



AVIAN RESOURCES EVALUATION

May 20, 2020

To: Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Re: Proposed Plattsville Relo CT, 5151 Park Avenue, Fairfield, CT
APT Project No. CT14110580

Verizon Wireless proposes to construct a new wireless telecommunications facility ("Facility") at 5151 Park Avenue in Fairfield, Connecticut (the "Host Property"). The Host Property consists of an approximately 60.21-acre parcel that is part of the Sacred Heart University's campus ("SHU" or the "University"). The area proposed for the Facility is located in the northwestern corner of the Host Property within a cleared and disturbed area ("Site"). The Facility would include a 130-foot tall steel monopole within a an approximate 50-foot by 50-foot fenced equipment compound. The Facility is being developed to relocate existing Verizon Wireless equipment from a building located at 175 Jefferson Street on the main campus of SHU.

The purpose of this evaluation is to document the proposed Facility's proximity to avian resource areas and evaluate its compliance with recommended guidelines of the United States Fish and Wildlife Service ("USFWS") for minimizing the potential for telecommunications towers to impact bird species.

All-Points Technology Corporation, P.C. ("APT") reviewed several publicly available sources of avian data for the state of Connecticut to provide the following information with respect to potential impacts on migratory birds associated with the proposed development. This desktop analysis and attached graphics identify avian resources and their proximities to the Host Property. Information within an approximate 3-mile radius of the Host Property is graphically depicted on the attached Avian Resources Map. Some of the avian data referenced herein are not located in proximity to the Host Property and are therefore not visible on the referenced map due to its scale. In those cases, the distances separating the Host Property from the resources are identified in the discussions below.

Proximity to Important Bird Areas

The National Audubon Society has identified 27 Important Bird Areas ("IBAs") in the state of Connecticut. IBAs are sites that provide essential habitat for breeding, wintering, and/or migrating birds. To achieve this designation, an IBA must support species of conservation concern, restricted-range species, species vulnerable due to concentration in one general habitat type or biome, or species

vulnerable due to their occurrence at high densities as a result of their congregatory behavior.¹ The closest IBA to the Host Property is The Nature Conservancy's Devil's Den Preserve in Easton, located approximately 4.4 miles to the northwest. This preserve is The Nature Conservancy's largest contiguous preserve in Connecticut, and is part of the largest tract of protected land in densely developed Fairfield County. Devil's Den supports large populations of all of Connecticut's forest interior nesting bird species. Due to its distance from the Site, this IBA would not experience an adverse impact from the proposed development of the Facility.

Supporting Migratory Bird Data

Beyond Audubon's IBAs, the following analysis and attached graphics identify several additional avian resources and their proximities to the Host Property. Although these data sources may not represent habitat indicative of IBAs, they may indicate possible bird concentrations² or migratory pathways.

Critical Habitat

Connecticut Critical Habitats depict the classification and distribution of 25 rare and specialized wildlife habitats in the state. They represent a compilation of ecological information collected over many years by state agencies, conservation organizations and individuals. These habitats range in size from areas less than one acre to areas that are tens of acres in extent. The Connecticut Critical Habitats information can serve to highlight ecologically significant areas and to target areas of species diversity for land conservation and protection but may not necessarily be indicative of habitat for bird species. The nearest Critical Habitat to the proposed Facility is a dry subacidic forest area associated with Tungsten Mine Park, which is located approximately 4.7 miles to the northeast. Due to its distance from the Site, this Critical Habitat would not experience an adverse impact from the proposed development of the Facility.

Avian Survey Routes and Points

Breeding Bird Survey Route

The North American Breeding Bird Survey is a cooperative effort between various agencies and volunteer groups to monitor the status and trends of North American bird populations. Routes are randomly located to sample habitats that are representative of an entire region and do not necessarily represent concentrations of avifauna or identification of critical avian habitats. Each year during the height of the avian breeding season (June for most of the United States), participants skilled in avian identification collect bird population data along roadside survey routes. Each survey route is approximately 24.5 miles long and contains 50 stops located at 0.5-mile intervals. At each stop, a three-minute count is conducted. During each count, every bird seen or heard within a 0.25-mile radius is recorded. The resulting data is used by conservation managers, scientists, and the general public to estimate population trends and relative abundances and to

¹ http://web4.audubon.org/bird/iba/iba_intro.html

² "Bird concentrations" is related to the USFWS *Revised Voluntary Guidelines for communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning* (September 27, 2013) analysis provided at the end of this document.

assess bird conservation priorities. The nearest point to the host Property along a survey route is associated with the Long Hill Breeding Bird Survey Route (Route #18013), which begins approximately 2.1 miles to the north on the Easton/Trumbull town line and generally winds its way north through Monroe, Newtown, and Southbury before terminating in Roxbury. Since bird survey routes represent randomly selected data collection areas, they do not necessarily represent a potential restriction to development projects. In this case, its distance from the Site would negate any potential adverse impact resulting from development of the Facility.

Hawk Watch Site

The Hawk Migration Association of North America ("HMANA") is a membership-based organization committed to the conservation of raptors through the scientific study, enjoyment and appreciation of raptor migration. HMANA collects hawk count data from almost 200 affiliated raptor monitoring sites throughout the United States, Canada and Mexico, identified as "Hawk Watch Sites." In Connecticut, Hawk Watch Sites are typically situated on prominent hills and mountains that tend to concentrate migrating raptors. The nearest Hawk Watch Site, Flirt Hill, is located in Easton, approximately 5.1 miles to the northwest of the proposed Facility.

Most hawks migrate during the day (diurnal) to take advantage of two theorized benefits: (1) diurnal migration allows for the use of updrafts or rising columns of air, called thermals, to gain lift without flapping thereby reducing energy loss; and (2) day migrants can search for prey and forage as they migrate.

Based on the distance separating this Hawk Watch Site and hawk migration behavior occurring during the daytime under favorable weather conditions when thermals form, no adverse impacts to migrating hawks are anticipated from development of the Facility.

Bald Eagle Survey Route

Bald Eagle Survey Routes consist of locations of midwinter bald eagle counts from 1986 to 2005 with an update provided in 2008. This survey was initiated in 1979 by the National Wildlife Federation. The associated database includes information on statewide, regional and national trends. Survey routes are included in the database only if they were surveyed consistently in at least four years and where at least four eagles were counted in a single year. The nearest Bald Eagle Survey Route is the Aspetuck and Saugatuck Reservoir Survey Route, located approximately 3.7 miles northwest of the Site.

Bald eagle migration patterns are complex, dependent on age of the individual, climate (particularly during the winter) and availability of food.³ Adult birds typically migrate alone and generally as needed when food becomes unavailable, although concentrations of migrants can occur at communal feeding and roost sites. Migration typically occurs during the middle of day (10:30–17:00) as thermals provide opportunities to soar up with limited energy expense; Bald

³ Buehler, David A. 2000. Bald Eagle (*Haliaeetus leucocephalus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/506> [Accessed 09/09/13].

Eagle migration altitudes are estimated to average 1,500 to 3,050 meters by ground observers.⁴ Four adults tracked by fixed-wing aircraft in Montana averaged 98 km/d during spring migration and migrated at 200 to 600 meters above the ground (McClelland et al. 1996).⁵

The USFWS's *National Bald Eagle Management Guidelines* (May 2007) recommend a 660-foot buffer to bald eagle nests if the activity will be visible from the nest with an additional management practice recommendation of retaining mature trees and old growth stands, particularly within 0.5 mile from water. No known bald eagle nests occur in the vicinity of the Host Property.

No adverse impacts to migrating bald eagle are anticipated from development of the Facility. This conclusion is based on the relatively short (130-foot) height of the Facility, eagle migration patterns during the daytime under favorable weather conditions when thermals form and compliance with USFWS bald eagle management guidelines.

Flyways

The Host Property is located in Fairfield County, approximately 4.5 miles north of Long Island Sound. The Connecticut coast lies within the Atlantic Flyway, one of four generally recognized regional primary migratory bird flyways (Mississippi, Central and Pacific being the others). This regional flyway is used by migratory birds travelling to and from summering and wintering grounds. The Atlantic Flyway is particularly important for many species of migratory waterfowl and shorebirds, and Connecticut's coast serves as a vital stopover habitat. Migratory land birds also stop along coastal habitats before making their way inland. Smaller inland migratory flyways ("secondary flyways") are often concentrated along major riparian areas as birds use these valuable stopover habitats to rest and refuel as they make their way further inland to their preferred breeding habitats. The Connecticut Migratory Bird Stopover Habitat Project (Stokowski, 2002)⁶ identified potential flyways along the Housatonic, Naugatuck, Thames, and Connecticut Rivers. This study paralleled a similar earlier study conducted by the Silvio O. Conte National Fish & Wildlife Refuge (Neotropical Migrant Bird Stopover Habitat Survey⁷), which consisted of collection of migratory bird data along the Connecticut River and the following major Connecticut River tributaries: Farmington, Hockanum, Scantic, Park, Mattabesset, Salmon, and Eight Mile Rivers. Of these potential flyways, the nearest to the Host Property is the Housatonic River, located approximately 7 miles to the southeast. These major riparian corridors may provide secondary flyways as they likely offer more food and protection than more exposed upland sites, particularly during the spring migration⁸. The Mill River riparian corridor, located 2.9 miles southeast of the Host

⁴ Harmata, A. R. 1984. Bald Eagles of the San Luis valley, Colorado: their winter ecology and spring migration. Ph.D. Thesis. Montana State Univ. Bozeman.

⁵ McClelland, B. R., P. T. McClelland, R. E. Yates, E. L. Caton, and M. E. McFadden. 1996. Fledging and migration of juvenile Bald Eagles from Glacier National Park, Montana. *J. Raptor Res.* 30:79-89.

⁶ Stokowski, J.T. 2002. Migratory Bird Stopover Habitat Project Finishes First Year. *Connecticut Wildlife*, November/December 2002. P.4.

⁷ The Silvio O. Conte National Fish & Wildlife Refuge Neotropical Migrant Bird Stopover Habitat Survey <http://www.science.smith.edu/stopoverbirds/index.html>

⁸ The Silvio O. Conte National Fish & Wildlife Refuge Neotropical Migrant Bird Stopover Habitat Survey. http://www.science.smith.edu/stopoverbirds/Chapter5_Conclusions&Recommendations.html

Property, is not identified as a potential flyway but potentially forms a secondary flyway as birds move northward from the Housatonic River corridor during the spring migration.

Siting of tower structures within flyways can be a concern, particularly for towers much taller than that proposed, and even more particularly for taller towers with guy wires and lighting. The majority of studies on bird mortality associated with towers focuses on very tall towers (greater than 1000 feet above grade), illuminated with non-flashing lights, and guyed. These types of towers, particularly if sited in major migratory pathways, can result in significant bird mortality (Manville, 2005)⁹. The proposed Facility is not this type of tower, being an unlit and unguyed monopole structure only 130 feet in height. More recent studies of short communication towers (<300 feet) reveal that they rarely kill migratory birds¹⁰. Studies of mean flight altitude of migrating birds reveal flight altitudes of 410 meters (1350 feet), with flight altitudes on nights with bad weather between 200 and 300 meters above ground level (656 to 984 feet)¹¹.

No adverse impacts to migrating bird species are anticipated with development of the Facility, based on its design (unlit and unguyed), relatively short (130-foot) height, and the distances separating the Host Property from the potential Housatonic and Mill River flyways. The design and height of the proposed Facility would also mitigate the potential for migratory bird impacts should the Mill River be used as a secondary flyway.

Waterfowl Focus Areas

The Atlantic Coast Joint Venture ("ACJV") is an affiliation of federal, state, regional and local partners working together to address bird conservation planning along the Atlantic Flyway. The ACJV has identified waterfowl focus areas recognizing the most important habitats for waterfowl along the Atlantic Flyway. Connecticut contains several of these waterfowl focus areas. The nearest waterfowl focus area to the Host Property is the Lower Housatonic Great Meadows area, located approximately 5.6 miles to the southeast. Please refer to the attached Connecticut Waterfowl Focus Areas Map. Based on the distance of this waterfowl focus area to the Host Property, no impact to migratory waterfowl would result from development of the proposed Facility.

⁹ Manville, A.M. II. 2005. Bird strikes and electrocutions at power lines, communications towers, and wind turbines: state of the art and state of the science - next steps toward mitigation. Bird Conservation Implementation in the Americas: Proceedings 3rd International Partners in Flight Conference 2002. C.J. Ralph and T.D. Rich, editors. USDA Forest Service General Technical Report PSW-GTR-191. Pacific Southwest Research Station, Albany CA. pp. 1-51-1064.

¹⁰ Kerlinger, P. 2000. Avian Mortality at Communication Towers: A Review of Recent Literature, Research, and Methodology. Prepared for U.S. Fish and Wildlife Service Office of Migratory Bird Management.

¹¹ Mabee, T.J., B.A. Cooper, J.H. Plissner, D.P. Young. 2006. Nocturnal bird migration over an Appalachian ridge at a proposed wind power project. Wildlife Society Bulletin 34:682-690.

DEEP Migratory Waterfowl Data

The Connecticut Department of Energy and Environmental Protection ("DEEP") created a Geographic Information System ("GIS") data layer in 1999 identifying concentration areas of migratory waterfowl at specific locations in Connecticut. The intent of this data layer is to assist in the identification of migratory waterfowl resource areas in the event of an oil spill or other condition that might be a threat to waterfowl species. This data layer identifies conditions at a particular point in time and has not been updated since 1999.

The nearest migratory waterfowl area, Ash Creek in Bridgeport to Fairfield, is located approximately 4.5 miles to the south of the Host Property. The associated species are identified as American black duck, gadwall, mallard, and green wing teal. Based on the distance of this migratory waterfowl area to the Host Property, no impact to migratory waterfowl would result from development of the proposed Facility.

DEEP Natural Diversity Data Base

DEEP's Natural Diversity Data Base ("NDDB") program performs hundreds of environmental reviews each year to determine the impact of proposed development projects on state listed species and to help landowners conserve the state's biodiversity. State agencies are required to ensure that any activity authorized, funded or performed by a state agency does not threaten the continued existence of endangered or threatened species. Maps have been developed to serve as a pre-screening tool to help applicants determine if there is a potential impact to state listed species.

The NDDB maps represent approximate locations of endangered, threatened and special concern species and significant natural communities in Connecticut. The locations of species and natural communities depicted on the maps are based on data collected over the years by DEEP staff, scientists, conservation groups, and landowners. In some cases, an occurrence represents a location derived from literature, museum records and/or specimens. These data are compiled and maintained in the NDDB. The general locations of species and communities are symbolized as shaded areas on the maps. Exact locations have been masked to protect sensitive species from collection and disturbance and to protect landowners' rights whenever species occur on private property.

No known areas of state-listed species are currently depicted on the most recent DEEP NDDB Maps at or within a 0.25 mile of the location of the Site. Therefore, in accordance with the DEEP's and Connecticut Siting Council's NDDB review policy, consultation with DEEP is not required. As a result, the proposed development is not anticipated to adversely impact any state threatened, endangered or species of special concern.

USFWS Communications Towers Compliance

In August 2016, the USFWS prepared its *Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning*. These suggested best practices were developed to assist tower companies in developing their communication systems in a

way that minimizes the risk to migratory birds and threatened and endangered species. The following avoidance and minimization measures, when used comprehensively, are recommended by USFWS to reduce the risk of bird mortality at communication towers. APT offers the following responses to each of the USFWS recommendations which are abridged from the original document.

1. *Collocation of the communications equipment on an existing communication tower or other structure (e.g., billboard, water and transmission tower, distribution pole, or building mount) is strongly recommended. This recommendation is intended to reduce the number of towers across the landscape.*

Collocation opportunities on existing towers or non-tower structures are not available in the area while achieving the required radio frequency ("RF") coverage objectives.

2. *Contact with USFWS Field Office. Communicate project plans to nearest USFWS Field Office.*

APT completed consultation protocols in accordance with Federal Communications Commission ("FCC") rules implementing the National Environmental Policy Act ("NEPA") and Section 7 of the Endangered Species Act through the USFWS Information, Planning, and Conservation System ("IPaC"). Based on the results of the IPaC review, one federally-listed threatened species is known to occur in the vicinity of the host property: northern long-eared bat ("NLEB"; *Myotis septentrionalis*). As a result of this preliminary finding, APT performed an evaluation to determine if development of the proposed Facility would result in a likely adverse effect to NLEB.

The Host Property is not within 150 feet of a known occupied maternity roost tree and is not within 0.25 mile of a known NLEB hibernaculum.¹² The nearest NLEB habitat resource to the proposed activity is located in Greenwich, approximately 21 miles to the southwest. Therefore, this project would not adversely affect NLEB.

3. *Placement. All new towers should be sited to minimize environmental impacts to the maximum extent practicable.*

- a. *Place new towers within existing "antenna farms" (i.e., clusters of towers) when possible.*

There are no existing "antenna farms" in the Site vicinity that would satisfy the RF coverage objectives.

- b. *Select already degraded areas for tower placement.*

The Site is located on a parcel that is already cleared and disturbed.

- c. *Towers should not be sited in or near wetlands, other known bird concentration areas (e.g., state or federal refuges, staging areas, rookeries, and Important Bird Areas), or in known migratory bird movement routes, daily movement flyways, areas of breeding concentration, in habitat of threatened or endangered species, or key habitats for Birds of Conservation Concern.*

¹² Based on review of DEEP's publicly-available *Northern long-eared bat areas of concern in Connecticut to assist with Federal Endangered Species Act Compliance* mapping (dated 2/1/16) and correspondence with NDDB.

The Site is not within wetlands, a known bird concentration area, migratory or daily movement flyway, or habitat of threatened/endangered species; nor would the development result in fragmentation of a core forest habitat that could potentially provide habitat for Birds of Conservation Concern.

d. Towers should avoid ridgelines, coastal areas, wetlands or other known bird concentration areas.

The Site is not located within ridgeline areas, coastal areas, wetlands or other known bird concentration areas.

e. Towers and associated facilities should be designed, sited, and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint". In addition, several shorter, un-guyed towers may be preferable to one, tall guyed, lit tower.

The proposed Facility will be sited, designed, and constructed to accommodate proposed equipment and to allow for future collocations within the smallest footprint possible, thus minimizing habitat fragmentation or the creation of barriers or excessive disturbance. The proposed Facility would consist of a 130-foot tall monopole structure, which requires neither guy wires nor lighting and is therefore consistent with USFWS' environmentally preferred "gold standard".

4. Construction. During construction, the following considerations can reduce the risk of take of birds:

a. Schedule all vegetation removal and maintenance (e.g., general landscaping activities, trimming, grubbing) activities outside of the peak bird breeding season to reduce the risk of bird take.

The Site is located within an existing cleared area, therefore vegetation removal will be minimal.

b. When vegetation removal activities cannot avoid the bird breeding season, conduct nest clearance surveys:

- i. Surveys should be conducted no more than five days prior to the scheduled activity to ensure recently constructed nests are identified;*
- ii. Timing and dimensions of the area to be surveyed vary and will depend on the nature of the project, location, and expected level of vegetation disturbance; and*
- iii. If active nests are identified within or in the vicinity of the project site, avoid the site until nestlings have fledged or the nest fails. If the activity must occur, establish a buffer zone around the nest and no activities will occur within that zone until nestlings have fledged.*

Two (2) trees require removal as part of this project. While avoidance of tree removal during peak bird breeding season will be attempted where feasible, due to the duration and ambiguity of this window, it may not be possible.

c. Prevent the introduction of invasive plants during construction to minimize vegetation community degradation by:

- i. Use only native and local (when possible) seed stock for all temporary and permanent vegetation establishment; and*
- ii. Use vehicle wash stations prior to entering sensitive habitat areas to prevent accidental introduction of non-native plants.*

No plants identified by the Connecticut Invasive Species Council as invasive plant species will be used for either temporary or permanent vegetation establishment. No vehicle wash stations are required since no sensitive habitat areas are located at the Site.

5. *Tower Design. Tower design should consider the following attributes:*

- a. *Tower Height. It is recommended that new towers should be not more than 199 ft. above ground level (AGL). This height increases the mean free airspace between the top of the tower and average bird flight height, even in weather conditions with reduced cloud ceiling;*
- b. *Guy Wires. We recommend using free standing towers such as lattice towers or monopole structures.*
- c. *Lighting System. Lights are a primary source of bird aggregation around towers, thus minimizing all light is recommended, including:*
 - i. *No tower lighting is the preferred option if Federal Aviation Administration (FAA) regulations and lighting standards (FAA 2015, Patterson 2012) permit.*
 - ii. *If taller (> 199 ft. AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used.*
 - iii. *Security lighting for on-ground facilities, equipment, and infrastructure should be motion or heat-sensitive, down-shielded, and of a minimum intensity to reduce nighttime bird attraction and eliminate constant nighttime illumination while still allowing safe nighttime access to the site.*

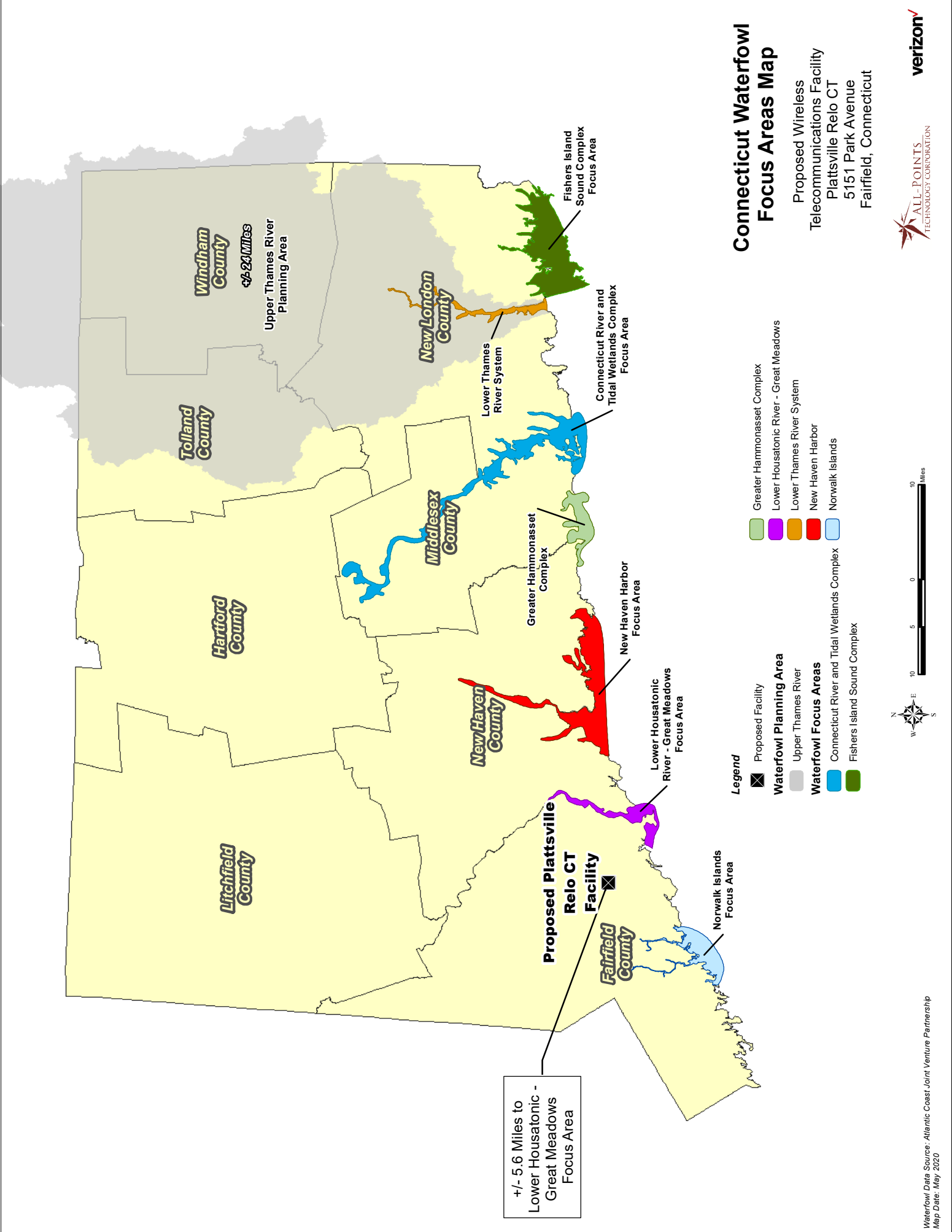
The proposed Facility would consist of a 130-foot tall monopole structure, which requires neither guy wires nor lighting and is therefore consistent with USFWS' environmentally preferred "gold standard". Security lighting for on-ground facilities would be down-shielded using Dark Sky compliant fixtures set on motion sensor with timer to eliminate constant nighttime illumination.

Summary and Conclusions

Based on the results of this desk-top evaluation, no migratory bird species are anticipated to be impacted by the proposed development. The Site is not proximate to an Important Bird Area and the proposed Facility would comply with the USFWS guidelines for minimizing the potential impacts to bird species.

Figures

- Avian Resources Map
- Connecticut Waterfowl Focus Areas Map



+/- 5.6 Miles to Lower Housatonic - Great Meadows Focus Area

Connecticut Waterfowl Focus Areas Map

Proposed Wireless Telecommunications Facility
 Plattsville Relo CT
 5151 Park Avenue
 Fairfield, Connecticut

- Legend**
- ☒ Proposed Facility
 - Waterfowl Planning Area**
 - Upper Thames River
 - Waterfowl Focus Areas**
 - Greater Hammonasset Complex
 - Lower Housatonic River - Great Meadows
 - Lower Thames River System
 - New Haven Harbor
 - Connecticut River and Tidal Wetlands Complex
 - Fishers Island Sound Complex

