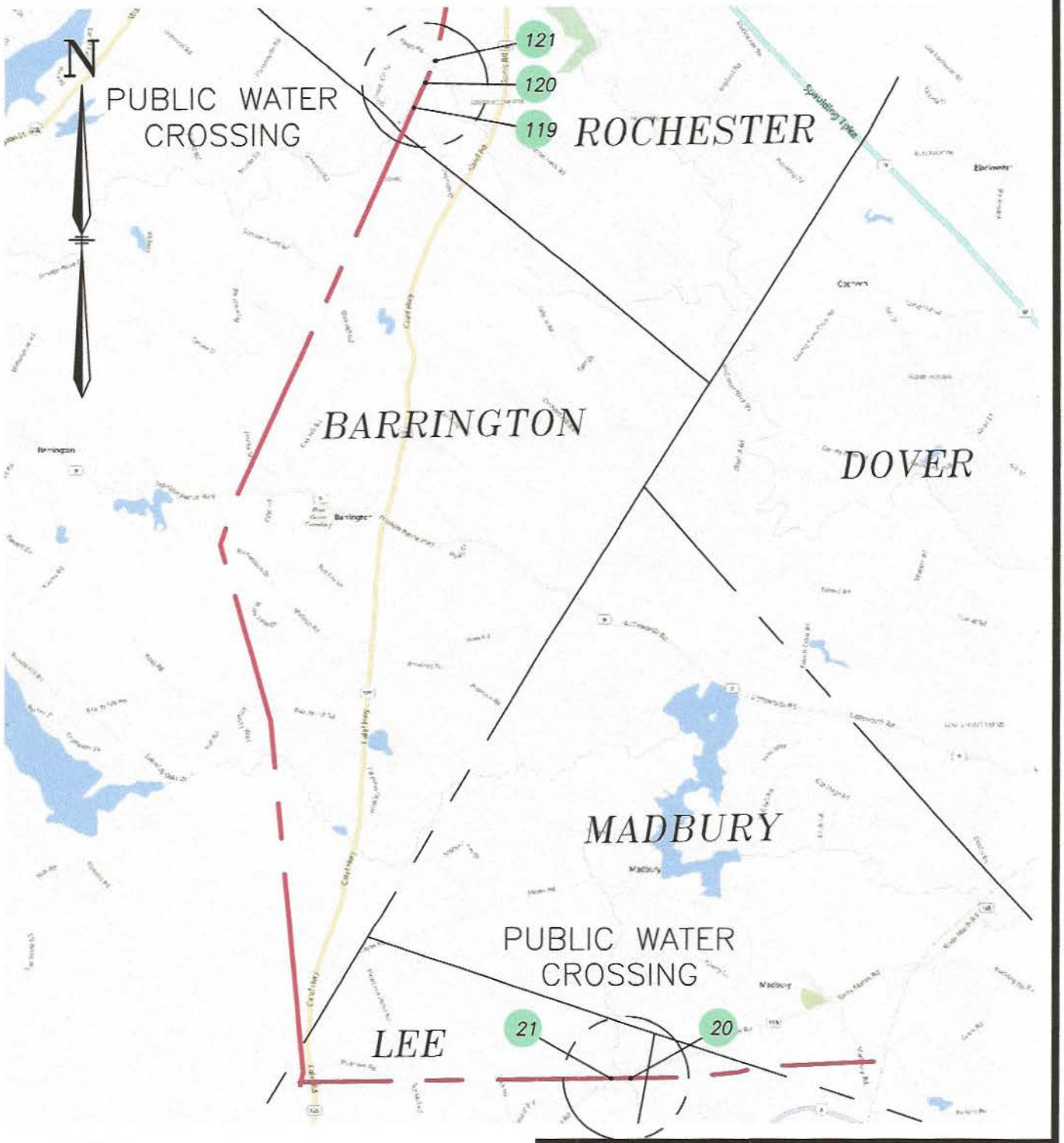


LEGEND:

G128 LINE:

G128 STR: 21

EVERSOURCE ENERGY

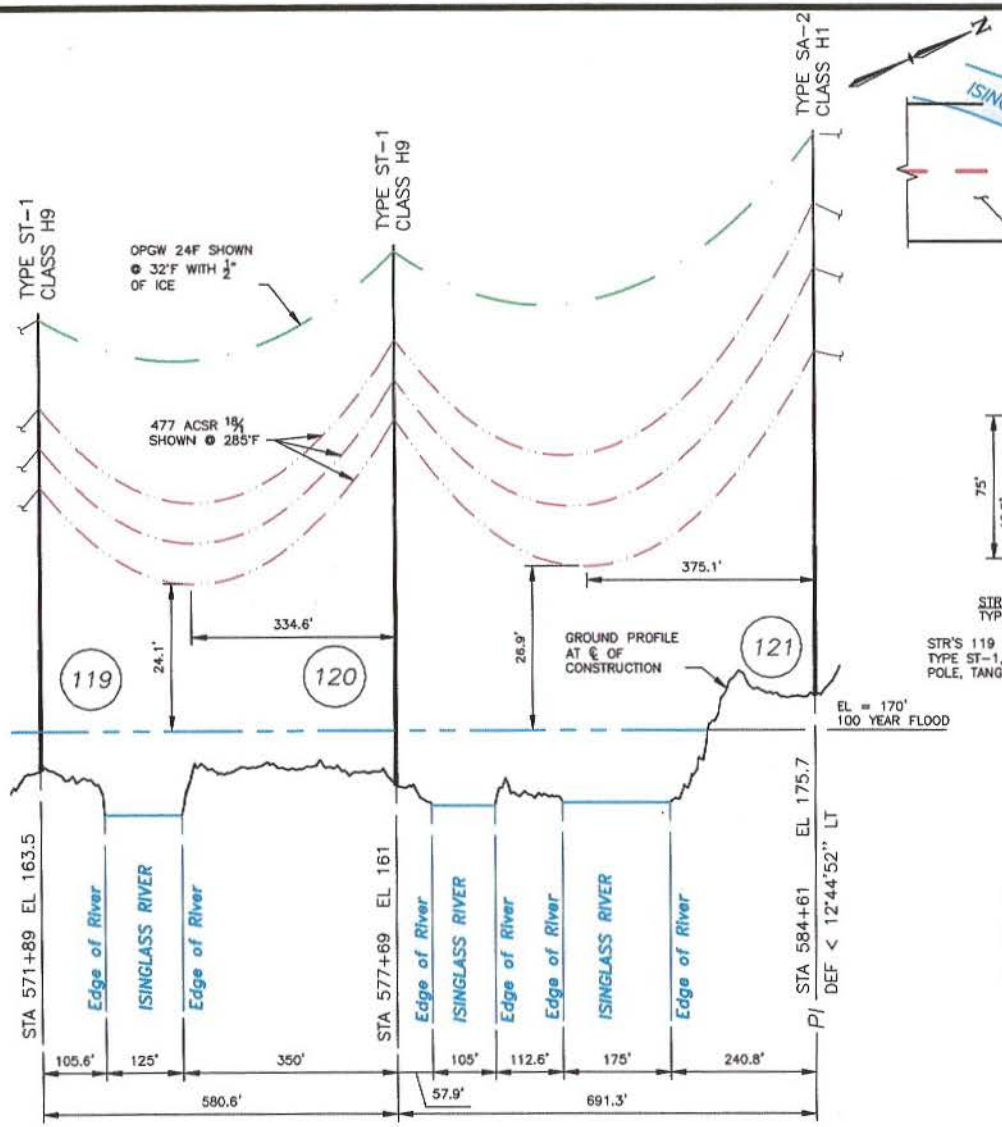
T	1
DRAWN	GBS
ENGINEER	APS
CHECKED	APS
APPROVED	SDR
DATE	08/31/20

G128 115kV LINE
OYSTER AND ISINGLASS RIVER, LOCATION PLAN
LEE / ROCHESTER, NEW HAMPSHIRE
EXHIBIT 1

DWG REV	EPN/DESCRIPTION	CONT/PE#	DATE	DRN	CHKD	APPR
1	SUBMITTED TO PUC		11/20	GBS	APS	SDR

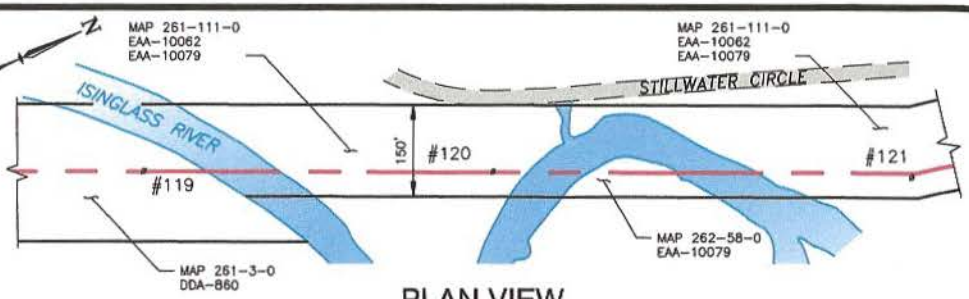
SCALE: 1" = 5000'
FILE: G12843901.DWG
IMAGE:
DRAWING NO.: G12843901

11/12/2020 10:11 AM – sulligx – C:\Users\sulligx\appdata\local\temp\AcPublish_16992\G12843901.dwg – EXHIBIT 1 (WATER CROSSING) ES VER: 12/2016



PROFILE VIEW

SCALE: HORZ 1" = 200'
VERT 1" = 20'



PLAN VIEW

SCALE: 1" = 200'

LEGEND:

- #119 STRUCTURE
- LINE, ℄ OF CONSTRUCTION
- LIMITS OF EVERSOURCE RIGHT OF WAY

STRUCTURE 119 TYPE ST-1 | STRUCTURE 120 TYPE ST-1 | STRUCTURE 121 TYPE SA-2

STR'S 119 & 120: ARE A EVERSOURCE TYPE ST-1, SINGLE CIRCUIT STEEL POLE, TANGENT, DELTA CONFIG.

STR 121: IS A EVERSOURCE TYPE SA-2, SINGLE CIRCUIT STEEL POLE, RUNNING ANGLE, VERTICAL CONFIG.

STRUCTURE DETAIL

SCALE: NTS

STRUCTURE LOCATION		
STRUCTURE	LONGITUDE	LATITUDE
119	-70.99039930	43.25389600
120	-70.98948010	43.25534030
121	-70.98836260	43.25705220

NESC VERTICAL CLEARANCE (FT) FROM TABLE 232.1, C2-2012	
NATURE OF SURFACE UNDERNEATH WIRES, CONDUCTORS OR CABLES	115kV
WATER AREAS NOT SUITABLE FOR SAIL BOATING OR WHERE SAIL BOATING IS PROHIBITED	18.6

CABLE SCHEDULE						
WIRE	QTY OF CABLES	DESCRIPTION	DESIGN CONDITION			
			MAX DESIGN TENSION (lb)	TEMP (°F)	ICE (in)	WIND (psf)
CONDUCTOR	3	PELICAN / ACSR 477 Kcmil 18/1	4171	0	0.5	4
OPGW	1	OPGW 24F ø0.571"	1035	0	0.5	4

NOTES:

1. PARCEL INFORMATION PROVIDED BY NH GRANIT.
2. ELEVATIONS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. THE 100 YEAR FLOOD ELEVATION FROM THE FEMA FLOOD MAP SERVICE CENTER, NATIONAL FLOOD HAZARD LAYER FIRMETTE, 09/01/2020 IS A ZONE A. THE ELEVATION WAS DEVELOPED THROUGH CONTOUR INTERPOLATION AS DEFINED IN THE FEMA APPROXIMATE ZONE A AREAS, A GUIDE FOR OBTAINING AND DEVELOPING BASE (100 YEAR) FLOOD ELEVATIONS, SECTION V. DEVELOPING BASE (100 YEAR) FLOOD ELEVATIONS.

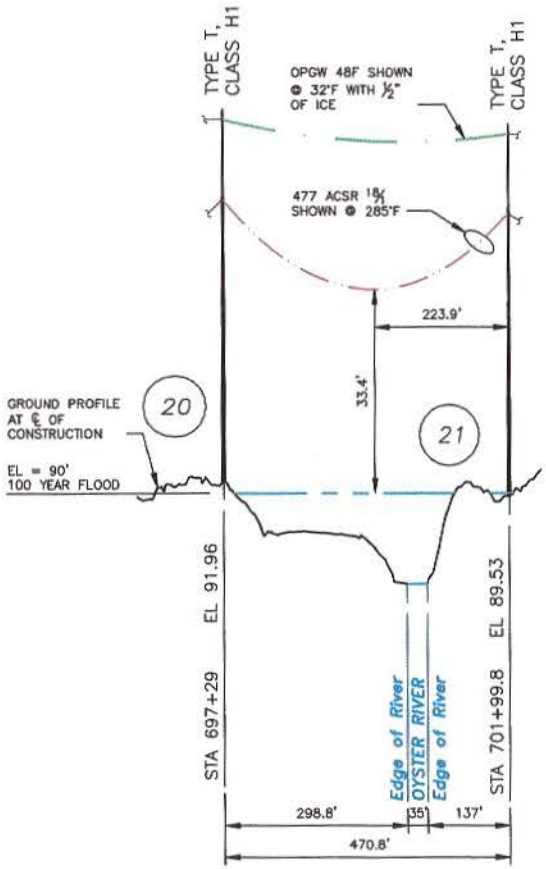
DWG REV	EPN/DESCRIPTION	CONT/PE#	DATE	DRN	CHKD	APPR
1	SUBMITTED TO PUC		09/20	GBS	APS	SDR

EVERSOURCE ENERGY

G128, 115kV LINE
ISINGLASS RIVER, PUBLIC WATER CROSSING
ROCHESTER, NEW HAMPSHIRE
EXHIBIT 3

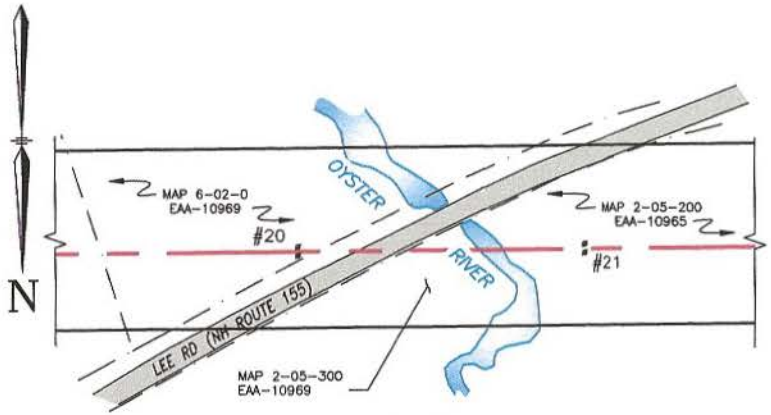
T	1
DRAWN	GBS
ENGINEER	APS
CHECKED	APS
APPROVED	SDR
DATE	08/31/20
SCALE	AS SHOWN
FILE: G12843902.DWG	
IMAGE:	
DRAWING NO.	G12843902

ES VER: 12/2016
11/12/2020 8:26 AM - sulligx - S:\Lines\Line 115kV\115 - G128\G12843902.dwg - EXHIBIT 3



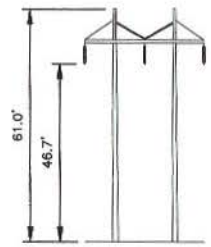
PROFILE VIEW

SCALE: HORZ 1" = 200'
VERT 1" = 20'



PLAN VIEW

SCALE: 1" = 200'



STR'S 20 AND 21: IS A EVERSOURCE TYPE T, SINGLE CIRCUIT STEEL POLE, H-FRAME TANGENT, HORIZONTAL CONFIG.

STRUCTURE DETAIL

SCALE: NTS

LEGEND:

- #20 STRUCTURE
- PROPERTY BOUNDARY
- LINE, ℄ OF CONSTRUCTION
- LIMITS OF EVERSOURCE RIGHT OF WAY

NOTES:

1. PARCEL INFORMATION PROVIDED BY NH GRANIT.
2. ELEVATIONS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. THE 100 YEAR FLOOD ELEVATION FROM THE FEMA FLOOD MAP SERVICE CENTER, NATIONAL FLOOD HAZARD LAYER FIRMETTE, 08/31/2020 IS A ZONE A. THE ELEVATION WAS DEVELOPED THROUGH CONTOUR INTERPOLATION AS DEFINED IN THE FEMA APPROXIMATE ZONE A AREAS, A GUIDE FOR OBTAINING AND DEVELOPING BASE (100 YEAR) FLOOD ELEVATIONS, SECTION V. DEVELOPING BASE (100 YEAR) FLOOD ELEVATIONS.

STRUCTURE LOCATION		
STRUCTURE	LONGITUDE	LATITUDE
20	-70.96371600	43.15855250
21	-70.96548020	43.15854730

NESC VERTICAL CLEARANCE (FT) FROM TABLE 232.1, C2-2012	
NATURE OF SURFACE UNDERNEATH WIRES, CONDUCTORS OR CABLES	115kV
WATER AREAS NOT SUITABLE FOR SAIL BOATING OR WHERE SAIL BOATING IS PROHIBITED	18.6

CABLE SCHEDULE						
WIRE	QTY OF CABLES	DESCRIPTION	DESIGN CONDITION			
			MAX DESIGN TENSION (lb)	TEMP (°F)	ICE (in)	WIND (psf)
CONDUCTOR	3	PELICAN / ACSR 477 Kcmil 1β	2779	0	0.5	4
OPGW	2	OPGW 48F ø0.457"	1864	0	0.5	4

0 200' 400'

DWG REV	EPN/DESCRIPTION	CONT/PE#	DATE	DRN	CHKD	APPR
1	SUBMITTED TO PUC		11/20	GBS	APS	SDR

EVERSOURCE ENERGY

G128, 115kV LINE
OYSTER RIVER, PUBLIC WATER CROSSING
LEE, NEW HAMPSHIRE
EXHIBIT 2

T	1
DRAWN	GBS
ENGINEER	APS
CHECKED	APS
APPROVED	SDR
DATE	08/31/20

SCALE: AS SHOWN
FILE: G12843901.DWG
IMAGE:
DRAWING NO. G12843901


EXHIBIT 4 - Site Location Map
Line G128, 115 kV
Oyster River Waterbody Crossing
Lee, New Hampshire
Image credit: Google Earth (5/4/2018)
Legend
Durham Fire Dept
Ellis Oyster River Reserve
LUNDHOLM GYMNASIUM
Madbury Public Library
Moharimet Elementary School
New Hampshire Public TV
NH DOT District 6
G128 Structure
Union Congregational Church
University of New Hampshire InterOperability Laboratory
Str 20 (-70.96371600, 43.15855250)
Str 21 (-70.96548020, 43.15854730)
Technology Dr
Sherburne Rd
Concord Rd
Randall Rd
Lee Rd
Snell Rd
155
4
Google Earth
4000 ft
N

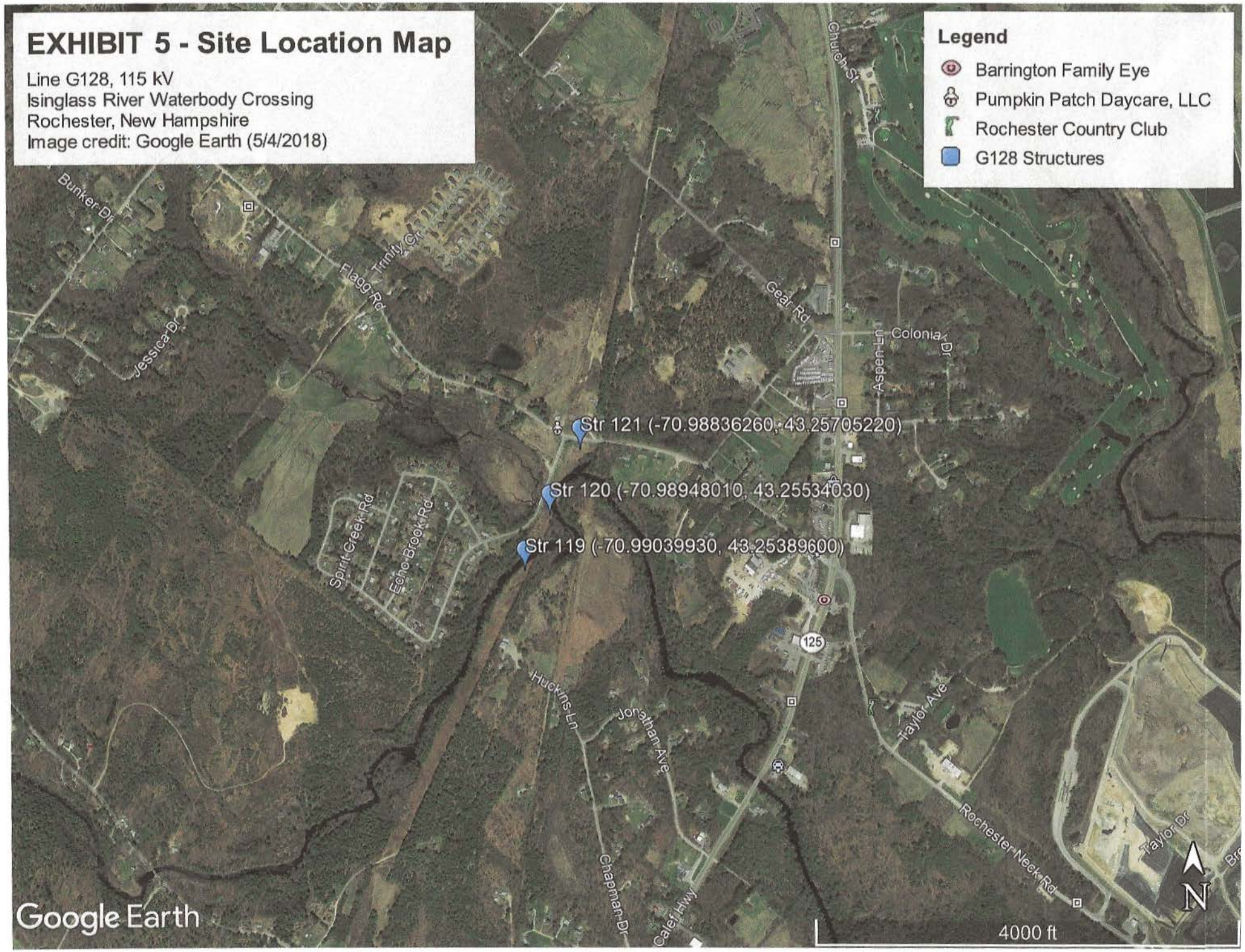


EXHIBIT 5 - Site Location Map
Line G128, 115 kV
Isinglass River Waterbody Crossing
Rochester, New Hampshire
Image credit: Google Earth (5/4/2018)
Legend
Barrington Family Eye
Pumpkin Patch Daycare, LLC
Rochester Country Club
G128 Structures
Str 121 (-70.98836260, 43.25705220)
Str 120 (-70.98948010, 43.25534030)
Str 119 (-70.99039930, 43.25389600)
Church St
Gear Rd
Colonial Dr
Aspen Ln
Bunker Dr
Flagg Rd
Trinity Cir
Jessica Dr
Spirit Creek Rd
Echo Brook Rd
Huckins Ln
Jonathan Ave
Taylor Ave
Rochester Neck Rd
Taylor Dr
Chapman Dr
Calef Hwy
125
Google Earth
4000 ft
N

DE 04-088

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

Petition for License to Construct and Maintain Electric Lines Over and Across the Public Waters of the Bellamy River in the Town of Barrington, New Hampshire and the Isinglass River in the City of Rochester, New Hampshire

Order Nisi Granting License to Construct and Maintain Electric Lines Over and Across Public Waters

ORDER NO. 24,348

July 9, 2004

On May 20, 2004, Public Service Company of New Hampshire (PSNH) filed a petition under RSA 371:17 with the New Hampshire Public Utilities Commission (Commission) for a license to construct and maintain electric lines over and across the Bellamy River in the Town of Barrington, New Hampshire and the Isinglass River in the City of Rochester, New Hampshire. PSNH amended its petition on May 25, 2004 and filed supplemental information on June 23, 2004. PSNH states that the new line will be an integral part of its transmission system that serves customers in the City of Rochester area.

PSNH proposes to build a new 115 kilovolt (kV) transmission line that will connect the existing C-129 115 kV line at Pinkham Road in Lee, to the PSNH Rochester Substation in Rochester. According to the petition, the new overhead line will be designated the G-128 line and will traverse a distance of approximately 11 miles on the easterly side of, and parallel to, an existing F-117 115 kV line in an existing PSNH right-of-way. PSNH states that the first new G-128 line crossing (Crossing A) will be located on the easterly side of the existing F-117 115 kV line crossing of the Bellamy River in Barrington, approximately ¼ mile south of Beauty Hill Road and approximately ½ mile west of N.H. Route 125, and will consist of structures #24 and #25. The petition states that the second crossing (Crossing B) will be located

on the easterly side of the existing F-117 115 kV line crossing of the Isinglass River in Rochester, just south of Flagg Road and approximately ¼ mile west of N.H. Route 125, and will consist of structures #71, #72, and #73. PSNH states that the new line will cross the Isinglass River in three adjacent locations.

PSNH avers that new construction is necessary due to load growth. PSNH states that in the summer of 2004, loss of either the F-117 115 kV line into Rochester, or the Farenheit-117/C-129 115 kV three terminal line (Rochester, Madbury, and Deerfield), will isolate more than 30 MW of load in the Rochester area, thus resulting in a violation of PSNH design criteria which requires the isolation of load on this line be limited to 30 MW. PSNH further states that the loss of the three terminal line also results in the loading of the L-175 115 kV line (Madbury to Deerfield) to 97 percent of its long time emergency rating, overloads the Dover transformers and 34.5 kV circuits, and produces unacceptable voltages in the Dover area. PSNH attests that application of the Rochester load shedding scheme does not alleviate the Dover overloads.

PSNH states that the new facilities will parallel the F-117 line and relieve the expected overload conditions. PSNH also states that the addition of the second 115 kV line will convert the Rochester Substation's radial line into a looped in and out configuration providing increased reliability to over 11,000 customers in the Rochester area.

CROSSING A

According to PSNH's petition, the construction of Crossing A will consist of structure #24, a new 75 foot single pole, laminated wood structure with steel davit arms in delta configuration (Type WT1) on the westerly side of the crossing, and structure #25, a new 70 foot Type WT1 structure on the easterly side of the crossing. PSNH states that the span between

these two structures will be approximately 512 feet.

PSNH plans the three-phase conductors to be 1272 MCM 45/7 ACSR conductor, constructed in a delta configuration, tensioned to 10,000 pounds, and sagged to National Electrical Safety Code (NESC), ANSI C2-2002 Heavy Loading conditions (0 degrees Fahrenheit, 4 pounds per square foot wind loading, and ½ inch radial ice). The maximum phase conductor sag of 16.5 feet will occur at a conductor temperature of 284 degrees Fahrenheit. At this elevated conductor temperature, the lowest phase conductor remains 28 plus/minus feet above the Bellamy River annual high water level of 214 plus/minus feet. PSNH has determined that according to NESC Table 232-1, Note 19, the design water surface area for the crossing is approximately 5.0 acres. For water areas of less than 20 acres that are suitable for sailing, NESC (Table 232-1 adjusted for voltages above 22 kV by Rule 232C.1.a.) requires that the primary conductor clearances to the water surface be 22.1 feet. PSNH points out that the planned clearance exceeds the NESC standard.

According to Exhibit 1 of the petition, the plan view of Crossing A, the single Brugg 12 OPGW shield wire will be placed approximately 14 feet above the highest phase conductor and remains well above the highest phase conductor. PSNH has determined that according to NESC Table 232-1, Note 19, the design water surface area for the crossing is approximately 5.0 acres. For water areas of less than 20 acres that are suitable for sailing, NESC (Table 232-1) requires that neutral conductor clearance to the water surface be 17.5 feet. This requirement is met by inspection.

PSNH states that the placement of the shield wire approximately 14 feet above the highest phase conductor exceeds the NESC clearance requirement (Table 235-5 adjusted for

voltages above 8.7 kV by Rule 232C.1.a.) of 3.37 feet between the phase conductors and neutral conductor.

CROSSING B

According to the petition, the construction of Crossing B will consist of structures #71, #72, and #73. Structures #71 and #72 are new 85-foot Type WT1 and new 100-foot Type WT1 structures respectively. PSNH states that structure #73 will be a new 100-foot single-pole wood laminated structure with steel offset brackets for the line angle (Type WA2). The span between structures #71 and #72 is 580 feet and the span between structures #72 and #73 is 689 feet.

PSNH proposes that the three-phase conductors will be 1272 MCM 45/7 ACSR conductor, constructed in a delta configuration on structures #71 and #72 and horizontal configuration on Structure #73, both spans tensioned to 10,000 pounds, and sagged to National Electrical Safety Code (NESC), ANSI C2-2002 Heavy Loading conditions (0 degrees Fahrenheit, 4 pounds per square foot wind loading, and ½ inch radial ice). PSNH states that the maximum phase conductor sag of 21.2 feet between structures #71 and #72 and 30.0 feet between structures #72 and #73 will occur at a conductor temperature of 284 degrees Fahrenheit. According to PSNH, at this elevated conductor temperature, the lowest phase conductor between structures #71 and #72 remains 31 plus/minus feet above the Isinglass River annual high water level of 165 plus/minus feet and 27.5 plus/minus feet above the highest point of the peninsula of land between structures #71 and #72. PSNH further states that at this elevated conductor temperature, the lowest phase conductor between structures #72 and #73 remains 34 plus/minus feet above the Isinglass River annual high water level of 165 plus/minus feet and 30.5 plus/minus

feet above the height of land between structures #72 and #73. PSNH has determined that according to NESC Table 232-1, Note 19, the design water surface area for these crossings is approximately 8.5 acres. For water areas of less than 20 acres that are suitable for sailing, NESC (Table 232-1 adjusted for voltages above 22 kV by Rule 232C.1.a.) requires that the primary conductor clearances to the water surface be 22.1 feet and 20.1 feet to the peninsula of land assuming that vehicular traffic may be present. PSNH points out that the planned clearances exceed the NESC standards.

According to Exhibit 2 of the petition, the plan view of Crossing B, the Brugg 12 OPGW shield wire will be approximately 14 feet above the highest phase conductor on the two Type WT1 structures (#71 and #72) and approximately 11 feet above the highest phase conductor on the Type WA2 structure (#73). PSNH has determined that according to NESC Table 232-1, Note 19, the design water surface area for the crossing is approximately 8.5 acres. For water areas of less than 20 acres that are suitable for sailing, NESC (Table 232-1) requires that neutral conductor clearance to the water surface be 17.5 feet. This requirement is met by inspection.

PSNH states that the placement of the shield wire approximately 14 feet above the highest phase conductor on structures #71 and #72, and approximately 11 feet above the highest phase conductor on structure #73 exceeds the NESC clearance requirement (Table 235-5 adjusted for voltages above 8.7 kV by Rule 232C.1.a.) of 3.37 feet between the phase conductors and neutral conductor.

CROSSINGS A AND B

According to PSNH, all crossing construction will be in upland areas and the installation methods to be used in the construction of the G-128 transmission line will avoid impacts to any wetlands in the areas of the crossing; therefore, no wetlands permits are required. PSNH states that PSNH owns permanent easement rights for the construction, operation, and maintenance of overhead electric lines where Crossing A (structures #24 and #25) and Crossing B (structures #71, #72, and #73) will be constructed. PSNH also states that current landowners at these locations have been previously informed of the proposed line construction.

PSNH states that the use and enjoyment by the public of these waters will not be diminished in any material respect as a result of the proposed aerial line crossings. PSNH further attests that the construction of the aerial electric lines will meet or exceed the requirements of the National Electrical Safety Code, ANSI C2-2002.

RSA 371:17 provides in part that whenever it is necessary, in order to meet the reasonable requirements of service to the public, that any public utility should construct a line of poles or towers and wires and fixtures thereon over or across any of the public waters of New Hampshire, it shall petition the Commission for a license to construct and maintain the same. "Public waters," as defined in RSA 371:17, means "all ponds of more than ten acres, tidewater bodies, and such streams or portions thereof as the Commission may prescribe." Based on the information presented, the Commission prescribes the part of the Bellamy River and Isinglass River subject to this petition as being "public waters" under RSA 371:17.

Based on the information presented by PSNH and Staff's recommendation, the Commission finds such crossings necessary for PSNH to meet the reasonable requirements of

reliable service to the public within PSNH's authorized franchise area and the requested license may be exercised without substantially affecting the public rights in the waters of the Bellamy or Isinglass Rivers. We find that the crossings are in the public good and we will approve the petition on a nisi basis in order to provide any interested party the opportunity to submit comments on said petition or to request a hearing.

Based upon the foregoing, it is hereby

ORDERED NISI, that subject to the effective date below, PSNH is authorized, pursuant to RSA 371:17 et seq., to construct, maintain and operate the aerial electric lines over and across the Bellamy River in Barrington, New Hampshire and the Isinglass River in Rochester, New Hampshire depicted on plans and drawings submitted May 20, 2004, amended on May 25, 2004, supplemented on June 23, 2004, and on file with this Commission; and it is

FURTHER ORDERED, that all construction, maintenance and future reconstruction to these approved crossings shall conform to the requirements of the NESC and all other applicable safety standards in existence at that time; and it is

FURTHER ORDERED, that PSNH operate these new crossings in conformance with the NESC; and it is

FURTHER ORDERED, that PSNH shall provide a copy of this order to the (i) Town Clerk of Barrington and the City Clerk of Rochester, (ii) New Hampshire Attorney General and the owners of the land bordering on said public waters at the location of the river crossings, pursuant to RSA 371:19, and (iii) pursuant to RSA 422-B:13, New Hampshire Department of Transportation and the Office of Secretary, U.S. Department of Commerce, by

first class mail, no later than July 20, 2004, and to be documented by affidavit filed with this office on or before August 2, 2004; and it is

FURTHER ORDERED, that PSNH shall cause a copy of this Order Nisi to be published once in a statewide newspaper of general circulation or of circulation in those portions of the state where operations are conducted, such publication to be no later than July 20, 2004 and to be documented by affidavit filed with this office on or before August 2, 2004; and it is

FURTHER ORDERED, that all persons interested in responding to this petition be notified that they may submit their comments or file a written request for a hearing on this matter before the Commission no later than July 27, 2004; and it is

FURTHER ORDERED, that any party interested in responding to such comments or request for hearing shall do so no later than August 2, 2004; and it is

FURTHER ORDERED, that this Order Nisi shall be effective August 9, 2004, unless PSNH fails to satisfy the publication obligation set forth above or the Commission provides otherwise in a supplemental order issued prior to the effective date.

By order of the Public Utilities Commission of New Hampshire this ninth day of July, 2004.

Thomas B. Getz	Susan S. Geiger	Graham J. Morrison
Chairman	Commissioner	Commissioner

Attested by:

Debra A. Howland

Executive Director & Secretary