ALL-POINTS TECHNOLOGY CORPORATION

WETLAND INVESTIGATION

January 6, 2015

Verizon Wireless
99 East River Drive
East Hartford, CT 06108

APT Project No.: CT1412030

Attn: Alexandria Carter

Re: Plymouth West Relo Facility
33 Keegan Road
Plymouth, Connecticut

Dear Ms. Carter,

All-Points Technology Corporation, P.C. ("APT") understands that a wireless telecommunications facility ("Facility") is proposed by Verizon Wireless at 33 Keegan Road in Plymouth, Connecticut ("Subject Property"). At your request, Matthew Gustafson, a Connecticut registered Soil Scientistwith APT conducted an inspection of the Subject Property on May 13, 2014 to determine the presence or absence of wetlands and watercourses within approximately 200 feet of proposed development activities ("Study Area"). The delineation methodology followed was consistent with both the Connecticut Inland Wetlands and Watercourses Act (IWWA) and the *Corps of Engineers Wetland Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, Version 2.0 (January 2012). The results of this wetland investigation are provided below.

Site and Project Description:

The Subject Property consists of an approximately 12.4-acre undeveloped wooded parcel. The area proposed for the wireless communications Facility is located at a local high point on a shallow to bedrock 'nob' in the general west-central portion of the subject property. The area is currently dominated by mature hardwood forest characterized as an even-aged oak dominant forest. Access to the Facility is proposed to be gained via a steep gravel access off Keegan Road, traversing west through mature edge hardwood forest. The Study Area is dominated by mature upland hardwood forests with complexes of forested hillside seep wetland systems intermingled with the bedrock controlled upland glacial till habitat. The surrounding land use generally consists of residential development to the north, south, and distant west and large core forest blocks to the east.

One wetland area was delineated within the Study Area consisting of forested bordering wetlands to an unnamed perennial stream, located approximately 130 feet west of the proposed access entrance, across Keegan Road and off the Subject Property. Please refer to the enclosed Wetland Delineation Map for the approximate location of the identified wetland resource area. Wetlands were marked with pink and blue plastic flagging tape numbered with the following sequence: WF

1-01 to 1-19. General weather conditions encountered during the May inspection included high 50° F temperatures with partly cloudy skies.

Regulation of Wetlands:

Wetlands and watercourses are regulated by local, state and federal regulations, with each regulatory agency differing slightly in their definition and regulatory authority of resource areas, as discussed below. The proposed Facility is under the exclusive jurisdiction of the State of Connecticut Siting Council and therefore exempt from local regulation, although local wetland regulations are considered by the Siting Council. If wetlands are identified on the Subject Property and direct impact is proposed, those wetlands may be considered Waters of the United States and therefore the activity may also be subject to jurisdiction by the U.S. Army Corps of Engineers ("ACOE") New England District.

Town of Plymouth: The Town of Plymouth regulates activities within wetlands and watercourses and within 100 feet of wetlands and watercourses through administration of the Connecticut Inland Wetlands and Watercourses Act (IWWA).

State of Connecticut: **Freshwater Wetlands:** The IWWA requires the regulation of activities affecting or having the potential to affect wetlands under Sec. 22a-36 through 22a-45 of the Connecticut General Statutes. The IWWA is administered through local municipalities. The IWWA defines wetlands as areas of poorly drained, very poorly drained, floodplain, and alluvial soils, as delineated by a soil scientist. Watercourses are defined as bogs, swamps, or marshes, as well as lakes, ponds, rivers, streams, etc., whether natural or man-made, permanent or intermittent. Intermittent watercourse determinations are based on the presence of a defined permanent channel and bank, and two of the following characteristics: (1) evidence of scour or deposits of recent alluvium or detritus; (2) the presence of standing or flowing water for a duration longer than a particular storm incident; and (3) the presence of hydrophytic vegetation.

ACOE: The U.S. Army Corps of Engineers regulates the discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act. Waters of the United States are navigable waters, tributaries to navigable waters, wetlands adjacent to those waters, and/or isolated wetlands that have a demonstrated interstate commerce connection. The ACOE Wetlands Delineation Manual defines wetlands as "[t]hose areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do

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support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been approved by the ACOE.

Soil Description:

Soil types encountered throughout the Study Area were generally consistent with digitally available soil survey information obtained from the Natural Resources Conservation Service ("NRCS")[1]. Wetland soils field identified consist of Ridgebury, Liecester and Whitman soils and Scorboro muck. The non-wetland soils were examined along the wetland boundary and more distant upland areas during the delineation, including the proposed Facility location. They are dominated by Charlton-Chatfield complex, Hollis-Chatfield-Rock outcrop complex. Detailed descriptions of wetland and upland soil types are provided below.

Wetland Soils:

The **Leicester** series consists of very deep, poorly drained loamy soils formed in friable till. They are nearly level or gently sloping soils in drainageways and low-lying positions on hills. Depth to bedrock is commonly more than 6 feet. Rock fragments range from 5 to 35 percent by volume to a depth of 40 inches and up to 50 percent below 40 inches. Leicester soils have a water table at or near the surface much of the year.

The **Ridgebury** series consists of very deep, somewhat poorly and poorly drained soils formed in glacial till derived mainly from granite, gneiss and schist. They are nearly level to gently sloping soils in low areas in uplands. This series includes phases that are poorly drained and the wetter part of somewhat poorly drained. A perched, fluctuating water table above the dense till saturates the solum to or near the surface for 7 to 9 months of the year.

The **Scarboro** series consists of very deep, very poorly drained soils on outwash plains, deltas, and terraces. They are nearly level soils in depressions. The water table is at or near the surface for 6 to 12 months of the year, and many areas are ponded for short periods. This is a mineral soil, but it has a mucky surface horizon.

The **Whitman** series consists of very deep, very poorly drained soils formed in glacial till derived mainly from granite, gneiss, and schist. They are nearly level or gently sloping

[1] NRCS Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app/, accessed on December 29, 2014.

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soils in depressions and drainageways on uplands. Depth to dense till is 12 to 30 inches. Some pedons have organic horizons overlying the A horizon. They are fibric hemic or sapric material, and are up to 5 inches thick. Whitman soils are found on nearly level and gently sloping soils in depressions and in drainage ways of glacial uplands. Slopes are typically 0 to 2 percent but range up to 8 percent where wetness is due to seepage water. This soil is very poorly drained. A perched water table, or excess seepage water, is at or near the surface for about 9 months of the year.

Upland Soils:

The **Charlton** series is a very deep, well drained loamy soil formed in friable till. They are nearly level to very steep soils on till plains and hills. Depth to bedrock and the seasonal high water table is commonly more than 6 feet.

The **Chatfield** series consists of moderately deep, well drained, and somewhat excessively drained soils formed in till. They are nearly level to very steep soils on glaciated plains, hills, and ridges. Slope ranges from 0 to 70 percent. Crystalline bedrock is at depths of 20 to 40 inches. The soils formed in a moderately thick mantle of glacial till overlying granite, gneiss, or schist bedrock. Rock outcrops are rare to common and are limited to the more resistant bedrock.

The **Hollis** series consists of shallow, well drained and somewhat excessively drained soils formed in a thin mantle of glacial till derived mainly from gneiss, schist, and granite. They are nearly level to very steep upland soils on bedrock controlled hills and ridges. Depth to hard bedrock ranges from 10 to 20 inches. Bedrock outcrops vary from few to many.

Wetlands Discussion:

Wetland 1 Classification Summary:

Wetland 1[2] (WF 1-01 to 1-19)	**System** Palustrine	**Subsystem**	**Class** Forested	**Subclass** Broad-leaved Deciduous	**Water Regime** Saturated	**Special Modifier**
Watercourse Type (unnamed)	Perennial ☒	Intermittent ☐	Tidal ☐	**Special Aquatic Habitat** (None)	Vernal Pool ☐	Other ☐

[2] Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online. http://www.npwrc.usgs.gov/resource/wetlands/classwet/index.htm - contents.

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Wetland 1 Description:

Wetland 1 is a complex of hillside seep wetland systems feeding a perennial stream system that generally flows north to south. This stream outfalls from a culvert under the crossing of Hoadley Xing and Keegan Road and is primarily forested for the entirety of the delineated reaches. The stream is characterized as generally narrow with a well formed bank and channel. The stream bottom is composed primarily of sandy material with intermixed small cobble. Bedrock and large till stone fragments can be found jutting form the bank edges intermittently. Road drainage from Keegan Road outfalls from a storm water culvert into Wetland 1 via a steeply eroding swale. Bordering wetlands to the perennial stream are variable, with the general width increasing as it progressivley drains farther away from the point outfall under Hoadley Xing/Keegan Road. Similarly, stream structure increases as the stream flows away from the discharge point, resulting in increased downed coarse woody debris, increased riffle/pool geomorphology, and bordering vegetative buffer.

Wetland 1 Dominant Vegetation:

Dominant Wetland Species Common Name (Latin Name)	**Dominant Adjacent Upland Species** Common Name (Latin Name)
Skunk Cabbage (Symplocarpus foetidus)	Canada Mayflower (Maianthemum
	Mountain Laurel (Kalmia latifolia)
	Northern Red Oak (Quercus rubra)
	Black Birch (Betula lenta)
	Garlic Mustard* (Alliaria petiolata)
	Black Cherry (Prunus serotina)

Summary:

Based on a review of the Site/Site Survey Plans prepared by Centek Engineering (Sheet No. ENS-1, latest revision date 12/15/14), no direct impact to wetlands is associated with the proposed Verizon Wireless development. The proposed Facility is located ±130 feet from the nearest wetland (edge of access entrance to wetland flag 1-10).

No temporary impacts to nearby wetland resources from construction activities are anticipated provided sedimentation and erosion controls are designed, installed and maintained during construction activities in accordance with the 2002 Connecticut Guidelines For Soil Erosion and Sediment Control. Short term and long term secondary impacts to nearby wetland areas are also mitigated by the fact the proposed access drive drainage will continue to be captured by the existing storwater control system on Keegan Road. Long term secondary impacts to wetland resources possibly associated with the operation of the Facility are minimized by the fact the development is unmanned, it minimizes the creation of impervious surfaces with the use of a gravel access drive and gravel compound, and it creates minimal traffic. APT recommends that stormwater generated by the proposed development be properly handled and treated in accordance with the 2004 Connecticut Stormwater Quality Manual.

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Provided these recommendations are implemented, it is APT's opinion that the proposed Verizon development will not result in a likely adverse impact to wetland resources.

If you have any questions regarding the above-referenced information, please feel free to contact me by telephone at (860) 663-1697 Ext 202 or via email at mgustafson@allpointstech.com.

Sincerely,

All-Points Technology Corporation, P.C.

Delineation Performed by:

Matthew Gustafson
Registered Soil Scientist

Delineation Reviewed by:

Dean Gustafson
Professional Soil Scientist

Enclosures

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Wetland Delineation Map

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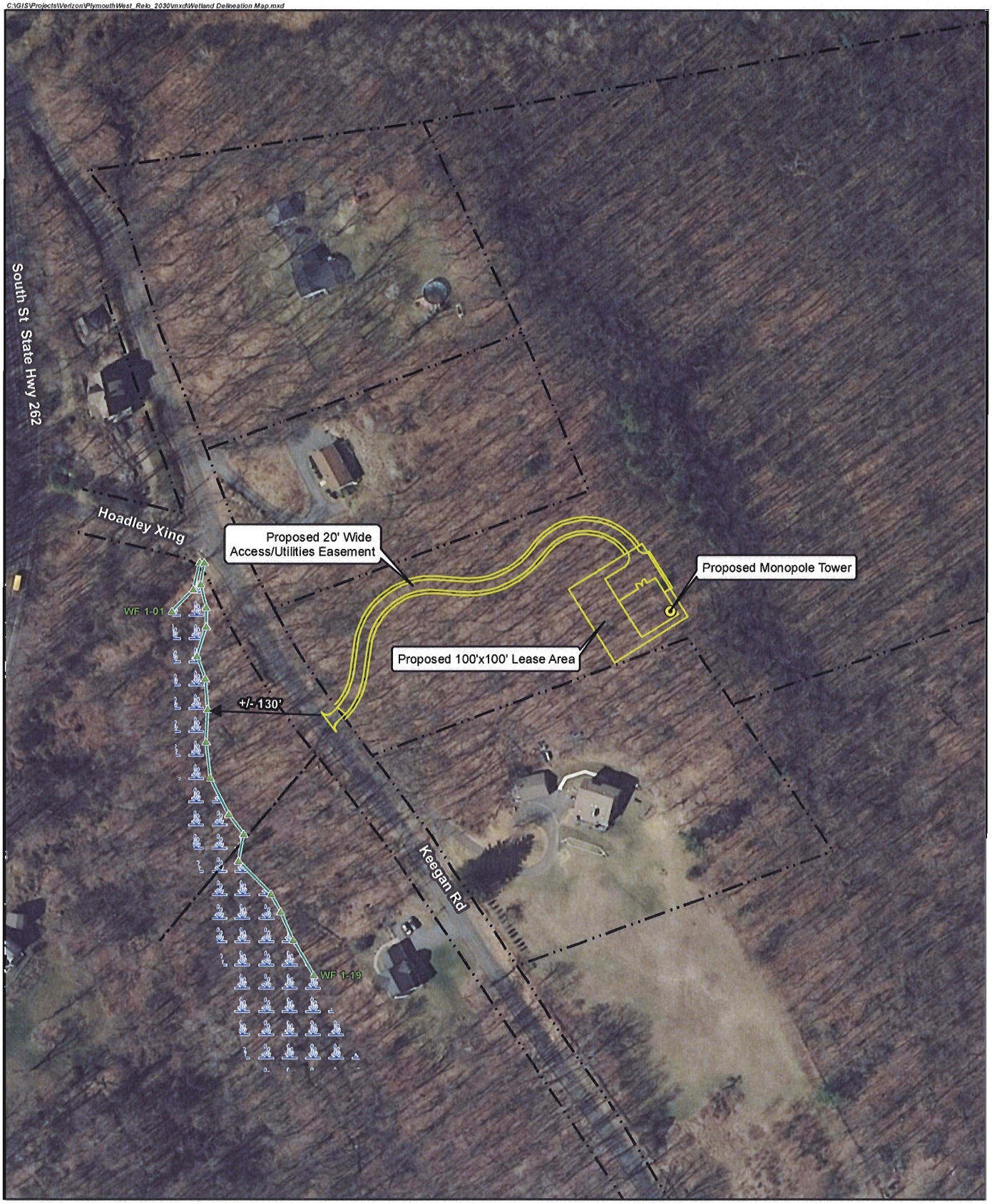

Legend

- Proposed Monopole Tower
- Proposed Facility Layout
- Property Line
- Wetland Flag
- Delineated Wetland Boundary
- Wetland Area

Wetland Delineation Map

Proposed Wireless
Telecommunications Facility
Plymouth West Relo
33 Keegan Road
Plymouth, Connecticut

verizon wireless

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150 75 0 150
Feet

Map Notes:
Base Map Source: 2012 Aerial Photograph (CTECO)
Map Scale:1:1,800
Map Date: January 2015