PUBLIC NOTICE

US Army Corps of Engineers ®
New England District
Vermont Project Office
11 Lincoln Street, Room 210
Essex Junction, Vermont 05452

Comment Period Begins: December 24, 2013
Comment Period Ends: January 24, 2014
File Number: NAE-2012-0123
In Reply Refer To: Michael S. Adams
Phone: (802) 872-2893
E-mail: Michael.s.adams@usace.army.mil

The District Engineer has received a permit application from the applicant below to conduct work in waters of the United States as described below.

APPLICANT: Vermont Gas Systems, Inc., ATTN: Jean-Marc Teixeira, 85 Swift Street, South Burlington, Vermont 05403.

ACTIVITY: Place fill in and drill beneath waters of the United States in conjunction with the installation of 41.1 miles of a new 12-inch natural gas transmission line, 5.1 miles of 6-inch distribution mainlines, and 4.7 miles of local distribution lines from Colchester to Middlebury, Vermont. This work will temporarily impact about 23.52 acres of waters of the United States. The construction of three new Gate Stations and five new mainline valve sites will not impact waters of the United States. A detailed description and a partial set of plans of the activity are attached.

WATERWAY AND LOCATION OF THE PROPOSED WORK
The northern end of the project site is located on the Colchester, VT USGS quadrangle sheet at UTM coordinates N 4931774.0 and E 645960.0. The southern end of the project site is located on the Middlebury, VT USGS quadrangle sheet at UTM coordinates N 4872745.0 and E 646460.0.

AUTHORITY
Permits are required pursuant to:
__X__ Section 10 of the Rivers and Harbors Act of 1899
__X_ Section 404 of the Clean Water Act
_____Section 103 of the Marine Protection, Research and Sanctuaries Act).

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act, and/or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 as amended.

NATIONAL HISTORIC PRESERVATION ACT
Based on his initial review, the District Engineer has determined that the proposed work may impact properties listed in, or eligible for listing in, the National Register of Historic Places. Additional review and consultation to fulfil requirements under Section 106 of the National Historic Preservation Act of 1966, as amended, will be ongoing as part of the permit review process.

ENDANGERED SPECIES CONSULTATION
The New England District, Army Corps of Engineers has reviewed the list of species protected under the Endangered Species Act of 1973, as amended, which might occur at the project site. It is our preliminary determination that the proposed activity for which authorization is being sought is designed, situated or will be operated/used in such a manner that it is not likely to adversely affect any Federally listed endangered or threatened species or their designated critical habitat. By this Public Notice, we are requesting that the appropriate Federal Agency concur with our determination.

The following authorizations have been applied for, or have been, or will be obtained:

(X) Permit, License or Assent from State.
( ) Permit from Local Wetland Agency or Conservation Commission.
(X) Water Quality Certification in accordance with Section 401 of the Clean Water Act.

In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. **Comments should be submitted in writing by the above date.** If you have any questions, please contact Michael S. Adams at (802) 872-2893.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of

obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

In accordance with 33 CFR 325.2(a)(8), we publish monthly a list of permits issued or denied during the previous month at www.nae.usace.army.mil/reg, under the heading "Monthly General and Individual Permit Authorizations." Relevant environmental documents and the SOFs or RODs are available upon written request and, where applicable, upon the payment of administrative fees. Also visit www.nae.usace.army.mil for more information on the New England District Corps of Engineers programs.

THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.

Frank DelGiudice
Chief, Permits and Enforcement Branch
Regulatory Division

If you would prefer not to continue receiving Public Notices, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at bettina.m.chaisson@usace.army.mil. You may also check here ( ) and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME: _____
ADDRESS: _____

PROPOSED WORK AND PURPOSE

Place fill in and drill beneath waters of the United States in conjunction with the installation of 41.1 miles of a new 12-inch natural gas transmission line, 5.1 miles of 6-inch distribution mainlines, and 4.7 miles of local distribution lines from Colchester to Middlebury, Vermont. This work will temporarily impact about 23.52 acres of waters of the United States. The construction of three new Gate Stations and five new mainline valve sites will not impact waters of the United States. The proposed work involves the following:

a. The transmission line and the distribution mainlines will be installed within a 50' - 75' wide corridor using a combination of existing overhead utility, roadway and new rights-of-way (ROW). The new ROW will be maintained at 50' wide. The lines will be installed in a 5' deep (average) trench and cross 18,018 linear feet of wetland and 54 waterways. Approximately 1,021,463 sq. ft. (23.45 acres) of wetlands and approximately 1,090 sq. ft. (0.025 acre) of stream bottom will be temporarily impacted by the trench, sidecast material and construction mats. Trenches in which the pipe will be installed will be backfilled with indigenous material, with contours restored. All temporary fills will be removed in their entirety upon project completion and disposed of at an upland, non-wetland location. Tree clearing within the work area will occur in about 91,124 sq. ft. (2.09 acre) of wetlands, with about 8,149 sq. ft. (0.19 acre) being allowed to grow back.

b. Installation of the transmission line using horizontal directional drilling (HDD) beneath the Winooski River between Essex Junction and Williston. The line will be a minimum of 25' below the stream bed. There will be no discharge of fill below the ordinary high water (OHW) of the river.

c. The local distribution lines will generally be installed within roadway shoulders. The lines will be installed in a 4' deep (average) trench. Approximately 2,008 sq. ft. (0.05 acre) of wetland will be temporarily impacted by the sidecast material and construction mats. Trenches in which the pipe will be installed will be backfilled with indigenous material, with contours restored. All temporary fills will be removed in their entirety upon project completion and disposed of at an upland, non-wetland location. Tree clearing within the work area will occur in about 665 sq. ft. (0.015 acre) of wetlands, with about 623 sq. ft. (0.014 acre) being allowed to grow back.

d. Installation of the local distribution line using HDD beneath Otter Creek at three locations in Vergennes and Middlebury. The line will be a minimum of 10' below the stream bed. There will be no discharge of fill below the OHW of the creek.

The purpose of the project is to increase gas reliability to existing customers within Chittenden County and extend gas service to Addison County to new customers.

In that this project involves the construction of a long linear project from Colchester to Middlebury, the applicant considered five conceptual alternative routes that utilized existing right-of-ways, with one being the proposed project. The routes were evaluated using a desktop GIS review of potential impacts on land use, system risk and consequence, archaeological resources, aesthetics, wetlands, waterways, floodplains, source protection areas, plant and wildlife habitat, additionally the overall project length, area of disturbance and project cost were also considered. The alternative routes consisted of: 1) I-89 and Vermont Transco, LLC's (VELCO) Northwest Reliability Project (NRP); 2) I-89 and US Route 7; 3) Chittenden County Circumferential Highway (CCCH)

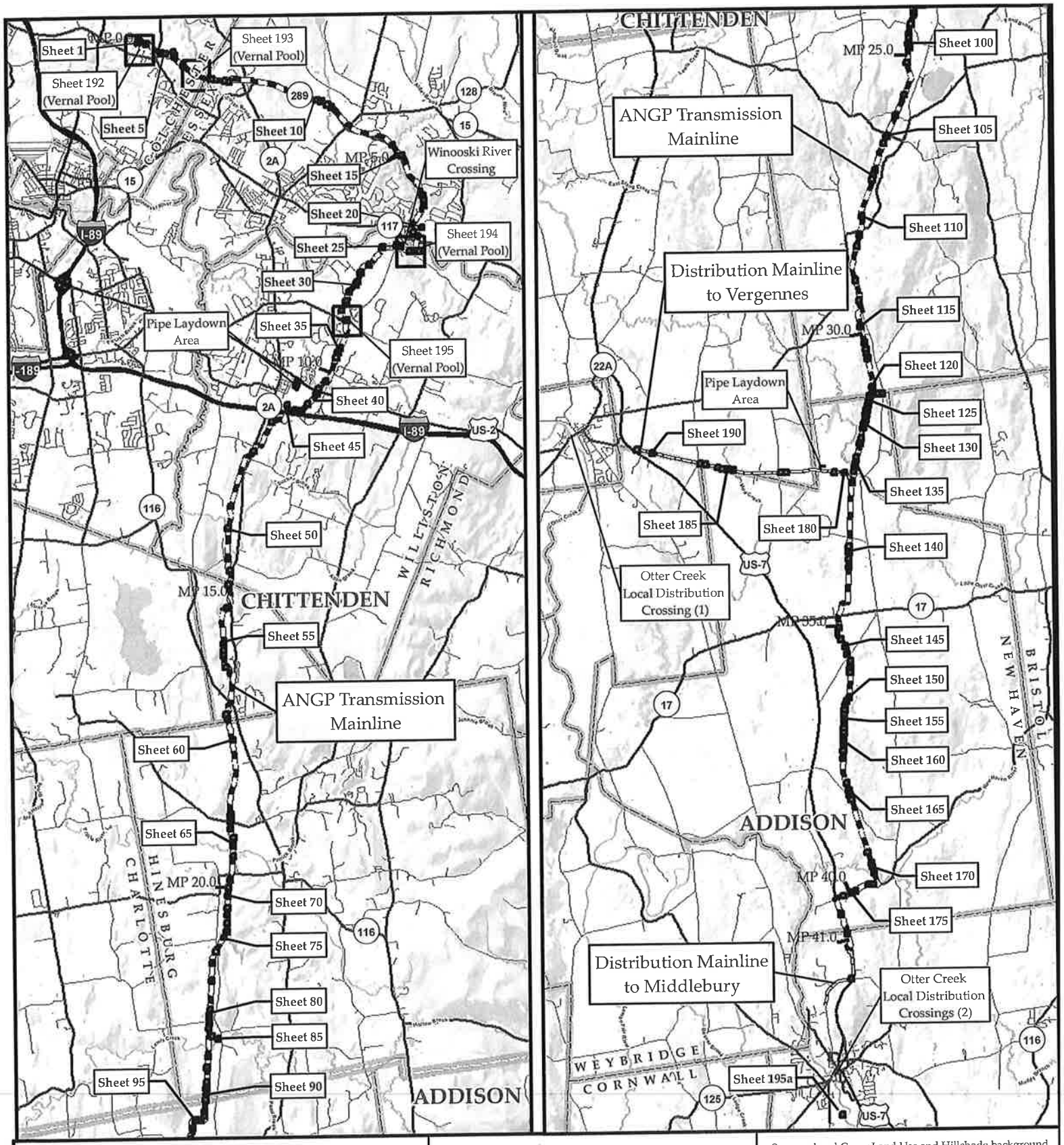
and NRP; 4) CCCH and US Route 7; and 5) CCCH and VELCO K43/K63 and 370 lines (the originally preferred alternative). The original preferred alternative was considered impracticable due to local stakeholder and constructability issues and was redesigned to the proposed project. The applicant concluded that the preferred alternative is the least environmentally damaging and practicable alternative.

New right-of-ways were not considered in that they would likely involve greater impacts to waters of the United States.

To minimize the impacts to aquatic resources the gas line will be installed by directional bore across two large wetland complexes and twelve times across perennial waterways. The project has been designed such that impacts to wetlands and waterways have been avoided and minimized to the maximum extent practicable while maintaining the project objectives. All areas of temporarily disturbed soils, including access and construction areas will be regraded, reseeded, and restored upon project completion. The project will not involve any permanent fill within waters of the United States.

To compensate for unavoidable impacts to waters of the U.S. of the proposed project, the applicant proposes to make a payment to the Ducks Unlimited – Vermont In-Lieu Fee Program.

The work is partially described on the enclosed plans, in twenty eight sheets, entitled "ADDISON NATURAL GAS PROJECT – PHASE I" (dated "December 20, 2012", last revised "October 4, 2013"), "Vermont Gas – Addison Natural Gas Project – Phase I" (dated "December 19, 2012", last revised "October 4, 2013" and "December 13, 2013") and "ADDISON NATURAL GAS PROJECT" (dated "06/28/13" and "09/20/13"). The entire set of wetland and stream impact plans can be viewed by contacting Jean-Marc Teixeira with VT Gas Systems at (802) 951-0387.



Legend

- Proposed Transmission Mainline
- Proposed Distribution Mainline
- County Boundary
- Town Boundary
- Waterbody (VHD)
- Interstate
- US Highway
- State Highway
- Town Road

Vermont Gas

ADDISON NATURAL GAS PROJECT – PHASE I

Chittenden and Addison Counties, VT

Wetland, Stream, and Vernal Pool Envelope Impact Exhibit - Index Map

December 20, 2012

Last Revised: July 10, 2013 or October 4, 2013

1 0.5 0 1 Miles

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Sources: Land Cover Land Use and Hillshade background provided by VCGI (2009), Roads downloaded from VCGI (2012); VHD Streams & Waterbodies by VHD and downloaded from VCGI (2009), Town and County Boundaries by VCGI (2009); Proposed Pipeline by CHA (2012/2013)

CHA design/construction solutions

Vermont Gas

VHB

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F:\57563.00 VGS Addison Expansion\GIS\Project\Impacts\404_401\100813\Impact_Exhibit_Series_Index_LULCmxd.mxd Exported by mbrumberg

Prepared by: MR

Vermont Gas - Addison Natural Gas Project - Phase I
Chittenden and Addison Counties, Vermont
Wetland Impact Analysis
Prepared by VHB
December 19, 2012
Last Revised: December 13, 2013

VHB Impact Exhibit #	Wetland ID	Delineated Area (Sq Ft)[1]	Cowardin Classification[2]	VHB Photo #	VHB Natural Resource Map Series Sheet #	CHA Plan Sheet #[3]	Town	Proposed Wetland Impacts					TOTAL IMPACTS (SQ FT)	Abutters[10]	
								Permanent Impacts (Sq Ft)[4]	Temporary Impacts (Sq Ft)[5]			Secondary Impacts[9] (Sq Ft)		LLN #	Last Name of Abutting Property Owner
									Trenching[6]	Forested Areas[7]	Non-Forested Areas[8]				
1, 2	2012-CM-1	28360*	PSS	W1	3	ANGP-EPSC-001B	Colchester	0	106	0	4,437	461	**5,004**	1, 1.01, 1.02, 1.03, 2	Thibault; Kilmoyer & Otten; Page; Cade; State of Vermont; Agency of Transportation
3	2012-CM-2	10470*	PEM/PSS	W2	3	ANGP-EPSC-001B	Colchester	0	60	0	600	0	**660**	1, 2	Thibault; State of Vermont; Agency of Transportation
4, 5	2012-CM-4	42860*	PEM/PFO	W3	3	ANGP-EPSC-002	Colchester	0	232	1,417	6,464	4,017	**12,130**	3, 3.01	State of Vermont; Agency of Transportation; Shangraw, Trustee of the Marion S. Shangraw Family Trust
5a	2013-PW-50	48,700	PEM		2	ANGP-T-G-008	Colchester	0	0	0	8,290	0	**8,290**	3.01	Trustee of the Marion S. Shangraw Family Trust
5b	2013-PW-51	34,900	PEM		2	ANGP-EPSC-002	Colchester	0	0	0	618	0	**618**	3.01	Trustee of the Marion S. Shangraw Family Trust
6	2012-CM-5	50760*	PEM/PFO	W4	2	ANGP-EPSC-002	Colchester	0	0	0	0	183	**183**	3	State of Vermont; Agency of Transportation
7	2012-CM-7	76270*	PEM/PSS	W5	4	ANGP-EPSC-004	Essex	0	0	0	0	0	-	4.01, 5	Town of Essex; State of Vermont; Agency of Transportation
8	2012-CM-14	1000	PEM/PSS	W6	4	ANGP-EPSC-004	Essex	0	0	0	0	989	**989**	4.01, 5	Town of Essex; State of Vermont; Agency of Transportation
9	2012-CM-13	2880	PEM/PSS	W7	4	ANGP-EPSC-004	Essex	0	0	0	732	0	**732**	5	State of Vermont; Agency of Transportation
10	2012-CM-43	4060	PEM/PFO	W8	5	ANGP-EPSC-007	Essex	0	0	0	0	1,333	**1,333**	9	State of Vermont; Agency of Transportation
10, 11	2012-CM-44	11480*	PEM	W9	5	ANGP-EPSC-007	Essex	0	0	0	2,117	276	**2,393**	9	State of Vermont; Agency of Transportation
11, 12, 13	2012-CM-45	90380*	PEM/PSS	W10	5	ANGP-EPSC-008	Essex	0	1,048	0	10,284	412	**11,744**	9, 9.01, 9.02, 9.03, 9.04	State of Vermont; Agency of Transportation; Whitten; Marshall; Barber; Montowese Industrial Park
15	2012-CM-49	5980	PEM/PSS	W11	6	ANGP-EPSC-011	Essex	0	0	0	194	0	**194**	9	State of Vermont; Agency of Transportation
16	2012-PW-57	4550*	PEM/PFO	W12	7	ANGP-EPSC-012	Essex	0	0	0	124	141	**265**	9, 11	Forestdale Group, LLC; State of Vermont; Agency of Transportation
17	2012-PW-58	970	PEM	W13	7	ANGP-EPSC-012	Essex	0	0	0	0	227	**227**	9	State of Vermont; Agency of Transportation
18	2012-PW-60	2430	PEM	W14	7	ANGP-EPSC-012	Essex	0	360	0	1,730	72	**2,162**	9, 11	Forestdale Group, LLC; State of Vermont; Agency of Transportation
20	2012/2013-CM-193	145690*	PEM	W15	7	ANGP-EPSC-014	Essex	0	0	0	8,243	0	**8,243**	14, 15	Steiner; Essex Green Common Land
21, 22, 23	2012-CM-194	129660	PEM/PFO	W16	8	ANGP-EPSC-014	Williston	0	299	0	3,347	4,716	**8,362**	19	Babcock
23	2012-CM-195	1670	PEM/PSS	W18	8	ANGP-ESPC-015	Williston	0	0	0	0	1,578	**1,578**	19	Babcock
24, 25	2012-CM-59	90000*	PEM/PSS	W19	8	ANGP-ESPC-015	Williston	0	0	0	0	13,427	**13,427**	20, 21, 22, 23	New England Central Railroad; Chittenden Solid Waste District; State of Vermont; Agency of Transportation
26	2012-CM-134	39980*	PEM/PFO	W20	9	ANGP-ESPC-015, 016	Williston	0	0	0	0	5,723	**5,723**	23	Chittenden Solid Waste District
27	2012-CM-136	2490*	PEM/PFO	W21	9	ANGP-EPSC-016	Williston	0	0	0	0	157	**157**	24	Chittenden Solid Waste District
28	2012-CM-137	2740*	PEM	W22	9	ANGP-EPSC-017	Williston	0	135	0	768	0	**903**	23.02, 29	Town of Williston; Chittenden Solid Waste District
29	2012-CM-138	2370*	PEM	W23	9	ANGP-EPSC-017	Williston	0	58	0	200	0	**258**	23.02, 30	Town of Williston, Chittenden Solid Waste District
30	2012-CM-139	6800*	PEM	W24	9	ANGP-ESPC-017	Williston	0	0	0	0	2	**2**	30	Chittenden Solid Waste District

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Vermont Gas - Addison Natural Gas Project - Phase I
Chittenden and Addison Counties, Vermont
Wetland Impact Analysis
Prepared by VHB
December 19, 2012
Last Revised: December 13, 2013

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								Permanent Impacts (Sq Ft)[4]	Temporary Impacts (Sq Ft)[5]			Secondary Impacts[9] (Sq Ft)		LLN #	Last Name of Abutting Property Owner
									Trenching[6]	Forested Areas[7]	Non-Forested Areas[8]				
31	2012-CM-141	10560*	PEM	W25	9	ANGP-ESPC-017	Williston	0	346	7	1,406	85	**1,843**	23.02, 30	Town of Williston, Chittenden Solid Waste District
32, 34	2012-CM-55	680720*	PFO	W26	9	ANGP-ESPC-018	Williston	0	0	518	0	1,528	**2,046**	22, 23.02, 35	State of Vermont; Agency of Transportation, Town of Williston; State of Vermont
33	2012-CM-143	6640*	PSS/PFO	W27	9	ANGP-EPSC-018	Williston	0	137	208	814	0	**1,159**	23.02, 35	Town of Williston; State of Vermont
33	2012-CM-144	4100	PEM	W28	10	ANGP-EPSC-018	Williston	0	220	0	1,170	0	**1,390**	23.02, 35	Town of Williston; State of Vermont
35	2012-CM-75	44740*	PEM	W29	10	ANGP-EPSC-020	Williston	0	149	0	1,746	0	**1,895**	38	State of Vermont; Agency of Transportation
36	2012-CM-76	57070*	PEM/PFO	W30	10	ANGP-EPSC-020	Williston	0	526	0	5,134	964	**6,624**	36.01, 38	The Big Three; State of Vermont; Agency of Transportation
37	2012-CM-77	11830*	PEM	W31	10	ANGP-EPSC-020	Williston	0	275	0	1,829	10	**2,114**	36.03, 36.04, 38	Nguyen & Hong; State of Vermont; Agency of Transportation; Nguyen
38, 39	2012-CM-79	272550*	PEM/PSS	W33	10	ANGP-EPSC-021	Williston	0	198	0	2,562	0	**2,760**	38	State of Vermont; Agency of Transportation
40	2012/2013-CM-82	193880*	PEM	W34	11	ANGP-EPSC-021	Williston	0	1,072	0	9,535	0	**10,607**	37.01, 39, 41	Town of Williston
47	2012-CM-88	91140*	PEM/PSS		11, 12	ANGP-ESPC-024	Williston	0	0	0	87	0	**87**	55	Sideline Properties, LLC
41, 42	2012/2013-CM-97/9	263590*	PEM	W35	11	ANGP-EPSC-022	Williston	0	652	0	6,229	469	**7,350**	41, 44	Town of Williston; State of Vermont; Agency of Transportation
43, 44	2012-CM-175	9250*	PEM/PFO	W36	11	ANGP-EPSC-022	Williston	0	0	0	0	3,475	**3,475**	44, 47	State of Vermont; Agency of Transportation; Allen Brook Development Incorporated
45	2012-CM-99	19620*	PEM/PSS	W37	11	ANGP-ESPC-023B	Williston	0	329	0	2,962	0	**3,291**	44, 47	State of Vermont; Agency of Transportation; Allen Brook Development Incorporated
46	2012/2013-CM-174	29850*	PEM/PSS	W38	11	ANGP-T-G-008	Williston	0	0	0	4,169	0	**4,169**	47	Allen Brook Development Incorporated
48	2012-CM-91	22770*	PEM/PSS	W39	12	ANGP-ESPC-025	Williston	0	225	0	3,038	0	**3,263**	57	Oak Hill Estates Association c/o Chenoweth
49	2012-CM-96	8240	PEM/PSS	W40	13	ANGP-EPSC-027	Williston	0	265	0	2,426	0	**2,691**	69	Morin; Pelkey-Morin
50	2012-CM-102	40410*	PEM/PSS	W41	13	ANGP-ESPC-028	Williston	0	12	2,458	961	3,080	**6,511**	72, 72.01	Laclair
51	2012-CM-104	17240*	PEM/PSS	W42	13	ANGP-EPSC-029	Williston	0	469	0	5,857	0	**6,326**	77, 78	Cambell; Chaloux
52	2012/2013-CM-219	63906*	PEM		14	ANGP-ESPC-029	Williston	0	456	0	7,276	0	**7,732**	80, 81	Cavanaugh; Armstrong
53	2012-CM-220	32600	PEM	W43	14	ANGP-ESPC-030	St George	0	385	0	3,316	0	**3,701**	82	Pillsbury
54	2012-CM-221	5310	PEM	W45	14	ANGP-ESPC-030	St George	0	15	0	650	0	**665**	82.08	Pillsbury and Weinhert-Pillsbury Trust
55	2012-CM-108	1660*	PEM	W46	15	ANGP-EPSC-032	ST George	0	0	0	23	0	**23**	83	Beliveau and Jalbert
55	2012-CM-109	4020	PEM	W47	15	ANGP-EPSC-032	ST George	0	31	0	321	0	**352**	83	Beliveau and Jalbert
56	2012-CM-111	62470*	PEM/PSS	W48	15	ANGP-EPSC-032	ST George	0	774	0	7,782	0	**8,556**	83, 84	Beliveau and Jalbert; Town of St. George
57	2012-CM-112	13840*	PEM/PSS	W49	15	ANGP-EPSC-032	ST George	0	186	0	1,320	357	**1,863**	84	Town of St. George
58	2012-RS-6	2350	PEM/PSS	W50	15	ANGP-EPSC-033	ST George	0	288	198	1,273	594	**2,353**	84	Town of St. George

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								Permanent Impacts (Sq Ft)[4]	Temporary Impacts (Sq Ft)[5]			Secondary Impacts[9] (Sq Ft)		LLN #	Last Name of Abutting Property Owner
									Trenching[6]	Forested Areas[7]	Non-Forested Areas[8]				
59	2012-PW-97	83030*	PEM/PSS/PFO	W51	16	ANGP-EPSC-035	St George	0	1,131	0	7,908	2,240	**11,279**	93, 95	Burnett Trust u/t/a dated November 17, 1995; Lajoice
59a	2012-PW-96	35290*	PEM/PSS		16	ANGP-EPSC-036	St George	0	0	0	991	0	**991**	93, 96	Burnett Trust u/t/a dated November 17, 1995; Fortin
60	2012-PW-95	1640	PEM	W52	16	ANGP-EPSC-036	Hinesburg	0	0	0	225	0	**225**	98	Trustee of the LaFreniere Family Revocable Trust
61, 62	2012-JB-33/34/35	644680*	PEM	W53	17	ANGP-EPSC-038	Hinesburg	0	1,804	0	16,255	0	**18,059**	103.01, 104, 105	Ketcham; Town of Hinesbrug
62	2012-CM-232	2360*	PEM		17	ANGP-EPSC-039	Hinesburg	0	0	0	165	0	**165**	105.01, 106	Noonan; Fortin
63	2012-CM-233	14220*	PEM	W54	17	ANGP-EPSC-039	Hinesburg	0	306	0	2,896	0	**3,202**	105.01, 106	Noonan; Fortin
64 through 67	2012-JB-31	287160*	PEM/PSS/PFO	W55	17	ANGP-EPSC-039, 040	Hinesburg	0	4,025	0	37,171	3,475	**44,671**	106, 106.01, 107, 107.01, 107.04, 108	Fortin; Lyman; Haystack Crossing, LLC; Lyman; State of Vermont; Agency of Transportation; Clark
67	2012-JB-30	1580	PEM	W56	18	ANGP-EPSC-040	Hinesburg	0	0	219	195	0	**414**	107.02, 107.04, 108	Town of Hinesburg; State of Vermont; Agency of Transportation; Clark
67	2012-JB-29	8450*	PEM	W57	18	ANGP-EPSC-040	Hinesburg	0	0	0	866	0	**866**	108	Clark
68 through 73	*2013-AW-CM-8*	*807100**	*PEM/PSS*	*W58*	*18*	ANGP-EPSC-041	*Hinesburg*	*0*	*2,466*	*0*	*23,142*	*0*	***25,608***	110, 111	*Carse; Hazen*
74	*2013-AW-CM-9*	*16580**	*PEM/PSS*	*W59*	*19*	ANGP-EPSC-043	*Hinesburg*	*0*	*221*	*0*	*1,895*	*0*	***2,116***	111	*Hazen*
75	*2013-AW-CM-10*	*44360**	*PEM*	*W60*	*19*	ANGP-EPSC-043	*Hinesburg*	*0*	*624*	*0*	*5,628*	*0*	***6,252***	112	*Carse Land Company LLC*
76	2012-CM-87	41350*	PEM	W61	19	ANGP-EPSC-043	Hinesburg	0	870	0	7,541	0	**8,411**	114, 116	Town of Hinesburg; Thibault Farm Properties LLC
77	2012-RS-20	5790*	PEM	W62	19	ANGP-EPSC-044	Hinesburg	0	0	0	366	0	**366**	117	Baldwin Haulenbeek
78	2012-CM-86	6410*	PEM	W63	19	ANGP-EPSC-045	Hinesburg	0	73	0	759	0	**832**	117	Baldwin Haulenbeek
79 through 82	2012-CM-84	123190*	PEM/PSS	W64	20	ANGP-EPSC-046	Hinesburg	0	0	0	14,483	0	**14,483**	118, 119	Baldwin: Town of Hinesburg
81, 82	2012-PW-85	19690	PEM	W65	20	ANGP-EPSC-046	Hinesburg	0	0	0	787	0	**787**	119, 120	Town of Hinesburg; Baldwin
83	2012-PW-84	4460	PEM	W66	20	ANGP-EPSC-046	Hinesburg	0	2	0	765	0	**767**	120	Baldwin
87	2012-PW-81	1310	PEM	W67	20	ANGP-EPSC-048	Hinesburg	0	0	0	182	235	**417**	124	Ames
88	2012-PW-80	4360	PEM/PSS	W68	21	ANGP-EPSC-048	Hinesburg	0	63	0	667	0	**730**	126	Meneilley
89	2012-PW-79	34530*	PEM	W69	21	ANGP-EPSC-048	Hinesburg	0	608	0	8,534	0	**9,142**	126, 126.01, 127.01	Meneilley; Sowle; Norris
90	2012-PW-78/RS-18	61060*	PEM/PSS	W70	21	ANGP-EPSC-049	Hinesburg	0	1,090	0	9,768	0	**10,858**	127, 128	Leuschner; Derrick
91	2012-PW-77/RS-17	54480*	PEM/PSS	W71	21	ANGP-EPSC-049	Monkton	0	955	0	8,551	0	**9,506**	128, 129	Derrick; Weaver
92	2012-PW-76/RS-16	23930*	PEM	W72	21	ANGP-EPSC-049	Monkton	0	773	0	6,447	0	**7,220**	131, 132	Stein; May
93	2012-PW-75	13280	PEM/PSS	W73	21	ANGP-EPSC-049	Monkton	0	294	0	2,985	0	**3,279**	133	Nolan

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VHB Impact Exhibit #	Wetland ID	Delineated Area (Sq Ft)[1]	Cowardin Classification[2]	VHB Photo #	VHB Natural Resource Map Series Sheet #	CHA Plan Sheet #[3]	Town	Proposed Wetland Impacts					TOTAL IMPACTS (SQ FT)	Abutters[10]	
								Permanent Impacts (Sq Ft)[4]	Temporary Impacts (Sq Ft)[5]			Secondary Impacts[9] (Sq Ft)		LLN #	Last Name of Abutting Property Owner
									Trenching[6]	Forested Areas[7]	Non-Forested Areas[8]				
94 through 97	2013-CM-3	88760*	PEM/PFO	W74	21	ANGP-EPSC-050	Monkton	0	1,920	0	11,220	5,862	**19,002**	134, 134.05, 137	Norris; Palmer; Town of Monkton
98, 99	*2013-AW-CM-7*	*#N/A*	*#N/A*	*W75*	*#N/A*	ANGP-EPSC-051	*Monkton*	*0*	*2,678*	*0*	*22,579*	*0*	***25,257***	138, 140	*Latreille; Bailey*
99 through 102	2012/2013-PW-71/72/73	152210*	PEM	W76	22	ANGP-EPSC-051	Monkton	0	1,944	0	17,236	387	**19,567**	138, 140	Latreille; Bailey
103	2012-PW-69	11680*	PEM/PSS	W77	22	ANGP-EPSC-053	Monkton	0	200	0	1,815	0	**2,015**	151	Mejia; Lauer
103	2012-PW-70/RS-14	5730*	PEM/PSS	W78	22	ANGP-EPSC-053	Monkton	0	144	0	1,514	0	**1,658**	150, 151	Morrow; Mejia & Lauer
104	2012-PW-68	2320	PEM/PUB	W79	23	ANGP-EPSC-054	Monkton	0	0	0	112	0	**112**	155	Peyser
105	2012-RS-3	18820*	PEM/PSS	W80	23	ANGP-EPSC-055	Monkton	0	442	0	3,981	0	**4,423**	160	Cousino
107 through 110	2012/2013-PW-67	5374910*	PEM/PSS/PFO	W81	24	ANGP-EPSC-056	Monkton	0	4,174	0	29,463	0	**33,637**	167, 168, 169, 170, 171, 178.02	Little; Cota; Clark; Vasatka, Alderman, Boisse, Williams
111	2012-PW-66	12040	PEM	W83	25	ANGP-EPSC-059	Monkton	0	0	0	1,140	0	**1,140**	176	Huizenga
112	2012-PW-64	76510*	PEM	W84	25	ANGP-ESPC-059	Monkton	0	1,431	0	15,282	0	**16,713**	176, 176.03	Huizenga; Coffey
113	2012-JB-12	7390*	PEM/PSS	W85	25	ANGP-EPSC-061A	Monkton	0	267	0	608	0	**875**	181	Hurlburt
114	2012-JB-10	1790	PEM/PFO	W86	26	ANGP-EPSC-062	Monkton	0	0	1,603	0	190	**1,793**	181, 182	Hurlburt; Town of Monkton
115	2012-RS-32	2050*	PEM	W87	26	ANGP-EPSC-063	Monkton	0	60	0	533	0	**593**	193, 194	Tenney & Cherington; Grace
115	2012-RS-33	11330*	PEM	W88	26	ANGP-EPSC-063	Monkton	0	233	0	2,075	0	**2,308**	192, 193	Hurlburt; Tenney & Cherington
116 through 119	2012-RS-31	188480*	PEM/PSS	W89	26	ANGP-EPSC-064	Monkton	0	4,226	0	38,141	0	**42,367**	196	Hurlburt
124 through 130	2012-RS-29	563880*	PEM/PFO	W90	27	ANGP-EPSC-065, 066	Monkton	0	13,267	0	156,479	0	**169,746**	196, 197, 198, 199, 200, 201, 202, 205, 206, 207, 208, 211, 212, 213	Hurlburt; Lichtenberg & Delictii; Everest; Peck; Legault; Choiniere
131	2012-RS-28	25320*	PEM	W91	27	ANGP-EPSC-066	New Haven	0	341	0	3,415	0	**3,756**	213	Choiniere
132 through 137	2012-RS-26	265790*	PEM/PFO	W92	28	ANGP-EPSC-067	New Haven	0	228	0	2,497	345	**3,070**	214, 215, 216	Elgin Spring Farm; Smith; Hill, d/b/a Four Hills Farm
121, 122, 123	*2013-AW-RS-29*	*#N/A*	*#N/A*		*27*	ANGP-EPSC-065	*New Haven*	*0*	*0*	*1,514*	*11,093*	*0*	***12,607***	*196, 197, 197.01*	*Hurlburt; Lichtenberg & Delictii*
137	2012-RS-25	15680*	PEM	W93	28	ANGP-EPSC-068	New Haven	0	0	0	0	0	-	216.01, 217	Town of New Haven; Elgin Spring Farm
138	2012-RS-24	59510*	PEM/PFO	W94	28	ANGP-EPSC-068	New Haven	0	617	0	4,607	3,266	**8,490**	217	Elgin Spring Farm
139	2012-RS-12	19220*	PEM/PSS/PFO	W95	29	ANGP-EPSC-070	New Haven	0	0	0	0	4,512	**4,512**	221	Farnsworth
139, 140	2012-RS-11	20390*	PEM	W96	29	ANGP-EPSC-070	New Haven	0	0	0	0	4,526	**4,526**	221	Farnsworth

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								Permanent Impacts (Sq Ft)[4]	Temporary Impacts (Sq Ft)[5]			Secondary Impacts[9] (Sq Ft)		LLN #	Last Name of Abutting Property Owner
									Trenching[6]	Forested Areas[7]	Non-Forested Areas[8]				
140	2012-RS-10	17440*	PEM	W97	29	ANGP-EPSC-070	New Haven	0	0	0	156	5,348	**5,504**	222	Smith
141	2012-RS-9	17460*	PEM	W98	29	ANGP-EPSC-070	New Haven	0	0	0	1,493	0	**1,493**	222	Smith
142	2012-RS-8	9920*	PEM/PSS	W99	29	ANGP-EPSC-071	New Haven	0	0	0	72	2,267	**2,339**	222	Smith
143	2012-RS-115	2000	PEM	W100	30	ANGP-EPSC-073	New Haven	0	178	0	895	7	**1,080**	231	Vermont Transco, LLC
145	2012-CM-165	4700	PEM	W101	30	ANGP-EPSC-074	New Haven	0	86	0	2,431	0	**2,517**	231	Vermont Transco, LLC
146	2012-CM-163	19020*	PEM/PSS	W102	31	ANGP-EPSC-074	New Haven	0	0	0	1,225	0	**1,225**	232, 233	Cousino; Meacham
147	2012-RS-113	550	PEM/PFO	W103	31	ANGP-EPSC-074	New Haven	0	0	0	0	315	**315**	234	Shortsleeve
148, 149	2012-CM-162	154120*	PEM/PSS	W104	31	ANGP-EPSC-074, 075	New Haven	0	0	0	0	162	**139**	236	Independent Explosives Inc
150 through 162	2012-CM-160/161	1698970*	PEM/PSS/PFO	W105	31	ANGP-EPSC-075	New Haven	0	21,514	0	204,809	0	**226,323**	236, 237, 238, 239, 240, 241	Independent Explosives Inc; Palmer; Middlebury Area Land Trust; Ganahl Venture LLC; Livingston; Pidgeon
163	2012-CM-158	35590*	PEM/PSS	W106	32	ANGP-EPSC-077	New Haven	0	738	0	5,837	0	**6,575**	242	Hall
164	2012-CM-157	5930*	PEM	W107	32	ANGP-EPSC-078	New Haven	0	0	0	2	0	**2**	246	Sweeney
166, 167	2012-CM-156	139990*	PEM/PFO	W108	33	ANGP-EPSC-078	New Haven	0	364	0	6,068	0	**6,432**	246, 247.01	Sweeney; Town of New Haven
168	2012-CM-151	1780	PEM	W110	33	ANGP-EPSC-080	New Haven	0	0	0	0	323	**323**	253, 254	Palmer; Carothers
167	2012-CM-155	7340*	PEM/PSS		33	ANGP-EPSC-079	New Haven	0	0	4	0	0	**4**	248	Sturtevant
169	2012-CM-150	33720*	PEM/PFO	W111	34	ANGP-EPSC-081	New Haven	0	96	0	1,097	2,280	**3,473**	254	Carothers
169, 170	2012-CM-148	38450*	PEM/PFO	W112	34	ANGP-EPSC-081	New Haven	0	811	3	7,969	2,872	**11,655**	254	Carothers
171	2012-CM-145	24970*	PEM/PSS	W113	34	ANGP-EPSC-081	New Haven	0	0	0	0	88	**88**	254.01, 255	State of Vermont; Agency of Transportation; Hill, d/b/a Four Hills Farm
176	2012-PW-9	2260*	PEM	W114	34	ANGP-EPSC-083A	New Haven	0	231	0	1,403	0	**1,634**	255.01, 261.01, 263.01	Town of New Haven; Laframboise; Many
178	2012-PW-8	3280*	PEM	W115	34	ANGP-EPSC-083B	New Haven	0	109	0	479	0	**588**	273.01	Dupoise
179	2012-PW-5	3830*	PEM	W116	35	ANGP-EPSC-M003	Middlebury	0	0	0	317	0	**317**	265.02, 3000	State of Vermont; Agency of Transportation; Bridge School Inc.
180	2012-RS-38	11160*	PEM	W117	28	ANGP-EPSC-V002	New Haven	0	282	0	2,054	0	**2,336**	216.01, 217	Town of New Haven; Elgin Spring Farm
181	2012-RS-41	5550*	PEM	W118	40	ANGP-EPSC-V003	New Haven	0	0	0	891	0	**891**	216.01, 217, 217.01	Town of New Haven; Elgin Spring Farm, c/o Bessette
182, 183	2012-RS-42	20660*	PEM	W119	40	ANGP-EPSC-V007	Ferrisburgh	0	54	0	1,753	0	**1,807**	0, 4020, 4025	Town of Ferrisburgh; Elgin Spring Farm Partnership; Torrey
184	2012-RS-48	16180*	PEM	W120	41	ANGP-EPSC-V011	Ferrisburgh	0	1	0	1,859	0	**1,860**	0, 4105, 4125	Town of New Haven; Painting
185	2012-RS-50	4780*	PEM	W121	41	ANGP-EPSC-V012	Ferrisburgh	0	36	0	582	0	**618**	0, 4125	Town of Ferrisburgh; Painting
186, 187	2012-RS-52	15620*	PEM/PFO	W122	41	ANGP-ESPC-V012	Ferrisburgh	0	581	0	2,256	0	**2,837**	0, 4145	Town of New Haven; Town of Ferrisburgh

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Vermont Gas - Addison Natural Gas Project - Phase I
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Wetland Impact Analysis
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VHB Impact Exhibit #	Wetland ID	Delineated Area (Sq Ft)[1]	Cowardin Classification[2]	VHB Photo #	VHB Natural Resource Map Series Sheet #	CHA Plan Sheet #[3]	Town	Proposed Wetland Impacts: Permanent Impacts (Sq Ft)[4]	Temporary Impacts (Sq Ft)[5]: Trenching[6]	Temporary Impacts (Sq Ft)[5]: Forested Areas[7]	Temporary Impacts (Sq Ft)[5]: Non-Forested Areas[8]	Secondary Impacts[9] (Sq Ft)	TOTAL IMPACTS (SQ FT)	Abutters[10]: LLN #	Abutters[10]: Last Name of Abutting Property Owner
188	2012-CM-176	11590*	PEM	W123	41	ANGP-EPSC-V013	New Haven	0	13	0	1,198	0	**1,211**	0, 4150	Town of New Haven; Doboer
189	2012-CM-178	2250	PEM	W124	41	ANGP-EPSC-V014	Waltham	0	0	0	641	0	**641**	0, 4160	Town of Waltham; Deboer
186	2012-RS-51	5470*	PEM		41	ANGP-EPSC-V012	New Haven	0	0	0	0	0	-	4140, 4145	Vermont Railway, Inc.; Town of New Haven
195a	2012-NS-5a	3170*	PEM		58	See Selected Details (Otter Creek Crossing - Middlebury South)	Middlebury	**0**	0	623	1,343	42	**2,008**	3126	Middlebury College
						Impact Subtotal (Sq Ft)		**0**	81,879	8,772	849,826	**83,018**	**1,023,471**		
									940,477						
						Impact Subtotal (Acres)		**0.0**	1.88	0.20	19.51	**1.91**	**23.50**		
									21.59						

Note: GIS impact analysis conducted using limits of disturbance created from the CHA CAD-based design drawing: June 28, 2013 and updated based on September 20, 2013 revisions to select areas.
*Indicates wetland continues outside of the VHB investigation area.
Rows in italics indicates Approximate wetland delineation.
[1]VHB Wetland delineations have been field reviewed (representative areas) by USACE and VT DEC personnel.
[2]Wetlands classification follows Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitat of the United States. U.S. Fish and Wildlife Service. FWS/OBD-79/31. 103pp.
[3] CHA Plan Sheet # references the September 20, 2013 - Site Plans Issued for construction.
[4] There would be no permanent impacts as a result Project construction; normally, Permanent Impacts are calculated based on areas of direct fill or grading.
[5]Proposed Temporary Impacts have been divided into the following three footnoted type descriptions, based on coordination with the USACE, for the purpose of calculating compensatory mitigation credits required:
[6] Trenching impacts would result from the excavation of an approximatly 5-foot wide trench to install the proposed pipline; trenches would be restored per EPSC plan (see Block 18 Attachment of 404 Permit Application).
[7] Temporary Tree Clearing impacts would result from the temporary clearing within forested wetlands, for work spaces needed during Project construction; these areas would be allowed to re-grow following construction.
[8] Construction mat impacts have been calcuated within non-forested wetlands, where mats would be placed during construction for equipment access.
[9]Secondary Wetland impacts are calculated based on areas of forested wetlands that would be permanently converted to emergent or scrub shrub types and superseded necessary temporary impacts within these areas.
[10] Abutter infromation, including mailing addresses and Line List Numbers are found in Adjoining Property Owners table in the Block 25 Attachment of the 404 Permit Application.

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Vermont Gas - Addis[illegible] Gas Project - Phase I
Chittenden and Addiso[illegible] [illegible]tles, Vermont
Stream Impact Analysis
Prepared by VHB
December 19, 2012
Last Revised: October 4, 2013

VHB Impact Exhibit #	Stream ID	Flow Regime[1]	Average Ordinary High Water (OHW) Width (Feet)[2]	VHB Photo #	VHB Natural Resource Map Series Sheet #	CHA Plan Sheet #[3]	Town	Proposed Stream Impacts[4]												Abutter[9]	
								Permanent Impact		Temporary Impact						Secondary Impact[8]		TOTAL IMPACTS			
										Trenching[5]		Forested Area[6]		Non-Forested Areas[7]							
								Impact (Linear Feet)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	*IMPACT (LF)*	*IMPACT AREA (SQ FT)*	LLN #	Name of Abutting Property Owner
5	2012-SC-CM-1	Perennial	2.0	S1	3	ANGP-EPSC-002	Colchester	0	0	2	4	39	78	0	0	86	172	*127*	*254*	2.03, 3, 3.01	Shangraw Life Estate; Shangraw Remainderman; State of Vermont; Agency of Transportation; Shangraw, Trustee of the Marion S. Shangraw Family Trust
8	2012-SC-CM-6	Intermittent	2.0	S2	4	ANGP-EPSC-004	Essex	0	0	0	0	0	0	0	0	13	26	*13*	*26*	4.01	Town of Essex
13	2012-TB-IB-2	Perennial	20.0	-	5	ANGP-EPSC-008	Essex	0	0	6	94	0	0	55	912	0	0	*61*	*1,006*	8.03, 9, 9.03, 9.04, 9.05	A & C Realty LLC; C/O Omega Electric Construction Co.; State of Vermont; Agency of Transportation; Barber; Montowese Industrial Park; Thibault
14	2012-SC-CM-16	Intermittent	2.0	S3	6	ANGP-EPSC-016	Essex	0	0	9	18	0	0	108	216	0	0	*117*	*234*	9	State of Vermont; Agency of Transportation
16	2012-DITCH-PW-22	Ditch	3.0	S4	7	ANGP-EPSC-012	Essex	0	0	18	54	0	0	191	573	12	36	*221*	*663*	9	State of Vermont; Agency of Transportation
18	2012-DITCH-PW-23	Ditch	2.0	S5	7	ANGP-EPSC-013	Essex	0	0	17	34	0	0	55	110	0	0	*72*	*144*	9	State of Vermont; Agency of Transportation
19	2012-TB-AB-7	Perennial	35.0	S6	8	ANGP-EPSC-013	Essex	0	0	0	86	0	0	0	1,407	0	0	*0*	*1,493*	14, 14.02, 14.03	Steiner; Raymond
19	2013-SC-CM-7	Intermittent	2.0	S7	8	ANGP-EPSC-013	Essex	0	0	7	14	0	0	73	146	0	0	*80*	*160*	14	Steiner
22	2012-SC-CM-84	Intermittent	2.0	S8	8	ANGP-EPSC-014	Williston	0	0	4	8	0	0	22	44	25	50	*51*	*102*	19	Babcock
23	2012-SC-CM-85	Ephemeral	2.0	S9	8	ANGP-EPSC-015	Williston	0	0	0	0	0	0	0	0	14	28	*14*	*28*	19	Babcock
26	2012-TB/SC-CM-54	Perennial	5.0	S10	9	ANGP-EPSC-015/ANGP-EPSC-016	Williston	0	0	0	0	0	0	0	0	56	280	*56*	*280*	23	Chittenden Solid Waste District
30	2012-SC-CM-57	Intermittent	2.0	S11	9	ANGP-EPSC-017	Williston	0	0	5	10	0	0	14	28	9	18	*28*	*56*	23.02, 30	Town of Williston, Chittenden Solid Waste District
39	2012-TB-ALB-1	Perennial	35.0	-	11	ANGP-EPSC-021	Williston	0	0	5	151	0	0	72	2,326	0	0	*77*	*2,477*	37.01, 38, 38.02, 39	Town of Williston; State of Vermont; Agency of Transportation; Williston Ltd Part.
43	2012-SC-CM-34	Intermittent	3.0	S12	11	ANGP-EPSC-022	Williston	0	0	0	0	26	78	0	0	52	156	*78*	*234*	44, 47	State of Vermont; Agency of Transportation; Allen Brook Development Incorporated
44	2012-TB-CM-35	Perennial	8.0	S13	11	ANGP-EPSC-022	Williston	0	0	0	0	33	547	0	0	64	755	*97*	*1,302*	44, 47	State of Vermont; Agency of Transportation; Allen Brook Development Incorporated
44	2012-TB/SC-CM-36	Perennial	3.0	S14	11	ANGP-EPSC-022	Williston	0	0	0	0	82	1,028	0	0	85	494	*167*	*1,522*	47	Allen Brook Development Incorporated
47	2013-SC-CM-2	Ephemeral	2.0	S15	11	ANGP-EPSC-024	Williston	0	0	0	0	31	62	0	0	35	70	*66*	*132*	55	Sideline Properties, LLC
47	2013-SC-CM-3	Ephemeral	2.0	S16	11	ANGP-EPSC-024	Williston	0	0	0	0	36	72	0	0	77	154	*113*	*226*	55	Sideline Properties, LLC
50	2012-TB-SB-1	Perennial	15.0	S17	13	ANGP-EPSC-28	Williston	0	0	6	79	0	0	77	968	0	0	*83*	*1,047*	72, 72.01	Laclair
55	2012-DITCH-CM-40	Ditch	2.0	S18	15	ANGP-EPSC-032	St. George	0	0	5	10	0	0	40	80	0	0	*45*	*90*	83	Belliveau and Jalbert
59	2012-SC-PW-42	Perennial	4.0	S19	16	ANGP-EPSC-035	St. George	0	0	5	20	0	0	43	172	2	8	*50*	*200*	93, 95	Burnett Trust u/t/a dated November 17, 1995; Lajoice
62	2012-SC-JB-10	Perennial	4.0	S20	17	ANGP-EPSC-038	Hinesburg	0	0	7	28	0	0	59	236	0	0	*66*	*264*	103, 103.01, 104	Trustees of the Ballard Family Trust u/t/a dated October 12, 2011; Ketcham; Town of Hinesburg
68	2013-AS-SC-CM-2	Ditch	2.0	S21	18	ANGP-EPSC-041	Hinesburg	0	0	7	14	0	0	58	116	0	0	*65*	*130*	110	Carse
68	2013-AS-SC-CM-3	Perennial	3.0	S22	18	ANGP-EPSC-041	Hinesburg	0	0	9	27	0	0	74	222	0	0	*83*	*249*	110	Carse

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Vermont Gas - Addiso Gas Project - Phase I
Chittenden and Addison ..ies, Vermont
Stream Impact Analysis
Prepared by VHB
December 19, 2012
Last Revised: October 4, 2013

VHB Impact Exhibit #	Stream ID	Flow Regime[1]	Average Ordinary High Water (OHW) Width (Feet)[2]	VHB Photo #	VHB Natural Resource Map Series Sheet #	CHA Plan Sheet #[3]	Town	Proposed Stream Impacts[4]												Abutter[9]	
								Permanent Impact		Temporary Impact						Secondary Impact[8]		TOTAL IMPACTS			
										Trenching[5]		Forested Area[6]		Non-Forested Areas[7]							
								Impact (Linear Feet)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	IMPACT (LF)	IMPACT AREA (SQ FT)	LLN #	Name of Abutting Property Owner
83	2012-SC-PW-38	Perennial	3.0	S23	20	ANGP-EPSC_047	Hinesburg	0	0	5	15	0	0	35	105	0	0	40	120	120	Baldwin
85	2012-SC-CM-69	Intermittent	2.0	-	20	ANGP-T-C-007A	Hinesburg	0	0	0	0	0	0	14	28	0	0	14	28	120	Baldwin
86	2012-SC-PW-36	Intermittent	2.0	S24	20	ANGP-EPSC-047	Hinesburg	0	0	0	0	0	0	0	0	0	0	0	0	121	Baldwin
86	2012-DITCH-PW-37	Ditch	1.0	S25	20	ANGP-EPSC-047	Hinesburg	0	0	0	0	0	0	0	0	0	0	0	0	121	Baldwin
87	2012-DITCH-PW-32	Ditch	1.0	S26	20	ANGP-EPSC-048	Hinesburg	0	0	0	0	0	0	9	9	0	0	9	9	124	Ames
87	2012-SC-PW-33	Intermittent	1.0	S27	20	ANGP-EPSC-048	Hinesburg	0	0	0	0	0	0	0	0	6	6	6	6	123, 124	Davis; Ames
94	2012-DITCH-PW-30	Ditch	2.0	S28	21	ANGP-EPSC-049	Monkton	0	0	7	14	0	0	95	190	0	0	102	204	133, 134	Nolan; Norris
97	2013-SC-CM-6	Perennial	6.0	S29	21	ANGP-EPSC-051	Monkton	0	0	9	54	0	0	122	732	0	0	131	786	134.05	Palmer
106	2012-TB/SC-RS-3	Perennial	3.0	S30	23	ANGP-EPSC-055	Monkton	0	0	5	15	0	0	46	138	0	0	51	153	161	Wageman
107	2012-SC-RS-2	Intermittent	2.0	S31	24	ANGP-EPSC-056	Monkton	0	0	0	0	0	0	88	176	0	0	88	176	167	Little
108	2012-TB/SC-RS-1	Perennial	2.0	S32	24	ANGP-EPSC-056	Monkton	0	0	5	10	0	0	171	342	0	0	176	352	168	Cota
112	2012-DITCH-PW-26	Ditch	2.0	S33	25	ANGP-EPSC-059	Monkton	0	0	5	10	0	0	71	142	0	0	76	152	176	Huizenga
113	2012-TB-JB-7	Perennial	8.0	S34	25	ANGP-EPSC-061A	Monkton	0	0	6	75	0	0	16	283	0	0	22	358	181, 182, 186	Hurlburt; Town of Monkton; George Trustee
120	2012-SC-RS-5	Perennial	2.0	S35	27	ANGP-EPSC-065	Monkton	0	0	5	10	0	0	52	104	0	0	57	114	196	Hurlburt
120	2012-SC-RS-5a	Perennial	2.0	S36	27	ANGP-EPSC-065	Monkton	0	0	6	12	0	0	51	102	0	0	57	114	196	Hurlburt
136	2012-TB-LOC-4	Perennial	35.0	S37	28	ANGP-EPSC-067	New Haven	0	0	0	0	0	0	0	0	0	0	0	0	216	Hill, d/b/a Four Hills Farm
144	2012-SC-CM-63	Intermittent	3.0	S38	30	ANGP-EPSC-073	New Haven	0	0	8	24	37	111	35	105	25	75	105	315	231	Vermont Transco, LLC
156	2012-SC-CM-62a	Perennial	4.0	S38	31	ANGP-EPSC-075	New Haven	0	0	0	0	0	0	0	0	0	0	0	0	236	Independent Explosives Inc
165	2012-SC-CM-61	Ephemeral	1.0	S39	32	ANGP-EPSC-078	New Haven	0	0	0	0	0	0	9	9	0	0	9	9	246	Sweeney
168	2012-SC-CM-59	Ephemeral	2.0	S40	33	ANGP-EPSC-080	New Haven	0	0	0	0	0	0	0	0	20	40	20	40	253, 254	Palmer; Carothers
172	2012-TB/SC-PW-7	Perennial	2.0	S41	34	ANGP-EPSC-082A	New Haven	0	0	7	72	0	0	50	493	0	0	57	565	255, 255.01, 257	Hill d/b/a Four Hills Farm; Town of New Haven; Trustees of the Butler Trust
173	2012-TB/SC-PW-6	Perennial	2.0	S42	34	ANGP-EPSC-082A	New Haven	0	0	7	46	0	0	31	88	30	198	68	332	255, 255.01, 257	Hill d/b/a Four Hills Farm; Town of New Haven; Trustees of the Butler Trust
174	2012-SC-PW-5	Intermittent	1.0	S43	34	ANGP-EPSC-082B	New Haven	0	0	8	8	0	0	36	36	0	0	44	44	255, 255.01, 257.01, 258.01	Hill d/b/a Four Hills Farm; Town of New Haven; Landon Trustee; Harvey Grice Rev Trust
175	2012-TB-PW-4	Intermittent	4.0	S44	34	ANGP-EPSC-082B	New Haven	0	0	0	0	0	0	7	35	21	282	28	317	255, 255.01, 258.01, 259.01	Hill d/b/a Four Hills Farm; Town of New Haven; Harvey Grice Rev Trust; Cunningham
178	2012-DITCH-PW-3a	Ditch	1.0	S45	35	ANGP-EPSC-083B	New Haven	0	0	60	60	0	0	100	100	0	0	160	160	273.01	Dupoise
195a	2012-SC-NS-4	Perennial	3.0	S45	58	ANGP-EPSC-	Middlebury	0	0	0	0	21	63	0	0	0	0	21	63	3126.00	Middlebury College
177	2012-SC-PW-3	Perennial	3.0	S46	35	ANGP-EPSC-046	Middlebury	0	0	5	15	0	0	24	72	0	0	29	87	265.02, 277.01	State of Vermont; Agency of Transportation; Delineation Corporation; c/o Thomas Corbin

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Vermont Gas - Addisc Gas Project - Phase I
Chittenden and Addiso.. ..dles, Vermont
Stream Impact Analysis
Prepared by VHB
December 19, 2012
Last Revised: October 4, 2013

VHB Impact Exhibit #	Stream ID	Flow Regime[1]	Average Ordinary High Water (OHW) Width (Feet)[2]	VHB Photo #	VHB Natural Resource Map Series Sheet #	CHA Plan Sheet #[3]	Town	Proposed Stream Impacts[4]												Abutter[9]	
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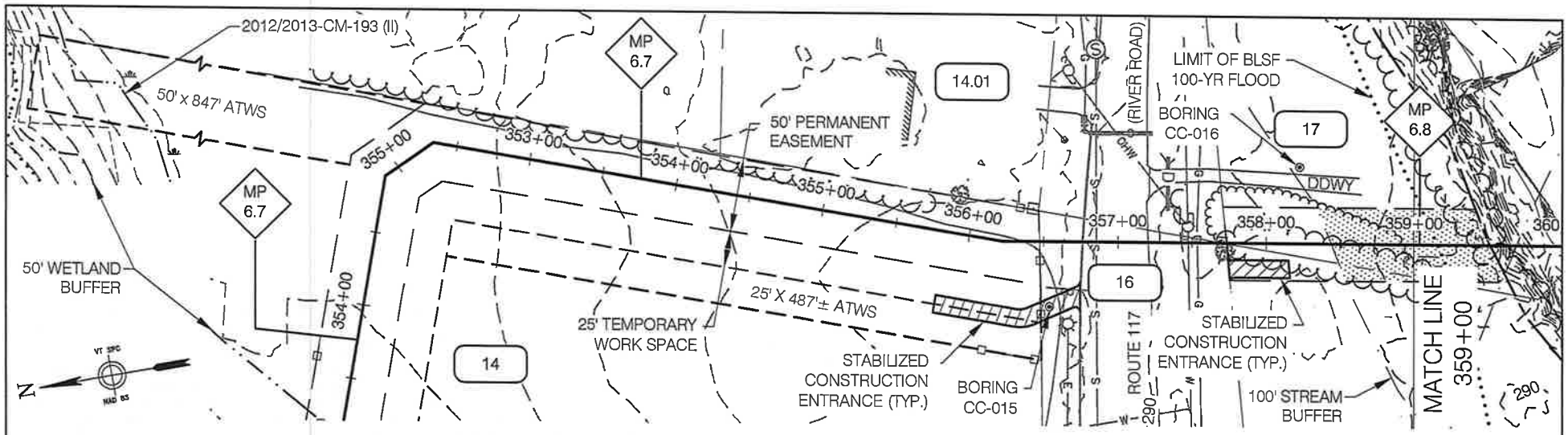
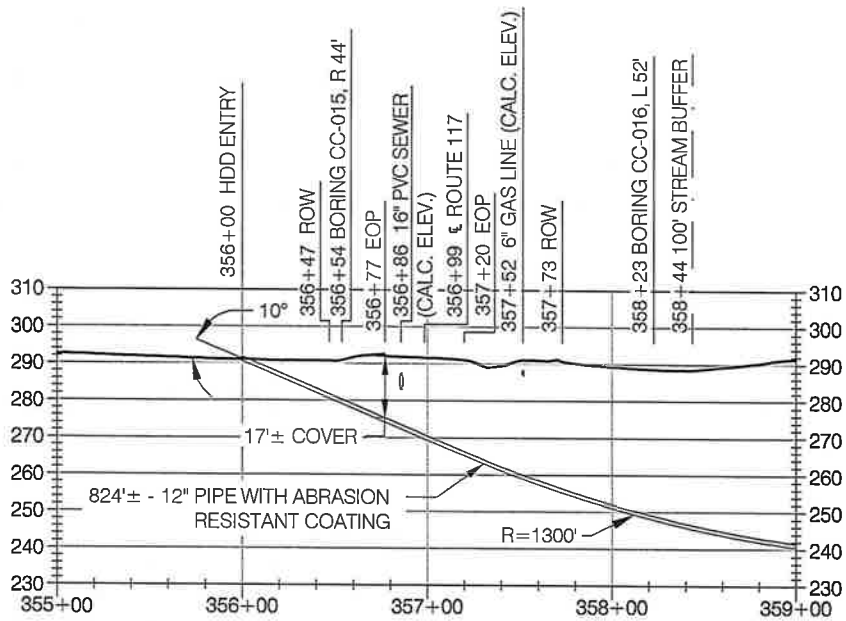
								Impact (Linear Feet)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	Impact (LF)	Impact Area (Sq Ft)	*IMPACT (LF)*	*IMPACT AREA (SQ FT)*	LLN #	Name of Abutting Property Owner
181	2012-SC-RS-9	Perennial	8.0	S47	40	ANGP-EPSC-V003	New Haven	0	0	0	0	0	0	15	120	0	0	*15*	*120*	215, 216.01, 217.01	Smith; Town of New Haven; Elgin Spring Farm & Bessette
190	2012-SC-CM-71	Intermittent	3.0	S48	42	ANGP-EPSC-V018	Ferrisburgh/Waltham	0	0	0	0	0	0	11	33	0	0	*11*	*33*	4240, 4250, 4255	Colomb; Santos; Guendel
191	2012-SC-CM-72	Intermittent	2.0	S49	42	ANGP-EPSC-V019	Ferrisburgh/Waltham	0	0	0	0	0	0	0	0	120	240	*120*	*240*	4280, 4290	Fitz-Gerald; Cousino
								0	**0**	**260**	**1,090**	**305**	**2,038**	**2,049**	**11,599**	**752**	**3,088**	**3,366**	**17,816**		

	Permanent Impact	Temporary Impact			Secondary Impact	TOTAL IMPACTS
Total Stream Impacts (Linear Feet):	0	*260*	*305*	*2,049*	752	***3,366***
		Total Temporary Impacts (LF):	2,614			
Total Stream Impacts (Square Feet):	0	*1090*	*2,038*	*11,599*	3,088	***17,816***
		Total Temporary Impacts (Sq Ft):	14,727			
Total Stream Impacts (Acres):	0.00	*0.03*	*0.05*	*0.27*	0.07	***0.41***
		Total Temporary Impacts (Acres):	0.34			

Note: GIS impact analysis conducted using limits of disturbance created from the CHA CAD-based design drawing: June 28, 2013 and updated based on September 20, 2013 revisions to select areas.
[1]Stream flow regime determined based on qualitative observations of instream hydrology indicators and geomorphic characteristic and are subject to professional judgment.
[2]Ordinary High Water (OHW) Width is determined from measurements taken in the field at the time of the delineation according to guidance provided in the U.S. Army Corps of Engineers (USACE). 2005. "Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification." No. 05-05. Accessed online at: http://www.usace.army.mil/cw/cecwo/reg/rgisindx.htm.
[3]CHA Plan Sheet # references the September 20, 2013 - Site Plans Issued for construction.
[4]Stream impacts were calculated by multiplying average OHW width by linear length of impact.
[5]Temporary trenching stream impacts are those for a 5'-wide trench.
[6]Temporary impacts from Project construction access, the use of Alternate Temporary Work Spaces (ATWS), and temporary tree clearing in forested areas which would be allowed to re-grow following construction, and temporary dewate
[7]Temporary impacts from Project construction access, the use of Alternate Temporary Work Spaces (ATWS), and temporary dewatering in non-forested areas.
[8]Secondary stream impacts are those where permanent forest clearing will occur over the stream channel - such impacts supersede necessary temporary impacts within these areas.
[9]Abutter infromation, including mailing addresses and Line List Numbers are found in Adjoining Property Owners table in the Block 25 Attachment of the 404 Permit Application.

10/28





NOTES:
ORDINARY HIGH WATER INFORMATION OBTAINED FROM VHB ON 07/09/2013

HORIZONTAL SCALE

100 50 0 100 feet

50 25 0 50 feet

VERTICAL SCALE

	BID		CONSTRUCTION	
ENVIRONMENTAL	JLS	06/28/13		
DRAFTING DESIGNER	SBM	06/28/13		
DRAFTING SUPERVISOR	BZD	06/28/13		
DESIGN ENGINEER	MDF	06/28/13		
DESIGN MANAGER	SAB	06/28/13		
	INITIALS	DATE	INITIALS	DATE

VERMONT GAS
PROPOSED 6" PIPELINE
ADDISON NATURAL GAS PROJECT
WINOOSKI RIVER CROSSING

LOC. CHITTENDEN COUNTY, VERMONT

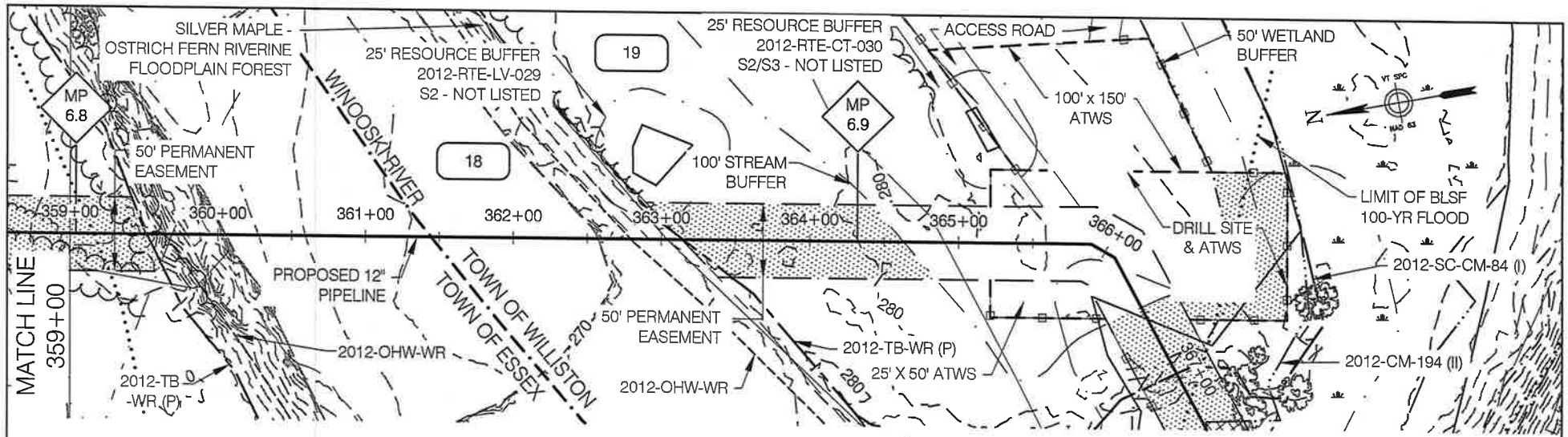
YEAR: 2013 | W.O. | SCALE: AS NOTED | DWG. | REV. 0

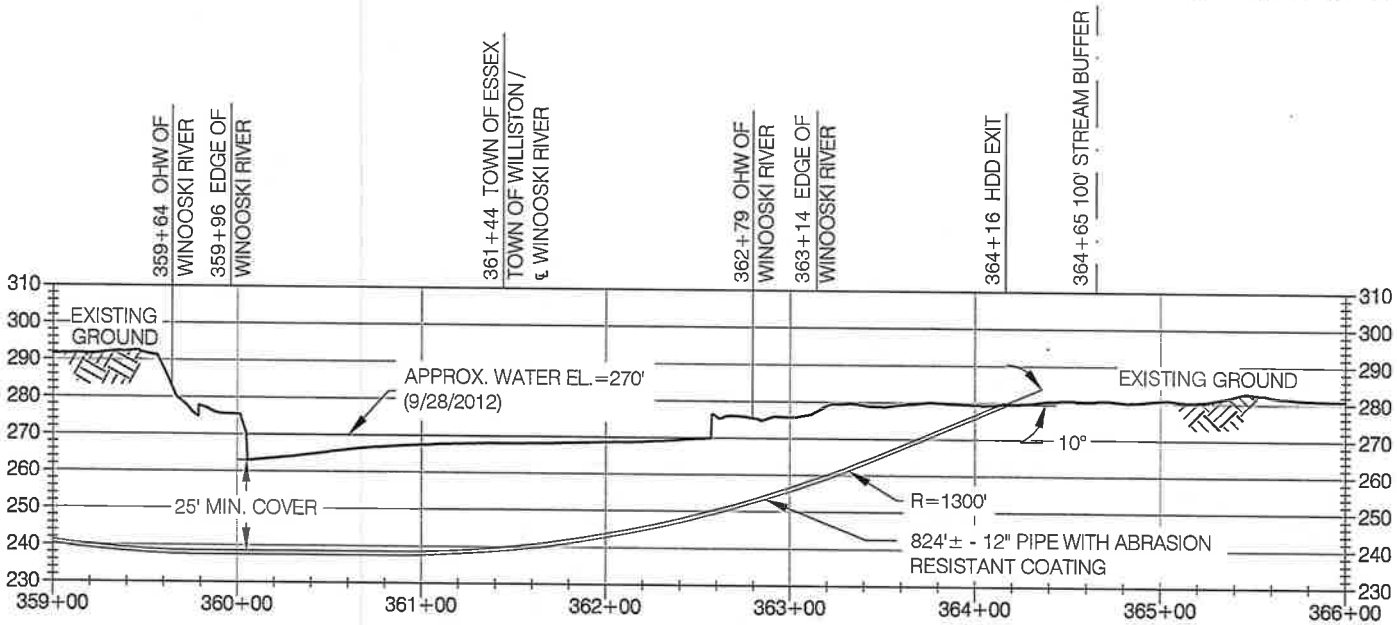
Vermont Gas

Vanasse Hangen Brustlin, Inc.

CHA
36 Cordage Park Circle, Suite 321, 328, 329, 336
Plymouth, MA 02360
Main: (781) 682-7700 • www.chacompanies.com

11/28





NOTES:
ORDINARY HIGH WATER INFORMATION OBTAINED FROM VHB ON 07/09/2013

HORIZONTAL SCALE

100 50 0 100 feet

50 25 0 50 feet

VERTICAL SCALE

	BID		CONSTRUCTION	
ENVIRONMENTAL	JLS	06/28/13		
DRAFTING DESIGNER	SBM	06/28/13		
DRAFTING SUPERVISOR	BZD	06/28/13		
DESIGN ENGINEER	MDF	06/28/13		
DESIGN MANAGER	SAB	06/28/13		
	INITIALS	DATE	INITIALS	DATE

VERMONT GAS
PROPOSED 6" PIPELINE
ADDISON NATURAL GAS PROJECT
WINOOSKI RIVER CROSSING

LOC. CHITTENDEN COUNTY, VERMONT

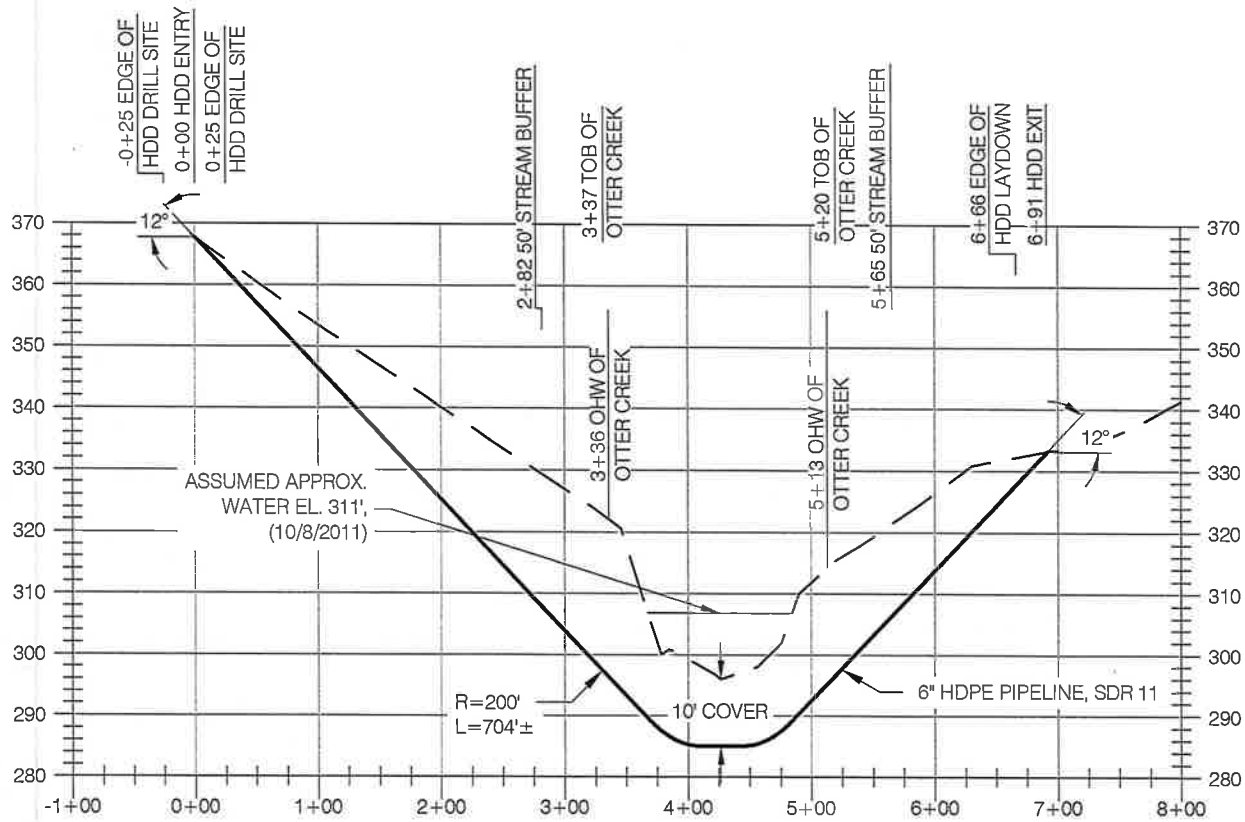
YEAR: 2013 | W.O. | SCALE: AS NOTED | DWG. | REV. 0

Vermont Gas

Vanasse Hangen Brustlin, Inc.

CHA

12/28



NOTE: ELEVATIONS BASED ON AVAILABLE DATA.
TO BE VERIFIED WITH FIELD SURVEY.

HORIZONTAL SCALE

150 75 0 150 feet

30 15 0 30 feet

VERTICAL SCALE

	BID		CONSTRUCTION	
ENVIRONMENTAL	JLS	06/28/13		
DRAFTING DESIGNER	SBM	06/28/13		
DRAFTING SUPERVISOR	BZD	06/28/13		
DESIGN ENGINEER	MDF	06/28/13		
DESIGN MANAGER	SAB	06/28/13		
	INITIALS	DATE	INITIALS	DATE

VERMONT GAS
PROPOSED 6" PIPELINE
ADDISON NATURAL GAS PROJECT
OTTER CREEK CROSSING–MIDDLEBURY NORTH

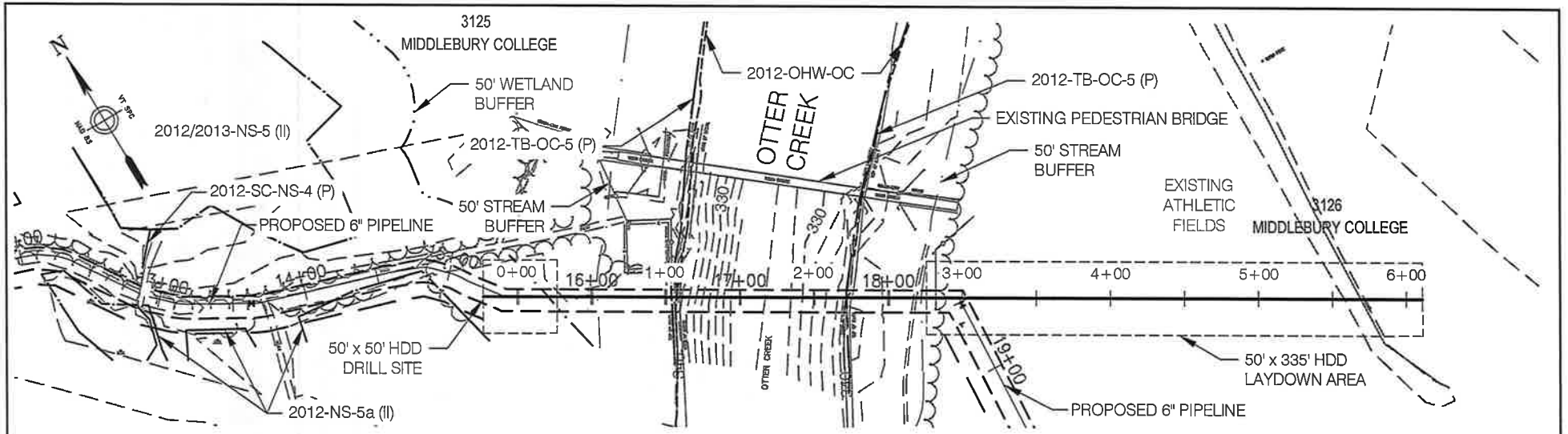
LOC. ADDISON COUNTY, VERMONT

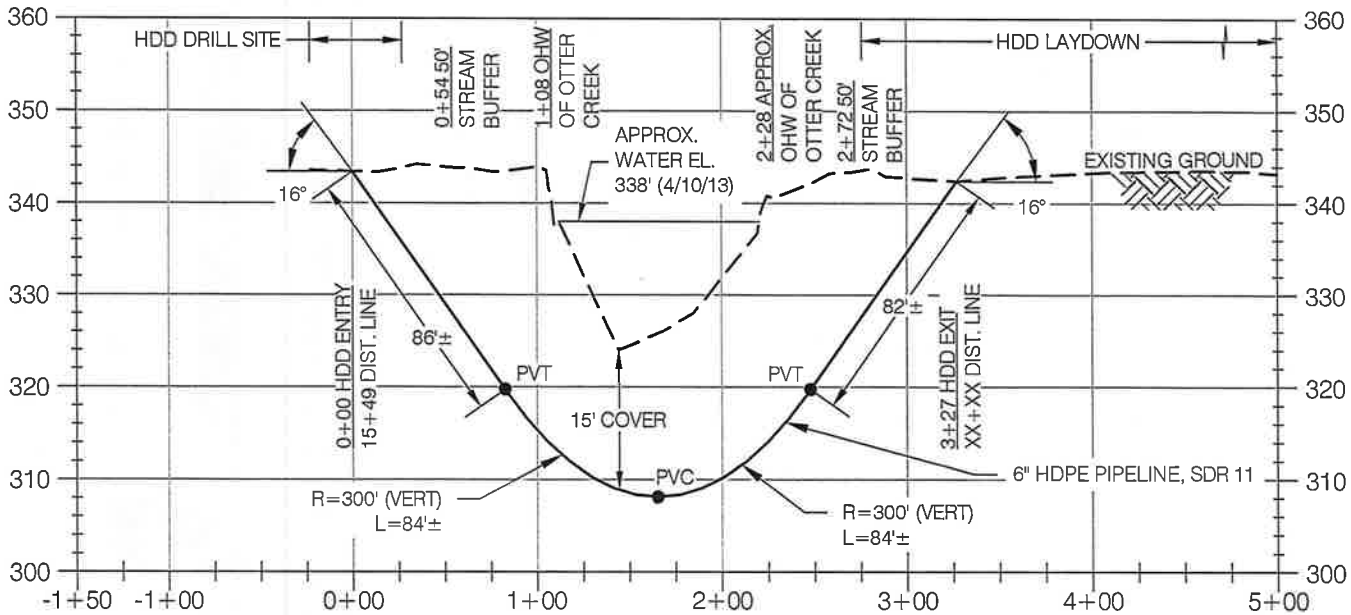
Vermont Gas

Vanasse Hangen Brustlin, Inc.

CHA

YEAR: 2013	W.O.	SCALE: AS NOTED	DWG. XXXX	REV. 0





NOTES:
1. ARCHAEOLOGICAL SITES OR SENSITIVE AREAS, IF PRESENT, TO BE EITHER 1) AVOIDED BY HDD OR MATTING, OR 2) MITIGATED THROUGH COORDINATION WITH THE VT DHP.

2. ORDINARY HIGH WATER INFORMATION OBTAINED FROM VHB ON 07/09/2013

HORIZONTAL SCALE

100 50 0 100 feet

20 10 0 20 feet

VERTICAL SCALE

	BID		CONSTRUCTION	
ENVIRONMENTAL	JLS	09/20/13		
DRAFTING DESIGNER	SBM	09/20/13		
DRAFTING SUPERVISOR	BZD	09/20/13		
DESIGN ENGINEER	MDF	09/20/13		
DESIGN MANAGER	SAB	09/20/13		
	INITIALS	DATE	INITIALS	DATE

VERMONT GAS
PROPOSED 6" PIPELINE
ADDISON NATURAL GAS PROJECT
OTTER CREEK CROSSING—MIDDLEBURY SOUTH

LOC. ADDISON COUNTY, VERMONT

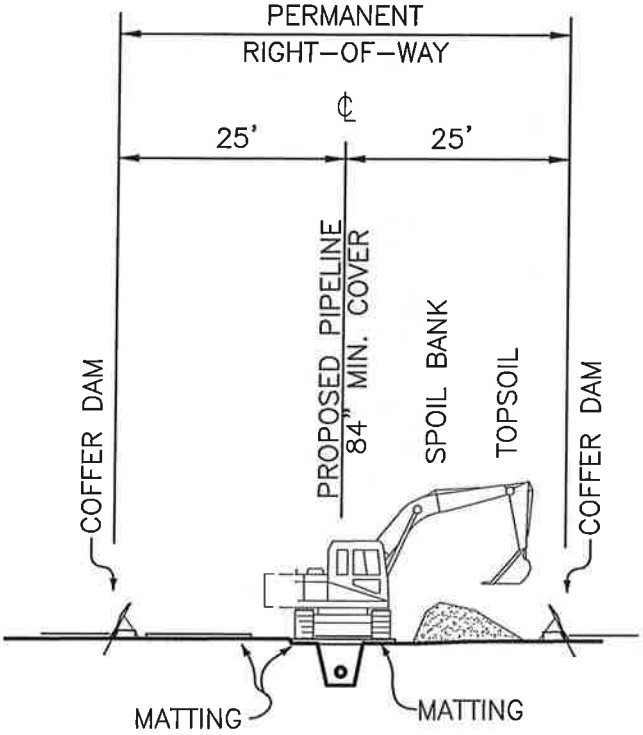
Vermont Gas

Vanasse Hangen Brustlin, Inc.

CHA

YEAR: 2013	W.O.	SCALE: AS NOTED	DWG. XXXX	REV. 0

16/28



CONSTRUCTION TYPE 7
NOT TO SCALE

NOTE:

1. THIS CONFIGURATION IS FOR STREAM CROSSING AND DOES NOT DEPICT ADDITIONAL TEMP. WORKSPACE.

2. ADDITIONAL TEMP. WORKSPACE HAS BEEN TYPICALLY INCORPORATED ON THE ALIGNMENT SHEETS FOR AREAS SUCH AS ROAD, RIVER/STREAM/WATERBODY, AND ARCHEOLOGICAL SITE CROSSINGS WHERE HORIZONTAL DIRECTIONAL DRILL CONSTRUCTION HAS BEEN PROPOSED.

3. FOR AREAS DESIGNATED AS PRIME AGRICULTURAL SOILS (PAS) IN THE SOIL TYPE BAND OF THE EPSC SHEETS, SEE "CONSTRUCTION WITHIN PRIME AGRICULTURAL SOILS (PAS) AREAS" FOR SOIL SEGREGATION AND ASSOCIATED CONSTRUCTION PROCEDURES.

4. SEE ALIGNMENT SHEETS FOR LOCATIONS OF THIS CONFIGURATION.

Typical Stream Crossing Construction Profile

N.T.S. Source: VHB LD_

Vanasse Hangen Brustlin, Inc.

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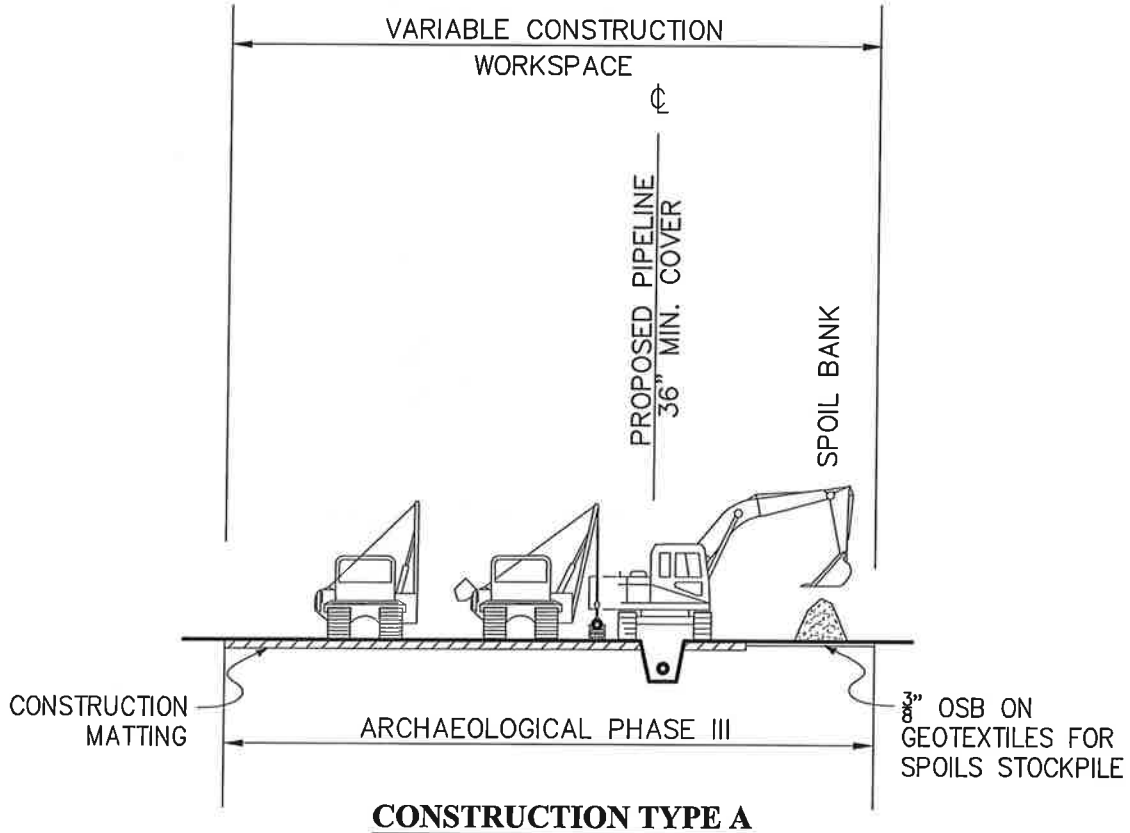
VERMONT GAS
ADDISON NATURAL GAS PROJECT - PHASE I
CWA SECTIONS 401/404 PERMIT APPLICATIONS
SELECTED DETAILS

December 20, 2012
Rev 1 - May 3, 2013
Rev 2 - July 2, 2013
Rev 3 - October 4, 2013

FOR COMPLETE PROJECT PLANS AND DETAILS, PLEASE REFER TO THE EPSC PLAN SET



CONSTRUCTION TYPE A

Notes:

1. THIS CONFIGURATION IS FOR VARIABLE CONSTRUCTION SPACE IN "ARCHAEOLOGICAL PHASE III" AREAS AND DOES NOT DEPICT ADDITIONAL TEMP. WORKSPACE. THE PHASE III AREAS ARE AS FOLLOWS: VT-AD-483, LOCUS 2 (8/14/2013), VT-CH-414 (8/14/2013), VT-AD-456, LOCUS 3, VT-AD-1559, VT-AD-138, LOCUS 2 (8/14/2013), VT-AD-87, LOCUS 2 (8/14/2013).

2. ADDITIONAL TEMP. WORKSPACE HAS BEEN TYPICALLY INCORPORATED ON THE ALIGNMENT & EPSC SHEETS FOR AREAS SUCH AS ROAD, RIVER/STREAM/WATERBODY, AND ARCHEOLOGICAL SITE CROSSINGS WHERE HORIZONTAL DIRECTIONAL DRILL CONSTRUCTION HAS BEEN PROPOSED.

3. SEE ALIGNMENT & EPSC SHEETS FOR LOCATIONS OF THIS CONSTRUCTION CONFIGURATION.

4. WHEN BACKFILLING, SOILS SHALL BE REPLACED IN ORDER THEY WERE EXCAVATED, WITH TOPSOIL AS UPPER LAYER FILL AND COMPACT SUBSOIL TO DEPTH OF ADJACENT NATIVE SUBSOIL/TOPSOIL INTERFACE. REPLACE TOPSOIL AS UPPER LAYER AND BLEND TO EXISTING GRADE OF UNDISTURBED SOILS. DISPOSE OF EXCESS SUBSOIL AT SUITABLE LOCATION AS APPROVED BY THE OSPC.

5. SEE EPSC PLAN "ADDITIONAL ENVIRONMENTAL NOTES" FOR ADDITIONAL INSTRUCTIONS RELATED TO CONSTRUCTION IN "ARCHAEOLOGICAL PHASE III" AREAS, INCLUDING FINAL STABILIZATION NOTES.

Construction Type A - Archeological

N.T.S.

Source: VHB

Vanasse Hangen Brustlin, Inc.

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Vermont Gas

VERMONT GAS

ADDISON NATURAL GAS PROJECT - PHASE I

CWA SECTIONS 401/404 PERMIT APPLICATIONS

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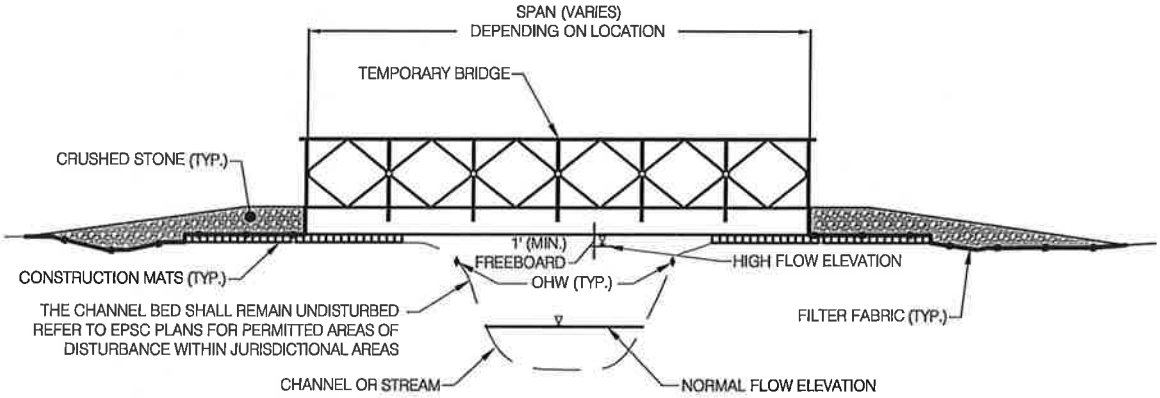

NOTES:

1. BRIDGE SHALL BE DESIGNED TO PROVIDE A CLEAR SPAN THAT IS EQUAL TO OR GREATER THAN OHW AT THE CROSSING SITE.
2. NO MATERIALS SHALL BE PLACED IN THE CHANNEL BELOW OHW WITHOUT PRIOR AUTHORIZATION.
3. BRIDGE SHALL BE DESIGNED TO CARRY THE MAXIMUM ANTICIPATED CONSTRUCTION LOADS. HOWEVER SHALL NOT BE LESS THAN AASHTO HS-25 LOADING CRITERIA.
4. BRIDGE SHALL BE DESIGNED SUCH THAT A MINIMUM ONE FOOT (1 FT) OF FREE BOARD EXISTS BETWEEN THE LOWEST MEMBER AND THE ANTICIPATED HIGH FLOW (Q25) WATER ELEVATION.
5. ADDITIONAL LOAD BEARING DEVICES BEYOND CONSTRUCTION MATTING MAY BE REQUIRED. THE CONTRACTOR SHALL CONDUCT A GEOTECHNICAL ANALYSIS OF EACH BRIDGE SITE TO DETERMINE THE NECESSARY BEARING CAPACITY OF SOILS AND TO DETERMINE THE MINIMUM DISTANCE BETWEEN BEARING SURFACES AND THE TOP OF STREAM/CHANNEL BANK.
6. APPROACH GRADES SHALL BE AS DEEMED NECESSARY BY THE CONTRACTOR.

Temporary Bridge Detail

N.T.S. Source: VHB LD_

Vanasse Hangen Brustlin, Inc.

CHA design / construction solutions

Vermont Gas

VERMONT GAS

ADDISON NATURAL GAS PROJECT - PHASE I

CWA SECTIONS 401/404 PERMIT APPLICATIONS

SELECTED DETAILS

December 20, 2012

Rev 1 - May 3, 2013

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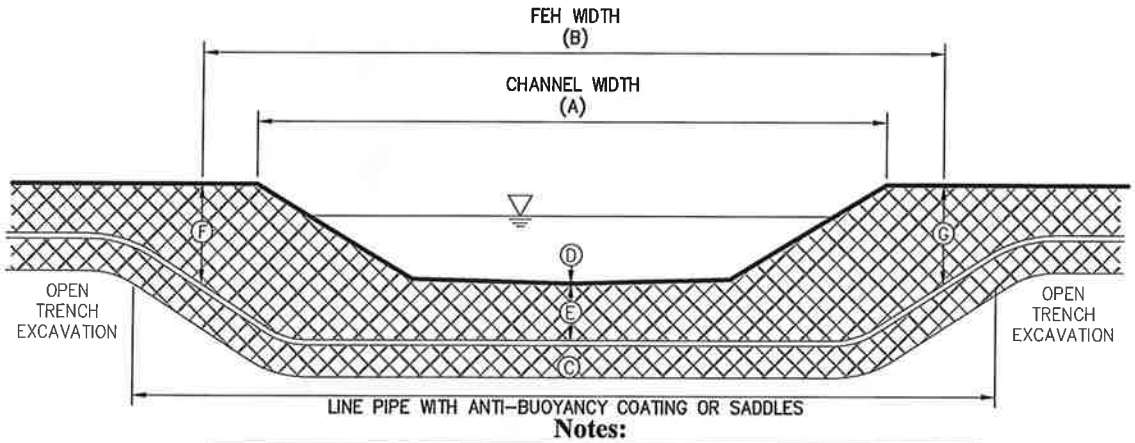
FOR COMPLETE PROJECT PLANS AND DETAILS, PLEASE REFER TO THE EPSC PLAN SET

MILEPOST	STREAM NAME	CHANNEL WIDTH (A)	FEH WIDTH (B)	CHANNEL ELEV. (C)	ELEV. BELOW CHANNEL (D)	ENTRY ELEV. (E)	EXIT ELEV. (F)
3.62	INDIAN BROOK	7	N/A (185)	430 [2]	< 420	< 430	< 430
6.60	ALDER BROOK	35	N/A (150)	281 [1]	< 274	< 281	< 281
10.32	ALLEN BROOK	35	360	376 [2]	< 366	< 376	< 376
13.79	SUCKER BROOK	15	120	367 [2]	< 360	< 367	< 367
18.93	UNNAMED TRIBUTARY TO LAPLATTE RIVER	4	N/A (310)	328 [1]	< 321	< 328	< 328
19.94	UNNAMED TRIBUTARY TO LAPLATTE RIVER	4	125	330 [2]	< 323	< 330	< 330
24.52	UNNAMED TRIBUTARY TO LEWIS CREEK	8	N/A (200)	407 [3]	< 400	< 407	< 407
29.11	UNNAMED TRIBUTARY TO LITTLE OTTER CREEK	8	N/A (400)	362 [2]	< 355	< 362	< 362
30.94	UNNAMED TRIBUTARY TO LITTLE OTTER CREEK	4	200	267 [2]	< 260	< 267	< 267

1. CHANNEL ELEVATION BASED ON CONTOURS SHOWN ON EPSC PLAN PROVIDED BY CHA, INC. DATED 02/28/2013 AND MODIFIED BASED ON FIELD ASSESSMENT BY VHB.
2. CHANNEL ELEVATION BASED ON CONTOURS SHOWN ON EPSC PLAN PROVIDED BY CHA, INC. DATED 02/28/2013 AND NOT ASSESSED IN THE FIELD BY VHB.
3. CHANNEL ELEVATION BASED ON TOPOGRAPHIC INFORMATION FROM GOOGLE EARTH AND NOT ASSESSED IN THE FIELD BY VHB.



Notes:

1. THIS CONFIGURATION IS FOR OPEN TRENCH EXCAVATION OF STREAM CROSSINGS AS SHOWN ON PROJECT PLANS. SEE ALIGNMENT SHEETS FOR LOCATIONS OF THIS CONFIGURATION.
2. TOP OF PIPELINE MUST BE AT LEAST AS DEEP AS THE CHANNEL BOTTOM (DIMENSION D) THROUGHOUT THE FLUVIAL EROSION HAZARD (FEH) CORRIDOR.
3. MINIMUM SEPARATION BETWEEN THE TOP OF PIPELINE AND THE CHANNEL BOTTOM (DIMENSION E) MUST BE AT LEAST 7 FEET.
4. ELEVATIONS PROVIDED ARE BASED ON APPROXIMATE NAVD 88 DATUM AND MUST BE FIELD VERIFIED PRIOR TO INSTALLATION OF PIPELINE.
5. FEH CORRIDOR IS LISTED AS NOT APPLICABLE (N/A) WHERE THE STREAM CROSSES OR IS ADJACENT TO AN EXISTING ROADWAY OR OTHER INFRASTRUCTURE THAT RESULTS IN RIVER MANAGEMENT CONSTRAINTS AT THAT LOCATION. FEH CORRIDOR WIDTHS AT THESE LOCATIONS ARE SHOWN FOR INFORMATION PURPOSES ONLY.
6. RESTORE DISTURBED CHANNEL, STREAM BANKS, AND APPROACHES FOLLOWING PIPELINE INSTALLATION PER EPSC PLAN.

Open Trench Stream Crossing - Typical Section

04/13

N.T.S.

Source: VHB

Vanasse Hangen Brustlin, Inc.

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ADDISON NATURAL GAS PROJECT - PHASE I

CWA SECTIONS 401/404 PERMIT APPLICATIONS

SELECTED DETAILS

December 20, 2012

Rev 1 - May 3, 2013

Rev 2 - July 2, 2013

Rev 3 - October 4, 2013

FOR COMPLETE PROJECT PLANS AND DETAILS, PLEASE REFER TO THE EPSC PLAN SET

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NOTES:

1. USE DIVERSION FLUME STREAM CROSSING ON WATER COURSES WITH LIMITED STREAM FLOW TO PREVENT SEDIMENTATION AND INTERRUPTION OF STREAM FLOW DURING CONSTRUCTION. THIS METHOD IS APPROPRIATE IN LOCATIONS WHERE FISH PASSAGE IS A CONCERN.

2. SCHEDULE CONSTRUCTION DURING LOW FLOW PERIOD, IF POSSIBLE.

3. THIS DETAIL REPRESENTS ONE POSSIBLE CONFIGURATION OF CONSTRUCTION ELEMENTS WITHIN THE TEMPORARY AND PERMANENT ROW. ALTERNATE CONFIGURATIONS OF CONSTRUCTION ELEMENTS BETWEEN THE UPSTREAM AND DOWNSTREAM DIVERSION STRUCTURES ARE ALLOWABLE SO LONG AS APPROPRIATE MEASURES ARE MAINTAINED TO PROTECT WATER QUALITY .

4. SET UP STEEL OR HDPE PIPE AS SHOWN, OR USE PRACTICAL ALTERNATIVES. PIPE (OR PIPES) MUST BE SIZED TO HAVE TWICE THE CAPACITY OF ANTICIPATED FLOW. DEPENDING ON STREAM FLOW, DIG SUMP HOLE TO CONCENTRATE WATER AT INTAKE.

5. INSTALL UPSTREAM DAM COMPOSED OF SANDBAGS, METAL PLATING OR A COMBINATION OF BOTH, INSTALL DOWNSTREAM DAM, IF REQUIRED, TO KEEP STREAM BED DRY.

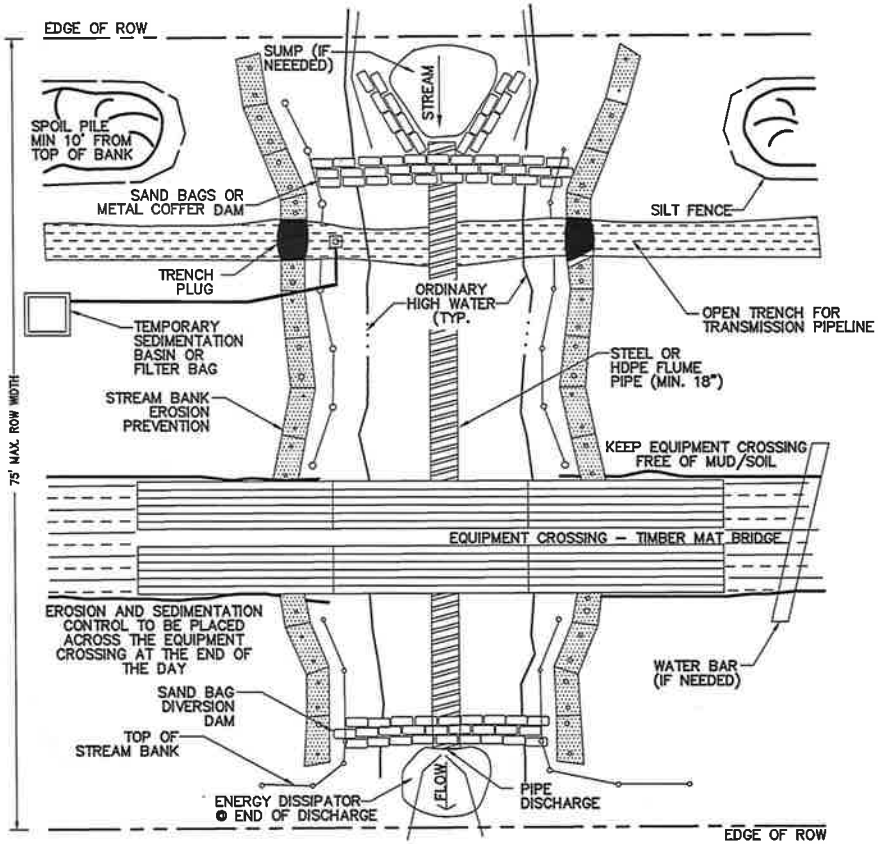
6. AFTER DAMS ARE IN PLACE, IT MAY BE NECESSARY TO USE A SUMP PUMP AND DEWATERING FILTER BAG TO KEEP WORK AREA DRY.

7. ALL MECHANIZED EQUIPMENT TO PERFORM WORK FROM ADJACENT TOP OF BANK AREAS. MAT STREAM IF WORK TO OCCUR IN STREAM CHANNEL.

8. EXCAVATE TRENCH AND LOWER IN PIPE UNDER DIVERSION FLUME. MOVE FLUME AS REQUIRED OR DISCONNECT IF TEMPORARY FLOW BLOCKAGE IS ACCEPTABLE. BACKFILL TRENCH.

9. DISMANTLE DOWNSTREAM DAM, THEN UPSTREAM DAM.

10. RESTORE DISTURBED CHANNEL, STREAM BANKS AND APPROACHES FOR A MINIMUM DISTANCE OF AT LEAST 50 FT. FROM THE STREAM EDGES AND PERMANENTLY STABILIZE WITHIN 1 DAY OF INITIAL RESTORATION. REFER TO THE STREAMBANK RESTORATION DETAIL FOR RESTORATION REQUIREMENTS.



Diversion Flume Stream Crossing

12/12

N.T.S.

Source: VHB

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NOTES:

1. USE DAM AND PUMP METHOD ON WATER COURSES WITH LIMITED STREAM FLOW TO PREVENT SEDIMENTATION AND INTERRUPTION OF STREAM FLOW DURING CONSTRUCTION.

2. SCHEDULE CONSTRUCTION DURING LOW FLOW PERIOD, IF POSSIBLE. PUMP AROUND TO BE USED ONLY DURING ACTIVE CONSTRUCTION. PUMP AROUND SYSTEM SHALL NOT BE LEFT UNATTENDED.

3. THIS DETAIL REPRESENTS ONE POSSIBLE CONFIGURATION OF CONSTRUCTION ELEMENTS WITHIN THE TEMPORARY AND PERMANENT ROW. ALTERNATE CONFIGURATIONS OF CONSTRUCTION ELEMENTS BETWEEN THE UPSTREAM AND DOWNSTREAM DIVERSION STRUCTURES ARE ALLOWABLE SO LONG AS APPROPRIATE MEASURES ARE MAINTAINED TO PROTECT WATER QUALITY .

4. SET UP PUMP AND HOSE AS SHOWN, OR USE PRACTICAL ALTERNATIVES. PUMP SHOULD HAVE TWICE THE PUMPING CAPACITY OF ANTICIPATED FLOW. HAVE STANDBY PUMP ON SITE. DEPENDING ON STREAM FLOW, DIG SUMP HOLE TO CONCENTRATE WATER AT INTAKE.

5. USE TEMPORARY SEDIMENTATION BASIN OR FILTER BAG PRIOR TO DISCHARGING WATER BACK TO STREAM.

6. INSTALL UPSTREAM DAM COMPOSED OF SANDBAGS, METAL PLATING OR A COMBINATION OF BOTH, INSTALL DOWNSTREAM DAM, IF REQUIRED, TO KEEP STREAM BED DRY.

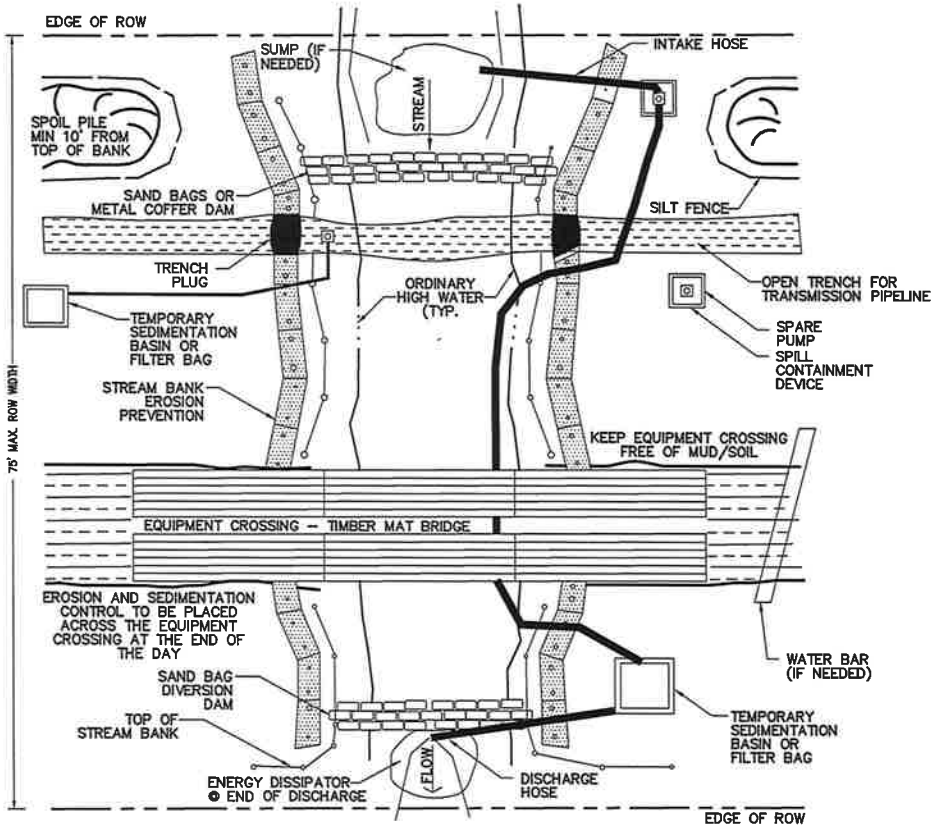
7. AFTER DAMS ARE IN PLACE, IT MAY BE NECESSARY TO USE ADDITIONAL PUMPS TO HANDLE STREAM FLOW.

8. EXCAVATE TRENCH AND LOWER IN PIPE UNDER HOSE. BACKFILL TRENCH.

9. ALL MECHANIZED EQUIPMENT TO PERFORM WORK FROM TEMPORARY BRIDGE OR ADJACENT TOP OF BANK AREAS. USE TIMBER MATS IS TO OCCUR IN STREAM CHANNEL.

10. DISMANTLE DOWNSTREAM DAM, THEN UPSTREAM DAM.

11. RESTORE DISTURBED CHANNEL, STREAM BANKS AND APPROACHES FOR A MINIMUM DISTANCE OF AT LEAST 50 FT. FROM THE STREAM EDGES AND PERMANENTLY STABILIZE WITHIN 1 DAY OF INITIAL RESTORATION. REFER TO THE STREAMBANK RESTORATION DETAIL FOR RESTORATION REQUIREMENTS.



Open Trench Stream Crossing - Dam and Pump Around Detail

12/12

N.T.S.

Source: VHB

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ADDISON NATURAL GAS PROJECT - PHASE I

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