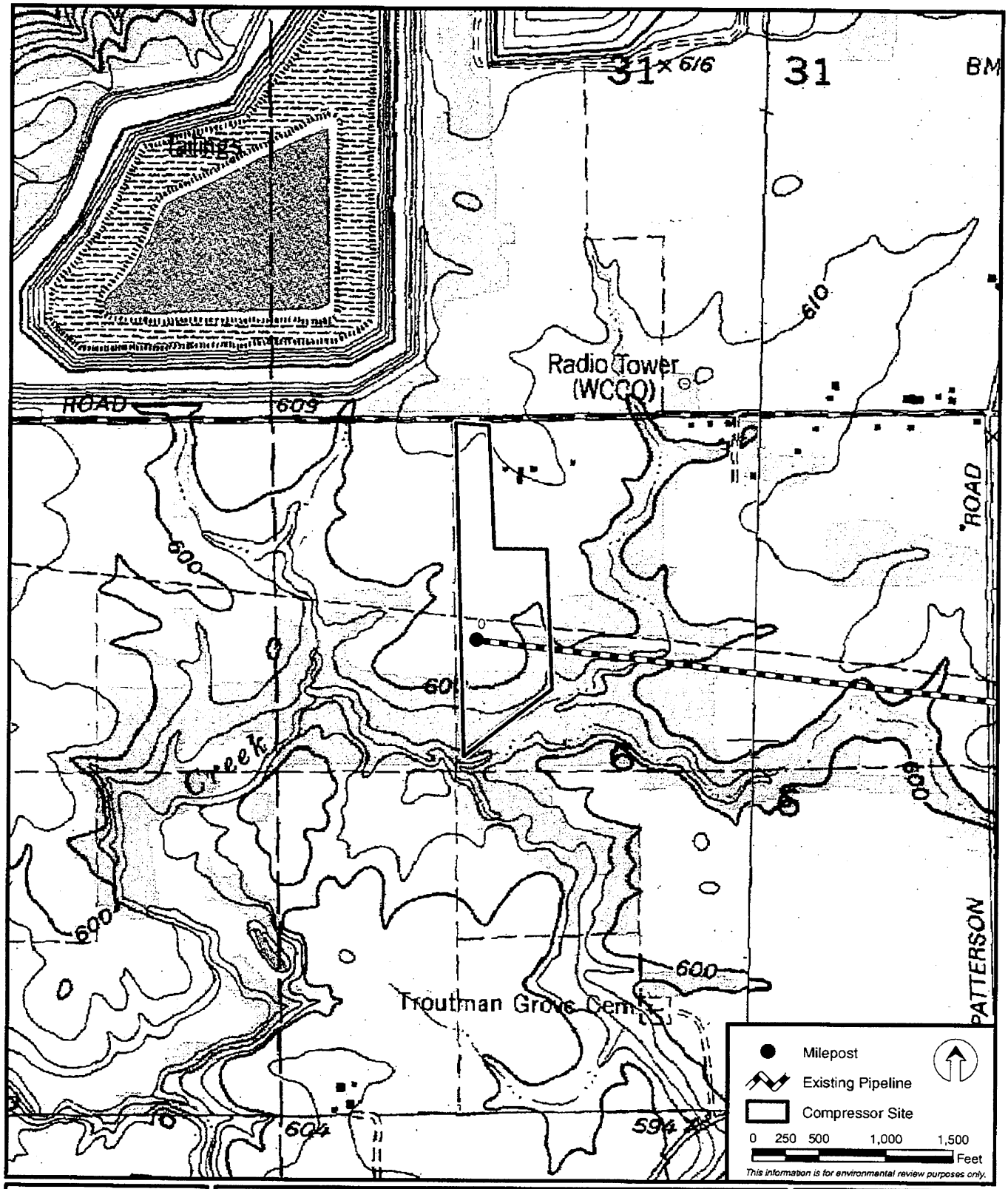
Natural Resource Group, Inc.

Patrick O. Robblee

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangle

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project
Will County Site

DATE: 10/29/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\D-F\EEL\VCSP_ArcGIS\2004\08 \Waterbodies_EEL_VSX_Wet_WA_Topo.mxd

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Sent To: Deanne Bahr/Sac+Fox Nation of MO
Street, Apt. No.; or PO Box No.: 305 N Main St
City, State, ZIP+4: Reserve, KS 66434

PS Form 3800, June 2002 — See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

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1. Article Addressed to:
Deanne Bahr, Museum Director
Sac+Fox Nation of Missouri
305 N. Main St.
Reserve, KS 66434

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Donna Poff ☐ Agent ☐ Addressee

B. Received by (Printed Name): DONNA POFF C. Date of Delivery: 8/1/05

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
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☐ Registered ☐ Return Receipt for Merchandise
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4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7004 2510 0005 4387 6965

PS Form 3811, February 2004 22 Domestic Return Receipt 102595-02-M-1540

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 12:16 PM
To: 'deannbahr@yahoo.com'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Tracking:

Recipient	Delivery
'deannbahr@yahoo.com'	
Patrick Robblee	Delivered: 9/9/2005 12:16 PM

Dear Ms. Bahr:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to you regarding the proposed Vector Pipeline (Vector) Compressor Expansion Project in Will County, Illinois. The project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and is subject to review under Section 106 of the National Historic Preservation Act. Accordingly, Vector is working to document cultural resources that may be affected by this project. As part of that process, Vector is consulting with federally recognized tribes historically known to have occupied the project area.

For this project, Vector proposes to construct an aboveground compressor station along its existing pipeline corridor in Will County. The station would measure approximately 25 acres in size and include an access road, compressor building and a compressor unit. Excerpts from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station were included with our August 15 letter. Vector conducted an archaeological survey of the project area, and no sites were discovered.

The purpose of our August 15 letter was to invite your comments regarding the potential of this project to cause effects to significant historic or cultural properties. I am writing to you today to confirm that you received our letter and to enquire whether you require additional information and/or have comments on this project. Your response to this inquiry is greatly appreciated.

Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From: ExchangePostmaster

To: Monika Hagebak;

CC:

Subject: Delivery Status Notification (Relay)

Date: Friday, September 09, 2005 12:16:15 PM

Attachments: ATT3033409.txt
Vector Pipeline Compressor Expansion Project

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deannbahr@yahoo.com

Sac and Fox Nation of Missouri in Kansas and Nebraska

305 North Main Street • Reserve, Kansas 66434
Phone (785) 742-7471 • Fax (785) 742-3785

September 8, 2005

Patrick Robblee
Natural Resource Group, Inc.
1000 IDS Center
80 South Eighth Street
Minneapolis MN 55402

Dear Mr. Robblee:

Thank you for your letter, which is in compliance with Section 106 of the National Historic Preservation Act, and Section 110.

Project: Vector Pipeline, Will County, Illinois

The Sac and Fox Nation of Missouri in Kansas and Nebraska NAGPRA department have determined the above project as:

No objections. However, if human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, please stop immediately and notify NAGPRA representative, Deanne Bahr, at the address above.

There are two other bands of Sac and Fox that also need to be contacted, the Sac and Fox Nation of Oklahoma and the Sac and Fox of the Mississippi in Iowa.

Johnathan Buffalo, NAGPRA Representative
Sac and Fox of the Mississippi in Iowa
349 Meskwaki Rd.
Tama, IA 52339-9629

Sandra Massey, NAGPRA Representative
Sac and Fox Nation of Oklahoma
Rt. 2, Box 246
Stroud, OK 74079

If you have any questions, please contact me at the number or address above.

Sincerely,

Deanne Bahr
Sac and Fox Nation of Missouri in Kansas and Nebraska
NAGPRA Contact Representative

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Jonathan Buffalo
Historic Preservation Officer
Sac & Fox of the Mississippi In Iowa
349 Meskawaki Rd
Tama, Iowa 52339-9629

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Will County, Illinois
Section 106 Consultation

Dear Mr. Buffalo:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in Will County, Illinois. The proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. An excerpt from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station is enclosed. Vector plans to begin construction of the compressor station during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and it is subject to review under Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470). Vector is contacting you as a designated non-Federal representative for the FERC.

To assist the FERC in meeting its obligations under the NHPA, Vector retained the Public Service Archaeology Program (PSAP) of the University of Illinois in Urbana, Illinois to conduct a field survey and compile an inventory of archaeological sites and other historic resources within its project area. The field investigation was conducted in October of 2004 and August of 2005. No cultural resources were identified as a result of this survey.

If you have any concerns regarding the Vector Compressor Station Expansion Project and its potential to affect traditional cultural properties or historic properties, please contact me by telephone at 612-359-5671, by email at pprobblee@nrginc.com, or by letter at the address listed above.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

Sincerely,

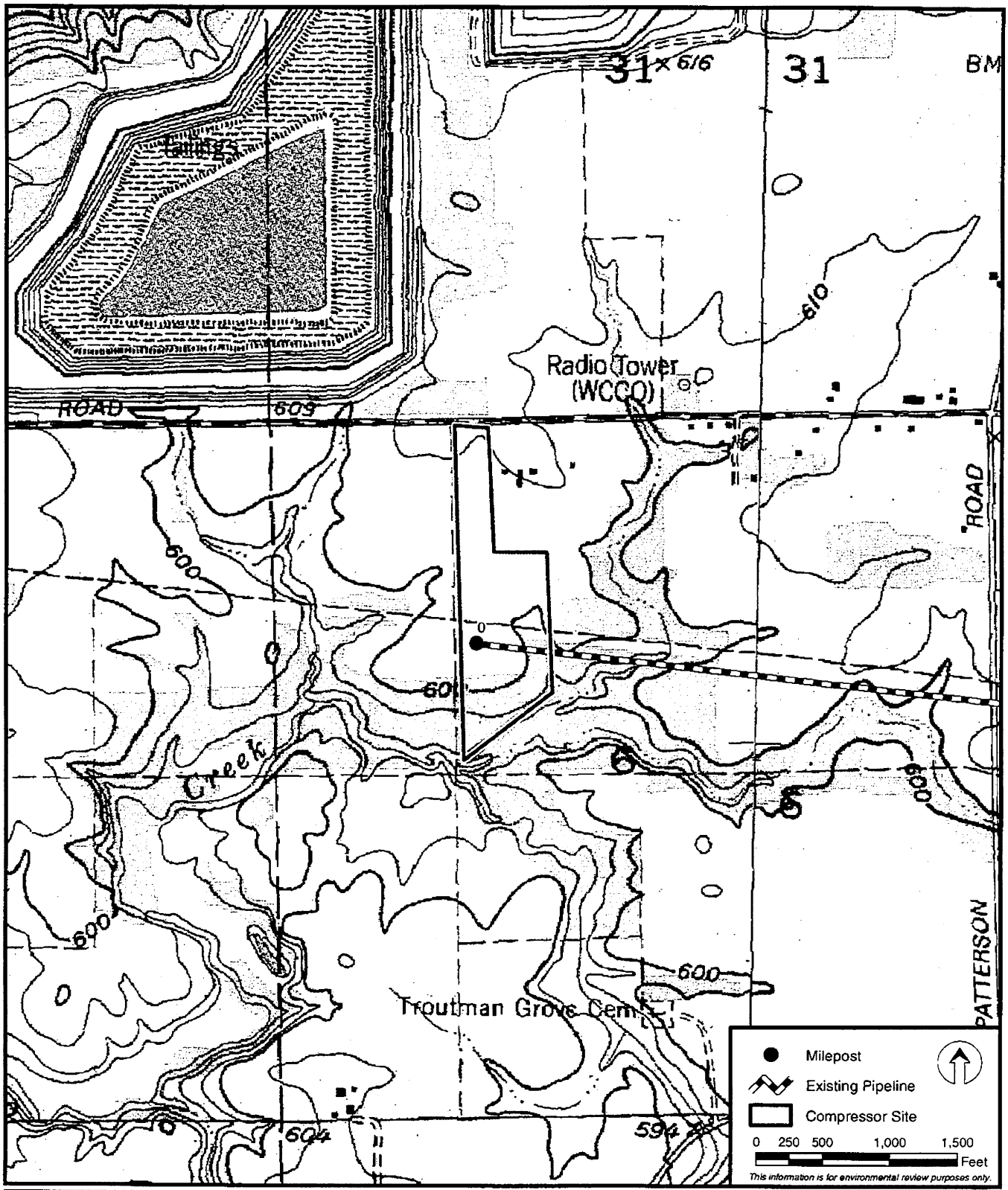
Natural Resource Group, Inc.

Patricia D. Robblee

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangle

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project
Will County Site

DATE: 10/29/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\D-F\EEL\VCSP_ArcGIS\2004\08\Waterbodies_EEL_VSX_Wat_WA_Topo.mxd

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Sent To: J. Buffalo/ Sac+Fox of the Mississippi in Iowa
Street, Apt. No.; or PO Box No.: 349 Meskawaki Rd
City, State, ZIP+4: Tama, IA 52339-9629

PS Form 3800, June 2002 — See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Jonathan Buffalo
Sac+Fox of the Mississippi in Iowa
349 Meskawaki Rd.
Tama, IA 52339-9629

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name): [illegible] C. Date of Delivery: 8-15-05

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7004 2510 0005 4388 4946

PS Form 3811, February 2004 — Domestic Return Receipt — 102595-02-M-1540

Sac & Fox Tribe of the Mississippi in Iowa

349 Meskwaki Road, Tama, IA 52339-9629 • (641) 484-4678 FAX (641) 484-5424

"MESKWAKI NATION"

September 1, 2005

Pat Robblee
Natural Resource Group, Inc.
1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

Dear Pat Robblee:

Thank you for the letter of August 15, 2005 concerning the project:

Vector Pipeline, Vector Compressor Station Expansion Project
Will County, Illinois

At this time, the Historical Preservation Department of the Sac and Fox of the Mississippi in Iowa has determined the above listed has:

- ☐ No interest in the area geographically
- ☐ No comment on the proposed undertaking
- ☑ No objections. However, if human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, please stop immediately and notify the NAGPRA Representative, Johnathan L Buffalo.
- ☐ Have an objection or require additional project information. Please send the following:

_____

Sincerely,

Johnathan L. Buffalo
Historical Preservation Coordinator
Sac and Fox of the Mississippi in Iowa

Cc: File

Iowa Tribe of Oklahoma

R.R. 1, Box 721
Perkins, Oklahoma 74059
(405) 547-2402
Fax: (405) 547-5294

09/13/2005

Natural Resource Group, Inc.
ATTN: Pat Robblee
80 S. 8th Street, 1000 IDS Ctr.
Minneapolis, MN 55402

RE: Vector

Dear Pat Robblee:

We received the notification of your district's improvement program. I understand that some of the project is a previous improvement and you do not foresee any impact of Native American or Euro-American archaeological resources.

Although the site does not have a religious or cultural significance to the Iowa Tribe of Oklahoma, please keep us informed if anything new is discovered.

Historical preservation is very important to the Iowa Tribe of Oklahoma. During excavation if anything is unearthed please call me at 405-547-2402 ext. 228 or e-mail me at jrice@iowanation.org.

Thank you for your cooperation in this matter.

Sincerely,

Jean Rice
Historical Preservation

JR/s

VCEP PROJECT

APPENDIX E

Non-Internet Public

Michigan Tribal Consultations

Consultation Index

Huron-Potawatomi-Nottawaseppi Huron Band of Potawatomi

Huron-Potawatomi-Nottawaseppi Huron Band of Potawatomi. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to D. Jones (Huron-Potawatomi-Nottawaseppi Huron Band of Potawatomi).

Huron-Potawatomi-Nottawaseppi Huron Band of Potawatomi. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to D. Jones (Huron-Potawatomi-Nottawaseppi Huron Band of Potawatomi).

Pokagon Band of Potawatomi Indians

Pokagon Band of Potawatomi Indians. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to M. Parrish (Pokagon Band of Potawatomi Indians).

Pokagon Band of Potawatomi Indians. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to M. Parrish (Pokagon Band of Potawatomi Indians).

Match-e-be-nash-she-wish Band of Potawatomi Indians

Match-e-be-nash-she-wish Band of Potawatomi Indians. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to M. Tenebaum (Match-e-be-nash-she-wish Band of Potawatomi Indians).

Match-e-be-nash-she-wish Band of Potawatomi Indians. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to M. Tenebaum (Match-e-be-nash-she-wish Band of Potawatomi Indians).

Match-e-be-nash-she-wish Band of Potawatomi Indians. 2005. Email dated September 9, from M. Tenebaum (Match-e-be-nash-she-wish Band of Potawatomi Indians) to M. Hagebak (Natural Resource Group, Inc.).

Saginaw Chippewa Indian Tribe

Saginaw Chippewa Indian Tribe. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to S. Kniffer (Saginaw Chippewa Indian Tribe).

Saginaw Chippewa Indian Tribe. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to S. Kniffer (Saginaw Chippewa Indian Tribe).

Little River Band of Odawa Indians

Little River Band of Odawa Indians. 2005. Letter dated August 15, from P. Robblee (Natural Resource Group, Inc.) to F. Beaver (Little River Band of Odawa Indians).

Little River Band of Odawa Indians. 2005. Email dated September 9, from M. Hagebak (Natural Resource Group, Inc.) to F. Beaver (Little River Band of Odawa Indians).

Little River Band of Odawa Indians. 2005. Email dated September 12, from F. Beaver (Little River Band of Odawa Indians) to M. Hagebak (Natural Resource Group, Inc.).

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

David Jones
Environmental Director
Huron-Potawatomi-Nottawaseppi Huron Band of Potawatomi
2221 1 1/2 Mile Rd.
Fulton, MI 49052

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Calhoun and Macomb Counties, Michigan
Section 106 Consultation

Dear Mr. Jones:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in both Calhoun and Macomb Counties, Michigan. Each proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. Excerpts from 7.5' series U.S.G.S. topographic quadrangles depicting the location of the proposed compressor stations are enclosed. Vector plans to begin construction of the compressor stations during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and it is subject to review under Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470). Vector is contacting you as a designated non-Federal representative for the FERC.

To assist the FERC in meeting its obligations under the NHPA, Vector retained Commonwealth Cultural Resources Group, Inc. (CCRG) of Jackson, Michigan to conduct a field survey and compile an inventory of archaeological sites and other historic resources within its project area. The investigation was conducted in August of 2005. No cultural resources were identified as a result of this survey.

If you have any concerns regarding the Vector Compressor Station Expansion Project and its potential to affect traditional cultural properties or historic properties, please contact me by telephone at 612-359-5671, by email at pprobblee@nrginc.com, or by letter at the address listed above.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

Sincerely,

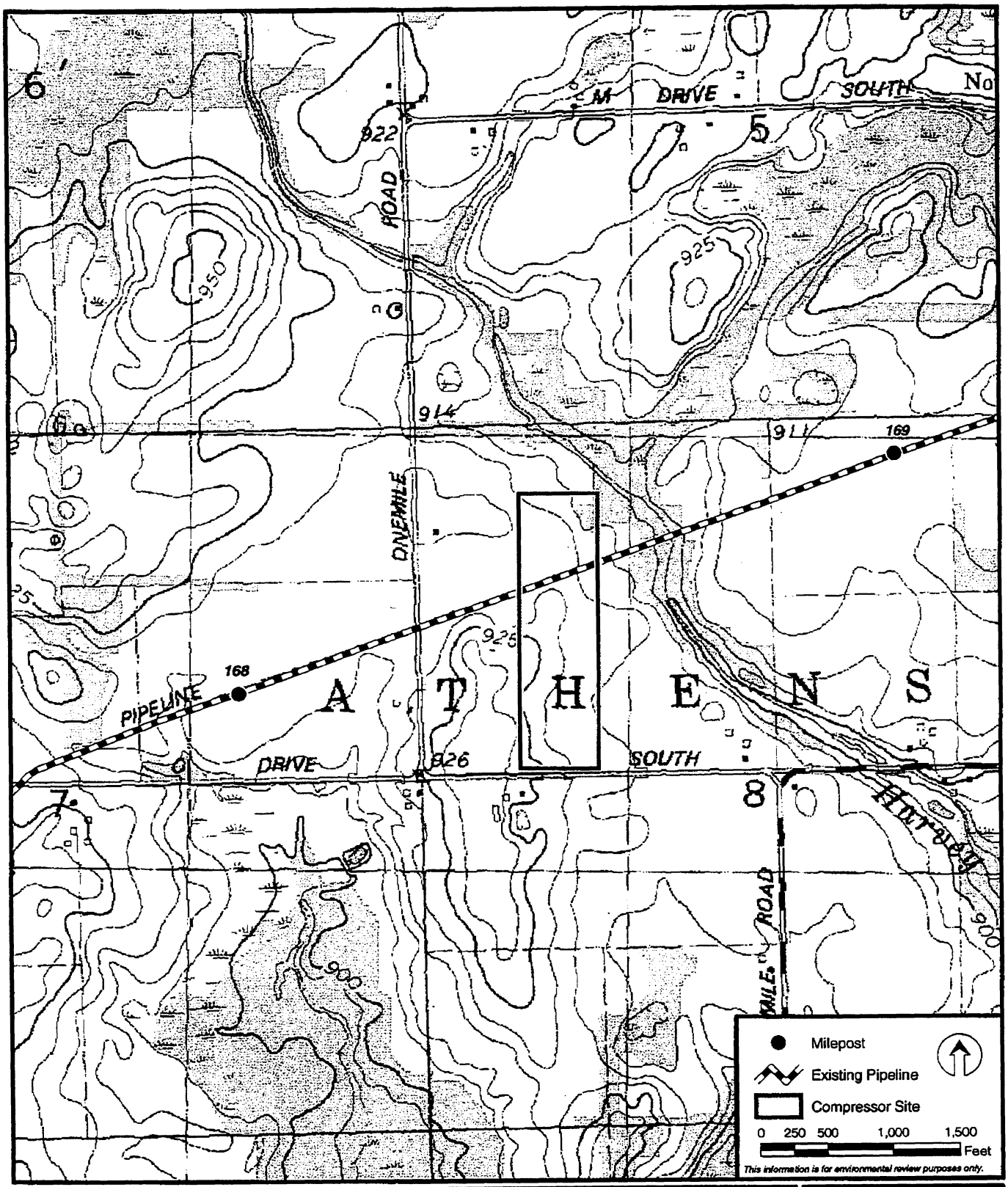
Natural Resource Group, Inc.

Patricia A. Robblee

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangles

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



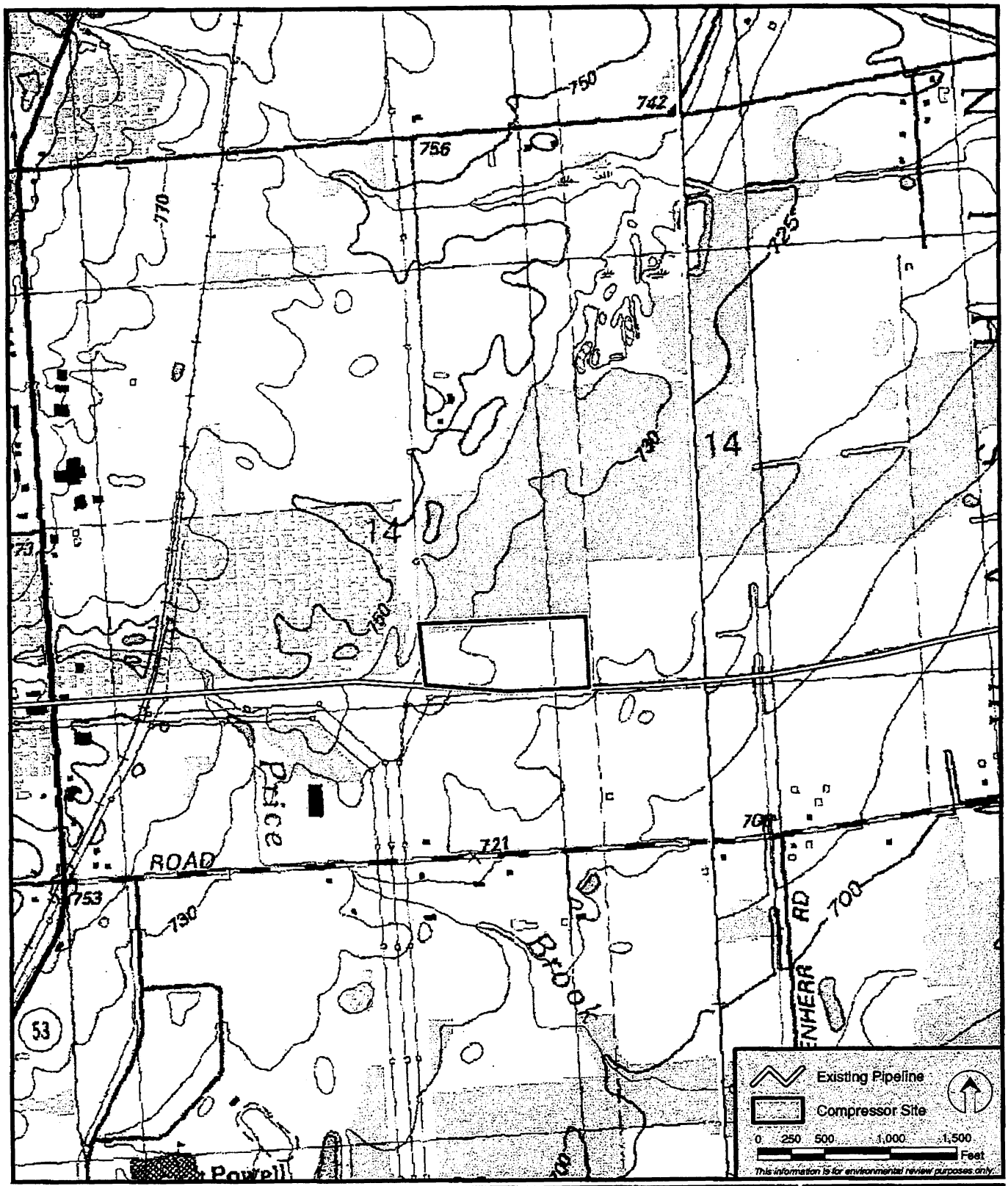
Vector Pipeline

Vector Compressor Station Expansion Project

Calhoun County Site

DATE: 08/28/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:RSMcGREGOR
M:\Clients\EEL\VCSP_ArcGIS\2004\08\Waterbodies_EEL_VSX_Wel_CF_Topo.mxd

NON-INTERNET PUBLIC



Vector Pipeline

Vector Compressor Station Expansion Project
Macomb County Site

DATE: 09/22/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\EEL\VCSP_ArcGIS\2004\09\VCSP_Expansion\Ray_Comp_St

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Sent To: David Jones/Huron-Potawatomi-Nottawaseppi
Street, Apt. No.; or PO Box No.: 2221 1½ Mile Rd
City, State, ZIP+4: Fulton, MI 49052

PS Form 3800, June 2002 — See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

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1. Article Addressed to:
David Jones
Environmental Director
Huron-Potawatomi-Nottawaseppi
Huron Band of Potawatomi
2221 1½ Mile Rd
Fulton, MI 49052

COMPLETE THIS SECTION ON DELIVERY

A. Signature: X Bron Willavize ☐ Agent ☐ Addressee
B. Received by (Printed Name): Bron Willavize
C. Date of Delivery: 8/22/05
D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number (Transfer from service label): 7004 2510 0005 4388 4939

PS Form 3811, February 2004 — Domestic Return Receipt — 102595-02-M-1540

NON-INTERNET PUBLIC

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 12:20 PM
To: 'davidjones@voyager.net'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Dear Mr. Jones:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to you regarding the proposed Vector Pipeline (Vector) Compressor Expansion Project in Calhoun and Macomb Counties, Michigan. Since that time, Vector has eliminated the Calhoun County portion of the project. The project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and is subject to review under Section 106 of the National Historic Preservation Act. Accordingly, Vector is working to document cultural resources that may be affected by this project. As part of that process, Vector is consulting with federally recognized tribes historically known to have occupied the project area.

For this project, Vector proposes to construct an aboveground compressor station along its existing pipeline corridor in Macomb County. The station would measure approximately 25 acres in size and include an access road, compressor building and a compressor unit. Excerpts from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station were included with our August 15 letter. Vector conducted an archaeological survey of the project area, and no sites were discovered.

The purpose of our August 15 letter was to invite your comments regarding the potential of this project to cause effects to significant historic or cultural properties. I am writing to you today to confirm that you received our letter and to enquire whether you require additional information and/or have comments on this project. Your response to this inquiry is greatly appreciated.

Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From:	Mail Delivery System
To:	Monika Hagebak;
CC:	
Subject:	Successful Mail Delivery Report
Date:	Friday, September 09, 2005 12:20:23 PM
Attachments:	Delivery report.txt Message Headers.txt

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The Postfix program

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1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Mike Parrish
Environmental Coordinator
Pokagon Band of Potawatomi Indians
901 Spruce St., P.O. Box 180
Dowagiac, MI 49047

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Calhoun and Macomb Counties, Michigan
Section 106 Consultation

Dear Mr. Parrish:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in both Calhoun and Macomb Counties, Michigan. Each proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. Excerpts from 7.5' series U.S.G.S. topographic quadrangles depicting the location of the proposed compressor stations are enclosed. Vector plans to begin construction of the compressor stations during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and it is subject to review under Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470). Vector is contacting you as a designated non-Federal representative for the FERC.

To assist the FERC in meeting its obligations under the NHPA, Vector retained Commonwealth Cultural Resources Group, Inc. (CCRG) of Jackson, Michigan to conduct a field survey and compile an inventory of archaeological sites and other historic resources within its project area. The investigation was conducted in August of 2005. No cultural resources were identified as a result of this survey.

If you have any concerns regarding the Vector Compressor Station Expansion Project and its potential to affect traditional cultural properties or historic properties, please contact me by telephone at 612-359-5671, by email at pprobblee@nrginc.com, or by letter at the address listed above.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

Sincerely,

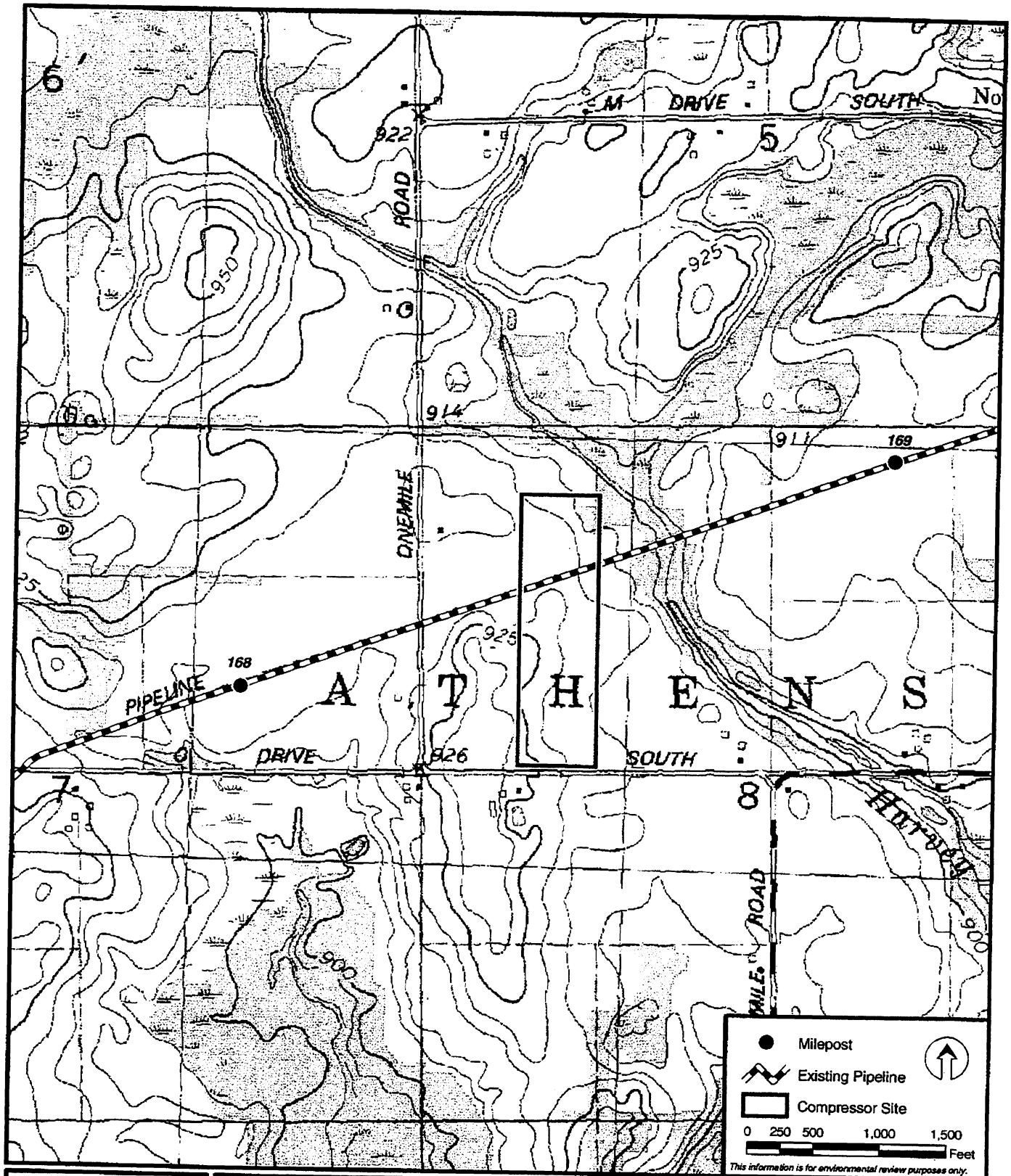
Natural Resource Group, Inc.

Patrick D. Robblee

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangles

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project

Calhoun County Site

DATE: 08/28/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:RSMcGREGOR
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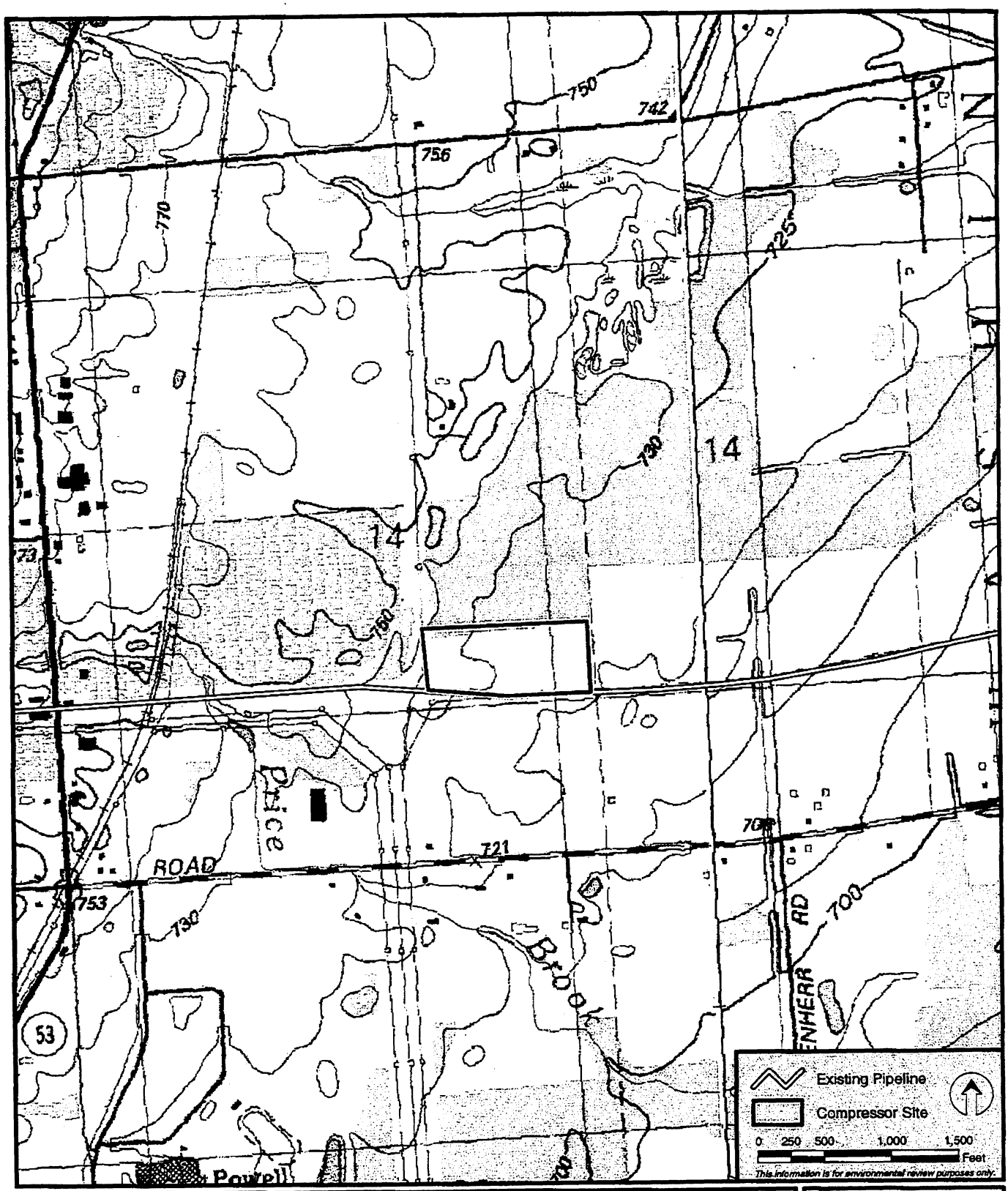
NON-INTERNET PUBLIC



Vector Pipeline

Vector Compressor Station Expansion Project
Macomb County Site

DATE: 09/22/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\EEL\VCSP_ArcGIS\2004\09\VCSP_Expansion\Ray_Comp_St

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Total Postage & Fees	$

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Sent To: Mike Parrish/Pokagon Band of Potawatomi
Street, Apt. No.; or PO Box No. 901 Spruce St, PO Box 180
City, State, ZIP+4 Dowagiac, MI 49047

PS Form 3800, June 2002 — See Reverse for Instructions

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1. Article Addressed to:

Mike Parrish
Environmental Coordinator
Pokagon Band of Potawatomi Indians
901 Spruce St.
P.O. Box 180
Dowagiac, MI 49047

COMPLETE THIS SECTION ON DELIVERY

A. Signature — X Beth Huston — ☐ Agent ☐ Addressee

B. Received by (Printed Name) Beth Huston — C. Date of Delivery 8/18/05

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
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☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7004 2510 0005 4388 4892

PS Form 3811, February 2004 — Domestic Return Receipt — 102595-02-M-1540

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 12:25 PM
To: 'mparrish@pokagon.com'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Dear Mr. Parrish:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to you regarding the proposed Vector Pipeline (Vector) Compressor Expansion Project in Calhoun and Macomb Counties, Michigan. Since that time, Vector has eliminated the Calhoun County portion of the project. The project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and is subject to review under Section 106 of the National Historic Preservation Act. Accordingly, Vector is working to document cultural resources that may be affected by this project. As part of that process, Vector is consulting with federally recognized tribes historically known to have occupied the project area.

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Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From: ExchangePostmaster
To: Monika Hagebak;
CC:
Subject: Delivery Status Notification (Relay)
Date: Friday, September 09, 2005 12:26:02 PM
Attachments: ATT3033601.txt
Vector Pipeline Compressor Expansion Project

This is an automatically generated Delivery Status Notification.

Your message has been successfully relayed to the following recipients, but the requested delivery status notifications may not be generated by the destination.

mparrish@pokagon.com

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Mike Tenebaum
Environmental Coordinator
Match-e-be-nash-she-wish Band of Potawatomi Indians in Michigan
P.O. Box 218, 1743 142nd Ave.
Dorr, MI 49323

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Calhoun and Macomb Counties, Michigan
Section 106 Consultation

Dear Mr. Tenebaum:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in both Calhoun and Macomb Counties, Michigan. Each proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. Excerpts from 7.5' series U.S.G.S. topographic quadrangles depicting the location of the proposed compressor stations are enclosed. Vector plans to begin construction of the compressor stations during the summer of 2006.

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Sincerely,

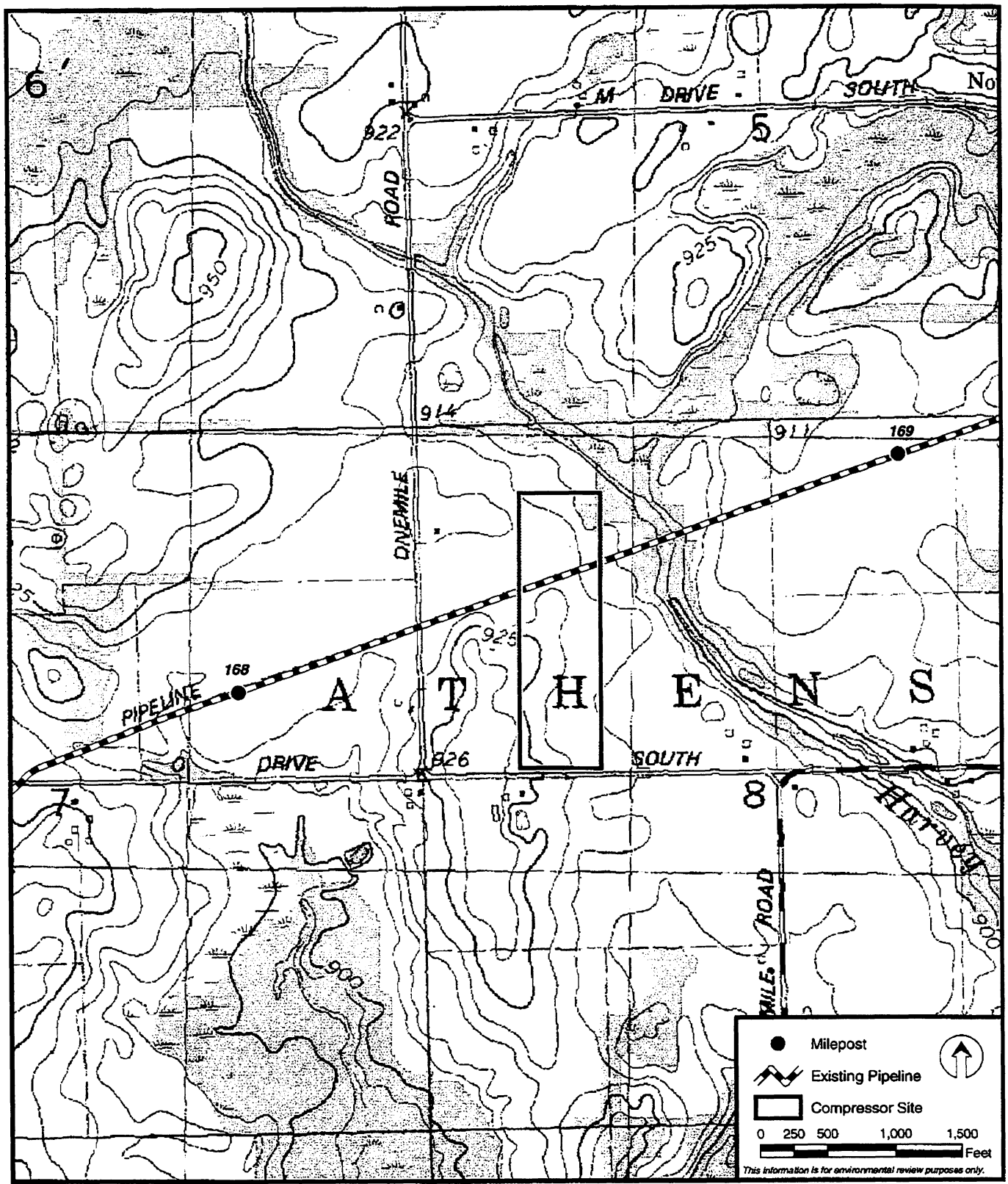
Natural Resource Group, Inc.

Patrick O. Robblee

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangles

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project
Calhoun County Site

DATE: 08/28/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:RSMcGREGOR
M:\Clients\EEI\VCSP_ArcGIS\2004\08\Waterbodies_EEI_VSX_Wet_CF_Topo.mxd

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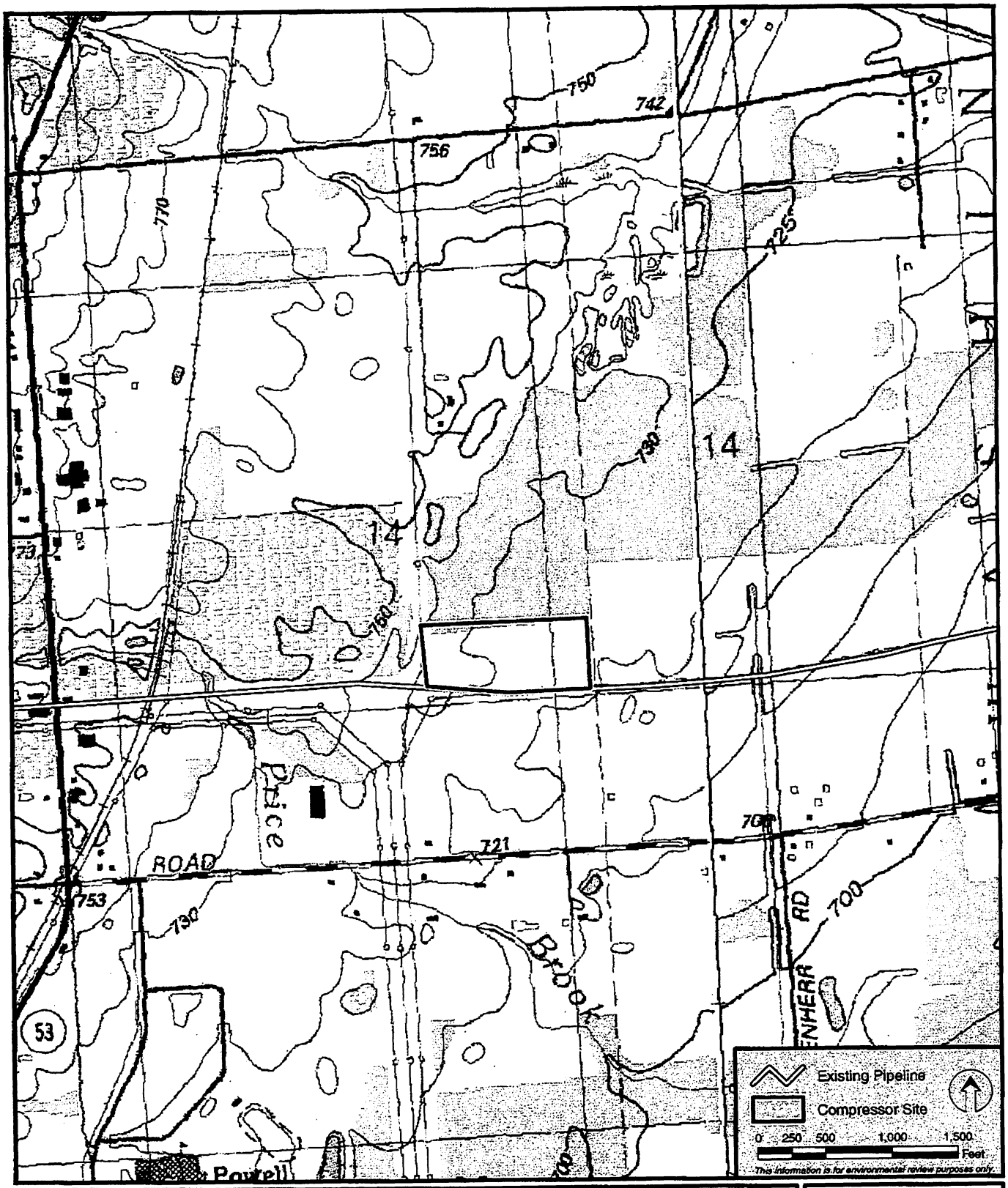

Vector Pipeline

Vector Compressor Station Expansion Project
Macomb County Site

DATE: 09/22/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
M:\Clients\EEL\VCSP_ArcGIS\2004\09\VCSP_Expansion\Ray_Comp_St

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Sent To: Mike Tenebaum/Match-e-be-nash-she-wish Band
Street, Apt. No.; or PO Box No. PO Box 218, 1743 142nd Ave
City, State, ZIP+4 Dorr, MI 49323

PS Form 3800, June 2002 — See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

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1. Article Addressed to:

Mike Tenebaum
Environmental Coordinator
Match-e-be-nash-she-wish Band of Potawatomi Indians in Michigan
P.O. Box 218
1743 142nd Ave.
Dorr, MI 49323

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) P.L. Spruce C. Date of Delivery 8/19/05

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
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☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7004 2510 0005 4388 4915

PS Form 3811, February 2004 — Domestic Return Receipt — 102595-02-M-1540

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 1:03 PM
To: 'mbtenenbaum@mbpi.org'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Dear Mr. Tenenbaum:

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Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From:
To:
CC:
Subject:
Date: Friday, September 09, 2005 1:12:32 PM
Attachments:

----IMA7c4d0ce.4321/mail.mbpi.org
Content-Type: text/plain; charset=us-ascii

Message delivered successfully to mbtenenbaum@mail.mbpi.org

----IMA7c4d0ce.4321/mail.mbpi.org
Content-Type: message/delivery-status

Reporting-MTA: mail.mbpi.org
Final-Recipient: rfc8222;mbtenenbaum@mail.mbpi.org
Action: delivered
Status: 2.0.0

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Content-Type: message/rfc822

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Content-class: urn:content-classes:message
Return-Receipt-To: "Monika Hagebak" <mrhagebak@nrginc.com>
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Disposition-Notification-To: "Monika Hagebak" <mrhagebak@nrginc.com>
Subject: Vector Pipeline Compressor Expansion Project
Date: Fri, 9 Sep 2005 13:03:24 -0500
Message-ID: <2DD37692002B454192EE2645C7C7BC0801A0A07A@MSPSRV04.
nrginc.com>
X-MS-Has-Attach: yes
X-MS-TNEF-Correlator:

Thread-Topic: Vector Pipeline Compressor Expansion Project
Thread-Index: AcW1aMX3fTjY0ta+QK6CKTN3KpwM2w==
From: "Monika Hagebak" <mrhagebak@nrginc.com>
To: <mbtenenbaum@mbpi.org>
Cc: "Patrick Robblee" <PPRobblee@nrginc.com>
X-Declude-Sender: mrhagebak@nrginc.com [65.166.10.206]
X-Declude-Spoolname: Dd0ca080c018c371e.SMD
X-Note: This E-mail was scanned by DCC JunkMail (www.dataconstructs.com) for spam.
X-Spam-Tests-Failed: HELOBOGUS, IPNOTINMX [6]
X-Note: This E-mail was sent from 206.10.166.65.in-addr.arpa ([65.166.10.206]).

----IMA7c4d0ce.4321/mail.mbpi.org--

From: Mike Tenenbaum
To: Monika Hagebak;
CC:
Subject: RE: Vector Pipeline Compressor Expansion Project
Date: Friday, September 09, 2005 2:11:34 PM
Attachments:

Ms. Hagebak:
Thank you for your recent communication. We did in fat receive the earlier materials referred to in your email. If we understand the most recent email, "....
Vector has eliminated the Calhoun County portion of the project."

In view of this latest information, we do not believe there are current or historic interests in Macomb County to be impacted by the proposed Vector activities. Should Vector alter plans once again to include activities in Calhoun or *any* of the southwest Michigan counties, we ask that you please do make contact with us at your earliest opportunity.

Again, we thank you for your request on these current issues and look forward to being of assistance to you in the future.
Sincerely,
Mike

Michael Tenenbaum
Environmental Coordinator
Gun Lake Tribe
1743 142nd Ave. P. O. Box 218
Dorr, MI 49323
(616) 681-8830 (phn)
(616) 681-8836 (FAX)
mbtenenbaum@mbpi.org

-----Original Message-----
From: Monika Hagebak [mailto:mrhagebak@nrginc.com]
Sent: Friday, September 09, 2005 2:03 PM
To: mbtenenbaum@mbpi.org
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Sally Kniffer
Environmental Specialist
Saginaw Chippewa Indian Tribe
7070 E. Broadway
Mt. Pleasant, MI 48858

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Calhoun and Macomb Counties, Michigan
Section 106 Consultation

Dear Ms. Kniffer:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in both Calhoun and Macomb Counties, Michigan. Each proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. Excerpts from 7.5' series U.S.G.S. topographic quadrangles depicting the location of the proposed compressor stations are enclosed. Vector plans to begin construction of the compressor stations during the summer of 2006.

Vector's project is regulated by the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act (15 USC 717), and it is subject to review under Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470). Vector is contacting you as a designated non-Federal representative for the FERC.

To assist the FERC in meeting its obligations under the NHPA, Vector retained Commonwealth Cultural Resources Group, Inc. (CCRG) of Jackson, Michigan to conduct a field survey and compile an inventory of archaeological sites and other historic resources within its project area. The investigation was conducted in August of 2005. No cultural resources were identified as a result of this survey.

If you have any concerns regarding the Vector Compressor Station Expansion Project and its potential to affect traditional cultural properties or historic properties, please contact me by telephone at 612-359-5671, by email at pprobblee@nrginc.com, or by letter at the address listed above.

Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

Sincerely,

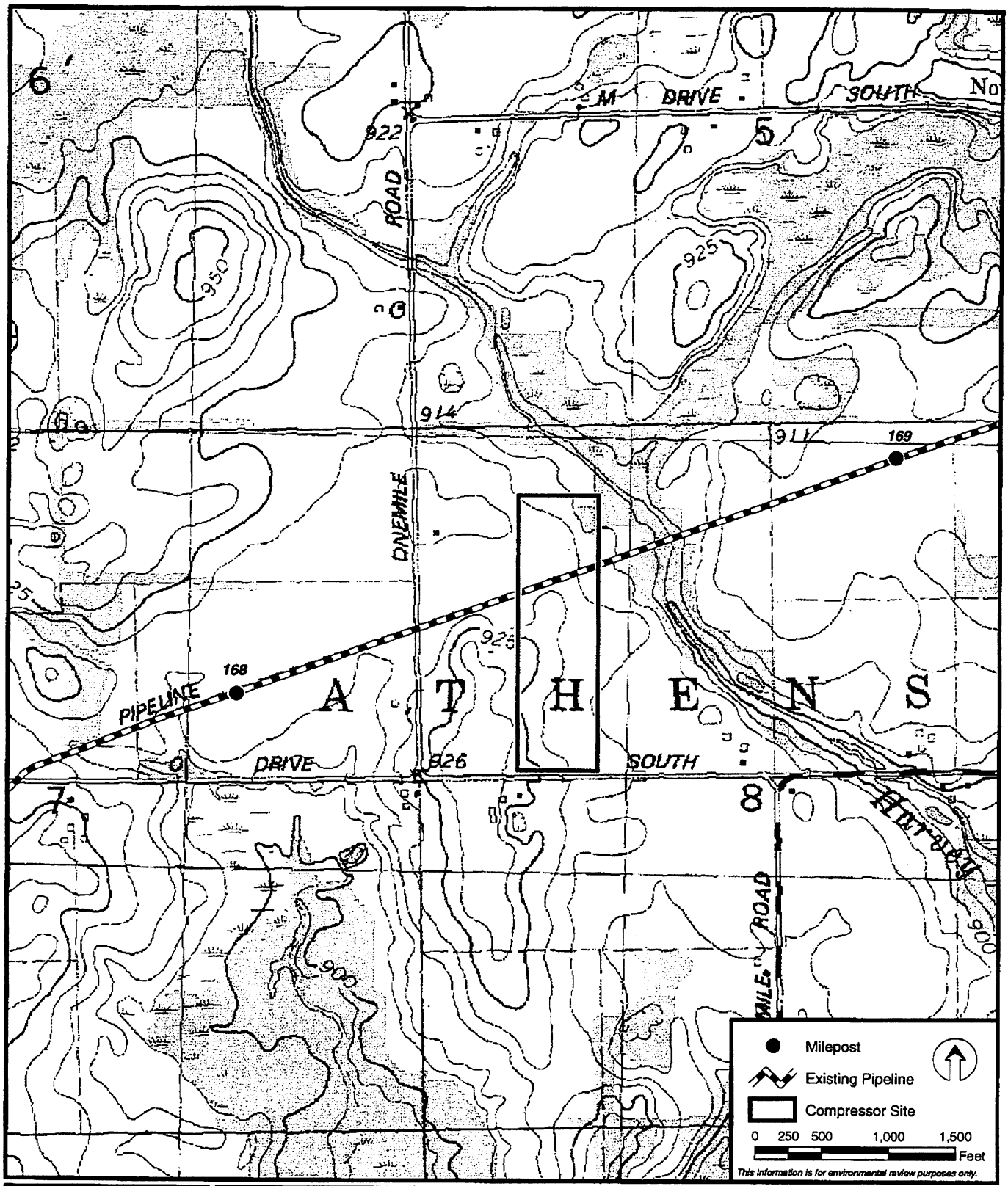
Natural Resource Group, Inc.

Patrick P. Robblee

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangles

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project

Calhoun County Site

DATE: 08/28/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:RSMcGREGOR
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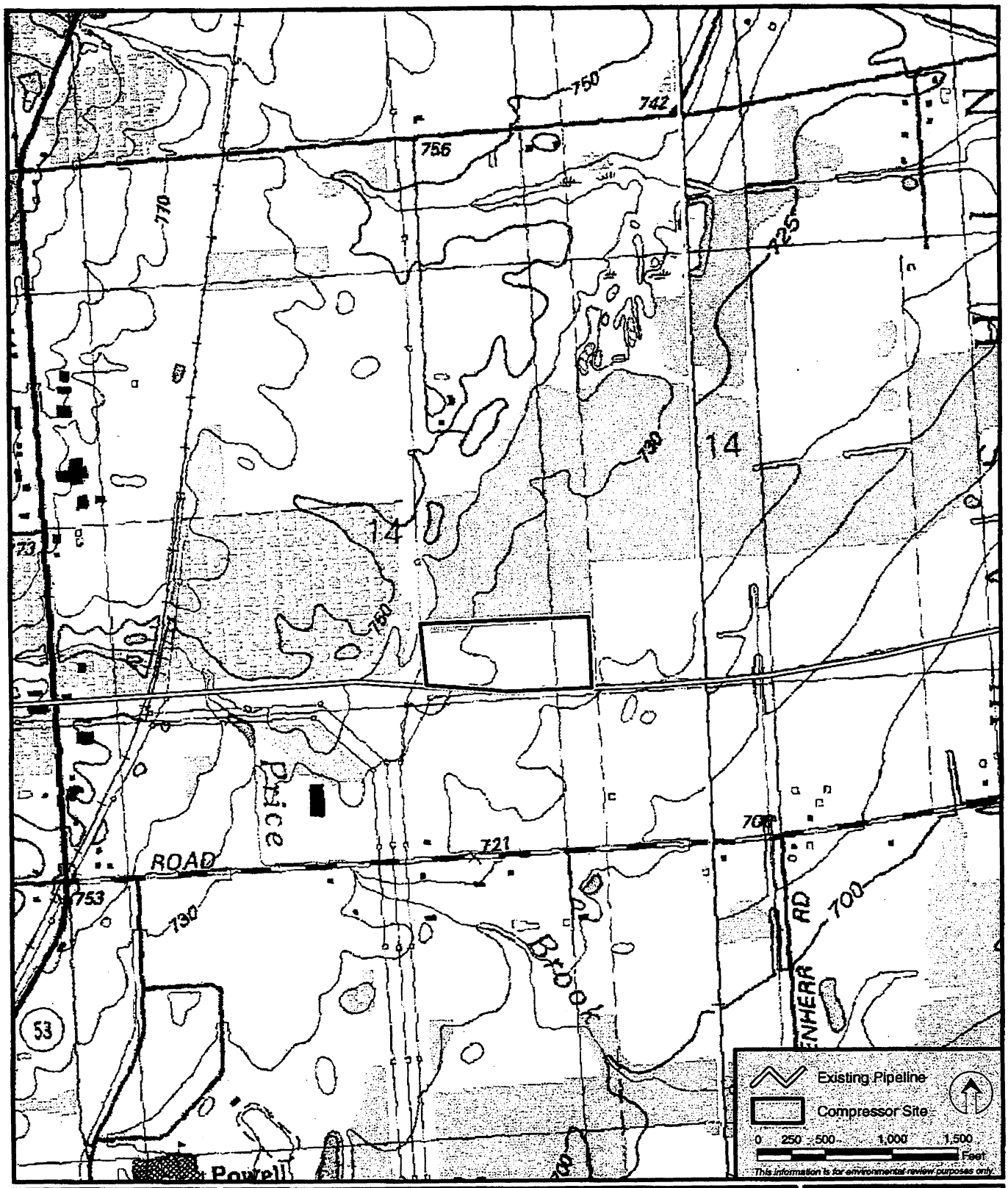
NON-INTERNET PUBLIC



Vector Pipeline

Vector Compressor Station Expansion Project

Macomb County Site

DATE: 09/22/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
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Sent To: Sally Knifter/Saginaw Chippewa Indian Tribe
Street, Apt. No.; or PO Box No. 7070 E. Broadway
City, State, ZIP+4 Mt Pleasant, MI 48858

PS Form 3800, June 2002 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Sally Knifter
Environmental Specialist
Saginaw Chippewa Indian Tribe
7070 E. Broadway
Mt. Pleasant, MI 48858

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X Robynn Mashka ☐ Agent ☐ Addressee

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C. Date of Delivery 8-17

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2. Article Number (Transfer from service label) 7004 2510 0005 4388 4922

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 12:57 PM
To: 'skniffen@sagchip.org'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Dear Ms. Kniffer:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to you regarding the proposed Vector Pipeline (Vector) Compressor Expansion Project in Calhoun and Macomb Counties, Michigan. Since that time, Vector has eliminated the Calhoun County portion of the project. The project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and is subject to review under Section 106 of the National Historic Preservation Act. Accordingly, Vector is working to document cultural resources that may be affected by this project. As part of that process, Vector is consulting with federally recognized tribes historically known to have occupied the project area.

For this project, Vector proposes to construct an aboveground compressor station along its existing pipeline corridor in Macomb County. The station would measure approximately 25 acres in size and include an access road, compressor building and a compressor unit. Excerpts from a 7.5' series U.S.G.S. topographic quadrangle depicting the location of the proposed compressor station were included with our August 15 letter. Vector conducted an archaeological survey of the project area, and no sites were discovered.

The purpose of our August 15 letter was to invite your comments regarding the potential of this project to cause effects to significant historic or cultural properties. I am writing to you today to confirm that you received our letter and to enquire whether you require additional information and/or have comments on this project. Your response to this inquiry is greatly appreciated.

Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From: Sally Kniffen
To: Monika Hagebak;
CC:
Subject: Read: Vector Pipeline Compressor Expansion Project
Date: Monday, September 12, 2005 8:29:13 AM
Attachments:

1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

NATURAL RESOURCE GROUP, INC.

telephone 612.347.6789
facsimile 612.347.6780
www.NRGINC.com

August 15, 2005

Frank Beaver
Environmental Coordinator
Little River Band of Odawa Indians
375 River St.
Manistee, MI 49660

RE: Vector Pipeline; Vector Compressor Station Expansion Project
Calhoun and Macomb Counties, Michigan
Section 106 Consultation

Dear Mr. Beaver:

Vector Pipeline (Vector) is proposing to expand the transmission capacity of its existing 42-inch-diameter natural gas pipeline between Joliet, Illinois and Sarnia, Ontario. The project, referred to as the Vector Compressor Station Expansion Project, will involve constructing a compressor station in both Calhoun and Macomb Counties, Michigan. Each proposed compressor station will be approximately 25 acres in size and will include an access road, compressor building, and a 15,000 horsepower Solar Mars compressor unit. Excerpts from 7.5' series U.S.G.S. topographic quadrangles depicting the location of the proposed compressor stations are enclosed. Vector plans to begin construction of the compressor stations during the summer of 2006.

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Thank you for your assistance with this project. I look forward to hearing from you. If you have any questions or require further information regarding this project, please do not hesitate to contact me.

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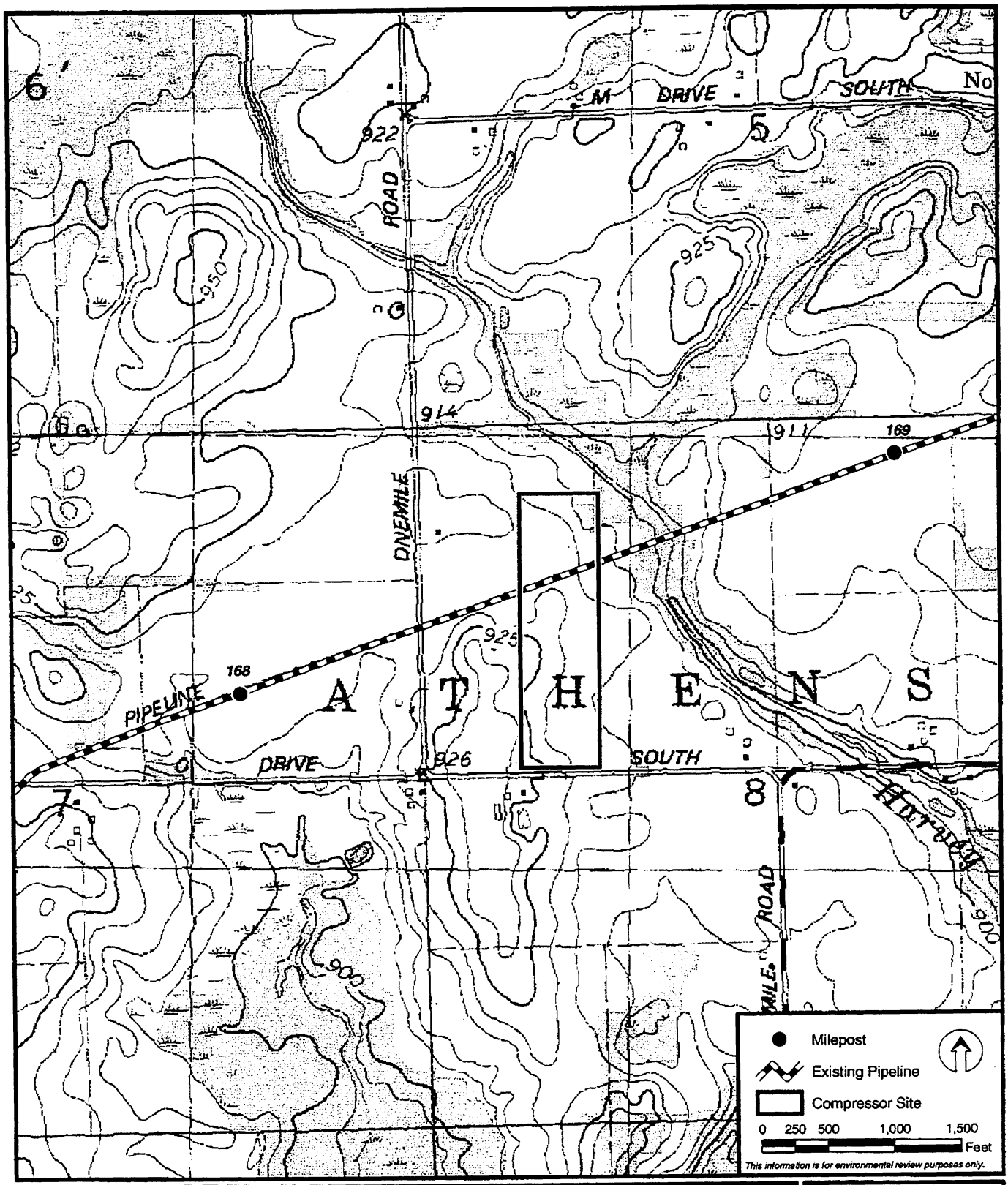
Natural Resource Group, Inc.

Pat Robblee
Cultural Resources Specialist

Enclosure: Topographic quadrangles

cc: Paul Meneghini, Vector Pipeline
Bart Jensen, Natural Resource Group, Inc.



Vector Pipeline

Vector Compressor Station Expansion Project

Calhoun County Site

DATE: 08/28/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:RSMcGREGOR
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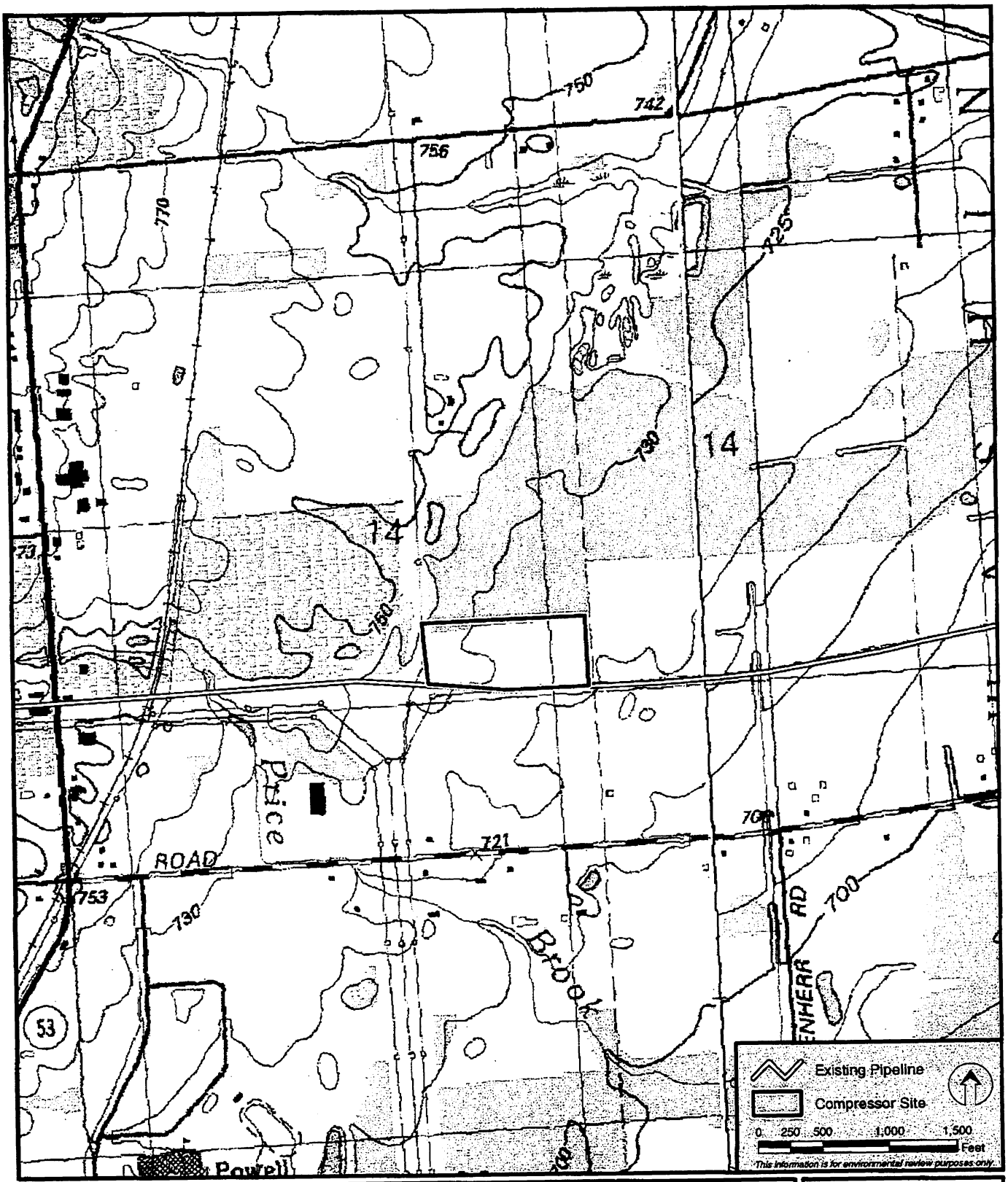

Vector Pipeline

Vector Compressor Station Expansion Project
Macomb County Site

DATE: 09/22/04
REVISED: 08/12/05
SCALE: 1:12,000
DRAWN BY:KJANDERSON
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NON-INTERNET PUBLIC

Monika Hagebak

From: Monika Hagebak
Sent: Friday, September 09, 2005 1:34 PM
To: 'fbeaver@lrboi.com'
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Dear Mr. Beaver:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to you regarding the proposed Vector Pipeline (Vector) Compressor Expansion Project in Calhoun and Macomb Counties, Michigan. Since that time, Vector has eliminated the Calhoun County portion of the project. The project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and is subject to review under Section 106 of the National Historic Preservation Act. Accordingly, Vector is working to document cultural resources that may be affected by this project. As part of that process, Vector is consulting with federally recognized tribes historically known to have occupied the project area.

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The purpose of our August 15 letter was to invite your comments regarding the potential of this project to cause effects to significant historic or cultural properties. I am writing to you today to confirm that you received our letter and to enquire whether you require additional information and/or have comments on this project. Your response to this inquiry is greatly appreciated.

Thank you,
Monika Hagebak

NRG Logo

Monika Hagebak
mrhagebak@nrginc.com
612.337.3350 Direct
612.347.6780 Fax

From: postmaster@lrboi.com
To: Monika Hagebak;
CC:
Subject: Delivery Status Notification (Success)
Date: Friday, September 09, 2005 1:33:54 PM
Attachments: ATT3035226.txt
Vector Pipeline Compressor Expansion Project

Your message

To: fbeaver@lrboi.com
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project
Sent: Fri, 9 Sep 2005 14:33:47 -0400

was delivered to the following recipient(s):

Frank Beaver on Fri, 9 Sep 2005 14:34:38 -0400
<mail.lrboi.com #2.0.0>

From: Frank Beaver
To: Monika Hagebak;
CC: Bill Brooks; Jay Sam;
Subject: RE: Vector Pipeline Compressor Expansion Project
Date: Monday, September 12, 2005 9:26:34 AM
Attachments:

Monika,

Thank you for the follow-up email to the August 15th letter requesting comments on the Vector Pipeline Compressor Expansion project. I received the letter and forwarded a copy of it to our Tribal Cultural Resources Director. He reviewed the project description, and determined that he had no comment on the project as presented.

The Little River Band of Ottawa Indians takes the protection of its cultural and historic resources very seriously, and appreciates the proactive efforts of the Natural Resource Group, Inc, in soliciting comments under Section 106 of the National Historic Preservation Act.

If you have any questions, please feel free to contact me.

-Frank-

W. Frank Beaver
Environmental Planner
Little River Band of Ottawa Indians
375 River Street
Manistee, MI 49660

-----Original Message-----
From: Monika Hagebak [mailto:mrhagebak@nrginc.com]
Sent: Friday, September 09, 2005 2:34 PM
To: Frank Beaver
Cc: Patrick Robblee
Subject: Vector Pipeline Compressor Expansion Project

Dear Mr. Beaver:

On August 15, 2005, Natural Resource Group, Inc. (NRG) wrote to

Vector Compression Expansion Project

Appendix F
Air Dispersion Modeling Analysis

NON-INTERNET PUBLIC

Air Dispersion Modeling Analysis

Vector Pipeline L.P.

Joliet Compressor Station, IL
Romeo Compressor Station, MI

Prepared for:
Vector Pipeline L.P.
119 N 25th Street East
Superior, WI 54880-5427

Prepared by:
Natural Resource Group, Inc.
1000 IDS Center
80 South Eighth Street
Minneapolis, Minnesota 55402

November 2005

Project No. *EEL 2005-140*

Vector Pipeline

NATURAL RESOURCE GROUP, INC.

NON-INTERNET PUBLIC

Dispersion Modeling Analysis

Vector Pipeline L.P.

Joliet Compressor Station, IL
Romeo Compressor Station, MI

Prepared for:

Vector Pipeline L.P.
119 N 25th Street East
Superior, WI 54880-5427

Prepared by:

Natural Resource Group, Inc.
1000 IDS Center
80 South Eighth Street
Minneapolis, Minnesota 55402

November 2005

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Natural Resource Group, Inc. (NRG) has performed an air dispersion modeling analysis for the Vector Pipeline L.P. proposed compressor stations located in Joliet, Illinois and Romeo, Michigan. The analysis has been completed using the United States Environmental Protection Agency's (USEPA's) Industrial Source Complex Short-Term Version 3 (ISCST3) with Plume Rise Model Enhancements (PRIME) model. ISCST3 is a steady-state Gaussian plume model recommended by the USEPA for assessing pollutant impacts from facilities with emission points influenced by building downwash, such as the noted compressor stations.

The results of this dispersion modeling analysis indicate that the two compressor stations will not cause or significantly contribute to a violation of the National Ambient Air Quality Standards (NAAQS). The ambient air impacts resulting from the proposed stations have been assessed for carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter less than 10 microns in diameter (PM_{10}). The results of the two dispersion modeling analyses performed are summarized in the following tables.

Summary of Dispersion Modeling Analyses Results

Pollutant	Averaging Period	Year*	Modeled Ambient Concentration* ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
Joliet Compressor Station						
PM_{10}	Annual	1987	0.4	27	27.4	50
	24-Hour	5 yr set	16.2	76	92.2	150
SO_2	Annual	1987	3.0	10.6	13.6	80
	24-Hour	1987	63.8	37.3	101.1	365
	3-Hour	1987	85.3	106.5	191.8	1,300
NO_x**	Annual	1987	5.5	51.6	57.1	100
CO	8-Hour	1987	4,014.7	3,026.6	7,041.3	10,000
	1-Hour	1987	5,234.6	4,772.8	10,007.4	40,000
Romeo Compressor Station						
PM_{10}	Annual	1990	1.1	35.0	36.1	50
	24-Hour	5 yr set	7.5	96.0	103.5	150
SO_2	Annual	1990	9.8	10.6	20.4	80
	24-Hour	1988	64.4	58.5	122.9	365
	3-Hour	1990	80.7	133.0	213.7	1,300
NO_x**	Annual	1990	13.2	36.2	49.4	100
CO	8-Hour	1988	4,220.0	2,668.0	6,888.0	10,000
	1-Hour	1988	5,829.8	4,292.0	10,121.8	40,000

* Year and concentration shown is worst case scenario
** Assumes 100% conversion from NOx to NO_2 for comparison to NO_2 standard

Based on the results shown above, the proposed compressor stations will not cause or significantly contribute to a violation of the PM_{10}, CO, SO_2 or NO_2 NAAQS.

1 INTRODUCTION

Natural Resource Group, Inc. (NRG) has performed an air dispersion modeling analysis for the Vector Pipeline L.P. proposed compressor stations located in Joliet, Illinois and Romeo, Michigan. The analysis has been completed using the United States Environmental Protection Agency's (USEPA's) Industrial Source Complex Short-Term Version 3 (ISCST3) with Plume Rise Model Enhancements (PRIME) model. ISCST3 is a steady-state Gaussian plume model recommended by the USEPA for assessing pollutant impacts from facilities with emission points influenced by building downwash, such as the noted compressor stations.

2 FACILITY EMISSION SOURCES

2.1 Potential Emissions

Air pollutant emissions from the facility are generated by combustion from gas turbines and emergency generators. The primary pollutants emitted will be PM/PM_{10}, NO_x, VOC, SO_2, and CO. A summary of the potential emissions from the stations are presented in Appendix A.

2.2 Source Types and Parameters

There are several types of emission sources that can be modeled in ISCST3. These source types include point sources, area sources, and volume sources. The compressor stations' sources include conventional point sources only.

Each source of emissions has several parameters that are required for the dispersion modeling analysis. The parameters for the point sources included in this analysis are presented in Appendix A.

3 MODELING METHODOLOGY

USEPA's ISCST3 PRIME model was used to estimate the potential air quality impacts of the proposed compressor stations. ISCST3 is a steady-state Gaussian plume model recommended by the USEPA for assessing pollutant impacts from facilities with emission points influenced by building downwash, such as the compressor stations. When conducting a comprehensive NAAQS compliance demonstration, existing background air quality data is combined with modeled impacts and compared against the applicable standard.

3.1 Modeling Applicability

Air dispersion modeling has been performed for the potential NO_x, CO, SO_2 and PM_{10} emissions from the compressor stations to compare with applicable short-term and annual modeling significance levels and NAAQS.

3.2 Significance Modeling

To determine whether emissions of a pollutant are required to be modeled for comparison with the ambient air standards (refined modeling analysis), it must be determined if the emissions have a significant impact on ambient air quality. Receptor grids used for determining significance are the same as those used in the refined modeling analysis (see Section 3.6). If the maximum modeled off-site concentration is greater than the modeling significance level (MSL), the source impact is considered significant and a refined modeling analysis must be performed. The MSLs are listed below in Table 3.1.

Table 3.1. Modeling Significance Levels

Pollutant	Modeling Significance Level (ug/m^3)				
	Annual	24-hour	8-hour	3-hour	1-hour
PM_{10}	1	5			
SO_2	1	5		25	
NO_2	1				
CO			500		2,000

3.3 Refined Modeling Analysis

Pollutant emissions for which the proposed facility or modification is considered to have a significant impact on air quality, must demonstrate that the proposed facility will not cause or significantly contribute to a violation of the ambient air quality standards. For major PSD sources, the refined modeling analysis must demonstrate compliance with the NAAQS and PSD increments. For non-PSD major sources, the refined modeling analysis must demonstrate compliance with the NAAQS.

The NAAQS were established by the USEPA under the authority of the Clean Air Act. Primary NAAQS define levels of air quality that the USEPA deems necessary to protect public health. Secondary NAAQS define levels of air quality that the EPA judges necessary to protect public welfare from any known, or anticipated adverse effects of a pollutant. Examples of the public welfare that are protected by the

secondary NAAQS include wildlife, buildings, national monuments, vegetation, visibility, and property values. The USEPA has NAAQS for six criteria pollutants: PM_{10}, SO_2, NO_2, CO, ozone, and lead. The USEPA is currently working to implement a NAAQS for particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$). Tables 3.2 and 3.3 list the NAAQS as well as the compliance demonstration method for the pollutants included in this analysis.

Table 3.2. Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS ($\mu g/m^3$)
PM_{10}	Annual	50
	24-Hour	150
SO_2	Annual	80
	24-Hour	365
	3-Hour	1,300
NO_2	Annual	100
CO	8-Hour	10,000
	1-Hour	40,000

Table 3.3. NAAQS Compliance Method

Pollutant	Averaging Period	Compliance Method
PM_{10}	Annual	Maximum Annual Concentration for a Five-Year Period
	24-Hour	6th Highest Concentration for a Five-Year Period at a Given Location
SO_2	Annual	Maximum Annual Concentration
	24-Hour	2nd Highest Concentration at a Given Location
	3-Hour	2nd Highest Concentration at a Given Location
NO_2	Annual	Maximum Annual Concentration
CO	8-Hour	2nd Highest Concentration at a Given Location
	1-Hour	2nd Highest Concentration at a Given Location

3.4 Modeling Options

All regulatory default options are selected for the analysis. These options include:

- No gradual plume rise (except for building downwash)
- Stack tip downwash (does not affect building downwash calculations)
- Buoyancy induced dispersion (except for Schulman-Scire downwash)
- No missing data processing
- Calm wind data processing

- Upper bound concentration estimates for sources influenced by building downwash from super-squat buildings
- Default wind speed profile exponents
- Default vertical potential temperature gradients

Based on land use classifications from United States Geological Survey (USGS) topographical maps, the majority (*i.e.*, > 50%) of the land surrounding the proposed compressor stations can be classified as suburban or rural. Therefore, the rural dispersion coefficients are used.[1] Elevated terrain is used in the modeling analysis to accurately account for the mild geographical terrain features surrounding the proposed site. The terrain elevations are established using digital elevation model (DEM) files from the USGS. The files used for these modeling analyses are included in Appendix B.

3.5 Ambient Air (Fenceline) Boundary

The NAAQS apply to air that is considered ambient which is defined as air outside of buildings that is accessible by the public. In most cases, ambient air boundaries are delineated based on the location of a fence or other significant physical barrier that restricts public access.

The proposed compressor stations will have physical fence barriers that will represent the site boundary.

3.6 Receptor Grid

ISCST3 model concentrations may be estimated at discrete receptor locations. The discrete Cartesian receptor grid is designed to identify maximum predicted impacts due to the proposed facility. The following receptor systems are used:

- A fenceline receptor system with receptors at an interval of 10 meters;
- A fine Cartesian grid extending 1 kilometer from the site in every direction with receptors located at an interval distance of 100 meters; and
- A course Cartesian grid extending approximately 10 kilometers from the site with receptors located at an interval distance of 1 kilometer.

3.7 Meteorological Data

The dispersion modeling analysis is performed using five years (1987 – 1991) of meteorological data available from the EPA Support Center for Regulatory Air Models (SCRAM) web site. The data for Joliet and Romeo included five years of surface observations and five years upper air observations collected at the National Weather Service (NWS) station at Peroria, Illinois and Detroit, Michigan, respectively.

[1] Per 40 CFR 51 Appendix W "*Guideline on Air Quality Models*" Section 8.2.8, the urban/rural classification is determined based on the land use of the area in a 3 kilometer radius about the source.

3.8 Background Concentrations

The existing ambient air concentrations must be accounted for when demonstrating compliance with the NAAQS. The existing ambient air concentrations (often referred to as background concentrations) are often estimated using ambient air monitoring data from the air basin that the proposed site is located. This method of estimating the background concentration is conservative because it accounts for the existing air pollutant concentrations (including existing stationary source impacts). Therefore, refined modeling analyses that use the ambient air monitoring data as background concentrations are double counting the actual emissions from existing facilities. For this modeling analysis, the background concentrations are estimated based on data provided by the Illinois Environmental Protection Agency (IEPA) and the Michigan Department of Environmental Quality (MDEQ). [2] The background concentrations used in this modeling analysis are shown in Table 3.4.

Table 3.4. Background Concentrations
Will County, IL and Macomb County, MI

Pollutant	Averaging Period	Will County, IL ($\mu g/m^3$)	Macomb County, MI ($\mu g/m^3$)
PM_{10}	24-Hour	76	96.0
	Annual	27	35.0
SO_2	Annual	10.6	10.6
	24-Hour	37.3	58.5
	3-Hour	106.5	133.0
NO_2	Annual	51.6	36.2
CO	1-Hour	4,772.8	4,292.0
	8-Hour	3,026.6	2,668.0

3.9 Building Downwash

Emissions modeled from the compressor stations were evaluated to determine if the emissions plume may become entrained in turbulent wakes, thus resulting in potentially higher ambient air impacts. These wake effects, also known as downwash, are the result of air flowing around large buildings and structures creating areas, or "zones", of turbulent airflow.

The minimum stack height necessary to avoid downwash effects, known as Good Engineering Practice (GEP) stack height, is defined by the following equation.

$$H_{GEP} = H + 1.5L \qquad \text{(Equation 1)}$$

Where, H_{GEP} = GEP stack height
H = structure or building height
L = the lesser of the structure height or projected width

[2] The Will County background concentrations are based on Annaul Air Quality Reports from IEPA website http://www.epa.state.il.us/air/air-quality-report/index.html The Macomb County background concentrations were provided to NRG on 11/21/05 by Dave Mason of the MDEQ.

This equation applies only to stacks located within 5L of a downwash structure. Stacks located more than 5L from the downwash structure are not subject to the wake effects of that structure. If more than one stack at the facility is modeled, the equation must be successively applied to each stack. If more than one structure is modeled, the equation must also be successively applied to each structure. The building downwash determination for this modeling analysis is performed for each stack and structure using the USEPA-approved Building Profile Input Program (BPIPPRM) that is compatible with ISC-PRIME. BPIPPRM will perform the aforementioned calculation for every 10-degree directional interval starting at 10 degrees and going clockwise to 360 (due North).

4 DISPERSION MODELING RESULTS

4.1 Significance Modeling Results

The proposed PM_{10}, NO_x, SO_2 and CO emissions were modeled and compared to the MSLs. The dispersion modeling indicated that the impacts are above the MSLs; therefore, a full refined modeling analysis was performed.

4.2 GEP Stack Height Determinations

As specified by the USEPA in Appendix W of 40 CFR 51 Section 7.2.5, no stack height credit may be given in excess of the GEP stack height for any source when determining emission limitations for compliance with the NAAQS. As defined in 40 CFR 51.100, GEP stack height is the greater of 65 meters or the height determined using the equation discussed in Section 3.9. The stack heights used for these dispersion modeling analyses are well below 65 meters. Therefore, the emission rates and stack heights used in the modeling analysis are appropriate for demonstrating compliance with the NAAQS. Building downwash has been calculated and included in the dispersion modeling for all stacks as mentioned in Section 3.9.

4.3 Nearby Sources

Nearby sources were not included in this modeling analysis.

4.4 NAAQS Analysis

As documented in the modeling results summary table in the Executive Summary, the total impacts of CO, NO_x, SO_2, and PM_{10} are below the applicable NAAQS for each averaging period demonstrating that the proposed compressor stations will comply with the CO, NO_2, SO_2, and PM_{10} NAAQS. Each analysis includes the modeled impacts from the applicable compressor station and existing background concentrations of the pollutants in the Joliet and Romeo area.

The ISCST3 input, output, meteorological data, and BPIP files for the modeling analyses are included on the CD-ROM found in Appendix B. Modeling file names and descriptions are listed in the following table.

Table 4.1. Modeling File Summary

File Name	Description
Joliet Compressor Station	
BPIP SO	BPIP input file
BPIP SUM	BPIP output file
BPIP TAB	BPIP tab file
Joliet_## NOx dta	ISCST3 input modeling file for the year ## NOx modeling run
Joliet_##_NOx lst	ISCST3 output modeling file for the year ## NOx modeling run
Joliet ##_CO dta	ISCST3 input modeling file for the year ## CO modeling run
Joliet ##_CO lst	ISCST3 output modeling file for the year ## CO modeling run
Joliet ## SO2.dta	ISCST3 input modeling file for the year ## SO2 modeling run
Joliet_##_SO2 lst	ISCST3 output modeling file for the year ## SO2 modeling run
Joliet ## PM10ANN dat	ISCST3 input modeling file for the year ## PM10 annual modeling run
Joliet_##_PM10ANN lst	ISCST3 output modeling file for the year ## PM10 annual modeling run
Joliet ##_PM10 dat	ISCST3 input modeling file for the year ## PM10 24-Hour modeling run The model was run as a five year set for the period of period of 1987-1991
Joliet ##_PM10 lst	ISCST3 output modeling file for the year ## PM10 24-Hour modeling run The model was run as a five year set for the period of period of 1987-1991 Five year set results are included as Joliet_91 PM10
DEM Folder	Elevation data DEM files
Joliet87 asc	Single year met data file containing observations from Peroria station for 1987
Joliet88 asc	Single year met data file containing observations from Peroria station for 1988
Joliet89 asc	Single year met data file containing observations from Peroria station for 1989
Joliet90 asc	Single year met data file containing observations from Peroria station for 1990
Joliet91 asc	Single year met data file containing observations from Peroria station for 1991
Romeo Compressor Station	
Romeo SO	BPIP input file
Romeo SUM	BPIP output file
Romeo TAB	BPIP tab file
Romeo_##_NOx dta	ISCST3 input modeling file for the year ## NOx modeling run
Romeo_##_NOx lst	ISCST3 output modeling file for the year ## NOx modeling run
Romeo_##_CO dta	ISCST3 input modeling file for the year ## CO modeling run
Romeo_##_CO lst	ISCST3 output modeling file for the year ## CO modeling run
Romeo_##_SO2.dta	ISCST3 input modeling file for the year ## SO2 modeling run
Romeo_## SO2 lst	ISCST3 output modeling file for the year ## SO2 modeling run
Romeo ##_PM10-ANN dat	ISCST3 input modeling file for the year ## PM10 annual modeling run
Romeo_##_PM10-ANN lst	ISCST3 output modeling file for the year ## PM10 annual modeling run
Romeo_##_PM10 dat	ISCST3 input modeling file for the five year period of 1987-1991 PM_{10} 24-hour modeling run
Romeo_##_PM10 lst	ISCST3 output modeling file for the five year period of 1987-1991 PM_{10} 24 hour modeling run
DEM Folder	Elevation data DEM files
det87 asc	Single year met data file containing observations from Detroit station for 1987
det88 asc	Single year met data file containing observations from Detroit station for 1988
det89 asc	Single year met data file containing observations from Detroit station for 1989
det90 asc	Single year met data file containing observations from Detroit station for 1990
det91 asc	Single year met data file containing observations from Detroit station for 1991
det8791 asc	Five year met data file containing observations from Detroit station for 1987 to 1991

Appendix A

Model Inputs

Table A-1
Vector Pipeline L.P.
Joliet and Romeo Compressor Stations
Point Source Modeling Summary

Stack/ Vent ID	Emission Sources Associated with Ethanol Production	PM_{10} (lb/hr)	$PM_{10\ Annual}$ (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	Stack Parameters: Stack Ht (ft)	Temp (°F)	Exit Velocity (ft/s)	Diameter (ft)	Stack Location: UTM E (m)	UTM N (m)
Joliet Compressor Station												
SV001	Gas Turbine	0.79	0.79	7.22	13.08	4.00	38	900	63.12	8.20	405393.7	4590231.9
SV005	Stand-by Power Unit (SPU)	0.12	0.007	0.004	0.02	0.34	21	1114	72.85	0.83	405384.3	4590153.3
Romeo Compressor Station												
SV001	Gas Turbine #1	0.79	0.79	7.22	9.62	4.00	38	900	63.12	8.20	335773.1	4735955.8
SV002	Gas Turbine #2	0.79	0.79	7.22	9.62	4.00	38	900	63.12	8.20	335818	4735955.8
SV005	Stand-by Power Unit (SPU)	0.16	0.01	0.01	0.03	0.47	22	1114	99.48	1.00	335729.9	4735917.5

Appendix B

Modeling Files (CD-ROM)

This appendix attachment (CD-ROM) has not been included with the FERC application; however, it is available upon request.

Vector Compression Expansion Project

Appendix G
Noise Survey Reports

NON-INTERNET PUBLIC

JOLIET COMPRESSOR STATION

AMBIENT SOUND SURVEY
AND NOISE IMPACT EVALUATION
(associated with the Vector Compression Expansion Project)

NON-INTERNET PUBLIC

H&K Report No. 1918

H&K Job No. 3717

Date of Report: November 7, 2005

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REPORT SUMMARY

In this report, we present the results of a July 20, 2005 ambient sound survey and subsequent noise impact analysis associated with the proposed **Joliet Compressor Station**, a new compressor station to be owned and operated by **Vector Pipeline, LP**, which is a 60/40 joint venture between Enbridge Inc. and DTE Energy, respectively. The purpose of the ambient sound survey and acoustical analysis is to:

- Document the existing acoustic environment around the proposed site and locate the noise-sensitive areas (NSAs) surrounding the proposed station.
- Project the sound level contribution that would result from operating the proposed compressor station installation.
- Determine noise control measures and noise specifications for the station equipment to insure that the facility meets applicable sound level criteria.

The following table summarizes the measured sound levels and noise quality analysis for the proposed Joliet Compressor Station at the closest NSAs:

Noise Quality Analysis for the Proposed Joliet Station at the Closest NSAs

NSAs	Distance to Station Turbine Units	Direction	Meas'd Ambient L_d (dBA)	Calc'd Ambient L_{dn} (via Meas'd L_d) (dBA)	Est'd L_{dn} of Station (dBA)	Station L_{dn} + Ambient L_{dn} (dBA)	Potential Increase Above Ambient (dB)
Houses (NSA #1)	1450 ft.	N	44.6	51.0	47.0	52.4	1.5
Houses (NSA #2)	2000 ft	NE	44.9	51.3	43.6	52.0	0.7
House (NSA #3)	3500 ft	S	43.2	49.6	37.3	49.8	0.3
Houses (NSA #4)	3600 ft	W-SW	50.3	56.7	37.1	56.7	0.0

Our measurements and observations during the July 20, 2005 ambient sound survey indicated that the existing ambient sound level was **51.0, 51.3, 49.6** and **56.7 dBA L_{dn}** for NSA #1 to NSA #4, respectively. The results of our measurements, observations and analysis indicate that the estimated full load station sound level contribution at the nearby NSAs should be less than an **L_{dn} of 55 dBA**. Therefore, assuming the recommended noise control measures are followed and successfully implemented, it is our opinion that the sound level attributable to the proposed

station should not exceed the FERC criterion of **55 dBA Ldn** at the nearby NSAs. In addition, the facility should have "minimum noise impact" on the surrounding environment. "Minimum noise impact" implies that the noise of the station should not interfere with public activity or be an annoyance outdoors.

Regarding the State of Illinois noise regulations, our analysis indicates that the proposed Joliet Compressor Station octave-band sound pressure level contributions should be less than the applicable State of Illinois requirements.

TABLE OF CONTENTS

Continued on next page

TABLE OF CONTENTS (cont'd.)

Page

FIGURES and TABLES

1.0 INTRODUCTION

In this report, we present the results of a July 20, 2005 ambient sound survey and subsequent noise impact analysis associated with the proposed **Joliet Compressor Station**, a new compressor station to be owned and operated by **Vector Pipeline, LP**, which is a 60/40 joint venture between Enbridge Inc. and DTE Energy, respectively. The purpose of the ambient sound survey and acoustical analysis is to:

- Document the existing acoustic environment around the proposed site and locate the noise-sensitive areas (NSAs) surrounding the proposed station.
- Project the sound level contribution that would result from operating the proposed compressor station installation.
- Determine noise control measures and noise specifications for the station equipment to insure that the facility meets applicable sound level criteria.

2.0 SOUND CRITERIA

Typically, certificate conditions set forth by the Federal Energy Regulatory Commission (FERC) require that the sound level attributable to a new compressor station not exceed an equivalent day-night sound level (L_{dn}) of **55 dBA** at any nearby NSA, such as residences, hospitals or schools. The L_{dn} is an energy average of the daytime L_{eq} (i.e., L_d) and nighttime L_{eq} (i.e., L_n) plus 10 dB. For an essentially steady sound source (e.g., gas compressor station) that operates continuously over a 24-hour period and controls the environmental sound level, the L_{dn} is approximately **6.4 dB** above the measured L_{eq}. Consequently, an L_{dn} of **55 dBA** corresponds to a L_{eq} of **48.6 dBA**.

For the proposed Joliet Compressor Station, there is a State of Illinois noise regulation that is applicable to this facility. The applicable environmental sound level limits, from an industrial source to a residential area, are based upon maximum allowable octave-band sound pressure levels, and not a single dBA value. For illustrative purposes only, the maximum allowable octave-band sound pressure levels when summed result in an A-wt. sound level of **61 dBA** (daytime) and **51 dBA** (nighttime). The **61 dBA** (daytime) level and **51 dBA** (nighttime) level correspond to an L_{dn} of **61 dBA**, which is generally less restrictive than the FERC sound level requirement of **55 dBA** L_{dn}. For the State of Illinois regulations, it is also required that no facility shall cause or allow the emission of any prominent discrete tone from a noise source. There are no local noise ordinances for the proposed Joliet Compressor Station. A summary of the State of Illinois Regulations is included in **Appendix A** (p. A-1).

For reference, a summary of acoustical terminology and typical metrics used to measure and regulate environmental noise is provided at the end of this report in **Appendix C**, (pp. C-1 to C-3).

3.0 DESCRIPTION OF SITE AND PROPOSED COMPRESSOR STATION

3.1 Description of the Site

Figure 1 (p. 14) depicts the proposed **Joliet Compressor Station** and surrounding area, noting that the proposed station will be constructed within a 20 acre parcel at the beginning of the **42" Vector Pipeline**. The existing **Vector Meter Station** and the existing **Guardian Meter Station** are directly adjacent to the proposed site, and the **Autobahn County Club of Joliet** (a car racing club and track) is directly southwest of the site.

The surrounding terrain consists of both level and gently sloping terrain. The surrounding area consists of rural residences, farm houses, forested lands and agricultural lands, in addition to the other facilities listed above. There are also more distant industrial facilities such as the **Peoples Energy Generation Station** and the **Stepan Millsdale Works**. The closest NSAs are rural residences that are approximately 1450 feet N of the proposed Joliet Compressor Station. There are additional residences 2000 feet NE, 3600 feet W-SW and 3500 feet S of the proposed Joliet Compressor Station.

3.2 Description of the Station Equipment

Figure 2 (p. 15) depicts the proposed Joliet Compressor Station plot plan. The noise impact analysis assumes that the facility will include one Solar Mars 100 turbine driven compressor units with a total station rating of approximately 15,000 HP. The following describes auxiliary equipment and other notable items associated with the new station

- Compressor building for the turbine driven centrifugal unit.
- Turbine exhaust system.
- Turbine air intake system.
- Turbine lube oil cooler.
- Aboveground gas piping.
- MCC/Generator Building for station control, MCC equipment, station emergency generator and station air compressors.
- Control Building.

4.0 MEASUREMENT METHODOLOGY

4.1 Sound Measurement Locations

Four (4) locations were chosen to measure the sound levels near the closest NSAs located around the proposed Joliet Compressor Station and the measurement locations are depicted on **Figure 1**. Photographs of all the measurement positions (towards the proposed Joliet Compressor Station) are shown in **Figures 3 - 6** (p. 16). The following is a description of the NSAs and the selected sound measurement positions:

Pos. 1: Adjacent to NSA #1: Three houses located on Schweitzer Road with the closest house approximately 1450 ft. N of the proposed turbine unit.

Pos. 2: Adjacent to NSA #2: Four houses located on Schweitzer Road with the closest house approximately 2000 ft. NE of the proposed turbine unit.

Pos. 3: Adjacent to NSA #3: A single farm house approximately 3500 ft. S of the proposed turbine unit. The farm house is at the end of a long driveway from Millsdale Road, and the ambient sound level measurement position was performed at the shoulder of Millsdale Road at the driveway to the farm house.

Pos. 4: Adjacent to NSA #4: Four houses on Vetter road with the closest house approximately 3600 ft. W-SW of the proposed turbine unit.

4.2 Data Acquisition and Sound Measurement Equipment

At the reported sound measurement locations, the A-wt. equivalent sound levels (L_{eq}) and unweighted octave-band sound pressure levels (SPLs) were performed at approx. 5 feet above ground. The sound measurements at the nearby NSAs attempted to exclude "extraneous sound" such as a car passing immediately by the measurement position and the sound measurements were typically performed during periods of minimum audible traffic noise. The measurement system consisted of a Larson-Davis (LD) Model 2900 Real Time Analyzer/SLM (a Type I SLM per ANSI Standard S1.4 & S1.11) with a 1/2-in. LD condenser microphone covered by a windscreen (calibrated with a LD Model CAL 200 Mic calibrator).

5.0 MEASUREMENT RESULTS

5.1 Measured Sound Level Data

Table A (p. 17) show the measured daytime L_{eq} (i.e., L_d) at the NSA measurement locations and the average of the measured data since multiple samples of the noise level were typically performed at each location. **Table A** also includes the calculated L_{dn} at each NSA measurement position, noting that the L_d was used to calculate

representative L_{cn} since it was deemed that the L_d was representative of nighttime levels. Meteorological conditions during the tests are summarized in **Table B** (p. 17). The measured unweighted octave-band SPLs at the reported sound measurement positions and the average of the octave-band SPLs are provided in **Table C** (p. 17). The following **Table 1** summarizes the measured ambient L_d at the NSAs and the calculated L_{dn}, as calculated from the measured L_d, noting that the measured L_d was used to infer a representative L_{dn}:

Meas. Position	NSAs	Distance to Station Turbine Unit	Direction	Meas'd L_d (dBA)	Calc'd L_{dn} (dBA)
Pos. 1	Houses (NSA #1)	1450 ft	N	44.6	**51.0**
Pos. 2	Houses (NSA #2)	2000 ft	NE	44.9	**51.3**
Pos. 3	House (NSA #3)	3500 ft.	S	43.2	**49.6**
Pos. 4	Houses (NSA #4)	3600 ft	W-SW	50.3	**56.7**

Table 1: Summary of the Measured Ambient Sound Levels and the Calculated L_{dn} at the Closest NSAs

It is our opinion that the measured sound level data adequately quantifies the existing ambient sound levels around the site for the meteorological conditions that occurred during the sound survey, and the ambient sound levels during the nighttime would be expected to be similar to the measured daytime sound levels.

5.2 Observations during the Site Sound Tests

At NSA #1: Audible sounds included distant industrial plants (which were dominant), birds, distant traffic, distant freight train, some wind noise in trees, and occasional noise from meter facilities adjacent to proposed Compressor Station was detectable.

At NSA #2: Audible sounds included distant industrial plants (which were dominant), birds, distant locomotives at switching station, distant airplane, brief insect noise, and intermittent noise associated with meter stations was detectable.

At NSA #3: Audible sounds included distant industrial plants (which were dominant), birds, distant farm traffic, and distant traffic.

At NSA #4: Audible sounds included distant industrial plants (which were dominant), sounds of birds, and distant traffic.

6.0 NOISE IMPACT EVALUATION

6.1 Significant Sound Sources

The noise impact evaluation considers the noise produced by all significant sound sources associated with the proposed station that could impact the sound contribution at the nearby NSAs. A description of the analysis methodology and source of sound data is provided in **Appendix B** (p. B-1). The following sound sources are considered significant:

- Noise of the turbine unit exhaust.
- Noise generated by the turbine intake air system.
- Turbine-compressor casing noise that penetrates the compressor building.
- Noise of the lube oil cooler (i.e., fin-fan cooler).
- Noise radiated by above ground compressor station piping.

6.2 Estimated Sound Contribution

Tables D - G (p. 18-21) shows the calculation (i.e., spreadsheet analysis) of the estimated octave-band SPLs and the A-wt. sound level, at NSAs #1 - #4, contributed by the significant noise sources associated with the proposed facilities for standard day propagating conditions (i.e., no wind, 60 deg. F., 70% R.H.). This spreadsheet analysis includes the potential noise reduction due to the anticipated and/or recommended noise control measures for equipment.

6.3 Noise Quality Analysis (FERC)

Table 2 below summarizes the Noise Quality Analysis for the nearby NSAs for the proposed Joliet Compressor Station:

Noise Quality Analysis							
NSAs	**Distance to Station Turbine Units**	**Direction**	**Meas'd Ambient L_d (dBA)**	**Calc'd Ambient L_{dn} (via Meas'd L_d) (dBA)**	**Est'd L_{dn} of Station (dBA)**	**Station L_{dn} + Ambient L_{dn} (dBA)**	**Potential Increase Above Ambient (dB)**
Houses (NSA #1)	1450 ft	N	44.6	51.0	47.0	52.4	1.5
Houses (NSA #2)	2000 ft	NE	44.9	51.3	43.6	52.0	0.7
House (NSA #3)	3500 ft.	S	43.2	49.6	37.3	49.8	0.3
Houses (NSA #4)	3600 ft	W-SW	50.3	56.7	37.1	56.7	0.0

Table 2: Proposed Joliet Compressor Station Noise Quality Analysis

As noted above in **Table 2**, the sound contribution of the proposed Joliet Compressor Station is estimated to be less than an L_{dn} of **55 dBA** at the nearby NSAs.

6.4 State of Illinois Regulations

Table 3 below summarizes the estimated octave band sound pressure level contributions of the proposed Joliet Station and the maximum allowable nighttime octave band sound pressure levels, for the State of Illinois requirements, at the nearest Class A land:

Estimated SPL at NSAs and State of Illinois Nighttime SPLs Allowed		**SPL in dB Per Octave-Band Center Freq. (Hz)**								
		31.5	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
NSA #1	Est'd SPLs at Class A Land	59	57	48	41	38	34	27	27	16
NSA #2	Est'd SPLs at Class A Land	56	54	46	38	35	30	23	20	9
NSA #3	Est'd SPLs at Class A Land	50	48	40	32	29	23	13	8	8
NSA #4	Est'd SPLs at Class A Land	50	48	40	32	28	22	13	8	8
State of Illinois Max. Nighttime SPLs		69	67	62	54	47	41	36	32	32

Table 3: Estimated Octave-Band SPL Contributions for the Proposed Joliet Compressor Station and the State of Illinois Maximum Allowable Nighttime Octave-Band SPLs for Class A Land

As noted above in **Table 3**, the estimated octave-band sound pressure level contributions for the proposed Joliet Station should be less than the nighttime maximum allowable octave-band sound pressure levels for the State of Illinois noise regulations.

6.5 Estimated Sound Levels for Blowdowns

The sound levels associated with high pressure gas venting are a function of initial blowdown pressure, the diameter and type of blowdown valve, and the diameter and arrangement of the downstream vent piping. As expected, blowdown sound levels are loudest at the beginning of the blowdown event and they decrease as the blowdown pressure decreases. The following **Table 4** summarizes the expected sound levels for normal blowdown events (i.e., unit start up and shut down) at the closest NSA:

"Normal" Blowdown Sound Source	Closest NSA	Distance to Blowdown Silencers (feet)	Direction	Est'd Initial Sound Level for Blowdown Event (dBA)
Proposed Compressor Unit	Houses (NSA #1)	1600	N	45

Table 4: Estimated Initial Sound Levels for "Normal" Blowdown Event

7.0 NOISE CONTROL REQUIREMENTS

The following section provides recommended noise control measures and equipment noise specifications along with other assumptions that may affect the noise generated by the facility.

7.1 Compressor Building

Building Structure

- As a minimum, walls/roof should be constructed with exterior steel of 20 gauge and interior layer of 8-inch thick unfaced mineral wool (e.g., 6.0-8.0 pcf uniform density) covered with a 24 gauge perforated liner. Thermal insulation, such as "R-19", should not be used as a substitute for the 6.0-8.0 pcf material.

- Personnel entry doors should have a minimum STC-38 sound rating and could include door glazing if a 2' x 2' maximum view port is employed (e.g., 1/2 inch thick laminated glazing or double pane safety glass). Doors should seal well with the doorframe and be self-closing.

- No windows, skylights or "open" louvers should be installed.

- All voids and openings in the building walls resulting from penetrations should be patched and well sealed. Building construction details shall be consistent with a high performance acoustical compressor building.

- Equipment doors shall have a minimum STC-40 sound rating. The Equipment doors shall be high performance double swing acoustical doors with 20 gage leafs (Overly or equal).

Building Ventilation

- The building ventilation system should be designed to properly ventilate (and cool) the building and equipment during maximum outside ambient temperatures with all personnel and equipment doors closed. Personnel and/or equipment doors will only be opened during maintenance activities.

- The A-wt. sound level for each ventilation inlet should not exceed **50 dBA** at **50 feet** from the building penetration (i.e., inlet louver, acoustic inlet hood, etc.). The A-wt. sound level for each ventilation exhaust outlet should not exceed **50 dBA** at **50 feet** from the building penetration (i.e., exhaust louver, exhaust hood, etc.). Each ventilation inlet and exhaust outlet shall assume that the following sound pressure levels exist inside the compressor building at and adjacent to the ventilation equipment:

SPLs per Octave-Band Center Freq. & A-Wt. Level

31.5	63	125	250	500	1000	2000	4000	8000	dBA
90	90	90	90	90	95	95	95	80	**101**

- The ventilation system inlet and exhaust systems shall be designed to control interior building sound paths from the inlet and exhaust flow paths, interior building sound paths across ventilation system components (i.e., ducting break-in noise, etc..) and sound that is generated by ventilation equipment (i.e., supply fans, exhaust fans, louvers, tempering coils, etc).

7.2 MCC/Generator Building and Control Building

Building Structure (for MCC/Generator Building)

- As a minimum, walls/roof should be constructed with exterior steel of 22 gauge and interior layer of 4-inch thick unfaced mineral wool (e.g., 6.0-8.0 pcf uniform density) covered with a 24 gauge perforated liner. Thermal insulation, such as "R-19", should not be used as a substitute for the 6.0-8.0 pcf material.

- Personnel entry doors should be insulated steel doors with 1/4 inch thick laminated glass. Doors should seal well with the doorframe and be self-closing.

- No windows or "open" louvers should be installed.

- All voids and openings in the building walls resulting from penetrations should be patched and well sealed.

- Overhead roll-up doors, as a minimum, should be a 22 gauge insulated type design (e.g., 20 gauge exterior with a 24 gauge backskin with insulation core) and should be completely weather stripped.

Building Ventilation (for MCC/Generator Building)

- The building ventilation system should be designed to properly ventilate (and cool) the building and equipment during maximum outside ambient temperatures with all personnel and equipment doors closed. Personnel and/or equipment doors should only be opened during maintenance activities.

- The A-wt. sound level for each ventilation inlet should not exceed **50 dBA** at **50 feet** from the building penetration (i.e., inlet louver, acoustic inlet hood, etc.). The A-wt. sound level for each ventilation exhaust outlet should not exceed **50 dBA** at **50 feet** from the building penetration (i.e., exhaust louver, exhaust hood, etc.). Each ventilation inlet and exhaust outlet shall assume that the following sound pressure levels exist inside the compressor building at and adjacent to the ventilation equipment:

SPLs per Octave-Band Center Freq. & A-Wt. Level

31.5	63	125	250	500	1000	2000	4000	8000	dBA
85	85	85	85	90	90	90	85	75	**95**

- The ventilation system inlet and exhaust systems shall be designed to control interior building sound that escapes from the inlet and exhaust flow paths, interior building sound paths across ventilation system components (i.e., ducting break-in noise, etc.,) and sound that is generated by ventilation equipment (i.e., supply fans, exhaust fans, louvers, tempering coils, etc).

- As a minimum, air-supply fans used for ventilation should include a metal boot enclosing the fan; a minimum 36-inch length exterior silencer and a weather hood lined with acoustical insulation.

- Assuming separate roof exhaust vents will be utilized, each roof exhaust vent, as a minimum, should include a 36-inch length silencer (i.e., baffle-type design) mounted between the building surface and vent/hood (i.e., in the ventilator throat).

Building Ventilation (for Control Building)

- Exterior building ventilation equipment (i.e., air handling units, air conditioning condensers/compressors, ventilation fans, etc.) should be located on the south and/or west side of the Control Building. In the event the Control Building includes a workshop and/or maintenance bays, there shall be no "open louvers" on the north and/or east sides of the Control Building.

- The A-wt. sound level for each ventilation inlet should not exceed **50 dBA** at **50 feet** from the building penetration (i.e., inlet louver, acoustic inlet hood, etc.). The A-wt. sound level for each ventilation exhaust outlet should not exceed **50 dBA** at **50 feet** from the building penetration (i.e., exhaust louver, exhaust hood, etc.). Each workshop bay and/or maintenance bay ventilation inlet and exhaust outlet shall assume that the following sound pressure levels exist inside the compressor building at and adjacent to the ventilation equipment:

SPLs per Octave-Band Center Freq. & A-Wt. Level

31.5	63	125	250	500	1000	2000	4000	8000	dBA
85	85	85	85	90	90	90	85	75	**95**

- The ventilation system inlet and exhaust systems shall be designed to control interior building sound that escapes from the inlet and exhaust flow paths, interior building sound paths across ventilation system components (i.e., ducting break-in noise, etc.,) and sound that is generated by ventilation equipment (i.e., supply fans, exhaust fans, louvers, tempering coils, etc).

- As a minimum, air-supply fans used for ventilation should include a metal boot enclosing the fan; a minimum 36-inch length exterior silencer and a weather hood lined with acoustical insulation.

7.3 Turbine Exhaust System

The exhaust system for each new turbine should include a silencer system that provides the following total dynamic insertion loss (DIL) values at the rated turbine operating conditions:

DIL Values in dB per Octave-Band Center Freq. for Exh. Muffler System

31.5	63	125	250	500	1000	2000	4000	8000
8	15	25	34	42	42	42	35	30

The exhaust ductwork located between the building and the outdoor muffler should be completely covered with an additional layer of acoustical lagging such as a 3-in. thick inner layer of 8.0-pcf insulation (e.g., mineral wool) covered with a heavy-gauge galvanized steel jacketing (minimum 18 gauge).

7.4 Turbine Air Intake System

The intake system for each new turbine should include two silencers in series (i.e., two stage silencing system) between the air intake filter and turbine unit. It is recommended that the first silencer is located inside the building, while the second stage silencer can be located outside the building. It is also required that the first stage silencer (and support system) is acoustically isolated from the second stage silencer (and support structure) with a suitable vibration break. The first stage silencer can either be a "tubular" design or parallel baffle construction. The second stage silencer should be a parallel baffle construction.

The "tubular" first stage silencer should meet the following dynamic insertion loss (DIL) values at the rated turbine operating conditions:

DIL Values in dB per Octave-Band Center Freq. for 1st Stage Muffler

31.5	63	125	250	500	1000	2000	4000	8000
1	2	3	4	18	38	46	54	50

The second stage parallel baffle silencer should meet the following dynamic insertion loss (DIL values) at the rated turbine operating conditions:

DIL Values in dB per Octave-Band Center Freq. for 2nd Stage Muffler

31.5	63	125	250	500	1000	2000	4000	8000
8	15	28	35	40	40	40	40	25

As an alternative, the turbine unit supplier can utilize parallel baffle silencers for both the first stage and second stage silencers, providing that the total DIL is equal to or greater than the above two stage inlet silencing system.

It is recommended that the inlet ducting inside the building is completely covered with an additional layer of acoustical lagging such as 4.0-pcf insulation (e.g., mineral wool) covered with a mass-filled vinyl jacket (e.g., composite of 1.0 psf mass-filled vinyl

laminated to 0.020" thick aluminum) to control sound levels inside the compressor building.

7.5 Turbine Lube Oil Cooler

It is recommended that the turbine manufacturer's electric motor driven "low noise" lube oil cooler is utilized for this application. For this application, the sound level should not exceed **56 dBA** at **50 feet** from the cooler perimeter at rated conditions. This sound level is equivalent to a sound power level (PWL) of approximately **88 dBA**, and the cooler fan tip speed would not be expected to exceed 6000 fpm to meet this noise requirement. The cooler supplier should provide the A-wt. sound level and unweighted octave-band SPLs at **50 feet** from the cooler with all fans on and motors operating.

At this time, it is not anticipated that the lube oil piping will have to be acoustically lagged, noting that additional information during the detailed design phase is necessary to make a final determination. Therefore, we recommend that this potential noise source and noise control measure be further analyzed when additional information is available during the detailed design phase.

7.6 Aboveground Gas Piping

Outdoor aboveground gas piping should be covered (i.e., lagged) with a minimum 3" thick fiberglass or mineral wool (e.g., 4.0 pcf uniform density) that is covered with a mass-filled vinyl jacket (e.g., composite of 1.0 psf mass-filled vinyl laminated to 0.020" thick aluminum). Aboveground valves can be covered with removable and/or reusable acoustic material and/or blankets. It is also recommended that the aboveground gas piping should be completely separated from other metal structures such as metal gratings, walkways and stairs around the piping.

7.7 Miscellaneous Equipment

Gas Blowdown Silencer (i.e., unit piping purge/unit blowdown): It is recommended that these sound sources are silenced to **50 dBA** at **300 ft**. (as measured 5 ft. above the ground), and to meet this noise goal, the "effective length" of the silencer section for the unit blowdown silencer should be at least 30 feet.

Fuel Gas Skid: It is recommended that any fuel gas skids be designed with regulators that can achieve **85 dBA** at **3 ft**. for the worst case design conditions (i.e., anticipated maximum pressure drop and flow across the regulator valve).

Station Standby Generator: It is recommended that the generator should not exceed **60 dBA** at **100 ft**. from the MCC/Generator building at rated operating conditions. This

sound specification includes, but is not limited to, the following noise sources associated with the generator: (1) noise of the engine-generator that penetrates the MCC/Generator building, (2) noise of the exterior jacket/auxiliary water cooler, (3) noise of the engine exhaust (hospital/critical grade muffler should be employed), and (4) noise of the air intake system. It is further recommend that this potential noise source and noise control measures be further analyzed when additional information is available during the detailed design phase.

8.0 FINAL COMMENT

Our measurements and observations during the July 20, 2005 ambient sound survey indicated that the existing ambient sound level was **51.0, 51.3, 49.6** and **56.7 dBA L_{dn}** for NSA #1 to NSA #4, respectively. The results of our measurements, observations and analysis indicate that the estimated full load station sound level contribution at the nearby NSAs should be less than an L_{dn} of **55 dBA**. Therefore, assuming the recommended noise control measures are followed and successfully implemented, it is our opinion that the sound level attributable to the proposed station should not exceed the FERC criterion of **55 dBA Ldn** at the nearby NSAs. In addition, the facility should have "minimum noise impact" on the surrounding environment. "Minimum noise impact" implies that the noise of the station should not interfere with public activity or be an annoyance outdoors.

Regarding the State of Illinois noise regulations, our analysis indicates that the proposed Joliet Compressor Station octave-band sound pressure level contributions should be less than the applicable State of Illinois requirements.

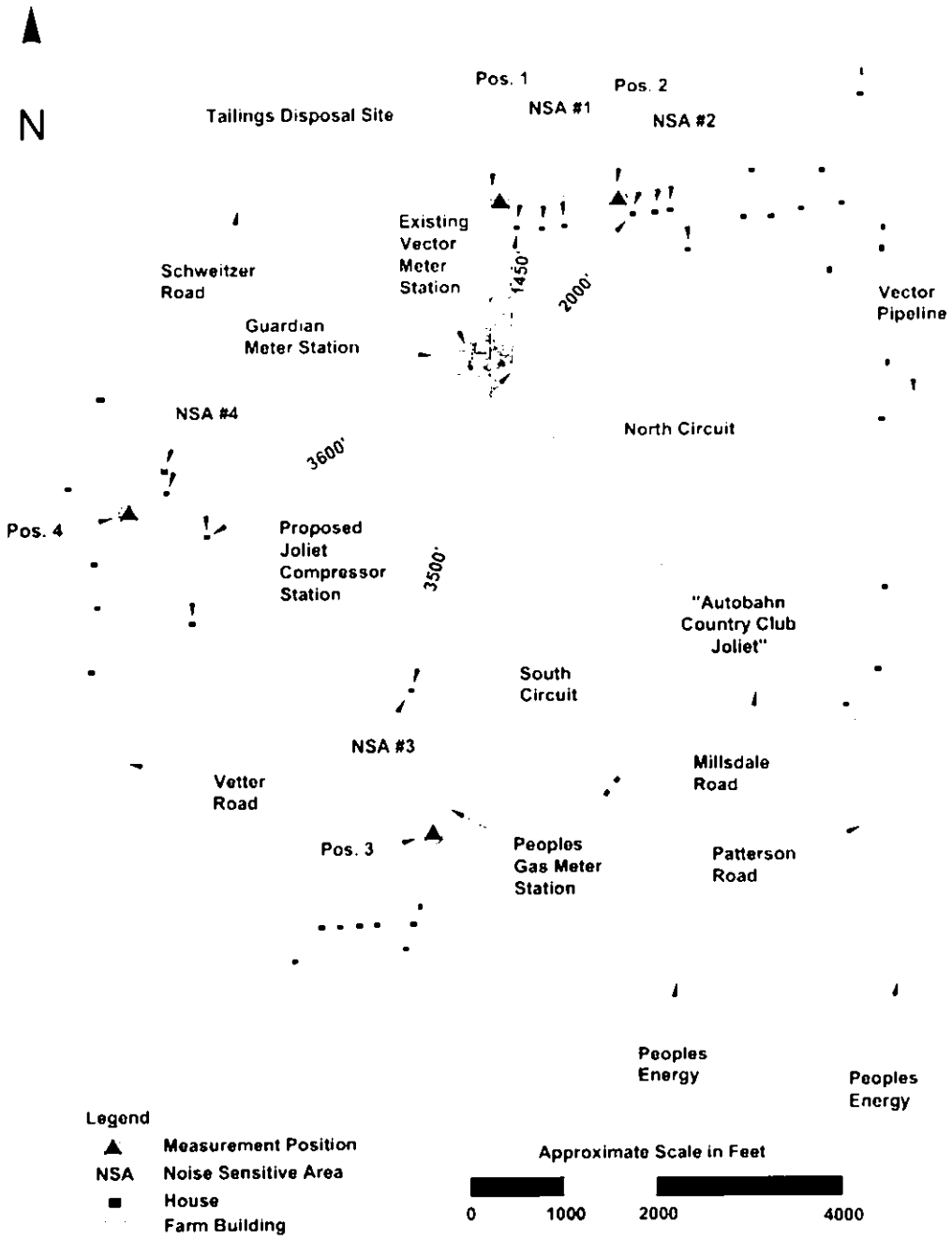

Figure 1: Proposed Joliet Compressor Station and Surrounding Area

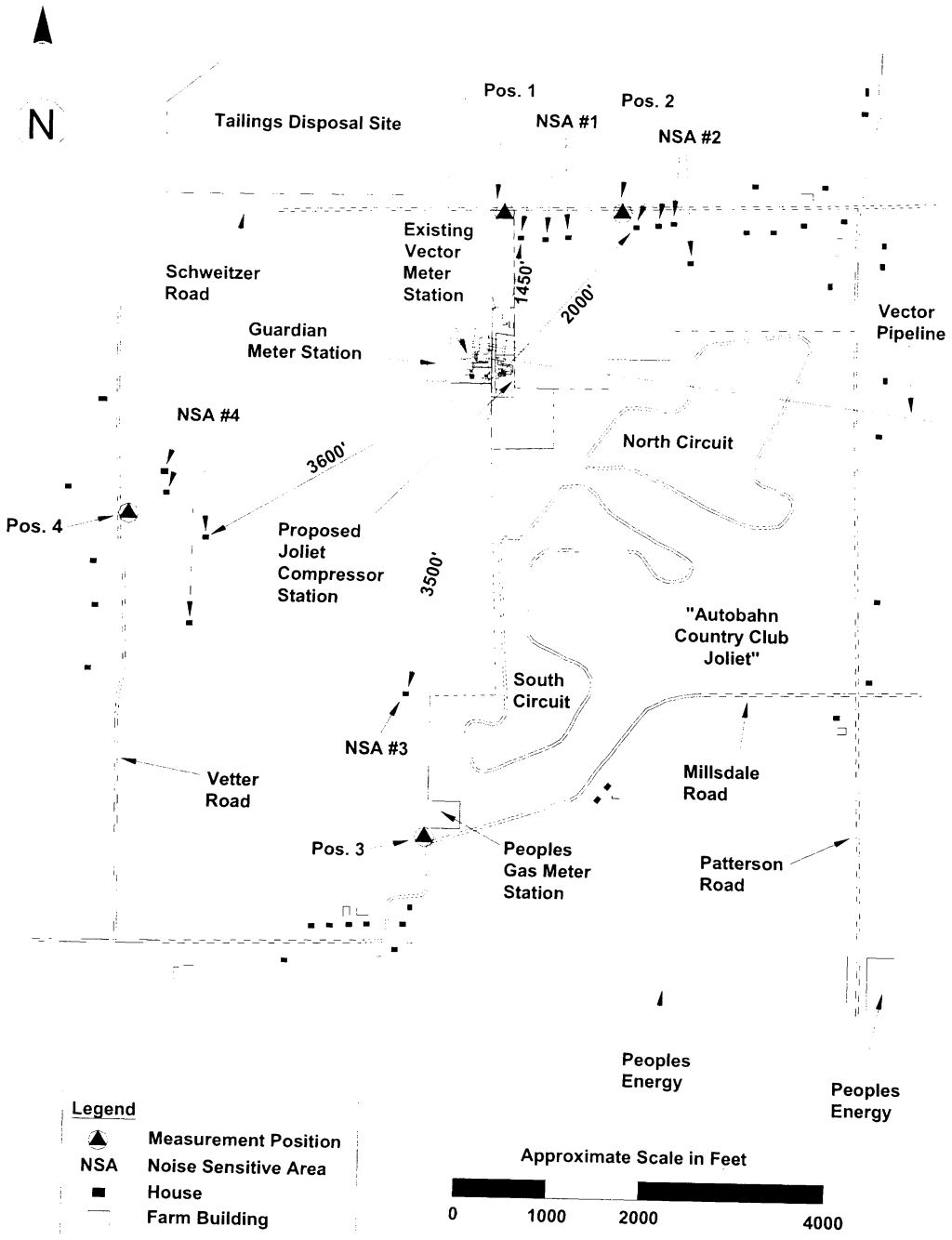

Figure 1: Proposed Joliet Compressor Station and Surrounding Area

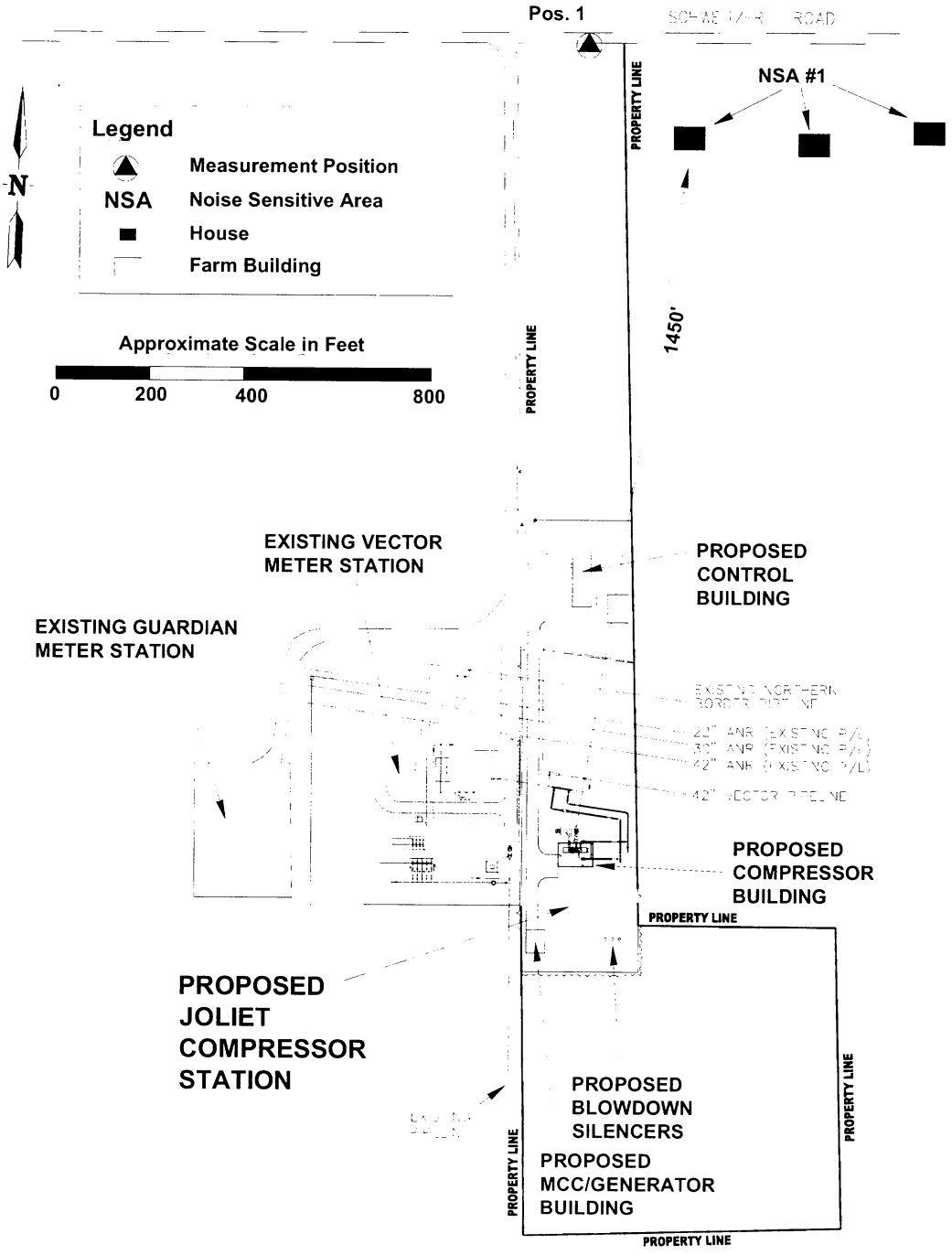

Figure 2: Proposed Joliet Compressor Station Plot Plan

Figure 3: View from Position 1

Figure 4: View from Position 2

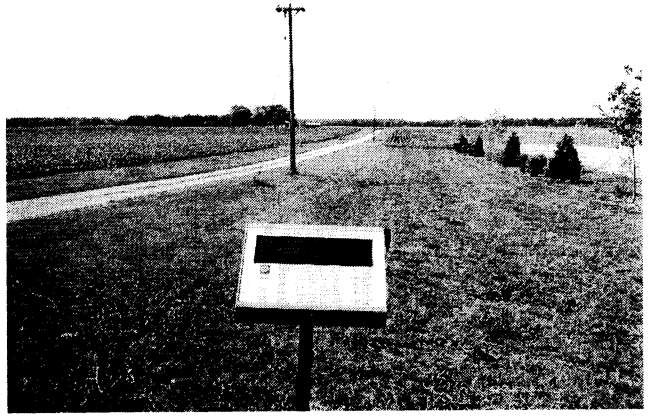

Figure 5: View from Position 3

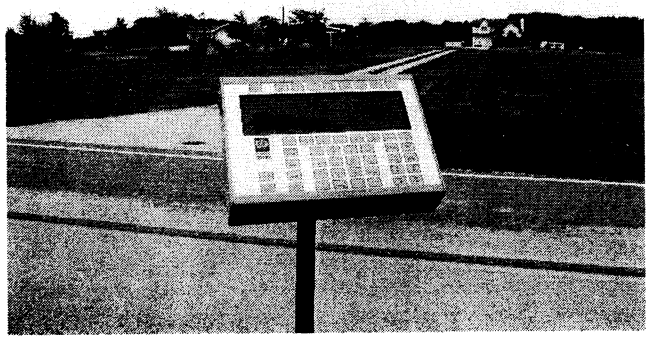

Figure 6: View from Position 4

Measurement Set		Measured A-Wt. Sound Levels (dBA)					
Position	Time of Test	D-time Leq(Ld)	Avg'd Ld	N-time Leq(Ln)	Avg'd Ln	Calc'd Ldn	Notes/Observations
Pos. 1 On Schweitzer Road, near NSA #1, 1450' N of Comp. Bldg.	4:19 PM 4:21 PM 4:23 PM	43.6 44.8 45.9	**44.6**	Not Meas'd	---	**51.0**	Audible sounds included distant industrial plants (which were dominant), birds, distant traffic, distant freight train, some wind noise in trees, and occasional noise from meter facilities adjacent to proposed Compressor Station was detectable.
Pos. 2 On Schweitzer Road, near NSA #2, 2000' NE of Comp. Bldg.	6:06 PM 6:08 PM 6:10 PM	45.5 45.9 43.5	**44.9**	Not Meas'd	---	**51.3**	Audible sounds included distant industrial plants (which were dominant), birds, distant locomotives at switching station, distant airplane, brief insect noise, and intermittent noise associated with meter stations was detectable.
Pos. 3 On Millsdale Road, near NSA #3, 3500' S of Comp. Bldg.	5:22 PM 5:23 PM 5:25 PM	44.2 42.6 43.3	**43.2**	Not Meas'd	---	**49.6**	Audible sounds included distant industrial plants (which were dominant), birds, distant farm traffic, and distant traffic.
Pos. 4 On Vetter Road, near NSA #4, 3600' W-SW of Comp. Bldg.	4:32 PM 4:34 PM 4:35 PM	49.5 50.6 51.5	**50.3**	Not Meas'd	---	**56.7**	Audible sounds included distant industrial plants (which were dominant), sounds of birds, and distant traffic.

Table A: **Proposed Joliet Compressor Station (IL): Measured Ambient Daytime Sound Levels (Leq) at the Closets NSAs on 07/20/05**

Measurement Set		Temp.	R.H.	Ground Level	Ground Level		Sky Conditions
Position	Time of Testing	(°F)	(%)	Wind Direction	Wind Speed	Peak Wind	
Pos. 1, 3 & 4	4:15 PM to 5:30 PM	83	75	from W	2-5 mph	-	Overcast
Pos. 2	6:00 PM to 6:15 PM	86	63	from W-NW	2-6 mph	-	Overcast

Table B: **Proposed Joliet Compressor Station (IL): Summary of the Meteorological Conditions During the Ambient Sound Survey Measurements on 07/20/05**

Measurement Set		Sound Pressure Level (SPL) in dB per Octave-Band Frequency (in Hz)									A-Wt.
Position	Time of Test	31.5	63	125	250	500	1000	2000	4000	8000	Level
Pos. 1 On Schweitzer Road, near NSA #1, 1450' N of Comp. Bldg.	4:19 PM	57.2	57.0	51.9	44.1	39.7	31.3	33.4	34.4	34.1	43.6
	4:21 PM	57.7	57.1	54.5	45.1	41.8	32.1	31.6	34.4	35.6	44.8
	4:23 PM	59.0	59.9	54.8	46.8	44.8	33.0	31.0	34.3	28.8	45.9
	Average SPL	**58.0**	**58.0**	**53.7**	**45.3**	**42.1**	**32.1**	**32.0**	**34.4**	**32.8**	**44.6**
Pos. 2 On Schweitzer Road, near NSA #2, 2000' NE of Comp. Bldg.	6:06 PM	55.8	55.7	48.9	42.8	37.5	30.9	41.6	37.9	28.1	45.5
	6:08 PM	57.1	56.7	52.3	42.8	36.2	31.9	41.9	37.7	27.0	45.9
	6:10 PM	57.6	57.3	49.5	41.5	36.7	27.4	38.4	35.6	28.5	43.5
	Average SPL	**56.8**	**56.6**	**50.2**	**42.4**	**36.8**	**30.1**	**40.6**	**37.1**	**27.9**	**44.9**
Pos. 3 On Millsdale Road, near NSA #3, 3500' S of Comp. Bldg.	5:22 PM	67.0	59.3	55.5	44.7	36.9	31.4	27.8	36.6	26.2	44.2
	5:23 PM	65.8	59.1	53.3	44.3	36.3	32.3	31.0	29.8	24.5	42.6
	5:25 PM	69.7	60.8	53.6	44.4	37.9	32.9	29.1	29.2	29.5	43.3
	Average SPL	**67.5**	**59.7**	**54.1**	**44.5**	**37.0**	**32.2**	**29.3**	**31.9**	**26.7**	**43.2**
Pos. 4 On Vetter Road, near NSA #4, 3600' W-SW of Comp. Bldg.	4:32 PM	60.8	60.8	54.5	49.8	49.4	39.9	38.0	35.9	27.0	49.5
	4:34 PM	60.5	60.3	55.0	51.1	50.6	39.1	40.2	38.9	26.5	50.6
	4:35 PM	62.0	61.3	55.4	49.7	48.5	39.3	45.6	43.5	25.9	51.5
	Average SPL	**61.1**	**60.8**	**55.0**	**50.2**	**49.5**	**39.4**	**41.3**	**39.4**	**26.5**	**50.3**

Table C: **Proposed Joliet Compressor Station (IL): Measured Ambient Unweighted Octave-Band Sound Pressure Levels (SPLs) at the Closest NSAs on 07/20/05**

Source No. & Dist (Ft)	SOURCE PWL & EST'D. SOUND LEVEL CONTRIBUTIONS AT SPEC. DISTANCE	PWL or SPL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
1)	PWL of Turbine-Comp. Casing Noise	118	117	117	115	115	115	120	124	120	128	
	PWL of Eng.-Comp. Casing Noise (1 unit)	118	117	117	115	115	115	120	124	120	128	
	NR of Noise Control (20 guage/8" MW)	-7	-11	-13	-20	-28	-35	-35	-35	-25		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1450	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-20		
	Source Sound Level Contribution	50	45	43	33	25	17	20	17	14	31	
2)	90 deg.PWL of Unsilenced Turbine Exh.	124	127	125	128	134	133	121	110	99	135	
	90 deg. PWL of Unsil. Turbine Exh. (1 unit)	124	127	125	128	134	133	121	110	99	135	
	Atten of Exhaust Silencer	-6	-11	-20	-30	-35	-38	-38	-32	-25		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1400	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-19		
	Source Sound Level Contribution	57	55	44	37	37	32	18	7	0	38	
3)	PWL of Body/Duct. of Turbine Silencer	105	108	96	80	74	70	68	65	60	85	
	PWL of Body/Duct. of Turbine Sil. (1 unit)	105	108	96	80	74	70	68	65	60	85	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1400	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-19		
	Source Sound Level Contribution	44	47	35	19	12	7	3	0	0	24	
4)	PWL of Turbine Intake System	113	119	126	126	127	130	133	167	158	168	
	PWL of Turbine Int. System (1 unit)	113	119	126	126	127	130	133	167	158	168	
	Atten of Inlet Silencers + Filter	-6	-18	-38	-50	-65	-70	-70	-70	-70		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1400	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-19		
	Source Sound Level Contribution	46	40	27	15	0	0	0	26	8	27	
5)	PWL of Aboveground Piping	95	100	100	100	100	110	110	110	100	116	
	PWL of Aboveground Piping (1 unit)	95	100	100	100	100	110	110	110	100	116	
	NR of Noise Control (Disch. Piping Insul.)	3	3	3	-3	-12	-20	-20	-20	-15		
	Ground Level Shielding	0	0	0	0	0	0	0	0	0		
1450	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-20		
	Source Sound Level Contribution	37	42	42	35	26	27	25	18	4	33	
6)	PWL of Turbine L.O. Cooler	95	102	99	92	87	84	80	76	71	91	
	PWL of Turbine L.O. Cooler (1 unit)	95	102	99	92	87	84	80	76	71	91	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Miscellaneous Shielding	0	0	0	0	0	0	0	0	0		
1400	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-19		Calc'd
	Source Sound Level Contribution	34	41	38	31	25	21	15	5	0	28	Ldn
Est'd Total Contribution of Proposed Station		**59**	**57**	**48**	**41**	**38**	**34**	**27**	**27**	**16**	**40.6**	**47.0**

General Note: DIL, NR and PWL values on this spreadsheet should not be used as the specified values. Refer to the "Noise Control Measures" in the report or other company specifications for the actual specified PWL of equip., noise reduction (NR) of pipe lagging or building construction, and DIL values of silencers assoc. with the prop. equipment.

Table D: Proposed Joliet Station: Est'd Sound Contribution at NSA #1

Source No. & Dist (Ft)	SOURCE PWL & EST'D. SOUND LEVEL CONTRIBUTIONS AT SPEC. DISTANCE	PWL or SPL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
1)	PWL of Turbine-Comp. Casing Noise	118	117	117	115	115	115	120	124	120	128	
	PWL of Eng.-Comp. Casing Noise (1 unit)	118	117	117	115	115	115	120	124	120	128	
	NR of Noise Control (20 guage/8" MW)	-7	-11	-13	-20	-28	-35	-35	-35	-25		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
2000	Hemispherical Radiation	-64	-64	-64	-64	-64	-64	-64	-64	-64		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-3	-6	-15	-27		
	Source Sound Level Contribution	47	42	40	30	22	13	15	10	4	28	
2)	90 deg.PWL of Unsilenced Turbine Exh.	124	127	125	128	134	133	121	110	99	135	
	90 deg. PWL of Unsil. Turbine Exh. (1 unit)	124	127	125	128	134	133	121	110	99	135	
	Atten of Exhaust Silencer	-6	-11	-20	-30	-35	-38	-38	-32	-25		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1950	Hemispherical Radiation	-64	-64	-64	-64	-64	-64	-64	-64	-64		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-3	-6	-15	-27		
	Source Sound Level Contribution	54	52	41	34	34	29	14	0	0	35	
3)	PWL of Body/Duct. of Turbine Silencer	105	108	96	80	74	70	68	65	60	85	
	PWL of Body/Duct. of Turbine Sil. (1 unit)	105	108	96	80	74	70	68	65	60	85	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1950	Hemispherical Radiation	-64	-64	-64	-64	-64	-64	-64	-64	-64		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-3	-6	-15	-27		
	Source Sound Level Contribution	41	44	32	16	9	4	0	0	0	21	
4)	PWL of Turbine Intake System	113	119	126	126	127	130	133	167	158	168	
	PWL of Turbine Int. System (1 unit)	113	119	126	126	127	130	133	167	158	168	
	Atten of Inlet Silencers + Filter	-6	-18	-38	-50	-65	-70	-70	-70	-70		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1950	Hemispherical Radiation	-64	-64	-64	-64	-64	-64	-64	-64	-64		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-3	-6	-15	-27		
	Source Sound Level Contribution	43	37	24	12	0	0	0	19	0	21	
5)	PWL of Aboveground Piping	95	100	100	100	100	110	110	110	100	116	
	PWL of Aboveground Piping (1 unit)	95	100	100	100	100	110	110	110	100	116	
	NR of Noise Control (Disch. Piping Insul.)	3	3	3	-3	-12	-20	-20	-20	-15		
	Ground Level Shielding	0	0	0	0	0	0	0	0	0		
1900	Hemispherical Radiation	-63	-63	-63	-63	-63	-63	-63	-63	-63		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-3	-6	-14	-26		
	Source Sound Level Contribution	35	40	39	33	23	24	21	12	0	30	
6)	PWL of Turbine L.O. Cooler	95	102	99	92	87	84	80	76	71	91	
	PWL of Turbine L.O. Cooler (1 unit)	95	102	99	92	87	84	80	76	71	91	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Miscellaneous Shielding	0	0	0	0	0	0	0	0	0		
2000	Hemispherical Radiation	-64	-64	-64	-64	-64	-64	-64	-64	-64		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-3	-6	-15	-27		Calc'd
	Source Sound Level Contribution	31	38	35	27	22	17	10	0	0	25	Ldn
Est'd Total Contribution of Proposed Station		**56**	**54**	**46**	**38**	**35**	**30**	**23**	**20**	**9**	**37.2**	**43.6**

General Note: DIL, NR and PWL values on this spreadsheet should not be used as the specified values. Refer to the "Noise Control Measures" in the report or other company specifications for the actual specified PWL of equip., noise reduction (NR) of pipe lagging or building construction, and DIL values of silencers assoc. with the prop. equipment.

Table E: Proposed Joliet Station: Est'd Sound Contribution at NSA #2

Source No. & Dist (Ft)	SOURCE PWL & EST'D. SOUND LEVEL CONTRIBUTIONS AT SPEC. DISTANCE	PWL or SPL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
1)	PWL of Turbine-Comp. Casing Noise	118	117	117	115	115	115	120	124	120	128	
	PWL of Eng.-Comp. Casing Noise (1 unit)	118	117	117	115	115	115	120	124	120	128	
	NR of Noise Control (20 guage/8" MW)	-7	-11	-13	-20	-28	-35	-35	-35	-25		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
3500	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-2	-5	-11	-27	-48		
	Source Sound Level Contribution	42	37	35	25	16	6	6	0	0	22	
2)	90 deg.PWL of Unsilenced Turbine Exh.	124	127	125	128	134	133	121	110	99	135	
	90 deg. PWL of Unsil. Turbine Exh. (1 unit)	124	127	125	128	134	133	121	110	99	135	
	Atten of Exhaust Silencer	-6	-11	-20	-30	-35	-38	-38	-32	-25		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
3550	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-2	-5	-11	-27	-49		
	Source Sound Level Contribution	49	47	36	28	28	21	4	0	0	29	
3)	PWL of Body/Duct. of Turbine Silencer	105	108	96	80	74	70	68	65	60	85	
	PWL of Body/Duct. of Turbine Sil. (1 unit)	105	108	96	80	74	70	68	65	60	85	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
3550	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-2	-5	-11	-27	-49		
	Source Sound Level Contribution	36	39	27	10	3	0	0	0	0	16	
4)	PWL of Turbine Intake System	113	119	126	126	127	130	133	167	158	168	
	PWL of Turbine Int. System (1 unit)	113	119	126	126	127	130	133	167	158	168	
	Atten of Inlet Silencers + Filter	-6	-18	-38	-50	-65	-70	-70	-70	-70		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
3550	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-2	-5	-11	-27	-49		
	Source Sound Level Contribution	38	32	19	6	0	0	0	1	0	11	
5)	PWL of Aboveground Piping	95	100	100	100	100	110	110	110	100	116	
	PWL of Aboveground Piping (1 unit)	95	100	100	100	100	110	110	110	100	116	
	NR of Noise Control (Disch. Piping Insul.)	3	3	3	-3	-12	-20	-20	-20	-15		
	Ground Level Shielding	0	0	0	0	0	0	0	0	0		
3500	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-2	-5	-11	-27	-48		
	Source Sound Level Contribution	29	34	34	27	17	16	11	0	0	23	
6)	PWL of Turbine L.O. Cooler	95	102	99	92	87	84	80	76	71	91	
	PWL of Turbine L.O. Cooler (1 unit)	95	102	99	92	87	84	80	76	71	91	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Miscellaneous Shielding	0	0	0	0	0	0	0	0	0		
3550	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-2	-5	-11	-27	-49		Calc'd
	Source Sound Level Contribution	26	33	30	22	16	10	1	0	0	19	Ldn
Est'd Total Contribution of Proposed Station		**50**	**48**	**40**	**32**	**29**	**23**	**13**	**8**	**8**	**30.9**	**37.3**

General Note: DIL, NR and PWL values on this spreadsheet should not be used as the specified values. Refer to the "Noise Control Measures" in the report or other company specifications for the actual specified PWL of equip., noise reduction (NR) of pipe lagging or building construction, and DIL values of silencers assoc. with the prop. equipment.

Table F: Proposed Joliet Station: Est'd Sound Contribution at NSA #3

Source No. & Dist (Ft)	SOURCE PWL & EST'D. SOUND LEVEL CONTRIBUTIONS AT SPEC. DISTANCE	PWL or SPL in dB Per Octave-Band Center Freq. (Hz)									A-Wt. Level	
		31.5	63	125	250	500	1000	2000	4000	8000		
1)	PWL of Turbine-Comp. Casing Noise	118	117	117	115	115	115	120	124	120	128	
	PWL of Eng.-Comp. Casing Noise (1 unit)	118	117	117	115	115	115	120	124	120	128	
	NR of Noise Control (20 guage/8" MW)	-7	-11	-13	-20	-28	-35	-35	-35	-25		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
3600	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-3	-5	-11	-27	-49		
	Source Sound Level Contribution	42	37	34	25	16	6	5	0	0	22	
2)	90 deg.PWL of Unsilenced Turbine Exh.	124	127	125	128	134	133	121	110	99	135	
	90 deg. PWL of Unsil. Turbine Exh. (1 unit)	124	127	125	128	134	133	121	110	99	135	
	Atten of Exhaust Silencer	-6	-11	-20	-30	-35	-38	-38	-32	-25		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
3600	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-3	-5	-11	-27	-49		
	Source Sound Level Contribution	49	47	35	28	28	21	3	0	0	29	
3)	PWL of Body/Duct. of Turbine Silencer	105	108	96	80	74	70	68	65	60	85	
	PWL of Body/Duct. of Turbine Sil. (1 unit)	105	108	96	80	74	70	68	65	60	85	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
3600	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-3	-5	-11	-27	-49		
	Source Sound Level Contribution	36	39	26	10	3	0	0	0	0	16	
4)	PWL of Turbine Intake System	113	119	126	126	127	130	133	167	158	168	
	PWL of Turbine Int. System (1 unit)	113	119	126	126	127	130	133	167	158	168	
	Atten of Inlet Silencers + Filter	-6	-18	-38	-50	-65	-70	-70	-70	-70		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
3600	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-3	-5	-11	-27	-49		
	Source Sound Level Contribution	38	32	18	6	0	0	0	1	0	11	
5)	PWL of Aboveground Piping	95	100	100	100	100	110	110	110	100	116	
	PWL of Aboveground Piping (1 unit)	95	100	100	100	100	110	110	110	100	116	
	NR of Noise Control (Disch. Piping Insul.)	3	3	3	-3	-12	-20	-20	-20	-15		
	Ground Level Shielding	0	0	0	0	0	0	0	0	0		
3650	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-3	-5	-11	-28	-50		
	Source Sound Level Contribution	29	34	33	27	16	16	10	0	0	23	
6)	PWL of Turbine L.O. Cooler	95	102	99	92	87	84	80	76	71	91	
	PWL of Turbine L.O. Cooler (1 unit)	95	102	99	92	87	84	80	76	71	91	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Miscellaneous Shielding	0	0	0	0	0	0	0	0	0		
3600	Hemispherical Radiation	-69	-69	-69	-69	-69	-69	-69	-69	-69		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-3	-5	-11	-27	-49		Calc'd
	Source Sound Level Contribution	26	33	29	22	16	10	0	0	0	19	Ldn
Est'd Total Contribution of Proposed Station		**50**	**48**	**40**	**32**	**28**	**22**	**13**	**8**	**8**	**30.7**	**37.1**

General Note: DIL, NR and PWL values on this spreadsheet should not be used as the specified values. Refer to the "Noise Control Measures" in the report or other company specifications for the actual specified PWL of equip., noise reduction (NR) of pipe lagging or building construction, and DIL values of silencers assoc. with the prop. equipment.

Table G: Proposed Joliet Station: Est'd Sound Contribution at NSA #4

State Noise Regulations

There is an Illinois noise regulation that is applicable to this facility. The applicable environmental sound level limits are a maximum allowable octave-band sound pressure levels (SPLs) contained within the State of Illinois environmental noise regulations (Title 35, Subtitle H: Chapter I of the IL Administrative code). The classification of land usage is provided in Appendix B of these regulations. In general, residential property is classified as Class A Land, commercial property is classified as Class B Land and industrial/agriculture properties are classified as Class C. It is assumed that the station is Class C Land, the property located at the closest NSAs is Class A Land and the land located immediately around and adjacent to the station property line is Class C Land.

The maximum allowable SPLs from activities on Class C Land to Class A Land is shown below in **Table A-1**, and it is assumed that these SPLs would apply to the property line of the NSAs that are nearby the station.

Condition Class C to Class A	SPL (in dB) per Unweighted Octave Band Center Frequency (Hz)								
	31.5	63	125	250	500	1000	2000	4000	8000
Daytime (07:00 to 22:00 Hours)	75	74	69	64	58	52	47	43	40
Nighttime (22:00 to 07:00 Hours)	69	67	62	54	47	41	36	32	32

Table A-1: Allowable Maximum SPL – State of IL Rules/Regulations (Class C to Class A)

To comply with these Illinois Environmental Protection Agency (ILEPA) noise regulations, we understand that the sound attributable to the facility must be below the respective daytime SPL in each specific octave band. Note that maximum allowable A-wt. sound levels are not given, and there are no limits for sound emitted from Class C Land to a Class C Land. It is also required that no person shall cause or allow the emission of any prominent discrete tone from any property-line-noise-source located on any Class A, B or C land to any receiving Class A, B or C land, provided however, that no measurement of one-third octave band SPLs shall be made less than 25 feet from such property-line source. Note that the definition of a prominent discrete tone is provided in the ILEPA noise regulations.

The maximum allowable octave-band limits when summed result in an A-wt. sound level of **61 dBA** (daytime) and **51 dBA** (nighttime) at a residential area from an industrial source. These limits translate to an Ldn of **61 dBA**, which is generally less restrictive than the FERC sound level requirement of **55 dBA** (L_{dn}). In addition, based on a discussion with the ILEPA, new noise sources are encouraged to locate in areas that already have high background noise levels such

as airports, highways, and industrial operations. The ILEPA also has indicated that a new noise source should not contribute more than **3 dBA** to the existing background noise level at any NSA (per a discussion with Greg Zak in 1999, noise advisor for the IL Noise Pollution Board).

DESCRIPTION OF THE ANALYSIS METHODOLOGY AND THE SOURCE OF SOUND DATA

ANALYSIS METHODOLOGY

In general, the predicted sound level contributed by the facility was calculated as a function of frequency from estimated octave-band sound power levels (PWLs) for each significant sound source associated with the proposed compressor station equipment. The following summarizes the analysis procedure:

- Initially, unweighted octave-band PWLs for each noise source (without noise control) were determined from actual sound measurements performed by H&K on similar equipment and/or obtained from the equipment manufacturer.
- Then, expected noise reductions in dB per octave-band frequency due to any designated noise control measures for each source were subtracted from the estimated PWL.
- Next, octave-band SPLs for each source (with noise control) were determined by compensating for sound attenuation due to propagation (hemispherical radiation) and atmospheric sound absorption.
- Since sound shielding by buildings can influence the sound level contributed at the NSAs, we also included the sound shielding due to buildings, if appropriate. Effects of vegetation or land contour were typically not considered in this analysis.
- Finally, the estimated octave-band SPLs for each source (with noise control and other sound attenuation effects) were corrected for A-weighting, and the total SPLs of all sound sources were logarithmically summed and corrected for A-weighting to provide the estimated A-wt. sound level contributed at the specified distance(s) by the proposed facility.

SOURCE OF SOUND DATA

The following describes the source of sound data for estimating the source sound levels and source PWLs used in the noise impact analysis. Note that equipment noise levels and acoustical performance of mufflers/silencers utilized in the acoustical analysis (i.e., spreadsheet analysis) are generally higher than the sound level requirement for the new equipment and new mufflers to insure that the design incorporates an acoustical "margin of safety."

- Turbine exhaust PWL were calculated from sound data recently measured in the field by H&K on a similar turbine-compressor. The DIL values for the exhaust muffler system utilized in the acoustical analysis are generally lower than the recommended values in order that the noise design analysis incorporates an acoustical "margin of safety."
- The estimated PWL values of equipment inside the building (i.e., turbine-driven compressor and equipment) were calculated from sound data measured by H&K on a similar compressor installation.

- The estimated PWL values of the outdoor aboveground gas piping were determined from sound measurements by H&K on gas piping similar to that of the proposed compressor installation.
- The estimated PWL value for lube oil cooler was designated to meet the design noise goal. Note that the estimated PWL for the coolers utilized in the acoustical analysis includes noise associated with lube oil piping. The noise level for the cooler used in the acoustical analysis is generally higher than the sound level requirement in order that the noise design analysis incorporates an acoustical "margin of safety."
- The estimated PWL for the turbine air intake were calculated from measured sound data in the field tests by H&K on similar turbines.

Summary of Typical Metrics for Regulating Environmental Noise & Acoustical Terminology Discussed in the Report

(1) Decibel (dB): A unit for expressing the relative power level difference between acoustical or electrical signals. It is ten times the common logarithm of the ratio of two related quantities that are proportional to power. When adding dB or dBA values, the values must be added logarithmically. For example, the logarithmic addition of **35 dB** plus **35 dB** is **38 dB**.

(2) Human Perception of Change in Sound Level

- A **3 dB** change of sound level is barely perceivable by the human ear
- A **5 or 6 dB** change of sound level is noticeable
- If sound level increases by **10 dB**, it appears as if the sound intensity has doubled.

(3) A-Weighted Sound Level (dBA): The A-wt. sound level is a single-figure sound rating, expressed in decibels, which correlates to the human perception of the loudness of sound. The dBA level is commonly used to measure industrial and environmental noise since it is easy to measure and provides a reasonable indication of the human annoyance value of the noise. The dBA measurement is not a good descriptor of a noise consisting of strong low-frequency components or for a noise with tonal components.

(4) Background or Ambient Noise: The total noise produced by all other sources associated with a given environment in the vicinity of a specific sound source of interest, and includes any Residual Noise.

(5) Sound Pressure Level (L_p or SPL): Ten times the common logarithm to the base 10 of the ratio of the mean square sound pressure to the square of a reference pressure. Therefore, the sound pressure level is equal to 20 times the common logarithm of the ratio of the sound pressure to a reference pressure (20 micropascals or 0.0002 microbar).

(6) Octave Band Sound Pressure Level (SPL): Sound is typically measured in frequency ranges (e.g., high-pitched sound, low-pitched sound, etc.) that provides more meaningful sound data regarding the sound character of the noise. When measuring two noise sources for comparison, it is better to measure the spectrum of each noise, such as in octave band SPL frequency ranges. Then, the relative loudness of two sounds can be compared frequency range by frequency range. As an illustration, two noise sources can have the same dBA rating and yet sound completely different. For example, a high-pitched sound concentrated at a frequency of 2000 Hz could have the same dBA rating as a much louder low-frequency sound concentrated at 50 Hz.

(7) Daytime Sound Level (L_d) & Nighttime Sound Level (L_n): L_d is the equivalent A-weighted sound level, in decibels, for a 15 hour time period, between 07:00 to 22:00 Hours (7:00 a.m. to 10:00 p.m.). L_n is the equivalent A-weighted sound level, in decibels, for a 9 hour time period, between 22:00 to 07:00 Hours (10:00 p.m. to 7:00 a.m.).

(8) Equivalent Sound Level (L_{eq}): The equivalent sound level (L_{eq}) can be considered an average sound level measured during a period of time, including any fluctuating sound levels during that period. In this report, the L_{eq} is equal to the level of a steady (in time) A-weighted sound level that would be equivalent to the sampled A-weighted sound level on an energy basis for a specified measurement interval. The concept of the measuring L_{eq} has been used broadly to relate individual and community reaction to aircraft and other environmental noises.

(9) Day-Night Sound Level (L_{dn}): The L_{dn} is an energy average of the measured daytime L_{eq} (L_d) and the measured nighttime L_{eq} (L_n) plus **10 dB**. The **10-dB** adjustment to the L_n is intended to compensate for nighttime sensitivity. As such, the L_{dn} is not a true measure of the sound level but represents a skewed average that correlates generally with past sound surveys which attempted to relate environmental sound levels with physiological reaction and physiological effects. For a steady sound source that operates continuously over a 24-hour period and controls the environmental sound level, an L_{dn} is approx. **6.4 dB** above the measured L_{eq}.

(10) Sound Level Meter (SLM): An instrument used to measure sound pressure level, sound level, octave-band SPL, or peak sound pressure level, separately or in any combinations thereof. The measured weighted SPL (i.e., A-Wt. Sound Level or dBA) is obtained by the use of a SLM having a standard frequency-filter for attenuating part of the sound spectrum.

SOUND LEVELS FOR TYPICAL ACTIVITIES **REFERENCE AND COMMUNITY RESPONSES**

Subjective Human Response and Conversation	Home and Industrial (Indoor Noise)	dBA Scale (Level)	Community and Traffic (Outdoor Noise)	Reference Loudness	Community Reaction To Outdoor Noise
		-- 140 --	Aircraft Carrier		
Threshold of Pain			Military Jet Aircraft		
		-- 130 --			
			Large Siren at 100 Ft.		
			Jet Takeoff at 200 Ft.	16 Times	
	Rock Band (Max.)	-- 120 --		as Loud	
Threshold of			Thunderstorm Activity		
Discomfort	Discotheque (Max.)			8 Times	
		-- 110 --	Elevated Train	as Loud	
	Symphonic Music (Max.)				
Maximum Vocal Effort			Auto Horn at 5 Ft.	4 Times	
	Industrial Plant	-- 100 --		as Loud	
Very Loud			Compacting Trash Truck		
	Newspaper Printing Rm.			2 Times	
Shouting in Ear		-- 90 --	Heavy Truck at 25 Ft.	as Loud	Vigorous Action
	Food Blender				and Law Suits
	Symphonic Music (Typ.)		Motorcycle at 25 Ft.	Reference	
Shouting		-- 80 --		Loudness	Threats of
	Garbage Disposal		Small Truck at 25 Ft.		Legal Action
Very Annoying	Alarm Clock		Heavy Traffic at 50 Ft.		Appeals to Officials
		-- 70 --		1/2 as Loud	Widespread
Moderately Loud	Vacuum Cleaner		Avg. Traffic at 100 Ft.		Complaints
	Electric Typewriter				
Normal Conversation		-- 60 --		1/4 as Loud	Sporadic Complaints
	Air Conditioner at 20 Ft.				
			Light Traffic at 100 Ft.		No Reaction,
	Typical Office	-- 50 --		1/8 as Loud	Although Noise
Quiet					is Noticeable
	Living Room		Typical Suburban Area		
	Bedroom	-- 40 --			
			Birdsong		
Very Quiet	Library				
		-- 30 --			
Soft Whisper	Broadcasting Studio		Rural Area		
				Just Audible	
		-- 20 --			
				Threshold	
		-- 10 --		of Hearing	
Hoover & Keith Inc. (Consultants in Acoustics)					
11391 Meadowglen, Suite D					
Houston, Texas 77082		-- 0 --			

-end of report-

ROMEO COMPRESSOR STATION

AMBIENT SOUND SURVEY
AND NOISE IMPACT EVALUATION
(Associated with the Vector Compression Expansion Project)

NON-INTERNET PUBLIC

H&K Report No. 1920

H&K Job No. 3719

Date of Report: November 7, 2005

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REPORT SUMMARY

In this report, we present the results of a July 25, 2005 ambient sound survey and subsequent noise impact analysis associated with the proposed **Romeo Compressor Station**, a new compressor station to be owned and operated by **Vector Pipeline, LP**, which is a 60/40 joint venture between Enbridge Inc. and DTE Energy, respectively. The purpose of the ambient sound survey and acoustical analysis is to:

- Document the existing acoustic environment around the proposed site and locate the noise-sensitive areas (NSAs) surrounding the proposed station.
- Project the sound level contribution that would result from operating the proposed compressor station installation.
- Determine noise control measures and noise specifications for the station equipment to insure that the facility meets applicable sound level criteria.

The following table summarizes the measured sound levels and noise quality analysis for the proposed Romeo Compressor Station at the closest NSAs:

Noise Quality Analysis for the Proposed Romeo Station at the Closest NSAs

NSAs	Distance to Station Comp. Building	Direction	Meas'd Ambient L_d (dBA)	Meas'd Ambient L_n (dBA)	Calc'd Ambient L_{dn} (dBA)	Est'd L_{dn} of Station (dBA)	Station L_{dn} + Ambient L_{dn} (dBA)	Potential Increase Above Ambient (dB)
Church & House (NSA #1)	1400 ft.	S-SW	51.2	43.6	52.3	48.8	53.9	1.6
Houses (NSA #2)	1600 ft.	S-SE	49.0	43.3	51.1	48.0	52.9	1.7

Our measurements and observations during the July 25, 2005 ambient sound survey indicated that the existing ambient sound level was **52.3** and **51.1 dBA L_{dn}** for NSA #1 and NSA #2, respectively. The results of our measurements, observations and analysis indicate that the estimated full load station sound level contribution at the nearby NSAs should be less than an **L_{dn}** of **55 dBA**. Therefore, assuming the recommended noise control measures are followed and successfully implemented, it is our opinion that the sound level attributable to the proposed station should not exceed the FERC criterion of **55 dBA Ldn** at the nearby NSAs. In addition, the facility should have "minimum noise impact" on the surrounding environment. "Minimum noise impact" implies that the noise of the station should not interfere with public activity or be an annoyance outdoors.

Regarding local Washington Township requirements, our analysis indicates that the proposed Romeo Compressor Station sound level contribution at the property lines should be less than the ordinance requirement of **65 dBA**. As indicated in the report, the adjacent ITC property line easements, the adjacent M-53 divided/limited access highway, and the adjacent Washington 10 Storage Field effectively results in increased buffer distance for the north, south and west directions as well.

TABLE OF CONTENTS

Continued on next page

TABLE OF CONTENTS (cont'd.)

Page

FIGURES and TABLES

1.0 INTRODUCTION

In this report, we present the results of a July 25, 2005 ambient sound survey and subsequent noise impact analysis associated with the proposed **Romeo Compressor Station**, a new compressor station to be owned and operated by **Vector Pipeline, LP**, which is a 60/40 joint venture between Enbridge Inc. and DTE Energy, respectively. The purpose of the ambient sound survey and acoustical analysis is to:

- Document the existing acoustic environment around the proposed site and locate the noise-sensitive areas (NSAs) surrounding the proposed station.
- Project the sound level contribution that would result from operating the proposed compressor station installation.
- Determine noise control measures and noise specifications for the station equipment to insure that the facility meets applicable sound level criteria.

2.0 SOUND CRITERIA

Typically, certificate conditions set forth by the Federal Energy Regulatory Commission (FERC) require that the sound level attributable to a new compressor station not exceed an equivalent day-night sound level (L_{dn}) of **55 dBA** at any nearby NSA, such as residences, hospitals or schools. The L_{dn} is an energy average of the daytime L_{eq} (i.e., L_d) and nighttime L_{eq} (i.e., L_n) plus 10 dB. For an essentially steady sound source (e.g., gas compressor station) that operates continuously over a 24-hour period and controls the environmental sound level, the L_{dn} is approximately **6.4 dB** above the measured L_{eq}. Consequently, an L_{dn} of **55 dBA** corresponds to a L_{eq} of **48.6 dBA**.

The State of Michigan regulates noise under "Michigan's Oil and Gas Regulations" which are primarily associated with the production of oil and gas in the State of Michigan. It is our understanding that Michigan's Oil and Gas Regulations" are not applicable to this interstate natural gas pipeline project. A summary of the State of Michigan Regulations in included in **Appendix A** (p. A-1).

Washington Township has a local noise ordinance that is applicable to this facility. This ordinance stipulates that noise from the proposed Romeo Compressor Station cannot exceed **65 dBA** at the station property lines and that noise shall be controlled so as not to become a nuisance to adjacent uses. The noise ordinance language is included in **Appendix A** (p. A-1).

For reference, a summary of acoustical terminology and typical metrics used to measure and regulate environmental noise is provided at the end of this report in **Appendix C**, (pp. C-1 to C-3).

3.0 DESCRIPTION OF SITE AND PROPOSED COMPRESSOR STATION

3.1 Description of the Site

Figure 1 (p, 15) depicts the proposed Romeo Compressor Station and surrounding area, noting that the proposed station will be constructed within a 9 acre parcel located immediately north of an existing 36 inch pipeline that Vector currently leases from Mich Con. The site is bound to the north by the existing **Washington 10 Storage Field** (which is owned and operated by DTE Energy). The site is bound to the west by high voltage electric transmission lines and State of Michigan divided/limited access highway M-53. The site is bound to the east by agricultural lands. Finally, it is bound to the south by high voltage electric transmission lines, gas pipelines and agricultural land. The proposed Romeo Compressor Station is also adjacent to the existing **DTE Energy Meter Station**.

The surrounding terrain is level and land use in the surrounding area varies from adjacent agricultural and forested lands, to rural residential and suburban residential developments. Land use on the opposite side (i.e., west) of State of Michigan M-53 highway is commercial. As noted above, the existing DTE Energy Meter Station and existing Washington 10 Storage Field are also adjacent to the proposed station. The closest NSAs are a church and house that are approximately 1400 feet S-SW, and houses that are approximately 1600 feet S-SE of the proposed Romeo Compressor Station, respectively.

3.2 Description of the Station Equipment

Figure 2 (p. 16) depicts the proposed Romeo Compressor Station plot plan. The noise impact analysis assumes that the facility will include two Solar Mars 100 turbine driven compressor units with a total station rating of approximately 30,000 HP. The following describes auxiliary equipment and other notable items associated with the new station:

- Compressor building for the two turbine driven centrifugal units.
- Turbine exhaust systems.
- Turbine air intake systems.
- Turbine lube oil coolers.
- Aboveground gas piping.
- Station gas aftercooler.

- Auxiliary building for station control, MCC equipment, station emergency generator and station air compressors.

4.0 MEASUREMENT METHODOLOGY

4.1 Sound Measurement Locations

Two (2) locations were chosen to measure the sound levels near the closest NSAs located around the proposed Romeo Compressor Station and the measurement locations are depicted on **Figure 1**. Photographs of the measurement positions (as viewed towards the proposed Romeo Compressor Station) are shown in **Figures 3 & 4** (p. 17). The following is a description of the NSAs and the selected sound measurement positions:

Pos. 1: Adjacent to NSA #1: A Church and house located on 29 Mile Road that are approximately 1400 feet S-SW of the proposed turbine units.
Pos. 2: Adjacent to NSA #2: Four houses located on 29 Mile Road, and the closest house is approximately 1600 ft. S-SE of the proposed turbine units.

4.2 Data Acquisition and Sound Measurement Equipment

At the reported sound measurement locations, the A-wt. equivalent sound levels (L_{eq}) and unweighted octave-band sound pressure levels (SPLs) were performed at approx. 5 feet above ground. The sound measurements at the nearby NSAs attempted to exclude "extraneous sound" such as a car passing immediately by the measurement position and the sound measurements were typically performed during periods of minimum audible traffic noise. The measurement system consisted of a Larson-Davis (LD) Model 2900 Real Time Analyzer/SLM (a Type I SLM per ANSI Standard S1.4 & S1.11) with a 1/2-in. LD condenser microphone covered by a windscreen (calibrated with a LD Model CAL 200 Mic calibrator).

5.0 MEASUREMENT RESULTS

5.1 Measured Sound Level Data

Table A (p. 18) shows the measured daytime L_{eq} (i.e., L_d) and nighttime L_{eq} (i.e., L_n) at the NSA measurement locations and the average of the L_d and L_n measured data since multiple samples of the noise level were typically performed at each location. **Table A** also includes the calculated L_{dn} at each NSA measurement position, as calculated from the measured L_d and L_n. Meteorological conditions during the tests are summarized in **Table B** (p. 18). The measured unweighted octave-band SPLs at the reported sound

measurement positions and the average of the octave-band SPLs are provided in **Tables C, D & E** (p. 19).

The following **Table 1** summarizes the measured ambient L_d and L_n at the NSAs along with the calculated L_{dn} (as calculated from the measured L_d and L_n).

Meas. Position	NSAs	NSA Dist. to Station Turbine Units	Direction	Meas'd L_d (dBA)	Meas'd L_n (dBA)	Calc'd L_{dn} (dBA)
Pos. 1	Church & House (NSA #1)	1400 ft.	S-SW	51.2	43.6	**52.3**
Pos. 2	Houses (NSA #2)	1600 ft.	S-SE	49.0	43.3	**51.1**

Table 1: Summary of the Measured Ambient Sound Levels and the Calculated L_{dn} at the Closest NSAs

It is our opinion that the measured sound level data adequately quantifies the existing ambient sound levels around the site for the meteorological conditions that occurred during the sound survey.

5.2 Observations during the Site Sound Tests

Adjacent to NSA #1 (12:30 to 12:50 PM): Audible sounds included M-53 traffic (which was dominant), birds, and some insect noise. It was necessary to pause extensively for 29 Mile Road passby traffic.

Adjacent to NSA #1 (7:15 to 7:35 PM): Audible sounds included M-53 traffic (which was dominant), birds, insects, and a distant airplane. It was necessary to pause extensively for 29 Mile Road passby traffic.

Adjacent to NSA #1 (11:00 to 11:25 PM): Audible sounds included distant and passby M-53 traffic, insects and a distant airplane. It was necessary to pause for 29 Mile Road passby traffic.

Adjacent to NSA #2 (12:50 to 1:05 PM): Audible sounds included M-53 traffic (which was significant to dominant) and birds. It was necessary to pause extensively for 29 Mile Road passby traffic.

Adjacent to NSA #2 (7:35 to 7:55 PM): Audible sounds included birds, M-53 traffic (although M-53 traffic was dominant at times). It was necessary to pause extensively for 29 Mile Road passby traffic.

Adjacent to NSA #2 (11:25 to 11:45 PM): Audible sounds included M-53 traffic and insects (which were equally dominant), and distant aircraft. It was necessary to pause for 29 Mile Road passby traffic.

6.0 NOISE IMPACT EVALUATION

6.1 Significant Sound Sources

The noise impact evaluation considers the noise produced by all significant sound sources associated with the proposed station that could impact the sound contribution at the nearby NSAs. A description of the analysis methodology and source of sound data is provided in **Appendix** B (p. B-1). The following sound sources are considered significant:

- Noise of the turbine unit exhaust.
- Noise generated by the turbine intake air system.
- Turbine-compressor casing noise that penetrates the compressor building.
- Noise of the lube oil cooler (i.e., fin-fan cooler).
- Noise of the gas aftercooler (i.e., fin-fan cooler).
- Noise radiated by above ground compressor station piping.

6.2 Estimated Sound Contribution

Tables F & G (pp. 20-21) shows the calculation (i.e., spreadsheet analysis) of the estimated octave-band SPLs and the A-wt. sound level, at NSAs #1 & #2, contributed by the significant noise sources associated with the proposed facilities for standard day propagating conditions (i.e., no wind, 60 deg. F., 70% R.H.). This spreadsheet analysis includes the potential noise reduction due to the anticipated and/or recommended noise control measures for equipment.

6.3 Noise Quality Analysis (FERC)

Table 2 below summarizes the Noise Quality Analysis for the nearby NSAs for the proposed Romeo Compressor Station:

Noise Quality Analysis								
NSAs	**Distance to Station Comp. Building**	**Direction**	**Meas'd Ambient L_d (dBA)**	**Meas'd Ambient L_n (dBA)**	**Calc'd Ambient L_{dn} (dBA)**	**Est'd L_{dn} of Station (dBA)**	**Station L_{dn} + Ambient L_{dn} (dBA)**	**Potential Increase Above Ambient (dB)**
Church & House (NSA #1)	1400 ft.	S-SW	51.2	43.6	52.3	48.8	53.9	1.6
Houses (NSA #2)	1600 ft.	S-SE	49.0	43.3	51.1	48.0	52.9	1.7

Table 2: Proposed Romeo Compressor Station Noise Quality Analysis

As noted above in **Table 2**, the sound contribution of the proposed Romeo Compressor Station is estimated to be less than the FERC criterion of L_{dn} of **55 dBA** at the nearby NSAs.

6.4 Washington Township Noise Ordinance

In general, the Washington Township noise ordinance stipulates that noise from the proposed Romeo Compressor Station cannot exceed **65 dBA** at the station property lines, as the station and adjacent land use is zoned as agricultural. The Washington Township noise ordinance also addresses "nuisance" noise as follows:

"In addition, objectionable sounds of an intermittent nature, or characterized by high frequencies even if falling below the aforementioned decibel readings shall be controlled so as not to become a nuisance to adjacent uses."

Table 3 below depicts the estimated Romeo Compressor Station sound level contribution at the South property line:

Property Line	**Approximate Location**	**Est'd Sound Level (dBA)**
South	(midway between the Compressor Building and Gas Cooler)	**60**
North	(midway between the Compressor Building and Gas Cooler)	**60**
East	(at midpoint of the East property line)	**58**
West	(at midpoint of West property line, adj. to the Control/MCC Bldg.)	**53**

Table 3: Estimated Sound Levels at Property Lines

As depicted in **Table 3** above, the estimated sound level contribution of the proposed Romeo Compressor Station at the four property lines is less than the Washington Township Ordinance requirement of **65 dBA**. For illustrative purposes, **Table H** (p. 22)

shows the calculation (i.e., spreadsheet analysis) of the estimated South property line octave-band SPLs and the A-wt. sound level contributed by the significant noise sources associated with the proposed facilities. Calculations for the East, North and West property lines were similarly performed.

The South and West property lines are also bounded by ITC power line easements, and these power line easements effectively create additional buffer distance between the Romeo Compressor Station and adjacent land use in the South and West directions. The North property line is bounded by the Washington 10 Storage Field.

With respect to the "nuisance" noise provision of the Washington Township noise ordinance, it is our opinion that the noise control measures identified in this report should ensure that "nuisance" noise is not an issue.

6.5 Estimated Sound Levels for Blowdowns

The sound levels associated with high pressure gas venting are a function of initial blowdown pressure, the diameter and type of blowdown valve, and the diameter and arrangement of the downstream vent piping. As expected, blowdown sound levels are loudest at the beginning of the blowdown event and they decrease as the blowdown pressure decreases. The following **Table 4** summarizes the expected sound levels for normal blowdown events (i.e., unit start up and shut down) at the closest NSA:

"Normal" Blowdown Sound Source	Closest NSA	Distance to Blowdown Silencers (feet)	Direction	Est'd Initial Sound Level for Blowdown Event (dBA)
Proposed Compressor Units	Houses & Church (NSA #1 & #2)	1600	S-SE to S-SW	45

Table 4: Estimated Initial Sound Levels for "Normal" Blowdown Event

7.0 NOISE CONTROL REQUIREMENTS

The following section provides recommended noise control measures and equipment noise specifications along with other assumptions that may affect the noise generated by the facility.

7.1 Compressor Building

Building Structure

- As a minimum, walls/roof should be constructed with exterior steel of 18 gauge and interior layer of 8-inch thick unfaced mineral wool (e.g., 6.0-8.0 pcf uniform density) covered with a 24 gauge perforated liner. Thermal insulation, such as "R-19", should not be used as a substitute for the 6.0-8.0 pcf material.

- Personnel entry doors should have a minimum STC-38 sound rating and could include door glazing if a 2' x 2' maximum view port is employed (e.g., 1/2 inch thick laminated glazing or double pane safety glass). Doors should seal well with the doorframe and be self-closing.

- No windows, skylights or "open" louvers should be installed.

- All voids and openings in the building walls resulting from penetrations should be patched and well sealed. Building construction details shall be consistent with a high performance acoustical compressor building.

- Equipment doors shall have a minimum STC-47 sound rating. The Equipment doors shall be high performance double swing acoustical doors with 16 gage leafs (Overly or equal).

Interior Wall Between Compressor Units

- The interior sound partition wall between the compressor units will consist of a solid metal septum layer (minimum 20 gage) with 4-inch layers of unfaced mineral wool (e.g., 6.0-8.0 pcf uniform density) on each side of the solid metal septum layer that are each covered with 24 gage perforated metal liners. It is very important that the solid metal septum layer extends completely to the exterior 18 gage building metal wall and roof panels. Thermal insulation, such as "R-19", should not be used as a substitute for the 6.0-8.0 pcf material.

- Personnel doors should have a minimum STC-38 sound rating and could include door glazing if a 2' x 2' maximum view port is employed (e.g., 1/2 inch thick laminated glazing or double pane safety glass). Doors should seal well with the doorframe and be self-closing.

- Overhead sectional roll-up doors can be utilized for larger equipment openings for the interior wall between compressor units. As a minimum, they should be a

22 gauge insulated type design (e.g., 20 gauge exterior with a 24 gauge backskin with insulation core) and they should be completely sealed. Sliding doors of similar construction can be utilized as an alternative to the sectional roll-up doors providing that they are completely sealed.

- All voids and openings in the interior sound partition wall resulting from penetrations should be patched and well sealed.

Building Ventilation

- The building ventilation system should be designed to properly ventilate (and cool) the building and equipment during maximum outside ambient temperatures with all personnel and equipment doors closed. Personnel and/or equipment doors should only be opened during maintenance activities.

- The A-wt. sound level for each ventilation inlet should not exceed **40 dBA** at **50 feet** from the building penetration (i.e., inlet louver, acoustic inlet hood, etc.). The A-wt. sound level for each ventilation exhaust outlet should not exceed **40 dBA** at **50 feet** from the building penetration (i.e., exhaust louver, exhaust hood, etc.). Each ventilation inlet and exhaust outlet shall assume that the following sound pressure levels exist inside the compressor building at and adjacent to the ventilation equipment:

SPLs per Octave-Band Center Freq. & A-Wt. Level

31.5	63	125	250	500	1000	2000	4000	8000	dBA
90	90	90	90	90	95	95	95	80	**101**

- The ventilation system inlet and exhaust systems shall be designed to control interior building sound paths from the inlet and exhaust flow paths, interior building sound paths across ventilation system components (i.e., ducting break-in noise, etc.,) and sound that is generated by ventilation equipment (i.e., supply fans, exhaust fans, louvers, tempering coils, etc).

7.2 Auxiliary Building

Building Structure (for Mechanical Equipment and Workshop Areas)

- As a minimum, walls/roof should be constructed with exterior steel of 22 gauge and interior layer of 4-inch thick unfaced mineral wool (e.g., 6.0-8.0 pcf uniform density) covered with a 24 gauge perforated liner. Thermal insulation, such as "R-19", should not be used as a substitute for the 6.0-8.0 pcf material.

- Personnel entry doors should be insulated steel doors with 1/4 inch thick laminated glass. Doors should seal well with the doorframe and be self-closing.

- No windows or "open" louvers should be installed.

- All voids and openings in the building walls resulting from penetrations should be patched and well sealed.

- Overhead roll-up doors, as a minimum, should be a 22 gauge insulated type design (e.g., 20 gauge exterior with a 24 gauge backskin with insulation core) and should be completely weather stripped.

Building Ventilation (for Mechanical Equipment and Workshop Areas)

- The building ventilation system should be designed to properly ventilate (and cool) the building and equipment during maximum outside ambient temperatures with all personnel and equipment doors closed. Personnel and/or equipment doors should only be opened during maintenance activities.

- The A-wt. sound level for each ventilation inlet should not exceed **40 dBA** at **50 feet** from the building penetration (i.e., inlet louver, acoustic inlet hood, etc.). The A-wt. sound level for each ventilation exhaust outlet should not exceed **40 dBA** at **50 feet** from the building penetration (i.e., exhaust louver, exhaust hood, etc.). Each ventilation inlet and exhaust outlet shall assume that the following sound pressure levels exist inside the compressor building at and adjacent to the ventilation equipment:

SPLs per Octave-Band Center Freq. & A-Wt. Level

31.5	63	125	250	500	1000	2000	4000	8000	dBA
85	85	85	85	90	90	90	85	75	**95**

- The ventilation system inlet and exhaust systems shall be designed to control interior building sound that escapes from the inlet and exhaust flow paths, interior building sound paths across ventilation system components (i.e., ducting break-in noise, etc.,) and sound that is generated by ventilation equipment (i.e., supply fans, exhaust fans, louvers, tempering coils, etc).

- As a minimum, air-supply fans used for ventilation should include a metal boot enclosing the fan; a minimum 36-inch length exterior silencer and a weather hood lined with acoustical insulation.

- Assuming separate roof exhaust vents will be utilized, each roof exhaust vent, as a minimum, should include a 36-inch length silencer (i.e., baffle-type design) mounted between the building surface and vent/hood (i.e., in the ventilator throat).

7.3 Turbine Exhaust Systems

The exhaust system for each new turbine should include a two stage silencer system that provides the following total dynamic insertion loss (DIL) values at the rated turbine operating conditions:

DIL Values in dB per Octave-Band Center Freq. for Exh. Muffler System

31.5	63	125	250	500	1000	2000	4000	8000
12	23	35	40	50	55	55	55	40

The recommended method to achieve the above DIL values is to install one rectangular muffler (parallel baffle design) of approx. 12 ft. length horizontally inside the building (to the greatest extent possible) and to install another rectangular muffler (parallel baffle design) of 18-20 ft. vertically outside the building (i.e., integrated into the vertical exhaust stack). It is also required that the horizontal section of ducting (and support structure) is acoustically isolated from the vertical exhaust stack and silencer with a suitable vibration break.

In addition, exhaust ductwork located between the building and the outdoor stack muffler should be completely covered with an additional layer of acoustical lagging such as a 3-in. thick inner layer of 8.0-pcf insulation (e.g., mineral wool) covered with a heavy-gauge galvanized steel jacketing (minimum 18 gauge).

7.4 Turbine Air Intake Systems

The intake system for each new turbine should include two silencers in series (i.e., two stage silencing system) between the air intake filter and turbine unit. It is recommended that the first silencer is located inside the building, while the second stage silencer can be located outside the building. It is also required that the first stage silencer (and support system) is acoustically isolated from the second stage silencer (and support structure) with a suitable vibration break. The first stage silencer can either be a "tubular" design or parallel baffle construction. The second stage silencer should be a parallel baffle construction.

The "tubular" first stage silencer should meet the following dynamic insertion loss (DIL) values at the rated turbine operating conditions:

DIL Values in dB per Octave-Band Center Freq. for 1st Stage Muffler

31.5	63	125	250	500	1000	2000	4000	8000
1	2	3	4	18	38	46	54	50

The second stage parallel baffle silencer should meet the following dynamic insertion loss (DIL values) at the rated turbine operating conditions:

DIL Values in dB per Octave-Band Center Freq. for 2nd Stage Muffler

31.5	63	125	250	500	1000	2000	4000	8000
8	15	28	35	40	40	40	40	25

As an alternative, the turbine unit supplier can utilize parallel baffle silencers for both the first stage and second stage silencers, providing that the total DIL is equal to or greater than the above two stage inlet silencing system.

It is recommended that the inlet ducting inside the building is completely covered with an additional layer of acoustical lagging such as 4.0-pcf insulation (e.g., mineral wool) covered with a mass-filled vinyl jacket (e.g., composite of 1.0 psf mass-filled vinyl laminated to 0.020" thick aluminum) to control sound levels inside the compressor building.

7.5 Turbine Lube Oil Coolers

It is recommended that the turbine manufacturer's electric motor driven "low noise" lube oil cooler is utilized for this application. For this application, the sound level should not exceed **56 dBA** at **50 feet** from the cooler perimeter at rated conditions. This sound level is equivalent to a sound power level (PWL) of approximately **88 dBA**, and the cooler fan tip speed would not be expected to exceed 6000 fpm to meet this noise requirement. The cooler supplier should provide the A-wt. sound level and unweighted octave-band SPLs at **50 feet** from the cooler with all fans on and motors operating.

At this time, it is not anticipated that the lube oil piping will have to be acoustically lagged, noting that additional information during the detailed design phase is necessary to make a final determination. Therefore, we recommend that this potential noise source and noise control measure be further analyzed when additional information is available during the detailed design phase.

7.6 Station Gas Aftercooler

The cooler fan tip speed should not exceed 4000 fpm and a low noise fan blade design shall be utilized. The cooler supplier should provide the A-wt. sound level and the unweighted octave-band SPLs at **50 feet** from the cooler with all fans/motors operating.

The ground surface below the gas aftercooler shall be covered with crushed rock to reduce reflected noise. A paved concrete surface below the gas aftercooler should not be utilized.

7.7 Aboveground Gas Piping

Outdoor aboveground gas piping should be covered (i.e., lagged) with a minimum 3" thick fiberglass or mineral wool (e.g., 4.0 pcf uniform density) that is covered with a mass-filled vinyl jacket (e.g., composite of 1.0 psf mass-filled vinyl laminated to 0.020" thick aluminum). Aboveground valves can be covered with removable and/or reusable acoustic material and/or blankets. It is also recommended that the aboveground gas piping should be completely separated from other metal structures such as metal gratings, walkways and stairs around the piping.

7.8 Miscellaneous Equipment

Gas Blowdown Silencers (i.e., unit piping purge/unit blowdown): It is recommended that these sound sources are silenced to **50 dBA** at **300 ft**. (as measured 5 ft. above the ground), and to meet this noise goal, the "effective length" of the silencer section for the unit blowdown silencer should be at least 30 feet.

Fuel Gas Skids: It is recommended that any fuel gas skids be designed with regulators that can achieve **85 dBA** at **3 ft**. for the worst case design conditions (i.e., anticipated maximum pressure drop and flow across the regulator valve).

Station Standby Generator: It is recommended that the generator should not exceed **60 dBA** at **100 ft**. from the auxiliary building at rated operating conditions. This sound specification includes, but is not limited to, the following noise sources associated with the generator: (1) noise of the engine-generator that penetrates the auxiliary building, (2) noise of the exterior jacket/auxiliary water cooler, (3) noise of the engine exhaust (hospital/critical grade muffler should be employed), and (4) noise of the air intake system. It is further recommend that this potential noise source and noise control measures be further analyzed when additional information is available during the detailed design phase.

8.0 FINAL COMMENT

Our measurements and observations during the July 25, 2005 ambient sound survey indicated that the existing ambient sound level was **52.3** and **51.1 dBA L_{dn}** for NSA #1 and NSA #2, respectively. The results of our measurements, observations and analysis indicate that the estimated full load station sound level contribution at the nearby NSAs should be less than an **L_{dn}** of **55 dBA**. Therefore, assuming the recommended noise

control measures are followed and successfully implemented, it is our opinion that the sound level attributable to the proposed station should not exceed the FERC criterion of **55 dBA Ldn** at the nearby NSAs. In addition, the facility should have "minimum noise impact" on the surrounding environment. "Minimum noise impact" implies that the noise of the station should not interfere with public activity or be an annoyance outdoors.

Regarding local Washington Township requirements, our analysis indicates that the proposed Romeo Compressor Station sound level contribution at the property lines should be less than the ordinance requirement of **65 dBA**. As indicated in the report, the adjacent ITC property line easements, the adjacent M-53 divided/limited access highway, and the adjacent Washington 10 Storage Field effectively results in increased buffer distance for the north, south and west directions as well.

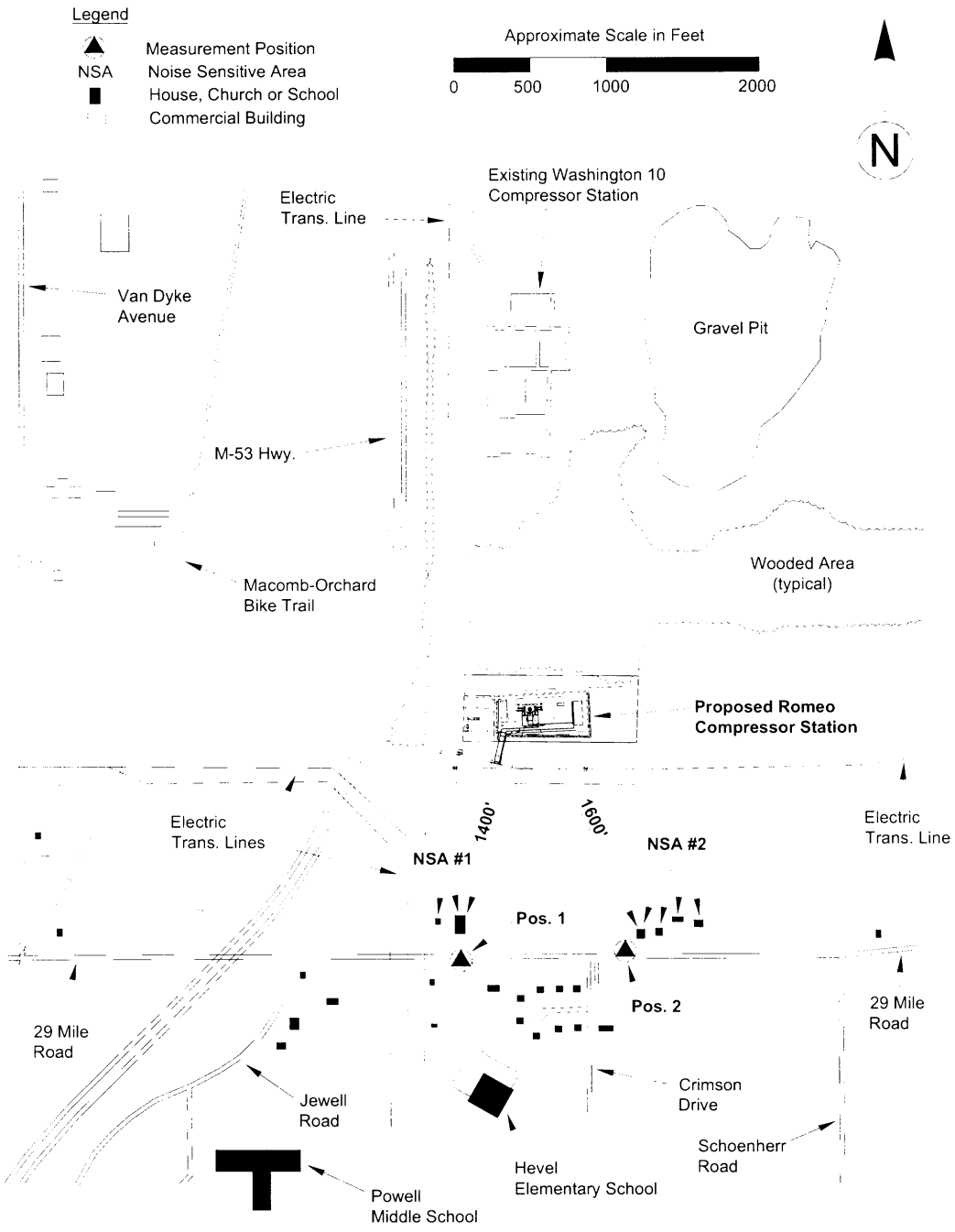

Figure 1: Proposed Romeo Compressor Station and Surrounding Area

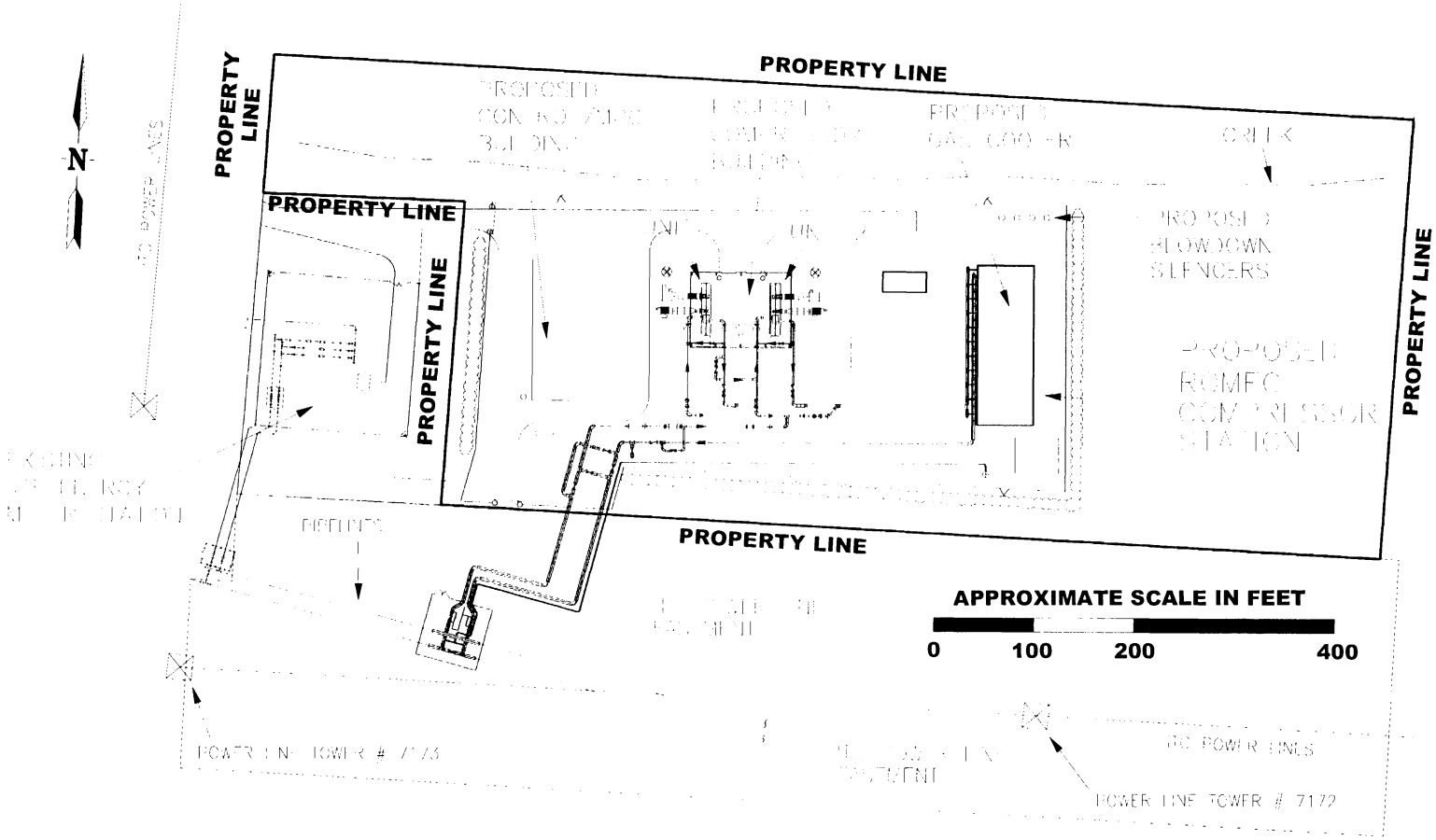

Figure 2: Proposed Romeo Compressor Station Plot Plan

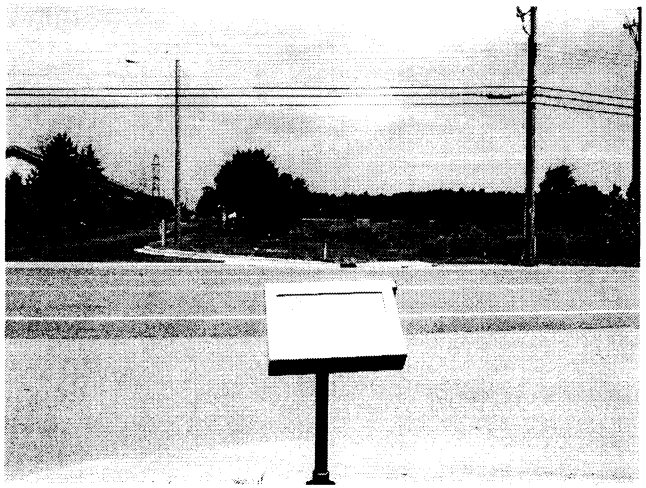

Figure 3: View from Position 1

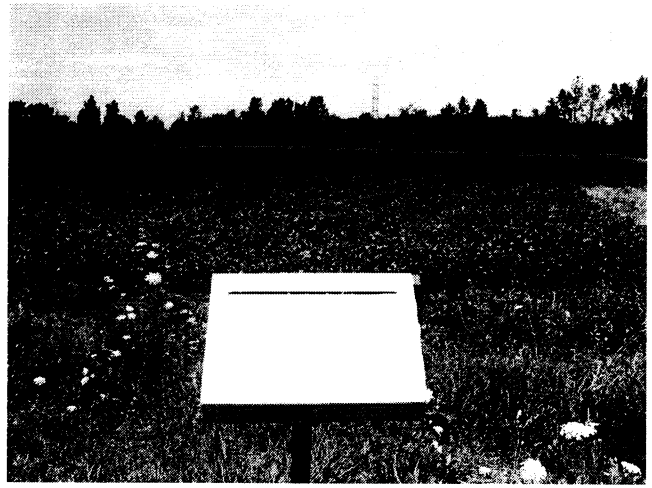

Figure 4: View from Position 2

	Measured A-Weighted (A-Wt.) Sound Levels (dBA)							
Meas. Position	D-time Leq (Ld)	Time 07/25/05	Avg. Ld	N-time Leq (Ln)	Time 07/25/05	Avg. Ln	Calc'd Ldn	**Notes/Observations**
Pos. 1 (near NSA #1)	51.9	12:37 PM		42.9	11:15 PM			12:30 to 12:50 PM: Audible sounds included M-53 traffic (which was dominant), birds, and some insect noise. Necessary to pause extensively for 29 Mile Road passby traffic.
On 29 Mile Road,	53.3	12:43 PM		43.5	11:17 PM			
across street from	54.3	12:47 PM	51.2	44.7	11:23 PM	43.6	**52.3**	
NSA #1, 1400 ft. S-SW	48.8	7:17 PM						7:15 to 7:35 PM: Audible sounds included M-53 traffic (which was dominant), birds, insects, and a distant airplane. Necessary to pause extensively for 29 Mile Road passby traffic.
of the Comp. Bldg.	49.5	7:23 PM						
	49.2	7:31 PM						11:00 to 11:25 PM: Audible sounds included distant and passby M-53 traffic, insects and a distant airplane. Necessary to pause for 29 Mile Road passby traffic.
Pos. 2 (near NSA #2)	50.2	12:58 PM		44.7	11:32 PM			12:50 to 1:05 PM: Audible sounds included M-53 traffic (which was significant to dominant) and birds. Necessary to pause extensively for 29 Mile Road passby traffic.
On 29 Mile Road	51.2	1:01 PM		42.1	11:35 PM			
adj. to NSA #2,	50.8	1:05 PM	49.0	43.6	11:41 PM	43.3	**51.1**	
1600 ft. S-SE	47.1	7:46 PM						7:35 to 7:55 PM: Audible sounds included birds, M-53 traffic (although M-53 traffic was dominant at times). Necessary to pause extensively for 29 Mile Road passby traffic.
of the Comp. Bldg.	48.9	7:51 PM						
	45.8	7:53 PM						11:25 to 11:45 PM: Audible sounds included M-53 traffic and insects (which were equally dominant), and distant aircraft. Necessary to pause for 29 Mile Road passby traffic.

Table A: **Proposed Romeo CS (MI): Summary of the Measured Ambient Daytime and Nighttime Sound Levels at the Closest NSAs on July 25, 2005 along with the Calculated Ambient Ldn**

Measurement Set		Temp.	R.H.	Ground Level	Ground Level		
Position	**Time of Testing**	(°F)	(%)	**Wind Direction**	**Wind Speed**	**Peak Wind**	**Sky Conditions**
Pos. 1 & 2	12:30 PM to 1:15 PM	89	28	North	3-6 mph	-	Sunny with scattered clouds
Pos. 1 & 2	7:15 PM to 8:00 PM	90	26	West-Northwest	0-2 mph	-	Sunny with scattered clouds
Pos. 1 & 2	11:15 PM to 11:45 PM	80	41	Calm	-	-	Clear to partly cloudy nighttime skies

Table B: **Proposed Romeo CS (MI): Meteorological Conditions During the Ambient Sound Survey Measurement around the Proposed Station on July 25, 2005**

Measurement Set		Sound Pressure Level (SPL) in dB per Octave-Band Frequency (in Hz)									A-Wt.
Position	Time/Date	31.5	63	125	250	500	1000	2000	4000	8000	Level
Pos. 1 (near NSA #1)	12:37 PM (07/25/05)	62.1	59.6	53.7	48.7	46.7	48.8	42.8	40.0	28.6	51.9
On 29 Mile Road,	12:43 PM (07/25/05)	61.9	60.0	56.5	52.5	49.3	49.7	43.0	40.2	30.4	53.3
across street from	12:47 PM (07/25/05)	62.6	64.8	57.1	53.5	51.3	50.4	43.6	38.9	35.6	54.3
NSA #1, 1400 ft. S-SW											
of the Comp. Bldg.	**Average SPL**	**62.2**	**61.5**	**55.8**	**51.6**	**49.1**	**49.6**	**43.1**	**39.7**	**31.5**	**53.1**
Pos. 2 (near NSA #2)	12:58 PM (07/25/05)	61.1	58.4	52.7	45.2	46.7	46.5	38.5	41.0	29.0	50.2
On 29 Mile Road	1:01 PM (07/25/05)	60.6	61.3	53.0	45.7	46.9	48.4	39.9	39.6	30.5	51.2
adj. to NSA #2,	1:05 PM (07/25/05)	59.3	61.0	52.4	46.9	46.5	47.9	39.7	38.6	29.7	50.8
1600 ft. S-SE											
of the Comp. Bldg.	**Average SPL**	**60.3**	**60.2**	**52.7**	**45.9**	**46.7**	**47.6**	**39.4**	**39.7**	**29.7**	**50.7**

Table C: **Proposed Romeo CS (MI): Meas'd Ambient Daytime Unweighted Octave Band SPLs and A-Wt. Sound Levels as Measured in the Afternoon of July 25, 2005**

Measurement Set		Sound Pressure Level (SPL) in dB per Octave-Band Frequency (in Hz)									A-Wt.
Position	Time/Date	31.5	63	125	250	500	1000	2000	4000	8000	Level
Pos. 1 (near NSA #1)	7:17 PM (07/25/05)	55.8	57.7	51.8	47.7	42.5	45.2	39.0	38.8	32.0	48.8
On 29 Mile Road,	7:23 PM (07/25/05)	55.7	58.2	52.0	44.9	44.7	46.2	40.4	38.3	31.8	49.5
across street from	7:31 PM (07/25/05)	57.7	58.3	51.4	47.0	44.1	45.3	39.5	40.3	29.7	49.2
NSA #1, 1400 ft. S-SW											
of the Comp. Bldg.	**Average SPL**	**56.4**	**58.1**	**51.7**	**46.5**	**43.8**	**45.6**	**39.6**	**39.1**	**31.2**	**49.1**
Pos. 2 (near NSA #2)	7:46 PM (07/25/05)	56.6	55.2	49.3	41.7	41.9	43.7	37.9	36.5	33.4	47.1
On 29 Mile Road	7:51 PM (07/25/05)	58.9	59.3	51.0	42.2	46.1	45.6	39.3	31.2	31.8	48.9
adj. to NSA #2,	7:53 PM (07/25/05)	56.8	55.1	48.8	39.1	41.9	41.7	36.7	35.5	31.4	45.8
1600 ft. S-SE											
of the Comp. Bldg.	**Average SPL**	**57.4**	**56.5**	**49.7**	**41.0**	**43.3**	**43.7**	**38.0**	**34.4**	**32.2**	**47.1**

Table D: **Proposed Romeo CS (MI): Meas'd Ambient Daytime Unweighted Octave Band SPLs and A-Wt. Sound Levels as Measured in Late Daytime of July 25, 2005**

Measurement Set		Sound Pressure Level (SPL) in dB per Octave-Band Frequency (in Hz)									A-Wt.
Position	Time/Date	31.5	63	125	250	500	1000	2000	4000	8000	Level
Pos. 1 (near NSA #1)	11:15 PM (07/25/05)	52.0	55.8	49.3	40.4	36.8	38.7	33.6	29.9	31.4	42.9
On 29 Mile Road,	11:17 PM (07/25/05)	56.6	54.6	48.0	39.4	39.3	39.5	34.0	29.3	32.3	43.5
across street from	11:23 PM (07/25/05)	52.6	54.1	49.6	43.7	41.3	40.8	33.4	29.0	31.7	44.7
NSA #1, 1400 ft. S-SW											
of the Comp. Bldg.	**Average SPL**	**53.7**	**54.8**	**49.0**	**41.2**	**39.1**	**39.7**	**33.7**	**29.4**	**31.8**	**43.6**
Pos. 2 (near NSA #2)	11:32 PM (07/25/05)	51.9	58.4	45.8	36.9	39.6	39.9	33.9	37.3	34.2	44.7
On 29 Mile Road	11:35 PM (07/25/05)	49.0	51.9	44.2	34.7	35.7	34.1	31.6	37.3	33.6	42.1
adj. to NSA #2,	11:41 PM (07/25/05)	50.0	55.6	46.1	38.1	40.0	36.1	32.1	37.4	33.7	43.6
1600 ft. S-SE											
of the Comp. Bldg.	**Average SPL**	**50.3**	**55.3**	**45.4**	**36.6**	**38.4**	**36.7**	**32.5**	**37.3**	**33.8**	**43.3**

Table E: **Proposed Romeo CS (MI): Meas'd Ambient Nighttime Unweighted Octave Band SPLs and A-Wt. Sound Levels as Measured in the Late Evening of July 25, 2005**

Source No. & Dist (Ft)	SOURCE PWL & EST'D. SOUND LEVEL CONTRIBUTIONS AT SPEC. DISTANCE	PWL or SPL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
1)	PWL of Turbine-Comp. Casing Noise	118	117	117	115	115	115	120	124	120	128	
	PWL of Eng.-Comp. Casing Noise (2 units)	121	120	120	118	118	118	123	127	123	131	
	NR of Noise Control (18 guage/8" MW)	-10	-14	-18	-26	-32	-38	-42	-42	-42		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1400	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-19		
	Source Sound Level Contribution	50	45	41	31	24	17	16	14	1	29	
2)	90 deg.PWL of Unsilenced Turbine Exh.	124	127	125	128	134	133	121	110	99	135	
	90 deg. PWL of Unsil. Turbine Exh. (2 units)	127	130	128	131	137	136	124	113	102	138	
	Atten of Exhaust Silencer (Higgot Kane)	-9	-19	-30	-35	-45	-50	-50	-45	-35		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1400	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-19		
	Source Sound Level Contribution	57	50	37	35	30	23	9	0	0	32	
3)	PWL of Body/Duct. of Turbine Silencer	105	108	96	80	74	70	68	65	60	85	
	PWL of Body/Duct. of Turbine Sil. (2 units)	108	111	99	83	77	73	71	68	63	88	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1400	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-19		
	Source Sound Level Contribution	47	50	38	22	15	10	6	0	0	27	
4)	PWL of Turbine Intake System	113	119	126	126	127	130	133	167	158	168	
	PWL of Turbine Int. System (2 units)	116	122	129	129	130	133	136	170	161	171	
	Atten of Inlet Silencers + Filter	-6	-18	-38	-50	-65	-70	-70	-70	-70		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1400	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-19		
	Source Sound Level Contribution	49	43	30	18	3	0	1	29	11	30	
5)	PWL of Aboveground Piping	95	100	100	100	100	110	110	110	100	116	
	PWL of Aboveground Piping (2 units)	98	103	103	103	103	113	113	113	103	119	
	NR of Noise Control (Disch. Piping Insul.)	3	3	3	-3	-12	-20	-20	-20	-15		
	Ground Level Shielding	0	0	0	0	0	0	0	0	0		
1300	Hemispherical Radiation	-60	-60	-60	-60	-60	-60	-60	-60	-60		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-10	-18		
	Source Sound Level Contribution	41	46	46	40	30	31	29	23	10	37	
6)	PWL of Turbine L.O. Cooler	95	102	99	92	87	84	80	76	71	91	
	PWL of Turbine L.O. Cooler (2 units)	98	105	102	95	90	87	83	79	74	94	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Miscellaneous Shielding	0	0	0	0	0	0	0	0	0		
1425	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-20		
	Source Sound Level Contribution	37	44	41	34	28	24	18	7	0	31	
7)	PWL of Station Gas Aftercooler	112	112	106	102	98	96	92	90	88	102	
	PWL of Sta. Gas Aftercooler (1 cooler)	112	112	106	102	98	96	92	90	88	102	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Miscellaneous Shielding	0	0	0	0	0	0	0	0	0		
1500	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-5	-11	-21		Calc'd
	Source Sound Level Contribution	51	51	44	40	36	33	26	17	6	38	Ldn
Est'd Total Contribution of Proposed Station		**60**	**56**	**50**	**44**	**38**	**36**	**31**	**30**	**15**	**42.4**	**48.8**

General Note: DIL, NR and PWL values on this spreadsheet should not be used as the specified values. Refer to the "Noise Control Measures" in the report or other company specifications for the actual specified PWL of equip., noise reduction (NR) of pipe lagging or building construction, and DIL values of silencers assoc. with the prop. equipment.

Table F: Proposed Romeo Station: Est'd Sound Contribution at NSA #1

Source No. & Dist (Ft)	SOURCE PWL & EST'D. SOUND LEVEL CONTRIBUTIONS AT SPEC. DISTANCE	PWL or SPL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
1)	PWL of Turbine-Comp. Casing Noise	118	117	117	115	115	115	120	124	120	128	
	PWL of Eng.-Comp. Casing Noise (2 units)	121	120	120	118	118	118	123	127	123	131	
	NR of Noise Control (18 guage/8" MW)	-10	-14	-18	-26	-32	-38	-42	-42	-42		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1600	Hemispherical Radiation	-62	-62	-62	-62	-62	-62	-62	-62	-62		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-5	-12	-22		
	Source Sound Level Contribution	49	44	40	30	23	16	14	11	0	28	
2)	90 deg.PWL of Unsilenced Turbine Exh.	124	127	125	128	134	133	121	110	99	135	
	90 deg. PWL of Unsil. Turbine Exh. (2 units)	127	130	128	131	137	136	124	113	102	138	
	Atten of Exhaust Silencer (Higgot Kane)	-9	-19	-30	-35	-45	-50	-50	-45	-35		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1600	Hemispherical Radiation	-62	-62	-62	-62	-62	-62	-62	-62	-62		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-5	-12	-22		
	Source Sound Level Contribution	56	49	36	34	29	22	7	0	0	31	
3)	PWL of Body/Duct. of Turbine Silencer	105	108	96	80	74	70	68	65	60	85	
	PWL of Body/Duct. of Turbine Sil. (2 units)	108	111	99	83	77	73	71	68	63	88	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1600	Hemispherical Radiation	-62	-62	-62	-62	-62	-62	-62	-62	-62		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-5	-12	-22		
	Source Sound Level Contribution	46	49	37	21	14	9	4	0	0	26	
4)	PWL of Turbine Intake System	113	119	126	126	127	130	133	167	158	168	
	PWL of Turbine Int. System (2 units)	116	122	129	129	130	133	136	170	161	171	
	Atten of Inlet Silencers + Filter	-6	-18	-38	-50	-65	-70	-70	-70	-70		
	Misc. Atten.	0	0	0	0	0	0	0	0	0		
1600	Hemispherical Radiation	-62	-62	-62	-62	-62	-62	-62	-62	-62		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-5	-12	-22		
	Source Sound Level Contribution	48	42	29	17	2	0	0	26	7	28	
5)	PWL of Aboveground Piping	95	100	100	100	100	110	110	110	100	116	
	PWL of Aboveground Piping (2 units)	98	103	103	103	103	113	113	113	103	119	
	NR of Noise Control (Disch. Piping Insul.)	3	3	3	-3	-12	-20	-20	-20	-15		
	Ground Level Shielding	0	0	0	0	0	0	0	0	0		
1500	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-5	-11	-21		
	Source Sound Level Contribution	40	45	44	38	29	30	27	20	6	36	
6)	PWL of Turbine L.O. Cooler	95	102	99	92	87	84	80	76	71	91	
	PWL of Turbine L.O. Cooler (2 units)	98	105	102	95	90	87	83	79	74	94	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Miscellaneous Shielding	0	0	0	0	0	0	0	0	0		
1625	Hemispherical Radiation	-62	-62	-62	-62	-62	-62	-62	-62	-62		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-5	-12	-22		
	Source Sound Level Contribution	36	43	40	32	27	23	16	5	0	30	
7)	PWL of Station Gas Aftercooler	112	112	106	102	98	96	92	90	88	102	
	PWL of Sta. Gas Aftercooler (1 cooler)	112	112	106	102	98	96	92	90	88	102	
	NR of Noise Control	0	0	0	0	0	0	0	0	0		
	Miscellaneous Shielding	0	0	0	0	0	0	0	0	0		
1450	Hemispherical Radiation	-61	-61	-61	-61	-61	-61	-61	-61	-61		
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-11	-20		Calc'd
	Source Sound Level Contribution	51	51	45	40	36	33	27	18	7	39	Ldn
Est'd Total Contribution of Proposed Station		**59**	**56**	**49**	**44**	**38**	**35**	**30**	**28**	**13**	**41.6**	**48.0**

General Note: DIL, NR and PWL values on this spreadsheet should not be used as the specified values. Refer to the "Noise Control Measures" in the report or other company specifications for the actual specified PWL of equip., noise reduction (NR) of pipe lagging or building construction, and DIL values of silencers assoc. with the prop. equipment.

Table G: Proposed Romeo Station: Est'd Sound Contribution at NSA #2

Source No. & Dist (Ft)	SOURCE PWL & EST'D. SOUND LEVEL CONTRIBUTIONS AT SPEC. DISTANCE	PWL or SPL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level
1)	PWL of Turbine-Comp. Casing Noise	118	117	117	115	115	115	120	124	120	128
	PWL of Eng.-Comp. Casing Noise (2 units)	121	120	120	118	118	118	123	127	123	131
	NR of Noise Control (18 guage/8" MW)	-10	-14	-18	-26	-32	-38	-42	-42	-42	
	Misc. Atten.	0	0	0	0	0	0	0	0	0	
200	Hemispherical Radiation	-44	-44	-44	-44	-44	-44	-44	-44	-44	
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	0	-1	-2	-3	
	Source Sound Level Contribution	67	62	58	48	42	36	37	40	35	48
2)	90 deg.PWL of Unsilenced Turbine Exh.	124	127	125	128	134	133	121	110	99	135
	90 deg. PWL of Unsil. Turbine Exh. (2 units)	127	130	128	131	137	136	124	113	102	138
	Atten of Exhaust Silencer (Higgot Kane)	-9	-19	-30	-35	-45	-50	-50	-45	-35	
	Misc. Atten.	0	0	0	0	0	0	0	0	0	
250	Hemispherical Radiation	-46	-46	-46	-46	-46	-46	-46	-46	-46	
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	0	-1	-2	-3	
	Source Sound Level Contribution	72	65	52	50	46	40	28	20	18	48
3)	PWL of Body/Duct. of Turbine Silencer	105	108	96	80	74	70	68	65	60	85
	PWL of Body/Duct. of Turbine Sil. (2 units)	108	111	99	83	77	73	71	68	63	88
	NR of Noise Control	0	0	0	0	0	0	0	0	0	
	Misc. Atten.	0	0	0	0	0	0	0	0	0	
250	Hemispherical Radiation	-46	-46	-46	-46	-46	-46	-46	-46	-46	
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	0	-1	-2	-3	
	Source Sound Level Contribution	62	65	53	37	31	27	25	20	14	42
4)	PWL of Turbine Intake System	113	119	126	126	127	130	133	167	158	168
	PWL of Turbine Int. System (2 units)	116	122	129	129	130	133	136	170	161	171
	Atten of Inlet Silencers + Filter	-6	-18	-38	-50	-65	-70	-70	-70	-70	
	Misc. Shielding	0	0	0	-2	-5	-7	-8	-9	-10	
275	Hemispherical Radiation	-46	-46	-46	-46	-46	-46	-46	-46	-46	
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	0	-1	-2	-4	
	Source Sound Level Contribution	63	57	44	30	13	9	11	42	31	44
5)	PWL of Aboveground Piping	95	100	100	100	100	110	110	110	100	116
	PWL of Aboveground Piping (2 units)	98	103	103	103	103	113	113	113	103	119
	NR of Noise Control (Disch. Piping Insul.)	3	3	3	-3	-12	-20	-20	-20	-15	
	Ground Level Shielding	0	0	0	0	0	0	0	0	0	
175	Hemispherical Radiation	-43	-43	-43	-43	-43	-43	-43	-43	-43	
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	0	-1	-1	-2	
	Source Sound Level Contribution	58	63	63	57	48	50	50	49	43	57
6)	PWL of Turbine L.O. Cooler	95	102	99	92	87	84	80	76	71	91
	PWL of Turbine L.O. Cooler (2 units)	98	105	102	95	90	87	83	79	74	94
	NR of Noise Control	0	0	0	0	0	0	0	0	0	
	Misc. Shielding	0	0	0	-2	-5	-7	-8	-9	-10	
275	Hemispherical Radiation	-46	-46	-46	-46	-46	-46	-46	-46	-46	
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	0	-1	-2	-4	
	Source Sound Level Contribution	51	58	55	46	38	33	28	21	14	44
7)	PWL of Station Gas Aftercooler	112	112	106	102	98	96	92	90	88	102
	PWL of Sta. Gas Aftercooler (1 cooler)	112	112	106	102	98	96	92	90	88	102
	NR of Noise Control	0	0	0	0	0	0	0	0	0	
	Miscellaneous Shielding	0	0	0	0	0	0	0	0	0	
200	Hemispherical Radiation	-44	-44	-44	-44	-44	-44	-44	-44	-44	
	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	0	-1	-2	-3	
	Source Sound Level Contribution	68	68	62	58	54	52	48	45	42	57
Est'd Total Contribution of Proposed Station		**75**	**73**	**67**	**62**	**56**	**54**	**52**	**51**	**46**	**61.0**

General Note: DIL, NR and PWL values on this spreadsheet should not be used as the specified values. Refer to the "Noise Control Measures" in the report or other company specifications for the actual specified PWL of equip., noise reduction (NR) of pipe lagging or building construction, and DIL values of silencers assoc. with the prop. equipment.

Table H: Proposed Romeo Station: Est'd Sound Cont. at South Property Line

*As indicated in **Section 2.0, Sound Criteria**, it is our understanding that "Michigan's Oil and Gas Regulations" are not applicable to this interstate natural gas project. The regulations have been included for information only.*

State of Michigan Department of Environmental Quality Recommendations

The noise attributable to an oil or gas surface facility is regulated under Michigan's Oil and Gas Regulations, Rule 324.1015 *Nuisance noise* and Rule 324.1016 *Construction standards for noise abatement at compressors associated with surface facilities.*

In summary, Rule 324.1015 *Nuisance noise* stipulates that:

- A person shall not cause a *nuisance noise* in the production, handling, or use of oil, gas, or brine or in the handling of any product associated with the production or use of oil, gas or brine. As stipulated in the rule, *"nuisance noise"* means any noise from a well or its associated surface facilities that causes injurious effects to human health or safety or the unreasonable interference with the comfortable enjoyment of life or property.

- The noise attributable to a surface facility must not exceed **45 dBA** at a distance of 1,320 feet from the facility.

- The State of Michigan *Supervisor of Wells* is authorized to use administrative controls to require that the surface facility *permittee* measure sound levels at nearby *noise-sensitive areas* and at a distance of 1,320 feet, if the *Supervisor of Wells* receives 1 or more complaints of noise. The State of Michigan *Supervisor of Wells* is authorized to require appropriate noise control measures for a surface facility *permittee* after all applicable information is considered. The State of Michigan *Supervisor of Wells* is authorized to require appropriate noise control measures even if the **45 dBA** noise level at 1,320 feet from the facility is not exceeded.[1]

In summary, Rule 324.1016 stipulates minimum construction standards for noise abatement at surface facilities.

Washington Township Noise Ordinance

Washington Township has a noise ordinance that is applicable to this facility.

190.000 ZONING* Ord. No. 102 Adopted: September 5, 1984

[1] Clarification from State of Michigan Department of Environmental Quality.

ARTICLE 5 ENVIRONMENTAL REQUIREMENTS

The environment is made up basically of two perceivable broad classes of creation: 1) [natural] and 2) man-made. This Ordinance is directed at managing the natural environment by regulating the man-made development and preserving the Township's natural resources wherever possible. First, this Article seeks to improve the environment resulting from development by requiring or limiting certain constructed features; second, it seeks to improve or preserve the environment by requiring the replacement of destroyed natural resources, and/or by preserving natural features already in place.

MAN-MADE ENVIRONMENT

190.503 Performance standards.

Sec. 5.03. No use shall be permitted within any district which does not conform to the following standards of use, occupancy, and operation, which standards are hereby established as the minimum requirements to be maintained within Washington Township.

10. *Noise* The emission of measurable noises from the premises shall not exceed sixty-five (65) decibels as measured at the boundary property lines, except that where normal street traffic noises exceed sixty-five (65) decibels during such periods, the measurable noise emanating from premises may equal, but not exceed, such traffic noises. In M-1 and M-2 Districts the following maximum noise levels may be permitted.

M-1 AREA: (6 a.m. to 11 p.m.) 75 decibels.
M-1 AREA: (11 p.m. to 6 a.m.) 70 decibels.
M-2 AREA: (6 a.m. to 11 p.m.) 80 decibels.
M-2 AREA: (11 p.m. to 6 a.m.) 75 decibels.

In addition, objectionable sounds of an intermittent nature, or characterized by high frequencies even if falling below the aforementioned decibel readings shall be controlled so as not to become a nuisance to adjacent uses.

DESCRIPTION OF THE ANALYSIS METHODOLOGY AND THE SOURCE OF SOUND DATA

ANALYSIS METHODOLOGY

In general, the predicted sound level contributed by the facility was calculated as a function of frequency from estimated octave-band sound power levels (PWLs) for each significant sound source associated with the proposed compressor station equipment. The following summarizes the analysis procedure:

- Initially, unweighted octave-band PWLs for each noise source (without noise control) were determined from actual sound measurements performed by H&K on similar equipment and/or obtained from the equipment manufacturer.
- Then, expected noise reductions in dB per octave-band frequency due to any designated noise control measures for each source were subtracted from the estimated PWL.
- Next, octave-band SPLs for each source (with noise control) were determined by compensating for sound attenuation due to propagation (hemispherical radiation) and atmospheric sound absorption.
- Since sound shielding by buildings can influence the sound level contributed at the NSAs, we also included the sound shielding due to buildings, if appropriate. Effects of vegetation or land contour were typically not considered in this analysis.
- Finally, the estimated octave-band SPLs for each source (with noise control and other sound attenuation effects) were corrected for A-weighting, and the total SPLs of all sound sources were logarithmically summed and corrected for A-weighting to provide the estimated A-wt. sound level contributed at the specified distance(s) by the proposed facility.

SOURCE OF SOUND DATA

The following describes the source of sound data for estimating the source sound levels and source PWLs used in the noise impact analysis. Note that equipment noise levels and acoustical performance of mufflers/silencers utilized in the acoustical analysis (i.e., spreadsheet analysis) are generally higher than the sound level requirement for the new equipment and new mufflers to insure that the design incorporates an acoustical "margin of safety."

- Turbine exhaust PWL were calculated from sound data recently measured in the field by H&K on a similar turbine-compressor. The DIL values for the exhaust muffler system utilized in the acoustical analysis are generally lower than the recommended values in order that the noise design analysis incorporates an acoustical "margin of safety."
- The estimated PWL values of equipment inside the building (i.e., turbine-driven compressor and equipment) were calculated from sound data measured by H&K on a similar compressor installation.

- The estimated PWL values of the outdoor aboveground gas piping were determined from sound measurements by H&K on gas piping similar to that of the proposed compressor installation.
- The estimated PWL values for lube oil and gas aftercooler were designated to meet the design noise goal. Note that the estimated PWL for the coolers utilized in the acoustical analysis includes noise associated with lube oil piping. The noise level for the cooler used in the acoustical analysis is generally higher than the sound level requirement in order that the noise design analysis incorporates an acoustical "margin of safety."
- The estimated PWL for the turbine air intake(s) were calculated from measured sound data in the field tests by H&K on similar turbines.

Summary of Typical Metrics for Regulating Environmental Noise & Acoustical Terminology Discussed in the Report

(1) Decibel (dB): A unit for expressing the relative power level difference between acoustical or electrical signals. It is ten times the common logarithm of the ratio of two related quantities that are proportional to power. When adding dB or dBA values, the values must be added logarithmically. For example, the logarithmic addition of **35 dB** plus **35 dB** is **38 dB**.

(2) Human Perception of Change in Sound Level

- A **3 dB** change of sound level is barely perceivable by the human ear
- A **5 or 6 dB** change of sound level is noticeable
- If sound level increases by **10 dB**, it appears as if the sound intensity has doubled.

(3) A-Weighted Sound Level (dBA): The A-wt. sound level is a single-figure sound rating, expressed in decibels, which correlates to the human perception of the loudness of sound. The dBA level is commonly used to measure industrial and environmental noise since it is easy to measure and provides a reasonable indication of the human annoyance value of the noise. The dBA measurement is not a good descriptor of a noise consisting of strong low-frequency components or for a noise with tonal components.

(4) Background or Ambient Noise: The total noise produced by all other sources associated with a given environment in the vicinity of a specific sound source of interest, and includes any Residual Noise.

(5) Sound Pressure Level (L_p or SPL): Ten times the common logarithm to the base 10 of the ratio of the mean square sound pressure to the square of a reference pressure. Therefore, the sound pressure level is equal to 20 times the common logarithm of the ratio of the sound pressure to a reference pressure (20 micropascals or 0.0002 microbar).

(6) Octave Band Sound Pressure Level (SPL): Sound is typically measured in frequency ranges (e.g., high-pitched sound, low-pitched sound, etc.) that provides more meaningful sound data regarding the sound character of the noise. When measuring two noise sources for comparison, it is better to measure the spectrum of each noise, such as in octave band SPL frequency ranges. Then, the relative loudness of two sounds can be compared frequency range by frequency range. As an illustration, two noise sources can have the same dBA rating and yet sound completely different. For example, a high-pitched sound concentrated at a frequency of 2000 Hz could have the same dBA rating as a much louder low-frequency sound concentrated at 50 Hz.

(7) Daytime Sound Level (L_d) & Nighttime Sound Level (L_n): L_d is the equivalent A-weighted sound level, in decibels, for a 15 hour time period, between 07:00 to 22:00 Hours (7:00 a.m. to 10:00 p.m.). L_n is the equivalent A-weighted sound level, in decibels, for a 9 hour time period, between 22:00 to 07:00 Hours (10:00 p.m. to 7:00 a.m.).

(8) Equivalent Sound Level (L_{eq}): The equivalent sound level (L_{eq}) can be considered an average sound level measured during a period of time, including any fluctuating sound levels during that period. In this report, the L_{eq} is equal to the level of a steady (in time) A-weighted sound level that would be equivalent to the sampled A-weighted sound level on an energy basis for a specified measurement interval. The concept of the measuring L_{eq} has been used broadly to relate individual and community reaction to aircraft and other environmental noises.

(9) Day-Night Sound Level (L_{dn}): The L_{dn} is an energy average of the measured daytime L_{eq} (L_d) and the measured nighttime L_{eq} (L_n) plus **10 dB**. The **10-dB** adjustment to the L_n is intended to compensate for nighttime sensitivity. As such, the L_{dn} is not a true measure of the sound level but represents a skewed average that correlates generally with past sound surveys which attempted to relate environmental sound levels with physiological reaction and physiological effects. For a steady sound source that operates continuously over a 24-hour period and controls the environmental sound level, an L_{dn} is approx. **6.4 dB** above the measured L_{eq}.

(10) Sound Level Meter (SLM): An instrument used to measure sound pressure level, sound level, octave-band SPL, or peak sound pressure level, separately or in any combinations thereof. The measured weighted SPL (i.e., A-Wt. Sound Level or dBA) is obtained by the use of a SLM having a standard frequency-filter for attenuating part of the sound spectrum.

SOUND LEVELS FOR TYPICAL ACTIVITIES **REFERENCE AND COMMUNITY RESPONSES**

Subjective Human Response and Conversation	Home and Industrial (Indoor Noise)	dBA Scale (Level)	Community and Traffic (Outdoor Noise)	Reference Loudness	Community Reaction To Outdoor Noise
Threshold of Pain		-- 140 --	Aircraft Carrier Military Jet Aircraft		
		-- 130 --	Large Siren at 100 Ft.		
	Rock Band (Max.)	-- 120 --	Jet Takeoff at 200 Ft.	16 Times as Loud	
Threshold of Discomfort	Discotheque (Max.)		Thunderstorm Activity	8 Times	
	Symphonic Music (Max.)	-- 110 --	Elevated Train	as Loud	
Maximum Vocal Effort			Auto Horn at 5 Ft.	4 Times	
	Industrial Plant	-- 100 --		as Loud	
Very Loud			Compacting Trash Truck		
	Newspaper Printing Rm.			2 Times	
Shouting in Ear		-- 90 --	Heavy Truck at 25 Ft.	as Loud	Vigorous Action and Law Suits
	Food Blender Symphonic Music (Typ.)		Motorcycle at 25 Ft.	Reference Loudness	
Shouting		-- 80 --			Threats of Legal Action
	Garbage Disposal		Small Truck at 25 Ft.		
Very Annoying	Alarm Clock		Heavy Traffic at 50 Ft.		Appeals to Officials
		-- 70 --		1/2 as Loud	Widespread Complaints
Moderately Loud	Vacuum Cleaner		Avg. Traffic at 100 Ft.		
	Electric Typewriter				
Normal Conversation		-- 60 --		1/4 as Loud	Sporadic Complaints
	Air Conditioner at 20 Ft.				
			Light Traffic at 100 Ft.		No Reaction, Although Noise is Noticeable
	Typical Office	-- 50 --		1/8 as Loud	
Quiet					
	Living Room		Typical Suburban Area		
	Bedroom	-- 40 --			
			Birdsong		
Very Quiet	Library				
		-- 30 --			
Soft Whisper	Broadcasting Studio		Rural Area		
				Just Audible	
		-- 20 --			
				Threshold of Hearing	
		-- 10 --			
Hoover & Keith Inc. (Consultants in Acoustics) 11504 Meadowglen Suite D Houston Texas 77082		-- 0 --			

-end of report-