

**THE STATE OF NEW HAMPSHIRE  
BEFORE THE  
NEW HAMPSHIRE  
SITE EVALUATION COMMITTEE**

**DOCKET NO. 2010-01**

**APPLICATION OF GROTON WIND, LLC  
FOR A CERTIFICATE OF SITE AND FACILITY**

**SECOND SUPPLEMENTAL PREFILED TESTIMONY OF  
HOPE E. LUHMAN  
ON BEHALF OF  
GROTON WIND, LLC**

November 19, 2010

1 **Qualifications**

2  
3 **Q. Please state your name, business address and qualifications.**

4 A. My name is Hope E. Luhman. My business address is: The Louis Berger Group,  
5 Inc., 20 Corporate Woods Blvd., Albany, New York 12211. My qualifications have not changed  
6 from what was described in my March 2010 prefiled testimony.

7 **Q. Who is your current employer and what position do you hold?**

8 A. I am employed by The Louis Berger Group, Inc. ("Berger") as an Assistant  
9 Director for Cultural Resources and Senior Archaeologist.

10 **Purpose of Testimony**

11 **Q. What is the purpose of your second supplemental prefiled testimony?**

12 A. The purpose of this testimony is to provide information concerning the potential  
13 impacts on historic sites of the portion of the Groton Wind, LLC project ("the Project") that  
14 includes an alternative overhead power line that will run from the Project site to Route 25. In

1 addition, I will discuss the status of the Applicant's discussions with the U.S. Army Corps of  
2 Engineers("USACE") and the New Hampshire Division of Historical Resources (" NH DHR") to  
3 address the issues raised in NH DHR's memorandum dated October 28, 2010 to Attorney  
4 Iacopino which has been marked for identification as Exhibit Buttolph 29 in this docket.

5 **Alternative Overhead Power Line**

6 **Q. Since the time of your prefiled supplemental testimony, have you performed**  
7 **additional work and/or studies relative to the alternative overhead power line's impacts on**  
8 **historic sites?**

9 A. Yes. Berger reviewed the files provided by the Applicant and conducted a site  
10 visit to evaluate archaeological sensitivity. Building on this assessment, our previous  
11 archaeological survey work, and in consultation with NH DHR, Berger undertook subsurface  
12 testing to investigate those areas assessed as sensitive. A copy of our report to NH DHR  
13 regarding the subsurface testing is attached to this testimony.

14 **Q. Do your additional work and/or studies relative to the alternative overhead**  
15 **power line cause you to change your opinion that the Project will not have an unreasonable**  
16 **adverse effect on historic sites?**

17 A. No. The additional subsurface testing did not identify any archaeological  
18 deposits.

19 **Status of Discussions with DHR and U.S. Army Corps of Engineers ("USACE")**

20 **Q. Please describe the roles that DHR and USACE play in permitting the**  
21 **Groton Wind Project.**

1           A.     For the Project, the USACE serves as the lead federal agency and has the  
2     responsibility under Section 106 of the National Historic Preservation Act to take into account  
3     the effects of the proposed undertaking on historic properties within the defined area of potential  
4     effect (or “APE”) for the undertaking and does so in consultation with NH DHR and other  
5     parties. In addition to their role in the Section 106 process, the NH DHR has responsibilities  
6     regarding historic properties under NH state authorities.

7           **Q.     Please explain how the Applicant intends to work with DHR and USACE to**  
8     **address their concerns about the Project’s impacts on historic sites.**

9           A.     The Applicant continues to play a very active role in the ongoing consultation  
10    between the NH DHR and the USACE. Meetings and ongoing consultation in recent days have  
11    resulted in the expectation of concrete next steps to be outlined by the USACE in consultation  
12    with NH DHR. The Applicant has every intention to work with the USACE and NH DHR as  
13    they so direct. An upcoming meeting scheduled for November 29, 2010, is expected to set the  
14    stage for a successful outcome to the consultative process.

15          **Q.     In your professional opinion, will the project have an unreasonable adverse**  
16    **effect on historic sites?**

17          A.     No, it is expected that the Project will not have an unreasonable adverse effect on  
18    historic properties. Any effects determined by the USACE in consultation with NH DHR will be  
19    mitigated in a manner deemed appropriate by the USACE in consultation with the NH DHR.

20          **Q.     Does this conclude your testimony?**

21          A.     Yes.



**THE Louis Berger Group, INC.**

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November 18, 2010

Edna M. Feighner  
Archaeologist and Review and Compliance Coordinator  
New Hampshire Division of Historical Resources  
19 Pillsbury Street  
Concord, New Hampshire 03301-3570

Re: *End-of-Field Letter, Addendum Phase IB Archaeological Survey, Groton Wind, LLC, Proposed Groton Wind Project, Grafton County, New Hampshire (Berger Reference CXE-4684); via electronic mail to: [Edna.Feighner@dcr.nh.gov](mailto:Edna.Feighner@dcr.nh.gov)*

Dear Ms. Feighner:

The Louis Berger Group, Inc. (Berger), is pleased to provide this *End-of-Field Letter, Addendum Phase IB Archaeological Survey, Groton Wind, LLC, Proposed Groton Wind Project, Grafton County, New Hampshire*.

On behalf of Groton Wind, LLC, (Groton Wind) a subsidiary of Iberdrola Renewables of Portland, Oregon, Berger has completed an addendum Phase IB archaeological investigation for Groton Wind's proposed Groton Wind Project (Project), Grafton County, New Hampshire. The area of potential effect (APE) for Berger's addendum Phase IB archaeological survey consists of an alternate overhead electrical line that would be located between the proposed Switchyard and O&M Facility at Groton Hollow Road and Route 25 (Moosilauke Road) (Figure 1). The alternative line is proposed to connect the project with the regional transmission grid. This investigation was designed in accordance with guidance issued by the New Hampshire Division of Historical Resources (NH DHR).

The overhead line between the Groton Wind Project site and Route 25 is currently anticipated to include approximately 37 single wood pole structures on a 35-foot wide cleared ROW. Approximately 10 to 12 of the poles would be on the current leased land for the Groton Wind Project and the remainder on two property easements. The poles would carry a total of six conductors on two davit arms (three on each) and would range in height from 34 to 42 feet above existing ground level. The taller poles would typically be located at angle points in the line. The line has been sited to follow existing logging roads/skid trails where possible and will include multiple angles and shifts in orientation. No permanent access roads or other man-made features, beyond the wood poles, are proposed on the ROW.

*Summary of Addendum Sensitivity Assessment*

Following the methodology of the previously completed Phase IA archaeological survey for the project (Berger 2010a), the sensitivity assessment for this addendum APE consisted of background research and fieldwork and was designed to gain an understanding of the project area, identify and assess areas of archaeological sensitivity (or potential), and identify any extant archaeological sites in the APE. Under the direction of Berger Archaeologist Mark Penney, Berger Field Supervisor Patrick Sabol conducted a field inspection of the APE on November 10, 2010. Overall, the APE was considered to possess a low to moderate probability to contain precontact archaeological resources. Nevertheless,

some areas were selected for subsurface survey based on fairly level terrain in proximity to Clark Brook and smaller intermittent or seasonal drainages and small wetlands. The APE was identified as possessing a low potential to contain historical archaeological resources based on the lack of map-documented structures (MDS) and lack of above ground historical features in or around the APE. Based on the results of the sensitivity assessment, it was Berger's opinion that a Phase IB archaeological survey was warranted for the addendum project component.

As mentioned above, the addendum Phase IB begins at the proposed Switchyard and goes through the proposed O&M Facility before continuing east for approximately 1 mile (1.6 kilometers) as far as Route 25 (see Figure 1, Figures 2a to 2d). The area between the Switchyard and O&M Facility (Poles 70, 71 and 72) was investigated during Berger's initial Phase IB investigation of the project (2010b) and was not reinvestigated for this addendum survey. Berger did identify some areas as being low to moderately archaeologically sensitive for precontact sites during the field inspection. For instance, Poles 74, 75 and 76 are situated on fairly level terrain between a perennial stream and two small intermittent streams, and the area was considered to be moderately archaeologically sensitive (Figure 2a). To the east, Poles 87, 88 and 89 were also identified as being in an area of moderate archaeological sensitivity based on fairly level terrain surrounded by intermittent streams and small wetlands (see Figure 2b). Finally, Poles 93, 94 and 95 were all considered to be located in an area of moderate archaeological potential based on fairly level terrain in proximity to an intermittent stream and small wetlands (see Figure 2c). East of Pole 95, the terrain and topography of the APE changed dramatically, consisting of moderate to excessively sloped terrain strewn with very large boulders (see Figure 2d). Other areas along the APE not selected as archaeologically sensitive were those that exhibited steep slope; wet, poorly drained soils; or rocky terrain.

#### *Methods for Addendum Phase IB Archaeological Survey*

Berger followed the same testing methodology as used in the original Phase IB archaeological survey (Berger 2010b) for the proposed Overhead Collector System, whereby shovel testing was conducted at and around proposed pole locations. For all proposed pole locations within areas considered to have potential to contain intact precontact archaeological sites, a testing strategy of five shovel tests per pole was utilized. More specifically, a single shovel test was excavated at the center of each proposed pole, surrounded by a square of four shovel tests at each corner, at 26-foot (8-meter) intervals. This method of emplacing shovel tests at all four corners and at the center of the proposed pole area provides an excellent strategy to investigate a small, confined project area. Typically five shovel tests were excavated at each proposed pole location; however, there were instances when fewer than five were excavated, owing to factors of slope or rocky terrain adjacent to the proposed pole location. Shovel tests were excavated by natural strata with arbitrary 0.3-foot (10-centimeter) levels within shovel tests measuring 1.6x1.6 feet (50x50 centimeters). All soils were passed through quarter-inch mesh screens, and descriptions using Munsell color codes and shovel test depths were recorded on standardized forms. All shovel test locations were recorded with the use of a handheld Trimble GeoXT GPS unit. In addition, Berger took photographs of the project area and the work in progress.

#### *Field Investigation Summary and Recommendations*

The archaeological field investigation was completed over a two-day period between November 15 and 16, 2010. For the addendum Phase IB investigation, Berger excavated a total of 40 shovel tests

at 11 proposed pole locations throughout archaeologically sensitive portions of the project area (see Figures 2a to 2d). In addition to testing poles at the archaeologically sensitive areas described above (Poles 74, 75, 76, 87, 88, 89, 93, 94, and 95), confirmation tests were excavated at Poles 73 and 106 in order to confirm suspected ground disturbances at those locations (see Figures 2a and 2d). As mentioned above, it was not always possible to excavate five shovel tests at each proposed pole location, and there were instances when fewer than five were excavated owing to factors of slope or rocky terrain. This was the case at Poles 89 and 95 where the actual testable area was too small to allow for five shovel tests. At proposed Pole 74, excavations were abandoned after completing two shovel tests due to the area around the pole being in an old, rocky stream bed.

Shovel tests throughout the APE were generally shallow and typical of upland soils for this area, and excepting areas where a rock impasse was encountered (Shovel Tests 74-A, 74-B, 88-C, 93-C, and 93-D), all shovel tests were excavated into sterile C-horizon soils. No cultural materials were recovered from any of the shovel tests.

Five shovel tests were excavated at both Pole 75 and Pole 76. Here a typical soil profile consisted of Stratum A, a very dark grayish brown (10YR 3/2) sandy loam with one to five percent gravels to a depth of 0.30 feet (9 centimeters); Stratum B, a dark yellowish brown (10YR 4/6) loamy sand with one to five percent gravels to a depth of 0.95 feet (29 centimeters); and Stratum C, a yellowish brown (10YR 5/4) loamy sand with one to five percent gravels to a final depth of 1.28 feet (39 centimeters).

Five shovel tests were excavated at both Pole 87 and Pole 88, while three were excavated at Pole 89. Here a typical soil profile consisted of Stratum A, a very dark brown (10YR 2/2) sandy loam with one to five percent gravels to a depth of 0.39 feet (12 centimeters); Stratum B, a dark yellowish brown (10YR 4/6) loamy sand with one to five percent gravels to a depth of 0.92 feet (28 centimeters); and Stratum C, a yellowish brown (10YR 5/8) loamy sand with one to five percent gravels to a final depth of 1.21 feet (37 centimeters).

Five shovel tests were excavated at both Pole 93 and Pole 94, while two were excavated at Pole 95. Here a typical soil profile consisted of Stratum A, a dark brown (10YR 3/3) sandy loam with one to five percent gravels to a depth of 0.49 feet (15 centimeters); Stratum B, a dark yellowish brown (10YR 4/6) sandy loam with one to five percent gravels to a depth of 0.98 feet (30 centimeters); and Stratum C, a yellowish brown (10YR 5/4) sandy loam with one to five percent gravels to a final depth of 1.31 feet (40 centimeters).

Finally, confirmation shovel tests were excavated at Poles 73 and 106 to assess suspected ground disturbance. As with previous excavations at the O&M facility (Berger 2010b), this area demonstrated disturbed A-horizon soils. No cultural materials were recovered. The two shovel tests excavated at Pole 106 also showed signs of previous ground disturbance in the form of a truncated A-horizon, disturbed B-horizon soils, and a sterile C-horizon. No cultural materials were recovered.

There are several possible reasons why Berger did not find any precontact archaeological sites within the project area. In general, prehistoric sensitivity was low to moderate throughout the APE. Testing areas were selected based on localized variations in topography, presence of water, resource-base exploitability, and level to fairly level terrain. Despite an effort to go beyond many of the criteria for locating precontact sites, none were identified. It is Berger's opinion that Groton Wind's alternative overhead electrical line, as currently designed, will not pose any impacts to any archaeological

remains, and no cultural resources will be impacted. However, should any of the proposed plans change, additional survey work may be necessary.

If clarification, modification, or additional information is required, please do not hesitate to contact me or Archaeologist Mark Penney directly.

Sincerely yours,  
THE LOUIS BERGER GROUP, INC.



Hope E. Luhman, Ph.D.  
Assistant Director – Cultural Resources

HEL/mep/cz

cc: Ed Cherian, Iberdrola  
Kristen Goland, Iberdrola  
Mark Penney, Berger  
File CXE-4684

#### REFERENCES

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Geospatial Data Gateway

2010 Orthoimagery. Geospatial Data Gateway. United States Department of Agriculture Service Center Initiative. Accessed online January 2010 at <<http://datagateway.nrcs.usda.gov/>>.

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2010 Geospatial data for the Archaeological Survey, Groton Wind Project, Town of Groton, Grafton County, New Hampshire. Iberdrola Renewables, Inc., Portland, Oregon.

The Louis Berger Group, Inc.

2010a *Phase IA Archaeological Survey, Groton Wind Project, Grafton County, New Hampshire*. Report prepared on behalf of Groton Wind, LLC, by The Louis Berger Group, Inc., Albany, New York.

2010b *End-of-Field Letter, Phase IB Archaeological Survey, Groton Wind Project, Grafton County, New Hampshire*. Report prepared on behalf of Groton Wind, LLC, by The Louis Berger Group, Inc., Albany, New York.

New Hampshire Geographically Referenced Analysis and Information Transfer System [NH GRANIT]

2006 New Hampshire Hydrography Dataset - CU 01070001 – Pemigewasset Geospatial data. University of New Hampshire, Institute for the Study of Earth, Oceans and Space Complex

Systems Research Center, 8 College Road, Morse Hall, Durham, NH. Accessed online November 2009 at <<http://www.granit.unh.edu/>>.

WebGIS

2009 Digital Elevation Model (DEM) geospatial data. Lakes Environmental Software. Waterloo, Ontario, Canada. Accessed online November 2009 at <<http://www.webgis.com/dlgdata.html>>.



FIGURE 1: Location of Addendum APE

SOURCE: ESRI 2008; Geospatial Data Gateway 2009; Ibarrola 2010; NH GRANIT 2006; WebGIS 2009

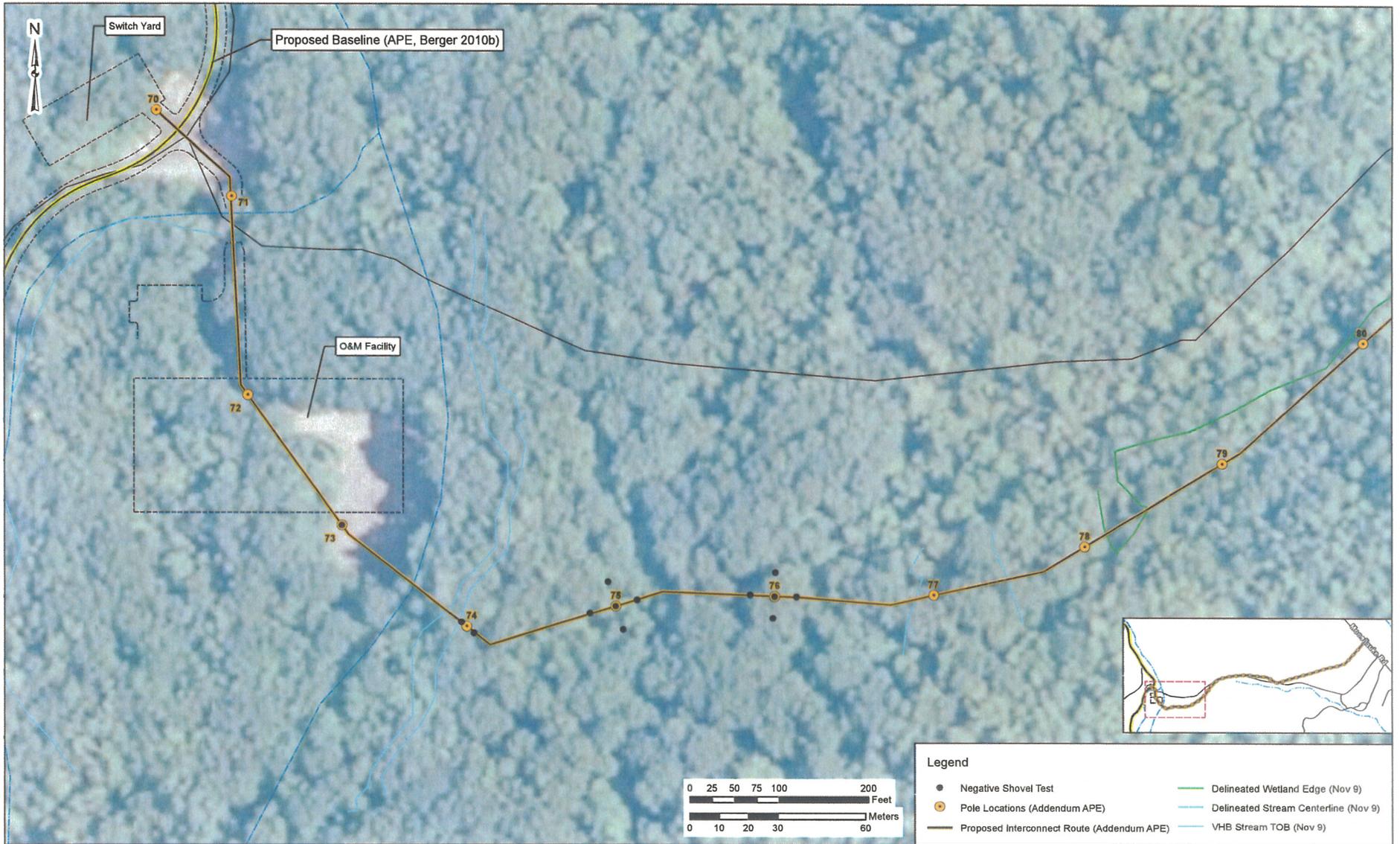


FIGURE 2a: Addendum Phase IB Archaeological Survey Results

SOURCE: ESRI 2008; Geospatial Data Gateway 2009; Iberdrola 2010; NH GRANIT 2006

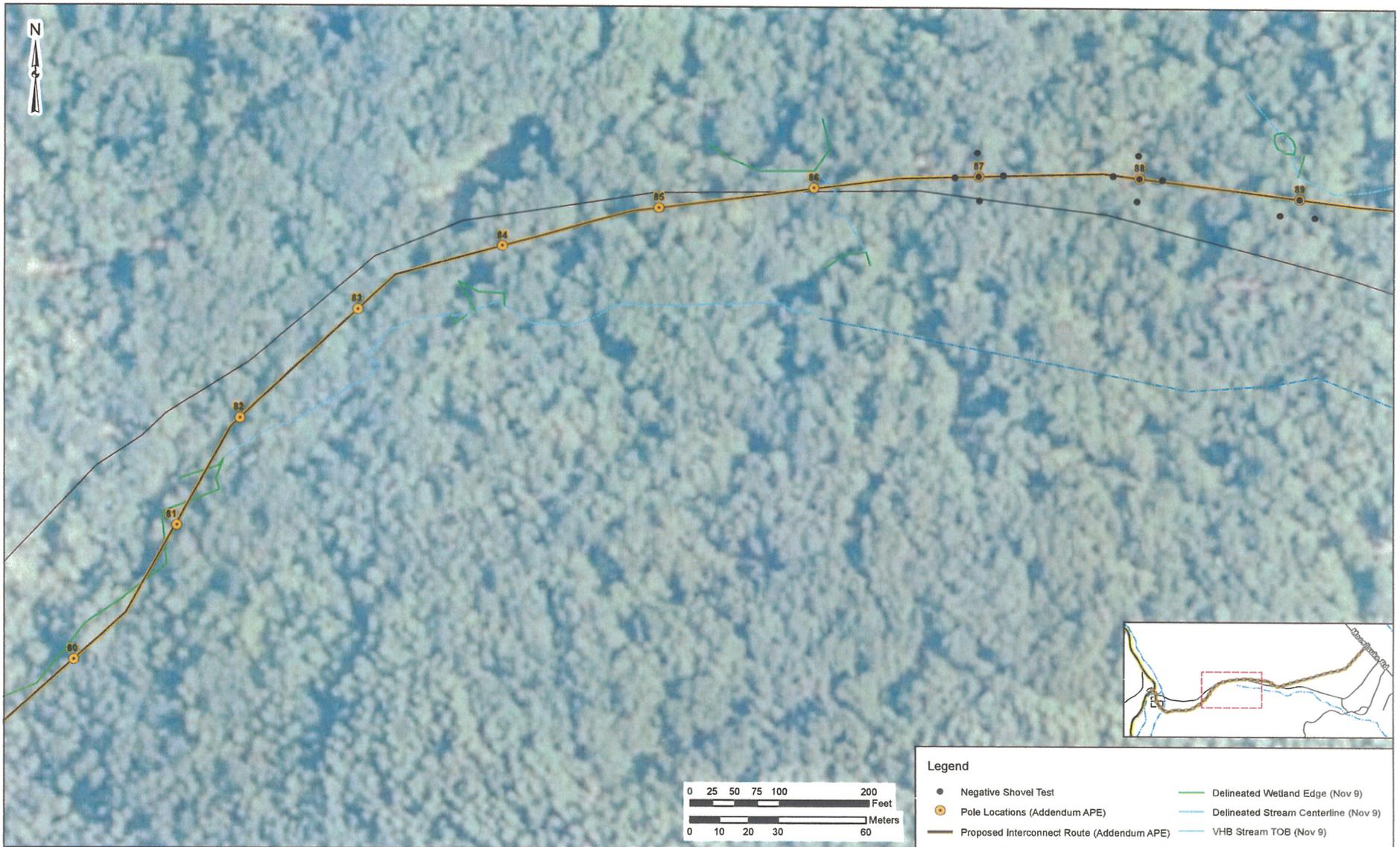


FIGURE 2b: Addendum Phase IB Archaeological Survey Results

SOURCE: ESRI 2008; Geospatial Data Gateway 2009; Iberrola 2010; NH GRANIT 2006



FIGURE 2c: Addendum Phase IB Archaeological Survey Results

SOURCE: ESRI 2008; Geospatial Data Gateway 2009; Iberdrola 2010; NH GRANIT 2006

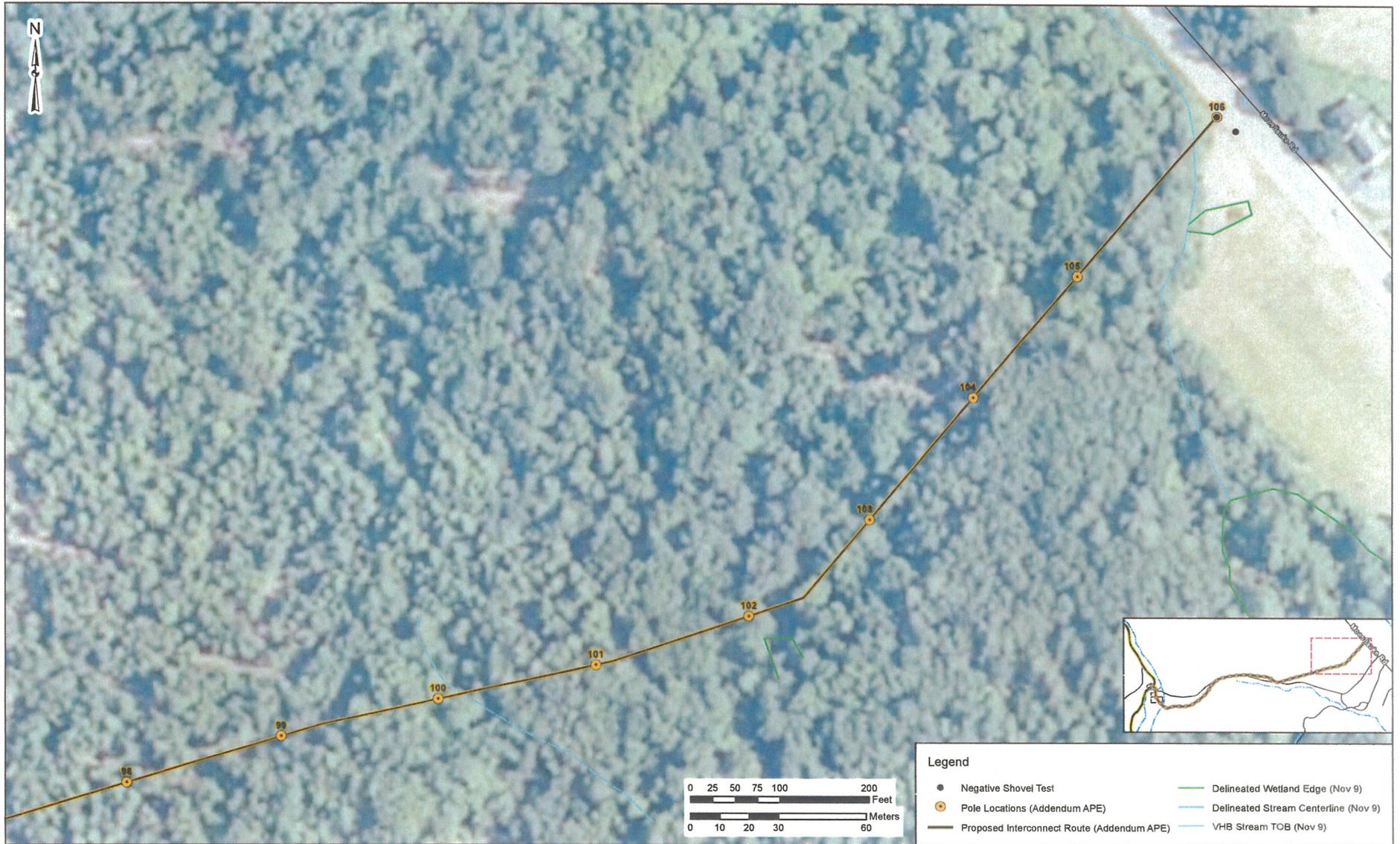


FIGURE 2d: Addendum Phase IB Archaeological Survey Results

SOURCE: ESRI 2008; Geospatial Data Gateway 2009; Iberdrola 2010; NH GRANIT 2006