

Northeast Archaeology Research Center, Inc.

Andy McMillan
Vermont Transco LLC
366 Pinnacle Ridge Road
Rutland, Vermont 05701

October 26, 2023

RE: Vermont Transco LLC St. Johnsbury Substation Project Archaeological Phase IB Identification Survey

Dear Andy:

We write to inform you of the completion of the archaeological Phase IB survey of the proposed Vermont Transco St. Johnsbury Substation Project located at 397 Higgins Hill Road, St. Johnsbury, Caledonia County, Vermont (Figures 1 and 2). The work was conducted by the Northeast Archaeology Research Center Inc. (NE ARC) on September 1st-5th and October 24th, 2023 on behalf of Vermont Transco LLC (VT Transco).

The Vermont Electric Power Company Inc. (VELCO) St. Johnsbury Substation was originally built in 1972, with various modifications and improvements occurring over the subsequent nearly fifty years of service. VELCO conducted a condition assessment of the Substation and identified the need to replace some of the equipment due to condition. VELCO identified deficiencies in equipment such as the control building, 220 circuit switcher, and the substation fence. VELCO proposes to address most of the Substation concerns by replacing the existing control building with a larger control building, replacing the existing 220 circuit switcher with a new K220 SF6 gas circuit breaker, and replacing the substation fence with an expanded fence. VELCO also plans to reconstruct and widen the existing driveway. The proposed improvements to the substation will require the installation of a temporary 115/34.5 kV substation adjacent to the existing Saint Johnsbury Substation on land owned by VELCO, with associated facilities including an extended GMP 12.47 kV distribution line along the existing substation driveway, a temporary 115kV line tap, temporary GMP 34.5 kV lines, a permanent reroute of one GMP 34.5 kV line, and replacement of various GMP poles to maintain clearance for the temporary access road and site grading. Tree clearing will be conducted to accommodate the new infrastructure and site drainage will be improved.

The goal of the Phase IB survey was to determine if archaeological sites of potential significance are present within the area of potential effect (APE) of the Project or to establish that it is unlikely that site(s) of potential significance are present. Significant sites are those that meet eligibility criteria for the State and National Registers of Historic Places. The archaeological work is required as part of the Vermont

Public Utility Commission Section 248 permit application process, and Vermont Division for Historic Preservation (VDHP) guidelines for archaeological studies in Vermont are also germane (VTSHPO 2017).

As detailed below, the Phase IB survey included the excavation of 75 0.5 m x 0.5 m test pits within two previously defined archaeologically sensitive areas, ASA 1 and ASA 2 (including 2a and 2b) (Figures 3 and 4). No precontact Native American artifacts or significant postcontact Euroamerican archaeological deposits were identified and thus no further archaeological work is recommended prior to Project construction.

Project Area Description and Archaeological Sensitivity

The Project area had never been archaeologically tested, however a recent Archaeological Resource Assessment (ARA) was undertaken for the Project by NE ARC (Hudgell and McPheters 2023). The ARA determined that the Project is generally sensitive for the presence of Native American archaeological sites given its location adjacent to the Moose River and various tributary streams and wetlands, as well as its location at the margin of former glacial Lake Hitchcock. The Moose River is tributary to the Passumpsic River, which in turn forms a major north-south travel way from the St. Lawrence Drainage and Lake Memphremagog to the Connecticut River. Precontact archaeological sites are documented in similar settings nearby including at the confluence of the Moose and Passumpsic Rivers and also on the Moose River within 700 m (0.4 mi) of the Project. The Project is not considered sensitive for potentially significant post-contact Euroamerican archaeological sites.

While the specific Project effects will occur in the vicinity of the existing substation, at the request of VT Transco the entire 40.5-acre VELCO property parcel was included in the ARA as well as a short distance of two right-of-ways (ROWs) extending out of the parcel south and southeast from the substation. Together the parcel and the ROWs are regarded as the Study Area, as shown in Figures 1 and 2. The Study Area is located on a set of northwesterly-facing, steeply sloped and stepped landforms on the southern side of the Moose River Valley, which meets the northwestern flank and lower slopes of Fairbanks Mountain. The VELCO parcel is roughly rectangular, and is situated north of Higgins Hill Road in the southern part of the town of St. Johnsbury and close to the Waterford town line, east of the village of St. Johnsbury, and about 100 m northwest of Interstate I-93 (see Figure 1). The parcel is bounded to the north by the Moose River, to the south by Higgins Hill Road, to the west by a steep slope down to a deeply incised stream, and to the east by an arbitrary parcel boundary that is not topographically defined.

There are both VELCO and GMP lines and structures located within the VELCO parcel and within the ROWs. The existing substation is located towards the southeastern extent of the parcel and is accessed

by a gravel driveway from Higgins Hill Road. The existing substation and access road sit on substantial fill prisms on an elevated terrace which forms one of the highest landforms in the parcel, looking down to the north towards the Moose River. Wetlands are also present within the parcel, including in a low area between the substation and Higgins Hill Road, as well as farther down the hill towards the Moose River.

As detailed in the ARA, five specific Archaeologically Sensitive Areas (ASAs) have been defined within the Study Area, all of them located within the 40.5-acre VELCO parcel (see Figure 3). All are broadly defined landforms which are sensitive for the presence of precontact archaeological sites. Project plans are still in development however given the location of the existing substation and access as well as the configuration of landforms within the Study Area, the Project will avoid ASA 3 (including 3a and 3b), ASA 4, and ASA 5. Proposed Project effects will occur on the broad landforms that include ASA 1 and ASA 2 (including ASA 2a and 2b). Therefore, archaeological Phase IB survey was focused within ASAs 1, 2a and 2b in order to determine if sites of potential significance are present within the Project APE (see Figure 4).

Archaeological Phase IB Survey

Phase IB survey included the excavation of 75 0.5 m x 0.5 m test pits situated at 5.0 m and 10.0 m intervals along 15 sampling transects (see Figure 4). Transects were placed to test the most sensitive areas of microtopography within previously defined ASAs 1, 2a and 2b.

ASA 1

ASA 1 encompasses two wooded and flat-topped elevated knoll landforms located to the south side (uphill) of the existing substation, including the saddle between them. These are elevated about 20 ft above the mapped maximum elevation of glacial Lake Hitchcock. A total of 17 test pits were placed at 5.0 m intervals along two transects, T11 and T12, which were positioned to follow the most level portions of the knolls and saddle (Figure 5, see Figure 4).

Test pits were excavated to depths of 30 to 80 cm below ground surface (cmbs), with an average depth of 45 cmbs. Stratigraphy was largely consistent throughout the ASA and included an uppermost dark grayish brown 'A' soil horizon 10-50 cm in thickness, usually overlying an olive brown to brown developed 'B' horizon 6-20 cm in thickness, in turn overlying a sterile 'C' horizon of light olive brown within which the majority of test pits were terminated; others were terminated early on boulder impasse or bedrock. Occasionally the 'B' horizon was not present and the 'A' horizon directly overlay 'C' subsoils; in these cases, as well as where a particularly deep 'A' horizon was present, the stratigraphy may represent disturbance such as a tree throw or removal of a boulder. Sediments were silt loams throughout, increasing in clay content with depth, and occasionally gravelly, and field observations corroborate the

USDA soil descriptions for the landform as Cabot silt loam, 8-15% slopes, derived from a parent material of loamy lodgement till (USDA 2023) (Figures 6 and 7).

No Native American artifacts were recovered from ASA 1; the only Euroamerican artifacts were two small pieces of undecorated whiteware ceramic, recovered from the 'A' soil horizon in test pits T11 P5 and T11 P6.

ASA 2

ASA 2 is a broad, generally level set of landforms vegetated with meadow grasses and occasional shrubs. This ASA has been split into areas 2a and 2b, which are topographically separated by what may be an artificially-modified drainage. Overall, ASA 2 includes a set of wide and level to gently rolling bench terrace landforms located just downslope of the existing substation and extending the width of the property parcel. These fall at the shoreline of glacial Lake Hitchcock. The broader terraces also include small, raised knolls which afford additional viewsheds, especially overlooking the deeply incised stream at the western edge of the property parcel. ASA 2 was tested with a total of 58 test pits, with 40 in ASA 2a and 18 in ASA 2b. Test pits were placed at 10.0 m intervals along eight transects in ASA 2a (T5 through T9, T13 through T15) and four transects in ASA 2b (T1 through T4), with transects positioned to sample knolls, the most level portions of the benches, and the most prominent viewsheds (Figures 8-11).

Test pits were excavated to depths of 30 to 100 cmbs, with an average depth of 52 cmbs. Stratigraphy was largely consistent across the broad landform and throughout the ASA and included an uppermost very dark brown to dark grayish brown 'Ap' plow zone soil horizon 20-35 cm in thickness, which either overlay an olive brown to brown developed 'B' horizon 10-31 cm in thickness, in turn overlying a sterile 'C' horizon of light olive brown within which the majority of test pits were terminated; again a few others were terminated early on boulder impasse or bedrock. In a number of cases the 'B' horizon was not present and had been wholly incorporated into the uppermost 'Ap' plow zone. In some areas occasional gravelly deposits were identified that may potentially represent fill – such as along transect T3 at the foot of the fill prism of the existing substation. Some deeper pits were excavated where it was difficult to discern color changes of soil stratigraphy however upon comparison with other test pit profiles during excavation it was determined that in all of these cases sterile subsoils were reached at around 40 to 50 cm, i.e., at comparable depths to the remainder of the ASA. Sediments were silt loams throughout, increasing in clay content with depth, and occasionally gravelly, and field observations corroborate the USDA soil descriptions for the landform as Cabot and Buckland silt loams, derived from a parent material of loamy lodgement till (USDA 2023) (Figures 12-17).

No Native American artifacts were recovered from ASA 2a or 2b; the only Euroamerican artifacts were one small piece of undecorated whiteware ceramic and one small piece of brown-glazed stoneware, recovered from the uppermost plow zone horizon in test pits T7 P4 and T3 P4, respectively.

Conclusions and Recommendations

Archaeological Phase IB survey has been completed for the proposed Vermont Transco St. Johnsbury Substation Project as part of the Vermont Public Utility Commission Section 248 review process. No Native American artifacts were recovered. The four recovered Euroamerican artifacts are all small (1 to 2 cm) pieces of undecorated ceramic dating generally to the 19th and/or 20th centuries, and none are considered to represent significant archaeological deposits: such items are typical of field scatter commonly identified in agricultural fields throughout northern New England.

Given the intensity and coverage of archaeological testing, the results of the Phase IB survey indicate that the Project as planned is unlikely to have an adverse effect on significant, i.e., State or National Register of Historic Places eligible archaeological sites, and no additional archeological work is recommended prior to Project construction.

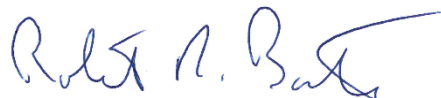
Of note, previously defined ASAs 3, 4 and 5 were not included in the Phase IB survey given that they will be avoided by the Project. These areas are untested and therefore are still considered archaeologically sensitive. Should changes to the current Project or future Projects impact these areas, it is recommended that Phase IB survey be conducted to determine if archaeological sites of potential significance are present or to establish that it is unlikely that such site(s) are present.

Please let us know if you have any questions or comments and thank you for the opportunity to conduct this study.

Sincerely,



Gemma-Jayne Hudgell
Assistant Director, NE ARC, Inc.



Robert Bartone, M.A.
Director, NE ARC, Inc.

References

Hudgell, Gemma-Jayne and Hutch M. McPheters

2023 *Archaeological Resource Assessment of the Proposed Vermont Transco LLC St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont*. Prepared for Vermont Transco LLC by the Northeast Archaeology Research Center, Inc.

USDA

2023 Web Soil Survey. Electronic Source, <http://websoilsurvey.nrcs.usda.gov>. Accessed 2023.

VTSHPO

2017 *The Vermont State Historic Preservation Office's Guidelines for Conducting Archaeology In Vermont and Appendices*. Vermont State Historic Preservation Office, Montpelier, VT.

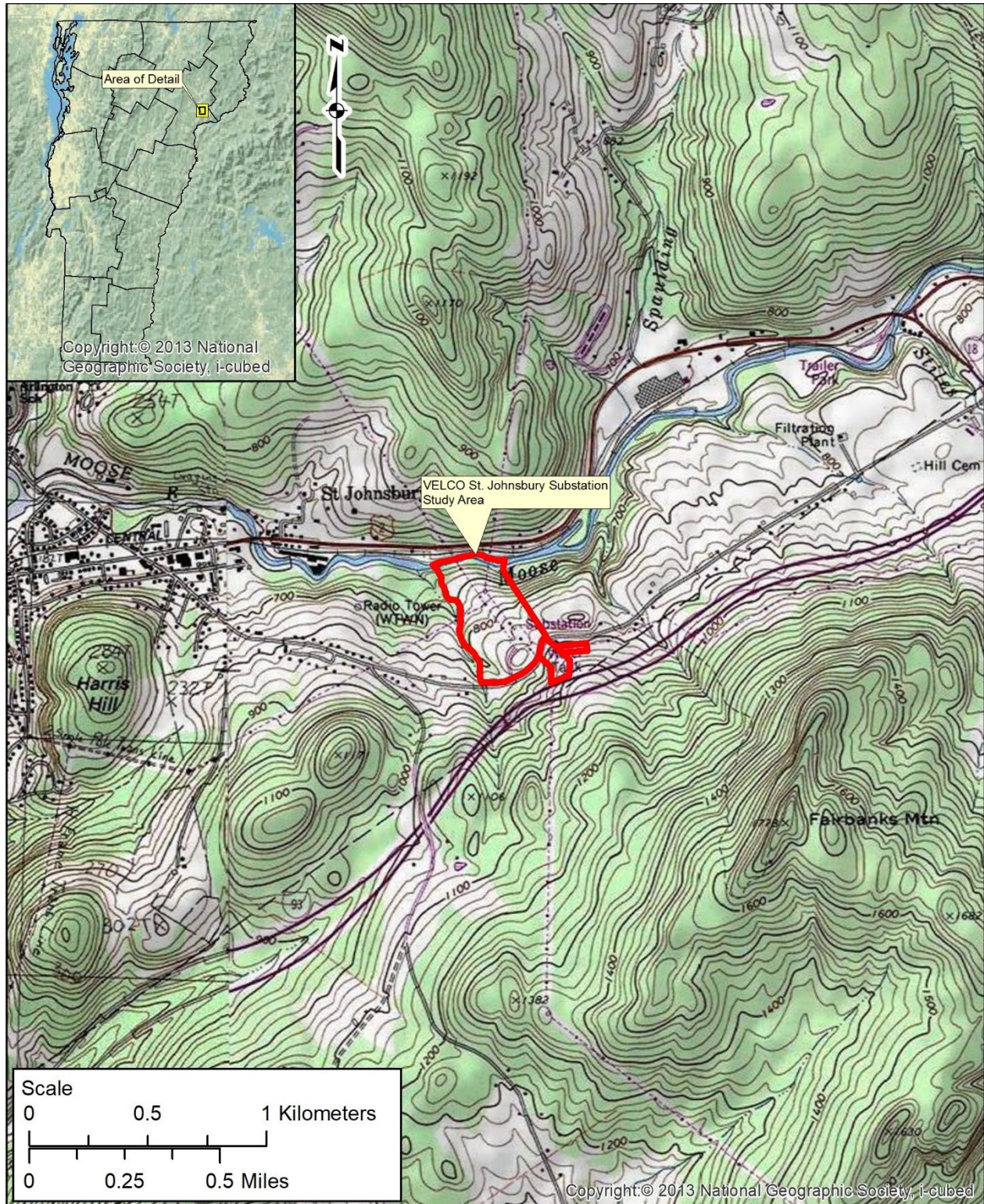


Figure 1. Topographic map showing the location of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.

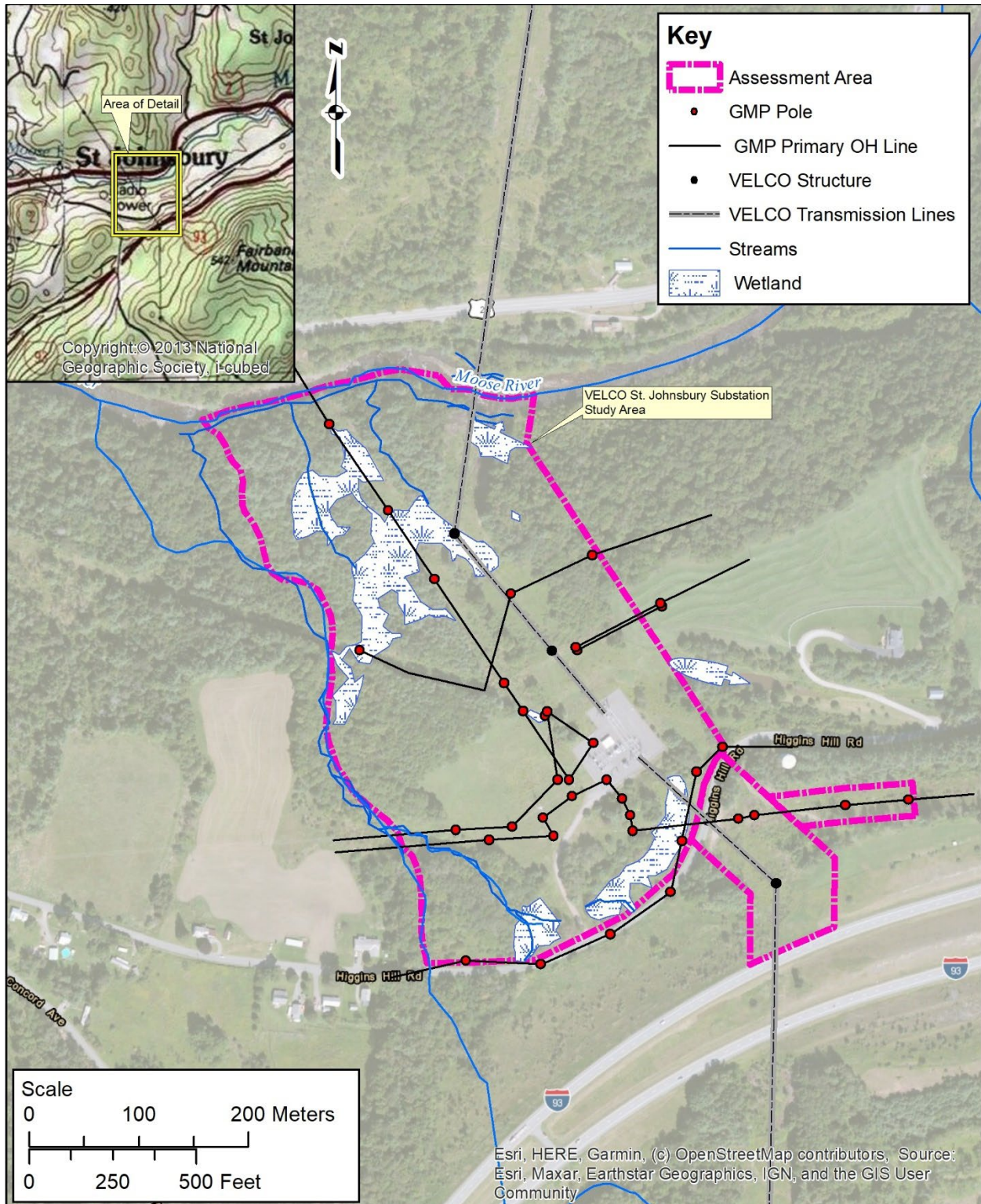


Figure 2. Aerial photograph showing the location of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.

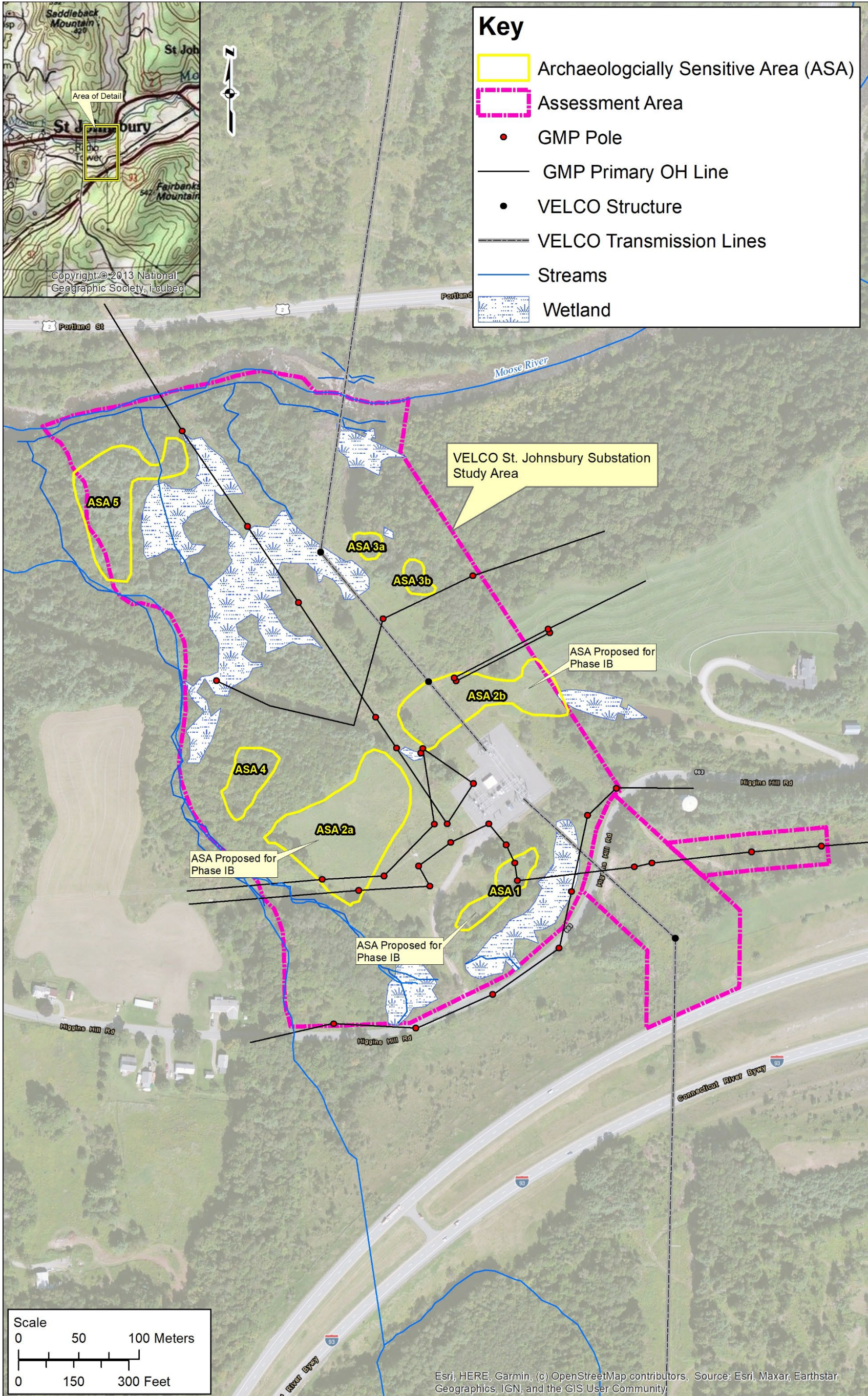


Figure 3. Aerial photograph showing the location of defined Archaeologically Sensitive Areas (ASAs) within the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont. Note ASAs 1, 2a and 2b which were the focus of Phase IB survey.

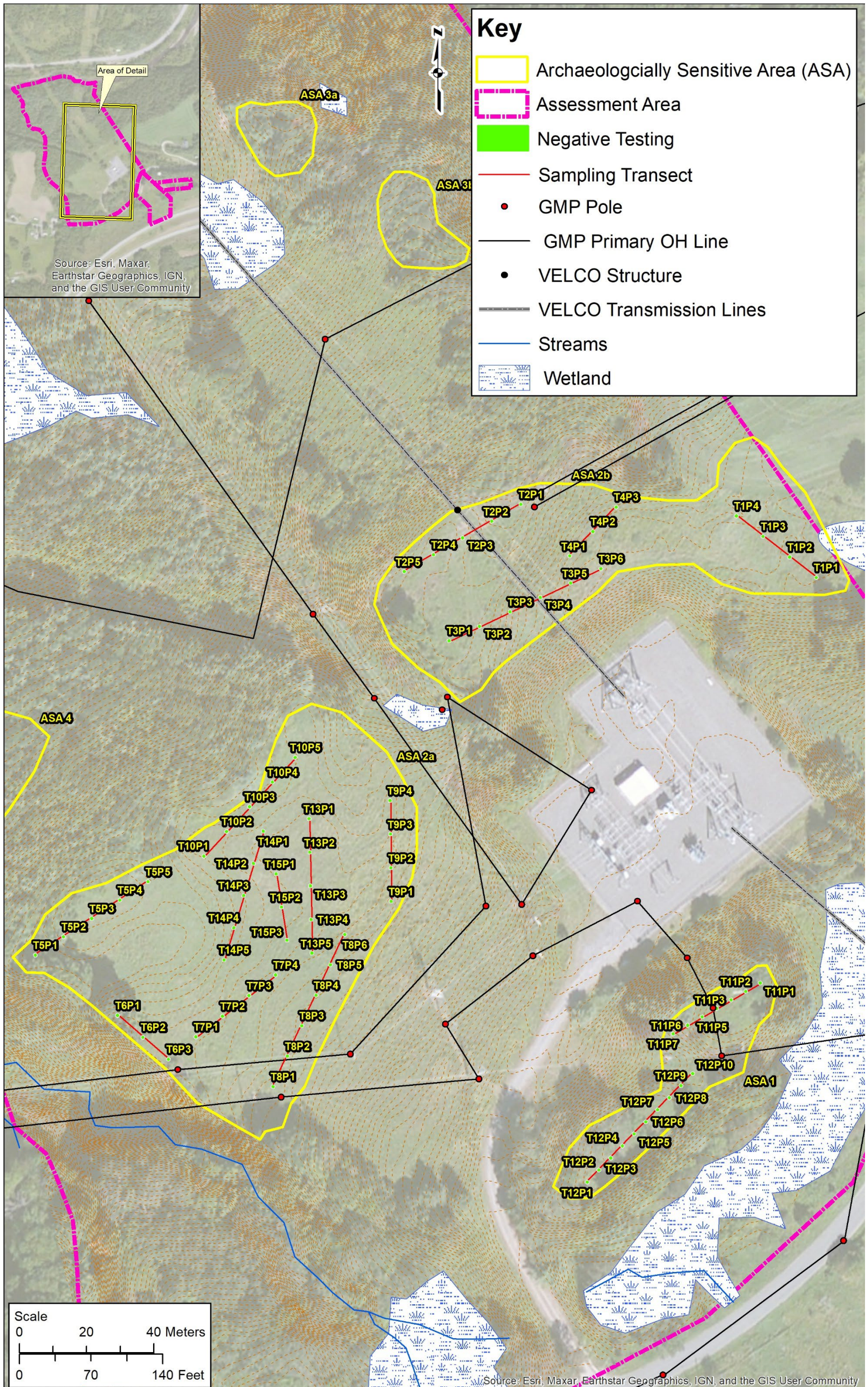


Figure 4. Aerial photograph showing the location of Phase IB survey test pits and sampling transects within ASAs 1, 2a and 2b within the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.



Figure 5. View east of crew members excavating along archaeological Phase IB testing transect T11 in ASA 1 of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.



Figure 6. Soil profile of test pit T12 P4 in ASA 1 of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.

Northeast Archaeology Research Center - Test Pit Profile Form

Project VELCO St. Johns I State Site # _____ Test Pit T12 P3

Area/Locus AA1 PN Area 101-200 PROV# 124 Feature #(s) _____

Supervisor MTG Exc. Team MTG, EAP Recorder MTO Date 09/04/23

Soil Profile	PN's / Artifacts, by level (see reverse for codes)	Soil Descriptions
0-10	L1	A 0-14cm
10-20	2	10YR 4/2
20-30	3	5H loam
30-40	4	
40-50	5	B 14-20cm
50-60	6	2.5Y 4/4
60-70	7	5H loam
70-80	8	
80-90	9	C 20-38cm
90-100	10	2.5Y 4/2
100-110	11	5H loam
110-120	12	
120-130	13	

Comments* NAR

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project VELCO St. Johns I State Site # _____ Test Pit T12 P4

Area/Locus AA1 PN Area 101-200 PROV# 128 Feature #(s) _____

Supervisor MTG Exc. Team MTO, EAP Recorder MTO Date 09/04/23

Soil Profile	PN's / Artifacts, by level (see reverse for codes)	Soil Descriptions
0-10	L1	A 0-51cm
10-20	2	10YR 4/2
20-30	3	5H loam
30-40	4	
40-50	5	
50-60	6	C 51-60cm
60-70	7	2.5Y 4/2
70-80	8	5H loam
80-90	9	
90-100	10	
100-110	11	
110-120	12	
120-130	13	

Comments* NAR

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Figure 7. Select schematic soil profiles from ASA 1 of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.



Figure 8. View southeast of crew members excavating along archaeological Phase IB testing transect T8 in ASA 2a of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont. Note the access road at the rear of the photograph and existing substation at the rear left.



Figure 9. View east of crew members excavating along archaeological Phase IB testing transect T13 in ASA 2a of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont. Note the existing substation at the rear center.



Figure 10. View east of crew members excavating along archaeological Phase IB testing transect T3 in ASA 2b of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont. Note the fill prism of the existing substation at the right of the photograph.



Figure 11. View west of crew members excavating along archaeological Phase IB testing transect T2 in ASA 2b of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.



Figure 12. Soil profile of test pit T9 P1 in ASA 2a of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.

Northeast Archaeology Research Center - Test Pit Profile Form

Project VELCO St. Johnsbury State Site # Test Pit TG P2
 Area/Locus ASA 2a PN Area 101-200 PROV# 112 Feature #(s)
 Supervisor MTG Exc. Team MTG, EAP Recorder MTG Date 09/02/23

Depth (cm)	Soil Profile	PN's / Artifacts, by level (see reverse for codes)	Soil Descriptions
0-10	A	L1 NAR	A. 0-20cm 10YR 3/3 silt loam
10-20			
20-30	B		B. 20-43cm 2.5Y 5/4 silt loam
30-40			
40-50	C		C. 43-63cm 2.5Y 4/3 silt loam
50-60			
60-70			
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			

Comments* NAR

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project VELCO St. Johnsbury State Site # Test Pit T9P1
 Area/Locus ASA 2a PN Area 101-100 PROV# 21 Feature #(s)
 Supervisor MTG Exc. Team JEG, RDS Recorder JEG Date 9/3/23

Depth (cm)	Soil Profile	PN's / Artifacts, by level (see reverse for codes)	Soil Descriptions
0-10	A	L1 NAR	A(0cm-26cm) 10YR 3/3 silt loam
10-20			
20-30			
30-40	C		C(27cm-47cm) 2.5Y 3/3 compact silt/clay w/comp. PK
40-50			
50-60			
60-70			
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			

Comments* NCM

Number of bags: 1

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Figure 13. Select schematic soil profiles from ASA 2a of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.



Figure 14. Soil profile of test pit T13 P4 in ASA 2a of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Vt. St. Johnsbury St. Substation State Site # Test Pit T13 P4

Area/Locus ASA 2a PN Area 201-300 PROV# 202 Feature #(s)

Supervisor CWK Exc. Team TAH, BDS Recorder BDS Date 10/24/23

Depth (cm)	Soil Description	PN's / Artifacts, by level (see reverse for codes)
0-35	A 0-35cm Silty loam 10YR 5/3	4-1 NAR
35-45	B 35-45cm Silty loam 10YR 4/3	
45-50	C 45-50cm 2.5Y 5/3 Silty clay	
50-130		

Comments* NAR

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Vt. St. Johnsbury St. Substation State Site # Test Pit T14 P4

Area/Locus ASA 2a PN Area 301-400 PROV# 303 Feature #(s)

Supervisor CWK Exc. Team ASP/AEG Recorder AEG Date 10/24/23

Depth (cm)	Soil Description	PN's / Artifacts, by level (see reverse for codes)
0-6	Ap - 0-6cm	4-1 NAR
6-10	- 10YR 3/2	
10-12	- very dark grayish brown	
12-18	- Silty loam	
18-38	A2B - 6-38cm	
38-59	- 10YR 4/2	
59-64	- Brown	
64-75	- silty loam	
75-84	AR - 38-59cm	
84-94	- 7.5Y 3/1	
94-104	- very dark gray	
104-114	- silty loam	
114-124	B - 59-64cm	
124-130	- 7.5Y 4/1	
	- olive brown	
	- silty loam	
	C - 64-75cm	
	- 7.5Y 3/2 - dark olive brown	
	- silty loam	

Comments* Lots of rocks and buried up slate starting 30cm.

Number of bags: 2

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Figure 15. Select schematic soil profiles from ASA 2a of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.



Figure 16. Soil profile of test pit T3 P2 in ASA 2b of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.

Northeast Archaeology Research Center - Test Pit Profile Form

Project VELCO St. Johnsbury State Site # Test Pit T2 P1
 Area/Locus ASA 2b PN Area 101-200 PROV# 103 Feature #(s)
 Supervisor MTG Exc. Team MTO, EAP Recorder MTO Date 09/01/23

Soil Descriptions	PN's / Artifacts, by level (see reverse for codes)
0-75cm	
10YR 4/2	1-1 NAR
Silt loam	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13

Comments* NAR
Terminated on rock impasse

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project VELCO St. Johnsbury State Site # Test Pit T3 P2
 Area/Locus ASA 2b PN Area 101-100 PROV# 006 Feature #(s)
 Supervisor MTG Exc. Team JEG BOS Recorder BOS Date 9/1/23

Soil Descriptions	PN's / Artifacts, by level (see reverse for codes)
0-30cm	
10YR 3/1	1-1 NAR
silty loam	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13

Comments*

Number of bags:

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Figure 17. Select schematic soil profiles from ASA 2b of the proposed VT Transco St. Johnsbury Substation Project, St. Johnsbury, Caledonia County, Vermont.