

# DANBURY BRANCH IMPROVEMENT PROGRAM TASK 5

# **ENVIRONMENTAL TECHNICAL MEMORANDUM**

STATE PROJECT 302-008



SECTION 14: SURFACE AND GROUNDWATER RESOURCES

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# SECTION 14. SURFACE AND GROUNDWATER RESOURCES

#### **INTRODUCTION**

Surface water and groundwater resources within the study corridor are discussed within this section. Surface water is defined as water that is present above the substrate or soil surface. Surface waters thus include resources such as rivers, lakes, reservoirs, ponds, perennial streams, estuaries, and oceans. Although some wetlands can also be considered surface waters, wetlands in the Danbury Branch study corridor are not addressed here; they are covered in a separate section.

Groundwater is defined as water that collects or flows beneath the earth's surface, filling the porous spaces in soil, sediment, and rocks. Groundwater originates from rain and from melting snow and ice and is the source of water for aquifers, springs and wells. The upper surface of groundwater is known as the water table. An aquifer is an underground formation of permeable rock or loose material that can produce useful quantities of water when tapped by a well. Groundwater is held within the tiny pores of the surrounding aquifer material. More than 96 percent of all available fresh water supplies occur in the form of groundwater, which is usually cleaner and purer than most surface water sources.

# **Regulatory Context**

Federal and state laws and regulations that will govern the project's effects on surface and groundwater resources are described below.

### Federal Laws and Regulations

- The Federal Water Pollution Control Act and Clean Water Act: The 1948 Federal Water Pollution Control Act (WPCA) was the nation's first comprehensive water pollution law. It authorized federal planning and programs to eliminate or reduce pollution of interstate waters, tributaries, and groundwaters. In 1972, the law was amended and became known as the Clean Water Act (CWA) (33 U.S.C. §1251 et seq). The CWA implemented measures focused on limiting discharges of pollution to waters of the U.S., primarily from point sources of pollution. Point-source pollution can be traced back to a single origin or source where effluent is discharged, such as a pipe carrying process water from an industrial plant or the outflow from a wastewater treatment plant.
- The National Pollutant Discharge Elimination System (NPDES) is one of fundamental regulatory permit programs established to implement the CWA. Under the program, direct dischargers of pollutants into waters of the U.S. are required to obtain a NPDES permit. The focus of the NPDES program is to reduce industrial process water discharges and municipal wastewater discharges to surface waters in an effort to improve the quality of surface waters nationwide. The NPDES program, administered in Connecticut by the DEP, includes the Stormwater Management and Wastewater Management General Permit Programs.

- The Water Quality Act (WQA) established the legal framework for regulating stormwater discharges under the NPDES program, 15 years after passage of the CWA. The need for this legislation arose from a notable study known as the National Urban Runoff Program (NURP) undertaken by the U.S. Environmental Protection Agency (EPA). The study identified stormwater runoff as a significant source of water pollution a source that was not regulated at the time because stormwater does not originate from a single identifiable discharge point. Rather it is a nonpoint source of pollution. Nonpoint pollution comes from many different places and is collected by rain water and snowmelt from broad land surfaces. Various pollutants are carried into surface and groundwater in this way. The recognition of stormwater runoff as a major pollution source eventually resulted in the 1987 reauthorization of the CWA and passage of the Water Quality Act (WQA). The WQA established the legal framework for regulating stormwater discharges under the NPDES program.
- Section 404(b)(1) of the CWA, which regulates the discharge of dredged and fill materials into wetlands and waters of the U.S. Depending on the type and quantity of impacts from dredging and filling, a project may require a Section 404 permit. The Section 404 program is administered by the Army Corps of Engineers. [Refer also to Section 7 (Wetlands) of the Environmental Technical Memorandum.]
- Section 401 of the CWA, which is also known as the water quality certification program.
  Projects requiring federal permits or approvals must obtain a Section 401 Water Quality
  Certification through the administering state agency (the DEP in Connecticut), which
  indicates that a proposed project complies with federal and state water quality standards
  and effluent limits. The certification covers construction as well as operation of a
  proposed project.
- The 1974 Safe Drinking Water Act (42 USC Section 300f et seq) protects public health by regulating public drinking water supplies. The law was amended in 1986 and again in 1996, and requires many actions to protect drinking water sources, including lakes, rivers, springs, reservoirs, and groundwater supply aquifers and wells. The EPA oversees the implementation of drinking water standards by states, localities, and other suppliers of drinking water.

#### State Laws and Regulations

A host of statutory and regulatory programs have been implemented by the State of Connecticut to govern water and wastewater management relative to development projects. The most relevant of these to the Danbury Branch Improvement Program are administered by the DEP and listed below.

 Connecticut Clean Water Act: Regulations and guidance governing the use, protection, and management of Connecticut's surface and groundwater resources date back to 1967, when the state legislature passed Connecticut's Clean Water Act. Connecticut's CWA required stringent wastewater treatment for municipal sewage facilities and industrial discharges. The 1967 act led to the development and federal approval of Connecticut's initial Water Quality Standards (WQS) in 1970. These WQS (Connecticut General Statutes [CGS] Section 22a-426) would later be revised a number of times: in 1973 to conform with the 1972 federal CWA; again in 1980 to include new groundwater quality standards; in 1992 to include numeric criteria for toxic pollutants in inland waters and Long Island Sound; in 1996 to update groundwater standards in light of newly passed property transfer and remediation regulations; and most recently in 2002 to include new information from several Long Island Sound and freshwater studies.

Connecticut's WQS are central to the success of Connecticut's long-term management of the state's surface and groundwater resources by providing guidance in many ways. Some of the major purposes of the WQS include:

- To provide guidance about the general types of discharges allowed
- To ensure the segregation of drinking water supplies from waters used for waste assimilation
- To provide the standards for toxicity consideration to protect aquatic life
- To provide a framework for establishing priorities for pollution abatement
- To provide clear guidance for location decisions for business, industry, and other developments.

Connecticut's clean water program assigns water quality classifications to all surface and groundwaters in the state. The water quality classifications are designated by the DEP based on the use or potential use of the water body or source as well as on their known or presumed quality. Water quality classifications range from the highest quality, AA, assigned to known drinking water supplies, to the lowest quality, D, assigned to waters that are degraded and restricted in their use.

- The Aquifer Protection Act (CGS 22a-354a-bb) established standards for two levels of modeling and mapping of wells in stratified drift aquifer areas. The mapping was required to show zones of contribution and recharge areas to existing and potential wells. Standards for mapping at level A were to be based on detailed study of aquifer geology, geometry, hydraulics and hydrology, modeling and pump test data. Standards for mapping at level B were to be based on less detailed study but still inclusive of geologic characteristics, limited field verification, locations of existing and potential well fields, and pumping rates.
- Aquifer Protection Land Use Regulations (R.C.S.A. 22a-354i-1 through 10) restrict land use actions in aquifer protection areas and require a permit for certain activities.

Specific to development projects and engineering design, the DEP has two important guidance manuals that play a critical role in the protection of surface waters of the state. These are the Connecticut Guidelines for Soil Erosion and Sedimentation Control (DEP 2002) and the 2004 Connecticut Stormwater Quality Ma nual (DEP 2002). In order to obtain water resource related

permits from DEP, projects must follow the design and environmental protection measures outlined in these manuals, including temporary and permanent conditions.

#### Methods, Coordination, and Data Sources

Information on surface and groundwater resources and water quality in the study corridor was obtained from existing mapping (DEP GIS Data Layers 2008). Water quality classifications were mapped based on these latest available data. Supplemental information was obtained from a review of Connecticut's Water Quality Standards (DEP 2002).

For the purpose of mapping water quality classifications for the Danbury Branch study corridor, classifications assigned to freshwater surface waters are shown as AA, A, B, C, and D. Classifications assigned to saltwater (marine) or brackish waters have a prefix of "S" before the quality designation, so are shown as SA, SB, SC, SD (there is no SAA classification). Surface water quality classification standards and definitions are shown in Table 1.

Water quality classifications assigned to groundwater have a prefix of "G" before the quality designation, so are thus shown as GAA, GA, GB, GC, or GD. Groundwater classification standards are shown in Table 2. The WQS establish restrictions for uses of and discharges to surface and groundwater resources in each particular classification.

Mapped groundwater wells are shown as circles. Each circle represents a well location at the center and a 500-foot radius around it, for a total diameter of 1,000 feet. The circle indicates the land around the actual well pipe that is very important for the quantity and quality of water available to the well. Aquifer protection areas (APAs) are broader zones surrounding active and proposed groundwater supply wells. APAs were mapped by water companies and by the DEP to identify the zone of contribution (the three-dimensional volume of water flowing to the well) and the recharge area (the entire area of land that allows water and other fluids to flow into the subsurface and move toward the well) for existing and potential wells located in stratified drift aquifers, pursuant to Public Acts 89-305 and 90-275.

Table 1: Connecticut Surface Water Quality Classifications

	Table 1: Connecticut Surface Water Quality Classifications				
Class	Designated Uses	Description			
AA	Existing or proposed drinking water supply, fish and wildlife habitat, recreational use (may be restricted,)	Water of highest quality based on water parameters and criteria established by the Connecticut WQS.			
	agricultural and industrial supply.	Waters mapped as AA are known or presumed to meet water quality criteria which support designated AA uses.			
A .1.	There is no SAA (marine) classification.				
A*	Habitat for fish and other aquatic life and wildlife; potential drinking water supplies; recreational; navigation; and water supply	Water of high quality based on water parameters and criteria established by the Connecticut WQS.			
	for industry and agriculture.  "SA" (marine) uses do <u>not</u> include	Waters mapped as A are known or presumed to meet water quality criteria which support designated A uses.			
	potential drinking water supplies but <u>do</u> include shellfish harvesting for direct human consumption.				
В	Habitat for fish and other aquatic life and wildlife; recreational; navigation; and industrial and agricultural water supply.	Water of the minimum acceptable quality based on water parameters and criteria established by the Connecticut WQS.			
	"SB" (marine) uses also include commercial shellfish harvesting.	Waters mapped as B are known or presumed to meet water quality criteria which support designated uses.			
С	Class C waters are suitable for certain fish and wildlife habitat; certain recreational activities; industrial activities and navigation. Class C waters may have good aesthetic value.  "SC" (marine) uses also include certain	Water of unacceptable quality due to point or non-point sources of pollution. As a result, water is frequently precluded from meeting Class B water quality criteria for one or more designated uses. Water quality conditions are usually correctable through implementation of water quality programs to control point and nonpoint sources.			
	aquacultural operations.	The goal for these waters is achievement of Class A or B criteria and designated uses. For freshwater resources, the goal may also be Class AA. The minimum acceptable goal is Class B unless a DEP and EPA approved Use Attainability Analysis demonstrates that one or more Class B designated uses are not attainable. In those situations, site specific water quality criteria will be employed to insure that all existing uses are maintained.			
D	Class D waters may be suitable for bathing or other recreational purposes, certain fish and wildlife habitat, industrial uses and navigation. Class D waters may have good aesthetic value.	Water of unacceptable quality due to severe pollution or presence of certain persistent contaminants in the sediments which may bioaccumulate in the food chain. As a result, water is consistently precluded from meeting Class B water quality criteria for one or more designated uses. Water quality conditions may not be readily			
	"SD" (marine) uses also include certain aquacultural operations.	correctable through implementation of water quality programs to control point and nonpoint sources.			
		The goal for such waters is identical to the goal for Class C waters.			

<sup>\*</sup>Freshwater resources that are not otherwise classified by the DEP are presumed to be Class A.

Source: DEP Surface Water Quality Standards (Effective December 17, 2002)

Table 2: Connecticut Groundwater Quality Classifications

Class	Designated Uses	Description	
GAA	Existing or public water supply or water suitable for drinking without treatment; serves as base-flow for hydraulically	Water of highest quality based on water parameters and criteria established by the Connecticut WQS.	
	connected surface water bodies.	Allowable discharges: treated domestic sewage, certain agricultural wastes, certain water treatment discharges.	
GA*	Existing private and potential public or private supplies of water suitable for drinking without treatment; base-flow for	Water of high quality based on water parameters and criteria established by the Connecticut WQS.	
	hydraulically connected surface water bodies.	Allowable discharges: Same as for GAA, plus discharge from sewage treatment facilities subject to stringent treatment and discharge requirements, and other wastes of natural origin that easily biodegrade and present no threat to groundwater.	
GB	Industrial process water and cooling waters;	GB waters are presumed to be degraded due to a variety	
	base-flow for hydraulically connected	of pollution sources.	
	surface water bodies; presumed not suitable for human consumption without treatment.	Allowable discharges: Same as for GA (the same	
	for numan consumption without treatment.	stringent treatment standards apply), plus certain other	
		biodegradable wastewaters subject to soil attenuation.	
GC	Areas of potential use for assimilation of	Allowable discharges: Potential discharges from certain	
	discharge authorized by the Commissioner	waste facilities subject to extraordinary permitting	
	(pursuant to CGS Section 22a-430); for example, a lined landfill for disposal of ash	requirements.	
	residue from a resource recovery facility.		
	The GC hydrogeology and setting provides		
	the safest conditions in case of technological failure.		

<sup>\*</sup> Much of Connecticut is presumed to be Class GA by DEP.

Source: DEP Groundwater Quality Standards (Effective April 12, 1996).

#### **EXISTING CONDITIONS**

The water resources in the study corridor are described below, for Surface Water Resources and Groundwater Resources. The locations of these resources in the corridor are shown on the attached maps. Table 3 summarizes the water resource features and quality conditions in the corridor by municipality.

#### **Surface Water Resources**

The Danbury Branch spans two of Connecticut's seven major watersheds (or drainage basins). The southern portion of the study corridor is in the Southwest Coast major drainage basin and the northern half is in the Housatonic River major basin. The lands in the southern portion of the corridor drain primarily into the Norwalk River, which flows south into Long Island Sound. The lands in the northern portion of the corridor drain easterly, southeasterly and, at times, even northerly toward the Housatonic River, which like the Norwalk River ultimately drains south into Long Island Sound.

Within these major basins are regional basins. The names of the regional basins indicate more specifically the receiving waters for the lands within their boundaries. The regional drainage basins from Norwalk and northerly through Redding, Wilton, Ridgefield, Redding, and the southern tip of Bethel, include the Southwest Shoreline Basin (corresponding to the Norwalk River estuary), the Norwalk River Basin, and the Saugatuck River Basin. The regional drainage basins from southern Bethel through Danbury, Brookfield and New Milford include the Still River Basin and the Housatonic Main Stem River Basin. A very small portion of the study corridor in New Milford falls within the Aspetuck River Regional Basin.

From south to north, starting in the vicinity of the South Norwalk Station, the rail corridor follows the Norwalk River northerly through Norwalk, Wilton, Weston, south Redding, and east Ridgefield. The rail corridor continues northerly, crossing Umpawaug Pond Brook and the Saugatuck River in Redding. As the corridor continues into Bethel, it lies along Sympaug Pond and follows the general course of Sympaug Brook to the brook's junction with the Still River in Danbury. From Danbury north through Brookfield and into New Milford, the corridor lies within the Still River valley, with the rail line on the east side of the river. The rail line crosses the Still River at its junction with the Housatonic River in New Milford, and then follows the Housatonic River northerly for the rest of its path in the study corridor.

In summary, from south to north, the major rivers and brooks in the study corridor include the following:

- Norwalk River in Norwalk, Wilton, Weston, Redding, and Ridgefield
- Umpawaug Pond Brook in Redding
- Saugatuck River in Redding
- Bogus Mountain Brook in Redding
- Sympaug Brook in Bethel and Danbury
- Still River in Danbury, Brookfield and New Milford
- Housatonic River in New Milford
- West Aspetuck River in New Milford

The names and quality of the surface water resources in the study corridor are described below and are shown on the attached maps. The noted water quality classifications are those designated by DEP for those particular resources, per the definitions outlined in Table 1.

There are no surface water reservoirs used for drinking water supply located within the study corridor.

#### Norwalk

The southern reach of the Norwalk River from Long Island Sound to Cross Street (near rail milepost 1.6) lies within Connecticut's designated coastal boundary. From Long Island Sound to approximately Wall Street, the river is tidally influenced and is thus considered a marine/brackish surface water resource. It has a water quality classification of SC with a goal of SB (the "S" prefix before the quality designation signifying "saltwater" - marine or brackish water). For the rest of the river's reach in Norwalk and upstream through the rest of corridor, the river is designated as a Class B freshwater resource.

Between Cross Street (milepost 1.6) and Deering Pond (near milepost 3.0), the Norwalk River lies outside of the 1,000-foot wide study corridor. There are several tiny Class A ponds within the west side of the corridor between Deering Pond and the Route 15 crossover. The Norwalk River re-enters the corridor near the eastern end of Deering Pond, an impoundment of the river which is designated Class B in terms of water quality. Another Class B impoundment along the river, Winnipauk Millpond, is located just south of milepost 4.0 and east of the rail line near the Merritt 7 Station. This pond is joined by an unnamed stream that flows from the northwest and under the rail line in this vicinity. This unnamed Class A stream drains several ponds outside the corridor in Wilton, in the vicinity of Belden Hill Road. The Norwalk River remains in the corridor nearly all the way to the Norwalk/Wilton town line (to approximately milepost 4.7).

#### Wilton

Throughout Wilton, the Norwalk River resides within or just beyond the study corridor. The rail line crosses the river five times in Wilton, at the following locations (approximate by milepost):

- Milepost 6.6 (north of Wolf Pit Road)
- Milepost 8.7 (south of Cannon Road)
- Milepost 9.4 (south of Seeley Road)
- Milepost 11.6 (south of Redding Road [Route 107])
- Milepost 12.2 (at the northern end of Factory Pond)

In addition to the Norwalk River, there are several ponds and tributary streams within the study corridor. Between mileposts 5.0 and 7.0 are seven unnamed ponds located adjacent to the tracks, four on the west side and three on the east. In this same vicinity, there are three unnamed tributaries of the Norwalk River crossed by the rail line. All these ponds and tributary streams are designated Class A with respect to water quality.

There is a small Class A pond encompassed by the Wilton Railroad Station and another, larger, Class A pond on the opposite side of the tracks, west of the Norwalk River, in this vicinity (near milepost 7.5). A Class A tributary stream to the Norwalk River, Comstock Brook, flows into the west side of the river near this pond. Slightly farther north (milepost 7.7) is Strong Pond, another Class B impoundment of the Norwalk River.

Between mileposts 8.0 and 9.0, there are several small impoundments along the Norwalk River, the largest being Cannon Pond near milepost 9.0, east of the tracks and east of Cannondale Station. All are Class B in terms of water quality. An unnamed Class A pond with the appearance of a formed detention pond is located along the west side of the tracks near milepost 8.4. Two smaller Class A ponds are at the outer edges of the corridor near mileposts 8.8 (east side) and 8.9 (west side). A tiny Class A pond and tributary flows from trackside near milepost 9.1 in a southeasterly direction, to join the Norwalk River at the north end of Cannon Pond. Mayapple Brook, a Class B/A stream (existing quality B with a goal of A) flows into the corridor and joins the Norwalk River just east of the tracks near milepost 9.4. The Class B Seeley Pond lies along this brook at the east edge of the corridor.

#### Redding

The Norwalk River is the prominent surface water in the southern portion of the Redding study corridor. Where the corridor enters Redding near milepost 11.7, the river abuts the rail line to the east. In the Georgetown section of Redding near the former Gilbert and Bennett Wire Factory, the most notable surface water feature is Factory Pond, a large kidney-shaped impoundment of the Norwalk River. The rail corridor crosses the northern end of this Class B pond, just west of where the Class A Pecks Pond Brook drains into the pond from the northeast.

Near milepost 12.9, the Class A Branchville Brook enters the study corridor in Redding, flowing southwest toward the rail line's crossing of the brook (in Ridgefield). Near milepost 13.7, another tributary flows westerly across the rail corridor towards the Norwalk River. This is an unnamed Class A stream originating at Mountain Pond to the east. Just north of the railroad crossing of this stream, near milepost 13.9, the rail corridor diverges from the path of the Norwalk River for good, continuing in a northerly direction towards Danbury. After passing east of a small unnamed Class A pond just north of Mountain Road (near milepost 14.1), the rail line crosses one more west-flowing tributary (Class A) to the Norwalk River near milepost 14.7. From that point north, the surface water features in the corridor are no longer associated with the Norwalk River.

North of milepost 15.0, the rail line passes along the western shoreline of Umpawaug Pond from approximately milepost 15.3 to 15.5 and then crosses Umpawaug Pond Brook twice near mileposts 15.8 and 15.9. Umpawaug Pond and Umpawaug Pond Brook are classified as quality AA, the highest classification. From milepost 15.9 to 16.5 the rail line parallels the west side of Umpawaug Pond Brook and then crosses the brook once again at milepost 16.5.

Near the Redding Station at milepost 17.1, the rail line enters an area where several Class AA surface water resources converge. Just south of the Redding Station, the rail line crosses the Saugatuck River and then just north of the station it crosses Hawley Pond Brook. Further to the north, near mile post 17.6, the rail line crosses a large impoundment of the Class AA Bogus

Mountain Brook before entering Bethel near milepost 18.0. Overall, this northern Redding segment of the rail corridor from Umpawaug Pond north to just north of the Redding-Bethel line is the most sensitive in terms of surface water quality, given the predominance of AA quality waters.

#### Ridgefield

The Norwalk River lies directly along the western side of the railroad tracks throughout the study corridor's length within the Town of Ridgefield, which extends approximately from milepost 12.5 to milepost 15.5. The one stream crossing in this stretch is Branchville Brook, a Class A stream flowing westerly across the tracks just north of the Branchville Station, to join the Norwalk River. In this same general location, Copper Pond Brook drains into the Norwalk River from the northwest. Copper Pond Brook is designated as a Class A surface water resource.

#### Bethel

In Bethel, the headwater ponds of Sympaug Brook lie along the eastern side of the rail line, near milepost 18.5. These ponds, known collectively as Sympaug Pond, are designated Class A with respect to water quality. Where the ponds flow northerly and form Sympaug Brook, the water quality classification drops to Class B, as the brook makes its way through more industrialized land uses. The brook then remains Class B all the way to its confluence with the Still River in Danbury. From the north end of Sympaug Pond, Sympaug Brook lies just outside the eastern edge of the study corridor until it follows the path of Turkey Plain Road/Grassy Plain Street, crossing the corridor from east to west, with a rail crossing near milepost 19.7.

There is a cluster of small Class A ponds along the east side of the tracks just north of milepost 20. Further to the north, near milepost 21.5 at the Bethel/Danbury town line, the rail line crosses Sympaug Brook for a second time. At this location, Sympaug Brook, Bethel Reservoir Brook, and Chestnut Brook all converge near the rail line, the first two coming from the west, the latter from the east. Chestnut Brook and Bethel Reservoir Brook are both Class A surface water resources. Sympaug Brook then flows into Danbury and northeast out of the corridor.

#### **Danbury**

At the Bethel-Danbury line, the Class B Sympaug Brook flows from the east side of the tracks to the northeast, leaving the corridor near milepost 21.7. Further north, in the vicinity of the Danbury Station, the rail line crosses the channelized Still River, a Class B surface water, in three separate locations: near milepost 22.5, milepost 22.9, and milepost 23.4. Between mileposts 25 and 26, the Still River meanders just beyond the eastern edge of the study corridor. When the river re-enters the corridor and the railroad bridges the river, north of Interstate 84 near milepost 26.6, the river quality is Class C with a goal of B. At this location, Beaver Brook joins the river on the west side of the rail line, just west of White Turkey Road. The last surface water in Danbury is an unnamed Class A stream just south of the Danbury-Brookfield town line. The tracks cross this stream near milepost 27.2

#### Brookfield

The Still River meanders outside the western edge of the rail corridor through most of Brookfield. It lies within the corridor for only a short stretch, between mileposts 31.2 and 32.2, remaining on the west side of the tracks. The river is of Class C quality throughout.

The relatively few other surface waters within the Brookfield portion of the corridor include the following: four small unnamed Class A ponds located toward the outer edges of the corridor between mileposts 27.8 and 28.5; an unnamed Class A stream flowing west across the corridor in the vicinity of milepost 28.0; two unnamed Class A streams converging on the east side of the tracks between mileposts 29.6 and 29.9, merging and passing under the rail line near 29.7; a tiny Class A pond on the east side of the tracks along the south side of Silvermine Road; two tiny Class A ponds straddling the tracks and Oak Grove Road just north of Silvermine Road near milepost 30.4; and another unnamed Class A stream with a rail crossing near milepost 30.7.

#### New Milford

For approximately three miles in New Milford, the Class C Still River meanders along the west side of the rail line. It weaves into the corridor in several locations: between mileposts 33.2 and 33.6; between milepost 34.0 and 34.2; between milepost 34.4 and 34.8; and between mileposts 35.5 and 36.0. The rail line crosses the Still River near milepost 35.9, where the river flows east into the Housatonic River, located along the east side of the tracks here. The Housatonic River at this location is designated Class D with a goal of Class B. The Housatonic flows in a southeasterly direction towards Lake Lillinonah, which is located approximately ½-mile east of the study corridor in this vicinity.

The Housatonic River enters the study corridor in New Milford near milepost 35.9. At approximately milepost 37.1, the rail line crosses the river on a long span bridge, the only crossing of this major river by the rail corridor. North of this crossing, the river lies to the west of and outside the study corridor.

Other surface waters in the New Milford portion of the corridor include the following: one very small Class A pond at the western edge of the corridor near milepost 33.0; two very small Class A ponds (oxbow remnants) west of the tracks and Erickson Road near milepost 34.3; an unnamed Class A stream, flowing east to west across the corridor near milepost 34.7; another very small Class A pond on the west side of the corridor near milepost 35.1; two round water treatment ponds on the west side of the tracks and two elongated detention ponds on the east side of the tracks between mileposts 36.9 and 37.0; the Class B Great Brook flowing east to west across the corridor, with a rail crossing near milepost 37.7; and finally, near milepost 38.6, the Class B West Aspetuck River, flowing south to its confluence with the Housatonic River outside the study corridor.

#### **Groundwater Resources**

Similar to the State of Connecticut as a whole, much the Danbury Branch study corridor is underlain by Class GA groundwater. Therefore, the following discussion focuses on describing

areas that are <u>not</u> underlain by Class GA groundwater. The discussion on groundwater resources is organized by municipality and is supported by the groundwater mapping presented on the attached maps. The groundwater quality classifications are those assigned by DEP, per the definitions presented in Table 2. An "impaired" label indicates that a water source does not attain water quality standards. Groundwater resources used for water supply are indicated by the presence of wells and/or APAs.

#### Norwalk

Groundwater underlying the rail corridor in southern Norwalk, from the southern project limit to the vicinity of Wall Street near milepost 1.4, is designated by the DEP as Class GB. From there north, the remaining length of the rail corridor within Norwalk is underlain by Class GA groundwater. The section from milepost 1.4 to the Merritt Parkway (Route 15), however, is designated "Impaired" (Class GA-Impaired).

While there are no public supply wells located within the Norwalk section of the study corridor, an Aquifer Protection Area (APA) crosses the corridor in one location. Just south of the Merritt Parkway is a Level "A" Aquifer Protection Area (APA) known as the Kellogg-Deering Wellfield APA #106. It is a regulated wellfield that is owned by the Norwalk First Taxing District. There are four active community wells associated with the APA, located approximately 1,000 feet west of the study corridor (near milepost 2.5) and west of the Norwalk River, around Kellogg Pond.

## Wilton

The entire length of the rail corridor within Wilton is underlain by Class GA groundwater. One short section on the east side of the tracks, from approximately milepost 10.2 north to milepost 10.5, along Mather Street, is designated "Impaired" (Class GA-Impaired).

One well location (GAA-Well) is located just south of the Cannondale Station and west of the rail line. This well is designated "Impaired" by the DEP (Class GAA-Impaired). The well itself (center of the radius) is located outside of the study corridor, while the eastern side of the protective radius around the well falls within the corridor, almost abutting the southwest side of the Cannondale Station.

There are no aquifer protection areas indicated within the Wilton portion of the study corridor.

# Redding

The Redding portion of the study corridor has a mix of GA and GAA groundwater background conditions. The southernmost three miles, from the Wilton-Redding town line to approximately milepost 18.0 near Simpaug Turnpike-Topstone Road, are underlain by Class GA groundwater. From there north for approximately another three miles, the corridor is underlain by Class GAA. This is the only segment of the study corridor with this highest quality groundwater and it corresponds to the Class AA Umpawaug Pond Brook and Saugatuck River surface waters described previously in the surface water section. The Class GAA groundwater extends just over

the Redding-Bethel town line, to approximately milepost 18.1, before groundwater is once again of Class GA.

At the very south end of Redding, there is a circular area of GB quality groundwater. This is located in the Georgetown section of Redding and coincides with the location of a former waste water treatment plant that once served the Gilbert and Bennett Wire Factory.

There are no active wells or aquifer protection areas indicated within the Redding portion of the study corridor.

#### Ridgefield

The rail corridor within the Town of Ridgefield is underlain almost entirely by Class GA groundwater. A small segment of the corridor, from milepost 15.0 to the Ridgefield-Redding town line near milepost 15.5, is underlain by the highest quality GAA groundwater, associated with the Umpawaug Pond watershed.

There are no wells or aquifer protection areas indicated within Ridgefield portion of the study corridor.

#### Bethel

Groundwater underlying the rail corridor from the Redding-Bethel town line north to the vicinity of Grassy Plain Street, near milepost 19.8, is designated by the DEP as Class GA. From there northerly to the Bethel/Danbury town line, a finger of Class GB groundwater encompasses most of the corridor, indicative of the increasingly industrialized land uses found in this portion of Bethel near the Danbury town line.

There are no wells or aquifer protection areas within the Bethel portion of the study corridor.

# **Danbury**

Almost all the Danbury portion of the study corridor is underlain by Class GB groundwater. The exceptions are a tiny finger of Class GA groundwater on the west side of the tracks near Triangle and Cook Streets and Class GA groundwater in the extreme northern segment of the study corridor in Danbury. This segment extends from the Still River crossing near White Turkey Road (approximately milepost 26.7) to the Danbury-Brookfield town line.

In the vicinity of the Danbury Station is an existing Level "B" Aquifer Protection Area (APA) that is owned and operated by the Danbury Water Department. The APA is known as the Osborne Street APA #73. The Osborne Well, which is inactive, is located northwest of the intersection of Tamarack Avenue and Fifth Avenue, approximately 1,000 feet beyond (north of) the limits of the study corridor.

One well location (GAA-Well) overlaps the study corridor in Danbury. It is located west of the tracks near the Shelter Rock Road-South Street intersection. The well (center of the circle) is just

outside of the study corridor, while a portion of the radius around the well lies within the corridor.

#### Brookfield

GA is the predominant groundwater quality underlying the study corridor in Brookfield. However, just north of the Danbury-Brookfield town line, approximately from milepost 27.4 to milepost 28.6 (near Gray's Bridge Road crossing of the rail line), there is an area underlain by Class GB groundwater along the western side of the corridor.

There are two GAA well locations within the Brookfield study corridor. One is located east of the tracks, off the south side of Silvermine Road (near milepost 30.1). This well is one of a cluster of wells, the others being located outside of the corridor. The second well in the corridor is less than ½-mile north of the first, on the west side of the tracks along Pocono Road and north of Silvermine Road (near milepost 30.5).

#### New Milford

Most of the study corridor in New Milford is underlain by Class GA groundwater. The exception is a swath of land underlain by Class GB, associated with the heavier industrial area west of the Housatonic River, from the confluence of the Still River to the south end of West Street (near milepost 37.5).

At approximately milepost 37.4, the rail corridor enters two Level "B" APAs that join to form a continuous coverage of the northern end of the study corridor. The APAs are associated with two well fields owned by United Water CT, Inc. – New Milford System. Known as the Indian Field APA #103 and Fort Hill Road APA #104, together they consist of a total of five (5) active water supply wells. All of the wells are located west of the Housatonic River and outside of the study corridor. Three of the wells, classified as GAA-Impaired, are located west of the Route 7/202-Bridge Street intersection, approximately 1,200 feet west of the study corridor. The other two wells, also GAA-Impaired, are located approximately 500 feet outside of the study corridor, at the very end of the corridor near milepost 39.0.

Table 3: Surface and Groundwater Resources Within the Danbury Branch Study Corridor, By Municipality

Municipality	Major Surface Waters	Surface Water Quality	Groundwater Quality	Wells and Aquifer Protection Areas (APAs)
Norwalk	Norwalk River	SC and B	GA and GB	APA (from Milepost 2.5 to 3.2); no wells
Wilton	Norwalk River Unnamed Ponds (between Mileposts 5 and 6)	B A	GA and GAA-well	None
Redding	Norwalk River Factory Pond Umpawaug Pond Umpawaug Pond Brook Saugatuck River (crossing)	B B AA AA AA	GA and GAA	None
Ridgefield	Norwalk River	В	GA and GAA	None
Bethel	Sympaug Pond Sympaug Brook	A B	GA, GB, and GAA	None
Danbury	Still River	B and C	GA, GB, and GAA-well	APA (from Milepost 23 to 24.6); no wells
Brookfield	Still River	С	GA, GB, and GAA-well	None
New Milford	Still River Housatonic River	C D	GA and GB	2 APAs (continuous from Milepost 37.3 to n. end of study corridor); no wells

Source: CTDEP GIS Data Layers (2008)

# **REFERENCES**

Connecticut Department of Environmental Protection, 2008. GIS Water Quality Standards and Criteria database.

Connecticut Department of Environmental Protection. 2002. *Water Quality Standards*. <a href="http://www.ct.gov/dep/lib/dep/water/water\_quality\_standardsl/wqs.pdf">http://www.ct.gov/dep/lib/dep/water/water\_quality\_standardsl/wqs.pdf</a>

Connecticut Department of Environmental Protection Website – Water Resources (various website links)



























