ENGINEERING REPORT
CONCERNING THE EFFECTS UPON
FCC LICENSED RF FACILITIES
DUE TO CONSTRUCTION OF THE
HERITAGE WIND ENERGY PROJECT
In
ORLEANS COUNTY, NEW YORK

Prepared for:
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Charlottesville, VA

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I. INTRODUCTION

This engineering report describes the results of a study and analysis to determine the locations of federally-licensed (FCC) microwave and fixed station radio frequency (RF) facilities that may be adversely impacted as a result of the construction of the Heritage Wind Energy Project in Orleans County, New York. This document describes impact zones and any necessary mitigation procedures, along with recommendations concerning individual wind turbine siting. All illustrations, calculations and conclusions contained in this document are based on FCC database records[1].

Frequently, wind turbines located on land parcels near RF facilities can cause more than one mode of RF impact, and may require an iterative procedure to minimize adverse effects. This procedure is necessary in order to ensure that disruption of RF facilities either does not occur or, in the alternative, that mitigation procedures will be effective. The purpose of this study is to facilitate the siting of turbines to avoid such unacceptable impact.

The Heritage wind project as currently planned involves the construction of approximately 33 wind turbines in the Town of Barre in southcentral Orleans County, New York. The wind turbines proposed to be erected will have a hub height of 125 meters and a rotor diameter of 162 meters. The maximum blade tip height therefore would be 206 meters AGL.

Using industry standard procedures and FCC databases, a search was conducted to determine the presence of any existing microwave paths crossing the subject property, land mobile and other RF facilities within or adjacent to the identified area and broadcast signals receivable in the area.

[1] The databases used in creating the attached tables and maps are generally accurate, but anomalies have been known to occur. Generally, for wind turbine siting, an on-site verification survey is often suggested as part of the due diligence process.

A specific turbine layout (LO 35) has been submitted for analysis. Accordingly, this report will address the potential conflicts that may be caused by the proposed turbines.

The following tabulation and analysis consists of five sections:

1. Microwave point-to-point path analysis
2. Land mobile, public safety and other communications tower sites
3. Broadcast AM, FM and TV
4. Military operations, NTIA notification and NEXRAD weather stations
5. Personal Wireless Communications (Cellular, etc.)

The attached figures were generated based upon the operating parameters of the FCC-licensed stations as contained in the FCC station database, with corrections of the antenna locations as needed.

The following analysis examines the pertinent FCC licensed services in the area for impact. This analysis assumes that all licensed services have been designed and constructed according to FCC requirements and good engineering practice. If this is not the case, the impacted facility must share responsibility with the wind project developer for the costs of any mitigation measures[2].

Each of the RF analyses is described separately in the sections that follow.

II. ANALYSIS OF MICROWAVE LINKS

An extensive analysis was undertaken to determine the likely effect of the new wind turbine farm upon the existing microwave paths, consisting of a Fresnel x/y/z axis study. The microwave paths have been overlaid on Google Earth™ maps, and the images of the microwave paths and the proposed turbines are also available in a KMZ file.

Important Note: Microwave path studies are based upon third party and FCC databases that normally exhibit a high degree of accuracy and reliability. Although Evans performs due diligence to ensure that all existing microwave facilities are represented, we cannot be responsible for errors in FCC databases that may lead to incomplete results. However, should such situations occur, Evans would perform an engineering analysis to determine how the additional facilities can be accommodated or, if wind turbine structures are already built, determine a method to re-direct an impacted beam path.

[2] For instance, some microwave paths may have insufficient ground clearances as they are presently configured.

For this microwave study, *Worst Case Fresnel Zones* (WCFZ) were calculated for each microwave path. The mid-point of a microwave path is the location where the widest (or worst case) Fresnel zone occurs. The radius *R* of the Worst Case Fresnel Zone, in meters, is calculated for each path using the following formula:

$$R \cong 8.65\sqrt{\frac{D}{F_{GHz}}}$$

where *D* is the microwave path length in kilometers and F_{GHz} is the frequency in gigahertz.

In general, the WCFZ is defined by the cylindrical area whose axis is the direct line between the microwave link endpoints and whose radius is *R* as calculated above. This is the zone where the siting of obstructions should be avoided. Evans Engineering Solutions has identified 8 unique licensed microwave paths from the FCC database that are within 2 miles of the project area boundary. These microwave paths are listed in Table 1 and mapped in Figures 1 and 2.

Call Sign 1	Call Sign 2	Site 1 Name	Site 2 Name	Freq. (MHz)	WCFZ (m)	Licensee
WPVZ322	*Rcv only*	WBJA Studio	WBJA Xmtr	947.0	22.8	Family Worship Center Church
WQSU536	WQSY996	UNY0106	UNY0161	5945.2-6226.89	15.4	Uniti Fiber LLC
WQSU732	WQSV390	Clarendon	Albion	5974.85/6226.89	10.4	County of Orleans
WQSU735	WQSV390	Medina	Albion	6034.15/6286.19	12.1	County of Orleans
WQSY996	WQUN673	UNY0161	UNY208	6063.8-6345.49	16.7	Uniti Fiber LLC
WQTF916	WQTF925	UNY0006	UNY0123	5974.85/6226.89	16.4	Uniti Fiber LLC
WQVF953	WQVG674	Bristol Center	CCI816547	6123.1-6775	29.6	Highway Networks, LLC
WQVG674	WQVH665	CCI816547	Olcott	10755-11285	17.9	Highway Networks, LLC

Table 1 – Licensed Microwave Links in and near Heritage Project Area

Five point-to-point microwave paths, highlighted in yellow in Table 1, are in the areas where turbines would be sited. As seen in Figure 3, a few planned turbines would be close to microwave paths; however, no turbines would be blocking any of the paths.

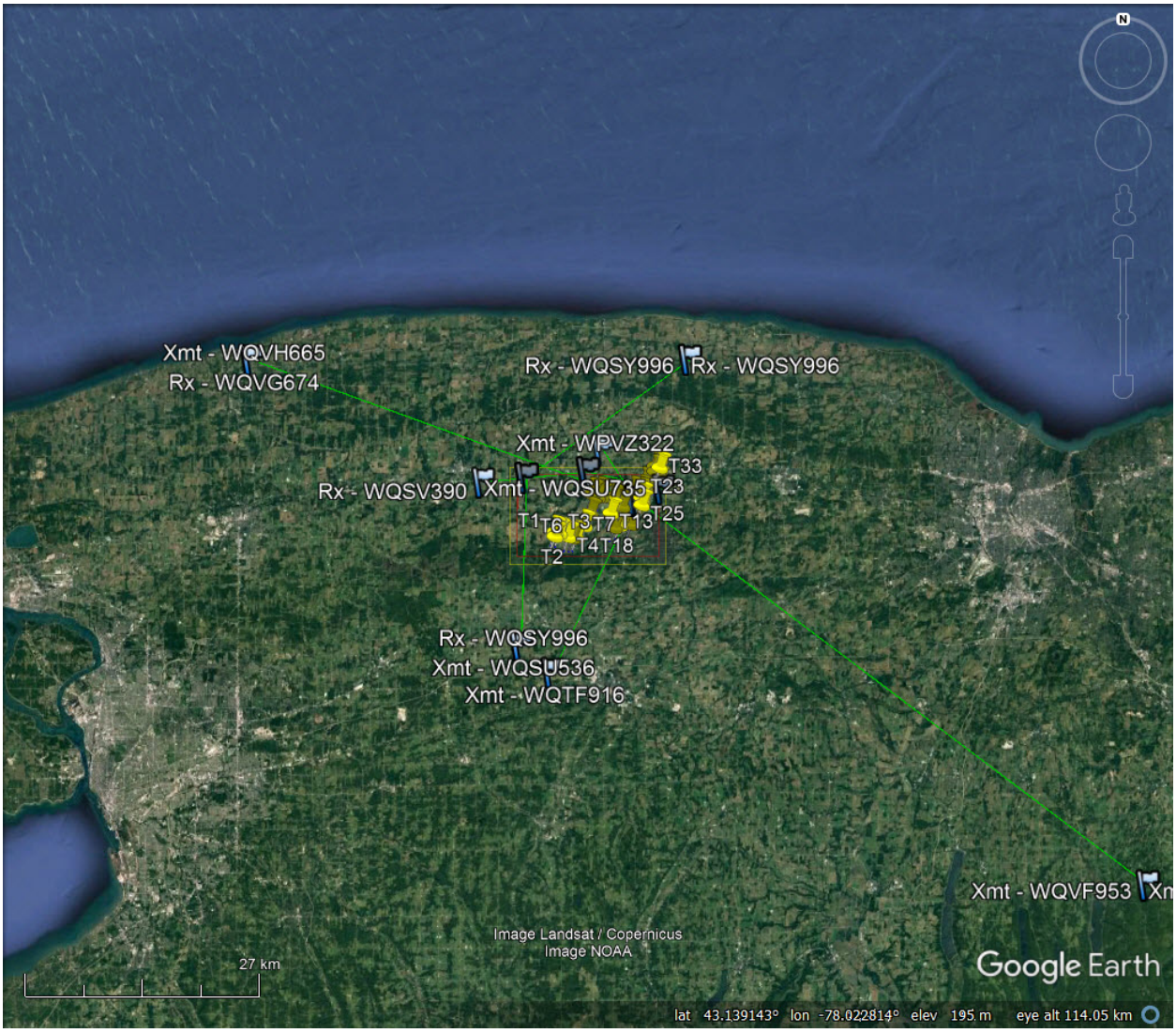

Figure 1 – Licensed Microwave Paths in or near Heritage Project Area

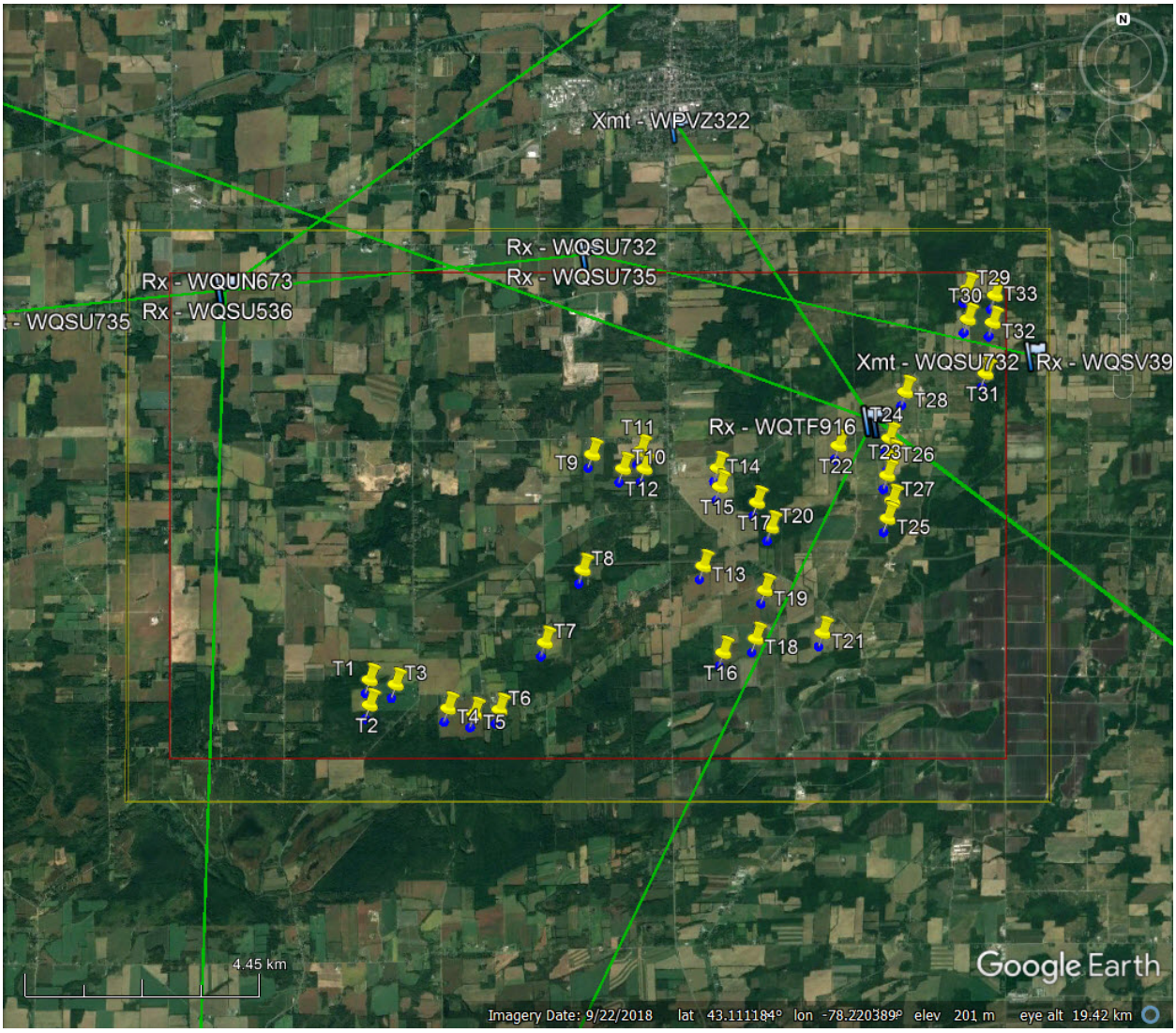

Figure 2 – Close-Up of Licensed Microwave Paths in or near Heritage Project Area

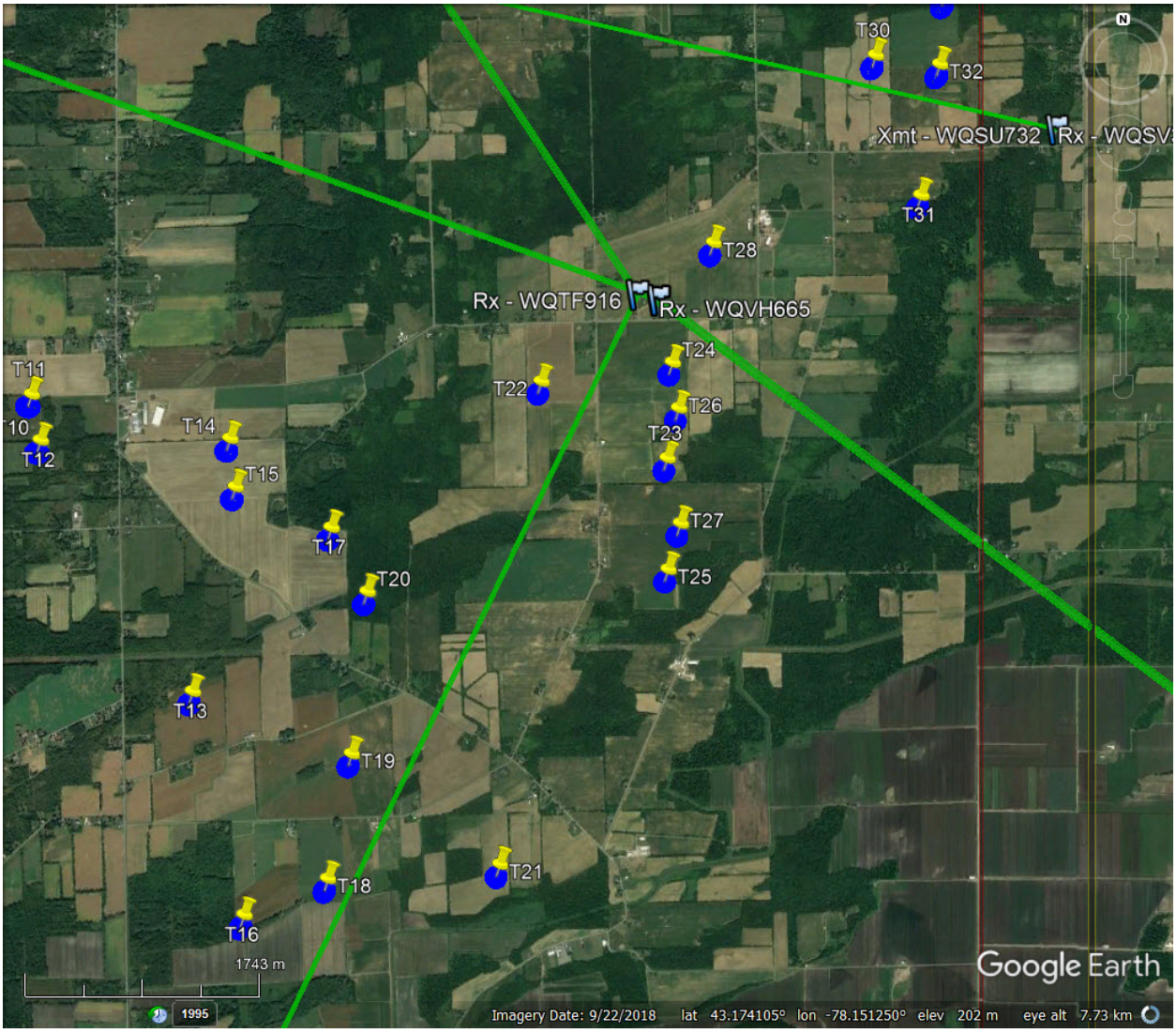

Figure 3 – Turbines Close to Microwave Paths

III. ANALYSIS OF FIXED RADIO FACILITIES

3.1 Land Mobile & Public Safety Facilities

A search of the FCC's land mobile/public safety radio database revealed 15 separately licensed land mobile and public safety transmitter stations that fall within the search area (0.5 mile beyond the project area boundary[3]). These land mobile stations are listed in Table 2 and mapped in Figures 4 and 5. The specifications on the land mobile stations can be found in the associated land mobile (LM) spreadsheet file.

Nine of these LM/PS stations are located at a common site (just outside the project area), as indicated in Table 2. Thus, there are seven unique LM/PS transmitter sites in the search area, four of which are inside the project area (those highlighted in yellow in Table 2).

Call Sign	Location No.	Latitude (NAD-83)	Longitude (NAD-83)	Ant. Ht. (m AGL)	Freq. (MHz)	Licensee
KEQ549	1	43.170069	-78.266518	64	43.1	Keeler Construction Co. Inc.
WQRY382	1	43.217611	-78.265083	34	464.15	Dudley, Kurtis R.
WPNV412	1	43.145371	-78.251564	24	464	Hazel, Harold F.
KYJ477	1	43.205653	-78.249032	26	43.1	Keeler Construction Co. Inc.
WPWL487	1	43.217952	-78.21303	107	453.125	Orleans County
WQDS443	1	43.217952	-78.21303	10	45.44	New York, State of
WQOK406	1	43.217952	-78.21303	91.4	159.4725 453.7125	Orleans, County of
WQVG649	1	43.217952	-78.21303	146	853.2375	Orleans, County of
KED513	1	43.217952	-78.21303	66	46.08	Orleans, County of
KLS640	1	43.217952	-78.21303	30	45.44	New York, State of
WPFG916	1	43.217952	-78.21303	55	155.43	NY State OPRHP - Genesee Region
WNVR300	2	43.217952	-78.21303	146	852.8375	Orleans, County of
KFD88	1	43.173629	-78.197406	15	151.085	Orleans, County of
WQSY904	1	43.199662	-78.108607	38	852.8375	Orleans, County of
WRCL381	2	43.217952	-78.21303	31	159.4725 453.7125	Orleans, County of

Table 2 – Land Mobiles & Public Safety Stations within 0.5 mile of Project Area Boundary

[3] The project area, for the purposes of this report, is considered to be the area within the Barre town boundary.

Multi-directional transmitting facilities, including land mobile stations, which are within 425 meters of a turbine site customarily should be further evaluated for the possibility of transmitter interference caused by wind turbines. It appears from Figures 4 and 5 that none of the land mobile stations in or near the project area are less than 425 meters from the nearest planned turbine.

Based on the current project layout, and assuming that the land mobile stations in and near the project area are actually located at their licensed locations, or located farther away from turbines, no adverse impact is expected to be caused to the transmissions of land mobile stations that are licensed by the FCC. If any of the turbines are to be re-sited or if turbines are added, it is recommended that no turbines be closer than the following distances from the land mobile sites listed below.

Land Mobile or Public Safety Station	Distance[4] (meters)
KEQ549	100
WPNV412	270
KYJ477	100
KFD88	150

[4] Setback distances are based on the operating frequencies of the licensed stations operating on these sites.

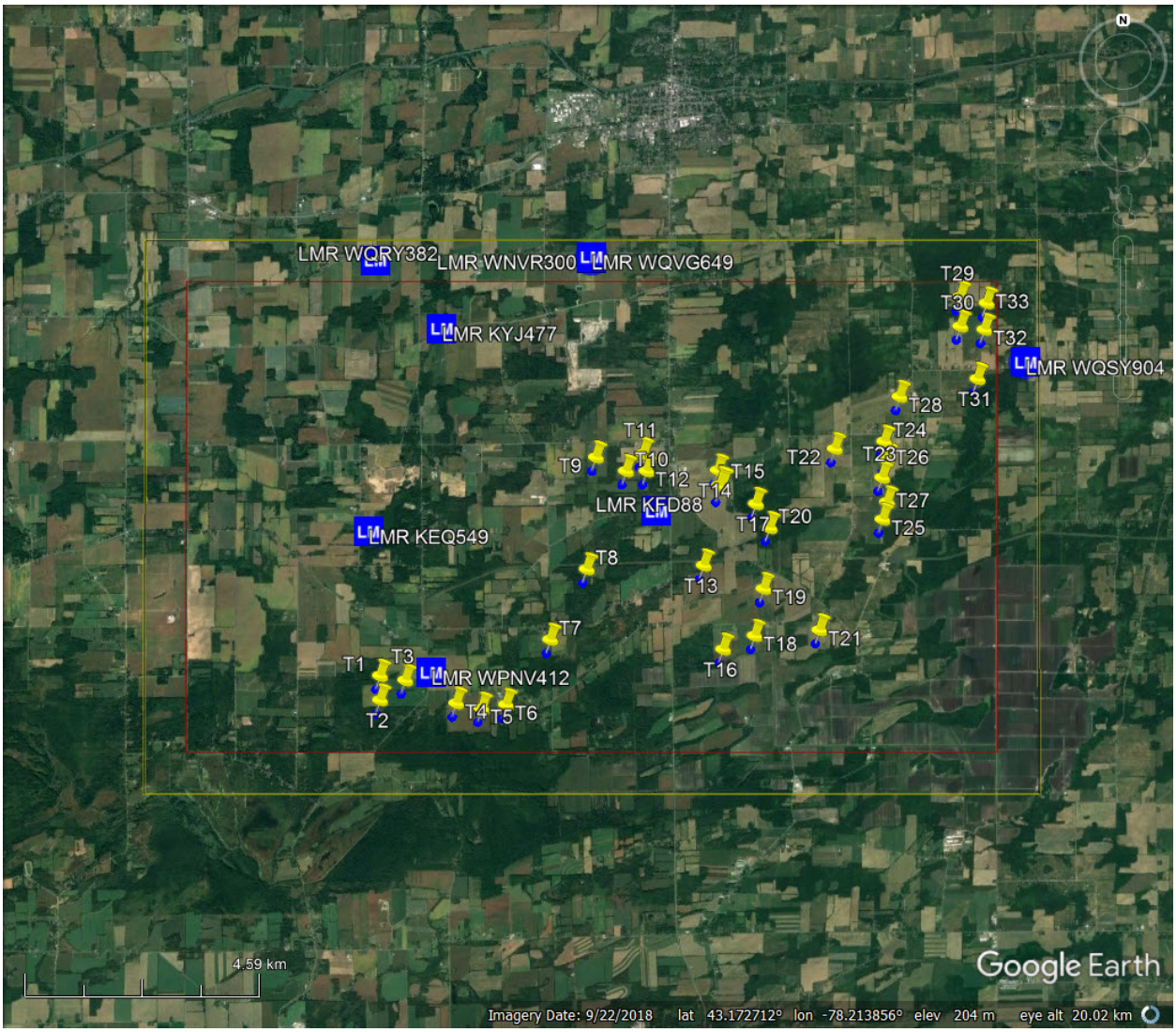

Figure 4 – Land Mobile Stations in or near Heritage Project Area

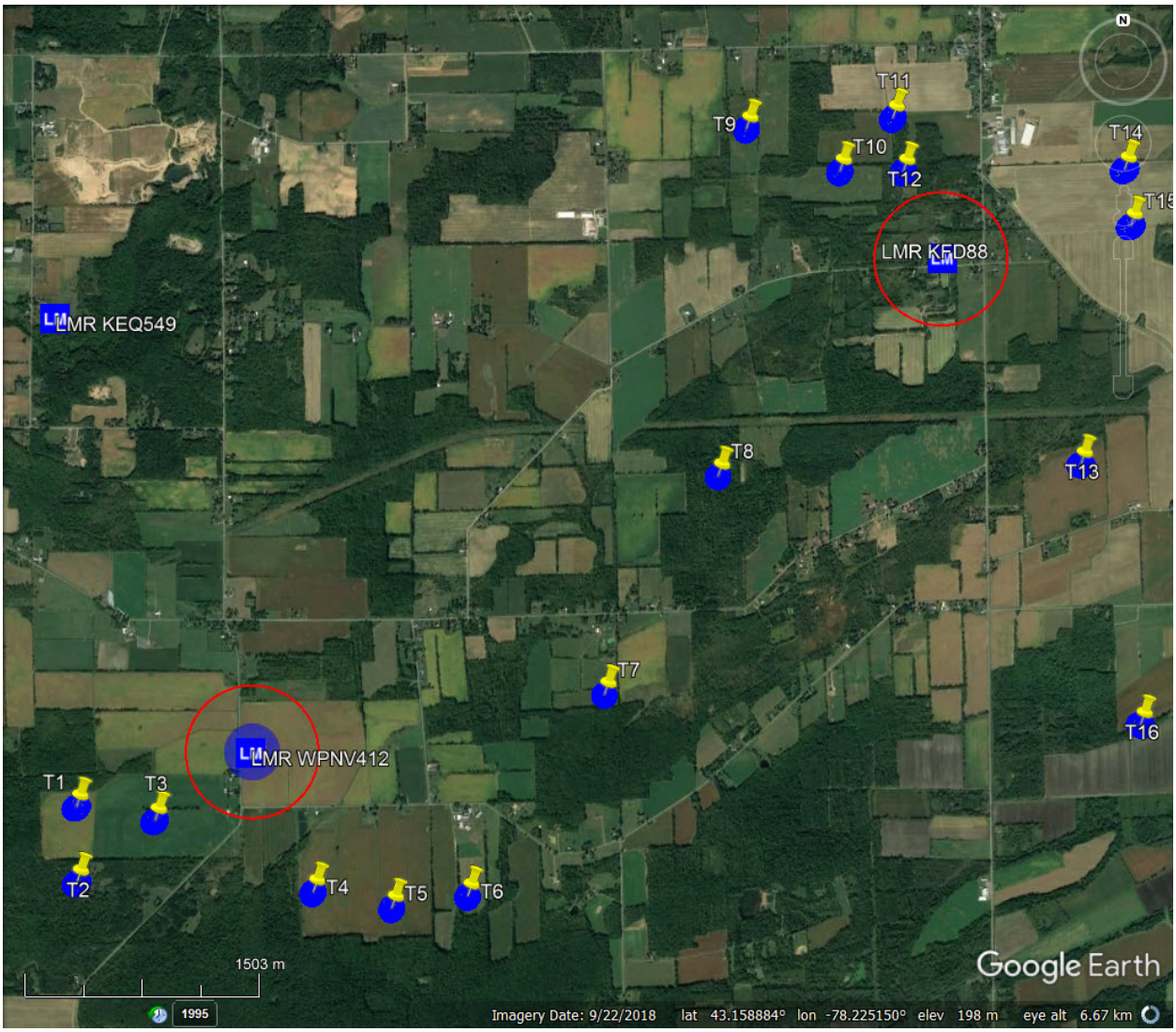

Figure 5 – Land Mobile Stations Close to Planned Turbines

The four LM/PS sites inside the project area are no closer than the 425-meter recommended setback distance from any planned turbine site (represented by the red circles around the LM/PS stations nearest the turbines).

3.2 Other Communications Sites

A search through the FCC registered antenna structures database reveals other communications towers located within 20 kilometers of the center of the proposed project area, which are listed in Table 3 and mapped in Figures 6 through 9. The antenna structure locations closest to planned turbines are shown in Figures 7 and 8. Many of these structures appear to be cellular base station towers. It is suggested, although not required, that these sites be investigated for microwave operations that are not in the FCC database, including unlicensed microwave facilities.

As mentioned previously, multi-directional transmitting facilities within 425 meters of a planned turbine customarily should be further evaluated for the possibility of turbine-related transmitter interference. Based on the current turbine layout, and as demonstrated in Figure 8, the Heritage project is not expected to cause any turbine-related signal transmission problems to multi-directional transmitting facilities located at any of the tower sites listed in Table 3 and shown in Figures 6 through 9.

Table 3 should not be considered a complete list of antenna structures in the area, since most towers under 200 feet (61 meters) in height are not required to be registered with the FCC. An on-site visual survey is suggested to identify such towers.

If changes or additions to the turbine layout are to be considered that would place turbines less than 425 meters from one or more of the tower sites listed in Table 3, it is suggested that further investigation be done to determine whether there are transmitting facilities on such towers that were not found in the FCC database searches described in this report.

FCC Registr. #	Owner	Location	Latitude	Longitude	Height AGL (m)
1002827	Time Warner Cable Northeast LLC	Brockport, NY	43-11-47.2N	077-59-45.0W	80.8
1003294	Time Warner Cable Northeast LLC	Medina, NY	43-13-17.8N	078-22-18.4W	70.1
1003599	STC Five LLC	Gaines, NY	43-18-21.0N	078-12-57.0W	79.9
1004991	New York Power Authority	Batavia, NY	43-02-35.2N	078-19-25.0W	77.1
1005512	American Towers LLC	Bergen, NY	43-04-10.2N	078-01-32.4W	70.1
1006270	Crown Atlantic Company, LLC	Holley, NY	43-11-18.1N	078-08-41.4W	59.4
1007686	STC Five LLC	Byron, NY	43-03-06.8N	078-03-01.6W	73.5
1007879	New York State Police	Batavia, NY	43-01-50.0N	078-11-14.0W	30
1008258	SBC Tower Holdings LLC	Gaines, NY	43-17-41.0N	078-08-54.0W	79.9
1009815	SBC Tower Holdings LLC	Barre, NY	43-12-40.6N	078-17-51.3W	90.5
1023176	SBC Tower Holdings LLC	Clarkson, NY	43-16-37.6N	077-56-46.1W	90.8
1039091	STC Five LLC	Pembroke, NY	43-01-40.0N	078-22-57.0W	61.6
1049044	Genesee Media Corporation	Brockport, NY	43-11-45.0N	077-57-04.0W	49
1061312	SpectraSite Communications, LLC	Batavia, NY	43-01-11.8N	078-10-52.6W	35.6
1062506	Genesee Valley BOCES	Batavia, NY	43-00-54.0N	078-11-03.0W	36.6
1063560	Crown Atlantic Company LLC	Batavia, NY	43-02-32.6N	078-18-17.5W	79.6
1205015	Genesee, County of	Batavia, NY	42-59-48.2N	078-11-17.0W	51.8
1210744	Orleans County EM Office	Albion, NY	43-13-04.6N	078-12-46.9W	148.4
1224679	American Towers, Inc.	Oakfield, NY	43-00-53.2N	078-20-30.1W	60.6
1224935	Family Worship Center Church, Inc.	Albion, NY	43-11-19.0N	078-08-52.0W	106
1228694	American Towers LLC	Stafford, NY	43-00-45.7N	078-05-48.5W	61.8
1231584	PTI US Towers I, LLC	Town of Leroy, NY	43-01-50.7N	077-57-55.6W	54.9
1234772	SBA Properties, LLC	Kendall, NY	43-19-48.6N	078-04-15.7W	79.2
1238411	SBA Towers II LLC	Brockport, NY	43-11-33.1N	077-56-56.8W	32
1239025	Keeler Construction Co Inc.	Albion, NY	43-10-13.4N	078-15-57.2W	60.9
1248535	Bell Atlantic Mobile of Allentown	Clarendon, NY	43-08-15.7N	078-02-42.5W	77.7
1249333	Bell Atlantic Mobile of Allentown	Barre, NY	43-09-18.8N	078-16-05.2W	61
1251525	SBA Towers II LLC	Lyndonville, NY	43-19-41.6N	078-23-54.4W	71.6
1251881	SBA Towers II LLC	Holley, NY	43-13-52.3N	078-01-28.0W	38.1
1254668	New York State Thruway Authority	Batavia, NY	43-01-01.4N	078-11-22.3W	45.7
1256135	Bell Atlantic Mobile of Allentown	Batavia, NY	43-01-12.3N	078-08-05.5W	29.9
1260447	Genesee, County of	Batavia, NY	43-00-52.6N	078-11-58.4W	48.7
1270246	ITT	Batavia, NY	43-01-45.7N	078-09-51.6W	16.7
1271401	Subcarrier Communications Inc.	Brockport, NY	43-11-43.3N	077-59-46.3W	59.5
1290619	Genesee, County of	Alabama, NY	43-04-19.2N	078-19-57.7W	65.5
1290620	Genesee, County of	Bergen, NY	43-04-12.9N	077-57-22.6W	61
1299439	Genesee, County of	Batavia, NY	43-02-29.4N	078-10-49.7W	33.5
1302179*	American Towers LLC	Basom, NY	43-02-14.0N	078-24-08.2W	36.6

The listed coordinates for the above structures are from documents filed with the FCC and have not been verified by this consultant. Green-shaded records indicate towers containing microwave facilities documented in Section II of this report. Blue-shaded records indicate towers containing land mobile facilities documented in Section III of this report. *ASR 1302179 has not been verified to have been built.

Table 3 – Communications Towers within 20 KM of Project Area

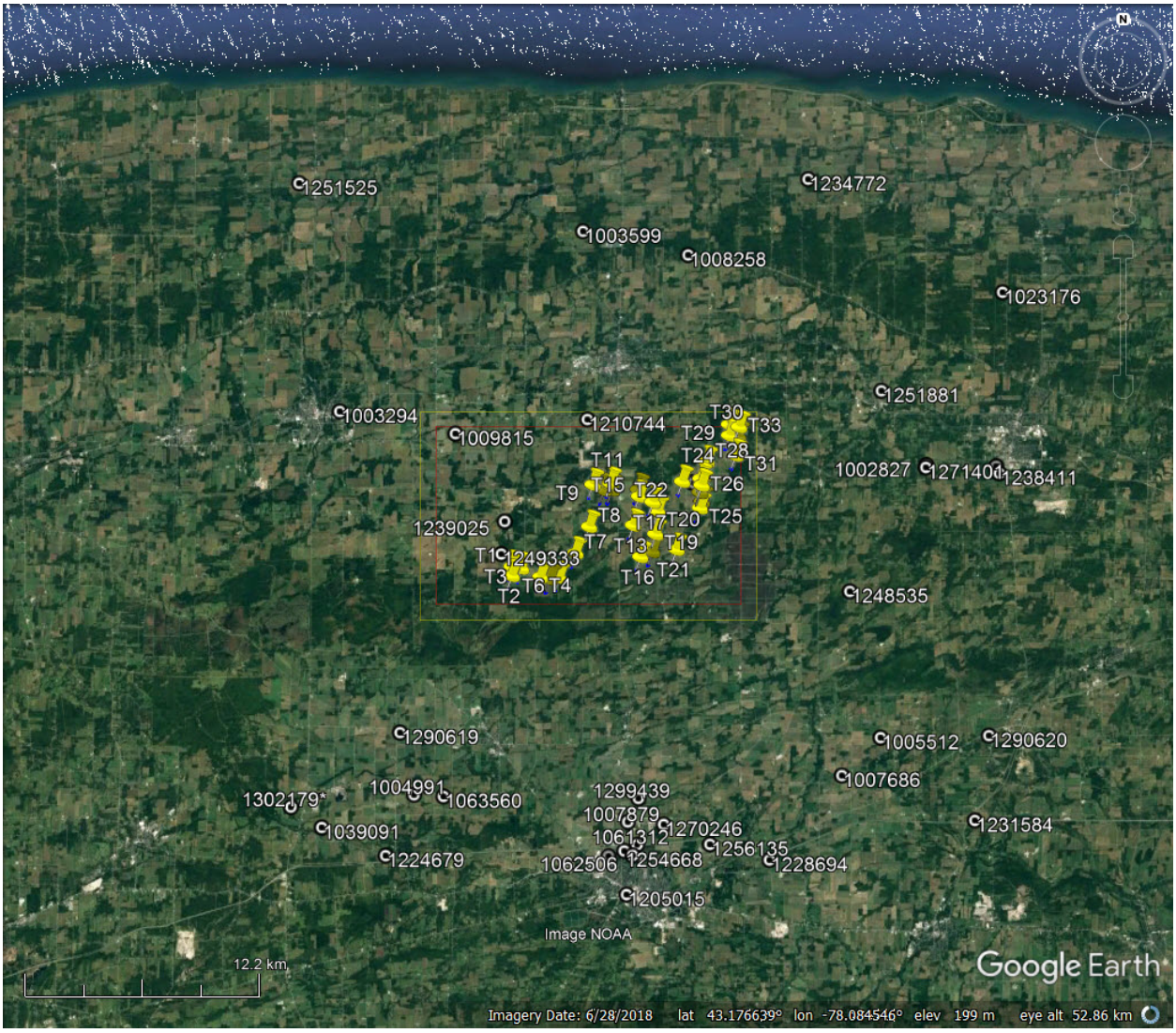

Figure 6 – FCC-Documented Antenna Structures within 20 KM of Center of Project Area

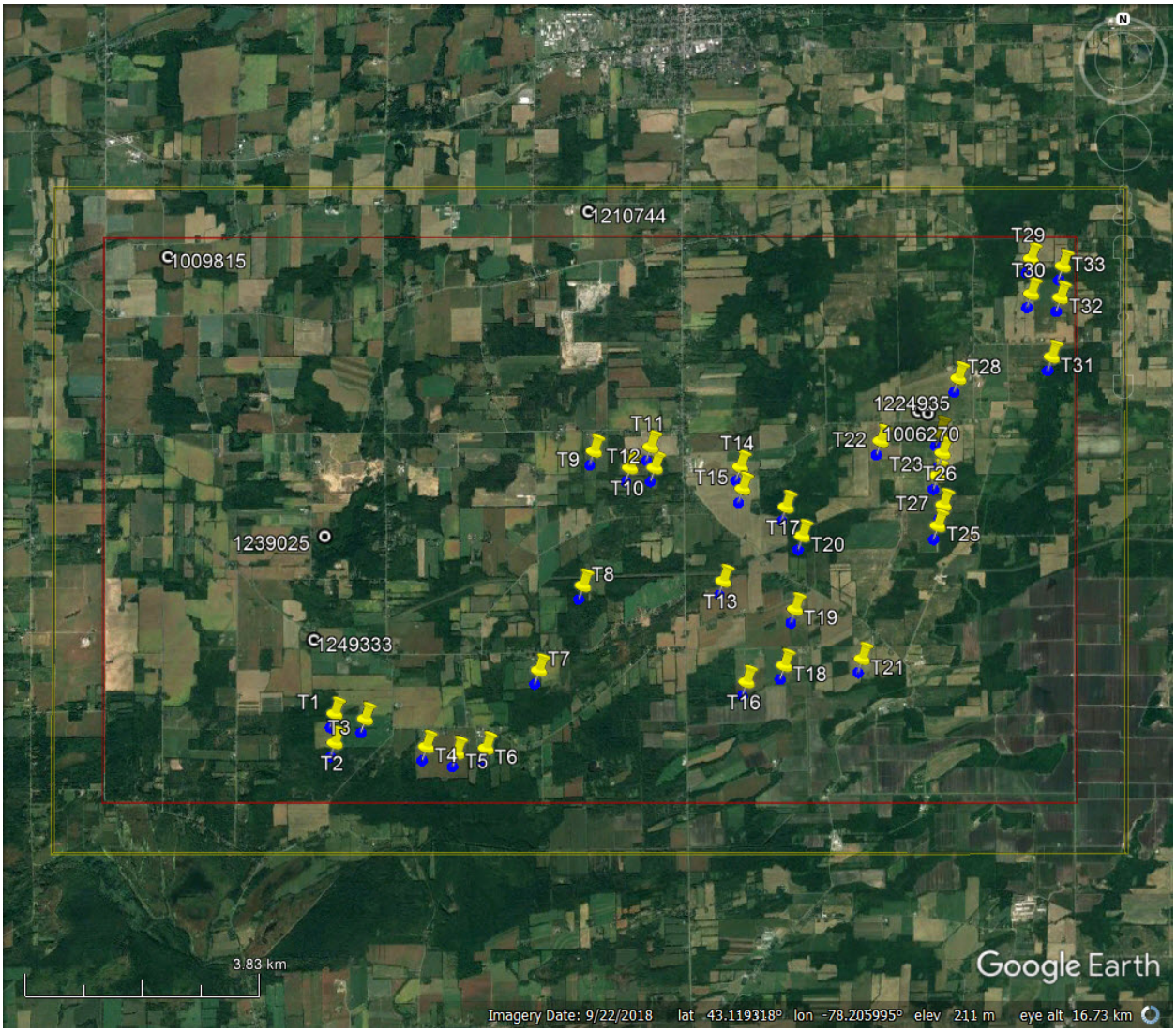

Figure 7 – Registered Towers closest to Project Area

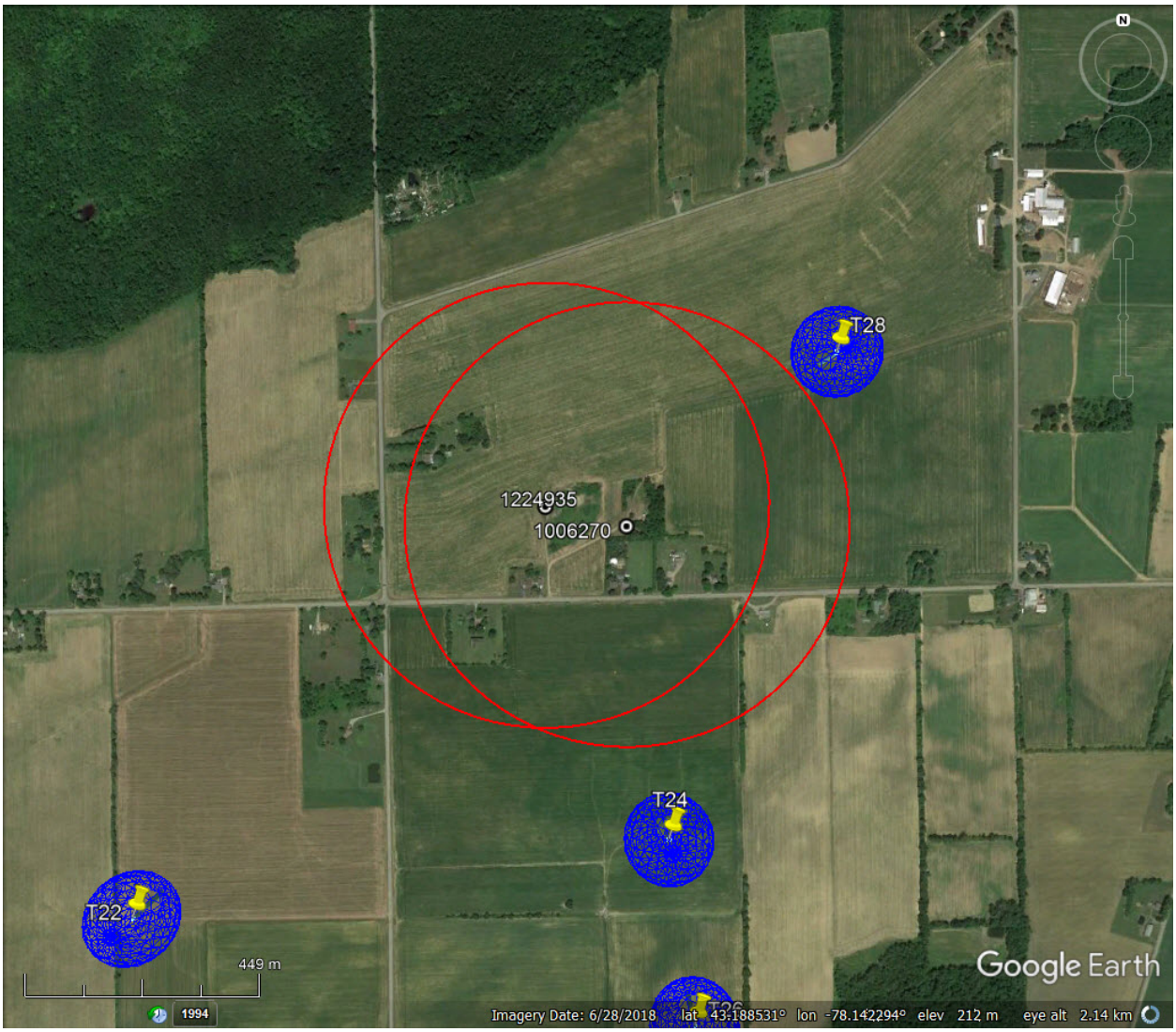

Figure 8 – FCC-Registered Towers closest to Planned Turbines

In the above image are shown the two registered towers nearest to planned turbines. As shown by the 425-meter radius circles around both sites, the planned turbine sites exceed the worst-case recommended setback of 425 meters from the tower sites.

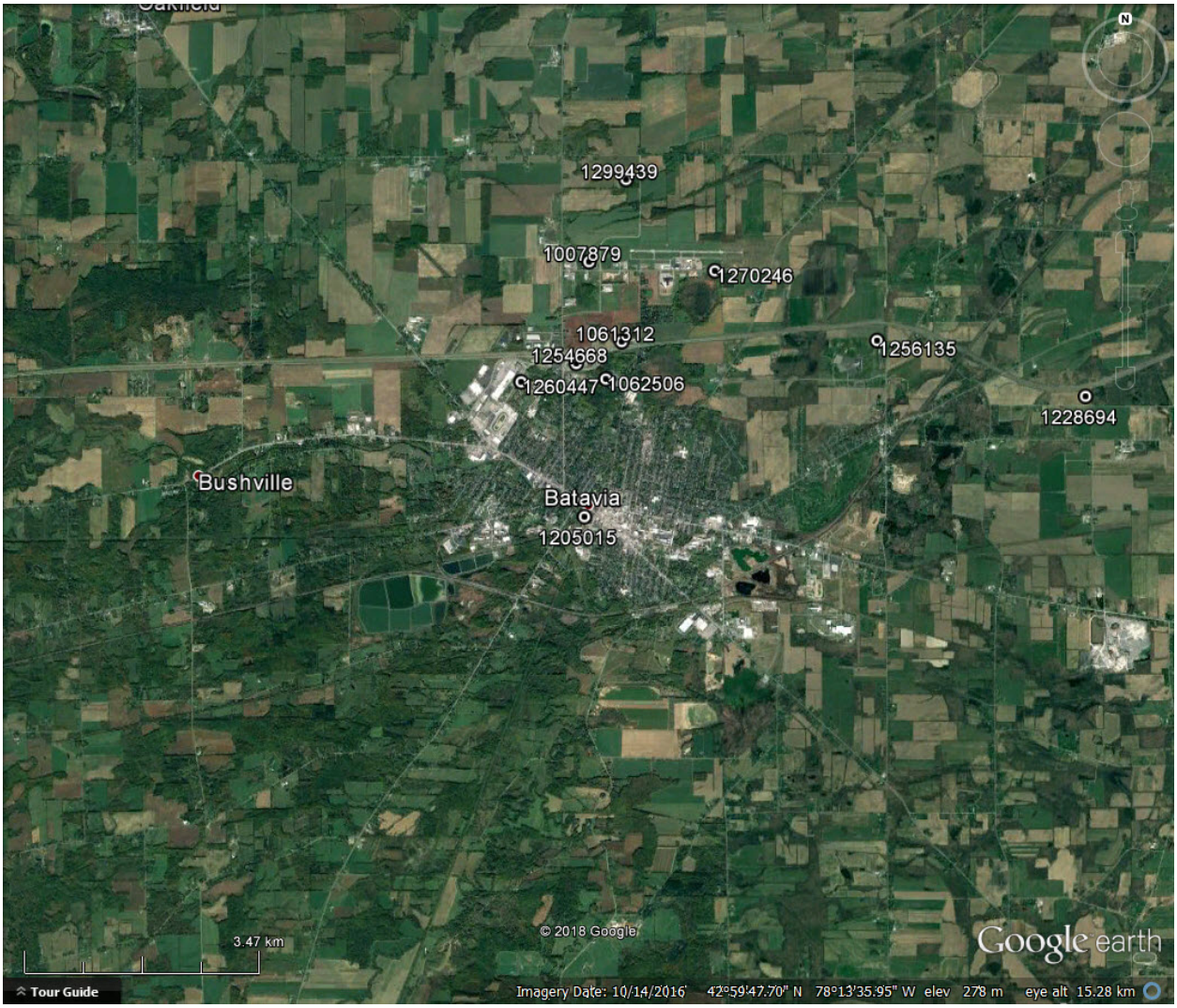

Figure 9 – Registered Towers in and near the City of Batavia

IV. ANALYSIS OF BROADCAST FACILITIES

4.1 TV Broadcast Facilities

The rotating blades of a wind turbine have the potential to disrupt over-the-air broadcast TV reception within a few miles of the turbine, especially when the direct path from the viewer's residence is obstructed by terrain. Interference is caused when signals reflected by the blades arrive at the viewer's TV antenna along with the direct signal. This is known as "multipath interference." However, as turbine manufacturers have replaced all-metal blades with blades constructed of mostly nonmetallic materials[5], this effect has been reduced. Also, the new generation of HDTV receivers is better equipped to deal with minor multipath interference (which is manifested by "pixilating" or "freezing" of the digital picture) than analog TV sets, as special circuitry is employed to suppress the weaker reflected signal. Occasionally, however, multipath interference from one or more turbines can cause video failure in HDTV receivers, especially if the receiver location is in a valley or other place of low elevation.

There is some possibility of signal disruption for residences that have to point their outdoor antennas through the turbine area, or that utilize "rabbit ear" antennas and/or older HDTV receivers. Most of this effect should be dissipated for locations three or more miles from a turbine, but some residual problems could be noted for HDTV receivers that are located below the grade level at the turbine base. Usually, a rule of thumb is that approximately 10% of the receiver locations are affected to some extent within three miles of a large turbine when the turbine is between the TV station and the receiver. The usual effect is intermittent "pixilation" or freezing of the digital TV picture. This estimate is based upon Evans Engineering's experience with similar wind energy projects.

Orleans County (also Genesee County to the south) is in the Buffalo, NY Designated Market Area (DMA) as defined by Nielsen Media Research. However, TV stations in the Rochester, NY market also are predicted to reach the wind project area. The TV stations that have been determined to place a predicted FCC primary off-the-air service signal over at least a portion of the project area or its immediate environs are listed in Table 4. The TV stations' predicted service area boundaries are mapped in Figure 10.

[5] Modern turbine blades are usually constructed from glass-reinforced plastic (GRP), although they usually contain some metal for strengthening, balance and grounding.

Call Sign	Network Affiliate	Virtual Channel	RF Channel	City of License	Power (KW)	Ant. Height (m HAAT)	Dist. km)	Azimuth (°T)
WBBZ-TV	*Independent*	67	7	Springville, NY	26.9	176	80.2	212.9
WHEC-TV	NBC	10	10	Rochester, NY	18.1	153	49.7	94.8
WHAM-TV	ABC	13	9	Rochester, NY	30	155	49.7	94.9
WUTV	FOX	29	32	Buffalo, NY	1000	329	67.3	211.8
WXXI-TV	PBS	21	22	Rochester, NY	273	152	49.7	94.9
WPXJ-TV	ION	51	24	Batavia, NY	500	374	34.3	155.0
WGCE-CD	Heartland	6	26	Rochester, NY	15	128	49.6	94.9
WUHF	FOX	31	28	Rochester, NY	320	161	49.6	95.0
WNLO	CW	23	36	Buffalo, NY	800	415	61.4	255.0
WGRZ	NBC	2	33	Buffalo, NY	480	295	59.0	210.9
WKBW-TV	ABC	7	34	Buffalo, NY	660	432	69.2	210.4
WIVB-TV	CBS	4	32	Buffalo, NY	1000	303	61.4	255.0
WNED-TV	PBS	17	31	Buffalo, NY	175	332	61.4	255.0
WROC-TV	CBS	8	21	Rochester, NY	1000	123	49.7	94.8
WBGT-CD	MyTV	46	29	Rochester, NY	15	97	49.6	94.9
WNYO-TV	MyTV	49	16	Buffalo, NY	575	329	62.2	254.8

Table 4 - TV Stations Serving Heritage Project Area

If the Heritage wind project should cause disruptions to over-the-air TV viewing, methods to resolve them are available, and are as follows:

1. Relocation of the household antenna to receive a better signal
2. Installation of a better outside antenna, or one with a higher gain
3. Installation of satellite or cable TV

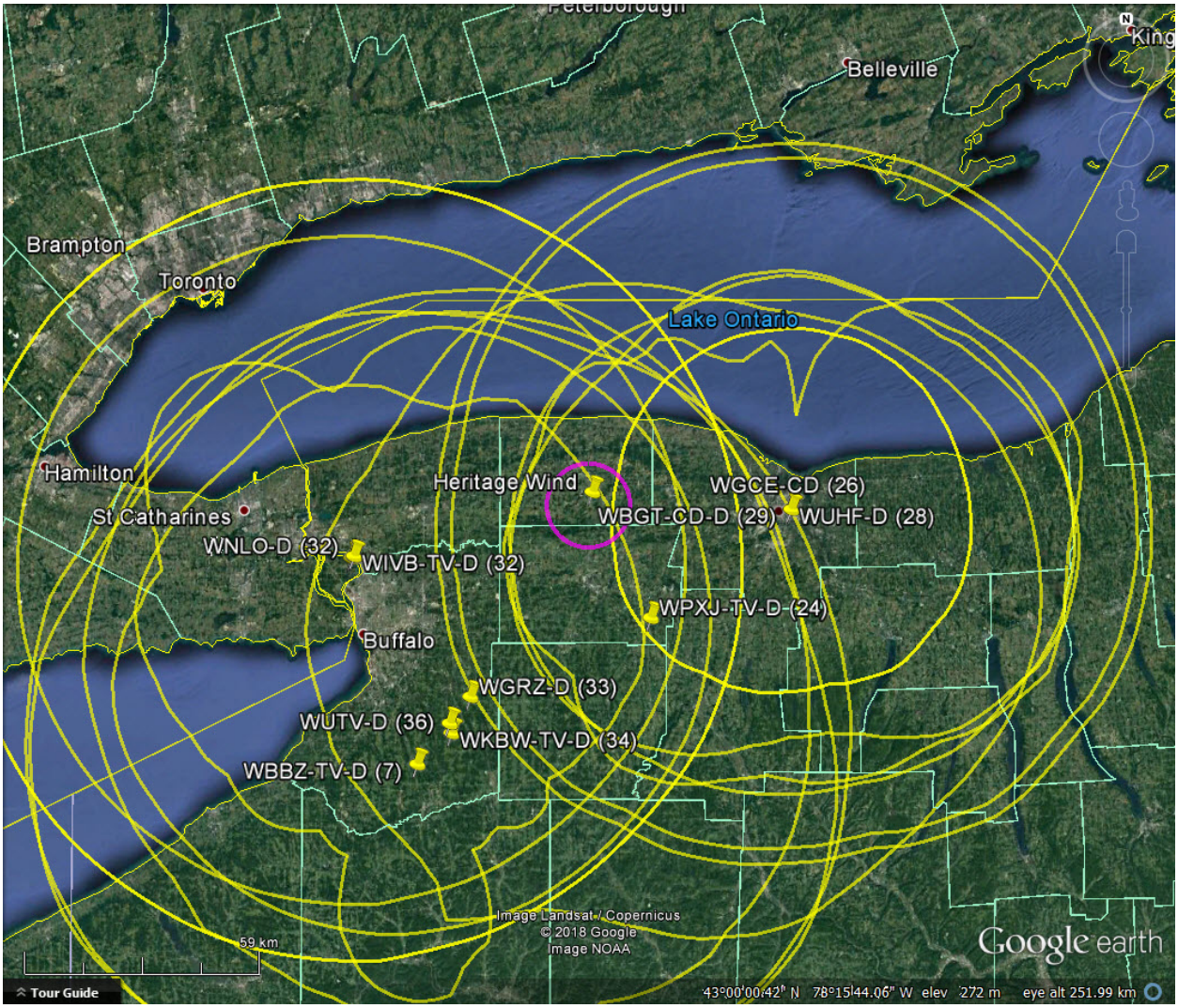

Figure 10 – Predicted Over-the-Air Television Coverage into Heritage Project Area

According to this engineer's calculations, there are approximately 1,275 households within an area likely to be affected (approximately 72 square miles). It is conservatively estimated that 55%, or 701 of the households receive TV programming primarily by satellite dish or cable. This leaves an estimated 574 households relying on transmitted off-the-air TV signals. Based on the 10% criteria described previously, up to 57 TV receiving locations may be affected to varying degrees in the worst-case. Mitigation costs would be approximately $200 per location for an upgraded outdoor antenna, or $400 per year per location for a satellite or cable subscription.

It is the opinion of this consultant that any disruptions to over-the-air TV broadcast signals, if they occur, can be resolved satisfactorily.

4.2 FM Facilities

The full-service FM stations that place a predicted primary signal over at least part of the project area are listed in the following Table 5. The FM stations' service area boundaries are mapped in Figure 11.

Call Sign	Freq. (MHz)	City of License	Power (KW)	Ant. Height (m HAAT)	Dist. (km)	Azimuth (°T)
WCOU	88.3	Attica, NY	11	163	38.7	181.7
WBFO	88.7	Buffalo, NY	50	117	50.4	248.0
WBSU	89.1	Brockport, NY	7.3	53	19.8	77.8
WGCC-FM	90.7	Batavia, NY	0.88	50	18.0	165.8
WXXI-FM	91.5	Rochester, NY	45	134	49.7	94.9
WBEE-FM	92.5	Rochester, NY	50	152	58.2	89.5
WBUF	92.9	Buffalo, NY	76	195	60.9	246.4
WBLK	93.7	Depew, NY	47	154	64.1	240.2
WNED-FM	94.5	Buffalo, NY	96	221	76.0	218.4
WAIO	95.1	Honeoye Falls, NY	50	146	64.7	103.8
WMSX	96.1	Buffalo, NY	47	154	64.1	240.2
WCMF-FM	96.5	Rochester, NY	48	142	49.6	95.0
WGRF	96.9	Buffalo, NY	24	217	60.9	246.4
WPXY-FM	97.9	Rochester, NY	50	142	49.6	95.0
WKSE	98.5	Niagara Falls, NY	46	128	67.8	254.1
WBZA	98.9	Rochester, NY	37	172	42.3	90.5
WDCX-FM	99.5	Buffalo, NY	110	195	76.1	218.3
WDVI	100.5	Rochester, NY	50	146	64.7	103.8
WRMM-FM	101.3	Rochester, NY	27	195	42.3	90.5
WJCA	102.1	Albion, NY	3.7	129	3.9	67.3
WTSS	102.5	Buffalo, NY	110	355	67.3	211.8
WEDG	103.3	Buffalo, NY	49	106	59.6	242.6
WHTT-FM	104.1	Buffalo, NY	50	118	62.6	232.5
WKDL-FM	104.9	Brockport, NY	6	100	33.3	91.9
WYRK	106.5	Buffalo, NY	50	142	64.1	240.2
WLKK	107.7	Wethersfield Township, NY	17	258	61.8	187.4

Table 5 – FM Stations Serving Heritage Project Area

Real-world experience with wind farms has shown that FM broadcast station signals (88 to 108 MHz) are fairly insensitive to wind turbines, even in cases where the FM transmitting antenna is surrounded by turbines that are higher than the FM antenna. Because of the "capture effect" supported by the "discriminator" in FM receivers, significant disruptions to the above facilities are not expected. Although the received signal may vary with the blade rotation at some receiver locations in the immediate area, good quality FM radios should factor out such time-varying signals.

There is one FM broadcast transmitter site inside the project area. It is the transmitter for WJCA and it is located at ASR 1224935 (see Figure 8). The turbine nearest to the WJCA tower, Turbine 28, is 591 meters away. For the reasons given above, this station's signal is not expected to be adversely affected.

4.3 AM Facilities

Large metallic structures such as wind turbines can adversely affect the transmitted signals of AM broadcast stations up to three kilometers away. A search of the FCC's database revealed no AM facilities within the required notification distance of three kilometers from any planned turbine. There should therefore be no reasonable expectations of disruptions in transmitted signals on the AM band due to the presence of the turbines. Occasionally, depending upon ground conditions, local AM receivers may experience slight signal changes due to local effects, but such anomalies are not recognized by the FCC or the standards of good engineering practice as having an unduly adverse effect.

Regarding AM stations located beyond the immediate vicinity of the turbines' footprint, there are no expectations of significant impact by the wind project to the coverages of such AM stations. Below in Table 6 is a list of AM stations whose transmitter sites are up to 30 kilometers in any direction outside the wind turbine footprint.

Call Sign	Freq. (KHz)	City of License	Power (KW Day/Night)	Dist. (km)	Azimuth (°T)
WDCX	990	Rochester, NY	5.0/2.5	27.2	76.5
WHAM	1180	Rochester, NY	50/50	39.3	105.1
WBTA	1490	Batavia, NY	1.0/0.71	22.1	178.8
WRSB	1590	Brockport, NY	1.0/1.0	19.7	83.3

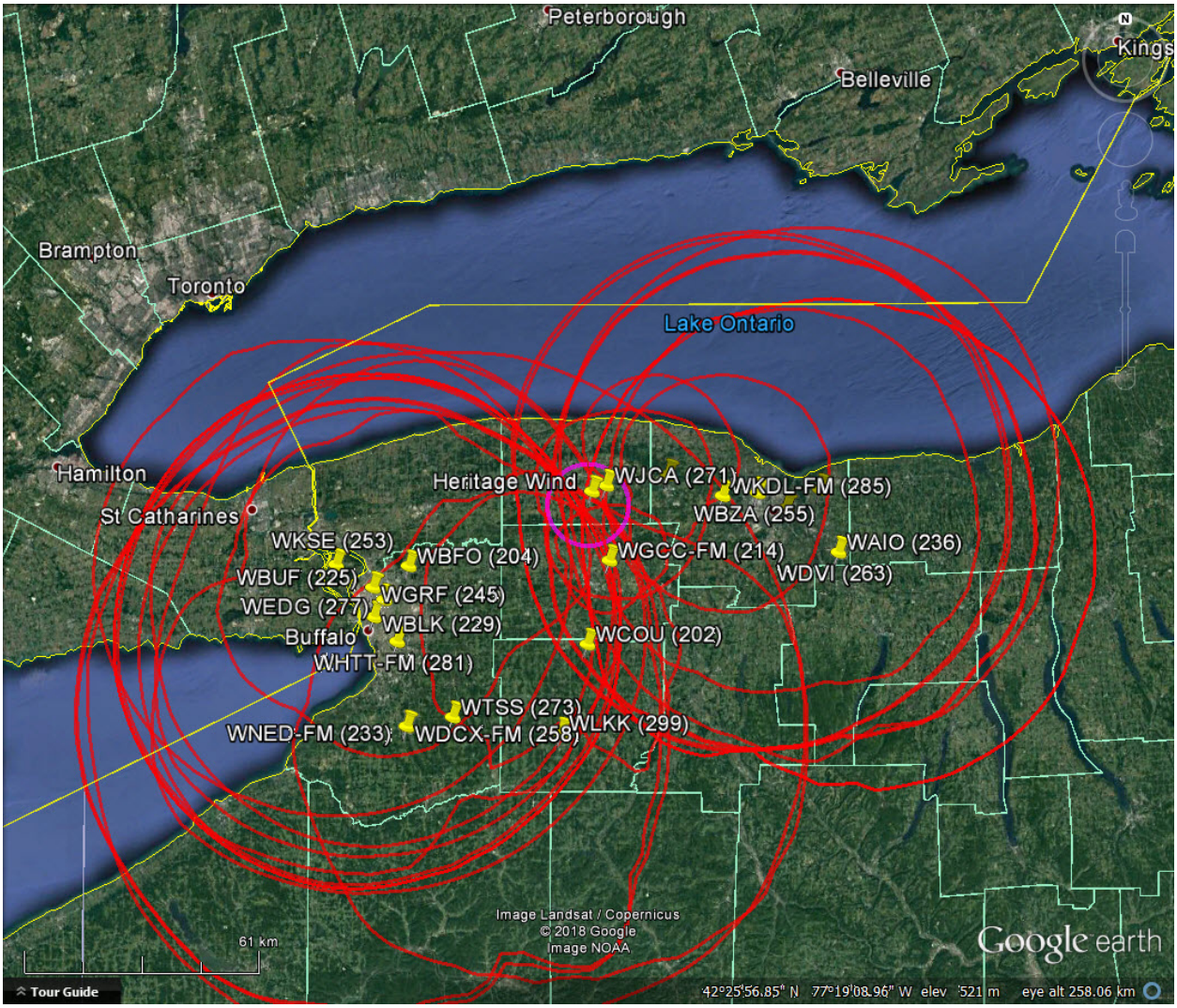

Figure 11 – Predicted FM Radio Coverage into Heritage Project Area

V. MILITARY AIRSPACE, NTIA NOTIFICATION & NEXRAD

5.1 Military Airspace

A preliminary screening of the Heritage wind proposal does not return any likely impacts to military airspace. Confirmation and documentation from the Regional Environmental Coordination Office for the appropriate military branch can be obtained if requested.

5.2 NTIA Notification

Operation of RF frequencies for federal government use is managed by the National Telecommunication Information Agency (NTIA), which is part of the U.S. Department of Commerce. The technical specifications for most government facilities are unavailable to the public. In order to avoid the derailment of the wind energy project due to late objections from a government agency, the NTIA should be notified of the proposed project during pre-construction planning. The NTIA has set in place a review process, wherein the Interdepartmental Radio Advisory Committee (IRAC), consisting of representatives from various government agencies, reviews new proposals for wind turbine projects for impact on government frequencies. In almost all cases, no adverse impact is found, and IRAC usually issues a determination in about 60 days.

On September 13, 2019, this office sent an updated notification of the Heritage wind project to the NTIA, and the NTIA responded with a determination letter on November 7, 2019.

5.3 NEXRAD Weather Radar

It its response, the NTIA identified only one concern about the Heritage wind project, which came from the US Department of Commerce. The wind project is in the notification/consultation zones of the NEXRAD weather radar station near Buffalo, New York. This engineering firm contacted the National Oceanic and Atmospheric Administration (which oversees the operation of all US NEXRAD weather stations) for consultation regarding the Heritage project. A representative of NOAA stated only that “[f]urther contact [with the NOAA] is requested only if the project area changes or the turbine heights increase by 10 meters or more.” Thus, the concern is deemed resolved.

VI. PERSONAL WIRELESS COMMUNICATIONS RECEPTION

There is no credible evidence known by this writer to suggest that reception on wireless handheld devices has been a problem in and around wind turbines. Since wireless phone service is mobile by design, operation of mobile devices in the area should theoretically not be

significantly affected. In addition, wireless networks employ diversity and multiple receivers to compensate for any disruptions at any one location.

Multidirectional signals emitted from any cellular tower that is not in the immediate area of the wind project (within 425 meters of any turbine site) would not be expected to be adversely affected by wind turbines. As stated in Section 3.2, there are no known towers registered with the FCC that are less than 425 meters from any planned turbine. Therefore, the proposed wind project should not disrupt cell phone service in the area.

VII. CONCLUSIONS AND RECOMMENDATIONS

1. Based on the current turbine layout, no proposed turbine would be in conflict with any FCC-licensed microwave path.

2. If an excessive amount of time goes by before the turbines are to be constructed (six months or more), it is recommended that the microwave study be updated in case new paths have been added to the FCC's database.

3. No land mobile or public safety transmitting stations are expected to be adversely affected, assuming that their transmitters are located exactly as per their FCC licenses.

4. Over-the-air TV interference due to operating wind turbines may occur but is not expected to be an intractable problem. Effective mitigation methods to resolve any interference that may occur are available, with satellite or cable service installation providing the worst-case solution. No AM or FM radio broadcast facilities are likely to be affected.

Respectfully Submitted,

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December 31, 2019