APPENDIX E-2 – WETLAND REPORT: EXISTING CONDITIONS

WETLAND REPORT: EXISTING CONDITIONS

KILLINGLY ENERGY CENTER

LAKE ROAD, KILLINGLY, CONNECTICUT

June 2016

REMA

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ATTACHMENTS

1.0 INTRODUCTION

This *Wetland Report: Existing Conditions* describes the in-field delineation and characterization of regulatory wetlands and watercourses by Rema Ecological Services, LLC (REMA) on the proposed Killingly Energy Center site (the site, the study area) during the early part of the 2016 growing season.

Specifically, two REMA staff[1] with expertise in soils, ecology, botany, and wildlife visited the subject site starting on February 4, 2016. The last site visit, for the purpose of baseline ecological inventories covered in this document, was conducted on June 13, 2016. In all, REMA staff visited the site on 15 different days since early February 2016, logging in excess of 80 hours in the field.

2.0 STUDY AREA SETTING

The study area encompasses roughly 73 acres of land in Killingly, Connecticut. Of this acreage, roughly 63 acres (the Generating Facility Site) fall to the north and northwest of Lake Road, while the balance (approximately 10 acres) (the Switchyard Site) is located to the south and southeast of Lake Road. The site is located west of Alexander Lake and Interstate 395, and few hundred feet south and east of the Quinebaug River (see Figure 1). An Eversource electric transmission right-of-way abuts the site to the southeast.

3.0 PAST LAND USE

The site was predominantly in agricultural use through the 1970s, based on archived aerial photography,[2] with the exception of the prominent northwesterly ridge, which was periodically logged; bedrock quarrying also took place at this ridge until the mid-1980s. Agricultural activities included pasturing, hay production, and arboriculture (i.e., fruit trees). A farmhouse is located within the Generating Facility Site, while an abandoned barn is located on the Switchyard Site. Stone walls are still visible, demarcating the

[1] The primary staff for the baseline natural resources studies included: George T. Logan, MS, PWS, CSE, and Sigrun N. Gadwa, MS, PWS.
[2] Archived aerials were viewed for flight years: 1934, 1951, 1965, 1970, 1986, and 1996.

edges of fields and pastures. Since the 1970s, the once open fields have reverted to young second-growth forest; some of it still in the pole size class.[3]

A small "farm pond" is located on the Generating Facility Site. This pond was reportedly developed in 1959 for use as a source of potable water for the farmhouse and also as a swimming hole. It is located at the head of a wetland seep, the headwaters of a small intermittent stream that leads to a central forested swamp on the Generating Facility Site. Portions of this steam have been channelized as a result of past agricultural activities. A pump house was built to the east of the pond.

Further west, a cistern was once constructed over a hillside seep that is located at the southwesterly edge of the forested swamp centrally located on the Generating Facility Site. From this location, a ditch was dug through the axis of the forested swamp to a stone wall at the eastern property boundary. This is the intermittent watercourse associated with the primary wetland system located on the Generating Facility Site.

4.0 SURFACE WATER RESOURCES & WETLANDS

4.1 Introduction

The study area's wetlands and surface waters (shown in Figure 2) were first characterized by examining federal and state wetlands maps and by conducting detailed site investigations of vegetation, soils, and hydrology to demarcate jurisdictional wetland boundaries. An *On-Site Soil Investigation & Wetland Delineation Report* is included as Attachment A of this *Wetland Report: Existing Conditions*, and provides detailed information on the site's upland and wetland soil types. Attachment B provides *Wetland Delineation & Characterization Field Forms* for each of the wetland ecological units, with detailed descriptions and inventories. Attachment C provides representative annotated photographs of each of these regulated resource areas, while Attachment D provides the results of surface water sampling. This section briefly describes the overall wetland and surface water resources (i.e., streams and open water habitats) associated with the study area.

[3] Pole size class is a forestry term reflecting trees of 4 inches to 10 inches diameter at breast height that would not be considered large enough for use as sawtimber, and can reflect a stand whose trees average this size.

All of the wetlands and surface waters within the study area were field-delineated in accordance with both state and federal statutes and criteria by a professional wetland/soil scientist.[4] State regulated wetlands were delineated in accordance with the Inland Wetlands and Watercourses Act (Connecticut General Statutes §22a-38). Federal jurisdictional wetlands were delineated pursuant to the Regional Supplement to the Corps of Engineers Wetland Delineation Manual (1987): Northcentral and Northeast Region, Version 2.0 (2012).

4.2 Wetland Flow Patterns

Wetland flow patterns within the Generating Facility Site are defined by the bedrock topography. Only one bedrock type is present on the site, a pale gray to pink, medium-grained felsic gneiss. A spring-fed, man-made pond (Wetland A1) and the pond's outlet stream (Wetland A2) are bordered to the east by a ridge on the eastern boundary of the Generating Facility Site (with a summit at 342.8 feet above mean sea level (amsl)), and to the west by a hill of similar height. Deep till soils on their slopes (Canton and Charlton series) have high moisture-holding capacity, and gradually discharge groundwater into Wetland A1 and Wetland A2.

Wetland Unit A3 (Wetland A3) also drains northerly along the west side of the central hill across nearly level glacial outwash soils. Wetland A3 joins the stream from Wetland A2 near the eastern property boundary, and the combined stream continues off-site towards the Quinebaug River. On the west side of the Generating Facility Site, the terrain reaches a maximum elevation of about 340 feet amsl in the northwestern corner, with the southwestern corner lower in elevation. The upper portion of the hillside swamp in Wetland B is at an elevation of approximately 257 feet amsl. The outlet intermittent watercourse from this wetland traverses glacial till and sandy outwash hillsides en route to the Quinebaug River.

4.3 Wetland Characterization Units

The A series of wetlands are interconnected and comprise the major wetland system on the Generating Facility Site. Other wetlands on the Generating Facility Site are smaller pockets (Wetland B, C, E and X). A portion of Wetland D extends onto the Switchyard

[4] i.e., George T. Logan, MS, PWS, CSE.

Site from the Eversource right-of-way. Each are shown on Figure 2 and described in the sections below.

4.3.1 Man-Made Pond (Wetland A1) – Generating Facility Site

Located downgradient and to the northwest of the existing residence, Wetland A1 is a roughly 0.25-acre man-made pond, originally developed in 1959 as a swimming-hole and a source of water for the then-active farm, according to the property owner (see Figure 2 and Attachment B). As a spring-fed pond, it is fed by both groundwater discharge and a small rivulet associated with a springhouse. The hydro-geomorphic setting is classified as "groundwater depression" within the pond, and "groundwater slope" on adjacent wetlands. It is largely shaded by trees, both broad-leaf deciduous and evergreen ("palustrine forested" cover type), resulting in cool temperatures and good water quality.

Pond depth fluctuates seasonally, but it retains some water year-round according to the property owner. Its depth was measured in April 2016 and found to be five feet near its earthen embankment and two to three feet deep near the perimeter, with a one to two foot layer of soft organics over the hard sandy bottom. Field investigations found numerous juvenile smallmouth bass, and several adult fish, as well as invertebrates and amphibians (e.g., water scorpions, predaceous diving beetles, crayfish, snails, and green frogs, bull frogs, and spring peepers). Spotted salamander egg masses were found in early spring; although emergence of salamanders is unlikely, as smallmouth bass are effective predators of salamander larvae. In fact, all of the egg masses observed in mid-April were observed to have been preyed upon a few days later.

The man-made pond shoreline supports an emergent cover type on very poorly drained soil, high in organics. It is vegetated with native wetland plants (e.g., swamp bedstraw, native sedges, and jewelweed) rather than planted with lawn. Duckweed and green algae were observed in early spring, when thawing vegetation makes nutrients from natural vegetation readily available, but water quality testing (Attachment D) showed that nutrient levels are close to reference levels for a non-impaired forested stream. By June, a patch of yellow pond-lily was observed in the deeper portion of the pond, near its outlet.

4.3.2 Eastern Intermittent Stream (Wetland A2) – Generating Facility Site

Wetland A2 and its associated intermittent stream is approximately 1.98 acres. It begins at the outlet to Wetland A1 and extends northwesterly (see Figure 2 and Attachment B). This intermittent stream has a stony substrate in its upper reach, near the pond, becoming sandier as soils transition from those derived from glacial till to sandy glacial outwash deposits.

Water quality is very good in this stream (see Attachment D), consistent with the water source, which is groundwater discharge from a forested watershed. The intermittent watercourse associated with Wetland A2 has well vegetated banks, only a few inches above the water surface, rather than a channel that is incised deeply into the ground. Steady groundwater discharge improves stream channel morphology, reducing the potential for erosion of the banks and stream bed. It is also associated with elevated plant diversity. Regardless of the type of bedrock, the groundwater discharge and shallow, flowing groundwater furnish a steady supply of soil minerals (through weathering of rock and soil particles). Indicator species in Wetland A2 are golden saxifrage, ironwood, yellow birch, and Pennsylvania cress, as well as diverse sedges, typical of headwaters wetlands fed by clean groundwater from till soils.

4.3.3 Central Wetland (Wetland A3) – Generating Facility Site

This is the largest wetland unit at the Generating Facility Site (see Figure 2 and Attachment B), approximately 6.26 acres. Underlying sandy outwash surficial materials determine the nature of Wetland A3. Extensive, very poorly drained, peaty soils support sunny emergent marsh on the east side of the swamp, dominated by tussock sedge and skunk cabbage, and also thickets of red maple saplings. Blue swamp violet is abundant on saturated, shaded soils. The sandy/mucky soils (Walpole and Scarboro soil series) offer poor support for tree roots, such that "tree tips" are common, typically associated with deeper open water by the upturned root mass and variable micro-topography. The hydro-geomorphic setting of Wetland A3 is classified as "groundwater slope," because the low-gradient wetland intercepts the sub-regional groundwater table in the permeable and sandy outwash soils. High stem density and organic substrate with good capacity for toxin adsorption means high potential for water quality renovation/polishing.

The northwest side of the wetland consists of gently sloping forest dominated by Eastern hemlock. This portion of the wetland is also underlain by sandy outwash soil, but with

a deeper water table than for the eastern portion described above. Soils are mostly poorly drained rather than very poorly drained. Herbaceous vegetation is sparse under the hemlocks, and differs little from that in moist upland forest. The outer swath of the wetland is well suited to infiltration of excess precipitation and the wetland's broad shape and variable microtopography allows for flood storage.

Other habitat features within this wetland include large diameter trees, both oaks and hemlocks, and a few white pines, tree tips, and old stone walls (one parallel to the southern wetland boundary). Ledge outcrops are located within 100 feet of the delineated wetland line to the northwest, which provide a striking visual contrast to the swamp.

The off-site outlet stream, which flows from both Wetlands A1 and Wetland A2, is intermittent but, based on the presence of aquatic organisms observed in the stream substrate (e.g., crane fly larvae, case caddisflies), it appears that it flows continually most years, but may dry up some years.

4.3.4 Northwestern Wetland (Wetland B) – Generating Facility Site

Wetland B is approximately 1.8 acres located at the far northwestern section of the Generating Facility Site (see Figure 2 and Attachment B). The southeastern part of Wetland B is a forested hillside with deep, friable, poorly drained soils derived from glacial till (Leicester series); spicebush and winterberry are the dominant shrubs, with red maple the dominant tree. The plant diversity in the southeastern, seasonally saturated lobe of Wetland B (with wildflowers like bloodroot, wood anemone, and dwarf ginseng) is typical of headwaters wetlands fed by clean groundwater from till soils. Regardless of the type of bedrock, the groundwater discharge though glacial till yields a steady supply of soil minerals, which influences vegetative composition and diversity.

The hillside discharges both surface and groundwater flow (and fine silt) into the seasonally flooded, lower portion of Wetland B. This portion of Wetland B is also forested, with both evergreen and broadleaf trees. This level area has several depressions, one deep enough for breeding of vernal pool amphibians (wood frog and spotted salamander). The steady supply of groundwater, continuing into mid-summer, prolongs the hydroperiod in Wetland B and improves the chances of successful metamorphosis for juvenile vernal pool amphibians, and also for other species observed here, like spring peeper and gray tree frog. In Wetland B, rock dams have altered the

outlet flow, increasing the effective depth of the pool area, which would also benefit species use.

Trees on the lower terrace include black willow, as well as red maple and Eastern hemlock; level terraces support lush floodplain species such as jewelweed, *Glyceria striata* (a swamp grass), and false nettle. Moss-covered logs crisscross the wetland, and several large tree tips contribute habitat structure and small pockets of palustrine scrub-shrub habitat. As in Wetland A3, a peripheral zone (on the north side) is shaded by hemlock and, thus, has sparse vascular vegetation. The hydro-geomorphic setting is classified as "groundwater slope."

Much of the flow within Wetland B is expected to infiltrate especially as it reaches Hinckley soil, continuing, subsurface, towards the Quinebaug River. Flow from Wetland B, when full infiltration does not occur, combines with discharge from Wetland C in an off-site stream that is a higher-gradient, more deeply incised stream that is lower in flow than other streams noted on-site. During the field visits in the spring season, stream flows within this off-site stream reached the river. Hemlock or white pine foliage overhangs most of the narrow stream, such that light levels are very low, resulting in very sparse riparian vegetation, with only occasional cinnamon fern, Virginia creeper, or Canada mayflower.

4.3.5 Western Outlet (Wetland C) – Generating Facility Site

Wetland C is an approximately 0.08-acre hillside swale that joins (with Wetland B) an off-site stream from the east (see Figure 2 and Attachment B). Wetland C does not qualify as a watercourse, lacking a defined channel. Its vegetation includes sparse skunk cabbage, some barberry, birch saplings, and red maples.

Much of the surface flow associated with this wetland unit is expected to infiltrate, especially as it reaches Hinckley soil, continuing, subsurface, towards the Quinebaug River.

4.3.6 Wetland Pocket (Wetland E) – Generating Facility Site

This small +/- 0.04-acre wetland pocket is located upgradient of Wetland C at the far northern section of the Generating Facility Site (see Figure 2 and Attachment B). Topography is slightly concave in this area, allowing for shallow ponding within this wetland early in the growing season, on tight silty till-derived soils. Wetland E overflows via a broad swale, down moderate slopes, toward Wetland C, which is located about 100 feet to the west.

Wetland E is a seasonally flooded to seasonally saturated wetland with poorly drained soils and a hydro-geomorphic setting classified as "surface water slope." It is dominated by hemlock in the overstory and, due to dense shading, little vegetation grows in the understory. A few violets, wood ferns, poison ivy, grasses, and New York fern were observed here.

4.3.7 Disturbed Wetland Pocket (Wetland X) – Generating Facility Site

Located to the southwest of Wetland A2, and close to the Wetland A1, this is a roughly 0.027-acre, narrow wetland with disturbed soils (see Figure 2 and Attachment B). Wetland X is within an area that has historically been farmed and used as a travel way to other portions of the overall site. Old tire ruts are obvious throughout this area, and the soils have been graded in the past (i.e., filled and/or excavated).

This is a seasonally saturated wetland devoid of an overstory, but with hydrology suitable for hydrophytes such as skunk cabbage and sensitive fern, and a few sedges. Multiflora rose and Japanese barberry are growing along the edge of this wetland, which overflows northerly over an old fill embankment to Wetland A2.

4.3.8 Right-of-Way Wetland (Wetland D) – Switchyard Site

The majority of the Switchyard Site is upland, consisting of post-agricultural deciduous woods and shrub tangles on moderately to gently sloping land, with a level mowed field within its northernmost section. A limited wetland area is located along the parcel's eastern property boundary, mostly off-site and within an Eversource electric power line right-of-way. Wetland D is part of a relatively large non-forested area.

Wetland D, which encompasses approximately 0.51 acres of the Switchyard Site, is dominated by scrub shrub and emergent (i.e., wet meadow) cover types, mostly with

poorly drained, outwash-derived soils (see Figure 2 and Attachment B). The scrub shrub portion of this wetland is dominated by white pine and red maple saplings, but also includes shrubs such as highbush blueberry, meadowsweet, and willows. The northern scrub shrub section of this wetland unit is dominated by invasive European (glossy) buckthorn, which is spreading. Herbaceous and shrub diversity is highest along the edges of the shrub thicket; including blue-eye grass, rough-stem goldenrod, cinnamon, royal, New York, and sensitive ferns, steeplebush, sedges, and nannyberry viburnum.

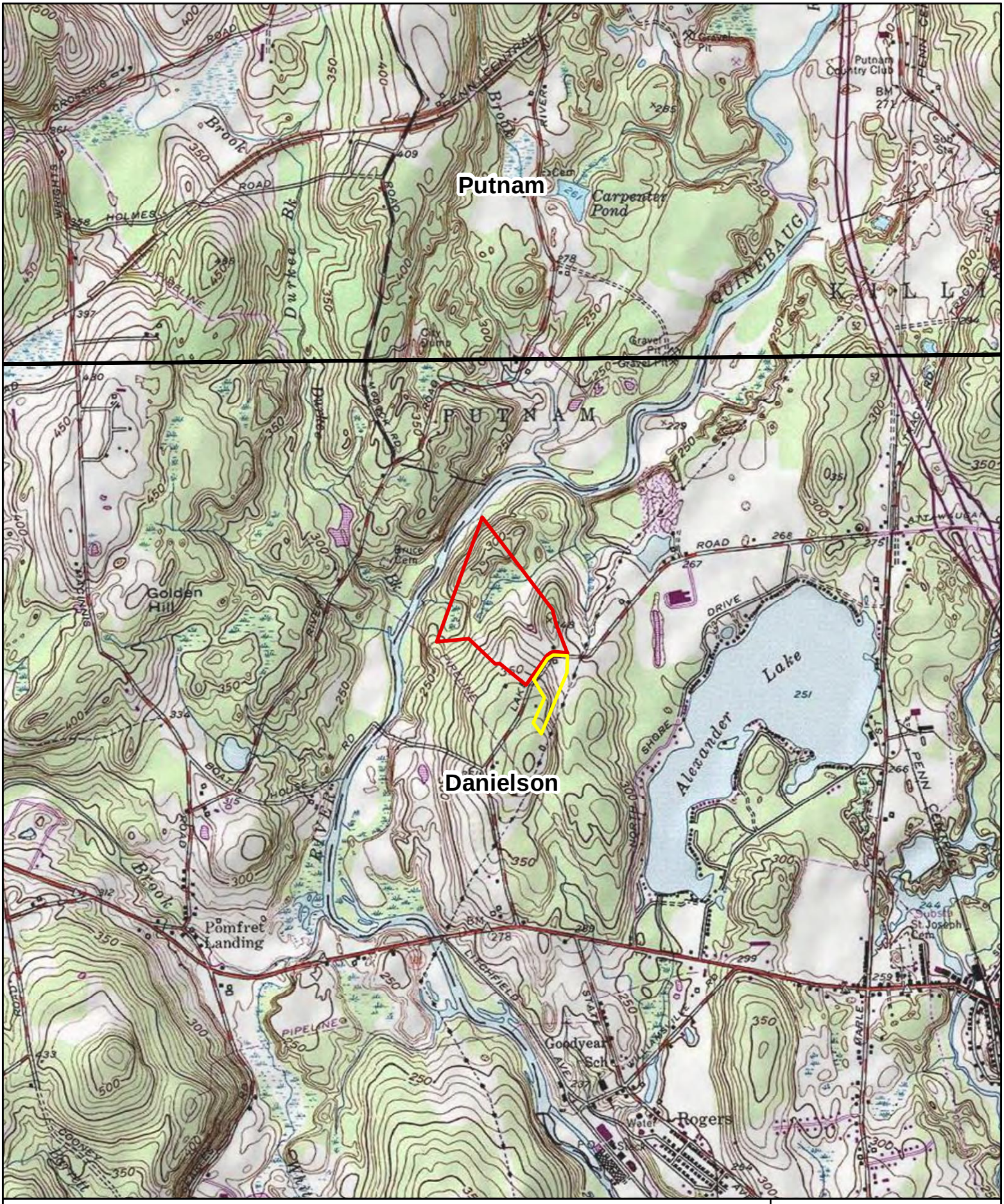
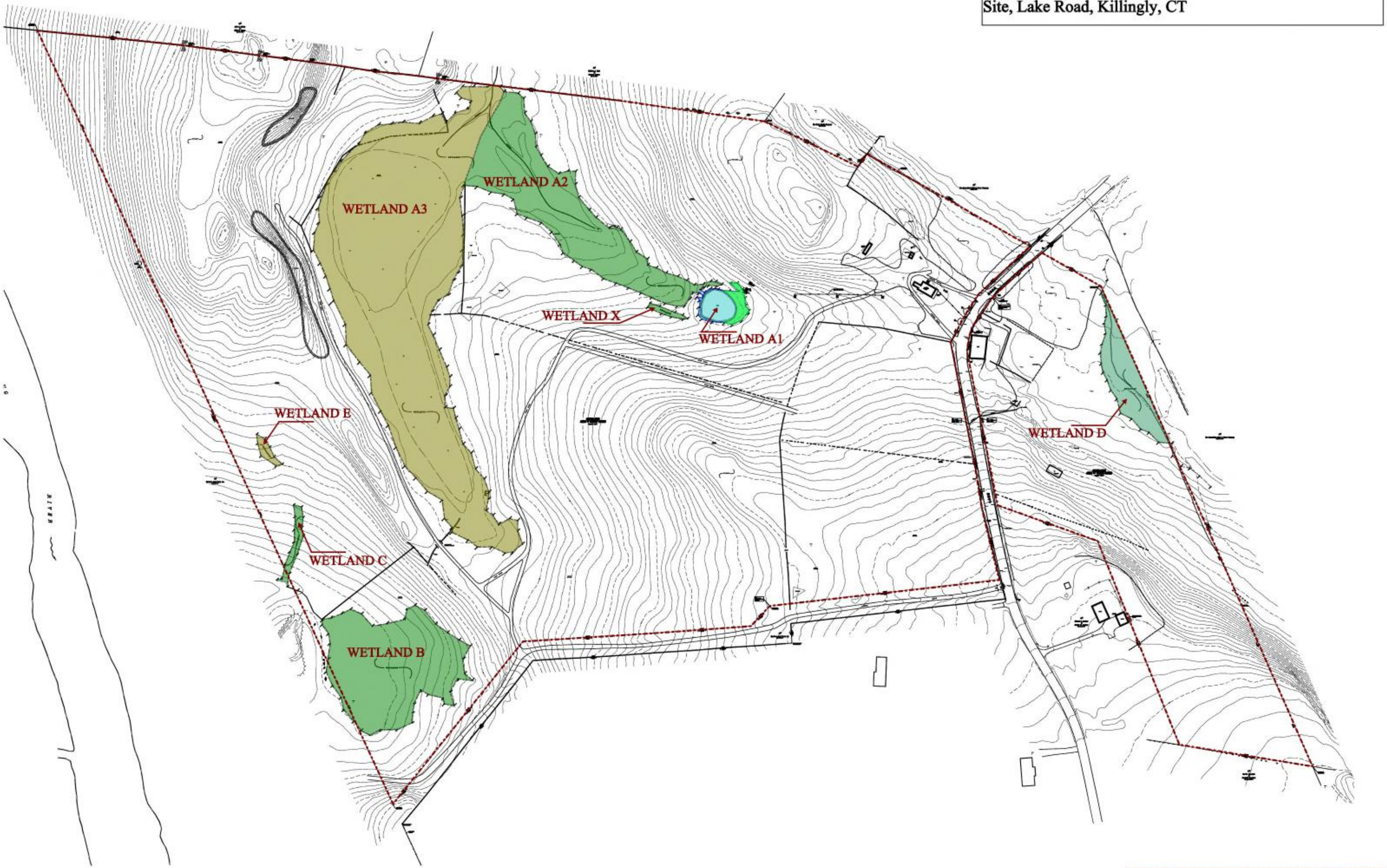


Figure 1: Site Locus; Generating Facility Site and Switchyard Site

Lake Road, Killingly, CT

FIGURE 2: Wetland Units at the Killingly Energy Center Site, Lake Road, Killingly, CT



PRODUCED BY: REMA ECOLOGICAL SERVICES, LLC
DATE: 6-16-16 ***SCALE***: NTS

Attachment A

On-Site Soil Investigation & Wetland Delineation Report

REMA ECOLOGICAL SERVICES, LLC
164 East Center Street, Suite 8
Manchester, CT 06040
860.649.REMA (7362)

REPORT DATE: June 15, 2016

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT

PROJECT NAME & SITE LOCATION:

+/- 62.9 and 10.1 acres (2 parcels)
Lake Road
Killingly, CT

REMA Job No.: 16-11897-KILJ

Field Investigation Date(s): 3/11, 3/24, 3/31, 4/13/16

Field Investigation Method(s):

- ☒ Spade and Auger
- ☐ Backhoe Test Pits
- ☐ Other:

REPORT PREPARED FOR:

Tetra Tech
2 Lan Drive, Suite 210
Westford, MA 01886
Attn.: Lynn Gresock, VP

Field Conditions:

Weather: Sunny to Overcast, 40s to 60s
Soil Moisture: Moderate-High
Snow Depth: none
Frost Depth: none

Purpose of Investigation:

- ☒ Wetland Delineation/Flagging in Field
- ☐ Wetland Mapping on Sketch Plan or Topographic Plan
- ☐ High Intensity Soil Mapping by Soil Scientist
- ☒ Medium Intensity Soil Mapping from *'The Soil Survey of Connecticut'* Maps (USDA-NRCS)
- ☐ Other:

Base Map Source(s): CT Soil Survey (USDA-NRCS) (attached); Figures A1, A2, A3, and B (attached)

Wetland Boundary Marker Series: RES-A-1 to RES-A-48, tied to RES-1A-1 to RES-1A-24, tied to RES-2A-1 to RES-2A-30, tied to RES-3A-1 to RES-3A-69 (open line), RES-X-1 to RES-X-9 (closed line), RES-B-1 to RES-B-41 (closed line) (with intermittent stream draining wetland), RES-C-1 to RES-C-16 (open line), RES-D-1 to RES-D-26 (open line), and RES-E-1 to RES-E-8 (closed loop)

General Site Description/Comments: The "study area" or "site" encompasses +/-73.02 acres of land (2 parcels), to the northwest and southeast of Lake Road, in Killingly, CT. In its present state the larger parcel is comprised of mixed deciduous/evergreen and evergreen forest on uplands, deciduous/evergreen forested wetlands, and a small man-made pond. The smaller parcel contains an open field, post-agricultural deciduous woods, evergreen/deciduous forest, shrub/vine tangles, and a portion of a scrub-shrub and emergent wetlands complex. The soils within the study area are mostly undisturbed in nature, and are predominately derived from glacial till (i.e. unstratified sand, silt & rock), including areas interspersed with bedrock outcrops, and glacial outwash (i.e. stratified sand & gravel). Locally the soils are disturbed and are associated with a residence (northern parcel), with a barn (southern parcel), as well as with past agriculture. The undisturbed upland soils are the somewhat excessively drained Gloucester (36), the excessively drained Hinckley (38), the well drained Canton and Charlton (62), Charlton and Chatfield (73), and Hollis-Chatfield-Rock outcrop (75) soils series complexes and mapping units, and the moderately well drained Sutton (52) soil series, and Ninigret and Tisbury (21) soil series complex. The disturbed upland soils are mapped as Udorthents (308). The undisturbed wetland soils are the poorly drained Walpole (13) sandy loam, the very poorly drained Scarboro (15) muck, and the very poorly and poorly drained Ridgebury, Leicester, and Whitman (3) soil series complex. The disturbed wetland soils are mapped as Aquents (308W). The larger parcel contains one contiguous, centrally located headwaters forested wetland, with a nearly level section, and a "lobe" extending southerly on gentle slopes. A man-made pond occurs at far upper reach (southern) of this lobe. A semi-perennial stream emanates from the overall wetland. Near the western boundary of the larger parcel, there is another forested wetland with an intermittent stream outlet. A small wetland pocket and narrow seasonal seep wetland occur near the western property boundary. At the smaller parcel a scrub-shrub/emergent wetland was delineated, the western edge of a larger off-site wetland that extends within the Eversource electric right-of-way to the east.

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT *(CONTINUED)*

PROJECT NAME & SITE LOCATION: +/- 73.02-acres (2 parcels)
Lake Road, Killingly, CT

SOIL MAP UNITS

Upland Soils

Udorthents (308). This soil mapping unit consists of well drained to moderately well drained soils that have been altered by excavation (i.e. sand and gravel borrow pits). The areas either have had two feet or more of the upper part of the original soil removed or have more than two feet of fill material on top of the original soil. Udorthents or Made Land soils can be found on any soil parent material but are typically fluvial on glacial till plains and outwash plains and stream terraces.

Hinckley gravelly loamy sand (38). This series consists of very deep, excessively drained soils formed in a shallow, loamy sand mantle underlain by gravelly sand, water deposited glacial outwash materials. They are level to very steep soils on outwash plains, terraces, deltas, kames and eskers. The soils formed in loamy over stratified sandy and gravelly glacial outwash derived mainly from crystalline rocks. Typically these soils have a very dark grayish brown loamy sand surface layer 7 inches thick. The subsoil layers from 7 to 15 inches are strong brown and yellowish brown gravelly loamy sand. From 15 to 18 inches the subsoil is yellowish brown gravelly sand. The substratum from 18 to 60 inches is light olive brown stratified sand, gravel and cobblestones.

Canton stony fine sandy loam (62). This series consists of deep, well drained soils formed in a coarse-loamy mantle underlain by sandy glacial till on uplands. They are nearly level to very steep soils on till plains and hills. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically, these soils have a surface layer of very dark grayish brown fine sandy loam 2 inches thick. The subsoil from 2 to 23 inches is yellowish brown fine sandy loam, gravelly fine sandy loam and gravelly sandy loam. The substratum from 23 to 60 inches is pale brown gravelly loamy sand.

Charlton very stony fine sandy loam (73). This series consists of very deep, well drained coarse-loamy soils formed in friable, glacial till on uplands. They are nearly level to very steep soils on till plains and hills. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. In tilled areas, these soils have a surface layer of dark brown fine sandy loam 8 inches thick. The subsoil from 8 to 26 inches is yellowish brown fine sandy loam and sandy loam. The substratum from 26 to 60 inches or more is grayish brown gravelly fine sandy loam.

Chatfield loam (73). This 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. Permeability is moderate or moderately rapid. In tilled areas, these soils have a surface layer that is very dark to dark grayish brown loam up to 8 inches thick. The subsoil from 8 to 26 inches is brown, flaggy silt loam.

Hollis fine sandy loam (75). This series consists of shallow, well drained and somewhat excessively drained; loamy soils formed in a thin mantle of friable glacial till over ledge. Depth to bedrock ranges from 10 to 20 inches. They occur on till plains and hills. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically, these soils have a surface layer of dark grayish brown fine sandy loam 3 inches thick. The subsoil from 3 to 14 inches is yellowish brown fine sandy loam. Hard and unweathered bedrock lies under the subsoil.

Gloucester sandy loam (58). This series consists of deep, somewhat excessively drained soils formed in a coarse-loamy glacial till on uplands. They are nearly level to very steep soils on till plains and hills. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically, these soils have a surface layer of very dark grayish brown sandy loam 4 inches thick. The subsoil from 4 to 25 inches is dark yellowish brown gravelly sandy loam and loamy sand. The substratum from 25 to 60 inches is light olive brown to light grayish brown gravelly, loamy coarse sand.

Sutton stony fine sandy loam (52). This series consists of deep, moderately well drained loamy soils formed in friable, glacial till on uplands. They are nearly level to steeply sloping soils on till plains, low ridges and hills, being typically located on lower slopes and in slight depressions. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically, these soils have a surface layer of dark brown fine sandy loam 8 inches thick. The subsoil from 8 to 28 inches is yellowish brown, mottled fine sandy loam and sandy loam. The substratum from 28 to 60 inches or more is light olive brown fine sandy loam.

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT *(CONTINUED)*

PROJECT NAME & SITE LOCATION: +/- 73.02-acres (2 parcels)
Lake Road, Killingly, CT

SOIL MAP UNITS

Upland Soils

Ninigret fine sandy loam (21). This series consists of very deep moderately well drained soils formed in a coarse-loamy mantle underlain by sandy water deposited glacial outwash materials. They are nearly level to gently sloping soils on glaciofluvial landforms, typically in slight depressions and broad drainage ways. The soils formed in loamy over stratified sandy and gravelly outwash derived from a variety of acid rocks. Typically, these soils have a very dark grayish brown fine sandy loam surface layer 8 inches thick. The subsoil from 8 to 26 inches is yellowish brown fine sandy loam with mottles below 16 inches. The substratum from 26 to 60 inches is mottled, pale brown, loose, stratified loamy sand.

Tisbury silt loam (21). This series consists of deep, moderately well drained soils formed in a coarse-silty mantle underlain by sandy water deposited glacial outwash materials. They are level to gently sloping soils in broad drainage swales and low lying positions on outwash plains and terraces. The soils formed in loamy over stratified sandy and gravelly glacial outwash derived mainly from acid crystalline rocks (granite, gneiss and schist). Typically these soils have a very dark grayish brown silt loam surface layer 8 inches thick. The subsoil from 8 to 26 inches is yellowish brown and brownish yellow silt loam, with mottles common below 16 inches. The substratum from 26 to 60 inches is grayish brown, mottled stratified sand and gravel.

Wetland Soils

Aquents (308w). This soil map unit consists of poorly drained and very poorly drained, disturbed land areas. They are most often found on landscapes which have been subject to prior filling and/or excavation activities. In general, this soil map unit occurs where two or more feet of the original soil surface has been filled over, graded or excavated. The Aquents are characterized by a seasonal to prolonged high ground water table and either support or are capable of supporting wetland vegetation. Aquents are recently formed soils which have an aquic moisture regime. An aquic moisture regime is associated with a reducing soil environment that is virtually free of dissolved oxygen because the soil is saturated by groundwater or by water of the capillary fringe. The key feature is the presence of a ground water table at or very near to the soil surface for a period of fourteen days or longer during the growing season.

Scarboro muck (15). This series consists of very deep, very poorly drained soils formed in sandy water deposited glacial outwash materials. They are nearly level soils on glaciofluvial landforms, typically in low depressions and drainage ways of outwash plains and terraces. The soils formed in a loamy sand, lying over stratified sandy and gravelly outwash derived from a variety of acid rocks. Typically these soils have a 9 inch black mucky peat or very dark brown mucky sandy loamy surface layer. The subsurface layer from 9 to 16 inches is gray loamy sand. The substratum from 16 to 60 inches is olive gray, grayish brown and light yellowish brown loamy sand, loamy fine sand and coarse sand. The substratum may be stratified.

Walpole sandy loam (13). This series consists of deep, poorly drained soils formed in sandy water deposited glacial outwash materials. They are nearly level to gently sloping soils on glaciofluvial landforms, typically in shallow drainage ways and low-lying positions on stream terraces and outwash plains. The soils formed in loamy over stratified sandy and gravelly outwash derived from a variety of acid rocks. Typically, these soils have a very dark brown sandy loam surface layer 6 inches thick. The subsoil from 6 to 23 inches is mottled, grayish brown sandy loam. The substratum from 23 to 60 inches is mottled, light brownish gray, gravelly loamy sand and gravelly sand.

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT *(CONTINUED)*

PROJECT NAME & SITE LOCATION: +/- 73.02-acres (2 parcels)
Lake Road, Killingly, CT

SOIL MAP UNITS

Wetland Soils

Leicester fine sandy loam (3). This series, which is some Connecticut counties is found only in complex with the Ridgebury and Whitman series, consists of deep, poorly drained loamy soils formed in friable glacial till on uplands. They are nearly level to gently sloping soils in drainage ways and low lying positions on till covered uplands. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically, these soils have a surface layer of black fine sandy loam 6 inches thick. The subsoil from 6 to 23 inches is grayish brown, mottled fine sandy loam. The substratum from 26 to 60 inches or more is dark yellowish brown, mottled, friable, gravelly fine sandy loam.

Ridgebury fine sandy loam (3). This soil series consists of deep, poorly and somewhat poorly drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level to moderately steep soils on till plains, low ridges and drumloidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically these soils have a black sandy loam surface layer 6 inches thick. The mottled subsoil from 6 to 16 inches is olive gray sandy loam. The mottled substratum from 16 to 60 inches is a light olive brown and olive, very firm and brittle gravelly sandy loam.

Whitman fine sandy loam (3). This series, which is some Connecticut counties is only mapped in complex with the Ridgebury and Leicester series, consists of deep, very poorly drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level and gently sloping soils on till plains, low ridges and drumloidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically these soils have a black fine sandy loam surface layer 8 inches thick. The mottled subsoil from 8 to 15 inches is gray sandy loam. The mottled substratum from 15 to 60 inches is firm, olive gray to gray dense glacial till.

Any accompanying soil logs and soil maps, and the on-site soil investigation narrative are in accordance with the taxonomic classification of the National Cooperative Soil Survey of the USDA Natural Resource Conservation Service, and with the Connecticut Soil Legend (DEP Bulletin No.5, 1983), as amended by USDA-NRCS. Jurisdictional wetland boundaries were delineated pursuant to the Connecticut General Statutes (CGS Sections 22a-36 to 22a-45), as amended. The site investigation was conducted and/or reviewed by the undersigned Registered Soil Scientist(s) [registered with the Society of Soil Scientists of Southern New England (SSSSNE) in accordance with the standards of the Federal Office of Personnel Management].

Respectfully submitted,

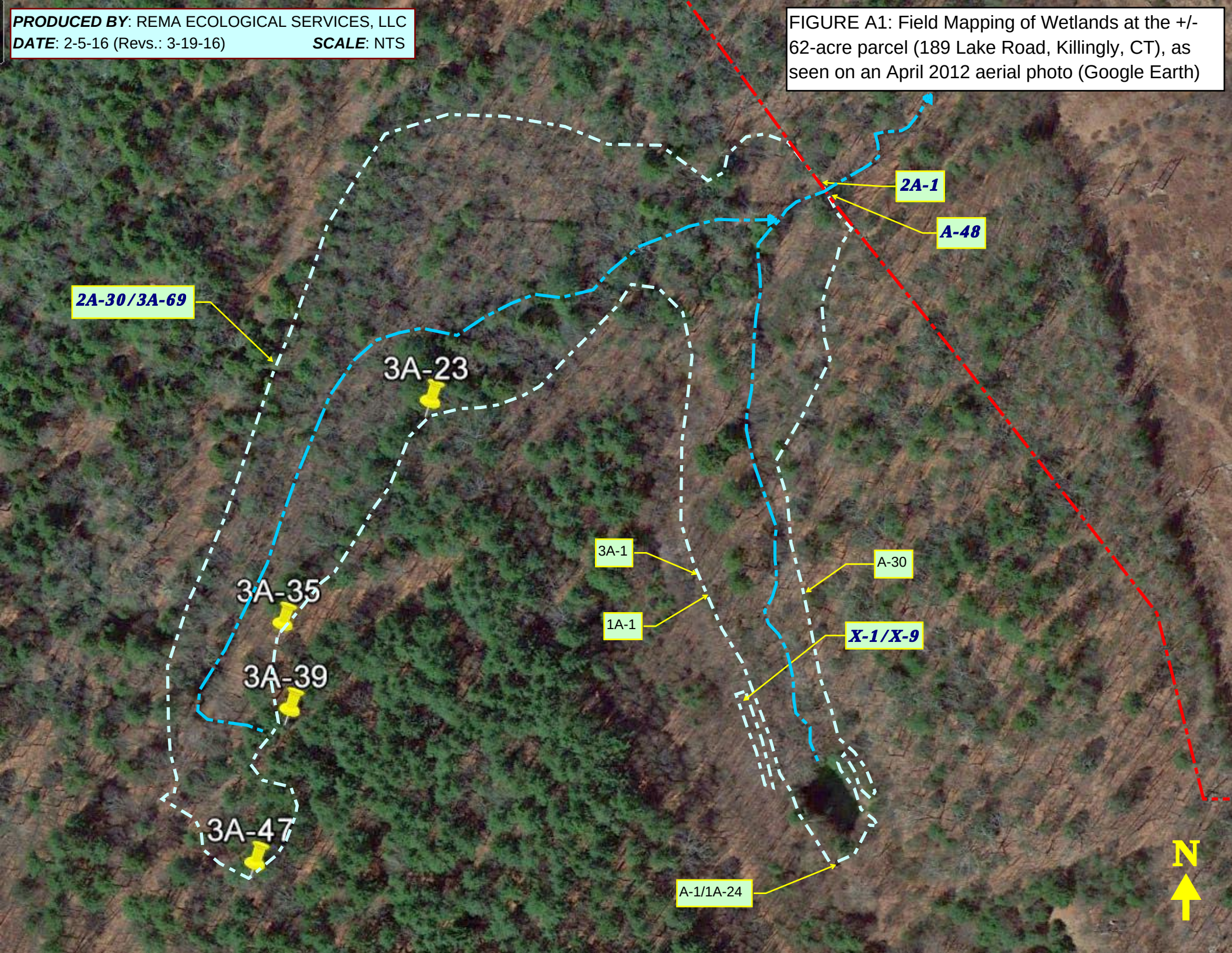
REMA ECOLOGICAL SERVICES, LLC

George T. Logan

George T. Logan, MS, PWS, CSE
Registered Soil Scientist, Professional Wetland Scientist
Field Investigator/Senior Reviewer

PRODUCED BY: REMA ECOLOGICAL SERVICES, LLC
DATE: 2-5-16 (Revs.: 3-19-16) ***SCALE***: NTS

FIGURE A1: Field Mapping of Wetlands at the +/- 62-acre parcel (189 Lake Road, Killingly, CT), as seen on an April 2012 aerial photo (Google Earth)



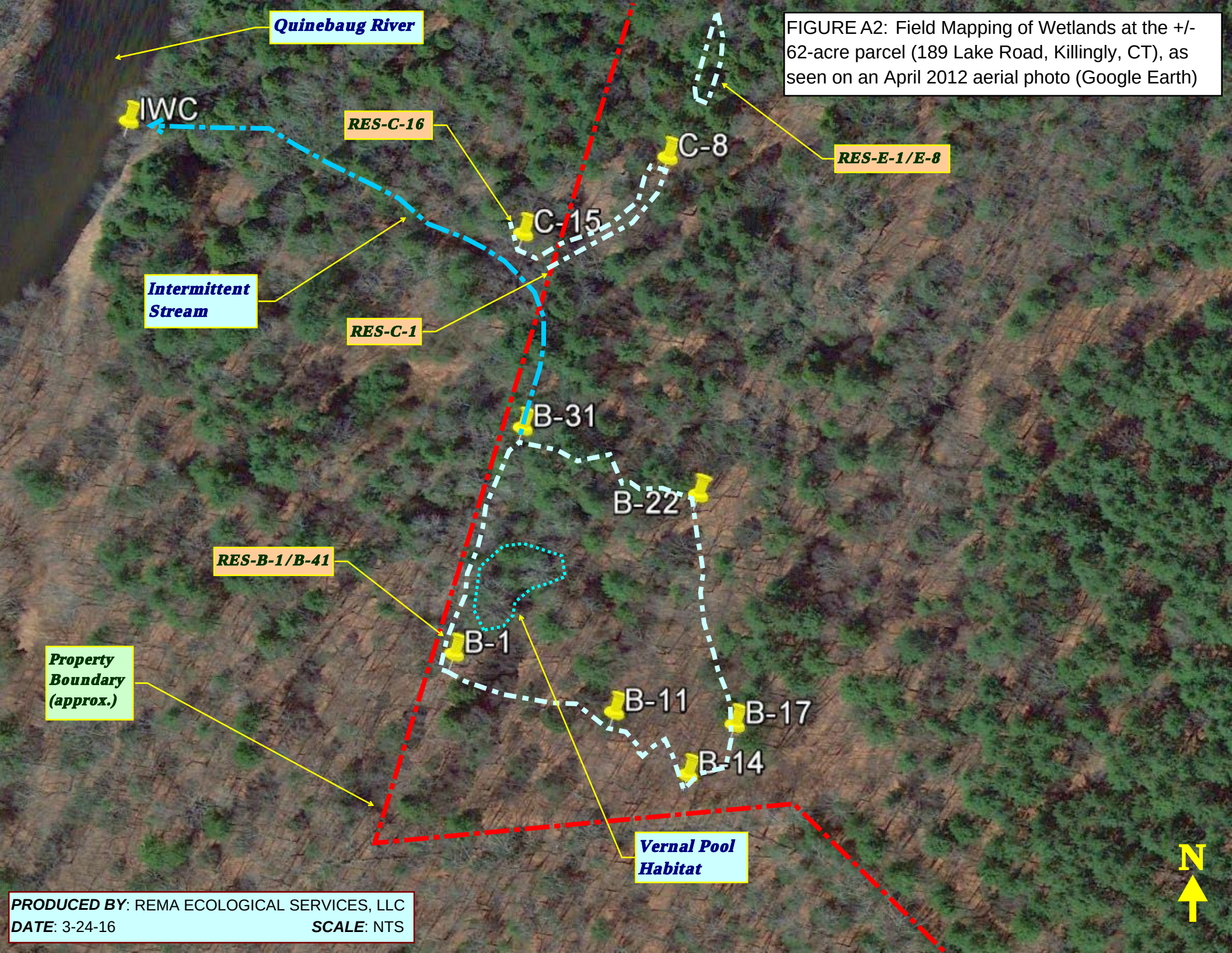
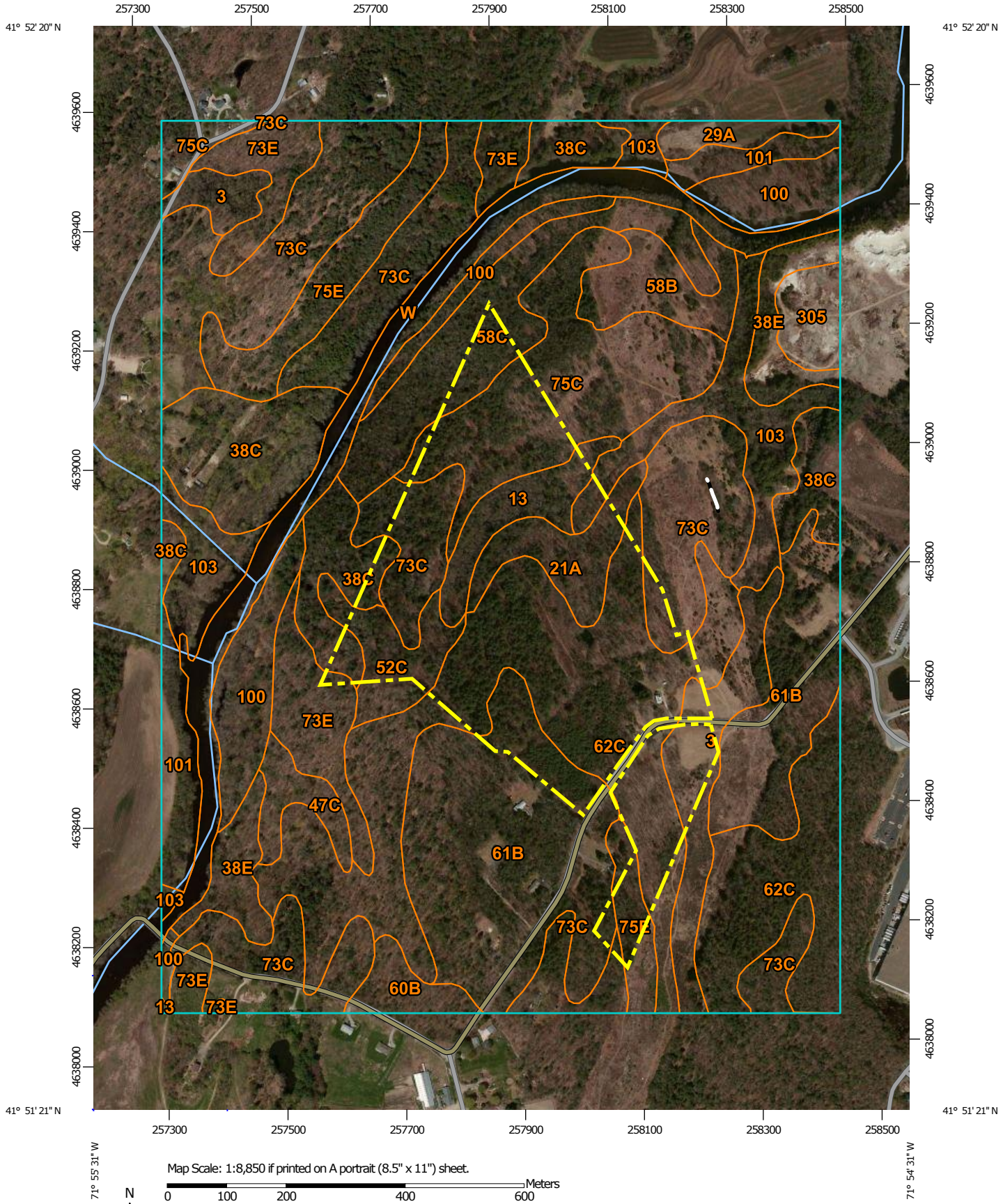


FIGURE A2: Field Mapping of Wetlands at the +/- 62-acre parcel (189 Lake Road, Killingly, CT), as seen on an April 2012 aerial photo (Google Earth)

PRODUCED BY: REMA ECOLOGICAL SERVICES, LLC
DATE: 3-24-16 ***SCALE***: NTS

FIGURE A3: Field Mapping of Wetlands at the +/- 9.7-acre SE parcel (189 Lake Road, Killingly, CT), as seen on an April 2012 aerial photo (Google Earth)

Figure B:
Soil Map—State of Connecticut
(189 Lake Road, Killingly, CT)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 14, Sep 22, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 30, 2011—May 1, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	14.1	3.3%
13	Walpole sandy loam, 0 to 3 percent slopes	6.3	1.5%
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	7.0	1.7%
29A	Agawam fine sandy loam, 0 to 3 percent slopes	3.0	0.7%
38C	Hinckley loamy sand, 3 to 15 percent slopes	29.3	6.9%
38E	Hinckley loamy sand, 15 to 45 percent slopes	9.6	2.3%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	4.0	0.9%
52C	Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony	6.5	1.5%
58B	Gloucester gravelly sandy loam, 3 to 8 percent slopes, very stony	7.5	1.8%
58C	Gloucester gravelly sandy loam, 8 to 15 percent slopes, very stony	17.1	4.0%
60B	Canton and Charlton soils, 3 to 8 percent slopes	3.6	0.9%
61B	Canton and Charlton soils, 3 to 8 percent slopes, very stony	50.6	11.9%
62C	Canton and Charlton soils, 3 to 15 percent slopes, extremely stony	67.7	16.0%
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	67.1	15.8%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	18.2	4.3%
75C	Hollis-Chatfield-Rock outcrop complex, 3 to 15 percent slopes	27.8	6.6%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	14.2	3.3%
100	Suncook loamy fine sand	18.1	4.3%
101	Occum fine sandy loam	8.7	2.0%

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
103	Rippowam fine sandy loam	20.0	4.7%
305	Udorthents-Pits complex, gravelly	4.2	1.0%
W	Water	19.5	4.6%
Totals for Area of Interest		**423.8**	**100.0%**

Attachment B

Wetland Delineation & Characterization Field Forms

WETLAND DELINEATION & CHARACTERIZATION FIELD FORM

Project:	Killingly Energy Center, 189 Lake Rd, Killingly	**Wetland ID:**	**A1**
Inspection Dates:	2/26/16 , 3/18/16 5/20/16, 6-2-16	Wetland Flag Series:	RES-A-1 to RES-A-11; RES-1A-13 to RES-1A-24
Inspector(s):	S. Gadwa & G. Logan	NWI Classification Codes:[1]	**PUB, PEM1, PFO1**

Weather/Field Conditions:	2-26 cold/overcast ; 5-20 & 6-2 sunny, fair		Snow/Frost Depth:	Ice cover on 2-2-16 only
Soil Moisture:	☐ Wet	☒ Moist	☐ Dry	
Type of Wetland Delineation:	☒ State	☒ Federal	☐ Other	

HGM Classification

☐ Surface Water Slope	☐ Surface Water Depression
☒ Groundwater Slope *(adjacent wetlands)*	☒ Groundwater Depression *(pond)*

NWI Classification

System:

☒ Palustrine pond<5' deep	☐ Lacustrine	☐ Riverine	☐ Estuarine

Class:

☒ Forested	☐ Scrub Shrub	☒ Emergent
☒ Aquatic Bed	☒ Unconsolidated Bottom	☒ Unconsolidated Shore

Subclass:

☒ Broad-leaved deciduous PFO1	☒ Needle-leaved evergreen PFO4	☒ Persistent (Emergent, E. shore)
☒ Non-persistent (S. shore)	☐ Sand	☐ Mud
☐ Other:_____, _____		

Wetland Hydrology

☐ Seasonally Flooded	☒ Temporarily Flooded	☐ Semi-permanently Flooded
☒ Seasonally Saturated	☒ Saturated	☒ Permanently Flooded (dominant)

Watercourse Type

☐ Intermittent	☒ Perennial	☐ Tidal
Comments: *A perennial pond, technically a watercourse per CT statutes, fed by intermittent & perennial (saturated hydrology) groundwater discharge. It is man-made, up to 5' deep & associated with a well house.*		

Special Aquatic Habitats

☐ Vernal Pool *(ecological sink)*	☐ Bog	☐ Fen
Comments: *Presence of small mouth bass and other predators precludes reproduction of VP amphibians*		

[1] The wetland unit could include more than one cover type. The dominant cover type is first.

Mapped Soil Series/Units

Soil Series (Map Unit Symbol)	WET	UP	DRAINAGE CLASS	NRCS MAPPED	FIELD CONFIRMED
Aquents (308W) (pond was excavated)	☒	☐	PD, VPD	☐	☒
Leicester, Whitman, Ridgebury (3) (limited)	☐	☒	PD, VPD	☐	☒
Sutton (52)	☐	☒	MWD	☒	☒
	☐	☐		☐	☐
	☐	☐		☐	☐
	☐	☐		☐	☐

ED=excessively drained; SED=somewhat excessively drained; WD=well drained; MWD=moderately well drained; SPD=somewhat poorly drained; PD=poorly drained; VPD=very poorly drained

Observed Plants[2]

TREES:	Red maple	Eastern hemlock	Black birch
	White pine		
SHRUBS:	Highbush blueberry	Japanese barberry	Spicebush
HERBS/MOSSES:	Blue Swamp violet	Sphagnum mosses	Skunk cabbage
	Tussock sedge	Fowl meadow grass	
	Bristly bedstraw	Bristly dewberry	EM rhizomatous sedge
	Marsh bedstraw	Lady fern	Jewelweed
	White Turtlehead (low)	Yellow pond lily	Duckweed
VINES:	Fox grape		

Observed Wildlife & Wildlife sign *(within wetland or nearby):*

Green frog	Bull frog	Spring peeper	Sp. salamander (egg masses)	Small mouth bass
Cray fish	Water scorpion	Snail	Water strider	amphipod
LA waterthrush	Barred owl	Wood duck	Garter snake	Brown snake
Catbird	Wood thrush			

Notes

This wetland ecological unit is a spring-fed pond excavated for recreational and drinking water purposes, taking advantage of extended groundwater at the surface or just below it at this location. Throughflow is good, and the pond outlet feeds a north-flowing seasonal stream (Unit A2). The pond has a maximum depth of five feet, and moderate nutrient levels, though a bloom of green algae in early spring obscured some amphibian egg masses. WA1 is partly shaded by trees, but also has emergent marsh cover type on the sunny southeastern shore. A 1' to 2' thick layer of soft, unconsolidated organics covers the hard bottom. The pond has a moderately large population of smallmouth bass, an indicator of very good water quality.

[2] Dominant plant species are underlined. Invasive species are double underlined. (s) = saplings

WETLAND DELINEATION & CHARACTERIZATION FIELD FORM

Project:	Killingly Energy Center, 189 Lake Rd, Killingly	**Wetland ID:**	**A2**
Inspection Dates:	3-18-16, 5-20-16, 5-26-16	Wetland Flag Series:	RES-A-11 to A-48; 1A-1 to 1A-13; 3A-1 to 3A-13
Inspector(s):	G. Logan, S. Gadwa	NWI Classification Codes:[1]	**PFO1**

Weather/Field Conditions:	5-20 & 26 sunny, fair, low wind	Snow/Frost Depth:	n/a
Soil Moisture:	☐ Wet	☒ Moist	☐ Dry
Type of Wetland Delineation:	☒ State	☒ Federal	☐ Other

HGM Classification

☒ Surface Water Slope	☐ Surface Water Depression
☒ Groundwater Slope	☐ Groundwater Depression

NWI Classification

System:

☒ Palustrine	☐ Lacustrine	☐ Riverine	☐ Estuarine

Class:

☒ Forested	☐ Scrub Shrub	☐ Emergent
☐ Aquatic Bed	☒ Unconsolidated Bottom	☐ Unconsolidated Shore

Subclass:

☒ Broad-leaved deciduous PFO1	☒ Needle-leaved evergreen PFO4	☐ Persistent
☐ Non-persistent	☐ Sand	☐ Mud
☐ Other:_____, _____		

Wetland Hydrology

☒ Seasonally Flooded	☒ Temporarily Flooded	☐ Semi-permanently Flooded
☒ Seasonally Saturated	☐ Saturated	☐ Permanently Flooded

Watercourse Type

☒ Intermittent	☐ Perennial	☐ Tidal
Comments: Intermittent outlet stream of pond, just 12-18" wide, also fed by groundwater discharge; rocky in upper portion (fill & till soils), then sandy. Seepage wetlands just below pond, west side & at far N. end.		

Special Aquatic Habitats

☐ Vernal Pool	☐ Bog	☐ Fen

[1] The wetland unit could include more than one cover type. The dominant cover type is first.

Mapped Soil Series/Units

Soil Series (Map Unit Symbol)	WET	UP	DRAINAGE CLASS	NRCS MAPPED	FIELD CONFIRMED
Aquents (308W); near pond, in northern filled section, & short ditched stretch	☒	☐	PD, VPD	☐	☒
Leicester, Whitman, Ridgebury (3)	☒	☐	PD, VPD	☐	☒
Walpole sandy loam (13)	☒	☐	PD	☒	☒
Sutton (52)	☐	☒	MWD	☐	☒
Udorthents (308); old field to west	☐	☒	MWD	☐	☒
	☐	☐		☐	☐

ED=excessively drained; SED=somewhat excessively drained; WD=well drained; MWD=moderately well drained; SPD=somewhat poorly drained; PD=poorly drained; VPD=very poorly drained

Observed Plants[2]

TREES:	Red maple (many pole size)	Eastern hemlock	Black birch
	Ironwood	Slippery elm	Yellow birch
	White pine	Red oak	
SHRUBS:	Highbush blueberry	Japanese barberry	Spicebush
	Sweet pepperbush	black birch (s)	
HERBS/MOSSES:	Blue Swamp violet	Sphagnum mosses	Skunk cabbage
	Bladder sedge	Jewelweed	Penn bittercress
	Bristly bedstraw	Follicled sedge	White swamp violet
	Marsh bedstraw	Royal fern	Cinnamon fern
	Hooked buttercup	Lady fern	Golden saxifrage
VINES:	Fox grape	Virginia creeper	

Observed Wildlife & Wildlife sign *(within wetland or nearby):*

Green frog	Phoebe	Wood frog	Deer	catbird
Barred owl	Two-lined salamander	Red-backed salamander	Wood thrush	cardinal

Notes

This wetland ecological unit occupies the forested east side of a gently sloping valley floor, bordered by a moderately sloping ridge to the east. It is fed by groundwater seepage, including the outlet stream of a spring-fed pond. Some filling took place in southern portion. Broadleaf trees predominate, and small "polesize" trees are dominant west of the corridor. Stream channel is braided in northern portion with an upland island. Water quality is excellent, with abundant mosses, and very low nutrient levels, based on testing for water quality. Banks are stable, not undercut or eroded, and flow occupies most of the channel bed (just 12-18" wide). Woody debris, including a large tree tip, is common at the north end. A broad (30 – 40 feet) swath of seasonally saturated forested wetland extends westerly from the stream; the eastern terrace is narrow.

[2] Dominant plant species are underlined. Invasive species are double underlined. (s) = saplings

WETLAND DELINEATION & CHARACTERIZATION FIELD FORM

Project:	Killingly Energy Center, 189 Lake Rd, Killingly	**Wetland ID:**	**A3**
Inspection Dates:	5/4, 5/26, 6/4/16	Wetland Flag Series:	RES-3A-13 to 3A69; 2A-1 to 2A-30
Inspector(s):	G. Logan, S. Gadwa	NWI Classification Codes:[1]	**PFO1/4**

Weather/Field Conditions:	5-4-16 overcast, cold; 5-26-16 sunny, fair, low wind	Snow/Frost Depth:	
Soil Moisture:	☒ Wet	☒ Moist	☐ Dry
Type of Wetland Delineation:	☒ State	☒ Federal	☐ Other

HGM Classification

☒ Surface Water Slope	☐ Surface Water Depression
☒ Groundwater Slope	☒ Groundwater Depression

NWI Classification

System:

☒ Palustrine	☐ Lacustrine	☐ Riverine	☐ Estuarine

Class:

☒ Forested	☐ Scrub Shrub	☐ Emergent
☐ Aquatic Bed	☒ Unconsolidated Bottom	☐ Unconsolidated Shore

Subclass:

☒ Broad-leaved deciduous	☒ Needle-leaved evergreen	☒ Persistent
☐ Non-persistent	☒ Sand *stream substrate, S. end*	☒ Mud *streambanks, deep shade*
☐ Other:_____, _____		

Wetland Hydrology

☒ Seasonally Flooded	☒ Temporarily Flooded	☐ Semi-permanently Flooded
☒ Seasonally Saturated	☒ Saturated	☐ Permanently Flooded

Watercourse Type

☒ Intermittent	☐ Perennial	☐ Tidal
Comments: *This low-gradient watercourse joins WA2 near southern property line & flows offsite. Central portion flows through a broad (~60' wide) sunlit marsh. South end: a ~3' wide stream with defined banks*		

Special Aquatic Habitats

☐ Vernal Pool	☐ Bog	☐ Fen
Comments: *Deepest pool, by a tree tip, centrally located (south of Wetland Flag 3A-67) is not deep enough or flooded long enough for wood frog breeding. Pickerel frog and spring peeper breeding probable.*		

[1] The wetland unit could include more than one cover type. The dominant cover type is first.

Mapped Soil Series/Units

Soil Series (Map Unit Symbol)	WET	UP	DRAINAGE CLASS	NRCS MAPPED	FIELD CONFIRMED
Walpole sandy loam (13) (dominant)	☒	☐	PD	☒	☒
Leicester, Whitman, Ridgebury (3)	☒	☐	PD, VPD	☐	☒
Scarboro muck (15)	☐	☒	VPD	☐	☒
Ninigret & Tisbury (21)	☒	☐	MWD	☒	☒
Canton & Charlton soils (62)	☐	☒	WD	☒	☒
	☐	☐		☐	☐

ED=excessively drained; SED=somewhat excessively drained; WD=well drained; MWD=moderately well drained; SPD=somewhat poorly drained; PD=poorly drained; VPD=very poorly drained

Observed Plants[2]

TREES:	<u>Red maple</u>	<u>Eastern hemlock</u>	<u>Black birch</u>
	Ironwood	Red oak	Yellow birch
	White pine		
SHRUBS:	Highbush blueberry	Japanese barberry	Spicebush
	Red maple (s)	Birch (s)	Winterberry
HERBS/MOSSES:	<u>Cinnamon fern</u>	Tussock sedge	Skunk cabbage
	<u>Sphagnum mosses</u>	<u>Jewelweed</u>	Marsh bedstraw
	<u>Bristly dewberry</u>	<u>Canada mayflower</u>	<u>Blue swamp violet</u>
	Dwarf ginseng	Wood anemone	Star flower
	Bladder sedge	<u>Sedges</u> (spp.)	Tall meadow rue
VINES:	Poison ivy	Virginia creeper	

Observed Wildlife & Wildlife sign *(within wetland or nearby):*

Pickerel frog	Green frog	Spring peeper	Gray tree frog	Veery
Barred owl	Catbird	Deer	Coyote	Red squirrel
LA waterthrush	Two-lined salamander	Wood frog		

Notes

This wetland ecological unit is a broad wetland on the west side of the central valley, with a broad swath of hemlock forest, and moderate microtopography. A moderate-height ridge lies to the west with rock outcrops (and abandoned quarry). The wetland intercepts a sub-regional groundwater table, and contains sizable marshy areas along the eastern section of stream, with very poorly drained organics, saturated year round. Plants besides Sphagnum patches are sparse under deep hemlock shade. The seasonal (semi-perennial) stream originates at a cistern/spring and has been ditched through the entire length of the swamp, likely in the late 1800s or early 1900s. The cistern contains a sizeable population of mayflies.

[2] Dominant plant species are <u>underlined</u>. Invasive species are <u>double underlined</u>. (s) = saplings

WETLAND DELINEATION & CHARACTERIZATION FIELD FORM

Project:	Killingly Energy Center, 189 Lake Rd, Killingly	**Wetland ID:**	**B**
Inspection Dates:	3-18, 5-20, 5-26, & 6-4-16	Wetland Flag Series:	RES-B-1 to B-41
Inspector(s):	G. Logan S. Gadwa	NWI Classification Codes:[1]	**PFO1/4**

Weather/Field Conditions:	5-20 & 26 sunny, fair, low wind	Snow/Frost Depth:	
Soil Moisture:	☐ Wet	☒ Moist	☐ Dry
Type of Wetland Delineation:	☒ State	☒ Federal	☐ Other

HGM Classification

☐ Surface Water Slope	☐ Surface Water Depression
☒ Groundwater Slope	☒ Groundwater Depression

NWI Classification

System:

☒ Palustrine	☐ Lacustrine	☐ Riverine	☐ Estuarine

Class:

☒ Forested	☐ Scrub Shrub	☐ Emergent
☐ Aquatic Bed	☒ Unconsolidated Bottom	☐ Unconsolidated Shore

Subclass:

☒ Broad-leaved deciduous PFO1	☒ Needle-leaved evergreen PFO4	☐ Persistent
☐ Non-persistent	☐ Sand	☒ Mud
☐ Other: _____, _____		

Wetland Hydrology

☒ Seasonally Flooded	☒ Temporarily Flooded	☐ Semi-permanently Flooded
☒ Seasonally Saturated	☐ Saturated	☐ Permanently Flooded

Watercourse Type

☒ Intermittent	☐ Perennial	☐ Tidal
Comments: A ditched outlet stream carries outflow off-site to the Quinebaug River		

Special Aquatic Habitats

☒ Vernal Pool	☐ Bog	☐ Fen
Comments: A seasonally flooded portion of wetland supports breeding of spotted salamander, wood frog, spring peeper, and gray tree frog (possibly pickerel frog)		

[1] The wetland unit could include more than one cover type. The dominant cover type is first.

Wetland Delineation & Characterization Field Form *(continued):* ***Project:*** KEC

Wetland ID: **B**

Mapped Soil Series/Units

Soil Series (Map Unit Symbol)	WET	UP	DRAINAGE CLASS	NRCS MAPPED	FIELD CONFIRMED
Sutton fine sandy loam (52)	☐	☒	MWD	☒	☒
Leicester, Ridgebury, Whitman (3)	☒	☐	PD, VPD	☐	☒
Hinckley loamy sand (38C)	☒	☐	EWD	☒	☒
Charlton-Chatfield complex (73)	☐	☒	WD	☒	☒
	☐	☐		☐	☐
	☐	☐		☐	☐

ED=excessively drained; SED=somewhat excessively drained; WD=well drained; MWD=moderately well drained; SPD=somewhat poorly drained; PD=poorly drained; VPD=very poorly drained

Observed Plants[2]

TREES:	Red maple	Eastern hemlock	Black birch
	Ironwood	Slippery elm	Black willow
	White pine	Green ash	
SHRUBS:	Spicebush	Japanese barberry	Winterberry
	Nannyberry		
HERBS:	Sensitive fern	Cinnamon fern	Skunk cabbage
	False nettle	Jewelweed	Fowl meadow grass
	Wood anemone	Dwarf ginseng	Bristly dewberry
	Canada mayflower	Hay-scented fern	Cinnamon fern
	Jack-in-the pulpit	New York fern	Partridgeberry
VINES:	Poison ivy		

Observed Wildlife & Wildlife sign *(within wetland or nearby):*

Wood thrush	Red-eyed vireo	Ovenbird	Gray tree frog	Sp. salamander
Wood frog	White tailed deer	White-footed mouse	Spring peeper	
Phoebe	Raven (flyover)	Red-shouldered hawk		

Notes

Wetland Unit B encompasses a seasonally saturated, densely vegetated, rocky slope on the east side of the wetland, dominated by spicebush, and a depressional area with several pools and extended soil saturation, supporting lush herbs. The deepest pool is a small vernal pool with over 30 inches of organics. On the northern & eastern periphery is seasonally saturated hemlock forest with sparse herbs. WB discharges northerly into a small north-flowing stream (ditched). Tree tips and moss-covered large woody debris are abundant. Surface flows are piped to this wetland along its southwestern edge from a wood road.

[2] Dominant plant species are underlined. Invasive species are double underlined. (s) = saplings

WETLAND DELINEATION & CHARACTERIZATION FIELD FORM

Project: Killingly Energy Center, 189 Lake Rd, Killingly		**Wetland ID:**	C
Inspection Dates: 5-26-16	Wetland Flag Series: WL		
Inspector(s): G. Logan, S. Gadwa	NWI Classification Codes:[1]		PFO1

Weather/Field Conditions:	5-26 sunny, fair, low wind	Snow/Frost Depth:	
Soil Moisture:	☐ Wet	☒ Moist	☐ Dry
Type of Wetland Delineation:	☒ State	☒ Federal	☐ Other

HGM Classification

☒ Surface Water Slope	☐ Surface Water Depression
☒ Groundwater Slope	☐ Groundwater Depression

NWI Classification

System:

☒ Palustrine	☐ Lacustrine	☐ Riverine	☐ Estuarine

Class:

☒ Forested	☒ Scrub Shrub (along swale)	☐ Emergent
☐ Aquatic Bed	☒ Unconsolidated Bottom	☐ Unconsolidated Shore

Subclass:

☒ Broad-leaved deciduous PFO1	☒ Needle-leaved evergreen PFO4	☐ Persistent
☐ Non-persistent	☐ Sand	☐ Mud
☐ Other:_____, _____		

Wetland Hydrology

☒ Seasonally Flooded	☐ Temporarily Flooded	☐ Semi-permanently Flooded
☒ Seasonally Saturated (swale)	☐ Saturated	☐ Permanently Flooded

Watercourse Type

☒ Intermittent	☐ Perennial	☐ Tidal
Comments: At western terminus joins intermittent outlet stream of Wetland Unit B, just 12-18" wide, and 1-2" deep. Stream is incised up to two feet, shaded by hemlocks, with minimal riparian vegetation. Vegetated feeder swale (i.e. Wetland C) joins the stream from the east.		

Special Aquatic Habitats

☐ Vernal Pool	☐ Bog	☐ Fen

[1] The wetland unit could include more than one cover type. The dominant cover type is first.

Mapped Soil Series/Units

Soil Series (Map Unit Symbol)	WET	UP	DRAINAGE CLASS	NRCS MAPPED	FIELD CONFIRMED
Leicester, Ridgebury, Whitman (3)	☒	☐	PD, VPD	☐	☒
Hinckley loamy sand (38)	☐	☒	ED	☒	☒
Sutton fine sandy loam (52)	☐	☒	MWD	☒	☒
Chatfield- Charlton sandy loam (62)	☐	☒	WD	☒	☒
	☐	☐		☐	☐
	☐	☐		☐	☐

ED=excessively drained; SED=somewhat excessively drained; WD=well drained; MWD=moderately well drained; SPD=somewhat poorly drained; PD=poorly drained; VPD=very poorly drained

Observed Plants[2]

TREES:	Eastern hemlock	Red maple	Black birch
	Red oak	Black oak	White pine
SHRUBS:	Hemlock (s)	Japanese barberry	Birch (s)
	Spicebush	Highbush blueberry	
HERBS/MOSSES:	Skunk cabbage	Cinnamon fern	Canada mayflower
	Christmas fern	Wood ferns	Jack-in-the-pulpit
	Violets	New York fern	Sensitive fern
	Sphagnum mosses		
VINES:	Virginia creeper		

Observed Wildlife & Wildlife sign *(within wetland or nearby):*

Gray tree frog	ovenbird	Wood thrush	Red-eyed vireo	deer
Raccoon				

Notes

Wetland Unit C is a narrow, small, mostly high-gradient, seasonal seepage wetland that exits the hemlock forest on the west side of the site and continues off-site towards the Quinebaug River, along an intermittent watercourse that originates in Wetland B. The sandy soil in glaciofluvial deposits near the river allows water to soak in quickly, limiting moisture levels and development of hydrophytic vegetation along the watercourse.

[2] Dominant plant species are underlined. Invasive species are double underlined. (s) = saplings

WETLAND DELINEATION & CHARACTERIZATION FIELD FORM

Project: Killingly Energy Center, 189 Lake Rd, Killingly		**Wetland ID:**	**D**
Inspection Dates: 5-26-16	Wetland Flag Series: RES-D-1 to D-26		
Inspector(s): G. Logan, S. Gadwa	NWI Classification Codes:[1]		**PFO1/4**

Weather/Field Conditions:	5-26 sunny, fair, low wind	Snow/Frost Depth:	
Soil Moisture:	☐ Wet	☒ Moist	☐ Dry
Type of Wetland Delineation:	☒ State	☒ Federal	☐ Other

HGM Classification

☒ Surface Water Slope	☐ Surface Water Depression
☒ Groundwater Slope	☐ Groundwater Depression

NWI Classification

System:

☒ Palustrine	☐ Lacustrine	☐ Riverine	☐ Estuarine

Class:

☐ Forested	☒ Scrub Shrub	☒ Emergent
☐ Aquatic Bed	☐ Unconsolidated Bottom	☐ Unconsolidated Shore

Subclass:

☒ Broad-leaved deciduous	☐ Needle-leaved evergreen	☒ Persistent
☒ Non-persistent	☐ Sand	☐ Mud
☐ Other:_____, _____		

Wetland Hydrology

☐ Seasonally Flooded	☐ Temporarily Flooded	☐ Semi-permanently Flooded
☒ Seasonally Saturated	☐ Saturated	☐ Permanently Flooded

Watercourse Type

☐ Intermittent	☐ Perennial	☐ Tidal
Comments:		

Special Aquatic Habitats

☐ Vernal Pool	☐ Bog	☐ Fen

[1] The wetland unit could include more than one cover type. The dominant cover type is first.

Wetland Delineation & Characterization Field Form *(continued):* ***Project:*** KEC
Wetland ID: **D**

Mapped Soil Series/Units

Soil Series (Map Unit Symbol)	WET	UP	DRAINAGE CLASS	NRCS MAPPED	FIELD CONFIRMED
Ridgebury (2)	☒	☐	PD	☐	☒
Walpole sandy loam (13)	☒	☐	PD	☐	☒
Sutton fine sandy loam (52)	☐	☒	MWD	☐	☒
Chatfield- Charlton sandy loam (62)	☐	☒	WD	☒	☒
	☐	☐		☐	☐
	☐	☐		☐	☐

ED=excessively drained; SED=somewhat excessively drained; WD=well drained; MWD=moderately well drained; SPD=somewhat poorly drained; PD=poorly drained; VPD=very poorly drained

Observed Plants[2]

TREES/SAPLINGS:	White Pine	Red maple	Green ash
	Black cherry		
SHRUBS:	Glossy buckthorn	Willows	Morrow's honeysuckle
	Autumn olive	Highbush blueberry	N. arrowwood
	Steeplebush	Meadowsweet	Multiflora rose
HERBS/MOSSES:	Roughstem goldenrod	Poison ivy	Bedstraw
	Common cinquefoil	Golden alexanders	Sensitive fern
	Royal fern	New York fern	Asters
	Grasses	Sedges	Madder
	Blue-eyed grass	Deer tongue	
VINES:	Poison ivy	Asiatic bittersweet	Fox grape

Observed Wildlife & Wildlife sign *(within wetland or nearby):*

Gray tree frog	Prairie warbler	Field sparrow	American robin	Yellow warbler
Indigo bunting	Yellow-throated vireo	Towhee	Broad-wing. hawk	Turkey
Crow	Common yellowthroat	Garter snake	Milk snake	Red-tld. Hawk
Cardinal	R. thr. Hummingbird	Deer	Meadow-jump. Mouse	Raven (flyover)

Notes

Wetland Unit D is the western portion of a larger wetland complex that occurs off-site within the Eversource electric right of way. It is a mosaic of scrub shrub and emergent wetland. Soils are derived from a sandy deposit within a till dominated landform. Spodic horizons were observed with a rudimentary iron pan. Some disturbance due to past agricultural activities is present, and invasive species, particularly glossy buckthorn, are locally dominant, and spreading.

[2] Dominant plant species are underlined. Invasive species are double underlined. (s) = saplings

WETLAND DELINEATION & CHARACTERIZATION FIELD FORM

Project: Killingly Energy Center, 189 Lake Rd, Killingly		**Wetland ID:**	**E**
Inspection Dates: 5-26-16	Wetland Flag Series: RES-E-1 to E-8		
Inspector(s): G. Logan, S. Gadwa	NWI Classification Codes:[1]	**PFO1/4**	

Weather/Field Conditions:	5-26 sunny, fair, low wind	Snow/Frost Depth:	
Soil Moisture:	☐ Wet	☒ Moist	☐ Dry
Type of Wetland Delineation:	☒ State	☒ Federal	☐ Other

HGM Classification

☒ Surface Water Slope	☐ Surface Water Depression
☐ Groundwater Slope	☐ Groundwater Depression

NWI Classification

System:

☒ Palustrine	☐ Lacustrine	☐ Riverine	☐ Estuarine

Class:

☒ Forested	☐ Scrub Shrub	☐ Emergent
☐ Aquatic Bed	☐ Unconsolidated Bottom	☐ Unconsolidated Shore

Subclass:

☒ Broad-leaved deciduous	☒ Needle-leaved evergreen	☐ Persistent
☐ Non-persistent	☐ Sand	☐ Mud
☐ Other:_____, _____		

Wetland Hydrology

☒ Seasonally Flooded	☐ Temporarily Flooded	☐ Semi-permanently Flooded
☒ Seasonally Saturated	☐ Saturated	☐ Permanently Flooded

Watercourse Type

☐ Intermittent	☐ Perennial	☐ Tidal
Comments:		

Special Aquatic Habitats

☐ Vernal Pool	☐ Bog	☐ Fen

[1] The wetland unit could include more than one cover type. The dominant cover type is first.

Wetland Delineation & Characterization Field Form *(continued):* ***Project:*** KEC
Wetland ID: E

Mapped Soil Series/Units

Soil Series (Map Unit Symbol)	WET	UP	DRAINAGE CLASS	NRCS MAPPED	FIELD CONFIRMED
Ridgebury (2)	☒	☐	PD	☐	☒
Hinckley loamy sand (38)	☐	☒	ED	☒	☒
Sutton fine sandy loam (52)	☐	☒	MWD	☒	☒
Chatfield- Charlton sandy loam (62)	☐	☒	WD	☒	☒
	☐	☐		☐	☐
	☐	☐		☐	☐

ED=excessively drained; SED=somewhat excessively drained; WD=well drained; MWD=moderately well drained; SPD=somewhat poorly drained; PD=poorly drained; VPD=very poorly drained

Observed Plants[2]

TREES:	Eastern hemlock	Red maple	Black birch
	White pine	Red oak	
SHRUBS:	Hemlock (s)	Japanese barberry	
HERBS/MOSSES:	Violets	Poison ivy	Bedstraw
	Christmas fern	Wood ferns	Jack-in-the-pulpit
	Starflower	New York fern	Asters
	Grasses	Cinnamon fern	
VINES:	Poison ivy		

Observed Wildlife & Wildlife sign *(within wetland or nearby):*

Gray tree frog	Scarlet tanager	Wood thrush	Red-eyed vireo	deer

Notes

Wetland Unit E is a very small and isolated shallow depressional area that receives surface flows from the surrounding forest. It overflows down a moderately steep slope to Wetland C, which flows off-site via an intermittent stream to the Quinebaug River. The overflow is a broad and shallow swale that does not qualify as an intermittent watercourse.

[2] Dominant plant species are underlined. Invasive species are double underlined. (s) = saplings

WETLANDS: *The Physical Environment*

WETLAND HYDROGEOMORPHIC CLASSIFICATION

Surface-Water Depression Wetlands: In these wetlands, precipitation and overland flow (surface runoff) collect in a depression where there is little or no groundwater discharge. Water leaves the wetland principally by evaporotranspiration and infiltration (groundwater recharge). The wetland hydrologic system lies above the local or regional groundwater system and is isolated from it by an unsaturated zone; thus, it is said to be "perched." In the glaciated Northeast, surface-water depression wetlands are most likely to form over bedrock or till deposits in topographically elevated areas of landscape; however, they may develop in lowland kettles or ice-block basins that formed in glaciolacustrine or fine-textured glaciofluvial deposits.

Surface-Water Slope Wetlands: These wetlands are located along the edge of stream or lake or on the sloping surface of a floodplain. They may occur on till or stratified drift but are commonly found on alluvium. While precipitation and overland flow also feed these wetlands, the principal source of water is the overflow of the adjacent water body. The sloping surface of the wetland permits water to drain readily back to the lake or river as its stage falls. As was the case with the previous class, the wetland surface usually lies well above the local water table, so groundwater discharge to the wetland is negligible or nonexistent. Groundwater recharge from the wetland is possible, depending on the permeability of underlying surficial deposits.

Groundwater Depression Wetlands: These wetlands occur where a basin intercepts the local groundwater table, so that groundwater discharge as well as precipitation and overland flow feed the wetland. Classic groundwater depression wetlands have no surface drainage leaving the site; however, occasional streamflow out may occur form basin overflow. Groundwater inflow may be continuous or seasonal, depending upon the depth of the basin and the degree of fluctuation of the local water table. During periods when the wetland water level is higher than the local groundwater table (e.g., after major precipitation events in dry season), groundwater recharge may occur. Groundwater may enter the wetland basin from all directions, or it may discharge in one area and recharge in another. In the glaciated Northeast, groundwater depression wetlands are most likely to occur in stratified drift, particularly in coarse-textured glaciofluvial deposits where relatively rapid movement between groundwater and surface water can occur.

Groundwater Slope Wetlands: These wetlands occur where groundwater discharges as springs or seeps at the land surface and drains away as streamflow. Most commonly, these wetlands occur on hillsides over till deposits or at the base of hills where stratified drift and till come into contact. Headwater wetlands are typically groundwater slope wetlands. The local water table slopes toward the wetland surface. Where groundwater flow is continuous, the soil remains saturated. At many sites, however, groundwater inputs cease during late summer or early fall as evaporotranspiration depletes soil moisture in the root zone, in which case the soil is only seasonally saturated. Permanent ponding of water is prevented by the sloping land surface, but water may collect temporarily in isolated depressions. Precipitation and overland flow provide additional water to the wetland on an intermittent basis. Groundwater recharge may occur in the wetland after such events, but amounts are likely to be negligible, especially where wetland soils have formed over dense lodgment till deposits. Where such deposits are present, groundwater slope wetlands may be fed primarily by shallow groundwater systems perched above the regional system.

Reference:

Golet, C.G., A.J.K. Calhoun, W.R. DeRagon, D.J. Lowry, and A.J. Gold. 1993. Ecology of Red Maple Swamps in the Glaciated Northeast: A Community Profile. USFWS. Biological Report No. 12

WETLANDS: *The Physical Environment*

SOIL DRAINAGE CLASSES

Excessively drained: Brightly colored; usually coarse-textured; rapid permeability; very low water-holding capacity; subsoil free of mottles

Somewhat excessively drained: Brightly colored; rather sandy; rapid permeability; low water-holding capacity; subsoil free of mottles

Well drained: Color usually bright yellow, red, or brown; drain excess water readily, but contain sufficient fine material to provide adequate moisture for plant growth; subsoil is free of mottles to a depth of at least 36 inches.

Moderately well drained: Generally any texture, but internal drainage is restricted to some degree; mottles common in the lower part of the subsoil, generally at a depth of 18 to 36 inches; may remain wet and cold later in spring; generally suited for agricultural use.

Somewhat poorly drained: Remain wet for long periods of time due to slow removal of water; generally have a slowly permeable layer within the profile or a high water table; mottles common in the subsoil at a depth of 8 to 18 inches.

Poorly drained: Dark, thick surface horizons commonly; gray colors usually dominate subsoil; water table at or near the surface during a considerable part of the year; mottles frequently found within 8 inches of the soil surface.

Very poorly drained: Generally thick black surface horizons and gray subsoil; saturated by high water table most of the year; usually occur in level or depressed sites and are frequently ponded with water.

Reference:

Wright, W. R., and E. H. Sautter. 1979. Soils of Rhode Island landscapes. R.I. Agric Exp. Station Bull. 429. 42 pp.

WETLANDS: *The Physical Environment*

COMMON WATER REGIMES OF NORTHEASTERN WETLANDS

Seasonally flooded: Surface water is present for extended periods, especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.

Temporarily flooded: Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the season.

Seasonally saturated: The soil is saturated to the surface, especially early in the growing season, but unsaturated conditions prevail by the end of the season in most years. Surface water is absent except for groundwater seepage and overland flow.

Semi-permanently flooded: Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land surface.

Permanently flooded: Water covers the land surface throughout the year in all years. Vegetation is composed of obligate hydrophytes.

Saturated: The substratum is saturated to the surface for extended periods during the growing season, but surface water is seldom present. This water regime applies to permanently saturated, non-flooded wetlands such as bogs.

References:

Golet, F. C., A. J. K. Calhoun, W. R. DeRagon, D. J. Lowry and A. J. Gold. 1993. Ecology of Red Maple Swamps in the Glaciated Northeast: A Community Profile. U. S. Dep. Int. Fish Wild. Serv. Biol. Rep. 12, 152 pp.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U. S. Fish Wild. Serv. Biol. Serv. Program FWS-OBS 79/31. 103 pp.

Attachment C

Annotated Photographs

Wetland/Watercourse Resources associated with Killingly Energy Center, Lake Road, Killingly, CT
Photos taken March to June 2016, by REMA Ecological Services, LLC

Photo A1-1: Wetland A1; man-made pond; 6-13-16; facing northwesterly

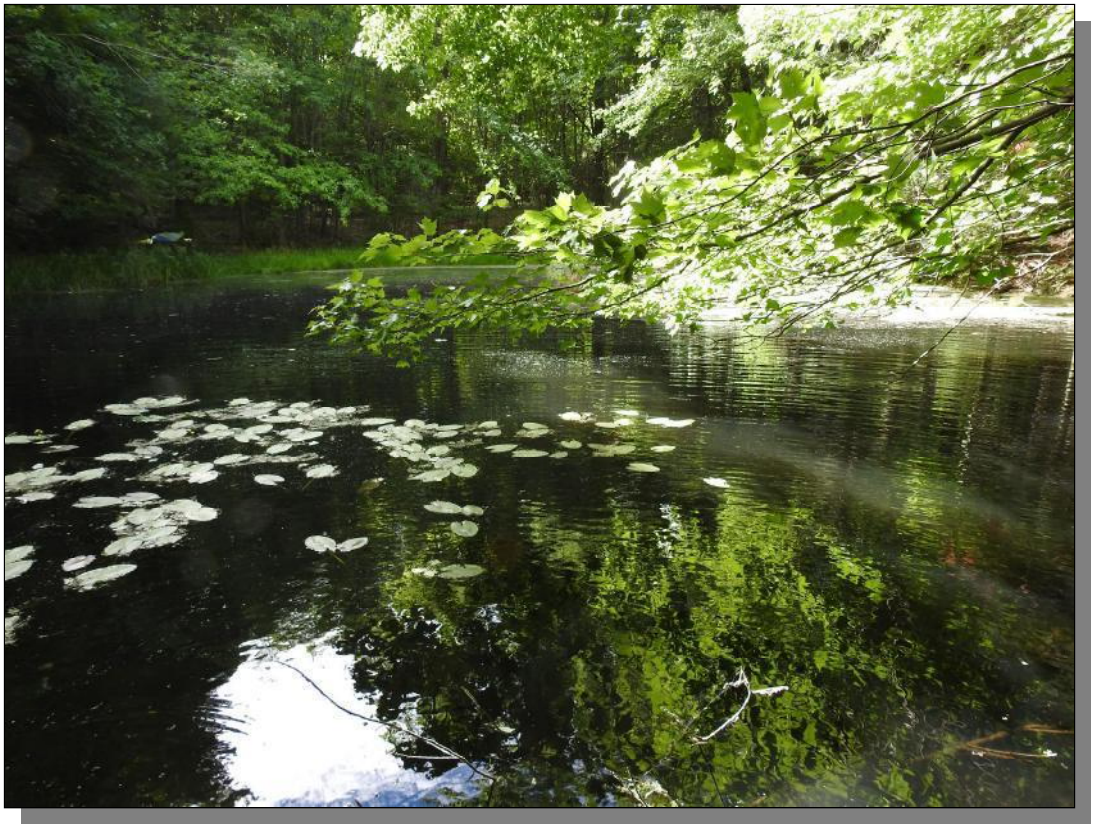


Photo A1-2: Man-made pond from earthen embankment; 6-10-16; facing southeasterly

Photo A1-3: Wetland A1; pump house and spring overflowing to man-made pond; 3-11-16; facing southeasterly

Photo A1-4: Man-made pond overflow to Wetland A2; from earthen embankment; 4-13-16; facing southwesterly

Photo A2-1: Wetland A2; semi-perennial stream and wetland corridor; 3-11-16; facing northwesterly

Photo A2-2: Wetland A2, lower portion on sandy soils; looking across wetland corridor; 3-11-16; facing westerly

Photo A2-3: Wetland A2; semi-perennial stream; upper portion on till soils; 5-26-16; facing southerly

Photo A2-4: Wetland A2, lower portion on outwash soils; 6-10-16; facing northerly

Photo A3-1: Wetland A3; seasonally flooded to saturated evergreen and deciduous wetland; 3-1-16; facing southerly

Photo A3-2: Wetland A3, semi-perennial stream outlet at property boundary; 3-11-16; facing northerly

Photo A3-3: Wetland A3; cistern at spring at the headwaters of the wetland's watercourse; 3-18-16; facing westerly

Photo A3-4: Wetland A3, cistern at wetland's spring; 6-10-16; facing easterly

Photo A3-5: Wetland A3; central section; 5-4-16; facing southwesterly

Photo A3-6: Wetland A3, southern section along channelized watercourse; 4-13-16; facing southwesterly

Photo A3-7: Wetland A3; watercourse within swamp; 5-20-16; facing southwesterly

Photo A3-8: Wetland A3, southern section; understory (background) dominated by tussock sedge; 6-10-16; facing easterly

Wetland/Watercourse Resources associated with Killingly Energy Center, Lake Road, Killingly, CT
Photos taken March to June 2016, by REMA Ecological Services, LLC

Photo B-1: Wetland B; seasonally saturated to flooded wooded swamp; central section; 4-13-16; facing northerly

Photo B-2: Wetland B, northern section; 5-26-16; facing southeasterly

Photo B-3: Wetland B; seasonally flooded area with 3+ feet of organics; an embedded vernal pool habitat; central section; 3-24-16; facing northeasterly

Photo B-4: Wetland B, central section; 5-26-16; facing northeasterly

Photo B-5: Wetland B; northwesterly extent; outlet stream forms at stone wall; also surface water quality sampling station; 4-26-16; facing northeasterly

Photo B-6: Wetland B, outlet intermittent stream at property boundary, flowing towards the Quinebaug River; facing northwesterly

Wetland/Watercourse Resources associated with Killingly Energy Center, Lake Road, Killingly, CT
Photos taken March to June 2016, by REMA Ecological Services, LLC

Photo C-1: Wetland C; seasonally saturated hillside seep; discharges to Wetland B's outlet stream off-site; 5-26-16; facing northeasterly

Photo C-2: Wetland C, top of delineated wetland; 5-26-16; facing southwesterly

Photo D-1: Wetland D; seasonally saturated scrub-shrub/emergent wetland (complex); northern section; 5-26-16; facing southerly

Photo D-2: Wetland D, emergent section up against eastern site boundary and Eversource ROW; 5-26-16; facing southeasterly

Photo D-3: Wetland D; central section; 5-26-16; facing southwesterly

Wetland/Watercourse Resources associated with Killingly Energy Center, Lake Road, Killingly, CT
Photos taken March to June 2016, by REMA Ecological Services, LLC

Photo E-1: Wetland E; seasonally saturated forested wetland pocket; 4-13-16; facing northeasterly

Photo E-2: Wetland E, a heavily shaded wetland pocket; 5-26-16; facing southwesterly

Wetland/Watercourse Resources associated with Killingly Energy Center, Lake Road, Killingly, CT
Photos taken March to June 2016, by REMA Ecological Services, LLC

Photo X-1: Wetland X; seasonally saturated, disturbed wetland, along cleared woods road, just west of Wetland A-3; 3-18-16; facing northerly

Photo X-2: Wetland X, a narrow, disturbed wetland; 3-24-16; facing southeasterly

Attachment D

Surface Water Quality Sampling

Table A. Surface water analytical results for two samples taken on 3-11-16 at the NTE Generating Facility, 189 Lake Road, Killingly, Connecticut: *Station #1A* , 5 feet upgradient of the outlet of a man-made farm pond (Wetland A1); *Station #1B* , about 200 feet downstream of the pond outlet, in WA2.

Sampling Stations:	*Station #1A (WA1)*	*Station #1B (WA2)*	*CT Standards*
Sampled on 3-11-16	Pond just above dam	Stream +/-200' below pond	
Sampling Time:	3:10 PM	5:29 PM	
Conductivity (µS/cm)	81.1	91.0	NE
pH	6.40	6.63	NE
Salinity (PPT)	0.1	ND	NE
Temperature (degrees C)	11.6	ND	as naturally occurs[1]
Total Phosphorus as P (µg/l)	0.03	0.02	only of natural origin[1], 23[2]
Ortho Phosphorus as P (µg/l)	0.01	<0.01	NE
Nitrate-N + nitrite-N (mg/l)	0.35	0.21	0.31[2] (includes Nitrite-N)
Ammonia (mg/l)	0.08	0.09	1.9[3] (chronic)
Total Kjeldahl Nitrogen (mg/l)	0.39	0.30	5[1]; 1.26[2]
Total Nitrogen (mg/l)	0.74	0.51	0.56[2]

NOTES:

N/A = Not applicable

NE = No standard established

mg/L = milligrams per Liter; µg/L = micrograms per Liter

[1] The State of Connecticut Water Quality Standards for Class A Waters.

[2] USEPA Nutrient Criteria (draft) for EcoRegion IV, Level 11 Ecoregion 59 (coastal New England).

[3] USEPA Freshwater Ambient Criteria (chronic toxicity) (2013); @ pH 7.0, Temp. 20^{o}C

Table B. Surface water analytical results for three samples taken on 5-4-16 at the NTE Generating Facility Site, 189 Lake Road, Killingly, Connecticut: *Station #1A* , 5 feet upgradient of the outlet of an excavated farm pond (Wetland A1); *Station #2* , just past the confluence of two un-named Intermittent streams, Wetlands A2 & A3; and *Station #3* , the outlet stream for Wetland B at northwestern section of site.

Sampling Stations:	*Station #1 (WA1)*	*Station #2 (WA1& 2)*	*Station #3 (WC)*	*CT Standards*
Sampled on 5-4-16	Pond just above dam	Confl., Stream A1 & A2	Outlet Stream of WB	
Sampling Time:	2:29 PM	3:01 PM	3:44 PM	
Conductivity (µS/cm)	50.5	49.8	21.4	NE
pH	6.70	6.78	6.60	NE
Salinity (PPT)	0.0	0.0	0.0	NE
Temperature (degrees C)	11.1	9.6	9.4	as naturally occurs[1]
Total Phosphorus as P (µg/l)	0.04	0.10	0.06	only of natural origin[1], 23.00[2]
Ortho Phosphorus as P (µg/l)	0.01	0.02	<0.01	NE
Nitrate-N + nitrite-N (mg/l)	0.12	0.22	0.01	0.31[2] (includes Nitrite-N)
Ammonia (mg/l)	<0.05	<0.01	0.10	1.9[3] (chronic)
Total Kjeldahl Nitrogen (mg/l)	0.34	0.67	0.49	5[1]; 1.26[2]
Total Nitrogen (mg/l)	0.46	0.89	0.50	0.56[2]

NOTES:

N/A = Not applicable

NE = No standard established

mg/L = milligrams per Liter; µg/L = micrograms per Liter

[1] The State of Connecticut Water Quality Standards for Class A Waters.

[2] USEPA Nutrient Criteria (draft) for EcoRegion IV, Level 11 Ecoregion 59 (coastal New England).

[3] USEPA Freshwater Ambient Criteria (chronic toxicity) (2013); @ pH 7.0, Temp. 20^{o}C

Note that the Total Nitrogen parameter is the sum of other nitrogen paramters; it is often used for stream assessments.

PHOENIX
Environmental Laboratories, Inc.

Thursday, March 17, 2016

Attn:
Rema Ecological Services
164 East Center Street
Suite 8
Manchester CT 06040

Project ID: 189 LAKE ROAD KILLINGLY
Sample ID#s: BK77815 - BK77816

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 17, 2016

FOR: Attn:
Rema Ecological Services
164 East Center Street
Suite 8
Manchester CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:	SG	03/11/16	15:10
Location Code:	REMA	Received by:	SW	03/11/16	17:29
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK77815
Phoenix ID: BK77815

Project ID: 189 LAKE ROAD KILLINGLY
Client ID: STATION 1 POND

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Conductivity	113	5.00	umhos/cm	1	03/12/16	RWR/KDB	SM2510B-97
Ammonia as Nitrogen	0.08	0.05	mg/L	1	03/16/16	WHM	E350.1
Nitrite-N	0.01	0.01	mg/L	1	03/11/16 20:25	CAL	E353.2
Nitrate-N	0.34	0.02	mg/L	1	03/11/16 20:25	CAL	E353.2
Ortho-Phosphate-P	0.01	0.01	mg/L	1	03/11/16 19:32	CAL	SM4500PF-99
pH	6.42	0.10	pH Units	1	03/12/16 00:23	RWR/KDB	SM4500-H B-00
Nitrogen Tot Kjeldahl	0.39	0.10	mg/L	1	03/16/16	WHM	E351.1
Total Nitrogen	0.74	0.10	mg/L	1	03/16/16	WHM	SM4500NH3/E300.0
Phosphorus, as P	0.03	0.01	mg/L	1	03/15/16	MA	SM4500PE-99

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Ortho-Phosphate was not field filtered within 15 minutes of collection.

Total Phosphorus:
This sample was received with a pH>2. The EPA requires preservation at time of sampling to a pH of <2. A sample bias can not be ruled out.

Ammonia:
This sample was received with a pH>2 The EPA requires preservation at time of sampling to a pH of <2. A sample bias can not be ruled out.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

Phyllis Shiller, Laboratory Director
March 17, 2016
Reviewed and Released by: Deb Lawrie, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 17, 2016

FOR: Attn:
Rema Ecological Services
164 East Center Street
Suite 8
Manchester CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:	SG	03/11/16	14:30
Location Code:	REMA	Received by:	SW	03/11/16	17:29
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBK77815
Phoenix ID: BK77816

Project ID: 189 LAKE ROAD KILLINGLY
Client ID: STATION 2 STREAM

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Conductivity	91	5.00	umhos/cm	1	03/12/16	RWR/KDB	SM2510B-97
Ammonia as Nitrogen	0.09	0.05	mg/L	1	03/16/16	WHM	E350.1
Nitrite-N	< 0.01	0.01	mg/L	1	03/11/16 20:26	CAL	E353.2
Nitrate-N	0.21	0.02	mg/L	1	03/11/16 20:26	CAL	E353.2
Ortho-Phosphate-P	< 0.01	0.01	mg/L	1	03/11/16 19:36	CAL	SM4500PF-99
pH	6.63	0.10	pH Units	1	03/12/16 00:25	RWR/KDB	SM4500-H B-00
Nitrogen Tot Kjeldahl	0.30	0.10	mg/L	1	03/16/16	WHM	E351.1
Total Nitrogen	0.51	0.10	mg/L	1	03/16/16	WHM	SM4500NH3/E300.0
Phosphorus, as P	0.02	0.01	mg/L	1	03/15/16	MA	SM4500PE-99

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

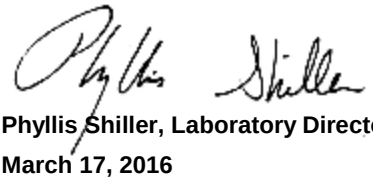
The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Ortho-Phosphate was not field filtered within 15 minutes of collection.

Total Phosphorus:
This sample was received with a pH>2. The EPA requires preservation at time of sampling to a pH of <2. A sample bias can not be ruled out.

Ammonia:
This sample was received with a pH>2 The EPA requires preservation at time of sampling to a pH of <2. A sample bias can not be ruled out.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.



Phyllis Shiller, Laboratory Director
March 17, 2016
Reviewed and Released by: Deb Lawrie, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

March 17, 2016

QA/QC Data

SDG I.D.: GBK77815

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 337837 (mg/L), QC Sample No: BK77090 (BK77815, BK77816)													
Ortho-Phosphate-P	BRL	0.01	0.06	0.07	15.4	101			96.1			85 - 115	20
QA/QC Batch 338038 (mg/L), QC Sample No: BK77110 (BK77815, BK77816)													
Ammonia as Nitrogen	BRL	0.05	0.10	0.10	NC	107			97.5				
Nitrogen Tot Kjeldahl	BRL	0.10	0.38	0.41	NC	99.4			102				
QA/QC Batch 338010 (mg/L), QC Sample No: BK77304 (BK77815, BK77816)													
Phosphorus, as P	BRL	0.01	5.06	4.99	1.40	106			106			85 - 115	20
QA/QC Batch 337868 (umhos/cm), QC Sample No: BK77538 (BK77815, BK77816)													
Conductivity	BRL	5.00	762	762	0	104						85 - 115	20
QA/QC Batch 337856 (pH), QC Sample No: BK77538 (BK77815, BK77816)													
pH			7.89	7.81	1.00	98.9						85 - 115	20
QA/QC Batch 337840 (mg/L), QC Sample No: BK77588 (BK77815, BK77816)													
Nitrate-N	BRL	0.02	1.38	1.39	0.70	102			120			85 - 115	20
Nitrite-N	BRL	0.01	0.12	0.13	8.00	103			86.5			85 - 115	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
March 17, 2016

Sample Criteria Exceedences Report

GBK77815 - REMA

Criteria: None

State: CT

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Cooler: Yes [x] No [ ]
Coolant: IPK [x] ICE [ ] N [ ]
Temp 15 °C Pg of

CHAIN OF CUSTODY RECORD

PHOENIX Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Residential Drinking Water Test

Customer: Conca Ecological Services, LLC
Address: 183 Guinevere Rd, Cheshire, CT 06410

Address where sample was collected: Foster Residence, Killingly, CT

Phone #: 2033371869
Fax #: Sigrani Gadwa @ sbc global.net

Client Sample - Information - Identification

Sampler's Signature: Sig N. Gadwa Date: ______

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
SE=Sediment SL=Sludge S=Soil/Solid W=Wipe O=Other

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	~~Turbidity~~	Conductivity	pH	TP	Orthophosphorus	TN	Nitrate+Nitrite	Ammonia			Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( )oz	GL Soil container ( )oz	40 ml VOA Vial	GL Amber 1000ml [ ] As is [ ] HCl	PL As is [X] 250ml [X] 500ml [ ] 1000ml (As is)	PL H2SO4 [ ] 250ml [ ] 500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle
~~Fish pond~~	Station 1 pond	SW	3-11-16	3:10		X	X	X	X	X	X	X	778	15						X				~~X~~
	Station 2 - stream	SW	3-11-16	2:30pm		X	X	X	X	X	X	X	778	16						X				

Relinquished by:	Accepted by:	Date:	Time:
Sig N. Gadwa	B. Alvarez 3/11/16 17:29	3-11-16	5:25pm

Comments, Special Requirements or Regulations:

Turnaround:
- [ ] 1 Day*
- [ ] 2 Days*
- [ ] 3 Days*
- [x] Standard
- [ ] Other

* SURCHARGE APPLIES

~~Ice down or keep samples @ 2-5°C (35-41°F)~~

~~Samples should be delivered to the lab within 12 hours (24 hours max) from time of sampling~~

~~Drinking Water Analysis List~~
~~The report will include the following analysis:~~

pH	Color	Sulfate
Hardness	Odor	Iron & Manganese
Chloride	Turbidity	Coliform Bacteria
Sodium	Nitrite & Nitrate	Chlorine

PHOENIX
Environmental Laboratories, Inc.

Friday, May 13, 2016

Attn:
Rema Ecological Services
164 East Center Street
Suite 8
Manchester CT 06040

Project ID: NTE-KILLINGLY
Sample ID#s: BN25553 - BN25555

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 13, 2016

FOR: Attn:
Rema Ecological Services
164 East Center Street
Suite 8
Manchester CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:	GH	05/04/16	14:29
Location Code:	REMA	Received by:	DL	05/04/16	18:10
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBN25553
Phoenix ID: BN25553

Project ID: NTE-KILLINGLY
Client ID: STATION #1 - POND

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	05/12/16	WHM	E350.1
Nitrate-Nitrite (N)	0.12	0.01	mg/L	1	05/05/16	GD	E353.2
Ortho-Phosphate-P	0.01	0.01	mg/L	1	05/05/16 00:49	GD	SM4500PF-99
pH	6.73	0.10	pH Units	1	05/05/16 04:51	RR/EG	SM4500-H B-00
Nitrogen Tot Kjeldahl	0.25	0.10	mg/L	1	05/12/16	WHM	E351.1
Phosphorus, as P	0.04	0.01	mg/L	1	05/09/16	JR	SM4500PE-99

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Ortho-Phosphate was not field filtered within 15 minutes of collection.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

Phyllis Shiller, Laboratory Director
May 13, 2016
Reviewed and Released by: Deb Lawrie, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 13, 2016

FOR: Attn:
Rema Ecological Services
164 East Center Street
Suite 8
Manchester CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:	GH	05/04/16	15:01
Location Code:	REMA	Received by:	DL	05/04/16	18:10
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBN25553
Phoenix ID: BN25554

Project ID: NTE-KILLINGLY
Client ID: STATION #2 - OUTLET STREAM

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	< 0.10	0.10	mg/L	2	05/12/16	WHM	E350.1
Nitrate-Nitrite (N)	0.22	0.01	mg/L	1	05/05/16	GD	E353.2
Ortho-Phosphate-P	0.02	0.01	mg/L	1	05/05/16 00:50	GD	SM4500PF-99
pH	6.78	0.10	pH Units	1	05/05/16 04:53	RR/EG	SM4500-H B-00
Nitrogen Tot Kjeldahl	0.67	0.20	mg/L	2	05/12/16	WHM	E351.1
Phosphorus, as P	0.10	0.01	mg/L	1	05/09/16	JR	SM4500PE-99

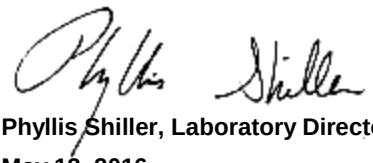
RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Ortho-Phosphate was not field filtered within 15 minutes of collection.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.



Phyllis Shiller, Laboratory Director
May 13, 2016
Reviewed and Released by: Deb Lawrie, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 13, 2016

FOR: Attn:
Rema Ecological Services
164 East Center Street
Suite 8
Manchester CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:	GH	05/04/16	15:44
Location Code:	REMA	Received by:	DL	05/04/16	18:10
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBN25553
Phoenix ID: BN25555

Project ID: NTE-KILLINGLY
Client ID: STATION #3 - WETLAND B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.10	0.05	mg/L	1	05/12/16	WHM	E350.1
Nitrate-Nitrite (N)	0.01	0.01	mg/L	1	05/05/16	GD	E353.2
Ortho-Phosphate-P	0.01	0.01	mg/L	1	05/05/16 00:51	GD	SM4500PF-99
pH	6.14	0.10	pH Units	1	05/05/16 04:55	RR/EG	SM4500-H B-00
Nitrogen Tot Kjeldahl	0.49	0.10	mg/L	1	05/12/16	WHM	E351.1
Phosphorus, as P	0.06	0.01	mg/L	1	05/09/16	JR	SM4500PE-99

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Ortho-Phosphate was not field filtered within 15 minutes of collection.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

Phyllis Shiller, Laboratory Director
May 13, 2016
Reviewed and Released by: Deb Lawrie, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

May 13, 2016

QA/QC Data

SDG I.D.: GBN25553

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 344503 (pH), QC Sample No: BN25265 (BN25553, BN25554, BN25555)													
pH			8.10	8.30	2.40	98.5						85 - 115	20
QA/QC Batch 344459 (mg/L), QC Sample No: BN25269 (BN25553, BN25554, BN25555)													
Ortho-Phosphate-P	BRL	0.01	0.07	0.06	15.4	99.4			90.5			85 - 115	20
QA/QC Batch 344828 (mg/L), QC Sample No: BN25647 (BN25553, BN25554, BN25555)													
Phosphorus, as P	BRL	0.01	0.73	0.74	1.40	105			101			85 - 115	20
QA/QC Batch 344586 (mg/L), QC Sample No: BN26060 (BN25553, BN25554, BN25555)													
Nitrate-N	BRL	0.02	0.09	0.08	NC	106			101			85 - 115	20
QA/QC Batch 345123 (mg/L), QC Sample No: BN29080 (BN25553, BN25554, BN25555)													
Ammonia as Nitrogen	BRL	0.05	0.23	0.23	NC	94.7			97.7			85 - 115	20
Nitrogen Tot Kjeldahl	BRL	0.10	1.83	1.83	0	91.7			77.0			85 - 115	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
May 13, 2016

Sample Criteria Exceedences Report

GBN25553 - REMA

Criteria: None

State: CT

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Comments

May 13, 2016 SDG I.D.: GBN25553

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.

Cooler: Yes [X] No [ ]
Coolant: IPK [ ] ICE [X] No [ ]

CHAIN OF CUSTODY RECORD

Temp 7 °C Pg of

PHOENIX
Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
[ ] Fax:
[ ] Phone:
[X] Email: REMA8@AOL.COM

Customer: REMA ECOLOGICAL SERVICES, LLC
Address: 164 EAST CENTER ST., SUITE 8
MANCHESTER, CT 06040

Project: NTE-KILLINGLY
Report to: REMA
Invoice to: 11

Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature: George Logan Date: 5-4-16

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe
OIL=Oil **B**=Bulk **L**=Liquid

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	PH	TKN	NO2+NO3	TP	ORTHO-P	AMMONIA-N	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml	PL H2SO4 [ ] 250ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle
25553	STATION #1 - POND	SW	5-4-16	2:29p	X	X	X	X	X	X						1	1	1		
25554	STATION #2 - OUTLET STREAM	SW	11	3:01p	X	X	X	X	X	X						1	1	1		
25555	STATION #3 - WETLAND B	11	11	3:44p	X	X	X	X	X	X						1	1	1		

Relinquished by:	Accepted by:	Date:	Time:
George Logan	Pauline	5-4-16	6:10p

Comments, Special Requirements or Regulations:
Please filter H_2SO_4 & HNO_3 samples of organic debris

Turnaround:
[ ] 1 Day*
[ ] 2 Days*
[ ] 3 Days*
[X] Standard
[ ] Other
* SURCHARGE APPLIES

RI
[ ] Direct Exposure (Residential)
[ ] GW
[ ] Other

CT
[ ] RCP Cert
[ ] GW Protection
[ ] SW Protection
[ ] GA Mobility
[ ] GB Mobility
[ ] Residential DEC
[ ] I/C DEC
[ ] Other

MA
[ ] MCP Certification
[ ] GW-1
[ ] GW-2
[ ] GW-3
[ ] S-1
[ ] S-2
[ ] S-3
[ ] MWRA eSMART
[ ] Other

State where samples were collected: _____

Data Format
[ ] Excel
[X] PDF
[ ] GIS/Key
[ ] EQuIS
[ ] Other

Data Package
[ ] Tier II Checklist
[ ] Full Data Package*
[ ] Phoenix Std Report
[ ] Other

* SURCHARGE APPLIES