

DANBURY BRANCH IMPROVEMENT PROGRAM TASK 5

ENVIRONMENTAL TECH. MEMOS

STATE PROJECT 302-008



SECTION 5: BIOLOGICAL DIVERSITY

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INTRODUCTION

Biological diversity encapsulates the variety of different living organisms (species) occurring in a place or region and the number of individuals of the species. It considers all manner of life forms, including plants and animals. It is often used as a measure of environmental health. Given the variety of life forms in the environment, the biological diversity in the Danbury Branch study corridor is described in terms of vegetation, wildlife, and fish resources (fisheries).

The place or places where a plant or animal finds its survival and reproductive needs during its life is called habitat. One of the best ways to estimate biological diversity in an area is to identify the number and types of plants and animals. For plants, this is generally straightforward and based on direct observation at the different times of year when plants can be seen and identified.

For fish and wildlife, which include the mammals, birds, reptiles, amphibians, and insects, this is more difficult. Animals are usually afraid of people and many live out of sight for most or all of their lives. And, animals move – some only short distances during their entire lives, like squirrels or salamanders, while others travel long distances regularly (like bears) or seasonally (like migratory birds). Some species rely on many types of habitat for food, mating, and their other activities, while others are dependent on just one specific habitat. Unless site-specific field surveys have been conducted, the presence of animals needs to be predicted (rather than observed with certainty) based on the types of habitat present. As such, much of the discussion of wildlife in this section relies on the identification and descriptions of habitat. The distribution and abundance of habitats become the basic measures of biological diversity.

Regulatory Context

The federal and state laws that will govern the project's effects on vegetation, wildlife, and fisheries are described below. These include the statutes outlined in the Threatened and Endangered Species chapter (included again here for reference) and additional ones encompassing a broader range of fish and wildlife.

- The Fish and Wildlife Coordination Act (16 USC 661-667) requires federal agencies, and any entity requiring any federal permit or license, to consult with the federal and state agencies responsible for fish and wildlife resource management, regarding projects which could affect these resources. Project effects encompass direct harm to fish and wildlife as well as changes in their habitats, including impoundments or diversions of streams and water bodies. The purpose of consultation is to avoid, minimize, and/or mitigate potential adverse impacts. For the Danbury Branch improvements project, the federal agencies are the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), and the state agency is the Connecticut Department of Environmental Protection (DEP).

- The Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.) requires federal agencies (and others) to avoid actions that would jeopardize threatened or endangered species or their critical habitats. The species and their critical habitats are designated by the USFWS for terrestrial and freshwater species and by the National Marine Fisheries Service (NMFS) for marine species and anadromous fish species (those that migrate from the ocean to freshwater to spawn). Section 7 of the ESA describes the steps for informal and formal consultation with the USFWS or NMFS if adverse impacts to federally designated (listed) species may occur due to a federal action. Consultation may require a biological assessment of potential project impacts on a listed species, after which the USFWS or NMFS issues a biological opinion regarding the conditions or prohibitions necessary for the project to proceed.
- Migratory Bird Treaty Act (MBTA) (16 USC 703-712) provides for the preservation and maintenance of stocks of migratory birds. Birds protected under the act include all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, swallows and others, including their body parts (feathers, plumes etc), nests, and eggs. A complete list of protected species is found at 50 CFR 10.13, and the USFWS regulations implementing the act are found at 50 CFR Parts 10 and 21.

Federal-aid transportation projects that are likely to result in a “take” of birds protected under the MBTA may require take permits from the USFWS. Take is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities." A take does not include habitat damage or alteration, as long as there is no direct destruction of birds, nests, eggs, or parts thereof. Construction activities that are most likely to result in takes of migratory birds include, but are not limited to, clearing or grubbing of migratory bird nesting habitat during the nesting season when eggs or young are likely to be present and bridge cleaning, painting, demolition, or reconstruction when bird nests are present.

- Bald Eagle Protection Act (16 USC 668-668d) This law provides for the protection of bald eagles and golden eagles by prohibiting the taking, possession and commerce of these birds except under certain specified conditions. Under the act, a taking includes pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing. Bald eagles may not be taken for any purpose unless the Secretary of Interior issues a permit prior to the taking.
- Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265) which provides for the conservation and management of fisheries. The primary purposes of the act are to:
 - Conserve and manage fishery resources including anadromous species (which live in the sea and migrate to freshwater to spawn)
 - Promote domestic commercial and recreational fishing under sound conservation and management principles

- Provide for the preparation and implementation of fisheries management plans to maintain continuous and optimum yield from each fishery
- Protect essential fish habitat in the course of federal permits, licenses, or other authorizations that could affect such habitat.

Essential fish habitat (EFH) can consist of both the water column and the underlying surface of a particular area. Areas designated as EFH contain habitat essential to the long-term survival and health of a fishery resource. Certain properties of the water column such as temperature or nutrients are essential to various species. Some species may require certain bottom types such as rocky bottoms or vegetation, or other conditions. EFH includes those habitats that support the different life stages of each managed species. A single species may use many different habitats throughout its life to support breeding, spawning, nursery, feeding, and protection functions. EFH encompasses those habitats necessary to ensure healthy fisheries now and in the future.

At the state level, the following legislation relative to biological resources is relevant:

- The Connecticut Endangered Species Act (CGS 26-303) establishes a state policy to *conserve, protect, restore and enhance any endangered or threatened species and essential habitat*. The act authorized the DEP to establish procedures to identify whether any native species is endangered, threatened or of special concern, and to review and update these designations every five years. The act requires that any action authorized, funded or performed by a state agency *does not threaten the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat designated as essential to such species*, using the best scientific data available. [Refer to the section on Threatened and Endangered Species for more information about this act.]
- Sections 25-108-1 and Section 26-112-21 through 48 inclusive of the Connecticut General Statutes (CGS) which defines and regulates fishing in Connecticut's Inland Waters and Marine District (including the segments of the Norwalk River, the Saugatuck River, and Factory Pond). It establishes Trout Management Areas, such as the Norwalk River Wild Trout Management Area, and other special management areas; details seasons for fishing by species and sets other limits by species; and regulates the conduct of fishermen.

Methods, Coordination, and Data Sources

Descriptions of vegetation were derived from observations of plant communities during field visits, supplemented by scientific literature. Wildlife and habitat information were likewise produced from a combination of field observations, published literature, and on-line web resources of wildlife and conservation organizations. Information on fisheries in the study corridor was obtained through personal communications with DEP fisheries biologists, supplemented by available printed publications and on-line sources. The Natural Diversity Data

Base (NDDDB) records for threatened and endangered (T&E) species were derived from the DEP GIS data updated to August 19, 2010.

EXISTING CONDITIONS

The Danbury Branch lies along a series of river valleys, reflecting the historic construction of the rail line on lands with gentle slopes. Rivers and their adjacent lands are particularly rich in biological diversity, due to the availability of fresh water, fertile soils, and mix of uplands and wetlands. The spread of human communities has eliminated and reduced substantial acreages of habitat in the corridor, while some undeveloped areas contain an assortment of habitat features signifying high biological diversity.

Ecological Backdrop

Ecoregions

The study corridor, like most of Connecticut, lies within a broad ecological region (ecoregion) designated by the U.S. EPA as the Northeastern Coastal Zone. An ecoregion is an area within which similar landscape and climate conditions occur, based on features such as geology, topography, climate, soils, land use, and hydrology. Each ecoregion thus exhibits a distinct pattern of vegetation and wildlife habitat. The topographic and climatic conditions result in drainage patterns which yield streams and rivers for fish and aquatic life.

The Connecticut DEP has identified the state's ecoregions as a way to better understand and predict the distribution of plants and animals for the purposes of management and conservation. As shown in the *Connecticut Comprehensive Wildlife Conservation Strategy* (DEP 2005), the study corridor lies within two ecoregions: 1) Norwalk and the southern end of Wilton lie within the Connecticut Coast ecoregion, located on the gently sloping coastal plain; 2) the rest of the corridor lies within the Western Connecticut ecoregion, characterized by rolling to steep hills, north-trending ridges, broad uplands, and localized deposits of sand and gravel.

The northern portion of the study corridor (northern Redding, Bethel, Danbury, Brookfield and New Milford) is located in an area where pockets of calcium-rich soils have developed from calcium-rich bedrock. As a result, some specialized plant species, when found in Connecticut, occur only in this region. Calcareous (limestone-associated) wetlands, alluvium, ledges, ridges, and caves have been observed in this region. These are considered biologically significant habitats in the state (Dowhan and Craig 1976).

Overview of Disturbance

The lands in the study corridor share a very similar history of settlement and were shaped by similar economic forces and development trends. Initially small urban cores expanded outward, eliminating natural habitats, while residential developments have crept into formerly rural countryside. Additionally, sand and gravel deposits were quarried and marble (calcium carbonate) formations were actively mined for the production of plaster, and agricultural lime.

Rural lands that were not developed, most of which were formerly cleared for farming or timber in the 18th and 19th centuries, have reverted to forest.

With the long history of settlement and diversity of commercial and industrial activities along the rail corridor, including rail transportation itself, there are limited large blocks of natural habitat remaining directly in the study corridor. Today, the corridor is a mosaic of urban settlement, outlying industrial (and large retail) assemblages, and wooded suburban (residential) developments, with only an occasional undeveloped parcel or farm. There are also fingers and swathes of undeveloped acreage, much of which have wetlands and some of which has upland forests. Very few fields or farms, which would have dominated the landscape a century ago, remain in the corridor today.

Vegetation

As noted in the *Overview of Disturbance*, undeveloped acreages in Connecticut tend to be covered by forest. The study corridor is no exception. On lands free of development or open water, forest is the most common vegetation. The dominant upland forest trees throughout the corridor consists of oak species (*Quercus spp.*) and hickories (*Carya spp.*), with lesser components of maples (*Acer spp.*) black birch, white ash, tulip poplar, hemlock, and others. The mix of trees growing in a particular area depends on the site history, type of soils, micro-climatic conditions, and other factors.

Table 1 provides a list of the most commonly encountered tree species in the study corridor, which is similar throughout Connecticut. The trees are categorized by the type of site (e.g. successional stage / disturbance conditions) they usually grow on. Where large forest blocks and wooded swathes between developed parcels occur in the study corridor, these tree species are characteristically observed. Most of these species are found in uplands, whereas some occur on both uplands and wetlands.

Table 1: Common Tree Species in the Study Corridor

COMMON TREE SPECIES	
<i>Pioneer Species - Intolerant of shade</i>	
Common Name	Scientific Name
Quaking aspen	<i>Populus tremuloides</i>
Bigtooth aspen	<i>Populus grandidentata</i>
Eastern red cedar	<i>Juniperus virginiana</i>
Pin or Fire cherry	<i>Prunus pensylvanica</i>
Sassafras	<i>Sassafras albidum</i>
Black locust*	<i>Robinia pseudoacacia</i>
Yellow poplar	<i>Liriodendron tulipifera</i>
Black willow	<i>Salix nigra</i>
Grey birch	<i>Betula populifolia</i>
<i>Intermediate Species - Some tolerance of shade, need mostly sun to partial sun</i>	
Northern red oak	<i>Quercus rubra</i>
Scarlet oak	<i>Quercus coccinea</i>
White oak	<i>Quercus alba</i>
Black oak	<i>Quercus velutina</i>
Swampwhite oak	<i>Quercus bicolor</i>
Chestnut oak	<i>Quercus prinus</i>
Shagbark hickory	<i>Carya ovata</i>
Pignut hickory	<i>Carya glabra</i>
Mockernut hickory	<i>Carya tomentosa</i>
Bitternut hickory	<i>Carya cordiformis</i>
Red maple	<i>Acer rubrum</i>
Yellow birch	<i>Betula alleghaniensis</i>
Black or Sweet birch	<i>Betula lenta</i>
Eastern white pine	<i>Pinus stroba</i>
American elm	<i>Ulmus americana</i>
Slippery elm	<i>Ulmus rubra</i>
White ash	<i>Fraxinus americana</i>
Black cherry	<i>Prunus serotina</i>
Hophornbeam	<i>Ostrya virginiana</i>
Butternut	<i>Juglans cinerea</i>
Basswood	<i>Tilia americana</i>
<i>Climax Species - Tolerant of shade</i>	
Sugar maple	<i>Acer saccharum</i>
American beech	<i>Fagus grandifolia</i>
Eastern hemlock	<i>Tsuga canadensis</i>
American hornbeam	<i>Carpinus caroliniana</i>

* Invasive Species

Shrubs and herbaceous plants (herbs) are often present under the tree canopy. There are shrubs and families of shrubs that are common throughout Connecticut and the study corridor. These are presented in Table 2. The list contains a mix of wetland and upland species. All but the autumn olive and multiflora rose are native species. The presence of a native shrub understory greatly increases the biodiversity of a forest area because they offer such a wealth of food, cover,

and nesting opportunities for wildlife, as well as fish where shrubs grow along a stream bank or lake shore.

Table 2: Common Shrub Species in the Study Corridor

COMMON SHRUB SPECIES	
Common Name	Scientific Name
Autumn olive*	<i>Eleagnus umbellata</i>
Staghorn sumac	<i>Rhus typhina</i>
Multiflora Rose*	<i>Rosa multiflora</i>
Common juniper	<i>Juniperus communis</i>
Speckled alder	<i>Alnus rugosa</i>
Viburnums	<i>Viburnum spp</i>
Witchhazel	<i>Hamamelis virginiana</i>
Winterberry	<i>Ilex verticillata</i>
Mountain laurel	<i>Kalmia latifolia</i>
Highbush blueberry	<i>Vaccinium corymbosum</i>
Huckleberry	<i>Gaylussacia baccata</i>
Hazelnut	<i>Corylus spp</i>
Elder	<i>Sambucus spp</i>
Spicebush	<i>Lindera benzoin</i>
Pepperbush	<i>Clethra alnifolia</i>

* Invasive Species

Another layer of diversity is potentially added by a ground layer of herbs and vines. There are many hundreds of herbs and vines that grow in the state. The species found vary greatly from location to location, depending upon the amount of sunlight passing through the tree canopy, soil types, moisture, disturbance history, and other factors.

Biodiversity diminishes greatly where high levels of disturbance have opened the door to invasive species. Invasive species are one of the top threats to biodiversity in Connecticut, as well as worldwide. Invasive plant and animal species affect both terrestrial and aquatic habitats, taking the places of native species. The effects of this process can be observed in the study corridor on some cleared lands. Where trees and shrubs have been cleared and soils disturbed, invasive and/or pest plant species tend to dominate, sometimes forming dense thickets. Species most commonly observed on disturbed non-wetland sites in the study corridor are the invasive non-native shrubs, autumn olive (*Elaeagnus umbellata*) and multiflora rose (*Rosa multiflora*), as well as the native herb species, poison ivy (*Toxicodendron radicans*). These sites support far fewer species than the assemblage of native trees, shrubs, and/or herbs that would have established in the absence of such disturbance.

Wetlands are common in the study corridor and these contain a variety of plant communities. Wetland vegetative types (communities) in the study corridor include forested, scrub-shrub, emergent, wet meadow, and others. Descriptions of these types are the following:

Forested – A wetland characterized by woody vegetation that is six meters (20 feet) tall or taller.

Scrub-shrub – A wetland dominated by woody vegetation less than six meters (20 feet) tall. Vegetation includes shrub species, young trees (saplings), and trees or shrubs that are small or stunted.

Emergent – A wetland characterized by plants that are erect, rooted, herbaceous, and water-loving (hydrophytic), excluding mosses and lichens. There is usually standing water in these wetlands to a depth of a few inches to two or three feet, although some may dry out periodically. The tops of the vegetation emerge from the water. A marsh is a form of emergent wetland.

Wet Meadow – A wetland resembling grasslands and containing water-loving grasses, sedges, rushes, and wildflowers. These wetlands may appear “dry” but have a high water table where groundwater is close to the surface, keeping the soil saturated. Wet meadows may become flooded during periods of seasonal high water.

Sometimes, several different wetland types occur together. Wetlands are usually very biologically diverse, due to the variety of water sources available to fish and wildlife combined with the variety of plant species they support which, in turn, attract fish and wildlife. Wetlands and their associated plant communities in the study corridor are described in detail in the Wetlands section.

Plant Communities in the Study Corridor

The most important plant communities in the study corridor for biological diversity are shown on the Key Habitats figures, Figure Nos. X1 to X14. These plant communities include Shrub Inland Wetlands, Freshwater Marsh, Non-Riparian Forested Wetlands, Riparian Zones along Large Rivers, Forest Blocks Greater than 100 Acres, and (other) Forest. The definitions of these communities -- which serve as habitat for wildlife -- and the data used to portray them are the following:

- Shrub Inland Wetlands - inland wetlands identified as scrub-shrub by the NWI or by field studies conducted for this DEIS. (Plant species within these wetlands are described in the Wetlands section under scrub-shrub wetlands.)
- Freshwater Marsh - inland wetlands identified as emergent by the NWI or by field studies conducted for this DEIS. (Plant species within these wetlands are described in the Wetlands section under emergent wetlands.)
- Non-Riparian Forested Wetlands – Wetlands identified by state and federal definitions, other than scrub-shrub or emergent wetlands, and not in association with major rivers. These are primarily forested wetlands (red maple swamps) but may also contain open water areas. (Plant species within these wetlands are described in the Wetlands section.)
- Riparian Zones along Large Rivers – these zones consist of state/federal wetlands and/or state (only) wetland soils where they are located adjacent to the Norwalk River,

Saugatuck River, Still River, and Housatonic River. These zones contain both wetland vegetation types and floodplain forest communities. (Plant species of these communities are described in the Wetlands section.)

- Forested Blocks Greater than 100 Acres – these are large acreages of contiguous forest with some portion in the study corridor. These blocks are comprised primarily of upland forest vegetation but where they abut and envelope riparian zones and other wetland areas, those other zones are included. This was done to illustrate that wildlife in that block would have unimpeded access to many different habitats under the protection of forest cover. This convergence of habitats, particularly within a surrounding large undisturbed habitat, is relatively rare in the state and reflects a possible “hot spot” for biological diversity. These contiguous forest blocks were identified primarily from aerial photo interpretation, supplemented by visual observations in the corridor.
- Forest – these are other forested habitats that appear intact from development, management, or other disturbance. These habitats are at least 35 acres in size, therefore larger than the remnant forest patches which might remain within a suburbanized setting and containing higher habitat values than the suburban-type forested habitats. These areas range from 35 to 100 acres in size.
- Shrub-dominated and herbaceous-dominated upland habitats – Small areas of shrub-dominated and herbaceous-dominated areas exist in the project area. These habitats, however, are all very small in nature and were not considered to be large enough in extent to be mapped. Shrub areas typically occur as edge habitat adjacent to the forested habitats within the corridor. Herbaceous areas are restricted to small disturbed areas, and may consist of forbs, grasses, or a mixture of the two.

Areas not highlighted on the Key Habitats figures fall into the category of urban and suburban environments. Urban areas are characterized by closely-spaced streets and buildings. Many non-native plants are used in landscaping and street trees. Disturbed sites and soils between pavement and buildings are generally covered by invasive species. Plant diversity is very low and natural plant communities supporting native wildlife are rare, except where large green spaces and parks are maintained.

In suburban areas, roads wind through forest cover and individual buildings (houses) are often surrounded by trees. There are commonly forested swaths along the back yards of houses. These wooded areas can have a moderate to high diversity of plants, including trees, shrubs and herbaceous understory plants. They do not support the full complement of wildlife diversity found in undeveloped forests, however, since living spaces (habitat areas) have been replaced by homes and human disturbance keeps many wildlife species away.

Wildlife

Wildlife resources include all the many types of animals to be found in the environment. Major groups include mammals, birds, amphibians (such as frogs, newts and salamanders), reptiles (such as snakes and turtles), and invertebrates (such as butterflies, mussels, insects).

Wildlife occur where they can find food, cover (places where they find shelter and protection against predators), water, and reproductive needs. These basic needs come in various shapes, forms, and sizes from resources in the environment. An area where the resources are combined just right to support a species or a population (of a species) is called habitat. Some wildlife find their needs in only one habitat, so they are strongly associated with (usually occur in) that habitat. Other species are generalists and are associated with a variety of habitats.

Key Habitats

One of the best sources of information about where to find rich assemblages of wildlife in Connecticut is *Connecticut's Comprehensive Wildlife Conservation Strategy (Strategy)* compiled by the DEP (DEP 2005). The *Strategy* identifies 12 key habitats that are the most important in the state for supporting and sustaining wildlife and fish. These habitats include various types of forests, wetlands, grasslands, water resources, and others. Locating these habitats is a major step in determining where clusters of species -- high biodiversity -- may be present.

It is important to note that even though a habitat may be observed, it does not mean that all or even any of the species generally associated with it will occur there. Perhaps a plant or animal population used to live there but was decimated by disease or toxins, driven out by competing species, or could no longer find its basic needs because the habitat shrank (e.g. due to infringing development, changing water levels, etc.) Habitat is thus an indicator that a species may occur there. For this reason, the term "potential habitat" is commonly used to describe habitat that looks suitable for a particular species but has not been proven (by actual sightings) to be used by a species.

Each of the 12 key habitat types recognized by DEP have one or more sub-habitats. A sub-habitat is a variation of the larger habitat type. The sub-habitats are distinct and/or localized and offer specialized habitat needs. Many of the sub-habitats are uncommon in the state and may be very important in supporting rare species. The *Strategy* identifies the wildlife (and fish) species of "greatest conservation need" -- these tend to be rare, declining, or at risk -- associated with the key habitats and sub-habitats. In the *Strategy's* extensive lists of species shown to be associated with a particular habitat, the categories of *Most Important*, *Very Important*, and *Important* indicate how critical that habitat is to the life needs of the species (and in essence, its long-term survival).

Most of the key habitats are naturally-occurring ecological communities with an interacting assortment of plant and animal species. Some manmade environments, even urban areas, are recognized to have specialized features of importance for certain rare species. However, heavily developed urban cores without nearby green spaces and vegetated streams or rivers are generally

lacking in habitat and thus low in biological diversity. The presence of urban habitats important to rare or declining wildlife is unknown in the Danbury Branch study corridor. In the absence of such data, the urban portions of the study corridor are not considered important for wildlife and biological diversity.

Of the 12 key habitats in the state, seven were observed within the study corridor. Five specialized sub-habitats within the key habitats were observed. These habitats and sub-habitats are of varying size and condition along the study corridor. There is Coastal River habitat – a sub-habitat – associated with the Norwalk Harbor and Norwalk River in Norwalk. The locations of the six other key habitats and sub-habitats in the corridor are shown on the Key Habitats figures, Figure Nos. 1 to 14.

Appendix A includes the DEP's lists of wildlife and fish species of greatest conservation need (GCN) associated with these habitats. In some cases, the species are strongly associated (very dependent) upon the habitat, so the habitat becomes crucial for their long-term survival. In the species lists, the number of different GCN groups (taxon) and species generally reflect the relative potential of the various habitats to support biodiversity (with longer lists indicating higher biodiversity.) Given the degraded habitat of the coastal section of the Norwalk River, the GCN species list for coastal rivers is not especially applicable and is not included.

Some of the habitat names on the Key Habitats figures have been modified from the DEP designations. The names used on the map legends are the following:

- *Upland forest (no specialized sub-habitats) – this is the background vegetation in many suburban areas. The most important upland forests consist of large contiguous acres, shown on the Key Habitats figures as **Forested Blocks Greater Than 100 Acres**. Smaller forested habitats are also important for local biodiversity, so undeveloped contiguous forest of 35 acres or more are also mapped, designated simply **Forest**. Note that these forest habitats may include small clearings or old fields, but they are predominantly forested.*
- *Forested inland wetland (no specialized sub-habitats) – these are shown as **Non-Riparian Forested Wetlands** on the Key Habitats figures. [Inland wetlands in the corridor that are not forested are called out as shrub or freshwater marsh.]*
- ***Shrub Inland Wetland** (no specialized sub-habitats) – these are shown by this name on the Key Habitats figures*
- ***Herbaceous inland wetland** (one sub-habitat)
- **Freshwater marshes** - these are shown by this name on the Key Habitats figures*
- *Freshwater aquatic (two sub-habitats)
- Large rivers and streams and associated riparian zones - these are labeled **Riparian Zones along Large River** on the Key Habitats figures. The Norwalk*

River, Saugatuck River, Still River, and Housatonic River were considered to be the large rivers in the study corridor.

*- **Cold water streams** - these are shown by this name on the Key Habitats figures*

- *Intensively Managed Habitats (one sub-habitat)*
 - ***Wet Meadow** - these are shown by this name on the Key Habitats figures*

Other indicators of important habitat that support high biodiversity are the following.

- Threatened and endangered (T&E) species records (also see discussion in the Vegetation section): Where T&E species records (from the DEP NDDDB) are located near one or more key habitats, the probability of a rare or endangered species still existing near those locations is greater. A NDDDB record does not mean that a threatened, endangered, or special concern species definitely occurs in that location but that there is potential for it to occur, based on prior observations. The record may relate to either plant or animal species. It is useful to see the location of NDDDB records at the same time as key habitats. Where T&E species records are located near one or more key habitats, the probability of a rare or endangered species still existing near those locations is greater. These data points are included on the Key Habitats figures.
- Conservation areas identified by municipalities, land trusts, state agencies, and conservation organizations, such as The Nature Conservancy and the Connecticut Chapter of the Audubon Society: These sources revealed that some key habitat areas have been recognized for their value and included in public preserve properties (discussed under each municipality)
- Managed hunting areas: There are no public hunting areas located in the study corridor; other (private) hunting areas are unknown.
- Field observations of habitat features: Field observations for this DEIS resulted in the identification of sub-habitats in the study corridor and confirmation of existing wetland mapping (DEP GIS) which reflected most of the key wetland habitats.

Key Habitats in the Study Corridor by Municipality

The key habitats in the study area are described by municipality below. These are the locations with the greatest potential to support high biological diversity at the present time and to maintain biological diversity into the future. Note that if a key habitat does not occur in the municipality, it is not listed.

Norwalk: Norwalk is dominated by urban lands. Species diversity is low in these areas and the types of wildlife to be found are limited. Descriptions of key habitats located in Norwalk follow.

- *Forest* – Approximately 15 acres of a 74-acre rectilinear forest habitat lies in the Norwalk portion of the study corridor. The forest occurs on the west side of the railroad tracks

north of Grist Mill Road, extending into Wilton. Although small, this is the largest undeveloped upland forest patch in Norwalk. Its edge along the west side of the tracks is intercepted by a powerline corridor, a type of manmade feature sometimes used as a travel corridor and breeding habitat for forest dwellers. Because of this habitat's location at the edge of an urban area and its encroachment by residential development just outside the west side of the corridor, this area has characteristics of a suburban habitat. This area thus would offer higher biological diversity than the rest of urban Norwalk in the corridor.

- *Non-Riparian Forested Wetlands* – There are only a few non-riparian forested wetlands in Norwalk, all located near the Route 15 crossing of the railroad tracks. These would be small pockets where the variety of birds and some small mammals would increase compared to the surrounding urban environment. They would have lower biological diversity than other larger forested wetland habitats in less developed portions of the corridor.
- *Riparian Zones along Large River* - The Norwalk River has extensive stretches of riparian forest on both sides. Given the urbanized character of Norwalk, these are narrow in width. However, where they occur they provide the best opportunity for biological diversity in Norwalk, offering cover (foliage), water, and food sources (insects and plant matter) for wildlife and fish. Many of these stretches have characteristics of a suburban fringe, being small vegetated strips or patches interfacing with development and human disturbances, so they likely support a mix of suburban bird species. They would also be important for migrating birds seasonally. The diversity of small mammals, amphibians, and reptiles would probably be relatively very low, as these patches are unconnected to larger habitats where a fuller range of breeding situations are available.
- *Coastal River* – There is a tidal segment of the Norwalk River in the study corridor just above the Norwalk Harbor estuary. Estuaries are normally important nursery areas for a diverse range of fish and shellfish. The Norwalk Harbor, however, has suffered from degraded water quality and loss of eelgrass habitat which provides nursery areas (refer to the following Fisheries section). The shorelines of the river within the study corridor are developed with bulkheads, rock armoring, and other modifications.

Currently the Norwalk Harbor estuary does not support important nursery habitat for fish and has relatively low value for wildlife and coastal shore birds. However, the river channel itself is valuable as a migratory corridor for two species of diadromous herring (diadromous means a fish that travels/migrates between salt and fresh water). The river channel itself is thus important.

Wilton: The Wilton portion of the study corridor is predominantly suburban in character, characterized by intermittent blocks of undeveloped hardwood forest among industrial, residential, and institutional developments. Descriptions of key habitats in Wilton follow.

- *Forested Blocks Greater Than 100 Acres* - The study area in Wilton contains a portion of one forest block greater than 100 acres in size. This forest block (numbered 1 on the Key Habitats figures) is roughly 260 acres on the east side of the rail line along Pimpewaug Road. It starts near MP 9.0 north of Cannon Road and the Cannondale Station and extends northerly along the tracks for almost a mile toward Honey Hill Road and easterly around Mayapple Brook (outside corridor) above Seeley Road. Power lines cut through the forest along the tracks and stone walls throughout the area speak of its former agricultural use. An evergreen patch of approximately 10 acres occurs within the upland hardwood acreage, and there are small cleared fields/pasture extending upslope of the study corridor. There are also a few houses, evidence of old quarries, and a utility corridor within this block, enveloped by the thick forest cover. The small evergreen grove, while not large enough to map as a separate sub-habitat, may be of special importance for deer wintering and for roosting and/or breeding needs of owls, hawks, and many other birds. Within this block is 74 acres of nature preserve called the Gregg Preserve, owned by the Wilton Land Conservation Trust. A *Wilton Walker's Guide to the Gregg Preserve* notes that there are spruce groves important for roosting owls and streamside habitats important for warblers.
- *Forest* – The study corridor in Wilton contains all or portions of two smaller forest habitat areas.
 - 1) One is the continuation of the rectilinear forest of approximately 74 acres (15 acres in Norwalk) on the west side of the railroad tracks, extending north from the Norwalk-Wilton line. This strip of forest is bounded by suburban development on the west and industrial uses east of the rail line, so its connections to surrounding habitats and overall potential diversity have been compromised. However, it does contain ponds within the native forest cover, which makes it a potentially favorable area for many forms of wildlife.
 - 2) The second forest habitat is an ovoid area of 58 acres partially within the study corridor on the east side of the tracks, slightly south of Cannon Road and the Cannondale Station. It is surrounded by suburban development and a golf course but may offer a local refuge for species adapted to a suburban-forest edge.
- *Non-Riparian Forested Wetlands* – The Norwalk River runs so close to the railroad tracks throughout the corridor in Wilton that there are almost no forested wetlands here that are not part of the river's riparian zone. One or two tiny forested wetland patches occur. Ponds edged by forested wetlands south of Wolfpit Road on the east side of the tracks (MP 6 to 6.3) suggest good potential for wildlife diversity.
- *Riparian Zones along Large River* – There are extensive lengths of forested riparian zone along both sides of the Norwalk River in Wilton. The zone ranges from a narrow fringe of trees in some places to broad patches around the bends in the river. The preservation of at least a narrow fringe throughout most of the length of Wilton has maintained a viable

continuous linear habitat. This zone likely supports a moderately high diversity of species, both terrestrial and aquatic, despite encroaching development from both sides of the river in some areas. The exception is the stretch of river near Georgetown, where historic housing developments encroached on both sides of the river and construction of industrial dams (and Factory Pond spanning into Redding) effectively eliminated the riparian zone. A very narrow zone persists along the river north of the Factory Pond within a suburban-like environment. This area is considered to have substantially lower potential for biological diversity.

- *Wet Meadow* – There is a small (less than 10 acre) wet meadow on the west side of tracks at a bend in the Norwalk River near MP 6.6. This area is managed as a natural preserve called Schenck’s Island (although not technically an island). *A Wilton Walker’s Guide to Schenck’s Island* recognizes it as a natural “oasis” within a densely developed area of Wilton. Three acres of the meadow along the river’s edge are owned by the Wilton Conservation Land Trust and the abutting 14 acres, which include meadow and wooded areas, are owned by the Town of Wilton. In this small area, wetland grasses and wildflowers support a diversity of birds and insects, in particular, as well as other wildlife groups.
- *Cold Water Habitat* -- The Norwalk River from the vicinity of Wolfpit Road in Wilton and northerly, through Wilton to Ridgefield, is considered a cold water habitat. This section is managed as a Wild Trout Management Area. This fisheries resource is further described in the Fisheries section below.

Redding: The Georgetown village is a small urbanized node within the Redding portion of the study corridor. The remainder of Redding in the corridor is lightly developed with a suburban-rural character. There are some very large undeveloped tracts through which the Danbury Branch passes, with large upland forests interspersed with various wetlands, ponds, and streams. Many undeveloped acres of these different habitats are directly within the study corridor, indicating that this portion of the corridor has very diverse wildlife and high biodiversity. It is likely the area of highest biological diversity in the study corridor.

Descriptions of key habitats in Redding follow.

- *Forested Blocks Greater Than 100 Acres* - The study corridor in Redding contains portions of four large contiguous forest blocks, numbered 2 through 5 on the Key Habitats figures.
 - 1) Between MP 13.2 and MP 14.5 are portions of an approximately 650 acre forest block, numbered 2 on the Key Habitats figures. This block is primarily upland forest, dissected by veins of forested wetlands and including or adjoining several ponds. It opposes several smaller forest habitats to the west across the tracks and is separated from another large forest block (number 3) by only a few swathes of development. The proximity of these different habitats enhance the ecological value of each, as wildlife populations have

greater choice of habitat, more potential areas to disperse their young, and more available breeding habitats. High plant diversity in large intact blocks such as this is also expected. Several NDDDB records overlap this block.

- 2) Forest block 3 shown on the Key Habitats figures is approximately 370 acres. It begins just north of Umpawaug Pond on the east side of the railroad tracks (approximately MP 15.7) and extends northerly and easterly. It encompasses large acreages of upland forest, as well as some linear forested wetlands along the sinuous Umpawaug Pond Brook and other small streams. The northern extent is approximately the Saugatuck River crossing of the railroad track just south of the existing Redding Station (near MP 17.2). The Saugatuck River through this block is a cold water habitat, indicated a rare level of ecological intactness in this area. Biological diversity in this location is expected to be extremely high. Several NDDDB records overlap this block.
 - 3) On the west side of the tracks from approximately MP 16.4 to MP 17.1, opposite the northern end of forest block 3, is forest block 4. This nearly 500-acre block extends from the tracks westerly out of the corridor, following the undeveloped Saugatuck River corridor. The portion in the study corridor is just south of the existing Redding Station. Its potential for biological diversity is similar to forest block 3. It has one overlapping NDDDB record within the corridor.
 - 4) A narrow tongue of a large forest block (numbered 5 on the Key Habitats figures) lies partially within the Redding study corridor, west of the tracks from approximately MP 17.5 to MP 18.1. The approximately 20 acres in Redding (of a total 900 acres) encompass several wetland areas, including the wetland complex into which Bogus Mountain Brook drains. This wetland (which appears as a pond on the Key Habitat figures but is a forested/scrub-shrub complex) spans the tracks and drains southerly under the tracks. The habitat along the corridor in Redding appears particularly suited for reptiles, amphibians, birds, fish, and invertebrates. The block extends northerly into the Bethel study corridor and farther west into Danbury, outside the study corridor. Several NDDDB records overlap this block just over the Redding-Bethel line within the study corridor, as well as farther west in Danbury.
- *Forest* – There are three smaller forest habitat areas partially within the Redding portion of the study corridor.
 - 1) The edge of an approximately 80-acre forest patch touches on the Redding portion of the study corridor near the Redding-Ridgefield town line, on the west side of the tracks between MP 13.3 and 13.9. This forest spans both the Redding and Ridgefield portions of the study corridor. The acreage in Redding is separated from the tracks by commercial development fronting on Route 7 (and Route 7). It fringes the banks of the Norwalk River and

associated wetlands, which enhance the potential biological diversity of this area (see also the habitat notes for this forest patch under Ridgefield).

- 2) A portion of a 40-acre forest habitat is located in the Redding rail corridor, west of the railroad tracks between MP 14.2 and MP 14.4. This habitat is opposite the tracks from the large forest block 2 located on the east side of the tracks. It is surrounded by low-density residential development and bordered on the west (outside the corridor) by Route 7 (in Ridgefield). This habitat contains two small ponds and two small fingers of forested wetlands. The mosaic of habitats and proximity to the large forest block indicate there may be relatively high biological diversity in this area. Several NDDB records partially overlap this forest along its north side.
 - 3) The third forested habitat is located along the east side of the rail line from approximately MP 17.5 to the Redding-Bethel town line (approximately MP 18.1) where the habitat continues into the Bethel corridor. All but about 10 acres of this 67-acre habitat is in Redding. Within this habitat are several fingers of forested wetlands and the wetland complex into which Bogus Mountain Brook drains. There are no NDDB records overlapping the Redding portion of this forest but several records touch upon the northern extent of this habitat in Bethel. The linear nature of this habitat and its location suggest a possible wildlife movement corridor between Sympaug Pond to the north and the Saugatuck River corridor to the south.
- *Non-Riparian Forested Wetlands* – There are many networks of forested wetlands in the Redding study corridor. All but one (in Georgetown) are located north of the Ridgefield-Redding border (near Branchville). Some occur in depressions or low points along the railroad line, such as near Mountain Road, while most occur in association with small streams that dissect the upland forests. These small but frequent wetland resources help support the wildlife community in the overall forest complex, and are locations where species with special water-related needs may be concentrated. They therefore boost biological diversity in many ways. One relatively large resource is a forested-shrub wetland associated with Bogus Mountain Brook just south of the Redding-Danbury town line. This wetland is periodically inundated by water (as reflected by its designation as open water on the aerial photo base map.) Its varying water regimes likely offer some unique feeding and breeding opportunities for a host of wildlife groups.
 - *Shrub inland wetland* – Two shrub inland wetlands are located in the Redding study corridor. One occurs within a mosaic of wetland types along the Norwalk River, west of the railroad tracks at MP 13.8, near the Redding-Ridgefield town line north of Branchville (Ridgefield). Although small and located adjacent to an industrial strip, it is part of the intact vegetation along the Norwalk River and thus offers an added habitat opportunity for shrub-dependent species. The mix of wetland types enhances this area's potential for biological diversity. The other shrub wetland is an approximately 10-acre area on the north side of Umpawaug Pond. This wetland appears to be a very valuable

habitat for biological diversity due to its size, association with the Umpawaug Pond water/wetland complex and Umpawaug Pond Brook, and its variety of plants.

- *Freshwater marsh* – A narrow edge of freshwater marsh occurs within the shrub-riparian corridor along the Norwalk River near the Redding-Ridgefield town line north of Branchville (Ridgefield). As a different habitat opportunity within the vegetated river corridor, it is a valuable addition to this area's potential for biological diversity. Another freshwater marsh in Redding is a large (approximately 14 acre) area on the south side of Umpawaug Pond. This wetland appears to be a very valuable habitat for biological diversity due to its size, association with the Umpawaug Pond water/wetland complex, and its variety of plants.
- *Riparian Zones along Large River* – The very southern tip of the Redding study corridor contains a narrow degraded riparian zone along the Norwalk River. Habitat potential here is minimal, as is the likelihood of biological diversity. Just north of the intervening Ridgefield segment of the study corridor, there is a brief stretch of riparian zone along the Norwalk River in Redding. Most of this habitat is separated from the tracks by Route 7 and an industrial strip, with one finger coming close to the tracks (and Route 7) just south of MP 14. However, where it occurs, the riparian zone vegetation appears well established and comprised of native plant species. It likely harbors a moderate level of biological diversity. The other Riparian Zone along a Large River in Redding is where the Saugatuck River crosses the study corridor in the vicinity of the Redding Station. The continuity and richness of native plant species indicates good potential for biological diversity in the Saugatuck River corridor.
- *Cold Water Habitat* -- Saugatuck River in Redding is a cold water habitat. It transects the Danbury Branch in the vicinity of the Redding Station. This fisheries resource is further described in the Fisheries section below.

Ridgefield: Descriptions of key habitats in Ridgefield follow.

- *Forest* – A portion of an approximately 80-acre forest patch is located in the Ridgefield study corridor near the Redding-Ridgefield town line, just north of Branchville between MP 13 and 13.6. This forest spans both the Redding and Ridgefield portions of the study corridor. It is on the west side of the tracks and separated from the tracks by Route 7, which hugs the tracks in this location. This forest habitat is situated on the banks above the Norwalk River and contains particularly dense forest vegetation which is well suited as roosting habitat for owls and hawks and year-round habitats for a range of birds, amphibians, reptiles, and invertebrates.
- *Shrub inland wetland* – One small shrub inland wetland occurs next to the Norwalk River north of Branchville, west of the railroad tracks at MP 13. This is a deteriorated segment of the river that has been artificially channelized over the years by development. No other wetland habitats or riparian resources are close to this wetland. As such, the habitat value of this spot is low and it is not an important opportunity for biological diversity.

- *Cold Water Habitat* - The short segment of the Norwalk River in the Ridgefield portion of the study corridor is considered a cold water habitat. This section is included in a Wild Trout Management Area. It is classified as a Category 3 trout stream: some wild trout and stocked trout. The fisheries resources in the river are further described in the Fisheries section below.

Bethel: Descriptions of key habitats in Bethel follow.

- *Forested Blocks Greater Than 100 Acres* – There is one large forest block of approximately 900 acres partially within the Bethel portion of the study corridor, on the west side of the tracks, labeled 5 on the Key Habitats figures. The 45 acres in the Bethel portion of the corridor extend from the Bethel-Redding line (a continuation of the strip in Redding) to the vicinity of Sympaug Pond (MP 19). Located primarily in Danbury west of (outside) the study corridor, this block appears quite free of disturbance such as dirt roads, quarry pits, and buildings. Intact forest blocks of this size are unusual in Connecticut. This block could likely support forest interior species which have been heavily impacted by forest fragmentation through much of the state. Several NDDB records overlap this block.
- *Forest* – There are two smaller forest habitats partially in the Bethel portion of the study corridor.
 - 1) Approximately 10 acres of a 67-acre forested habitat lies within the Bethel study corridor on the east side of the tracks, connecting to the remaining acreage across the town line (south) in Redding. This habitat is directly across from the large forest block 5 (as labeled on the Key Habitat figures). This forested habitat consists of wooded areas along the edge of open spaces, thus likely providing cover for edge species of birds and small mammals. As noted under Redding, the linear nature of this habitat and its location suggest a possible wildlife movement corridor between Sympaug Pond to the north and the Saugatuck River corridor to the south.
 - 2) Another forested habitat of about 70 acres lies partially within the corridor in Bethel. It is located on the east side of the rail line in the vicinity of MP 20. It encompasses a forested wetland along the tracks and extends upslope. A residential subdivision penetrates into the forest higher on the slope, so the habitat has two “arms”. This habitat is likely important in maintaining the biodiversity of the shrub and forested wetlands along the rail line below, since many wildlife species require both upland and wetland habitats during their lives and this is the only undeveloped habitat around those wetlands. Without this forest block, the adjacent wetlands would undoubtedly experience a reduction in species and thus a drop in biodiversity.

- *Non-Riparian Forested Wetlands* – The Bethel study corridor contains a couple of forested wetland fingers associated with small streams and a couple of forested wetlands in basin configurations. The fingers tend to be near degraded or channelized streams and are not of very high value for wildlife and biological diversity. The basins are larger and more valuable, particularly the one near MP 20 which contains patchy open water pockets and is encompassed by a large forest block.
- *Shrub inland wetland* - There are two shrub inland wetlands in the Bethel study corridor, both associated with Sympaug Brook. The one along Sympaug Brook as it flows northerly from Sympaug Pond is a narrow wetland with disturbed edges from encroaching yard/storage and mixed uses. It is low in potential wildlife use and biological diversity, factoring in the scarcity of wetlands at Sympaug Pond. The other shrub wetland lies directly along the railroad tracks between Grassy Plain Road and an industrial complex, near MP 20. This approximately 20-acre wetland appears to support productive and predominantly native vegetation, and has abundant water in a variety of regimes. Although it is surrounded by urban-suburban land uses to the west and north, its proximity to the wetlands and large forest block east of the tracks enhances this wetland's potential for biological diversity. It is likely to have moderately high diversity.
- *Freshwater marsh* - There is one freshwater marsh partly located in the Bethel study corridor, just northwest of the Bethel Station. This relatively small area surrounded by downtown Bethel on two sides likely offers low to moderate diversity and is probably used most frequently by birds and small mammals.

Danbury: Descriptions of key habitats in Danbury follow.

- *Forest* – One contiguous forest habitat of about 35 acres straddles the Danbury-Brookfield corridor. It is a rectangular block east of the tracks just north of MP 27, located almost entirely within the study corridor, with approximately 15 acres lying within Danbury. The once greater extent of this forest, which has the appearance of a dry oak forest, is now the site of a corporate office park. This block lies on a ridge along and above the rail line. Due to the small size of this habitat, it cannot support exceedingly high biological diversity but may contain remnant habitat for species that are not common in this part of the study corridor (dry oak habitat being one of the specialized sub-habitats recognized by the DEP). Just less than half, approximately 15 acres, is located in Danbury. Two NDDDB records overlap with this forest habitat.
- *Non-Riparian Forested Wetlands* - The Danbury study corridor contains some broad areas of forested wetlands near the Danbury-Bethel town line. Forested wetlands follow the course of a tributary to the Still River and occur in an undeveloped parcel between industrial buildings just south of MP 22. There is aerial-photographic evidence of past ditching in these wetlands, which changed the water regimes and thus may have eliminated a number of species that would otherwise occur.

- *Shrub inland wetland* - One small shrub inland wetland occurs partially within the Danbury corridor, next to the Still River on the east side of the railroad tracks, north of the railroad bridge over the Still River in Danbury near MP 26.7. This section of river has intact natural banks and narrow terraced floodplain areas; however soils have been disturbed by earth-moving and development on both sides close to the river. This small wetland likely adds to the available habitat resources for migrating/traveling wildlife and provides a buffer for the river edge, but is probably low in directly supporting biological diversity.
- *Freshwater marsh* – Several very small snippets of freshwater marsh are located in the vicinity of MP 27 in the Danbury study corridor. They occur both east and west of the rail line along the sides of roadways. These contain common reed (*Phragmites australis*) and a few other emergent plant species, many of which are of low value for wildlife. These areas are more important for physical wetland functions than biological functions. They may be used on a limited basis by birds for food and/or cover. Several NDDDB records overlap these wetland patches.
- *Riparian Zones along Large River* - Danbury has two general locations where riparian vegetation along the Still River occurs within the study corridor. One is within an urban area with prior industrial disturbance east of Beaver Brook Road, where the riparian zone falls within the corridor in two small places. The other is along the river east of the railroad bridge at MP 26.7, where the river has intact natural banks and narrow terraced floodplain areas. These habitats would not be likely to directly support high biological diversity but would provide cover, water and limited food sources for a variety of species moving through the area and tolerant of the urban environment. A NDDDB record overlaps with one of the zones along Beaver Brook Road.

The Still River Alliance is restoring a portion of the Still River within the study corridor, to improve riparian conditions. That project's limits are from the junction of the Still River with Limekiln Brook in Danbury to near the Danbury-Brookfield town line. The portions in the study corridor are the areas noted above as riparian habitat zones.

Brookfield: Descriptions of key habitats in Brookfield follow.

- *Forested Blocks Greater Than 100 Acres* – A large forested block (numbered 6 on the Key Habitat figures) spans the Brookfield and New Milford portions of the study corridor on the west side of the tracks. This 370-acre (total) block centers on the forested Still River corridor, which resides within and abuts the rail study corridor on the west. The 100 or so acres in Brookfield (inside and outside the study corridor) extend from just south of MP 32 to MP 33 (the Brookfield-New Milford line), for a distance of about a mile. This block encompasses riparian and upland forest, with smaller patches of marsh and other non-forested wetlands. This mosaic of habitats along the riverway is likely rich in plant species and valuable to the many forms of wildlife requiring a protective cover of forest. Strip development along Route 7 to the west has encroached upon this habitat and carved out some notches in the otherwise solid rectilinear area. Although narrow at some

points, the habitat is still contiguous and its rich resources indicate high to very high biodiversity. Almost all of this forest block is covered by NDDDB records.

- *Forest* – Approximately 20 acres of the 35-acre contiguous forest block that spans the Danbury-Brookfield line north of MP 27 is located in the Brookfield portion of the study corridor. As noted under Danbury, this appears to be a remnant of a larger dry oak forest which is now the site of a corporate office park. It is not a location of high biological diversity but may contain remnant habitat for species that are uncommon in this part of the study corridor. Two NDDDB records overlap with this forest habitat in Brookfield.
- *Non-Riparian Forested Wetlands* – In the southern part of the Brookfield study corridor, there are several forested wetlands that were once part of the riparian zone of the Still River but are now separated from the river by Route 7 and Gray's Bridge Road. These are now pockets of variable sizes separated by roads, houses, various earth excavations, and other mixed land uses. They are on both sides of the track between MP 27.3 and 28.5. Biological diversity associated with these pockets is estimated to be low. The largest remnant, located on the west side of the tracks just north of the Brookfield-Danbury town line, offers the best habitat among them, with solid forest and a portion of an old river ox-bow. This area may support a small community of song birds, small mammals, and amphibians tolerant of human-impacted habitats. A NDDDB record overlaps with the southernmost extent of one of the habitat pockets and another NDDDB record overlaps with the northern occurrences of these pockets, in a location where the Still River and Route 7 curve along the outside of the western study corridor boundary.

More forested wetland patches occur within the Brookfield corridor north of the intersection of Junction and Pocono Roads. The largest and most intact of these is an elongated wetland extending along the east side of the tracks for about ¼ mile south of MP 30, in association with a small stream. Only very small pockets remain on the west side of the tracks here, where the installation of a gas pipeline may have slightly reduced the size of the wetlands, already constrained on the west by Pocono Road.

North of Silvermine Road, more small strips and spots of wetlands are located on both sides of the rail line, their small size reflecting that they have only narrow fringes of wetland trees at their borders. These characteristics probably only slightly boost the potential wildlife diversity from that of the surrounding suburban forest, if at all.

Several more elongated forested wetlands lie along the east side of the tracks in the Brookfield segment from MP 30.8 to MP 32.2, with one final pocket at the Brookfield-New Milford town line. These wetlands appear close enough to the Still River to have once been hydrologically connected. However, they are now separated from the Still River at varying distances by the railroad tracks, north-south roadways, and in some cases houses. They are also bounded on their east sides by residential developments. The predominant suburban character around these wetlands and the numerous barriers between them and large native habitats seriously restrict the biological diversity of these

wetlands. Multiple NDDDB records overlap with these wetland segments along this entire stretch.

- *Freshwater marsh* - There is one oblong freshwater marsh embedded in the riparian zone of the Still River within the Brookfield study corridor, just south of the Brookfield-New Milford line, south of MP 33. It is surrounded by riparian forest, upland forest, and within a long contiguous forest/riparian block. It therefore contributes greatly to the biodiversity of this habitat area in Brookfield and is estimated to support a very high diversity of wildlife given its relatively small size. This wetland is totally encompassed by T&E species (NDDDB) records.
- *Riparian Zones along Large River* – There is a length of approximately one mile along the west side of the railroad tracks in the Brookfield study corridor where the riparian zone of the Still River occurs. This zone stretches from approximately MP 31.8 to MP 33. The Still River weaves along (parallel to) the western edge of the study corridor in this stretch so the riparian zone continues west of the limits of the corridor. The riparian zone is densely forested in most places. It forms a relatively large block of nearly 100 acres in Brookfield and is likely very high in biodiversity for all wildlife groups. Almost all of this zone is covered by (NDDDB) records.

New Milford: Descriptions of key habitats in New Milford follow.

- *Forested Blocks Greater Than 100 Acres* - There are three large forest blocks partially in the New Milford portion of the study corridor.
 - 1) Forest block 6 (as numbered on the Key Habitat figures) is located on the west side of the tracks and west of Aldridge Road, extending from northern Brookfield into the southern New Milford study corridor to approximately MP 34.6. This 370-acre (total) block centers on the forested Still River corridor which resides within and abuts the rail study corridor to the west. This block includes upland and riparian forest, and encompasses various wetland patches of scrub-shrub, marsh and wet meadow types. Similar to the Brookfield portion of the corridor, there has been encroachment on this habitat from development off Route 7 to the west. In New Milford, development has included commercial, office, golf course, and residential. There is still, however, substantial acreage and quality habitat to suggest very high biodiversity. This block is entirely covered by (NDDDB) records.
 - 2) Forest block 7 is located on the east side of the tracks in New Milford opposite the tracks from block 6, occurring in the corridor from approximately MP 33.2 to MP 33.9. This approximately 148-acre block is separated from Block 6 by the tracks, Aldridge Road (west of the tracks), and a line of residential/shop properties along Aldridge Road. This block includes upland forests on sloping hills, some fingers of forested wetlands, and a managed pasture near Old Pumpkin Hill Road within the forested

backdrop. There are three NDDDB records that partially overlap this block along its length in the New Milford study corridor.

- 3) Forest block 8 as numbered on the Key Habitat figures is a 270-acre block partially in the New Milford study corridor on the east side of the tracks. This continuously forested habitat touches on the corridor only at its northwest limit, near the convergence of the Still River and Housatonic River (just south of MP 36). From the corridor it extends east and then splits, arcing both north and south around Lake Lillinonah. The acreage in the study corridor is small and transected by Grove Street but its riverside location and connection to the dense forest cover around Lake Lillinonah suggest very valuable habitat for wildlife, particularly large birds (owls, raptors) and medium-to-large mammals with big home ranges. This block lies within the bounds of Lovers Leap State Park. Two NDDDB records overlap with this block at its northern extent, one of which touches the study corridor.
- *Non-Riparian Forested Wetlands* - The forested wetlands in the New Milford study corridor are very similar to the forested wetlands in the northern part of Brookfield. In southern New Milford there are numerous linear forested wetlands in association with small streams. Those offer the greater opportunities for biodiversity in this type of wetland in New Milford. Such wetlands occur along the east side of the tracks from the New Milford-Brookfield town line north toward Old Pumpkin Hill Road (MP 38.9). Another such wetland occurs along a stream that intersects the tracks near MP 34.7.

Segmented forested wetlands and small patches surrounded by suburban development occur along the tracks north of Old Pumpkin Hill, near MP 35 (Ericson Road) and MP 37 (south of the rail bridge over the Housatonic River). These are considered low in potential wildlife diversity.

At the north end of the study corridor in New Milford, from downtown north, there is only one forested wetland area. This occurs in association with the West Aspetuck River where it crosses the corridor. This provides a thick cover for animal movement and a variety of habitat opportunities along this small river. Although narrow, this is a relatively intact forested wetland and is likely to support moderate biological diversity.

- *Shrub inland wetland* – There are two shrub inland wetlands in the New Milford study corridor. These are located within the mosaic of riparian zone on the west side of the tracks. The two nearly-abutting wetlands are located between MP 33.6 to MP 34.1. Their combined acreage is approximately 10 acres. These wetlands adjoin riparian forests and the freshwater marsh described below. They offer habitat that is not very common in the study corridor and are part of a relatively intact riparian matrix along a major river. They therefore contribute greatly to the biodiversity of this habitat area in New Milford and are estimated to support a very high diversity of wildlife. Multiple NDDDB records overlap with these wetlands.

- *Freshwater marsh* - There is one approximately 10-acre freshwater marsh embedded in the riparian zone of the Still River within the New Milford study corridor, just north of Cross Road (north of MP 34). It has thick robust vegetation within some sinuous curves of the river. It adjoins riparian forests on the west and shrub wetlands to the south. It offers a sizeable habitat that is not very common in the study corridor and is part of an intact riparian matrix along a major river. It therefore contributes greatly to the biodiversity of this habitat area in New Milford and is estimated to support a very high diversity of wildlife. This area is probably the best waterfowl and waterbird habitat in the corridor. Multiple T&E species (NDDDB) records overlap with this wetland.
- *Riparian Zones along Large River* - There is a continuous riparian zone along the Still River in the New Milford corridor between the New Milford- Brookfield town line (MP 33) to the vicinity of MP 35, all on the west side of the tracks. The Still River in New Milford weaves along (parallel to) the western edge of the study corridor and often lies within the corridor in this stretch. The riparian zone in New Milford has dense forests and also includes some shrub wetland and freshwater wetland complexes. It forms a large contiguous habitat of over 300 acres. The Still River riparian habitats in New Milford are thus estimated to have very high biodiversity. All of this zone in New Milford is encompassed by NDDDB records.

The New Milford portion of the study corridor also has riparian zones along the Housatonic River. These periodically occur along both sides of the river from the junction of the Housatonic and Still Rivers in the study corridor (near MP 38) to the northern study limit. These tend to be alluvial outwash areas (capable of supporting important riparian vegetation) where landowners are mowing close to the edge of the river. Forest vegetation is at a minimum and where not mowed or managed regularly, these areas have been invaded by non-native shrubs, particularly autumn olive. The Housatonic River riparian habitats in New Milford are thus estimated to have relatively low biological diversity. A NDDDB record overlaps with one such riparian zone near MP 36.

The Town of New Milford will soon be initiating some projects which enhance the Housatonic River. The town won funding from the Natural Resource Trustees of the Housatonic River Basin for the Youngsfield Park River Walk and Greenway project and the Saga Meadows project.

- *Wet Meadow* –There is a wet meadow of approximately 15 acres on the west side of the tracks and the west side of Aldridge Road in the New Milford study corridor, just north of the New Milford-Brookfield town line. This area has an open level field of wetland grasses and herbs (wildflowers), fringed by tall mature floodplain trees. It also contains at least one large snag where a hunting raptor was observed during field visits. It is an uncommon habitat in the study corridor and a rich one. It is estimated to support a very high diversity of all wildlife types.

Fisheries

Overview

Fish are often described in terms of fisheries resources, a term which encompasses fish populations (individuals of the same species) in combination with the environments (habitats) they live in. Fisheries resources occur in many of the rivers, streams, lakes, and ponds within the study corridor. Fisheries resources contribute to the food supply, economy, and health of the human community and fishing is an important recreational opportunity.

Fisheries resources in the study area include fish species that thrive in cold water, such as trout, fish that tolerate warmer water (warm-water species) and anadromous fish species (migrating to freshwater and/or river estuaries from the sea to spawn.) Cold-water fisheries are highly valued due to their ability to support native trout, while warm-water fisheries are sometimes caused by degradation of cold-water habitat through sedimentation, channel erosion, and man-made discharges that change a stream's temperature and structure. Anadromous fish are extremely valuable resources, as they play an important role in supporting the food chain in all their diverse habitats and moreover the overall health of the marine environment.

Within the study area, cold-water fisheries (trout) are found in several upstream waterways. Trout are among the most sought-after game fish in Connecticut. Natural trout reproduction is not adequate to support the current levels of trout harvesting (fishing) in most of Connecticut's rivers and streams, so DEP sustains trout populations through fish stocking in suitable habitat. These efforts are described in more detail by town below. Warm-water fisheries are the most common fish habitats in the study corridor. Two anadromous species, alewife and blueback herring (collectively called river herring), are known to utilize the Norwalk River for spawning habitat.

Based on coordination with the National Marine Fisheries Service (NMFS), the Norwalk River contains Essential Fish Habitat (EFH) within the project area (see correspondence in Appendix B). The NMFS identifies anadromous and resident fish species occur within the project area, as well as forage and benthic species in nearby aquatic habitats. This preliminary coordination does not indicate the species or their locations within the project area. When more details of potential project impacts are known, additional coordination with NMFS will be conducted to identify specific species and habitats of concern.

Fisheries Resources by Municipality

The fisheries resources in the study corridor are described more fully below.

Norwalk: The Norwalk River flows into Norwalk Harbor and Long Island Sound. Norwalk Harbor is a tidal estuarine environment. Historically, Norwalk Harbor has provided suitable habitat for shellfish, winter flounder, alewife, and blueback herring, among other species. However, the marine habitat in the harbor has substantially deteriorated over time, as reflected in the decline of fish populations and suitable nursery habitat such as eelgrass.

The most pronounced example is flounder, which have historically spawned in Norwalk Harbor and the tidal portion of the Norwalk River. Data compiled by the Harbor Watch Program indicates sharp declines in the flounder population. Flounder sampling studies during the early 1990s collected between 500 and 900 flounder per year, whereas in 2006, no flounder were collected (D. Harris, personal communication.) Eelgrass beds, important habitats for marine fish because of the cover and food sources they provide, were once present in Norwalk Harbor, but are now absent, largely due to poor water quality (D. Harris, personal communication).

Two anadromous species, alewife and blueback herring (collectively called river herring), are known to utilize the Norwalk River for spawning habitat. In springtime, these fish migrate from Long Island Sound through Norwalk Harbor to upstream freshwater portions of the Norwalk River. Upstream migrations are blocked by dams, however, the first being the Flock Process Dam, located just south of the Merritt Parkway. It is likely that alewife and blueback herring, and possibly sea-run brown trout, migrate just to the base of the dam (M. Johnson, personal communication). Slightly downstream of the Flock Process Dam, the Silvermine River flows into the Norwalk River. Alewife are able to migrate up the Silvermine River to the vicinity of Perry Road, where there is a small barrier.

Wilton: The rail corridor in Wilton also parallels the Norwalk River. Trout are stocked in the Norwalk River in several locations along the Norwalk River including the Wild Trout Management Area in the vicinity of Wolfpit Road in Wilton. Recreational fishing hot spots include the Wild Trout Management Area, as well as:

- South of Route 107 to Old Mill Road in Wilton (the Georgetown area)
- One mile north of Route 106 in Wilton
- The vicinity of the Cannon Road/Pimpewaug Road intersection in Wilton near the railroad bridge.

The DEP Fisheries Division has implemented several programs designed to maintain and improve trout fishing opportunities for Connecticut anglers. Adult trout (brook, brown, and rainbow) are stocked, intermittently, along the Norwalk River. Approximately 8,000 trout are stocked each year. In 2007, approximately 1,800 brook trout, 3,200 brown trout, and 1,800 rainbow trout were stocked. Additionally, 500 trophy brown trout, 550 trophy rainbow trout, and 31 surplus brood trout stock (very large) were stocked (B. Orciari, personal communication). In the Wild Trout Management Area (Wilton to Ridgefield), brown trout fry are also stocked. Fishing regulations require that any fish less than nine inches in length must be released in this area.

Native fish species found in the Norwalk River in the study area include: longnose dace, blacknose dace, white sucker, creek chub, and tessellated darter. Largemouth and smallmouth bass are the principle predators in most of the state's lakes and ponds, and thus play an important role in determining the distribution and abundance of other fish populations within the aquatic community.

Redding: The Saugatuck River in Redding is stocked with a mix of brook trout, brown trout, and rainbow trout. At the bridge crossing, where the rail corridor cuts across the river, there is sensitive habitat for a variety of native species including longnose dace, blacknose dace, white sucker, creek chub, and tessellated darter. This location is also a hot spot for recreational fishing.

The rail corridor runs parallel to Umpawaug Brook in Redding. Umpawaug Pond Brook, last sampled for fish in June 2007, contains several native species: tessellated darters, white suckers, redbreast sunfish, and redbfin pickerel. Umpawaug Pond offers limited opportunities for angling for warm-water species such as largemouth bass, sunfish, and yellow perch.

Ridgefield: The rail line parallels the Norwalk River in Ridgefield. The river is stocked with brook trout, brown trout, and rainbow trout at several points along the river.

Bethel: In Bethel, the headwater ponds of Sympaug Brook lie along the rail line in the study corridor, flow northerly and form Sympaug Pond. Sympaug Brook, sampled several times between 1991 and 2006, contains numerous native species (blacknose dace, longnose dace, creek chub, common shiner, white sucker, tessellated darter, yellow perch, redbfin pickerel, redbreast sunfish, pumpkinseed sunfish), as well as introduced species (bluegill sunfish and largemouth bass). According to DEP, it is safe to assume that, at a minimum, the fish species in Sympaug Brook are also present in Sympaug Pond (M. Humphreys, personal communication). Sympaug Pond offers limited opportunities for angling for warm-water species such as largemouth bass, sunfish, and yellow perch.

Danbury: In Danbury, Sympaug Brook flows into the Still River, which lies along the tracks near the Danbury Railroad Station and intersects the corridor farther north, close to the Danbury-Brookfield town line. The Still River is stocked with a mix of brook trout, brown trout, and rainbow trout. The Still River is stocked in downtown Danbury at Eagle Street with approximately 400 trout each year (B. Orciari, personal communication). This Eagle Street location, near the bridge crossing at Routes 7 and I-84, is a hot spot for fishing. Native fish found in the vicinity of Eagle Street include smallmouth bass and white sucker. Carp, a non-native species, are also common at this location.

Brookfield: The Still River in Brookfield is a warm-water fisheries resource. In addition to warm-water native species such as smallmouth bass, yellow perch, and white sucker, non-native carp are found in this part of the River. It does not support trout and is not stocked by DEP.

New Milford: The Still River in New Milford has similar fisheries resources as the Still River in Brookfield. It is a warm-water fisheries resource with a mix of native warm-water fish and the non-native carp. It does not support trout and is not stocked by DEP.

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APPENDIX A

LISTS OF WILDLIFE SPECIES DEPENDENT UPON KEY HABITATS IN CONNECTICUT

Source: Connecticut Department of Environmental Protection, 2005, *Connecticut's Comprehensive Wildlife Conservation Strategy*

Note: On the following tables, the headings *Most Important*, *Very Important*, and *Important* indicate the level of importance of the key habitat to the wildlife species listed underneath.

GNC = Greatest Conservation Need

Upland Forest (Habitat 1) GCN Species by Taxon		
<p>Mammal</p> <p><i>Most Important</i></p> <ul style="list-style-type: none"> Eastern Small-footed Bat Hoary Bat Indiana Bat Red Bat Silver-haired Bat <p><i>Very Important</i></p> <ul style="list-style-type: none"> Bobcat Deer Mouse Northern Flying Squirrel <p><i>Important</i></p> <ul style="list-style-type: none"> Black Bear Eastern Pipistrelle Hairy-tailed Mole Little Brown Bat Long-tailed Weasel Northern Long-eared Bat Short-tailed Weasel Southern Red-backed Vole Woodland Vole <p>Bird</p> <p><i>Very Important</i></p> <ul style="list-style-type: none"> Acadian Flycatcher Bald Eagle Black-and-white Warbler Black-throated Blue Warbler Blue-headed Vireo Cerulean Warbler Golden-crowned Kinglet Great Crested Flycatcher Hermit Thrush Long-eared Owl Northern Saw-whet Owl Rose-breasted Grosbeak Ruffed Grouse Sharp-shinned Hawk Wood Thrush Worm-eating Warbler 	<p>Bird (cont.)</p> <p><i>Important</i></p> <ul style="list-style-type: none"> Barred Owl Bay-breasted Warbler Blackburnian Warbler Black-throated Green Warbler Broad-winged Hawk Brown Creeper Cape May Warbler Cooper's Hawk Dark-eyed Junco Eastern Wood-pewee Gray-cheeked Thrush Great Horned Owl Hooded Warbler Louisiana Waterthrush Magnolia Warbler Northern Flicker Northern Goshawk Northern Parula Olive-sided Flycatcher Ovenbird Pileated Woodpecker Purple Finch Red-breasted Nuthatch Scarlet Tanager Swainson's Thrush Winter Wren Yellow-rumped Warbler Yellow-throated Vireo 	<p>Reptile/Amphibian</p> <p><i>Most Important</i></p> <ul style="list-style-type: none"> Blue-spotted salamander (diploid) Eastern Spadefoot Timber Rattlesnake <p><i>Very Important</i></p> <ul style="list-style-type: none"> Blue-spotted Salamander (complex) Common Five-lined Skink Eastern Box Turtle Eastern Hog-nosed Snake Eastern Ribbonsnake Jefferson Salamander Northern Leopard Frog Northern Slimy Salamander Northern Spring Salamander Spotted Turtle Wood Turtle <p><i>Important</i></p> <ul style="list-style-type: none"> Copperhead Eastern Newt Eastern Racer Fowler's Toad Gray Treefrog Marbled Salamander Northern Dusky Salamander Spotted Salamander Wood Frog <p>Invertebrate</p> <p><i>Most Important</i></p> <ul style="list-style-type: none"> Columbine Duskywing <p><i>Very Important</i></p> <ul style="list-style-type: none"> Common Roadside Skipper <p><i>Important</i></p> <ul style="list-style-type: none"> American Burying Beetle Atlantis Fritillary Aureolaria Seed Borer Black Lordithon Rove Beetle <i>Calosoma wilcoxi</i> <i>Carabus sylvosus</i> Cicada Columbine Borer Gray Comma Imperial Moth Purse-web Spider Regal Moth

Threats Affecting GCN Species in Upland Forest Habitat

- Insufficient scientific knowledge regarding wildlife species (distribution, abundance and condition).
- Loss, degradation or fragmentation of habitats from development or changes in land use.
- Degradation of habitats by non-native invasive species.

Forested Inland Wetland (Habitat 4) GCN Species by Taxon		
<p>Mammal</p> <p><i>Most Important</i> Eastern Small-footed Bat Hoary Bat Indiana Bat Red Bat Silver-haired Bat Southern Bog Lemming</p> <p><i>Very Important</i> Bobcat Northern Water Shrew</p> <p><i>Important</i> Black Bear Eastern Pipistrelle Hairy-tailed Mole Little Brown Bat Mink Northern Long-eared Bat</p> <p>Bird</p> <p><i>Very Important</i> American Black Duck American Woodcock Black-billed Cuckoo Black-throated Blue Warbler Canada Warbler Cerulean Warbler Chestnut-sided Warbler Green Heron Hermit Thrush Hooded Merganser Least Flycatcher Northern Saw-whet Owl Rose-breasted Grosbeak Yellow-billed Cuckoo</p>	<p>Bird (cont.)</p> <p><i>Important</i> American Redstart Baltimore Oriole Barred Owl Black-throated Green Warbler Broad-winged Hawk Eastern Kingbird Eastern Screech-owl Gray-cheeked Thrush Great Blue Heron Louisiana Waterthrush Northern Flicker Northern Parula Northern Waterthrush Purple Martin Red-shouldered Hawk Veery Winter Wren Yellow-throated Vireo</p>	<p>Reptile/Amphibian</p> <p><i>Most Important</i> Blue-spotted salamander (diploid) Eastern Spadefoot</p> <p><i>Very Important</i> Blue-spotted Salamander (complex) Eastern Box Turtle Eastern Ribbonsnake Spotted Turtle Wood Turtle</p> <p><i>Important</i> Eastern Newt Fowler's Toad Marbled Salamander Spotted Salamander Wood Frog</p> <p>Invertebrate</p> <p><i>Most Important</i> Hessel's Hairstreak</p> <p><i>Very Important</i> Pink Streak Two-spotted Skipper</p> <p><i>Important</i> Annoited Sallow Moth <i>Bembidion semicinctum</i> <i>Brachinus cyanipennis</i> <i>Carabus vinctus</i> Coastal Pond Amphipod <i>Goniops chrysocoma</i> Gray Comma <i>Hybomitra trepida</i> <i>Hybomitra typhus</i> <i>Lemmer's Noctuid Moth</i> <i>Loxandrus vitiosus</i> Mystic Valley Amphipod</p>

Threats Affecting GCN Species in Forested Inland Wetland Habitat

- Insufficient scientific knowledge regarding wildlife species (distribution, abundance, and condition).
- Loss, degradation, or fragmentation of habitats from development or changes in land use.
- Degradation of habitats by non-native invasive plants and wildlife (e.g., *phragmites*, purple loosestrife, mute swan).
- Loss of wetland habitat from historic filling, dredging, and ditching.
- Loss of habitat value due to hydrologic impacts from development, new roads, impervious surfaces, and culverts.

Shrub Inland Wetland (Habitat 5) GCN Species by Taxon		
<p>Mammal</p> <p><i>Most Important</i> Eastern Small-footed Bat Hoary Bat Indiana Bat New England Cottontail Red Bat Silver-haired Bat Southern Bog Lemming</p> <p><i>Very Important</i> Bobcat Northern Water Shrew</p> <p><i>Important</i> Black Bear Mink</p> <p>Bird</p> <p><i>Very Important</i> Alder Flycatcher American Woodcock</p> <p><i>Important</i> Gray Catbird Louisiana Waterthrush Northern Waterthrush Willow Flycatcher</p>	<p>Reptile/Amphibian</p> <p><i>Most Important</i> Blue-spotted salamander (diploid)</p> <p><i>Very Important</i> Blue-spotted Salamander (complex) Eastern Box Turtle Eastern Ribbonsnake Northern Spring Salamander Spotted Turtle Wood Turtle</p> <p><i>Important</i> Eastern Newt Marbled Salamander Northern Dusky Salamander Smooth Greensnake Spotted Salamander Wood Frog</p>	<p>Invertebrate</p> <p><i>Most Important</i> Banded Bog Skimmer Bog Tiger Moth <i>Hybomitra longiglossa</i> Labrador Tea Tentiform Leafminer Pitcher Plant Borer Moth Yellow Bog Anarta</p> <p><i>Very Important</i> Crimson-ringed Whiteface <i>Hybomitra frosti</i> Sedge Skipper Slender Clearwing Two-spotted Skipper</p> <p><i>Important</i> <i>Agonum darlingtoni</i> <i>Agonum mutatum</i> <i>Atylotus ohioensis</i> <i>Bembidion quadratum</i> Bog Copper Henry's Elfin <i>Hybomitra lurida</i> <i>Merycomyia whitneyi</i> Pitcher Plant Moth <i>Sargus fasciatus</i> Ski-tailed Emerald <i>Tabanus fulvicallus</i></p>

Threats Affecting GCN Species in Shrub Inland Wetland Habitat

- Insufficient scientific knowledge regarding wildlife species (distribution, abundance, and condition).
- Loss, degradation, or fragmentation of habitats from development or changes in land use.
- Degradation of habitats by non-native invasive plants and wildlife (e.g., *phragmites*, purple loosestrife, mute swan).
- Loss of wetland habitat from historic filling, dredging and ditching.
- Loss of habitat value due to hydrologic impacts from development, new roads, impervious surfaces, and culverts.

Priority Research/ Survey/ Monitoring Needs for Shrub Inland Wetland Habitat

- Determine the life history, abundance, distribution, and habitat requirements for GCN bat species, especially Indiana bats. *Measure:* number of GIS data layers produced; number of life history measures established.
- Enhance inventory and conservation efforts for butterfly species. *Measure:* number of new monitoring sites or species protocols established.

Herbaceous Inland Wetland (Habitat 6) GCN Species by Taxon		
<p>Mammal</p> <p><i>Most Important</i></p> <ul style="list-style-type: none"> Eastern Small-footed Bat Hoary Bat Indiana Bat Red Bat Silver-haired Bat <p><i>Very Important</i></p> <ul style="list-style-type: none"> Northern Water Shrew <p><i>Important</i></p> <ul style="list-style-type: none"> Black Bear Eastern Pipistrelle Little Brown Bat Mink Muskrat Northern Long-eared Bat Woodland Vole 	<p>Bird</p> <p><i>Most Important</i></p> <ul style="list-style-type: none"> American Bittern King Rail Least Bittern Pied-billed Grebe Sedge Wren <p><i>Very Important</i></p> <ul style="list-style-type: none"> Alder Flycatcher American Black Duck Blue-winged Teal Canada Warbler Common Moorhen Green Heron Hooded Merganser Marsh Wren Northern Saw-whet Owl Sora <p><i>Important</i></p> <ul style="list-style-type: none"> Black-crowned Night-heron Eastern Kingbird Gray Catbird Rough-legged Hawk Virginia Rail Willow Flycatcher 	<p>Reptile/Amphibian</p> <p><i>Most Important</i></p> <ul style="list-style-type: none"> Blue-spotted salamander (diploid) Bog Turtle <p><i>Very Important</i></p> <ul style="list-style-type: none"> Blue-spotted Salamander (complex) Eastern Box Turtle Eastern Ribbonsnake Northern Spring Salamander Spotted Turtle Wood Turtle <p><i>Important</i></p> <ul style="list-style-type: none"> Northern Dusky Salamander <p>Fish</p> <p><i>Most Important</i></p> <ul style="list-style-type: none"> Banded Sunfish <p>Invertebrate</p> <p><i>Very Important</i></p> <ul style="list-style-type: none"> Sedge Skipper Two-spotted Skipper <p><i>Important</i></p> <ul style="list-style-type: none"> <i>Bembidion pseudocautum</i> <i>Brachinus cyanipennis</i> Eyed Brown <i>Merycomya whitneyi</i> Newman's Brocade <i>Sargus fasciatus</i>

Threats Affecting GCN Species in Herbaceous Inland Wetland Habitat

- Insufficient scientific knowledge regarding wildlife species (distribution, abundance, and condition).
- Loss, degradation, or fragmentation of habitats from development or changes in land use.
- Loss of habitat value due to hydrologic impacts from development, new roads, impervious surfaces, and culverts.
- Degradation of habitats by non-native invasive species.
- Loss of early successional habitats through natural succession.
- Loss of wetland habitat from historic filling, dredging, and ditching.

Priority Research/ Survey/ Monitoring Needs for Herbaceous Inland Wetland Habitat

- Determine the life history, abundance, distribution, and habitat requirements of GCN bat species, especially the Indiana bat. *Measure:* number of GIS data layers produced; number of life history measures established.

**Large Rivers and their Riparian Zones (Habitat 9a)
GCN Species by Taxon**

Mammal	Reptile/Amphibian	Invertebrate
<p>Most Important Eastern Small-footed Bat Hoary Bat Indiana Bat Red Bat Silver-haired Bat</p> <p>Very Important Meadow Jumping Mouse</p> <p>Important Black Bear Eastern Pipistrelle Little Brown Bat Long-tailed Weasel Mink Muskrat Northern Long-eared Bat Short-tailed Weasel</p> <p>Bird</p> <p>Most Important Pied-billed Grebe</p> <p>Very Important Alder Flycatcher American Black Duck American Woodcock Bald Eagle Black-and-white Warbler Blue-winged Teal Canada Warbler Cerulean Warbler Greater Scaup Least Flycatcher</p> <p>Important American Redstart Bank Swallow Barred Owl Belted Kingfisher Blue-gray Gnatcatcher Canvasback Cliff Swallow Common Merganser Eastern Kingbird Eastern Screech-owl Great Cormorant Hooded Warbler Lesser Scaup Louisiana Waterthrush Northern Rough-winged Swallow Northern Waterthrush Orchard Oriole Osprey Red-necked Grebe Warbling Vireo Willow Flycatcher Yellow-throated Vireo</p>	<p>Most Important Blue-spotted Salamander (diploid) Eastern Spadefoot</p> <p>Very Important Blue-spotted Salamander (complex) Eastern Box Turtle Eastern Ribbonsnake Spotted Turtle Wood Turtle</p> <p>Important Fowler's Toad</p> <p>Fish</p> <p>Most Important Alewife American Eel Atlantic Sturgeon Atlantic Tomcod Blueback Herring Burbot Rainbow Smelt Shortnose Sturgeon</p> <p>Very Important American Shad Atlantic Salmon Chain Pickerel Fourspine Stickleback Hickory Shad Menhaden Sea Lamprey</p> <p>Important Black Crappie Golden Shiner Hogchoker Largemouth Bass Pumpkinseed Redbreast Sunfish Smallmouth Bass Striped Bass White Sucker Yellow Perch</p>	<p>Most Important Brook Floater Dwarf Wedge Mussel Puritan Tiger Beetle Virginia River Snail</p> <p>Very Important Blue Crab Midland Clubtail Riverine Clubtail Sedge Skipper Tidewater Mucket Two-spotted Skipper</p> <p>Important American Rubyspot <i>Baetisca lacustris</i> <i>Baetisca obesa</i> <i>Bembidion carinula</i> <i>Bembidion lacunarium</i> <i>Brachinus fumans</i> <i>Brachinus medius</i> <i>Brachinus ovipennis</i> <i>Cicindela marginata</i> Cobra Clubtail Dark-bellied Tiger Beetle Eastern Pearlshell Eastern Pond Mussel Fiddler Crabs Grass Shrimp Hairy-necked Tiger Beetle Lymnaeid Snail <i>Nebria lacustris lacustris</i> Sand Shrimp Shore Shrimp Skillet Clubtail Slender Walker Walker's Tusked Sprawler Woodland Pondsail Yellow Lampmussel</p>

Cold Water Streams (Habitat 9c) GCN Species by Taxon		
<p>Mammal</p> <p>Most Important Eastern Small-footed Bat Hoary Bat Indiana Bat Red Bat Silver-haired Bat</p> <p>Very Important Northern Water Shrew Woodland Jumping Mouse</p> <p>Important Eastern Pipistrelle Little Brown Bat Mink Northern Long-eared Bat</p> <p>Bird</p> <p>Most Important American Woodcock</p> <p>Very Important Louisiana Waterthrush Northern Waterthrush Olive-sided Flycatcher</p>	<p>Reptile/Amphibian</p> <p>Very Important Eastern Ribbonsnake Northern Spring Salamander</p> <p>Important Northern Dusky Salamander</p> <p>Fish</p> <p>Most Important American Brook Lamprey American Eel Brook Trout (wild) Brown Trout (wild) Burbot Slimy Sculpin</p> <p>Very Important Fourspine Stickleback Longnose Sucker</p> <p>Important Blacknose Dace Common Shiner Cutlips Minnow Fallfish Longnose Dace White Sucker</p>	<p>Invertebrate</p> <p>Very Important Harpoon Clubtail Mustached Clubtail Rapids Clubtail Tiger Spiketail</p> <p>Important American Rubyspot <i>Bembidion simplex</i> <i>Brachinus fumans</i> <i>Brachinus medius</i> <i>Brachinus ovipennis</i> <i>Cinygmula subaequalis</i> Ski-tailed Emerald</p>

Threats Affecting GCN Species in Cold Water Streams (Habitat 9c)

- Insufficient scientific knowledge regarding wildlife and freshwater, diadromous, and marine fish species and their habitats (distribution, abundance, and condition).
- Loss, degradation, or fragmentation of habitats from development or changes in land use.
- Impacts to and loss of riparian habitat for wildlife corridors and insufficient buffer requirements to protect streams.
- Degradation, alteration, and loss of habitat due to stream channel modifications, channelization, filling, dredging, development, vegetation control, and shoreline modification.
- Instream flow alterations and increasing temperatures caused by consumptive withdrawals of surface or ground water and wetland loss.
- Impacts to fish habitats due to ineffective or insufficient land use regulations among towns.
- Loss of coldwater habitat due to decreased groundwater input or increased warming (e.g., filling of wetlands, impoundments, removal of riparian vegetation).

parks, greenways, river corridors, or coastal marshes that attract wildlife. An example of good urban habitat is the City of Hartford. The Connecticut River funnels many migratory species through the city and some, such as the peregrine falcon, make use of the urban landscape of skyscrapers and their ledges to nest. Keney Park, a 695 acre greenspace within the city, is just one of many parks that provides wildlife habitat.

The quality of urban habitat for some species has declined. The redesign of building roof-tops and the replacement of gravel with alternative roofing materials has decreased nesting habitat for common nighthawks. Likewise, the capping and lining of chimneys has decreased roosting and nesting habitat for chimney swifts.

The present and future condition of urban habitats is directly related to the amount of awareness and information about wildlife and their habitats.

Urban Habitat (Habitat 11e) GCN Species by Taxon		
Mammal <i>Most Important</i> Indiana Bat <i>Important</i> Little Brown Bat Northern Long-eared bat	Bird <i>Most Important</i> Barn Owl Common Nighthawk Red-headed Woodpecker <i>Very Important</i> Chimney Swift	Invertebrate <i>Important</i> <i>Harpalus caliginosus</i>

Threats Affecting GCN Species in Urban Habitats (Habitat 11e)

- Insufficient scientific knowledge regarding wildlife species (distribution, abundance, and condition).
- Loss, degradation, or fragmentation of habitats from development or changes in land use.
- Degradation of habitats by non-native invasive species.
- Impacts from human disturbance.

Priority Research/ Survey/ Monitoring Needs for Urban Habitats (Habitat 11e)

- Determine the population status and distribution of breeding populations of common nighthawks. *Measure:* number of GIS data layers produced of all known sites; development of effective monitoring protocols.
- Determine the population status and distribution of chimney swifts and establish effective monitoring protocols. *Measure:* number of GIS data layers produced of all known sites; development of effective monitoring protocols.
- Determine the life history, abundance, distribution and habitat requirements for GCN bat species, especially the Indiana bat. *Measure:* number of GIS data layers produced; number of life history measures established.

Intensively Managed (Habitat 12) GCN Species by Taxon		
<p>Mammal</p> <p><i>Most Important</i></p> <ul style="list-style-type: none"> Eastern Small-footed Bat Hoary Bat Indiana Bat New England Cottontail Red Bat Silver-haired Bat Southern Bog Lemming <p><i>Very Important</i></p> <ul style="list-style-type: none"> Meadow Jumping Mouse <p><i>Important</i></p> <ul style="list-style-type: none"> Black Bear Eastern Pipistrelle Little Brown Bat Northern Long-eared Bat <p>Bird</p> <p><i>Most Important</i></p> <ul style="list-style-type: none"> Barn Owl Common Nighthawk Golden-winged Warbler Horned Lark Northern Harrier Red-headed Woodpecker Sedge Wren Vesper Sparrow Yellow-breasted Chat 	<p>Bird (cont.)</p> <p><i>Very Important</i></p> <ul style="list-style-type: none"> American Black Duck American Kestrel American Woodcock Blue-winged Teal Blue-winged Warbler Bobolink Brown Thrasher Chestnut-sided Warbler Eastern Meadowlark Eastern Towhee Field Sparrow Glossy Ibis Great Crested Flycatcher Indigo Bunting Long-eared Owl Northern Bobwhite Prairie Warbler Ruffed Grouse Savannah Sparrow Short-eared Owl Whip-poor-will Yellow-billed Cuckoo <p><i>Important</i></p> <ul style="list-style-type: none"> American Redstart Eastern Kingbird Eastern Screech-owl Eastern Wood-pewee Gray Catbird Great Horned Owl Hooded Warbler Magnolia Warbler Orchard Oriole Rough-legged Hawk Ruby-throated Hummingbird Snowy Owl Warbling Vireo White-eyed Vireo Willow Flycatcher 	<p>Reptile/Amphibian</p> <p><i>Very Important</i></p> <ul style="list-style-type: none"> Eastern Hog-nosed Snake Eastern Ribbonsnake Spotted Turtle Wood Turtle <p><i>Important</i></p> <ul style="list-style-type: none"> Copperhead Eastern Racer Smooth Greensnake <p>Invertebrate</p> <p><i>Very Important</i></p> <ul style="list-style-type: none"> Harris's Checkerspot <p><i>Important</i></p> <ul style="list-style-type: none"> Bronze Copper <i>Cicindela purpurea</i> <i>Cucullia speyeri</i> Culvers Root Borer <i>Harpalus caliginosus</i> Hop Vine Borer Moth Hops-stalk Borer <i>Panagaeus fasciatus</i> Regal Fritillary

Threats Affecting GCN Species in Intensively Managed Habitat

- Insufficient scientific knowledge regarding wildlife species (distribution, abundance, and condition).
- Loss, degradation, or fragmentation of habitats from development or changes in land use.
- Degradation of habitats by non-native invasive species.
- Impacts from human disturbance.
- Lack of fire needed to maintain certain habitats.
- Loss of early successional habitats through natural succession.
- Degradation of habitat from overbrowsing by deer.

APPENDIX B

CORRESPONDENCE AND PERSONAL COMMUNICATIONS RELATIVE TO BIOLOGICAL DIVERSITY

Municipality Natural Resource Information Summary and Contact Log

New Milford

- Plan of Conservation and Development adopted on October 30, 10097.
 - CT State Plan of Conservation and Development identifies the Housatonic Riverway as a proposed preservation and conservation area;
 - Town Plan of Conservation and Development indicates a proposed greenway along the banks of the Housatonic River from Galyordsville to Brookfield;
 - Some portions of the Still Riverway have been purchased as conservancy lands; the State Plan of Conservation and Development identifies the Still Riverway as a proposed preservation and conservation area;
 - Town Plan of Conservation and Development identifies the entire length of the Still River and abutting lands as proposed open space;
 - CT State Plan of Conservation and Development identifies the West Aspetuck River as a proposed preservation and conservation area;
- James Furlow, Wetlands Enforcement Officer (860-355-6083) stated that the Town does not have a natural resource inventory and that he is not aware of any special areas of protection. (Date of conversation – August 3, 2009). In a subsequent call to James Furlow regarding Housatonic River restoration projects: The Town of New Milford requested funding from the Natural Resource Trustees of the Housatonic River Basin for river restoration and won funding for the Youngsfield Park River Walk and Greenway project (Public Works project) and the Saga Meadows project (Parks & Recreation project). Neither project has started yet (funding to be released soon). No concepts maps are available. Complete project descriptions are available on the Town's web site. (Date of conversation – August 16, 2009).

Brookfield

- Plan of Conservation and Development adopted in 2002.
 - Identifies a greenway/riverway along the Still River that would connect to Danbury
- Katherine Daniel, Wetland Enforcement Officer, (203-775-7316), stated that they do not have a natural resources inventory. She is aware of wetlands of significance within the vicinity of the rail line, however, but further investigation would be necessary to determine the significance of each one. (Date of conversation – August 3, 2009).

Danbury

- Full Plan of Conservation and Development is not available online.
 - The Environmental Impact Commission is responsible for protecting and preserving the wetlands and watercourses within the City of Danbury.
-

- Attempted contact with Joe Mead, Wetlands Enforcement Officer (203-797-4525) on September 17, 2009

Bethel

- Plan of Conservation and Development became effective on October 15, 2007.
 - Natural Resources Plan identifies Sympaug Pond as being within a Natural Biodiversity Database (NDDDB) Area and contains slopes greater than 25%.
 - Sympaug Pond is also located within Terre Haute
 - An area near Grassy Plains Drive is also located within an NDDDB area
 - The area near Bethel Station contains wetland soils and is within the 100-year flood plain.

Ridgefield

- Plan of Conservation and Development not available online.
- Amy Pardee, Wetlands Enforcement Officer (203-431-2383) called back and in a message on 8/5/09 stated that they are currently putting together a natural resource inventory for the Town. She does not know of any special areas of ecological value within our study area. She suggested that we call the Norwalk River Watershed Authority as they may have a better idea.

Redding

- Plan of Conservation and Development adopted in 2008. Significant amount of detail about Saugatuck River and Norwalk River, but nothing about potential resources or habitats.
- Robert Flanagan, Wetlands Enforcement Officer (203-938-8517) stated that they do not have a local natural resource inventory. At the time I spoke with him, he could not recall any special areas of ecological value within our study area. He did mention that the Conservation Commission does have a regulation of a 500-foot buffer around any vernal pool. (Date of conversation – August 3, 2009)

Wilton

- New Plan of Conservation and Development will be approved on October 5, 2009.
 - Identifies an Aquifer Protection Zone that runs parallel to the Norwalk River.
 - According to the Water Resources Plan, the railroad ROW is located within Aquifer, or area of high groundwater availability.
 - Mike Conkland, Wetlands Enforcement Officer (203-563-0180). Attempted contact with him Tuesday, September 15, 2009
-

Norwalk

- Plan of Conservation and Development adopted in June 2008. [File is very large; low resolution file that is also available does not contain very much detail.]
- Alexis Cherichetti, Senior Environmental Officer (203-854-7744) stated that they are compiling a natural resource inventory now. No areas of special ecological concern came to mind while we were on the phone. She also checked the CT DEP Natural Diversity Map and did not find anything. (Date of conversation – August 4, 2009).



TELECON

Call From: Laurel	Project: P788.06/Danbury Branch Rail Corridor – Biological Diversity
Call To: Bob Orciari, CT DEP	Voice/Fax: 860-485-0226
Date: December 9, 2008	Time: 11:00-11:30 a.m.
Subject: Danbury Branch Rail Corridor – Fisheries Resources	

Laurel called Bob Orciari, CT DEP, fisheries biologist, for the purpose of inquiring about fisheries resources for the Danbury Branch Rail Corridor DEIS. She asked 1) if fish are stocked (and, if so, the species of stocked fish), 2) for a list of native species (if any), 3) about sensitive habitat areas (if any), 4) about hot spots for fishing (if any) for the following locations:

- Norwalk River – from downtown Norwalk (north of Norwalk Harbor) and north all the way to Redding (the river is parallel to and often within the corridor in Norwalk, Wilton, a teeny corner of Ridgefield, and a short stretch in Redding)
- Umpawaug Pond Brook in Redding (parallel to and in corridor for a short stretch)
- Saugatuck River in Redding – one location (bridge crossing) as the river cuts across the corridor
- Bogus Mountain Brook in Redding - one location (culvert or bridge) as it cuts across the rail corridor
- Sympaug Pond and Brook in Bethel – this brook is parallel to corridor and inside it a couple of times in Bethel
- Still River – in downtown Danbury near Union Station, a bridge crossing at Route 784 in Danbury, then parallel to and within the rail corridor again in northern Brookfield and New Milford.
- Housatonic River in New Milford (north of Still River junction) – parallel to and within the rail corridor

What follows is a summary of the call/discussion:

Still River

According to Mr. Orciari, the Still River is stocked with a mix of 400 trout (brook, brown, and rainbow) in downtown Danbury at Eagle Street. This Eagle Street location, a hot spot for fishing, is near the bridge crossing at Routes 7 and 84. Native fish found in the vicinity of Eagle Street include small mouth bass and white sucker. Carp are also common at this location, but they are a non-native species.

The Still River in northern Brookfield and New Milford is a warm water resource. It does not support trout and is not stocked with fish. However, non-native carp are found in this part of the Still River.

Housatonic River

According to Mr. Orciari, the Housatonic in New Milford (north of Still River junction) is a warm water resource. It does not support trout and is not stocked with fish. However, non-native carp and native species such as small mouth bass and white suckers are found in this part of the Housatonic River.

Saugatuck River

According to Mr. Orciari, the Saugatuck River in Redding at the bridge crossing where the river cuts across the rail corridor is a very popular fishing spot. The Saugatuck River is stocked with trout (a mix of brook, brown, and rainbow) in the vicinity of the bridge crossing. This area is sensitive habitat for a variety of native species: long nose bass, black nose bass, white sucker, creek chubbs, and tessellated darter.

Norwalk River

There are several areas along the Norwalk River in the railroad corridor where trout are stocked. There is a Wild Trout Management Area along the Norwalk River starting from the vicinity of Wolfpit Road in Wilton, through Wilton to Ridgefield. This Wild Trout Management Area is a hot spot for fishing. Other key fishing and habitat areas along the Norwalk River are:

- South of Route 107 to Old Mill Road in Wilton (the Georgetown area)
- One mile north of Route 106 in Wilton
- The vicinity of the Cannon Road/Pimpewaug Road intersection in Wilton near the railroad bridge

Adult trout (brook, brown, and rainbow) are stocked, intermittently, along the Norwalk River. Approximately 8,000 trout are stocked each year. In 2007, approximately 1,800 brook trout, 3,200 brown trout, and 1,800 rainbow trout were stocked. Additionally, 500 trophy brown trout, 550 trophy rainbow trout, and 31 surplus brood trout stock (very large) were stocked. In the Wild

Trout Management Area (Wilton to Ridgefield), brown trout fry are also stocked. Any fish less than nine inches in length must be released in the Wild Trout Management Area.

Native fish species found in the Norwalk River in the railroad corridor study area include: long nose bass, black nose bass, white sucker, creek chubbs, and tessellated darter.

Brooks, and Ponds

Mr. Orciari referred me to Mr. Michael Humphreys (860-567-3445), another CT DEP fisheries biologist for more information to discuss the Umpawaug Pond Brook in Redding, Bogus Mountain Brook in Redding, and Sympaug Pond and Brook in Bethel.

From: Humphreys, Michael [mailto:Michael.Humphreys@ct.gov]
Sent: Tuesday, December 16, 2008 12:23 PM
To: Laurel Stegina
Subject: RE: Danbury Branch Rail Corridor - Fisheries

Hello Laurel,

I checked our stream survey database for records for these three streams. None of the three have been stocked by the State. Bogus Mountain Brook has not been sampled.

Umpawaug Pond Brook was sampled for fish June 28, 2007 and contained tessellated darters (native), white suckers (native), redbreast sunfish (native), and redbreast pickerel (native).

Sympaug Brook has been sampled seven times between 1991 and 2006. The fish species list includes: blacknose dace (native), longnose dace (native), creek chub (native), common shiner (native), white sucker (native), tessellated darter (native), yellow perch (native), redbreast pickerel (native), redbreast sunfish (native), pumpkinseed sunfish (native), bluegill sunfish (introduced), and largemouth bass (introduced).

We have no fish data specifically for Sympaug Pond, however it is safe to assume that, at a minimum, the species in the brook are also present in the pond.

We have not identified any specific sensitive habitat areas for fish in these water bodies (It will be necessary for you to go through the process of checking with DEP's Natural Diversity Database for records of plant and animal species of concern, as well as rare habitat types.)

We have no specific knowledge of fishing activity on these waters, however Sympaug Pond and Umpawaug Pond appear large enough to offer limited opportunities for angling for warmwater species such as largemouth bass, sunfish, and yellow perch.

I assume from our phone conversation that Bob Orciari gave you adequate information on Saugatuck River and Still River, both of which are stocked with trout to provide fishing opportunities, and both of which have numerous native species present.

I hope this information satisfies your data needs.

Mike Humphreys
DEP Inland Fisheries Biologist
860 567-8998

From: Laurel Stegina [mailto:lstegina@fhiplan.com]
Sent: Tuesday, December 16, 2008 8:34 AM
To: Humphreys, Michael
Subject: Danbury Branch Rail Corridor - Fisheries

Hi Michael,

Thank you for speaking with me last week regarding fisheries in the brooks, streams, and ponds in the Danbury Branch rail corridor. (As a reminder, Fitzgerald & Halliday, Inc. is assisting with a Draft Environmental Impact Statement of alternative improvements for the Danbury Branch.)

As mentioned by phone, I am interested in finding out more about the following water bodies. These water bodies are shown on the attached maps.

- Umpawaug Pond Brook in Redding (parallel to and in the rail corridor for a short stretch)
- Bogus Mountain Brook in Redding (one location – a culvert or bridge as the brook cuts across the rail corridor)
- Sympaug Pond and Brook in Bethel (parallel to and in the rail corridor)

In particular, I am researching:

- If fish are stocked in each of the water bodies (and, if so, the species of stocked fish)
- List of native species (if any) in each of the water bodies
- Sensitive habitat areas (if any) in each of the water bodies
- Hot spots for fishing (if any) for each of the water bodies

Any information and assistance you can provide would be greatly appreciated. Please don't hesitate to call me with any questions or concerns. Thank you!

Take care,
Laurel

Laurel J. Stegina, AICP

Senior Planner II
Fitzgerald & Halliday, Inc.
Direct Dial Phone: 860-256-4914
Direct Dial Fax: 860-760-6213
lstegina@fhiplan.com
www.fhiplan.com

From: Johnson, Mark [mailto:Mark.Johnson@ct.gov]
Sent: Friday, April 24, 2009 3:27 PM
To: Laurel Stegina
Subject: RE: Danbury Branch Rail Corridor - Marine Fisheries
Importance: Low

Laura-

I checked through my files and we do not have any reports or studies of the fisheries in Norwalk Harbor other than what has been provided to us by the Harbor Watch Program, at Earthplace Nature Center (http://www.earthplace.org/environment/water_quality.html). Dick Harris is a good contact, and I suggest you call him to determine the best way to obtain or view their data and reports. Other good sources would be the City of Norwalk Harbor Commission. They have prepared a Harbor Management Plan that could be of use. And, for shellfish information, contact the City of Norwalk Shellfish Commission, and the State of Connecticut, Dept of Agriculture, Bureau of Aquaculture, Milford. 203-874-0696.

I'm not sure if what you are working on has any potential for inwater work. Just in case, when I review permit applications that involve inwater work there are three species that occur in the harbor two are of particular concern: winter flounder, alewife and blueback herring. Although there is no direct evidence of winter flounder spawning in the harbor, there is sufficient information that indicates to us that they do in fact spawn in Norwalk Harbor and the tidal portion of the Norwalk River. If a project involves dredging or excavation that could produce significant suspended sediment, then I typically recommend that the activity be prohibited during the spawning and early life-stage (eggs and larvae) development period from February 1 to May 15. Alewife and blueback herring, collectively called river herring, are anadromous. We don't have very good information on the status of the populations using the system, but we do know they occur there. They migrate in spring from Long Island Sound through the harbor to freshwater spawning areas in the river. If a project could interfere with migration, either by producing significant suspended sediment or significant underwater noise and pressure waves, then I recommend the activity be prohibited from April 1 to June 30.

Please let me know if I can assist you further.

Mark Johnson, Senior Fisheries Biologist (Coastal)

CT DEP Marine HQ
P.O. Box 719; 333 Ferry Road
Old Lyme, CT 06371
Phone: 860-434-6043; Fax: 860-434-6150
Email: mark.johnson@ct.gov

From: Laurel Stegina [mailto:lstegina@fhiplan.com]
Sent: Friday, April 24, 2009 10:35 AM
To: Johnson, Mark
Subject: Danbury Branch Rail Corridor - Marine Fisheries

Hi Mark,

Thank you for speaking with me this morning regarding marine fisheries resources in Norwalk Harbor. As a reminder, I'm with Fitzgerald & Halliday, Inc. (FHI), and FHI is assisting with a Draft Environmental Impact Statement of alternative improvements for the Danbury Branch Rail Corridor.

Any marine fisheries studies conducted for Norwalk Harbor that you could direct me to would be greatly appreciated. In particular, I am interested in finding out about existing fisheries habitat (such as eelgrass beds and other good nursery areas) in Norwalk Harbor. I am also researching for Norwalk Harbor native species and hot spots for fishing (if any).

Any information and assistance you can provide would be greatly appreciated. Please don't hesitate to call me with any questions or concerns. Thank you!

Take care,
Laurel

Laurel J. Stegina, AICP
Senior Planner II
Fitzgerald & Halliday, Inc.
Direct Dial Phone: 860-256-4914
Direct Dial Fax: 860-760-6213
lstegina@fhiplan.com
www.fhiplan.com

-----Original Message-----

From: Johnson, Mark [mailto:Mark.Johnson@ct.gov]
Sent: Friday, May 01, 2009 11:06 AM
To: Laurel Stegina
Subject: Danbury Branch Corridor-addtitional info
Importance: Low

Laurel-

As we discussed today on the phone you are interested to know how far alewife and blueback herring (two anadromous species) can migrate up the Norwalk River and tributaries. On the Norwalk River, the first barrier is the Flock Process Dam, which is just south of the Merritt Parkway. We believe both alewife and blueback herring migrate to the base of this dam. There may also be sea-run brown trout as well, but we don't know if they spawn in the river. The Silvermine River is a tributary of the Norwalk River, entering the Norwalk River downstream of the Flock Process Dam. Alewife are able to migrate up to the vicinity of Perry Road, where there is a small barrier. There are many more of these small barriers further north. It is our intention to get passage on these as well as Flock Process Dam and other barriers in the Norwalk River.

Your original request was specific to Norwalk Harbor and so I did not discuss freshwater species in the Norwalk River watershed. If that is of interest to your project let me know. Regarding the anadromous species, the same types of seasonal restrictions on inwater work I discussed for Norwalk Harbor might apply throughout their spawning migration route in freshwater. We also make recommendations to avoid impacts to freshwater species and their habitat. For guidelines please refer to the following link to the Habitat Restoration section of the DEP website:

http://www.ct.gov/dep/cwp/view.asp?a=2696&q=322734&depNav_GID=1630 . The links at the bottom will be helpful, in particular the Stream Crossing Guidelines at

<http://www.ct.gov/dep/lib/dep/fishing/restoration/streamcrossingguidelines.pdf>

Thanks,

Mark Johnson, Senior Fisheries Biologist (Coastal)

CT DEP Marine HQ
P.O. Box 719; 333 Ferry Road
Old Lyme, CT 06371
Phone: 860-434-6043; Fax: 860-434-6150
Email: mark.johnson@ct.gov



FITZGERALD & HALLIDAY, INC.

72 Cedar Street, Hartford, Connecticut 06106
Tel. (860) 247-7200
Fax (860) 232-7536

TELECON

Call From: Laurel Stegina
Project: P788.06/Danbury Branch Rail Corridor – Biological Diversity
Dick Harris, Harbor Watch
Call To: Program, Earthplace Nature Center
Voice/Fax: 860-485-0226
Date: May 1, 2009
Time: 10:00-11:00 a.m.
Subject: Danbury Branch Rail Corridor – Fisheries Resources

Mark Johnson, CT DEP, suggested contacting Dick Harris, Harbor Watch Program -- Earthplace Nature Center, for reports and studies of fisheries in Norwalk Harbor. Laurel called Mr. Harris and asked him about:

- Marine fisheries studies that have been conducted for Norwalk Harbor
- Existing fisheries habitat (such as eelgrass beds and other good nursery areas) in Norwalk Harbor

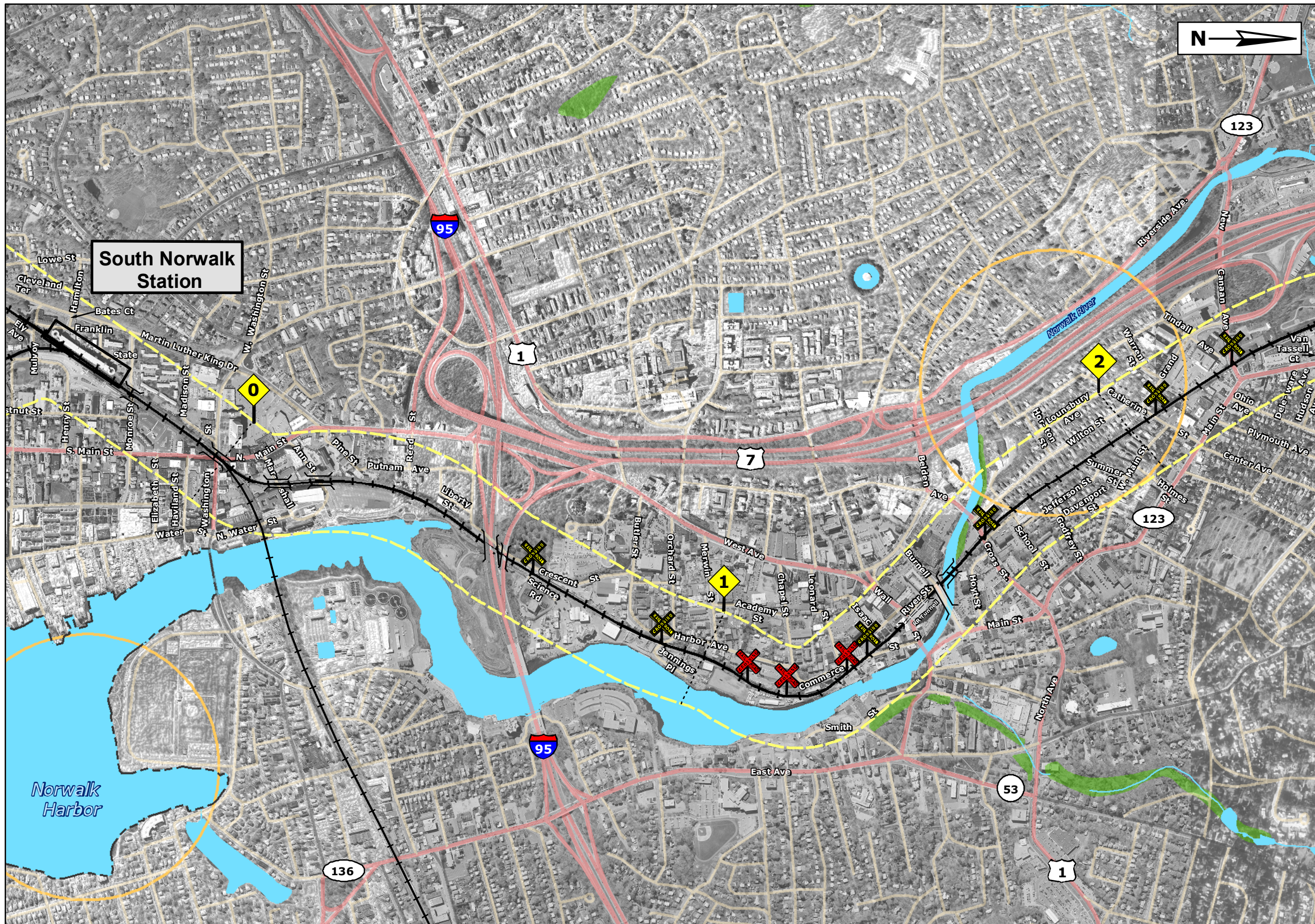
Mr. Harris referred me to the Norwalk River Report (2008) prepared by the Norwalk River Watershed Association, which he will send to FHI's Hartford Office via mail.

He said that Norwalk Harbor has historically provided suitable habitat for winter flounder, among other species. However, the marine habitat in the harbor has shown signs of degradation over time. Since 1990, there is evidence of flounder species decline. Flounder sampling results over the past 19 years is summarized as follows:

- 500-900 flounder were collected in the early 1990
- In 2002, no flounder were collected
- Flounder population showed signs of re-bounding between 2003 through 2006 when between 60 and 80 flounder were collected
- However, in 2006, no flounder were collected
- About 60 to 80 flounder were collected in 2007 and again in 2008

Mr. Harris said that in 2005 there was a large fish kill event involving an estimated 1 million fish. He attributed the fish kill primarily to poor water quality and loss of tidal wetlands.

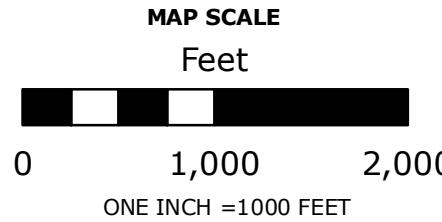
Eelgrass was once present in Norwalk Harbor, but has gradually declined over time. Eelgrass is now absent in Norwalk Harbor, largely due to poor water quality.



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
- Proposed Location of New Railroad Station
- Railroad Milepost Marker
- Railroad Crossing
- Private Railroad Crossing
- Interstate Highway
- US Highway
- State Road
- Local Road
- Rivers/Streams
- Lakes/Ponds
- Shrub Inland Wetland
- Freshwater Marsh
- Non-Riparian Forested Wetlands
- Riparian Zones along Large River
- Forested Blocks Greater Than 100 Acres +
- Forest
- Cold Water Habitats
- Wet Meadow
- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

GIS MAPPING BY: URS CORPORATION DATE: 11/2010

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION



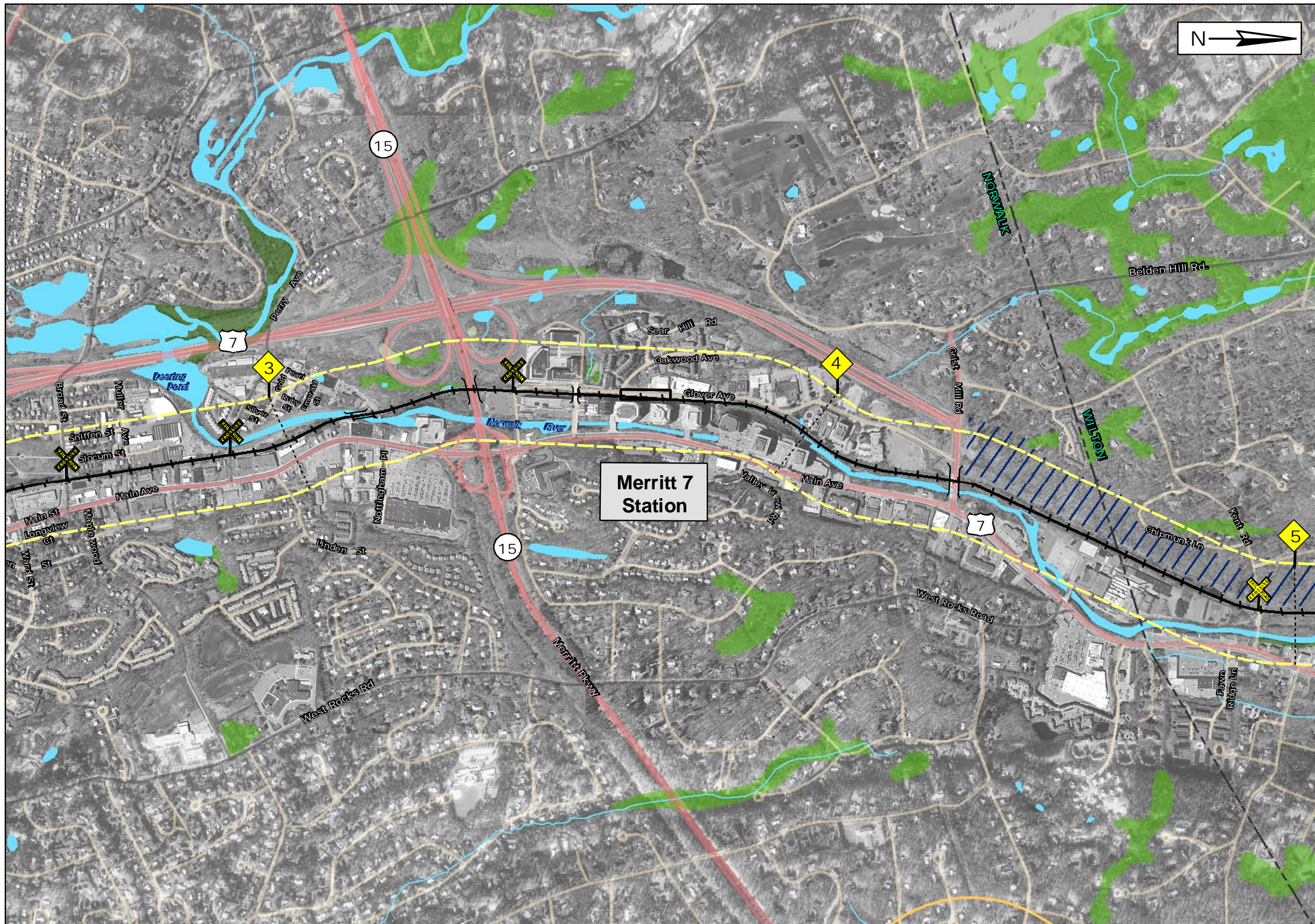
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MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

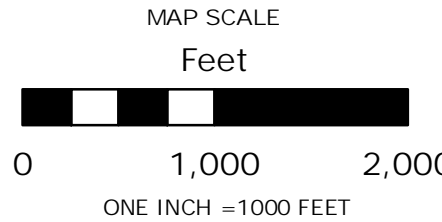
SHEET NO: **1 OF 14**



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
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GIS MAPPING BY: URS CORPORATION DATE: 11/2010

STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION

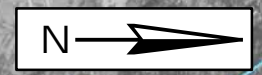
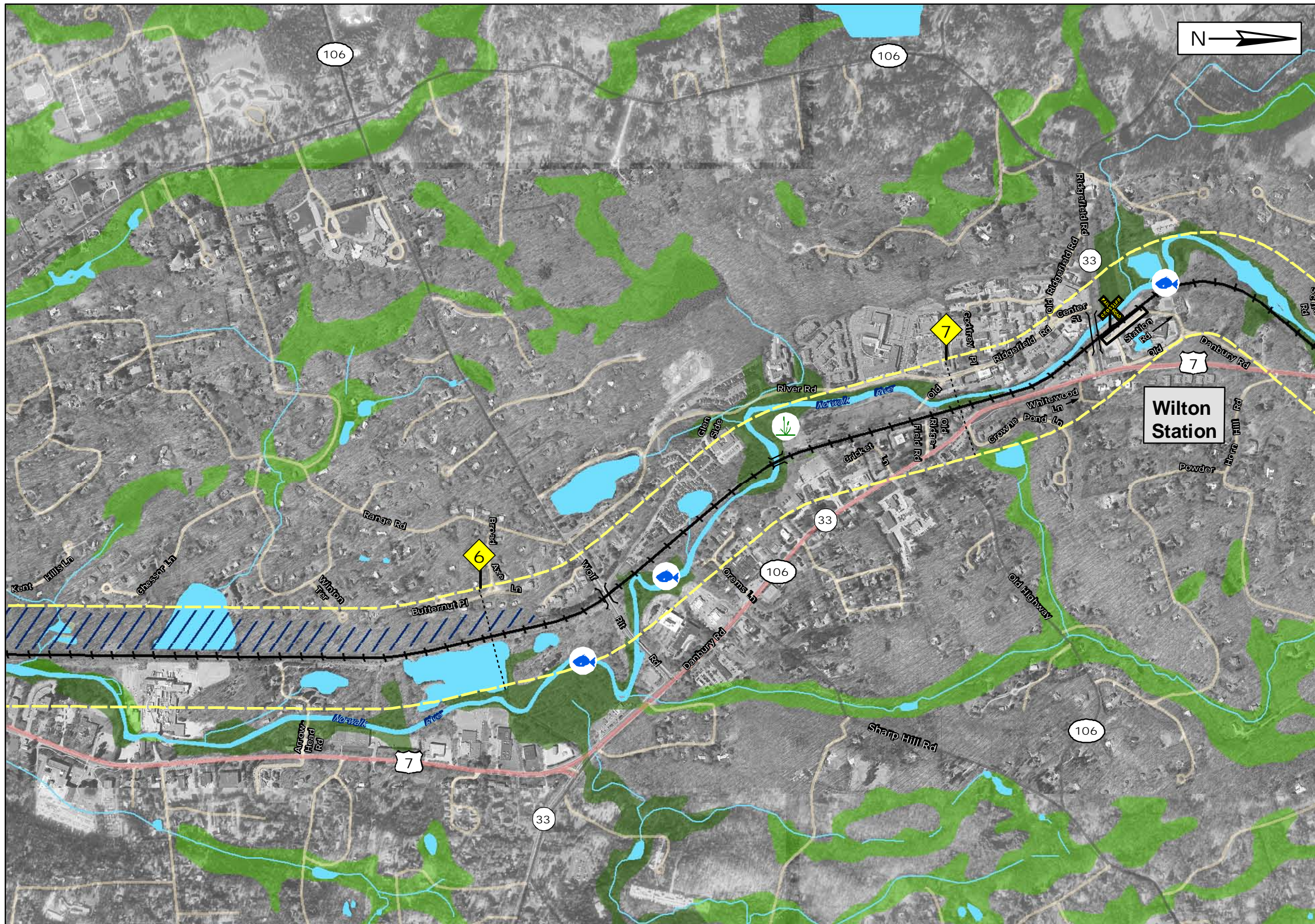
TOWN(S): **NORWALK, WILTON**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

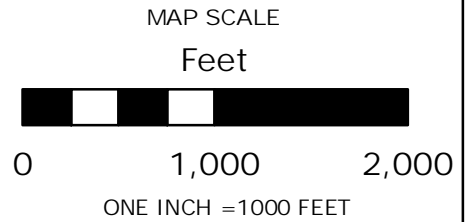
SHEET NO: **2 OF 14**



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
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- Railroad Milepost Marker
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- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

GIS MAPPING BY: URS CORPORATION DATE: 11/2010

STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION



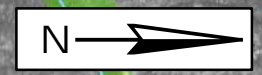
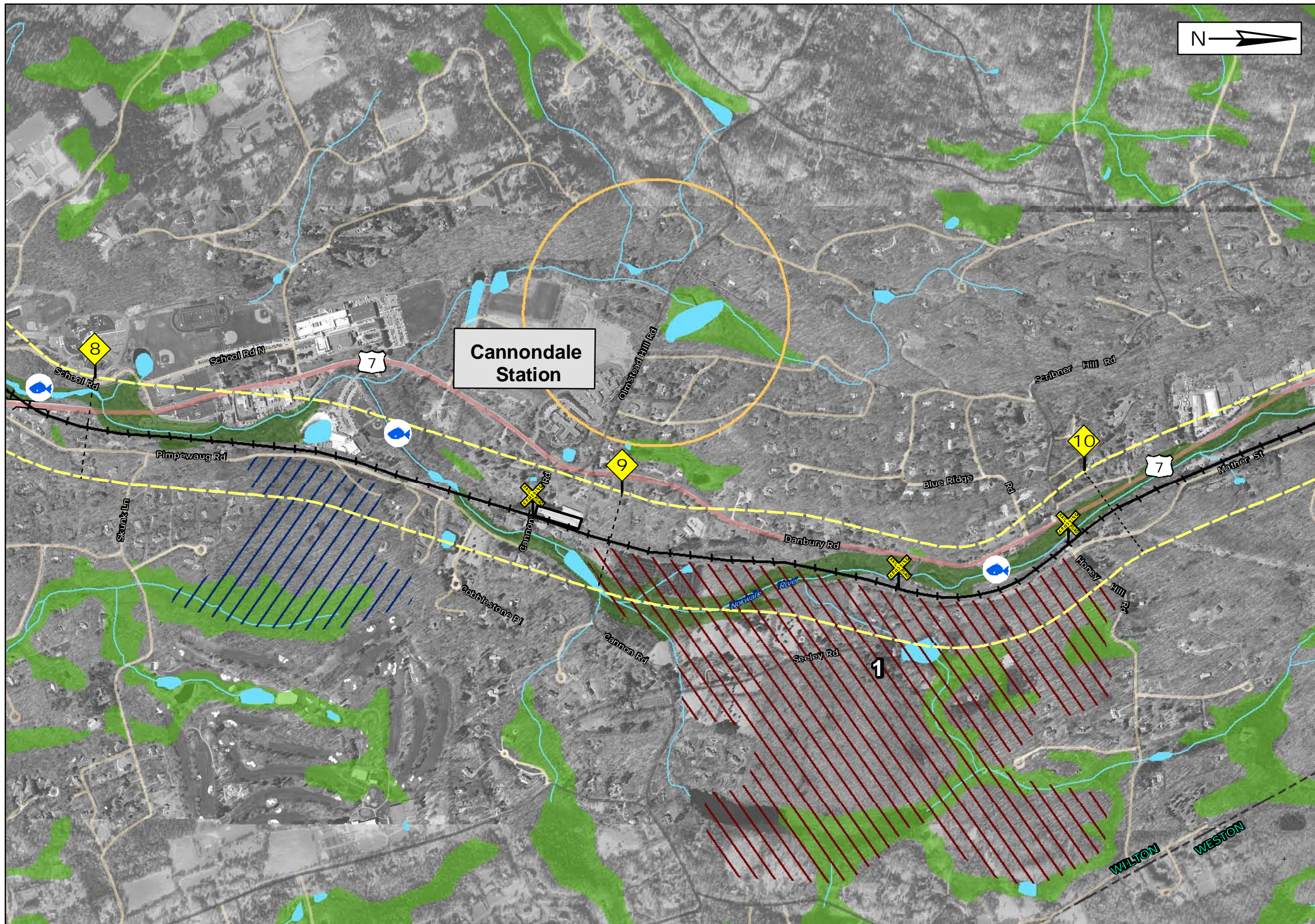
TOWN(S): **WILTON**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

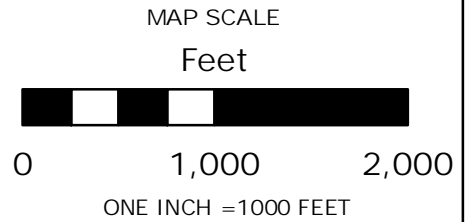
SHEET NO: **3 OF 14**



Legend

- Railroad Track
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- Town Boundary
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- Proposed Location of New Railroad Station
- Railroad Milepost Marker
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 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

GIS MAPPING BY: URS CORPORATION DATE: 11/2010

STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION



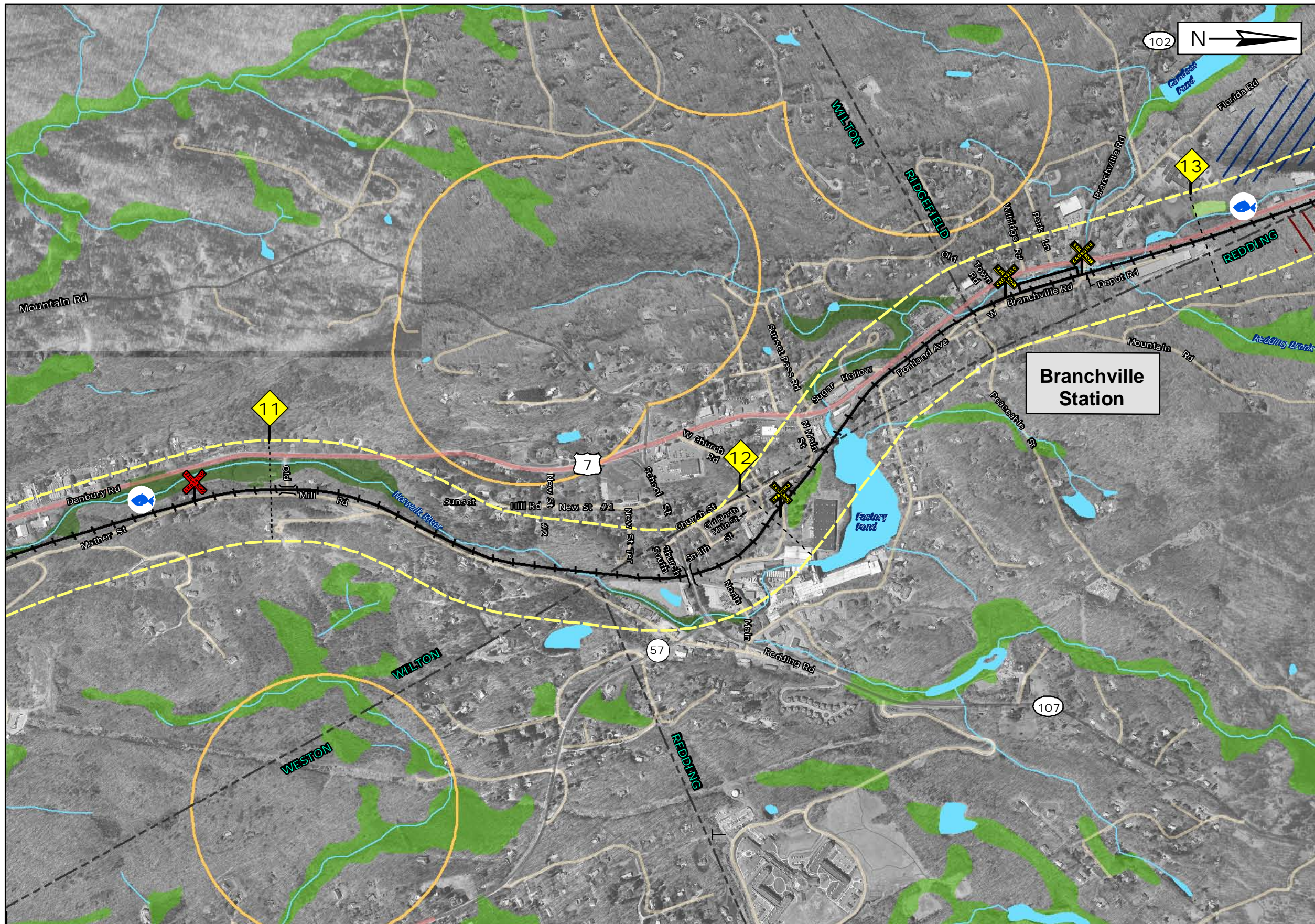
TOWN(S): **WILTON**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

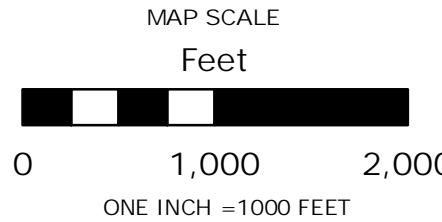
SHEET NO: **4 OF 14**



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
- Proposed Location of New Railroad Station
- Railroad Milepost Marker
- Railroad Crossing
- Private Railroad Crossing
- Interstate Highway
- US Highway
- State Road
- Local Road
- Rivers/Streams
- Lakes/Ponds
- Shrub Inland Wetland
- Freshwater Marsh
- Non-Riparian Forested Wetlands
- Riparian Zones along Large River
- Forested Blocks Greater Than 100 Acres +
- Forest
- Cold Water Habitats
- Wet Meadow
- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

GIS MAPPING BY: URS CORPORATION DATE: 11/2010

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 DEPARTMENT OF TRANSPORTATION

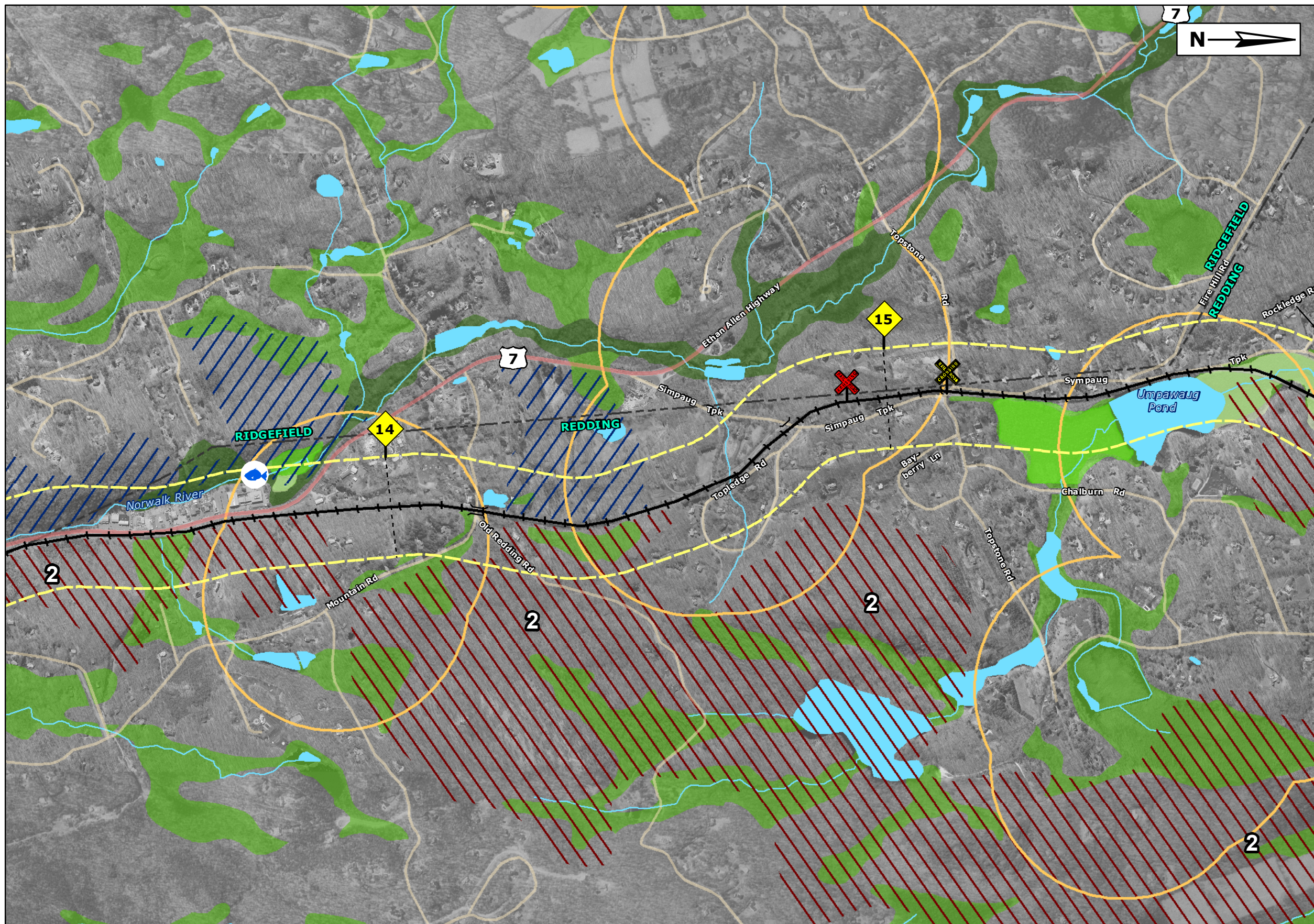
TOWN(S): **WILTON, REDDING, RIDGEFIELD, WESTON**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

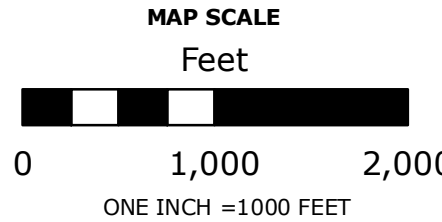
SHEET NO: **5 OF 14**



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
- Proposed Location of New Railroad Station
- Railroad Milepost Marker
- Railroad Crossing
- Private Railroad Crossing
- Interstate Highway
- US Highway
- State Road
- Local Road
- Rivers/Streams
- Lakes/Ponds
- Shrub Inland Wetland
- Freshwater Marsh
- Non-Riparian Forested Wetlands
- Riparian Zones along Large River
- Forested Blocks Greater Than 100 Acres +
- Forest
- Cold Water Habitats
- Wet Meadow
- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

GIS MAPPING BY: URS CORPORATION DATE: 11/2010

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

TOWN(S): **REDDING, RIDGEFIELD**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

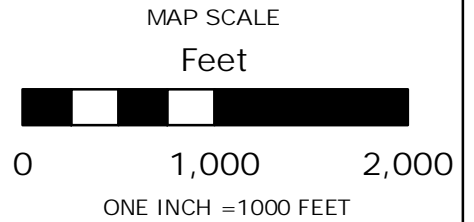
MAP NO:

SHEET NO: **6 OF 14**



- Legend**
- Railroad Track
 - 1000 Foot Study Corridor
 - Town Boundary
 - Railroad Station
 - Proposed Location of New Railroad Station
 - Railroad Milepost Marker
 - Railroad Crossing
 - Private Railroad Crossing
 - Interstate Highway
 - US Highway
 - State Road
 - Local Road
 - Rivers/Streams
 - Lakes/Ponds
 - Shrub Inland Wetland
 - Freshwater Marsh
 - Non-Riparian Forested Wetlands
 - Riparian Zones along Large River
 - Forested Blocks Greater Than 100 Acres +
 - Forest
 - Cold Water Habitats
 - Wet Meadow
 - T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

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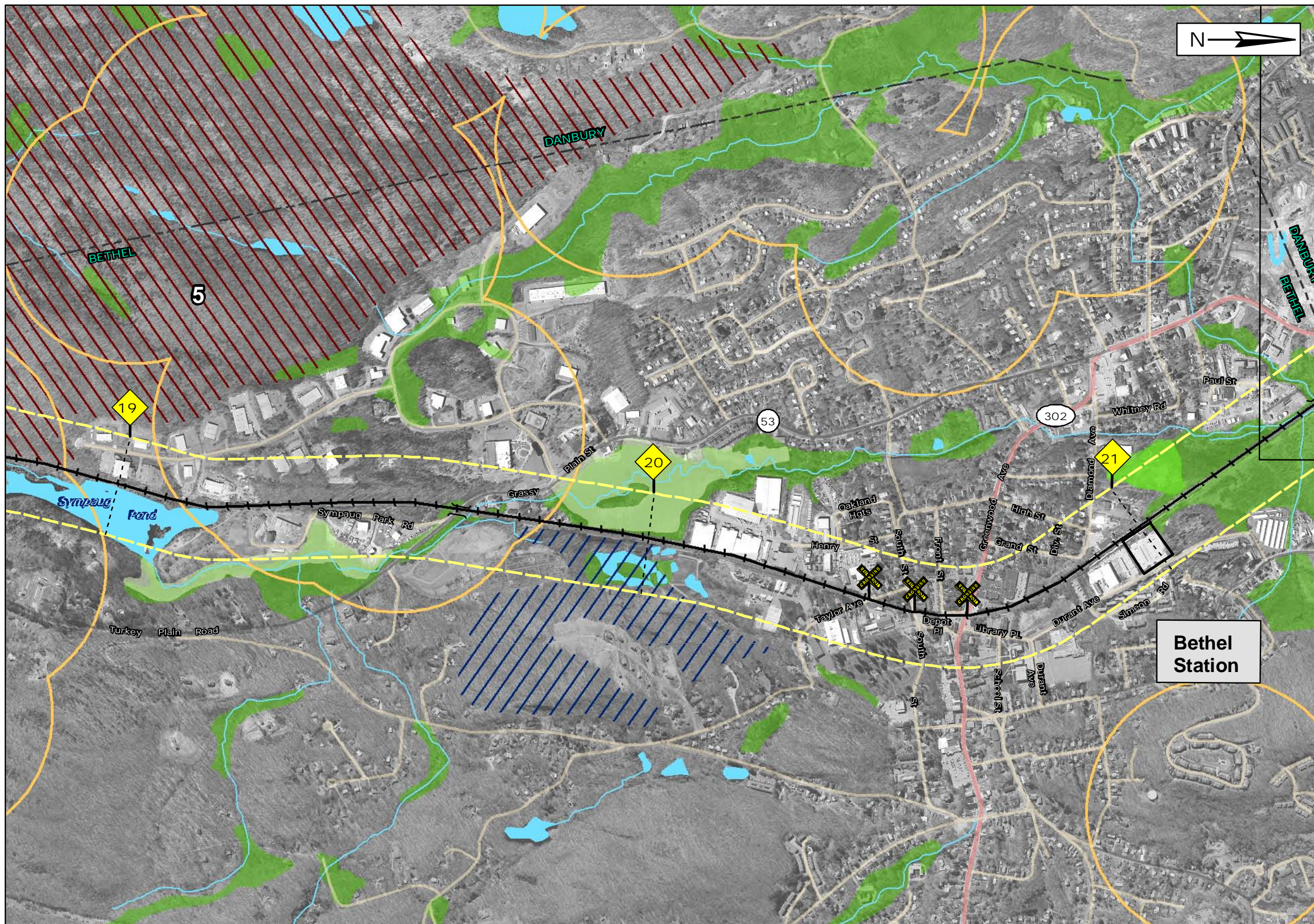
TOWN(S): **REDDING, BETHEL DANBURY**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

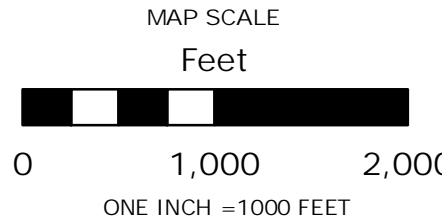
SHEET NO: **7 OF 14**



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
- Proposed Location of New Railroad Station
- Railroad Milepost Marker
- Railroad Crossing
- Private Railroad Crossing
- Interstate Highway
- US Highway
- State Road
- Local Road
- Rivers/Streams
- Lakes/Ponds
- Shrub Inland Wetland
- Freshwater Marsh
- Non-Riparian Forested Wetlands
- Riparian Zones along Large River
- Forested Blocks Greater Than 100 Acres +
- Forest
- Cold Water Habitats
- Wet Meadow
- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

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STATE OF CONNECTICUT
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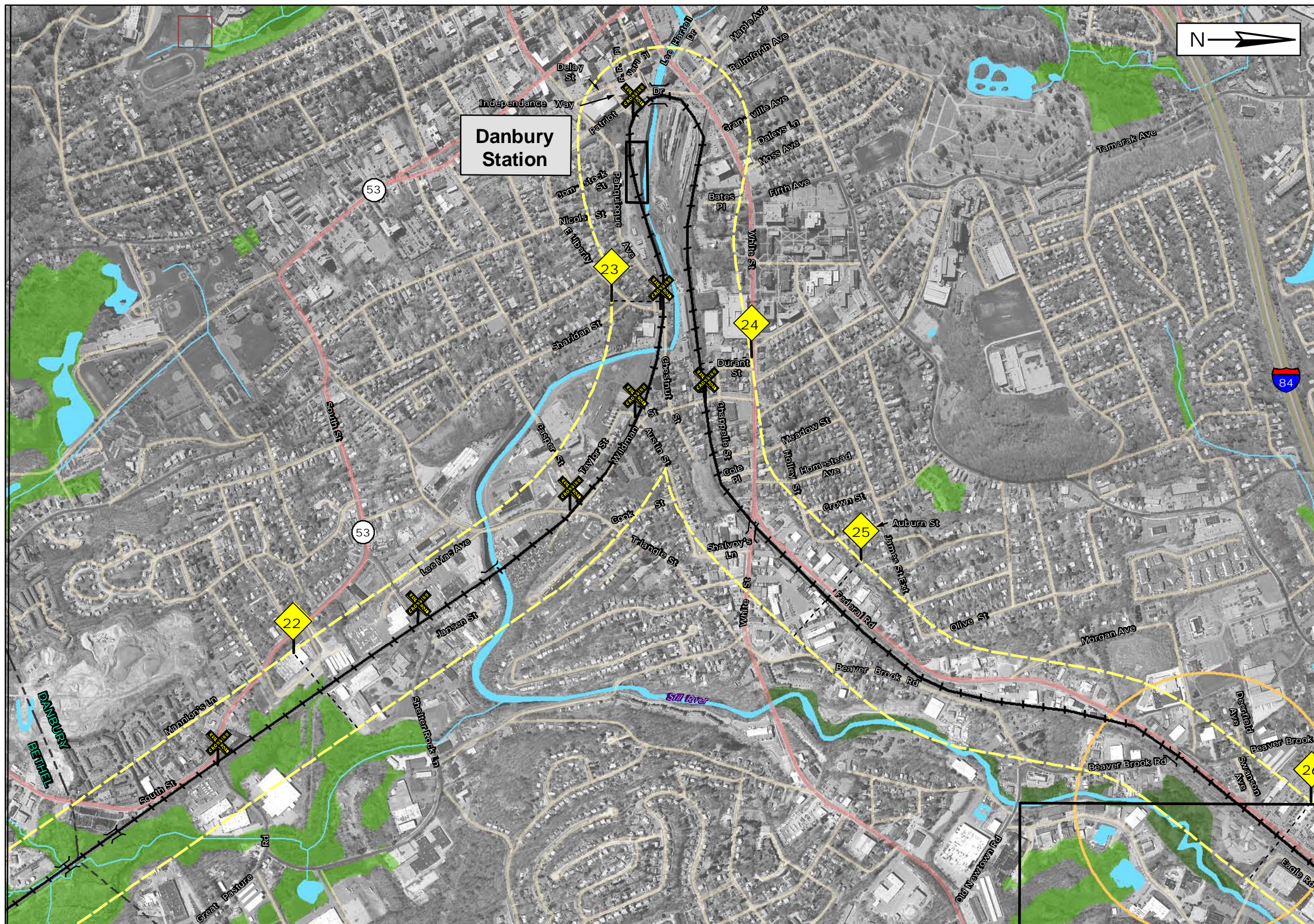
TOWN(S): **BETHEL, DANBURY**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

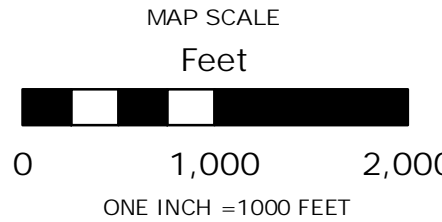
SHEET NO: **8 OF 14**



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
- Proposed Location of New Railroad Station
- Railroad Milepost Marker
- Railroad Crossing
- Private Railroad Crossing
- Interstate Highway
- US Highway
- State Road
- Local Road
- Rivers/Streams
- Lakes/Ponds
- Shrub Inland Wetland
- Freshwater Marsh
- Non-Riparian Forested Wetlands
- Riparian Zones along Large River
- Forested Blocks Greater Than 100 Acres +
- Forest
- Cold Water Habitats
- Wet Meadow
- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

GIS MAPPING BY: URS CORPORATION DATE: 11/2010

STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION

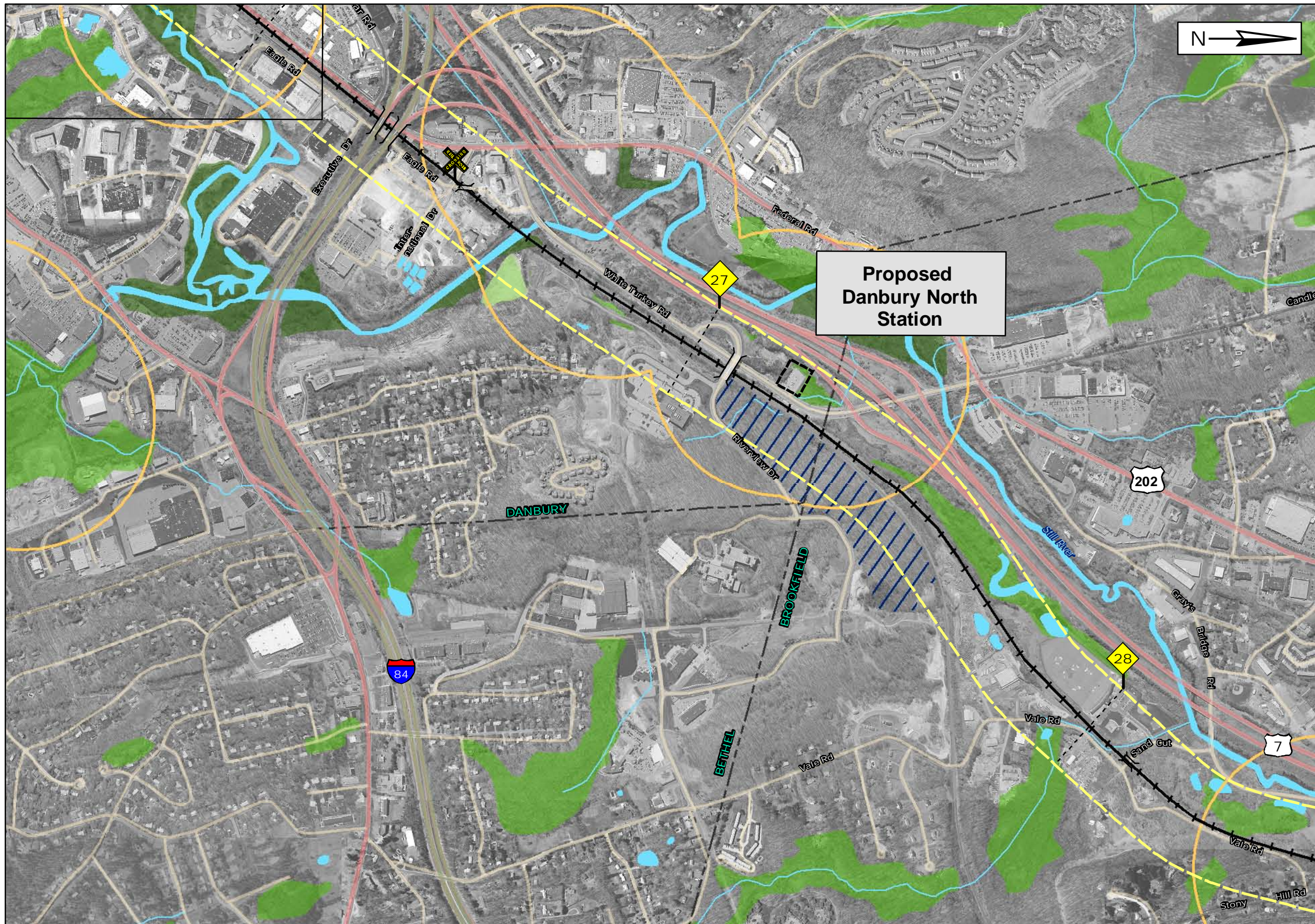
TOWN(S): **DANBURY**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

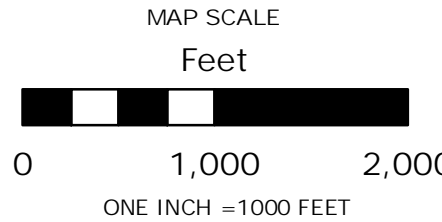
SHEET NO: **9 OF 14**



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
- Proposed Location of New Railroad Station
- Railroad Milepost Marker
- Railroad Crossing
- Private Railroad Crossing
- Interstate Highway
- US Highway
- State Road
- Local Road
- Rivers/Streams
- Lakes/Ponds
- Shrub Inland Wetland
- Freshwater Marsh
- Non-Riparian Forested Wetlands
- Riparian Zones along Large River
- Forested Blocks Greater Than 100 Acres +
- Forest
- Cold Water Habitats
- Wet Meadow
- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

GIS MAPPING BY: URS CORPORATION DATE: 11/2010

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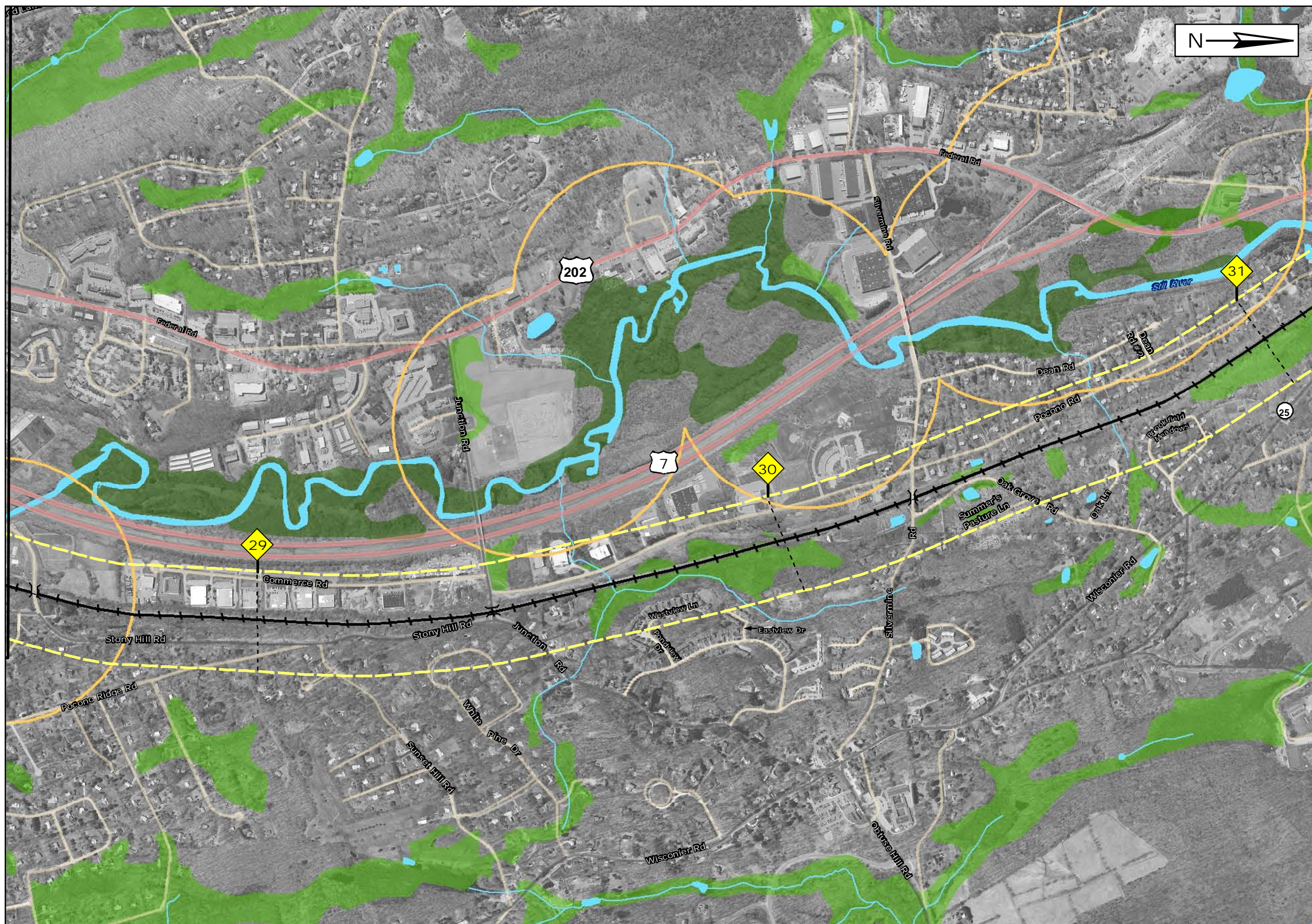
TOWN(S): **DANBURY, BETHEL, BROOKFIELD**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

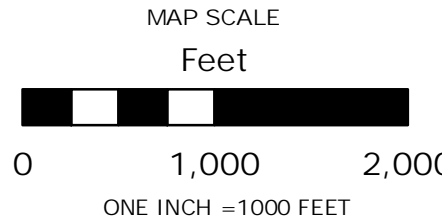
SHEET NO: **10 OF 14**



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
- Proposed Location of New Railroad Station
- Railroad Milepost Marker
- Railroad Crossing
- Private Railroad Crossing
- Interstate Highway
- US Highway
- State Road
- Local Road
- Rivers/Streams
- Lakes/Ponds
- Shrub Inland Wetland
- Freshwater Marsh
- Non-Riparian Forested Wetlands
- Riparian Zones along Large River
- Forested Blocks Greater Than 100 Acres +
- Forest
- Cold Water Habitats
- Wet Meadow
- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

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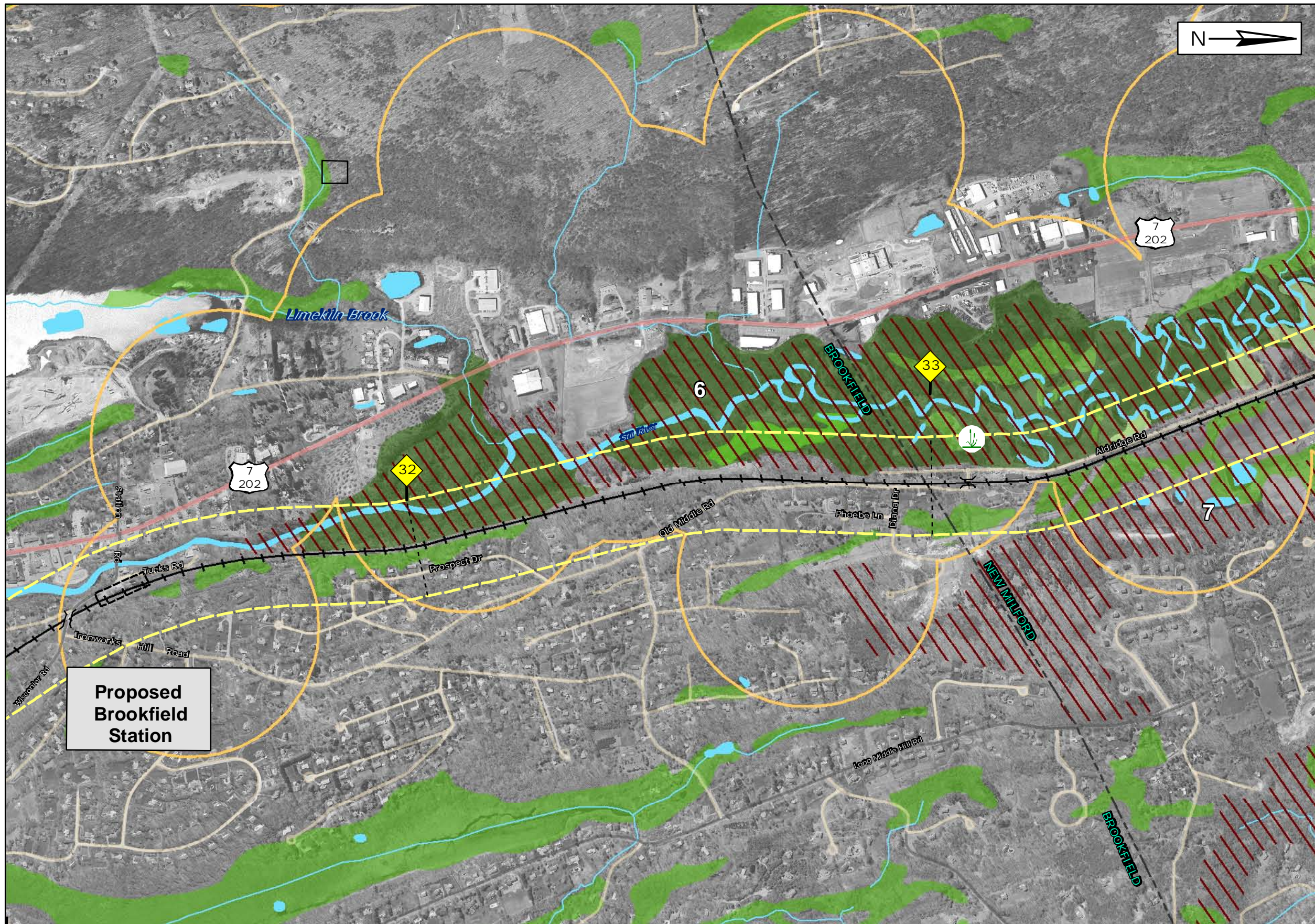
TOWN(S): **BROOKFIELD**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

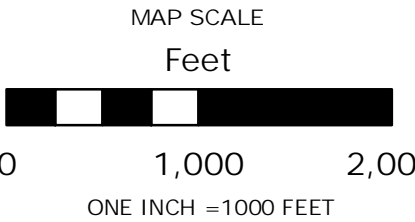
MAP NO:

SHEET NO: **11 OF 14**



Legend	
	Railroad Track
	1000 Foot Study Corridor
	Town Boundary
	Railroad Station
	Proposed Location of New Railroad Station
	Railroad Milepost Marker
	Railroad Crossing
	Private Railroad Crossing
	Interstate Highway
	US Highway
	State Road
	Local Road
	Rivers/Streams
	Lakes/Ponds
	Shrub Inland Wetland
	Freshwater Marsh
	Non-Riparian Forested Wetlands
	Riparian Zones along Large River
	Forested Blocks Greater Than 100 Acres +
	Forest
	Cold Water Habitats
	Wet Meadow
	T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT

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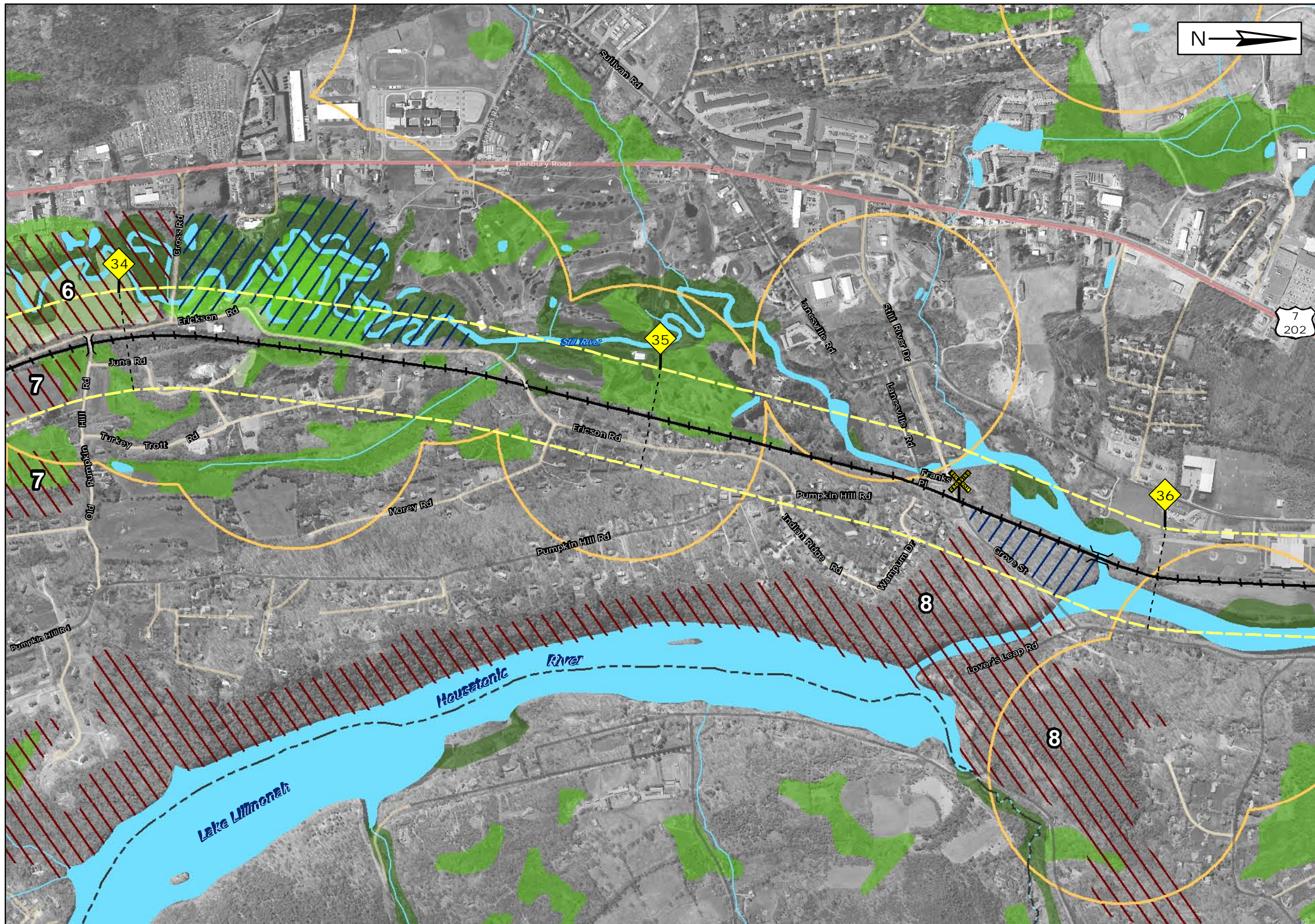
TOWN(S): BROOKFIELD, NEW MILFORD

MAP TITLE: KEY HABITATS

PROJECT NO: 302-008

MAP NO:

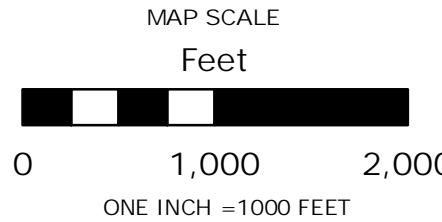
SHEET NO: 12 OF 14



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
- Proposed Location of New Railroad Station
- Railroad Milepost Marker
- Railroad Crossing
- Private Railroad Crossing
- Interstate Highway
- US Highway
- State Road
- Local Road
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- Lakes/Ponds
- Shrub Inland Wetland
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- Riparian Zones along Large River
- Forested Blocks Greater Than 100 Acres +
- Forest
- Cold Water Habitats
- Wet Meadow
- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: **DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT**

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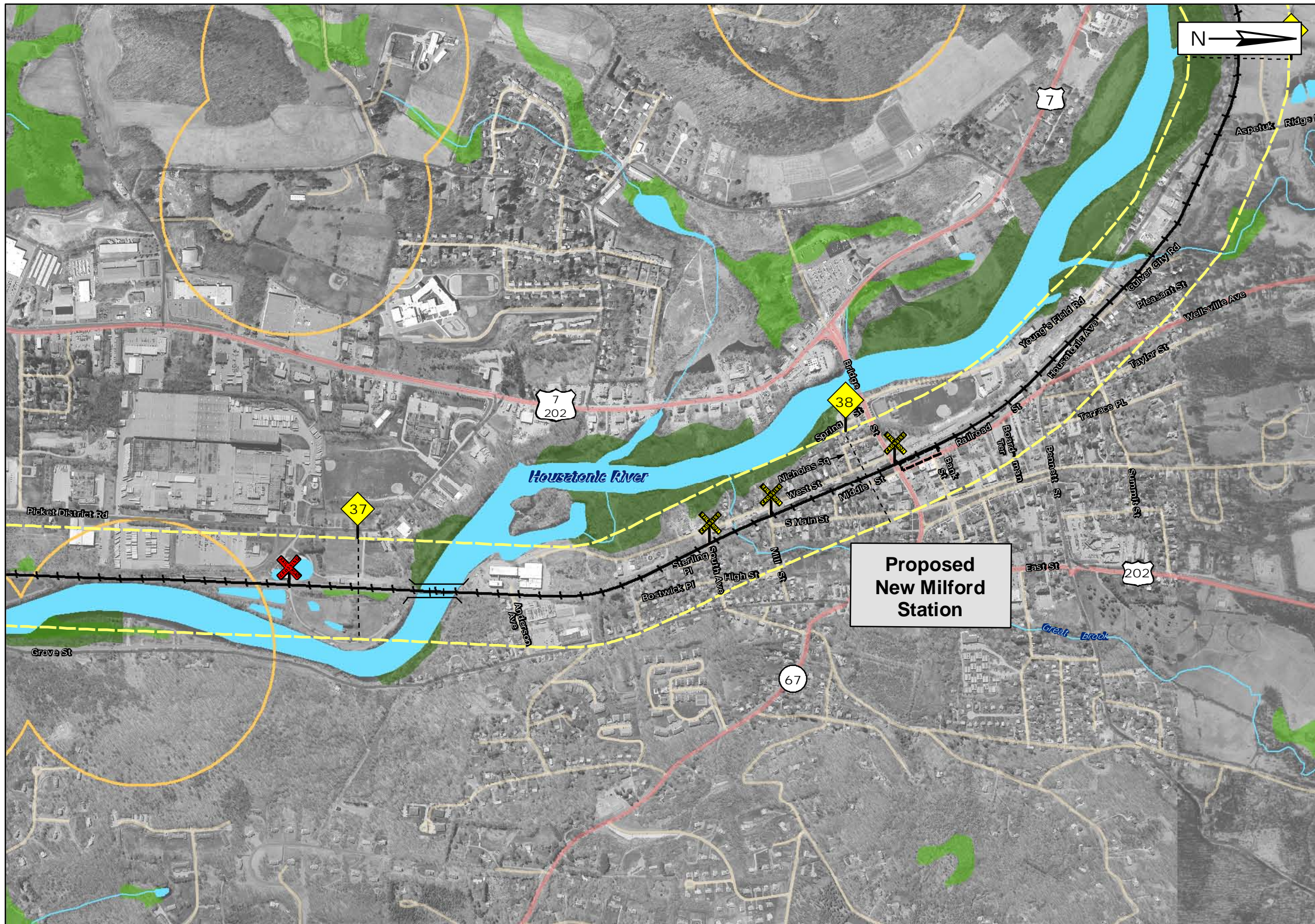
TOWN(S): **NEW MILFORD**

MAP TITLE: **KEY HABITATS**

PROJECT NO: **302-008**

MAP NO:

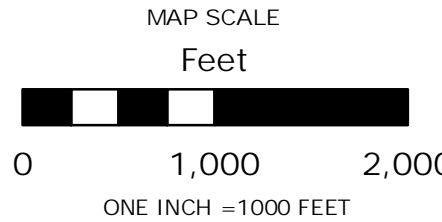
SHEET NO: **13 OF 14**



Legend

- Railroad Track
- 1000 Foot Study Corridor
- Town Boundary
- Railroad Station
- Proposed Location of New Railroad Station
- Railroad Milepost Marker
- Railroad Crossing
- Private Railroad Crossing
- Interstate Highway
- US Highway
- State Road
- Local Road
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- Lakes/Ponds
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- Freshwater Marsh
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- Forest
- Cold Water Habitats
- Wet Meadow
- T&E Species Record

Data Sources:
 Roads layer: CT DEP
 RR Track: CT DEP
 Town Boundary: CT DEP
 Hydrography: CT DEP
 RR Milepost and Crossings: Metro-North



PROJECT TITLE: DANBURY BRANCH IMPROVEMENT PROGRAM & ELECTRIFICATION ENVIRONMENTAL IMPACT STATEMENT

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STATE OF CONNECTICUT
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TOWN(S): NEW MILFORD

MAP TITLE: KEY HABITATS

PROJECT NO: 302-008

MAP NO:

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