APPENDIX E

V-182
TURTLE TOWN POND
CONCORD, NH

1. The location of this crossing is shown on the attached location map marked as Exhibit 7.

2. The design and proposed construction of this crossing is shown on the attached PSNH Transmission Drawing entitled "V-182 – 115 KV, TURTLE TOWN POND WATER CROSSING, CONCORD, NEW HAMPSHIRE" (Drawing No. 7649-395) marked as Exhibit 9.

3. Line V-182 will cross Turtle Town Pond on single pole wood tangent structures with a total span of 2,743.6'. The last 5 structures crossing the pond (from south to north) include 100', 105', 105', 105', and 75' tangent structures (Structures #83, #84, #85, #86, and #87 respectively). With the exception of Structure #87, these structures will be installed in 4' diameter steel culverts. The culverts will be installed into the pond to a minimum depth of 10'-15', the poles will be placed into the culverts, and the culverts will be backfilled with a clean granular material. A detail of these structures have been provided with the petition as FIGURE 2. As shown on FIGURE 2, the top and middle phase wires have an approximate separation at the structure of 7' vertically and 12' horizontally, while the middle and bottom phase wires are 8' vertically and 13' horizontally. The OPGW wire is carried on the structures above the phase wires by a support bracket approximately 14'-6" above and 6' laterally from the top phase wire. Land along the shoreline between the structures of this crossing and the river is traversable by vehicles. Oak Hill Road is crossed over along the northern shoreline of Turtle Town Pond between Structures 86 and 87. The minimum clearance of 20.1' to the road for truck traffic per the NESC has been met, as 33.8 of clearance is provided.

4. Turtle Town Pond (surveyed at EL. 316 ft) is bounded by Oak Hill Road to the west, Appleton Street to the south, Oak Hill to the north, and a large, flat wetland area of approx. 175 acres to the east at an elevation of approx. 323 ft. The pond drains to the south into Mill Brook, which passes beneath a bridge supporting Appleton Street, and eventually feeds into the Merrimack River. During most periods of the year, Mill Brook is continually flowing, therefore maintaining a consistent level to the pond. Higher measurable flows on Mill Brook draw down the pond during times of increased precipitation. Flood insurance maps (100 yr flood) as provided by FEMA are not available for Turtle Town Pond. Also, no information was available for the 10-year flood elevation for the pond. For the purposes of this design, the clearances provided over this water body were determined through a hydrologic analysis of Turtle Town Pond and the surrounding area. This analysis considered the surrounding elevations, pond inlet and outlet characteristics, available storage in the pond, overflow into Oak hill Road, and finally total expected rainfall for a 10-year storm event (4.2 inches in a 24 hour period per USDA maps). Based upon this available information, an increase in the pond elevation

of 2.5-feet should be expected. However; for the purpose of this petition, a more conservative rise of 5' was used. Therefore, the final pond elevation of the pond during a 10-year storm event will be 321-feet which will also increase the area of the pond from 159 acres to 239 acres. Additionally, at the new maximum operating temperature, the new clearance over Turtle Town Pond will meet or exceed the existing clearance provided by the existing V-182 Line. As stated in paragraph 8 of the Petition, the minimum required 115 kV conductor clearances for water surface areas between 200-2000 acres is 36.1'.

5. The sags and clearances to the water surface during a 5' water rise event for this crossing are as follows;

- OPGW wires – Due to the fact that the OPGW wire is located above the phase wires, its clearance to the water surface will always exceed the minimum required NESC distance.

- NESC Heavy Loading - The maximum conductor sag for this weather case will be 10.3' with a minimum clearance to the water surface of 47.5', between structures #84 and #85.

- -20 degrees F - The maximum conductor sag for this weather case will be 8.1' with a clearance to the water surface of 49.3', between structures #84 and #85.

- 285 degrees F – Max operating temperature (Phase wires) based on PSNH transmission standards - The maximum conductor sag for this weather case will be 18.0' with a clearance to the water surface of 38.8', between structures #84 and #85. This condition produces the greatest sag in the phase wires and therefore the minimum clearance to the water surface. This design will exceed the minimum clearance requirement of 36.1' by 2.7' under temporary emergency conditions during the calculated high water level.

- **Minimum phase to OPGW clearance – The weather case that would** produce the minimum clearance between the phase wires and OPGW wire would be a combination of winter weather factors. First, the phase wires would have to be at 30 deg. F just after an ice storm and would have just dropped their ice. The OPGW would also be at 30 deg. F and would still be iced with 1" of radial ice. Under these conditions the clearance would be 12.8' vertically and 6.0' horizontally from the shield wires to the closest phase wire. Based on Section 235.C.2.a.1 and Table 235-6 section 2.a of the NESC, the minimum clearance required is 57.4", or approximately 4'-10" [29" + (121 kV-50 kV) x 0.4"].

THIS PLAN IS FOR REFERENCE ONLY.
NO REPRESENTATION OR WARRANTY IS MADE AS TO LOCATION OF BOUNDARIES OR OTHER POINTS OF REFERENCE

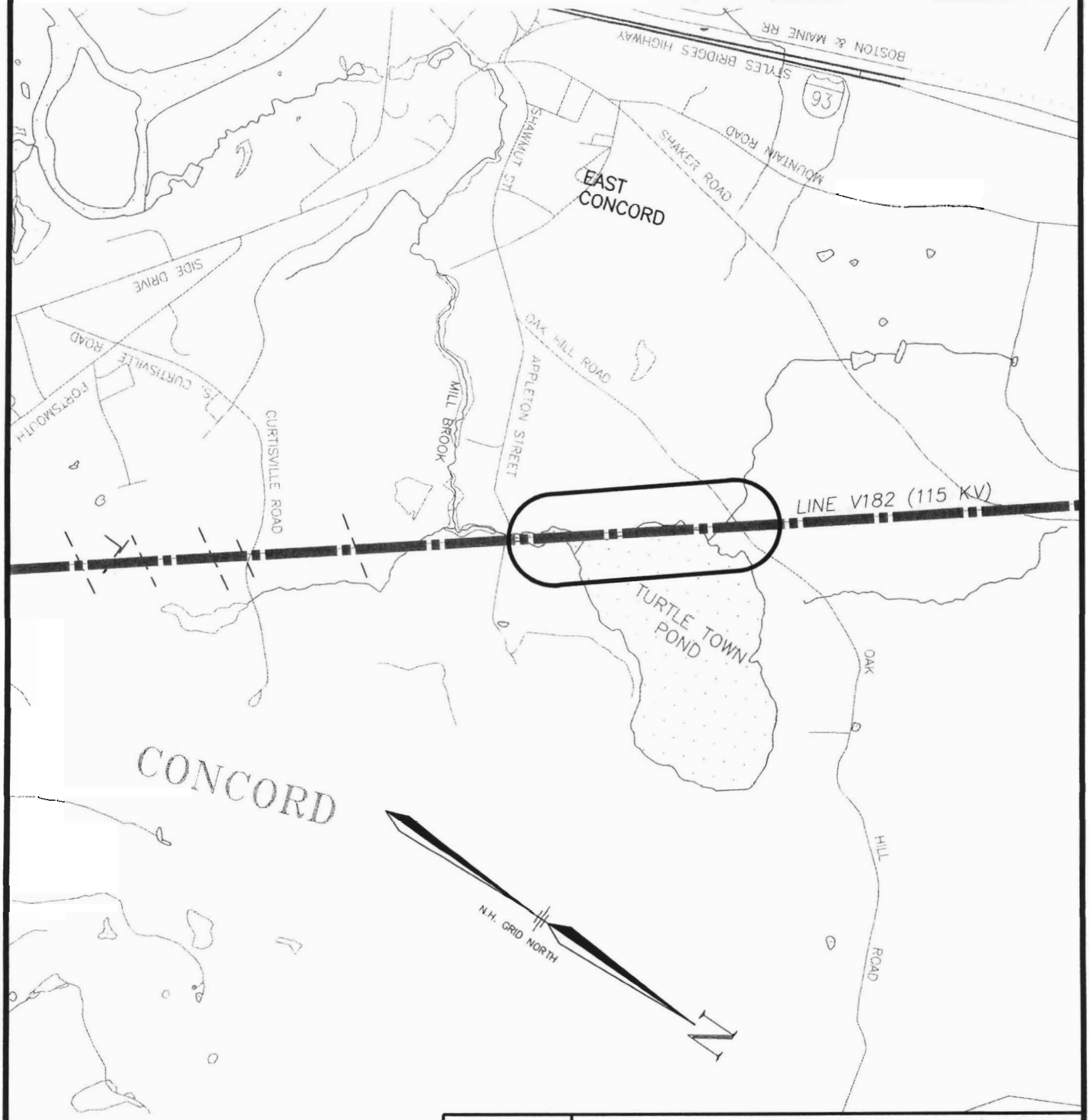


EXHIBIT 7

NO.	REVISION	DATE	DRWN	CHCK	APPR
0	ISSUED FOR LICENSING	9/2007	JLQ	JMD	

DRAWN: JLQ
DESIGNED: JMD
CHECKED: SKP
APPROVED: *

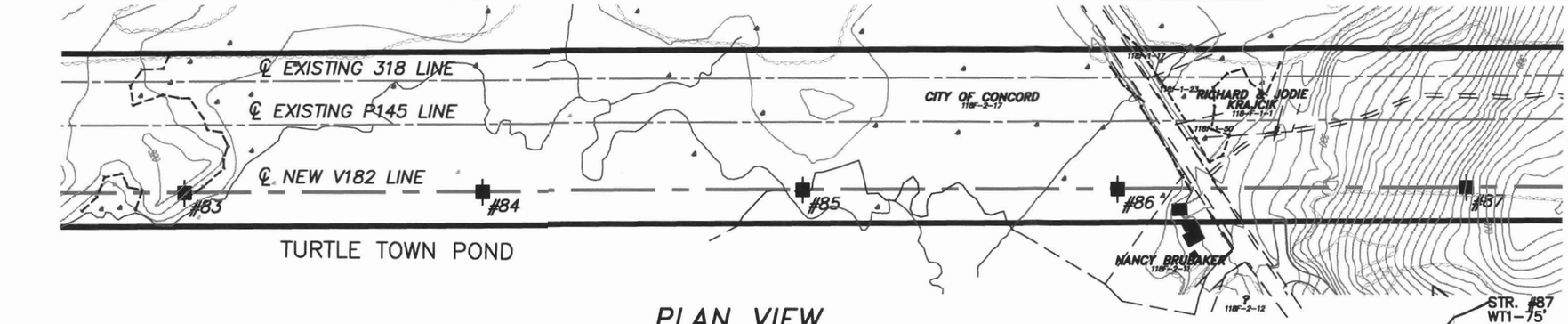
Public Service of New Hampshire — Transmission Business

V182 LINE – 115 KV

TURTLE TOWN POND WATER CROSSING

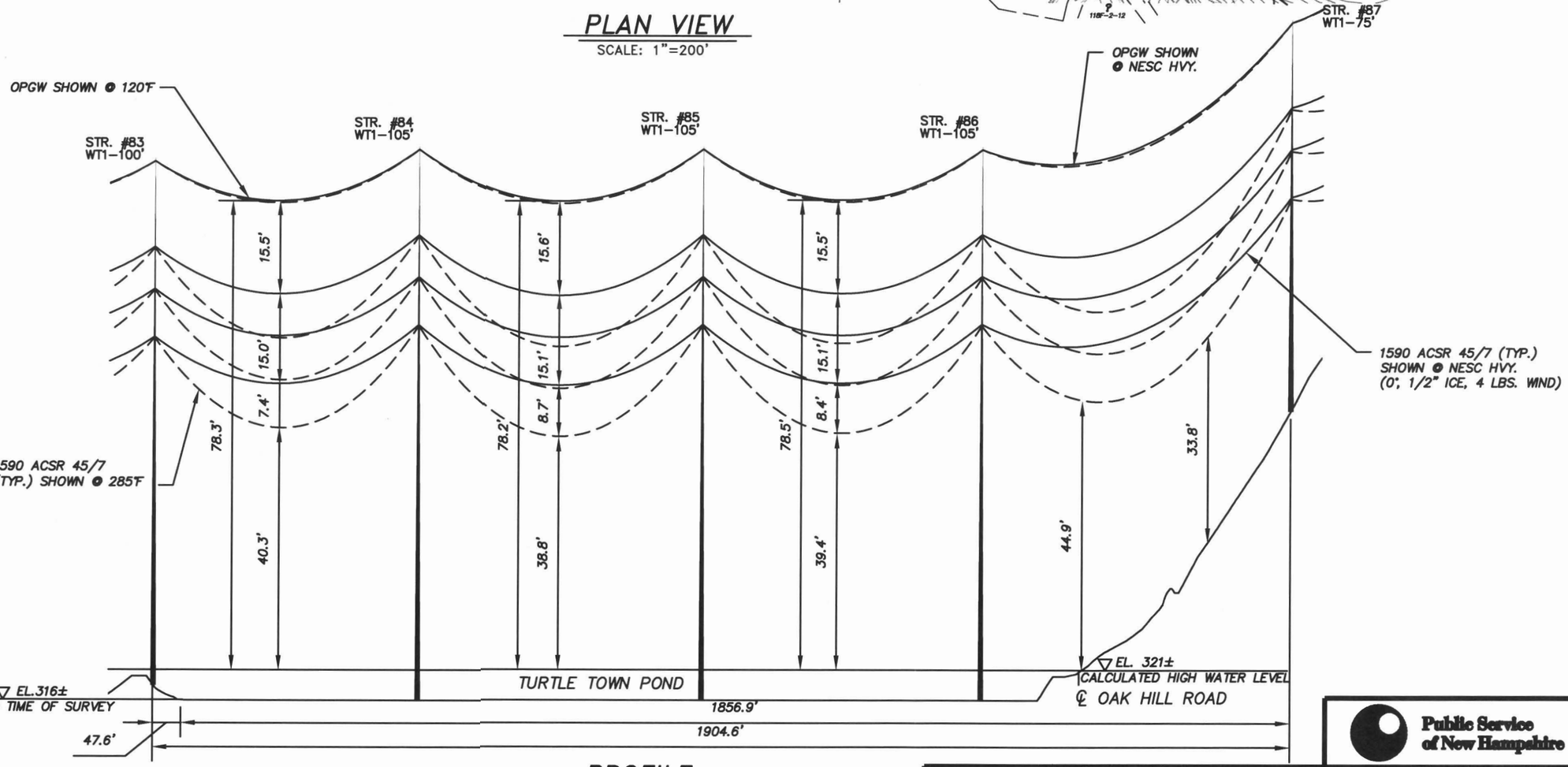
CONCORD, NEW HAMPSHIRE

SCALE	DATE	SHEET	DRAWING NO.
AS NOTED	08/08/07	7 OF 13	7649–394A



PLAN VIEW

SCALE: 1"=200'



PROFILE

SCALE: 1"=200' HORIZ.
1"=20' VERT.

200 100 0 200 400 600

GRAPHIC SCALE
(Feet)

THIS PLAN IS FOR REFERENCE ONLY. NO REPRESENTATION OR WARRANTY IS MADE AS TO LOCATION OF BOUNDARIES OR OTHER POINTS OF REFERENCE

N.H. GRID NORTH

N

EXHIBIT 9

NO.	REVISION	DATE	DRWN	CHCK	APPR
0	ISSUED FOR LICENSING	9/2007	JLQ	JMD	

Public Service of New Hampshire

Transmission Business

DRAWN: JLQ
DESIGNED: JMD
CHECKED: SKP
APPROVED: *

V182 LINE – 115 KV
TURTLE TOWN POND WATER CROSSING
CONCORD, NEW HAMPSHIRE

SCALE	DATE	SHEET	DRAWING NO.
1"=200'	08/08/07	9 OF 13	7649-395