Beaver River – Porter 115 kV Transmission Rebuild Project

Exhibit E-5

Effect on Communications

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EXHIBIT E-5: EFFECT ON COMMUNICATIONS

E-5.1 INTRODUCTION

The Project[1] is expected to have no adverse effects on communications (i.e., television, microwave, etc.) during construction or operation. National Grid will comply with applicable sections of the latest version of the National Electric Safety Code ("NESC") related to the appropriate spacing between power and communication cables. As part of the final design, if third parties are identified that have underground communication cables within or adjacent to the Project right-of-way ("ROW"), they will be consulted to ensure that the precise location of the communication facilities are shown on the plan and profile drawings and that the appropriate clearances are maintained. The signals transmitted along fiber optic cables are not distorted by any form of outside electronic, magnetic or radio frequency interfere. Therefore, no impacts to the operations of fiber optic cables are anticipated from the Project and the continued operation of the Beaver River - Porter Line.

Radio noise is a complex function of conductor size, surface conditions, spacing, operating voltage and meteorological conditions. Weather effects such as variations in humidity, air density, wind, and rain affect radio noise levels. For example, during a rain event there may be an increase in radio noise over that experienced during sunny days. Also, as the conductor ages, surface imperfections tend to be smoothed out by weathering, resulting in a reduction of a few decibels in noise as compared to the levels when the line is new. The proposed facilities are not expected to result in any interference with radio or television ("TV") reception because the proposed electric transmission facilities are similar to the existing facilities and will use Existing ROW where no such interference has been reported. Nevertheless, National Grid will respond to any reports of possible interference and will investigate and resolve interference from its proposed improvements.

E-5.2 EXISTING COMMUNICATION FACILITIES

National Grid identified the locations of existing communications facilities within one mile of the Project ROW using the Federal Communication Commission ("FCC") online Antenna Structure Registration Search database and augmented this search with direct

[1] In this exhibit, the term "Project" and numerous other capitalized terms are defined in the Glossary included within this Application.

observations from field surveys. Aboveground communications towers that are registered with the FCC and located within one mile of the Project ROW are presented in Table E-5-1.

As indicated in Table E-5-1, there are 100 communication towers registered with the FCC within one (1) mile of the Project ROW. Of these towers, 33 are microwave service towers, one (1) tower is for paging, cellular, land mobile commercial towers, and antenna towers each, and 63 are for land mobile private towers. The nearest communication facility is located approximately 4 linear feet from the proposed transmission centerline and is owned by the Applicant. The next closest communication facility to the proposed transmission centerline is approximately 36 linear feet away. The majority of communication facilities are at least 1,000 linear feet from the Project ROW. Figure E-5.1 depicts the location of these facilities.

E-5.3 TRANSMISSION EFFECTS ON COMMUNICATION FACILITIES

Communication interference generally associated with transmission lines can occur in different ways, as follows:

- **Corona Discharge:** Corona discharge is caused by the ionization of air at the conductor surface caused by the electric field. Corona discharge creates electromagnetic radiation or radio noise that can potentially distort the received signal.
- **Electrostatic Spark (Gap Noise):** Electrostatic spark can be caused by a cracked insulator or loose hardware. If the electric field is strong enough, it can create a spark across the gap of the faulty hardware causing radio noise or gap noise. This phenomenon is more common on distribution lines, and the utility will identify and address the specific cause of the gap noise by fixing or replacing broken hardware.
- **Blocking Signal:** Transmission lines may interfere with communication by blocking or re-radiating broadcast signal. Blocking signal would occur when the proposed structures are in the direct path between the sending and receiving antenna. Re-radiating signal could occur when the proposed structure reflects a broadcast signal and the receiving antenna receives both the direct and reflected signal, distorting the signal.

Given the distance, the proposed Project is not anticipated to affect the surrounding communication systems including any impact the Project could have on amplitude modulation ("AM") and frequency modulation ("FM") radio, digital television, cellular phones, and microwave communication.

E-5.3.1 AM Radio Interference

Amplitude Modulated (AM) radio signals can be susceptible to transmission line interference. The potential for corona and AM radio interference is a function of the line voltage, conductor size, and weather condition; being that the impacts increase with voltage and decreases with increasing conductor size. It is anticipated that the Project will create little to no noise/impacts on AM Radio communications given the distance to the nearest towers of at least one-quarter mile and the proposed shielding on the cables. Additionally, the Project will be rebuilt with the same voltage and along the same centerline.

E-5.3.2 FM Radio Interference

Due to the much higher frequency, FM radio signals are not known to be affected by corona interference. Also, unlike AM radio, due to the much shorter wave lengths, the proposed Project structures will not re-radiate or deflect the radio signal.

E-5.3.3 Television Interference

In June 2009, the United States Congress required that all full-powered television signals be broadcast as digital signals. Class A TV stations subsequently converted from analog to digital broadcast in 2015. Digital TV broadcasts digitally and at much higher frequencies than AM radio, and thus are not subject to corona interference nor impacted by the proposed Project structures by blocking or re-radiating the broadcast signal.

E-5.3.4 Telephone Interference

There are no telephone lines within the Project ROW, but the Existing Lines and the Proposed Lines cross electric and telephone lines co-located at road crossings. Generally, telephone cables are manufactured with shielded copper wire designed to minimize the potential for transmission line interference. Digital and fiber optic telephone communications are not known to be subject to transmission interference. One (1) cellular tower is located within one mile of the Project; a review of the signal direction and height will be complete during final design of the Project as part of the Environmental Management and Construction Plan ("EM&CP") to ensure that there will be no impacts.

Powerline corona radio noise will also typically not cause interference to cellular telephone reception because cell phone carriers typically operate at a frequency much higher than AM and FM radio.

E-5.3.5 Microwave Communication

In general, microwave communication is not known to be subject to transmission line interference. A microwave signal is typically a narrow band and line-of-sight, so an exception to this general rule would be if a transmission structure was built directly in a microwave path. However, since the Project structures are proposed to be constructed in the same vicinity and along the same centerline as its existing structures, it is not expected that the Project would affect microwave communication. There are approximately 33 microwave towers within one mile of the Project; a review of the signal direction and height will be complete during final design of the Project as part of the EM&CP to ensure that there will be no impacts.

E-5.4 RAILWAY INTERFERENCE

The Project ROW intersects three (3) railroad crossings including one (1) active Penn Central Railroad crossing and two (2) inactive Lowville Beaver River Railroad crossings. The following issues were identified as potential Project interferences to the railroads:

- Personnel safety for steady state magnetic field induction. Depending how far the Project is to the tracks, this could cause potential shock hazards to a person in contact with the rail.
- Railroad signal system compatibility for steady state magnetic field induction. The Railroad warning devices and motion sensors are typically the most sensitive to unwanted AC interference.
- Personnel safety for faulted power line magnetic field induction. A phase-to-ground fault on the Project can induce high voltages on the rails, which may cause the track arrestors to fire. This causes a step-touch potential on the rail, which can cause personnel harm.

The results of the Electric and Magnetic Field ("EMF") Study conducted in this matter will be filed once the reports are completed.

E-5.5 UNDERGROUND PIPELINE INTERFERENCE

When metallic pipelines are located in the same vicinity as transmission lines, the pipeline can incur induced voltages and currents. A review of the National Pipeline Mapping System indicates the Project is crosses one (1) natural gas pipeline owned and operated by the Iroquois Gas Transmission System ("Iroquois") between existing Structures 26 and 27 in the Town of Croghan (Segment 1). The Iroquois pipeline is currently located approximately 83 feet east of existing Structure 27. The nearest proposed transmission structure is located approximately 92 feet west of the pipeline. Both the existing and proposed transmission lines cross the pipeline, therefore potential impacts to the pipeline are not anticipated to change as a result of the Project.

Additional underground pipelines are noted perpendicular to the Project ROW, usually at roadways, which is typically not a major concern. Also, there were no above-ground valve stations, or any above ground sections of the pipelines observed. The Applicant will coordinate with the pipeline operator as part of the EM&CP to prevent interference with the pipelines.

E-5.6 MITIGATION STANDARDS

The Project is not expected to result in any interference with radio, television, or cell reception. National Grid will comply with applicable provisions of the NESC related to the appropriate spacing between the proposed transmission lines and communication facilities. Although National Grid has not received any complaints about the Existing Lines from communication facility operators or the public, National Grid will document any reports of possible interference along the Project ROW and take appropriate follow-up actions.

During the final design of the proposed facilities and the development of the Project EM&CP, National Grid will contact potential third party underground communication cable and pipeline operators to confirm the placement of their facilities within the Project ROW and appropriate offsets to maintain. In addition, with the assistance of Dig Safely New York, National Grid will conduct ground surveys for all existing underground facilities, including communication cables, to confirm placement of all underground facilities to ensure their location is accurately depicted on construction drawings, to ensure appropriate clearances and to verify that appropriate interference protections are in place.

E-5.7 TRANSMISSION LINE ELECTRIC AND MAGNETIC FIELDS

Opinion No. 78-13 (in Cases 26529 and 26559), effective June 19, 1978, established the Commission's interim standard for an electric field strength of 1.6 kV/m at the edge of the Project ROW as calculated at one meter above ground, with the line at rated voltage. The Commission's Statement of Interim Policy on Magnetic Fields of Major Electric Transmission Facilities (in Cases 26529 and 26559), effective September 11, 1990, set a limit for magnetic fields of 200 milliGauss (mG) at the edge of the Project ROW as measured at one meter above ground when the circuit phase currents are equal to the winter-normal conductor rating. Given that structures (including where two single circuit structures are replacing existing double circuit structures) for this rebuild are, for the most part, staying within an established Project ROW, the voltage is not changing, and new structures will only be approximately 10 to 15 feet from the location of the existing structures, our preliminary analysis indicates that there will not be an exceedance of the maximum electric and magnetic fields set forth in the Commission's guidelines. The results of the Electric and Magnetic Field ("EMF") Studies conducted in this matter will be filed once the reports are completed.

EXHIBIT E-5 - EFFECT ON COMMUNICATIONS

TABLE AND FIGURE

Table E-5-1: Federal Communications Commission Antenna Structure Registrations Within One Mile of the Project ROW								
Figure E-5.1 Reference	**Licensee**	**Geographic Location of the Facility**		**FCC Registration No.** [a]	**FCC Call Sign**	**Structure Type**	**Approximate Distance from Existing Line (ft)**	**Structure Height (m)**
		Latitude	**Longitude**					
76	National Grid USA Service Company Inc. (Porter Substation)	43.784222	-75.475167	5196530	WNTR607	Not Listed	3.93	9.4
18	Erie Boulevard Hydro Power LP	43.907278	-75.362139	11084068	WPPH471	Not Listed	36.54	N/A[d]
77	National Grid USA Service Company Inc.	43.630889	-75.4035	5196530	WNTR608	Not Listed	94.69	9.4
37	Neptune Technology Group, Inc.	43.243833	-75.261278	5079827	WQQF898	Tank with Antenna	270.59	36.0
13	Lowville, Village of	43.783667	-75.476306	10347078	WNRE218	Building with Antenna	322.63	N/A
30	Lowville, Village of	43.783611	-75.476389	16548893	WQHB613	Not Listed	347.30	N/A
96	National Grid USA Service Company, Inc	43.152611	-75.223833	5196530	WSAJ899	Tower[c]	494.88	60.7
97					WSAJ900			
98					WSAJ901			
6	New York State Dept of Environmental Conservation	43.812833	-75.471583	3438579	KFA494	Building with Antenna	517.55	32.0
23	New York Power Authority	43.153417	-75.2235	3482791	WNSX462	Not Listed	633.26	9.0
8	Oneida, County of	43.370583	-75.283444	3419330	KEE269	Tower[b]	719.40	39.0
9					KNCE722	Tower		
10					KNNQ268	Tower		
24					WPWM474	Tower		
25					WPZI876	Tower		
45					WRCC846	Tower		
81					WPWK616	Tower		
82					WPWK621	Tower		
83					WPWK623	Tower		
88	Oneida County Department of Emergency Services	43.370583	-75.283444	3419330	WQZQ665	Tower[c]	719.40	50.3
92					WRJG663			
93					WRQA921			
89	Herkimer County Office of Emergency Services	43.370583	-75.283444	4125951	WRFY556	Tower[c]	719.40	58.5
90					WRFY557			
91					WRFY560			
32	New York State Unified Court System (5th JD)	43.779861	-75.477306	8474157	WQKT619	Not Listed	745.29	N/A
14	Lowville, Village of	43.787556	-75.480194	10347078	WPNP549	Not Listed	1,054.85	N/A

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		Latitude	**Longitude**					
61	Adirondack Central School District	43.479306	-75.348694	18460444	WQJX377	Not Listed	1,104.64	N/A
22	National Grid USA Service Company Inc.	43.368944	-75.281278	5196530	WNQX235	Tower	1,174.48	54.9
29					WQGV499			
79					WPNB713			
80					WPNB714			
33, 34	Herkimer County Office of Emergency Services	43.368944	-75.281278	4125951	WQLB456	Tower	1,174.48	59.4
38	Neptune Technology Group, Inc.	43.190806	-75.258889	5079827	WQQJ859	Building with Antenna	1,179.39	19.7
70	Cellco Partnership	43.369472	-75.281333	3290673	WMT216	Tower[b]	1,195.73	109.7
71					WMT217			
101	Bell Atlantic Mobile Systems LLC	43.369472	-75.281333	29635588	KNKA438	Tower	1,195.73	94.8
62	Baillie Lumber Company LP	43.488917	-75.345944	22040471	WQQT820	Not Listed	1,321.12	N/A
20	Power Authority of the State of New York	43.922278	-75.322417	3482791	KEG756	Building with Antena	1,337.82	N/A
68	The Flack Broadcasting Group LLC	43.513111	-75.362389	8309841	WLI943	Tower	1,365.08	6.4
84					WQLX690			
19	Duflo Spray Chemical Inc.	43.838944	-75.430194	11401312	KJO443	Tower[b]	1,508.00	24.0
60	Adirondack Central School District	43.479361	-75.351056	18460444	WQJX377	Not Listed	1,601.30	N/A
64	Citizens Telecommunications Company of New York, Inc.	43.4845	-75.340444	3574548	KEH87	Tower[b]	1,778.98	33.5
55	Leyden, Town of	43.517	-75.350167	3418084	WPCC434	Not Listed	1,803.86	6.0
72	New York Power Authority	43.922278	-75.319611	3482791	WNEK634	Not Listed	2,005.53	112.2
78					WNTZ631			
53	Kraft Foods - Lowville	43.777083	-75.481722	18699116	WRWM394	Not Listed	2,078.16	N/A
1	Marcy, Town of	43.188	-75.261583	3417979	KEJ771	Tower	2,128.02	12.1
59	Adirondack Central School District	43.482361	-75.336556	18460444	WQJX377	Not Listed	2,225.71	N/A
42	Holland Patent Central School	43.253111	-75.254556	25245630	WQYJ222	Building with Antenna	2,250.60	14.0
48	Master Meter Inc.	43.788	-75.485361	21436175	WROZ881	Not Listed	2,328.91	N/A
40, 41	Kraft Foods Group, Inc.	43.777778	-75.482861	9679572	WQWJ748	Building with Antenna	2,334.53	10.6

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Figure E-5.1 Reference	**Licensee**	**Geographic Location of the Facility**		**FCC Registration No. [a]**	**FCC Call Sign**	**Structure Type**	**Approximate Distance from Existing Line (ft)**	**Structure Height (m)**
		Latitude	**Longitude**					
3	Steuben, Town of	43.319222	-75.282111	3417417	WNHR253	Not Listed	2,363.81	N/A
44	Holland Patent Central School	43.244833	-75.252694	25245630	WQYJ222	Building with Antenna	2,632.83	10.7
36	Mobiletech Communications Corp	43.926944	-75.322778	5123914	WQQA881	Tank with Antenna	2,516.48	34.0
43	Holland Patent Central School	43.24625	-75.252361	25245630	WQYJ222	Building with Antenna	2,632.83	10.7
16	New York State Electric and Gas Corporation	43.785056	-75.48575	4127932	WPMF919	Building with Antenna	2,695.42	10.0
4, 5	New Bremen, Town of	43.839222	-75.424083	7631161	WPKZ965	Tower[c]	2,763.79	6.0
26	New York State Electric and Gas Corporation	43.785056	-75.486194	4127932	WQET480	Pole	2,810.99	27.4
17	Demko Farms Inc.	43.716722	-75.46325	9591504	WPMN309	Silo	2,835.98	15.0
12	Lowville, Village of	43.793111	-75.489361	10347078	WNRE218	Building with Antenna	2,858.90	12.0
21	National Grid USA Service Company Inc.	43.778389	-75.485472	5196530	WBF829	Not Listed	2,966.00	Not Listed
49, 50	South Lewis Central School District	43.636083	-75.394778	3414372	WRQW414	Building with Antenna	3,005.34	17.1
99	JKL Communications LLC	43.766722	-75.482944	20783841	KQZ790	Not Listed	3,055.63	Not Listed
15	Mohawk Adirondack and Northern Railroad	43.374222	-75.274611	35347160	WNYR618	Tower	3,273.99	29.0
65, 66	Citizens Telecommunications Company of New York, Inc.	43.786444	-75.4885	3574548	KEH88	Tower[b]	3,277.67	45.7
67					KEM45			
39	Town of Martinsburg Highway Dept.	43.735639	-75.472417	22524136	WQRI690	Building with Antenna	3,458.32	13.7
2	New York, State of DOT	43.647556	-75.431556	5813506	KLG416	Not Listed	3,525.17	24.0
46	Jefferson-Lewis BOCES	43.787306	-75.490056	29764388	WRJD992	Not Listed	3,591.63	9.5
102	State University of New York (SUNY) Institute of Technology	43.141944	-75.226389	1036168[1]	N/A	Pole	3,658.06	18.0
94	Lewis, County of	43.788917	-75.493306	21498639	WRVS567	Building with Antenna	4,265.53	15.9
95					WRVS568			11.5
86		43.788889	-75.493306		WQVB624	Building with Antenna	4,268.19	18.3
87					WQVB663			60.6
73	National Grid USA Service Company Inc.	43.142	-75.217917	5196530	WNEU860	Not Listed	4,426.70	6.1

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Figure E-5.1 Reference	**Licensee**	**Geographic Location of the Facility**		**FCC Registration No. [a]**	**FCC Call Sign**	**Structure Type**	**Approximate Distance from Existing Line (ft)**	**Structure Height (m)**
		Latitude	**Longitude**					
47	Wolfspeed, Inc.	43.139889	-75.23825	21883632	WROJ567	Building with Antenna	4,437.46	19.8
100	JKL Communications LLC	43.740833	-75.443361	20783841	WQGX564	Tower	4,450.87	13.1
11	Lowville, Village of	43.786167	-75.49325	10347078	WNRE218	Building with Antenna	4,514.68	12.0
27	Lewis County General Hospital	43.795889	-75.499083	3419090	WQFD626	Building with Antenna	5,124.49	45.7
35					WQMK613			
7	Lewis County Search and Rescue Inc.	43.7945	-75.498806	3419363	WQF617	Not Listed	5,137.75	48.5
69	The Flack Broadcasting Group LLC	43.447667	-75.3465	8309841	WLI943	Tower	5,143.81	6.4
85					WQLX690			
57	Mobiletech Communications	43.448	-75.346833	5123914	WPRF782	Mast	5,156.25	29.2
58					WPRG946			
63	New York State Police	43.447778	-75.346667	3438595	WQWA317	Not Listed	5,160.56	N/A
54	Bank of America	43.139333	-75.219083	33575754	WRWW847	Not Listed	5,191.53	6.4
56	Municipal Commission of Boonville	43.483389	-75.324611	3419058	WNQG602	Not Listed	5,194.83	N/A
51, 52	Lewis County Health System	43.795889	-75.499389	33457888	WRWL250	Building with Mast	5,204.60	16.4
28	American Time	43.795583	-75.499389	15495773	WQFW336	Not Listed	5,218.90	N/A
31	SLG Communications Corp	43.865333	-75.387139	3397114	WQKK225	Tower	5,245.23	9.0

Notes:

[a] Additional communication towers may be present, but only those with a verifiable FCC Registration Number are included in this table.

[b] guyed structure used for communication purposes

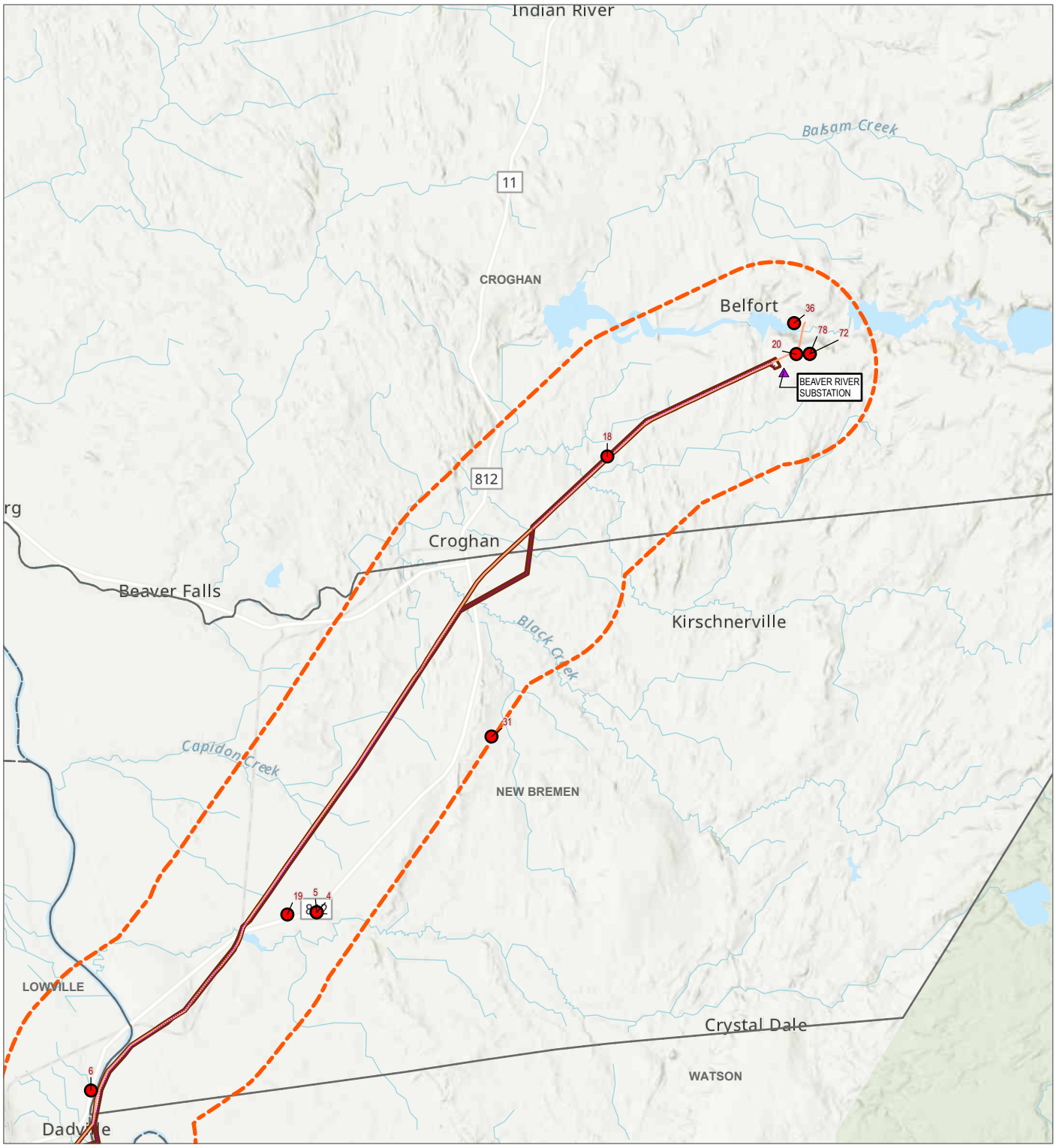
[c] lattice structure used for communication purposes

[d] N/A = Not available

[1] An FCC Registration Number was not listed for the licensee. The antenna structure registration number is provided.

Source: http://wireless2.fcc.gov/UlsApp/AsrSearch/asrRegistrationSearch.jsp

Figure E-5.1 FCC Registered Communication Towers



- PROPOSED SUBSTATION
- EXISTING SUBSTATION
- PROPOSED TRANSMISSION LINE
- EXISTING TRANSMISSION LINE
- PROJECT ROW
- COUNTY BOUNDARY
- MUNICIPAL BOUNDARY
- 1-MILE PROPOSED ROW BUFFER
- COMMUNICATION TOWER

BASE MAP: ESRI USGS TOPOGRAPHIC MAP
DATA SOURCES: USGS, ESRI, FCC, TRC

N

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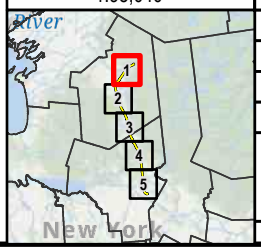


PROJECT:
BEAVER RIVER – PORTER 115 KV TRANSMISSION REBUILD PROJECT
LEWIS AND ONEIDA COUNTIES, NY

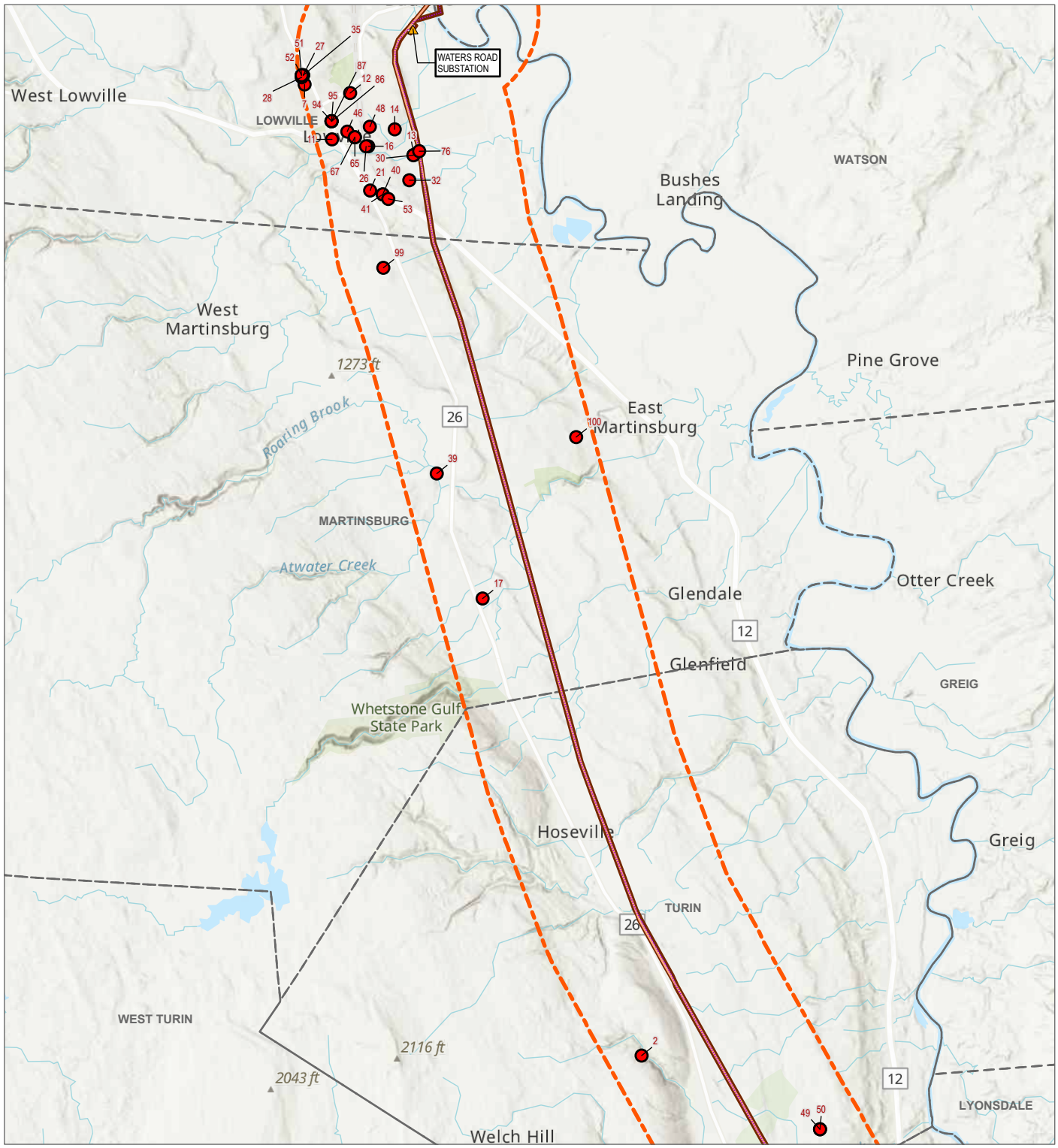
TITLE:
FCC REGISTERED COMMUNICATION TOWERS

DRAWN BY:	A. KAILAS	PROJ. NO.:	541437
CHECKED BY:	C. SMITH		
APPROVED BY:	C. SMITH		
DATE:	FEBRUARY 2025		

FIGURE E-5.1
PAGE 1 OF 5

TRC
3 CORPORATE DRIVE
SUITE 202
CLIFTON PARK, NY 12065
PHONE: 518.348.1190

FILE: BRP_2_5_11X17L



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MILES
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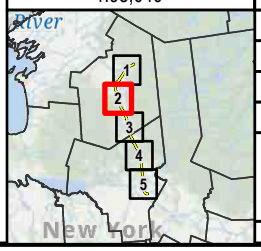


PROJECT:
BEAVER RIVER – PORTER 115 KV TRANSMISSION REBUILD PROJECT
LEWIS AND ONEIDA COUNTIES, NY

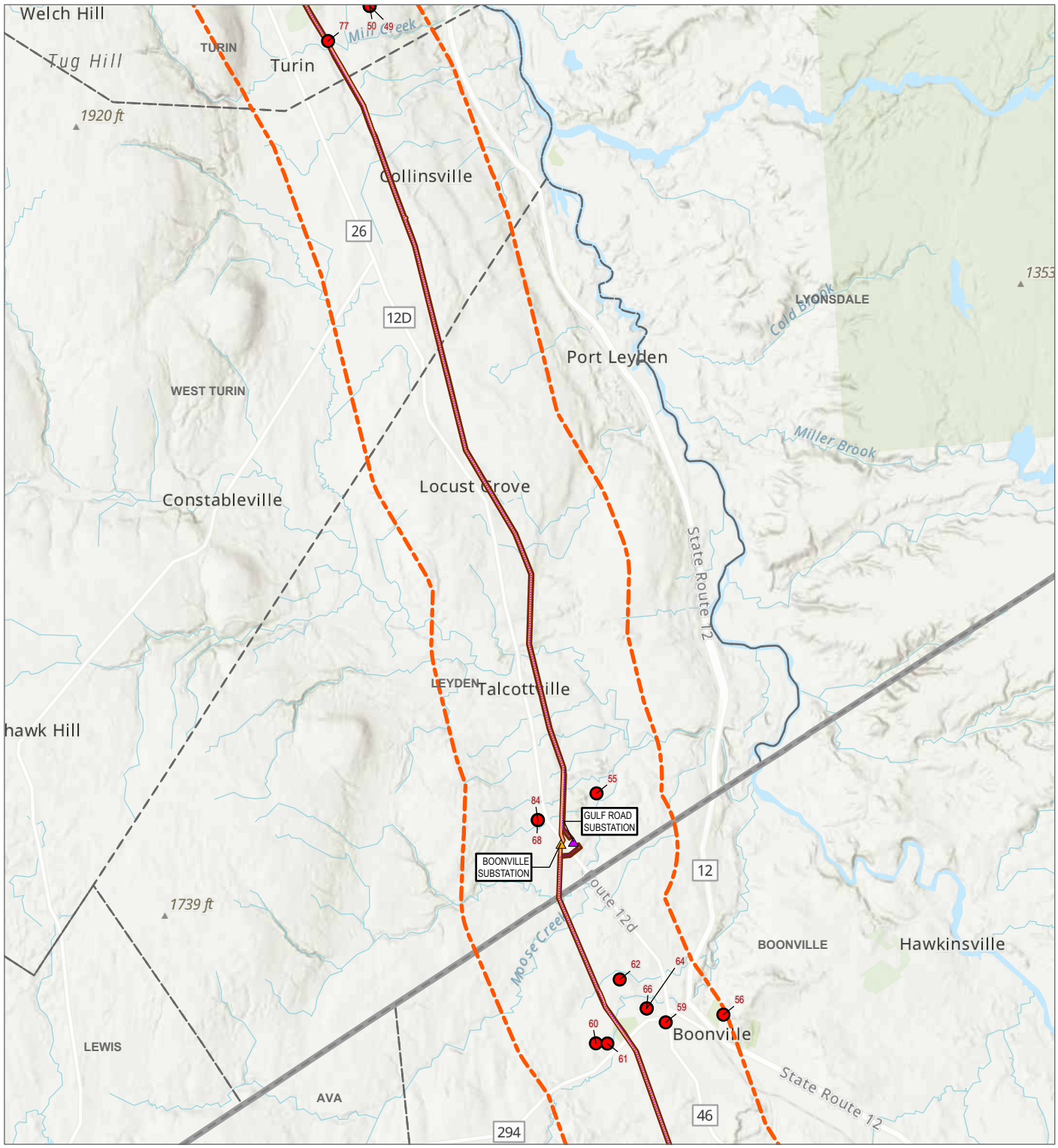
TITLE:
FCC REGISTERED COMMUNICATION TOWERS

DRAWN BY:	A. KAILAS	PROJ. NO.:	541437
CHECKED BY:	C. SMITH		
APPROVED BY:	C. SMITH		
DATE:	FEBRUARY 2025		

FIGURE E-5.1
PAGE 2 OF 5

TRC
3 CORPORATE DRIVE
SUITE 202
CLIFTON PARK, NY 12065
PHONE: 518.348.1190

FILE: BRP_2_5_11X17L



- PROPOSED SUBSTATION
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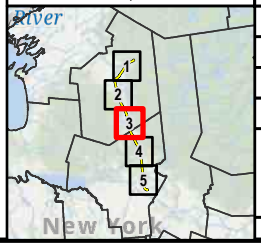
- COMMUNICATION TOWER

BASE MAP: ESRI USGS TOPOGRAPHIC MAP
DATA SOURCES: USGS, ESRI, FCC, TRC

N

0 0.75 1.5
MILES
1:95,040



PROJECT:
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LEWIS AND ONEIDA COUNTIES, NY

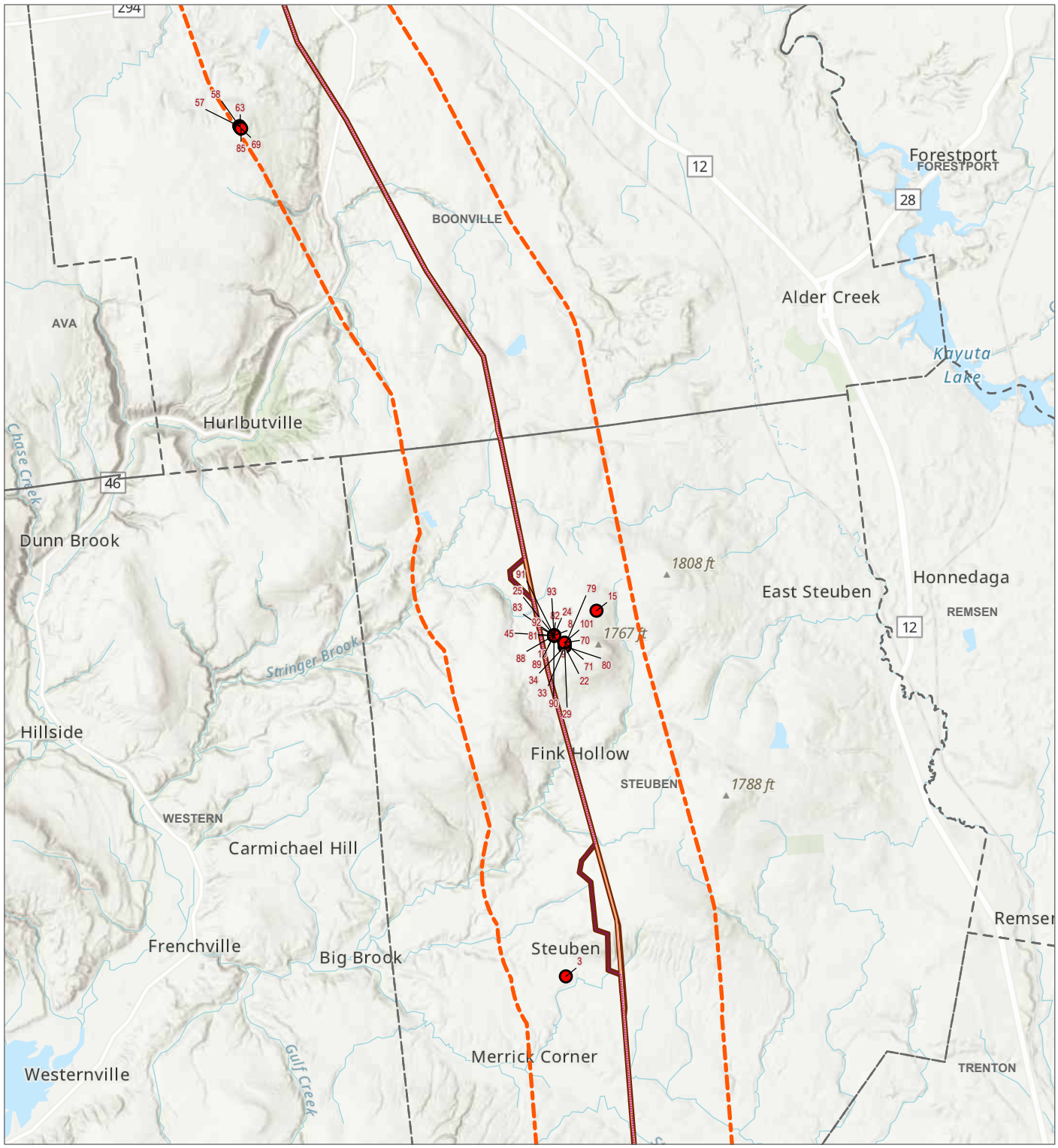
TITLE:
FCC REGISTERED COMMUNICATION TOWERS

DRAWN BY:	A. KAILAS	PROJ. NO.:	541437
CHECKED BY:	C. SMITH		
APPROVED BY:	C. SMITH		
DATE:	FEBRUARY 2025		

FIGURE E-5.1
PAGE 3 OF 5

TRC
3 CORPORATE DRIVE
SUITE 202
CLIFTON PARK, NY 12065
PHONE: 518.348.1190

FILE: BRP_2_5_11X17L



- PROPOSED SUBSTATION
- EXISTING SUBSTATION
- PROPOSED TRANSMISSION LINE
- EXISTING TRANSMISSION LINE
- PROJECT ROW
- COUNTY BOUNDARY
- MUNICIPAL BOUNDARY
- 1-MILE PROPOSED ROW BUFFER
- COMMUNICATION TOWER

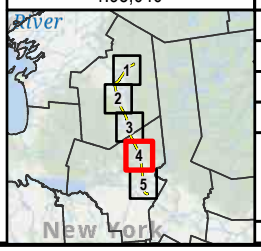
BASE MAP: ESRI USGS TOPOGRAPHIC MAP
DATA SOURCES: USGS, ESRI, FCC, TRC

N

0 0.75 1.5

MILES

1:95,040



PROJECT:
BEAVER RIVER – PORTER 115 KV TRANSMISSION REBUILD PROJECT
LEWIS AND ONEIDA COUNTIES, NY

TITLE:
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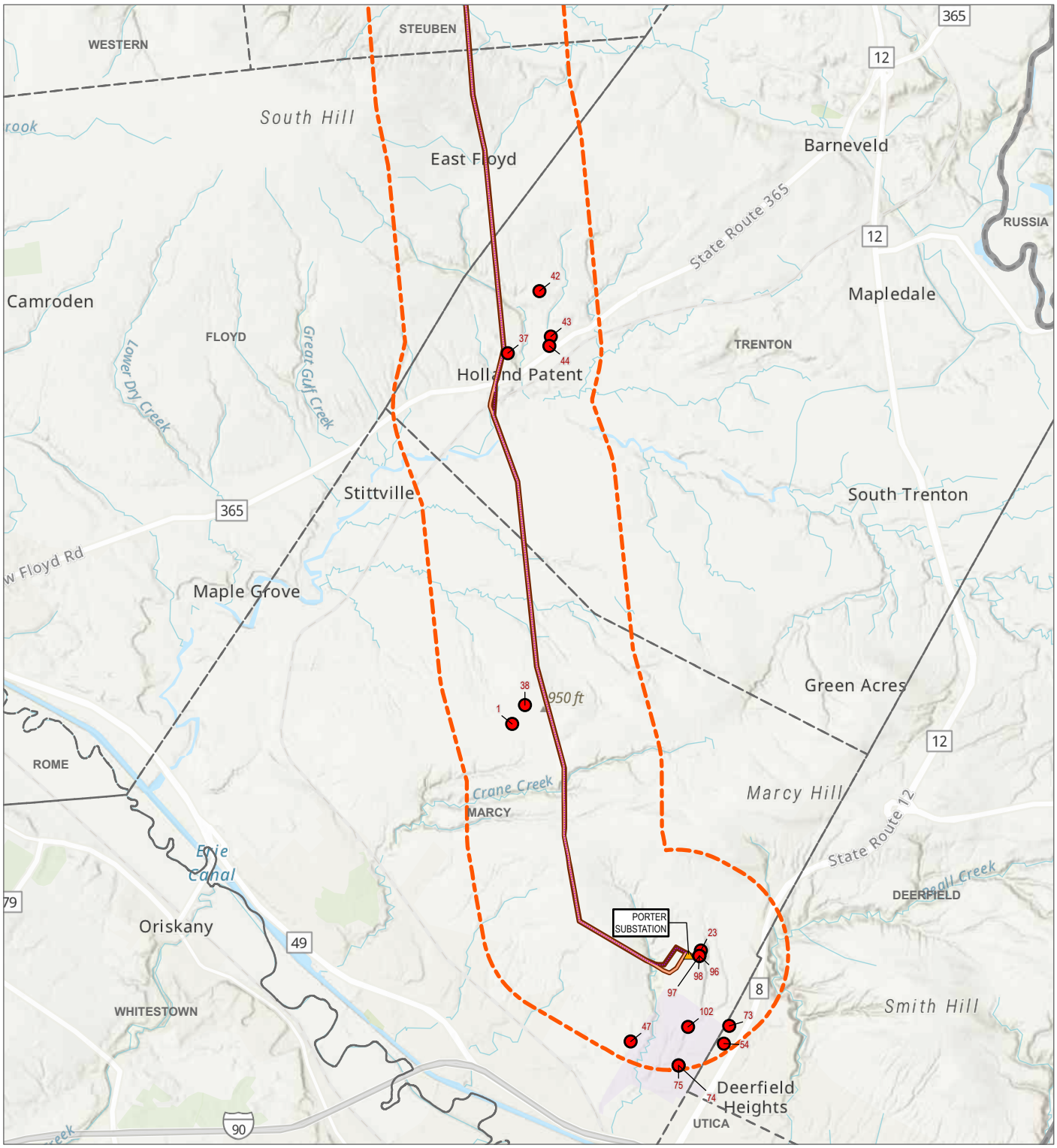

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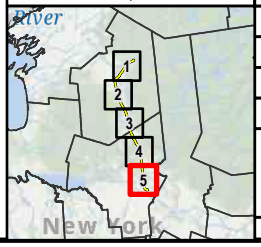

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