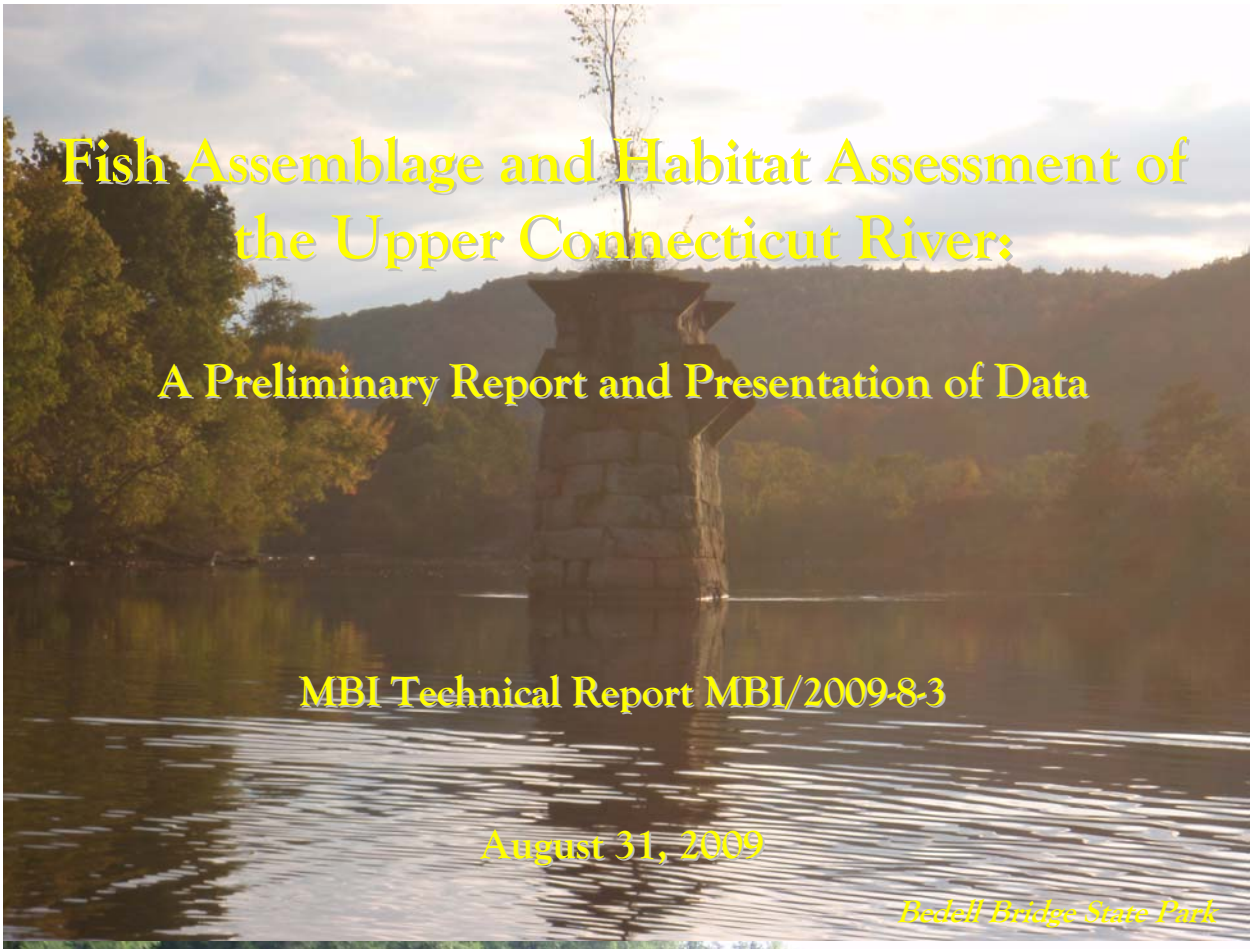

# Fish Assemblage and Habitat Assessment of the Upper Connecticut River:

## A Preliminary Report and Presentation of Data

**MBI Technical Report MBI/2009-8-3**

**August 31, 2009**

*Bedell Bridge State Park*


Chris O. Yoder, Principal Investigator
Lon E. Hersha, Senior Research Associate
Center for Applied Bioassessment & Biocriteria
Midwest Biodiversity Institute
P.O. Box 21561
Columbus, OH 43221-0561
mbi@mwbinst.com

Bryan R. Apell
Kleinschmidt Associates
35 Pratt Street
Suite 201
Essex, CT 06426


*Connecticut River Gorge near French King Rock*

# Fish Assemblage and Habitat Assessment of the Upper Connecticut River: Preliminary Results and Data Presentation

Final Project Report to:

U.S. EPA, Region I
1 Congress Street, Suite 1100
Boston MA 02114-2023
Steve Winnett, Work Assignment Manager
Ralph Abele, Technical Contact
EPA Contract Number EP-C-06-033
Work Assignment 2-14

August 31, 2009

MBI Technical Report MBI/2009-8-3

by:

Chris O. Yoder, Principal Investigator
Lon E. Hersha, Research Associate
Center for Applied Bioassessment & Biocriteria
Midwest Biodiversity Institute
P.O. Box 21561
Columbus, OH 43221-0561
mbi@mwbinst.com

and

Bryan R. Apell
Kleinschmidt Associates
35 Pratt Street
Suite 201
Essex, CT 06426
Bryan.Apell@KleinschmidtUSA.com

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Chris O. Yoder, Principal Investigator
Lon E. Hersha, Research Associate
Center for Applied Bioassessment & Biocriteria
Midwest Biodiversity Institute

and

Bryan R. Apell
Kleinschmidt Associates
35 Pratt Street
Suite 201
Essex, CT 06426

## INTRODUCTION

The Midwest Biodiversity Institute received funding from U.S. EPA via a subcontract with the Great Lakes Environmental Center (GLEC) in 2008 to conduct an assessment of the fish assemblage of the mainstem Connecticut River between Lake Francis and the freshwater extent of the tidal estuary. This project is intended in part to extend to other New England Rivers and is based on the assessment of the fish assemblages in the large rivers of Maine that has been underway since 2002. Two project reports completed in 2006 (Yoder et al. 2006a,b) describe the methods and logistics of that project, and these were applied on the Connecticut River in 2008. A third Maine report (Yoder et al. 2008) completed in 2008 describes the development of an interim Index of Biotic Integrity (IBI) applicable to the larger freshwater rivers of Maine. That index is applied herein along with another IBI developed for the Atlantic slope (Daniels et al. 2005) to provide an initial assessment of the upper Connecticut River mainstem fish assemblages. The overall goal of this project is to assess the current status of the fish assemblages and as it is related to both historical and contemporary biological, chemical, and physical characteristics and stressors.

### New England Rivers Fish Assemblage Assessments

A long term objective of the various New England large rivers fish assemblage studies that have been supported by U.S. EPA, Region I over the past 7 years is the development of a fish assemblage assessment tool that can be used to systematically assess the status of large rivers. Large rivers are also referred to as "non-wadeable" since effective sampling requires a boat or raft mounted method. Hence the sphere of this and its related projects deal with rivers that are too large to ***effectively*** sample with wading methods and hence require a floating platform such as a boat or a raft. Attempting to define parameters around which such decisions can be made is an important goal of an allied Regional EMAP project (MBI 2008a).

When developed such a tool can be used to assess multiple resource management objectives (Figure 1) including the existing status and quality of individual rivers and the effectiveness of management efforts aimed at restoring native fish assemblages including diadromous species. An ongoing purpose of the New England large rivers projects is the development and testing of the U.S. EPA Biological Condition Gradient (BCG), which is a product of the U.S. EPA Tiered Aquatic Life Uses working group (U.S. EPA 2005). The testing of biological assessment methods

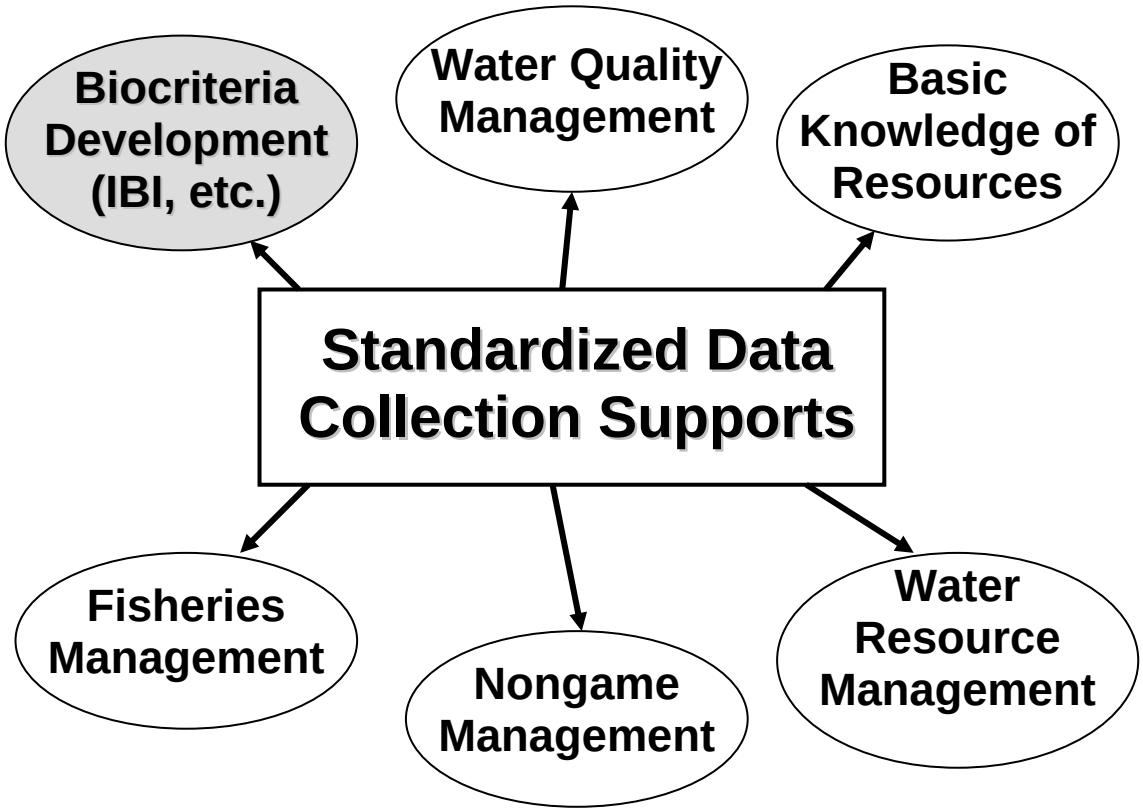


*Figure 1. Multiple and integrated uses of the data and information produced by systematic biological assessment.*

development and biological criteria for large rivers is also a principal objective of the EPA National Biocriteria Program and this project is at least indirectly tied to that effort.

In addition to the biocriteria related objectives of this study, the baseline information provided about the distribution and abundance of fish species supports important resource management objectives including;

1. restoration and management of diadromous species;
2. management of hydroelectric generating facilities and river flows;
3. fisheries management issues; and,
4. documentation and management of introduced species.

## Upper Connecticut River Fish Assemblage Assessment

This study contributes to the basic understanding of the distribution and abundance of freshwater and diadromous fishes in the Upper Connecticut River. While the initial goal was to assess the entire mainstem, Endangered Species Act (ESA) concerns with shortnose sturgeon downstream from Turners Falls delayed sampling of the lower river until 2009. We are not aware of any similarly focused studies that have been done at least in the recent past hence comparatively little is known about the relative abundance, distribution, and composition of the fish assemblage beyond species of historical and contemporary management interest. Of particular interest is the documentation of introduced species that occur in the same habitats required by fish species that are the focus of high profile management and restoration interests. The interim Maine Rivers IBI was developed in an attempt to highlight and potentially address those very issues. It is used here as one of the key analytical methodologies to assess the present condition of the resident fish assemblages and reveal how it relates to historical and contemporary stressors and prospects for future restoration.

### *Background and Management Issues*

The Connecticut River has been the subject of recent interest and concern in terms of overall quality and restoration of a once thriving diadromous fish assemblage. Dams and flow management for the production of hydroelectric power have significantly altered these populations. As such diadromous species are the focus of the most intensive management efforts directed at the upper mainstem. In addition, the introduction of non-native species comprised of both inter- and intra-continental origin have been commonplace with several of these species becoming naturalized.

We are not aware of any previous efforts to characterize the fish assemblage as a whole and with a study design that includes the systematic collection of fishes from multiple sites along the mainstem. As such, this may represent the first effort of this kind in the mainstem itself.

## STUDY AREA DESCRIPTION

The study area for this project extends from just downstream from the Murphy Dam at Lake Francis to the Turners Falls impoundment just upstream from the Turners Falls dam. An attempt was made to locate sites upstream from Lake Francis, but these segments proved to be too shallow to effectively sample with the raft under normal summer-fall flows. Within the study area 41 discrete mainstem locations were sampled for fish, qualitative habitat, and limited water quality (temperature, dissolved oxygen, and conductivity) once each during August 24 –October 12, 2009 (Table 1).

Table 1. Location of electrofishing sites and major sources of potential impact in the Upper Connecticut River mainstem sampled August 25 –October 12, 2008 (EF = electrofishing site [CTR#]; Dam [with number]; NPDES – permitted discharge). Letters and numbers in brackets are used on the figures.

| River Mile | Site Type | Location - Description | Habitat Type | Site Code |
|---|---|---|---|---|
| 325.6 | Dam | Murphy Dam - Lake Francis [19] | | - |
| 323.6 | EF | Dst. Murphy Dam | | CTR4 |
| 322.0 | EF | Ust. Lower (Canaan) Dam | | CTR5 |
| 316.4 | Dam | Lower (Canaan) Dam [17] | | - |
| 313.7 | EF | Dst Lower (Canaan) Dam & Canaan WWTP | | CTR6 |
| | NPDES | Canaan WWTP (VT0100625) | | - |
| 307.1 | EF | Near Colebrook, NH | | CTR7 |
| 291.0 | EF | Near N. Stratford, VT – Nulhegan R. confluence | | CTR8 |
| | Tributary | Upper Ammonoosuc R. | | - |
| 267.8 | EF | Dst. Groveton (Wyoming) Dam | | CTR9 |
| | NPDES | Lancaster WWTP (NH0100145) | | - |
| 257.9 | EF | Dst. Lancaster WWTP | | CTR10 |
| 247.3 | Dam | Gillman Project Dam [15] | | - |
| 247.0 | EF | Dst. Gillman Project Dam | | CTR11 |
| 243.8 | EF | Moore Reservoir (upper end) | | CTR12 |
| 236.0 | Dam | Moore Reservoir Dam [14] | | - |
| 235.9 | EF | Dst. Moore Reservoir | | CTR13 |
| 228.7 | Dam | Comerford Station Dam [13] | | - |
| 228.5 | EF | Dst. Comerford Station Dam | | CTR14 |
| | Tributary | Passumpsic River | | - |
| | NPDES | Stratford WWTP (NHG580536) | | - |
| 227.1 | EF | Dst. Passumpsic River | | CTR15 |
| 221.7 | Dam | McIndoe Station Dam [12] | | - |
| | NPDES | Dalton Hydro LLC (VT0000116) | | - |
| 221.7 | EF | Dst. McIndoe Station Dam | | CTR16 |
| 217.7 | Dam | Ryegate Dam [11] | | - |
| 217.6 | EF | Dst. Ryegate (Dodge Falls) Dam | | CTR17 |
| | Tributary | Ammonoosuc River | | |
| 213.1 | EF | Dst. Ammonoosuc R. confluence | | CTR18 |
| 200.7 | EF | Near Bedell Bridge State Park (NH) | | CTR19 |
| | NPDES | Bradford WWTP (VT0100803) | | - |
| 194.4 | EF | Dst. Bradford WWTP | | CTR20 |
| 179.2 | EF | Near E. Thetford, VT | | CTR21 |

Table 1. (continued)

| River Mile | Site Type | Location - Description | Habitat Type | Site Code |
|---|---|---|---|---|
| 170.9 | EF | Ust. Hanover, NH | | CTR22 |
| | NPDES | Hanover WWTP (NHG580099) | | - |
| 166.3 | EF | Dst. Hanover WWTP | | CTR23 |
| 165.6 | EF | Wilder Dam impoundment | | CTR24 |
| 164.0 | Dam | Wilder Dam [10] | | - |
| 163.9 | EF | Dst. Wilder Dam | | CTR25 |
| | Tributary | White River | | - |
| | NPDES | Lebanon WWTP (NH0100366) | | - |
| | NPDES | Hartford WWTP (VT0101010) | | - |
| 161.5 | EF | Dst. White R.; Hartford & New Leb. WWTPs | | CTR26 |
| 155.6 | EF | Near N. Hartland, VT | | CTR27 |
| | NPDES | Windsor WWTP (VT0100919) | | CTR27A |
| 148.5 | EF | Dst. Windsor WWTP | | CTR28 |
| | NPDES | Claremont WWTP (NH0101257) – via trib. | | - |
| 144.4 | EF | Dst. Claremont WWTP tributary | | CTR29 |
| 139.5 | EF | Ust. Black R. confluence (ust. Charlestown) | | CTR30 |
| | NPDES | Charlestown WWTP (NH0100765) | | - |
| 137.4 | EF | Ust. Weathersfield | | CTR31 |
| 133.2 | EF | Dst. Glidden Island | | CTR31A |
| 131.4 | EF | Ust. Black River | | CTR31B |
| 125.6 | EF | Dst. Charlestown WWTP | | CTR32A |
| 121.9 | EF | Bellows Falls impoundment | | CTR32 |
| 120.7 | Dam | Bellows Falls Dam [9] | | - |
| 116.2 | EF | Dst. Bellows Falls Dam | | CTR33 |
| | NPDES | Bellows Falls WWTP (VT0100013) | | - |
| 114.7 | EF | Dst. Bellows Falls WWTP | | CTR34 |
| 105.7 | EF | Near Westminster, VT | | CTR35 |
| 102.3 | EF | Dst. Putney, VT (2 NPDES) | | CTR36 |
| 97.6 | EF | Ust. West River confluence & Brattleboro, VT | | CTR37 |
| | Tributary | West River | | - |
| | NPDES | Brattleboro WWTP (VT0100064) | | - |
| 92.5 | EF | Dst. Brattleboro WWTP | | CTR38 |
| 90.1 | EF | Vernon Dam impoundment | | CTR39 |
| 89.0 | EF | Ust. Entergy VT Yankee mixing zone | | CTR39A |
| 88.5 | Dam | Vernon Dam [7] | | - |
| 88.4 | EF | Dst. Vernon Dam; ust. Entergy VT Yankee | | CTR40 |
| | NPDES | Entergy Vermont Yankee (VT0000264) | | - |

Table 1. (continued)

| River Mile | Site Type | Location - Description | Habitat Type | Site Code |
|---|---|---|---|---|
| 83.3 | EF | Ust. Northfield, MA | | CTR42 |
| | NPDES | Northfield WWTP (MA0100200) | | - |
| 79.2 | EF | Ust. St. Rt. 10 | | CTR 43 |
| | NPDES | Erving WWTP (MA0101516) | | - |
| 72.2 | EF | Dst. Erving WWTP; ust. Turners Falls | | CTR44 |
| 68.8 | EF | Turners Falls Dam impoundment | | CTR45 |
| 67.9 | Dam | Turners Falls Dam [6] | | - |

## METHODS

### *General Scope and Design*

This study consisted of ascertaining the relative abundance, composition, distribution, and general health of the fish assemblage in the Upper Connecticut River mainstem between the Murphy Dam at Lake Francis and the Turners Falls impoundment. The methodology followed that developed by the Maine Rivers fish assemblage assessment that was initiated in 2002 (MBI 2002; Yoder et al. 2006a) and is presently being extended to other New England rivers by this and allied projects. This methodology specifies sampling within a summer-early fall seasonal index period of July 1 – September 30 particularly when the interim fish Index of Biotic Integrity (IBI; Yoder et al. 2008) and associated data is used to assess the quality of the fish assemblage. As such the sampling was conducted between August 24 and October 12, 2009, being extended beyond September 30 only as weather and flows permitted. While sampling would have taken place in July and early August, it was delayed in 2008 to avoid the persistent and record high river flows that occurred during the early portion of the index period.

### *Equipment Specifications*

Boat electrofishing was the method of choice based on its successful application as a single gear method to selected large rivers in Maine by Kleinschmidt in 2000-1 and by MBI and Kleinschmidt in 2002-7 (MBI 2002; Yoder et al. 2006 a,b). Rivers that offer sufficient width and depth are sampled using a 16' john boat rigged for daytime and nighttime electrofishing. Electric current generated by a Smith-Root 5.0 GPP generator/pulsator combination is transmitted by anodes and cathodes located in front of the bow. Anodes (+ electrode) consisted of gangs of 3/16" stainless steel woven cable; a gang consisted of 4-6 separate strands bundled together. Cathodes (- electrode) consisted of four ¾" diameter flexible stainless steel conduit cut to lengths of 6-8' (or longer for deep rivers) and suspended directly from the bow. A positive pressure foot pedal switch is located on the bow platform and operated by a primary netter. Two netters were located on the bow platform. Emergency cutoff switches are located within easy reach of the boat driver on the rear seat and on the 5.0 GPP pulsator unit. Lights are affixed the safety railing to enable night

sampling. The 16' electrofishing boat is propelled by a 15 and 25 h.p. outboards mounted on the transom.

A 14' heavy duty inflatable raft with an outboard transom was used at sites where width and/or depth precluded the effective and safe use of the 16' john boat. Electric current is generated by a Smith-Root 2.5 GPP generator/pulsator combination and transmitted by similarly arrayed anodes and cathodes. The electrode configuration is similar to the 16' boat, except that the 6 cathodes of 6-8' in length were suspended from the sides of the raft, 3 from each side. The anode gangs were hung from a retractable (telescoping) aluminum boom that was secured to the raft with locking ratchet straps. A single netter was positioned on a bow a seat. Battery powered 12 volt lights were mounted on the aluminum frame to support nighttime sampling, although all riverine sites in 2006 were sampled during daytime. The 14' raft is propelled by a 15 h.p. short shaft outboard with multiple tilt settings. The latter feature was essential for maneuvering the raft in swift flowing, shallow, and boulder laden habitats. Electrofishing unit settings were typically governed by relative conductivity. At low conductivity sites (15-40 $\mu S/m^2$) the GPP unit settings selected were the high voltage range (500-1000 v) at 120 Hz and 100% of the voltage range to produce 2-4 A. At sites with higher relative conductivity (>40-100 $\mu S/m^2$) the same settings at 80-100% of the voltage range produced 5-10A (4-8 A for the 2.5 GPP unit). For the 5.0 GPP unit, higher relative conductivity in excess of 200 $\mu S/m^2$ necessitated switching to the low voltage range (maximum = 500 v) at 50-80% of the voltage range to produce 12-18A. The latter situations were rare and occurred only at the tidal influenced site. The selection of the 120 Hz pulse frequency was accomplished by trial and error testing in 2001 and initially during the 2002-3 surveys (Yoder et al. 2006a). This was determined to be the most effective pulse setting based on visual observations of the comparative effectiveness in stunning all fish species. Lower settings (30, 60 Hz) were much less effective and are deemed unsuitable for New England rivers. Care is taken to avoid injury and all processed fish were examined for visible signs of injury and damage.

***Field Data Recording***

Detailed field data recording and sample processing procedures are described in the Connecticut River project QAPP (MBI 2008b). Captured fish are immediately placed in an aerated live well for processing. If necessary, fish are anesthetized to minimize trauma and handling stress. Trout and salmon are placed in separate aerated containers and processed first to minimize their holding time. Individual fish are identified to species, weighed to the nearest gram, and examined for external anomalies. Species that occur in large numbers are subsampled with a minimum of 15 individuals for large adults and 50 for smaller species and 1+ or 0+ life stages. Most species are distinguished as adults, 1+ (juveniles), or 0+ (young-of-year) in accordance with the criteria in Table 2 (Yoder et al. 2006a). The principal purposes of this differentiation were to increase the accuracy of extrapolations based on subsampling and for potential IBI guild classification. Species of recreational and/or commercial interest are also measured for total length to the nearest mm.

Table 2. Criteria (weight, length, or other) used to determine adult (A), 1+ (juvenile; B), and 0+ (young-of-year; Y) designations for Connecticut river fish species for the primary purpose of assuring the accuracy of extrapolated total biomass based on subsamples and for IBI guild classification. Not all species are differentiated.

| Species | Adult | 1+[1] | 0+ |
|---|---|---|---|
| Sea lamprey *(Petromyzon marinus)* | fully developed[2] | -[2] | ammocoete |
| American eel *(Anguilla rostrata)* | >500 g | | <10 g |
| Blueback herring *(Alosa aestivalis)* | >100 g | | <10 g |
| Alewife *(Alosa pseudoharengus)* | >100 g | | <10 g |
| American shad *(Alosa sapidissima)* | >100 g | | <10 g |
| Lake chub *(Couesius plumbeus)* | >10 g | | <1 g |
| Common carp *(Cyprinus carpio)* | >1000 g | | <50 g |
| Common shiner *(Luxilis cornutus)* | >10 g | | <1 g |
| Golden shiner *(Notemigonus crysoleucas)* | >100 g | | <10 g |
| Spottail shiner *(Notropis hudsonius)* | >10 g | | <1 g |
| Eastern blacknose dace *(Rhinichthys atratulus)* | | not determined | |
| Longnose dace *(Rhinichthys cataractae)* | | not determined | |
| Creek chub *(Semotilus atromaculatus)* | | not determined | |
| Fallfish *(Semotilus corporalis)* | >50 g | | <3 g |
| Longnose sucker *(Catostomus catostomus)* | >1000 g | | <10 g |
| White sucker *(Catostomus commersonii)* | >1000 g | | <10 g |
| White catfish *(Ameirus catus)* | >100 g | | <10 g |
| Brown bullhead *(Ameirus nebulosus)* | >100 g | | <10 g |
| Northern pike *(Esox lucius)* | >500 g | | <10 g |
| Chain pickerel *(Esox niger)* | >80 g | | <10 g |
| Rainbow trout *(Oncorhynchus mykiss)* | >100 g | | <10 g |
| Atlantic salmon *(Salmo salar)* | >500 mm | | <10 g |
| Landlocked salmon *(Salmo salar sebago)* | >100 g | | <10 g |
| Brown trout *(Salmo trutta)* | >100 g | | <10 g |
| Brook trout *(Salvelinus fontinalis)* | >100 g | | <10 g |
| Burbot *(Lota lota)* | >100 g | | <10 g |
| Banded killifish *(Fundulus diaphanus)* | | not determined | |
| Mummichog *(Fundulus heteroclitus)* | | not determined | |
| Slimy sculpin *(Cottus cognatus)* | >20 g | | <2 g |
| White perch *(Morone americana)* | >100 | | <10 g |
| Striped bass *(Morone saxatilis)* | >500 mm | | <50 g |
| Rock bass *(Ambloplites rupestris)* | >80 g | | <10 g |

[1] Juvenile criteria are <adult, >y-o-y.

[2] Parasitic habitats fully developed in adults; buccal funnel is fully developed in juveniles, but is not yet parasitic.

Table 2. (continued)

| Species | Adult | 1+ | 0+ |
|---|---|---|---|
| Redbreast sunfish *(Lepomis auritus)* | >50 g | | <5 g |
| Pumpkinseed sunfish *(Lepomis gibbosus)* | >50 g | | <5 g |
| Smallmouth bass *(Micropterus dolomieui)* | >150 mm | | <10 g |
| Largemouth bass *(Micropterus salmoides)* | >150 mm | | <10 g |
| Black crappie *(Pomoxis nigromaculatus)* | >100 g | | <10 g |
| Yellow perch *(Perca flavescens)* | >50 g | | <5 g |

The majority of captured fish are identified to species in the field; however, any uncertainty about the field identification of individual fish requires the retention of voucher specimens for laboratory identification. Fish were preserved in a solution of borax buffered 10% formalin and labeled by date, river, and site designation. Identification is made to the species level in all cases and follows the nomenclature of the American Fisheries Society (Nelson et al. 2004). Immature and post-larval fish less than 15-20 mm in length were generally not included in the sample.

All fish that are weighed, whether done individually, in the aggregate, or as subsamples, were examined for the presence of gross external anomalies. An external anomaly is defined as the presence of a visible skin, extremity (fin, barbell, operculum), skeletal, or subcutaneous disfigurement, and is expressed as the weighted percentage of affected fish among all fish weighed. Light and heavy infestations are noted for certain types of anomalies and follow the guidance in Ohio EPA (1989) and Sanders et al. (1999).

Physical measurements are also taken in the field during fish sampling and include the sample site distance, GPS coordinates, temperature (°C), dissolved oxygen (D.O.; mg/l), relative conductivity ($\mu S/cm^2$), and the Qualitative Habitat Evaluation Index (QHEI; Rankin 1989, 1995; Ohio EPA 2006) modified for application to Maine rivers (Yoder et al. 2006 a,b).

Site distance was determined with a GPS unit. This was done by tracking the cumulative lineal distance as the sampling progressed in the prescribed downstream direction. Waypoints were established as necessary to account for the curvature of the shoreline and/or the sampling track that was followed within each site. Each river was designated with a unique alpha code (e.g., Connecticut River = "CTR") and each site with a unique numeric descriptor (e.g., "CTR4"). The upstream end, or beginning of each site was designated "A" and subsequent waypoints were designated B, C, D, and so on. The downstream terminus of each zone was designated with a "Z".

***Crew Composition and Logistics***

A boat electrofishing crew consists of three persons - two netters and a boat driver. The netter's primary responsibility is to capture all fish sighted; the driver's responsibility is to maneuver the boat

so as to provide the netters the best opportunities to capture and land stunned fish (the driver may assist in netting stunned fish that appear near the stern or behind the boat). The boat driver also operates the electrofishing unit. Each task requires skill and training, but boat maneuvering requires the most experience to gain adequate proficiency and ensure safe operation. The latter skill was particularly important in the faster flowing sections of the study area. In actual practice, the boat driver also functions as the crew leader that supervises all aspects of the data collection.

The netters are usually seasonal technicians with the physical ability to perform all crew member tasks. The netters are clad in chest waders and wear life jackets and rubber gloves; the driver is also clad in chest waders. Sampling sites are positioned at selected intervals along a contiguous river reach and sampling takes place along the shoreline(s) offering the most diverse macrohabitat features. In other areas of the U.S. this usually includes the gradual outside bends of large rivers (Gammon 1973, 1976), but this is not invariable. Maine's rivers presented many similarities and a few dissimilarities, the latter being manifest in faster current velocities including swift chutes, runs, and rapids and cover types (e.g., large boulders, log cribs, deep runs, bedrock ledges) away from the shoreline that required some adaptations of the existing methods.

A typical sampling day consists of launching the boat at an upstream access point, shuttling the truck and trailer to a downstream retrieval point, and returning to sample sites between the launch and retrieval points by navigating in a downstream direction. Normally, three 1.0 km sites can be sampled each day within river reaches of less than 10 to more than 15 miles in length. If continuous navigation of a river segment was limited or precluded by falls, dams, or other safety concerns, the boat was launched and retrieved from a single access site in proximity to the sampling site. In the Presumpscot River access was precluded mostly by navigational safety concerns, particularly in some of the smaller impoundments. Site location was seldom precluded by a lack of launch or retrieval access, although many locations required what is termed as "rough launching". A four wheel drive truck with the capacity to transport a three-person crew and the electrofishing boat is essential to this type of sampling. Sufficient traction and pulling power is needed to access remote or unimproved access sites.

***Habitat Assessment***

A qualitative evaluation of macrohabitat is made by the fish field crew leader after each location is sampled using the Qualitative Habitat Evaluation Index (QHEI; Rankin 1989, 1995; Ohio EPA 2006). The QHEI is a physical habitat index designed to provide an empirical, qualitative evaluation of the lotic macrohabitat characteristics that are important to fish assemblages. It consists of a visual estimate of the quality, composition, amount, and extent of substrate, cover, channel, riparian, flow, pool/run/riffle, and gradient variables. It has been shown to correspond predictably with key attributes of fish assemblage quality (Rankin 1989, 1995) and as such is an important tool in the diagnosis of habitat related fish assemblage impairments. The QHEI was originally developed as a rapid assessment tool and in recognition of the constraints associated with the practicalities of conducting a large-scale monitoring program, i.e., the need for a rapid assessment tool that yields meaningful information and which takes advantage of the knowledge and insights of experienced field biologists who conduct the biological assessment. The QHEI has been used widely outside of Ohio and parallel habitat evaluation techniques are in widespread

existence throughout the U.S. The QHEI incorporates the types and quality substrate, the types and amounts of instream cover, several characteristics of channel morphology, riparian zone extent and quality, bank stability and condition, and pool-run-riffle quality and characteristics. Slope or gradient is also factored into the QHEI score. We followed the guidance and scoring procedures outlined in Ohio EPA (1989, 2006) and Rankin (1989) with some modifications made during 2002 and 2003 (Yoder et al. 2006a). These modifications include the addition of large boulder and granitic origin to the substrate metric and impoundment to the channel morphology and pool/run/riffle metrics. This data is entered, stored, and analyzed in the Maine ECOS data management system used by MBI.

Elevated flow conditions can adversely affect electrofishing efficiency, particularly if they result in abnormally turbid conditions. High flows can also temporarily affect fish distribution by displacing them away from their typical habitats. Our protocol requires that sampling be conducted under "normal, summer-fall low flow conditions." Knowing what this is requires local knowledge and a familiarity with flow gage readings and conditions. Generally, these conditions coincide with low flow durations of approximately 80% or greater, i.e., flows that are exceeded 80% of the time for the period of record. These statistics are available for New England rivers from the U.S. Geological Survey at: http://waterdata.usgs.gov/. The key is to avoid sampling during conditions that deter and reduce sampling efficiency. In such cases sampling should be delayed until flow and water conditions return to "normal" conditions.

**Sampling and Survey Design**

Mainstem rivers are treated as linear assessment units in order to understand how changes take place along a longitudinal continuum with respect to both natural and anthropogenic influences. Important in the delineation of these assessment units are natural features and transitional boundaries (e.g., thermal, ecological, and geological boundaries) and clusters of anthropogenic sources (e.g., major urban/industrial areas, impoundments, discharges, etc.). Study areas can include up to 150-200 km long river reaches in order to capture all relevant influences, include zones of impact and recovery thus exposing pollution gradients, and to provide context for interpreting results within a localized reach or at a given location. This design yields a detailed assessment of status, the extent and severity of indicator responses in a particular series of river reaches, and temporal changes both within season and between years. This produces assessments of the severity (departure from the desired state) and extent (lineal extent of the departures) of biological impairments in a river (Yoder et al. 2005).

We followed a combination of the preceding designs, which are similar in many respects in that the goal of each is to produce a dataset capable of providing information for multiple environmental and natural resource management purposes (Figure 1). We targeted the largest volume point sources directly and bracketed major aggregations of point sources, urban areas, and changes in habitat of both natural and man-made origin. This is done irrespective of actual site quality, but includes the range of conditions from minimally impacted background (usually upstream) through the gradient of impacts and conditions that reflect the severity of impacts in a particular study area. In the Upper Connecticut River mainstem this resulted in sampling sites

that generally occurred within 4-5 miles of each other. As such, we sampled 41 mainstem sites (1.0 km each) in 260 miles of the Upper Connecticut River study area in 2008.

## Data Management and Analysis

Data were analyzed using routines available in the Maine ECOS data management system that was adapted for use by MBI in the Maine Rivers project. Maine ECOS produces standardized data reports on fish species relative abundance and condition that includes assemblage attributes such as numbers, biomass, functional and tolerance guilds, condition metrics, and compositional expressions. Recently the interim Maine Rivers IBI was added along with the Modified Index of Well-Being (MIwb). These outputs can also be exported as Excel files. Relative abundance data is reported as numbers and biomass per kilometer.

### *Expected Fish Assemblages along the Biological Condition Gradient (BCG)*

Developing an understanding of the native fish assemblages that historically occurred in Maine's non-wadeable rivers was a critical task for determining the current status of the fish assemblages and their potential for restoration. We used the Biological Condition Gradient (BCG) concept developed by U.S. EPA (2005; Figure 2) and as detailed by Davies and Jackson (2006) for this task. This process required us to characterize the "as naturally occurs" assemblage as the ultimate potential for quality and restoration. While restoring all rivers to such a condition may be impractical given the economically dependent activities and ingrained species introductions that have substantially altered the Maine fish fauna, it is important to at least qualitatively visualize this penultimate condition. It serves as an essential anchor for the "upper end" of the BCG. We accomplished this by visualizing the "as naturally occurs" fish fauna that was likely encountered by the first European settlers coupled with our knowledge of how such assemblages were most likely organized based on current knowledge of species autecology and distribution. The latter was partly derived from analyses of the statewide database (Yoder et al. 2006b, 2008).

This process permits the visualization about how the "as naturally occurs" fish fauna likely changes as the effect of large scale human disturbances such as land uses (forestry, agriculture, urbanization), water pollution (point source discharges, nonpoint source runoff), habitat modification (dams/impoundments, riparian encroachment, channel modification), hydrologic alterations (flow diversions, withdrawals), changes to energy processing (nutrient enrichment, climatic changes), and biotic changes (introductions of non-native species) increased in magnitude and scope through space and time. Each of these stressor categories illustrates the fundamental concept of Karr's five factors that determine the integrity of a water resource (Karr et al. 1986). Many of these impacts are well documented in Maine's rivers and the biological consequences as currently reported in terms of the macroinvertebrate assemblage (Davies et al. 1999), using Maine DEP's standardized methods and biological criteria (Davies and Tsomides 1997), key species of management interest (Warner 2005; Saunders et al. 2006), environmental tolerance and guilds (Halliwell et al. 1999), and native status (Halliwell 2005). The BCG is a conceptual model that describes how ecological attributes change in response to increasing levels of the *effect* of stressors (Davies and Jackson 2006; Figure 2). It is portrayed as a "gradient of condition" with descriptions about how key assemblage attributes and properties are expected to change with increasing stress

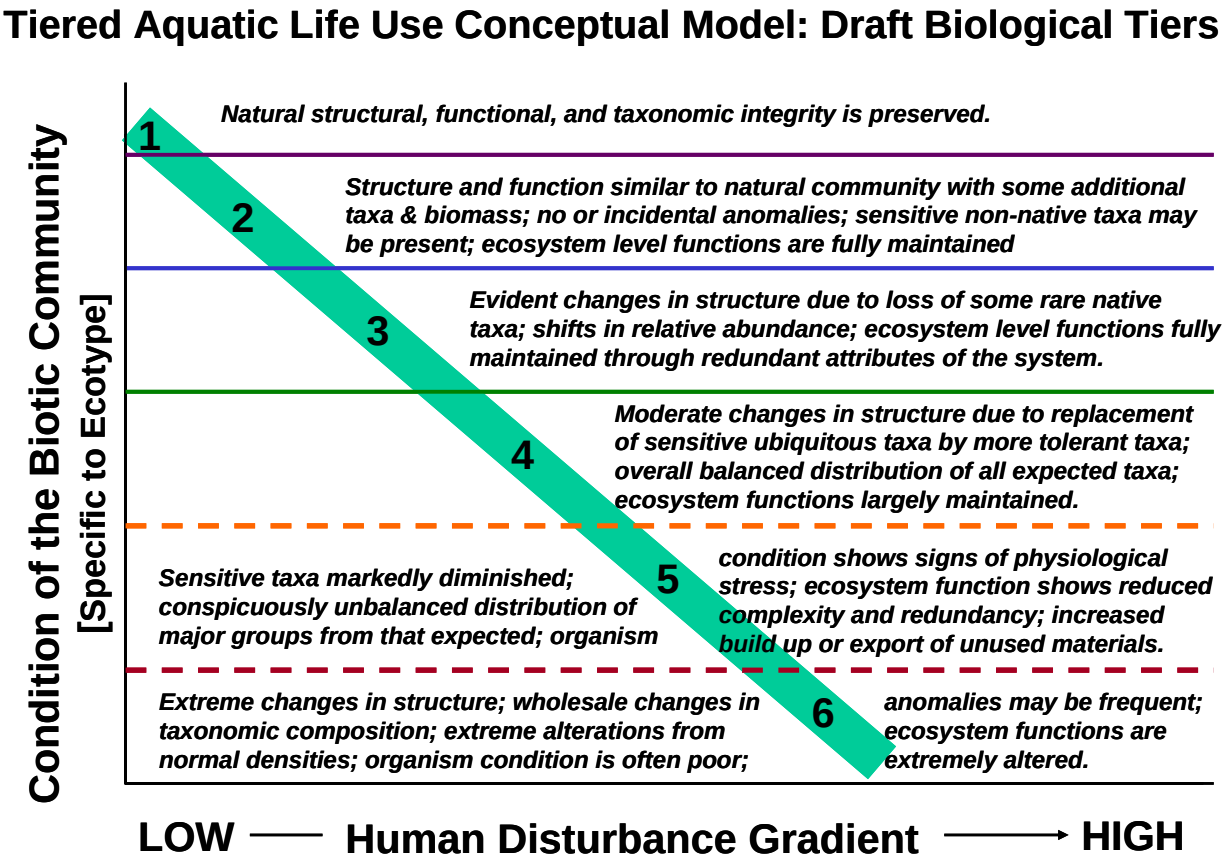


*Figure 2. The Biological Condition Gradient (BCG) conceptual model and descriptive attributes of tiers along a gradient of quality and increasing disturbance (Davies and Jackson 2006).*

in a succession of six tiers from "as naturally occurs" to "severely degraded". Ten attributes that include characteristics of taxa representation, proportion, membership, condition, along with two functional categories are included for each of the six BCG tiers. This template can be used to develop a model for aquatic assemblages that are representative of a specific region or aquatic ecotype. This provides an organized starting point for assuring that specific quantitative measures (e.g., IBI) are conceptually sound and consistent with our best understanding of how aquatic ecosystems respond to stress. It also promotes the incremental measurement and characterization of biological assemblage data beyond comparatively simple and less detailed "pass/fail" thresholds.

It also enables the development of tiered expectations for specific water bodies. U.S. EPA (2005) described this as tiered aquatic life uses (TALU), a concept that is emulated by Maine DEP's codified and quantitative biological criteria for macroinvertebrates (Davies et al. 1997). In developing a BCG model for Maine's non-wadeable fish assemblages Yoder et al. (2006b, 2008) accessed general information about the riverine fish assemblages relying on historical information and expert judgment in the process. Some of this was accomplished via an ad hoc project advisory group comprised of U.S. EPA, U.S. F&WS, NOAA, the applicable Maine state agencies (DEP, IF&W, DMR), and other interested groups (Trout Unlimited, Penobscot Indian Nation). One important outcome of these discussions was the conclusion that the "as naturally occurs" fish

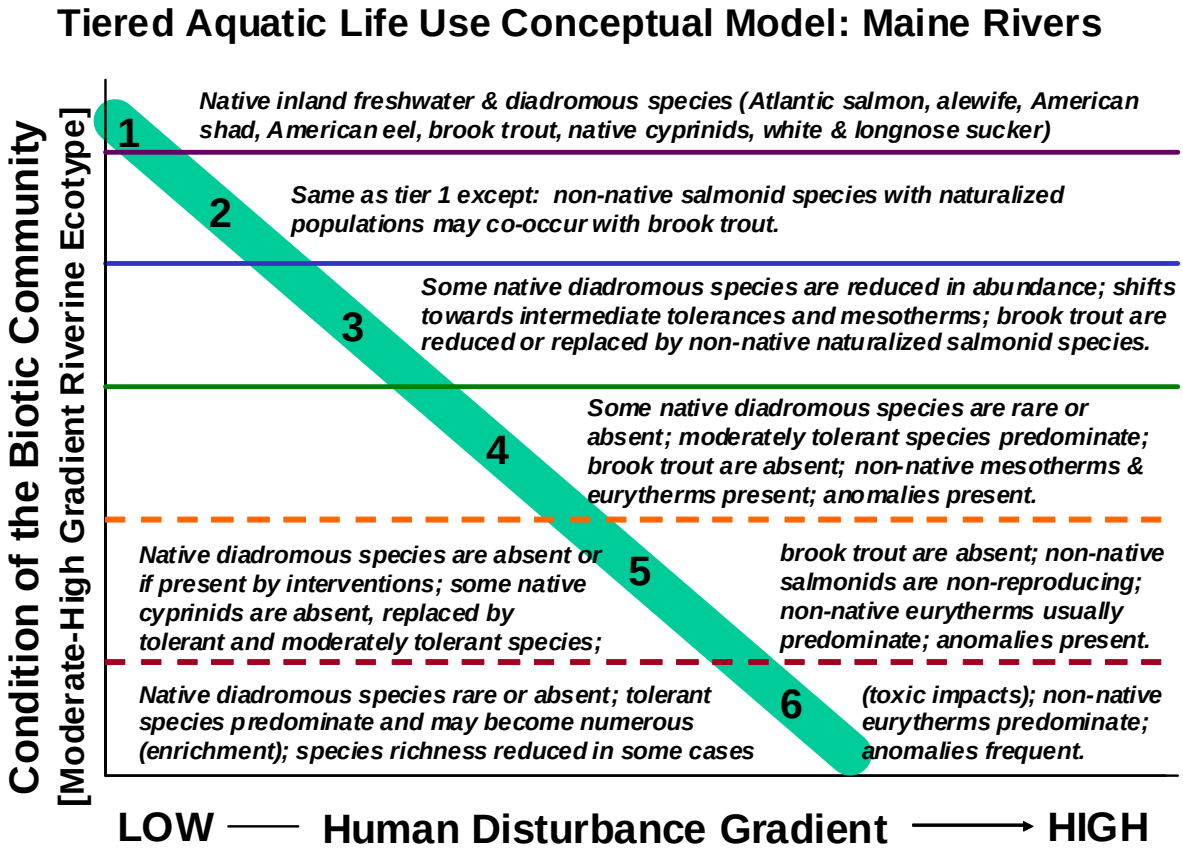


*Figure 5. The Biological Condition Gradient (BCG) model for the moderate-high gradient riverine ecotype in Maine (Yoder et al. 2006b, 2008).*

assemblage in the moderate-high gradient riverine ecotype was largely comprised of native cold water species. The comparatively simple BCG for Maine's non-wadeable moderate-high gradient rivers was the result (Figure 3; Yoder et al. 2006b, 2008). This reflects a comparatively simple, qualitative method of visualizing what has happened in many instances to the "as naturally occurs" fish assemblage for this riverine ecotype in Maine through time. The current departures from tier 1 attributes and characteristics are the result of multiple modifications to water quality, habitat, flow regime, and the native fauna via the introduction of alien species. This was initially used by Yoder et al. (2008) to generally vet the efficacy of the interim Maine Rivers IBI. We believe this is

a potential starting point for the Upper Connecticut River fish assemblage given their respective similarities, i.e., cold water, depauperate, and with a significant diadromous component.

***Indices of Biotic Integrity (IBI)***

We used the interim Maine Rivers IBI (Yoder et al. 2008) and the Atlantic Slope IBI (Daniels et al. 2005) to initially portray the results of the Upper Connecticut River fish assemblage results. The Maine IBI consists of 12 metrics that were selected based on the consideration of the metric responsiveness to a reference based gradient analysis and ecological role fulfillment and relevance (Yoder et al. 2008). The metrics and their resulting scoring equations and other necessary adjustments appear in Table 2. The Maine ECOS programming produces a report that includes the individual metrics values and scores and the aggregate interim IBI score by sampling location. The Atlantic Slope IBI (Table 3) consists of 12 metrics and it utilized the traditional 12-60 scoring range of Karr et al. (1986). We did not use any scoring criteria to distinguish relative quality, but the scale of both indices generally should correspond to the BCG scale and tiers of condition.

***Modified Index of Well-Being (MIwb)***

Gammon (1976) and Gammon et al. (1981) originally developed and tested the Index of Well-Being (Iwb) as a multiparameter evaluation of large river fish assemblages. The Iwb is based on four measures of diversity, abundance, and biomass and represents an attempt to produce an integrated evaluation of these baseline assemblage attributes. The individual performance of numbers, biomass, and the Shannon index as consistent indicators of the quality of fish communities has historically been disappointing. However, when combined in the Iwb these individual community attributes respond in a more complimentary and intuitively predictable manner. For example, an increase in total numbers and/or biomass caused by one or two predominant species is usually offset by a corresponding decline in the Shannon index. In addition, the $\log_e$ transformation of the numbers and biomass components acts to reduce much of the variability inherent to these parameters alone. Gammon (1976) found the variability of each of the four Iwb components as measured by a coefficient of variation to range from 20-50%, yet the composite variability reflected by the Iwb was only 7%. High numbers and/or biomass are commonly, and at times inaccurately, perceived as a positive attribute of a fish assemblage. High numbers and biomass result in a high Iwb score only if a relative "evenness" is maintained between the abundance of the common species. However, this is not invariable, especially with environmental perturbations which tend to restructure fish assemblages without corresponding decreases in diversity (e.g., nutrient enrichment, habitat modification). Fish assemblages in habitat modified rivers can frequently exhibit very high

A modification of the original Iwb was developed by Ohio EPA (1987) and further explained by Yoder and Smith (1999). The modified Iwb retains the same computational formula as the original Iwb, but eliminates species designated as highly tolerant , aliens, and hybrids from the numbers and biomass metrics; these species are retained in the Shannon index calculations. This modification eliminates the "undesired" effect caused by a high abundance of tolerant or alien species, but retains their "desired" influence in the Shannon indices. The computational formula used is as follows:

Modified Index of Well-Being (MIwb) = 0.5 ln N + 0.5 ln B + H (no.) + H (wt.);
where:

N = CPUE; relative numbers minus species designated highly tolerant (Ohio EPA 1987);
B = CPUE; relative biomass minus species designated highly tolerant (Ohio EPA 1987);
H (no.) = Shannon diversity index based on numbers (version which uses $\log_e$);
H (wt.) = Shannon diversity index based on numbers (version which uses $\log_e$).

We used the MIwb to primarily assess the assemblage level properties of the 2008 results.

## RESULTS

The 2008 sampling effort included standardized boat electrofishing at 46 discrete sampling locations for a cumulative effort of 44.74 km. Most sites were 1.0 km in length with the exception of two sites that were restricted by the configuration of the river channel and one discharge mixing zone site. A total of 7,262 individual fish comprised of 40 different species and 1 hybrid were included in the collections. Average relative abundance was 169 individuals/km and 8.41 kg/km.

### *Assemblage Composition*

A general pattern in the composition of the fish assemblage existed between the "upper" and "lower" mainstem (Table 5). The "upper" mainstem (between Lake Francis and the Wilder impoundment) included mesothermic and stenothermic species being predominated numerically by yellow perch and white sucker in terms of biomass. Stenotherms included slimy sculpin, round whitefish, brown trout, rainbow trout, brook trout, and Atlantic salmon. The assemblage in the "lower" mainstem (Wilder Dam to the Turners Falls impoundment) included eurythermic species and was both numerically and in terms of biomass predominated by smallmouth bass. Stenothermic species were absent from this segment of the mainstem. Diadromous species were not a major part of the samples with the exception of American eel in the "lower" mainstem.

### *Assemblage Condition*

Overall assemblage condition is expressed here by the interim Maine Rivers IBI (Yoder et al. 2008), the Atlantic slope IBI (Daniels et al. 2005), and the modified Index of Well-Being (MIwb; Gammon et al. 1981). While neither IBI is specifically derived nor calibrated for the Connecticut River there is some value in using each to initially portray the mainstem fish assemblages. The Atlantic slope IBI was developed for the neighboring Hudson and Delaware River basins and the authors felt it would be relevant in adjacent basins. The interim Maine IBI was developed for

Table 3. Interim Maine non-wadeable rivers IBI metrics with calibrated scoring equations and manual scoring adjustment criteria. Proportional (%) metrics are based on numbers unless indicated otherwise (after Yoder et al. 2008).

| Metric | Scoring Equation | Scoring Adjustments | |
|---|---|---|---|
| | | Score = 0 | Score = 10 |
| Native Species Richness | 10 * (-0.2462 + (0.0828*numspec2))) | <3 sp. | ≥15 sp. |
| Native Cyprinid Species (excluding fallfish) | (10 * (0.4457 + (0.0109*allcyp_ff) - (0.00005629 * (allcyp_ff $^2$)))) | Eq[1] | Eq |
| Adult white & longnose sucker abundance (biomass) | (10 * (0.3667 + (0.008*ws_lns_pb) - (0.000023592 * (ws_lns_pb$^2$)))) | 0 | ≥128 kg/km |
| %Native Salmonids | (10 * (0.9537 + (0.00000000039*nat_salm) - (0.000078892 * (nat_salm$^2$)))) | 0 | ≥20% |
| %Benthic Insectivores | 10 * (0.010966*benth_pc_n) | 0 | ≥91.2% |
| %Blackbasses | 10 - (10 * (-0.09684 + (0.5638*log10(blackbass)))) | Eq | 0 |
| %Fluvial Specialist/ Dependent | (10 * (0.2775 + (0.0073*fluv_pc_n))) | 0% | Eq |
| %Macrohabitat Generalists | 10 - (10 * (0.1017 + (0.0096*macro_gen))) | >90% | Eq |
| Temperate Stenothermic Species | (10 * (0.7154 + (0.4047*(log10(steno))))) | 0 sp. | >5 sp. |
| Non-guarding Lithophilic Species | (10 * (0.2979 + (0.8975*log10(lith_ng)))) | <1 | >10 |
| Alien Species | 10 - (10 * (0.1063 + (0.3271*Alien_sp) - (0.029*(Alien_sp$^2$)))) | ≥5 | 0 |
| %DELT Anomalies | 10 - (10 * (0.8965 + (0.1074*log10(delta)))) | Eq | 0 |

[1] No scoring adjustments are necessary; scoring determined by equation (Eq) across entire metric scoring range of 0-10.

Table 4. Atlantic slope Index of Biotic Integrity metrics and scoring criteria (after Daniels et al. 2005).

| Metric | 5 | 3 | 1 |
|---|---|---|---|
| 1. Species Richness (excluding non-native) | | MSRL Equation[2] | |
| 2. Number of Benthic Insectivore Species | | MSRL Equation | |
| 3. Number of Water Column Species | | MSRL Equation | |
| 4. Number of Terete Minnow Species | | MSRL Equation | |
| 5. Proportion of Dominant Species | <40% | 40-55% | >55% |
| 6. Proportion of White Sucker | <3% | 3-15% | >15% |
| 7. Proportion of Generalists | <20% | 20-45% | >45% |
| 8. Proportion of Insectivores | >50% | 25-50% | <25% |
| 9. Proportion of Top Carnivores | >5% | 1-5% | <1% |
| 10. Number of fish in the sample | | MDL[3] | |
| 11. Proportion in two size classes | >40% | 15-40% | <15% |
| 12. Proportion of fish with anomalies | 0% | 0-1% | >1% |

larger rivers and is based on a presumption of a cold water fish assemblage, which at least applies to the upper reaches of the 2008 study area. Regardless of the current efficacy of either IBI a more refined approach will be needed to fully and fairly assess assemblage condition.

Both the Atlantic slope and Maine IBIs had their highest values in the upper reaches of the 2008 study area, although the longitudinal pattern in each was somewhat different (Figures 6 and 7). Both IBI declined markedly downstream from the series of 5 dams between RM 247.3 and 217.7. The Atlantic slope IBI was perhaps more even downstream and did not necessarily reflect the alternation of impounded and riverine habitats. The Maine IBI reflected a wider range of response reflecting the inclusion of stenothermic and mesothermic species and fluvial dependent

[2] MSRL – maximum species richness line equations were used to score these metrics.
[3] MDL – maximum density line equation was used to score this metric.

Table 5. Most abundant fish species ranked by average numbers (No./Km) and biomass (Kg/Km) collected in the Upper Connecticut River mainstem August 25 – October 12, 2009 at 45 1.0 km boat electrofishing sites. The study area is separated in "upper" (upstream Wilder Dam) and "lower" (downstream Wilder Dam to Turners Falls impoundment) segments.

| Species | No./Km | Species | Kg/Km |
|---|---|---|---|
| **Upper Mainstem** (Dst. Lake Francis to Wilder impoundment) | | | |
| Yellow perch *(Perca flavescens)* | 47.9 | White sucker *(Catostomus commersonii)* | 5.71 |
| Fallfish *(Semotilus corporalis)* | 16.7 | Smallmouth bass *(Micropterus dolomieui)* | 1.03 |
| White sucker *(Catostomus commersonii)* | 14.6 | Round whitefish *(Prosopium cylindraceum)* | 0.70 |
| Pumpkinseed sunfish *(Lepomis gibbosus)* | 14.3 | Yellow perch *(Perca flavescens)* | 0.48 |
| Slimy sculpin *(Cottus cognatus)* | 12.4 | Brown trout *(Salmo trutta)* | 0.41 |
| Smallmouth bass *(Micropterus dolomieui)* | 5.0 | Rock bass *(Ambloplites rupestris)* | 0.38 |
| Rock bass *(Ambloplites rupestris)* | 4.6 | Brook trout *(Salvelinus fontinalis)* | 0.24 |
| Round whitefish *(Prosopium cylindraceum)* | 3.1 | Atlantic salmon *(Salmo salar)* | 0.19 |
| Common shiner *(Notropis cornutus)* | 3.1 | Rainbow trout *(Oncorhynchus mykiss)* | 0.17 |
| Largemouth bass *(Micropterus salmoides)* | 2.1 | Northern pike *(Esox lucius)* | 0.16 |
| Longnose dace *(Rhinichthys cataractae)* | 2.1 | Black crappie *(Pomoxis nigromaculatus)* | 0.15 |
| Tessellated darter *(Etheostoma olmstedi)* | 1.9 | Pumpkinseed sunfish *(Lepomis gibbosus)* | 0.12 |
| **Lower Mainstem** (Dst. Wilder Dam to Turners Falls impoundment) | | | |
| Smallmouth bass *(Micropterus dolomieui)* | 32.3 | Smallmouth bass *(Micropterus dolomieui)* | 2.00 |
| Common shiner *(Notropis cornutus)* | 31.3 | Largemouth bass *(Micropterus salmoides)* | 1.00 |
| Spottail shiner *(Notropis hudsonius)* | 25.2 | White sucker *(Catostomus commersonii)* | 0.89 |
| Fallfish *(Semotilus corporalis)* | 24.8 | Yellow perch *(Perca flavescens)* | 0.55 |
| Yellow perch *(Perca flavescens)* | 21.5 | Common carp *(Cyprinus carpio)* | 0.40 |
| White sucker *(Catostomus commersonii)* | 15.1 | Bluegill *(Lepomis macrochirus)* | 0.38 |
| Largemouth bass *(Micropterus salmoides)* | 6.9 | Rock bass *(Ambloplites rupestris)* | 0.23 |
| Rock bass *(Ambloplites rupestris)* | 6.7 | Pumpkinseed sunfish *(Lepomis gibbosus)* | 0.20 |
| Yellow bullhead *(Ameirus natalis)* | 6.1 | Northern pike *(Esox lucius)* | 0.16 |
| Bluegill *(Lepomis macrochirus)* | 5.9 | Chain pickerel *(Esox niger)* | 0.14 |
| Tessellated darter *(Etheostoma olmstedi)* | 4.6 | Fallfish *(Semotilus corporalis)* | 0.13 |
| Pumpkinseed sunfish *(Lepomis gibbosus)* | 3.9 | American eel *(Anguilla rostrata)* | 0.13 |

and specialist species in the upper 30-40 miles. The decline in a general downstream direction was more pronounced and also reflected the alternating impounded and riverine habitats in the lower part of the 2008 study area. It also reflects the shift towards eurythermic species and macrohabitat generalists. A key question that remains to be answered is if this is a "natural" change or if it is accentuated by flow and habitat modifications as each accumulates in a downstream direction.

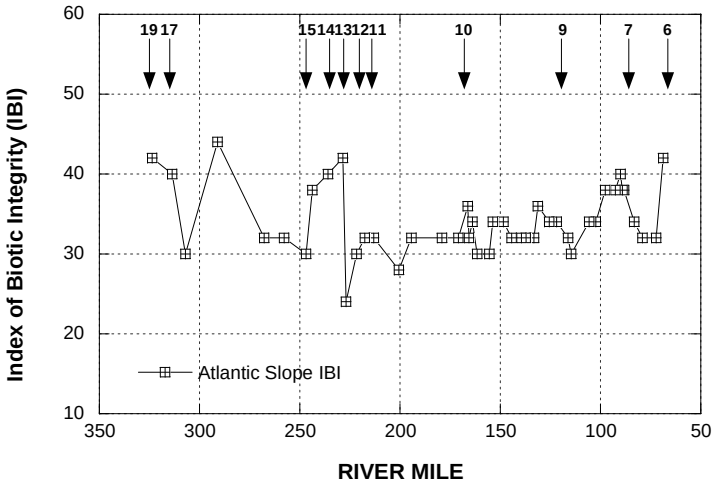


*Figure 6. Atlantic slope Index of Biotic Integrity (IBI; Daniels et al. 2005) results in the upper Connecticut R. between Lake Francis and Turners Falls, 2008.*

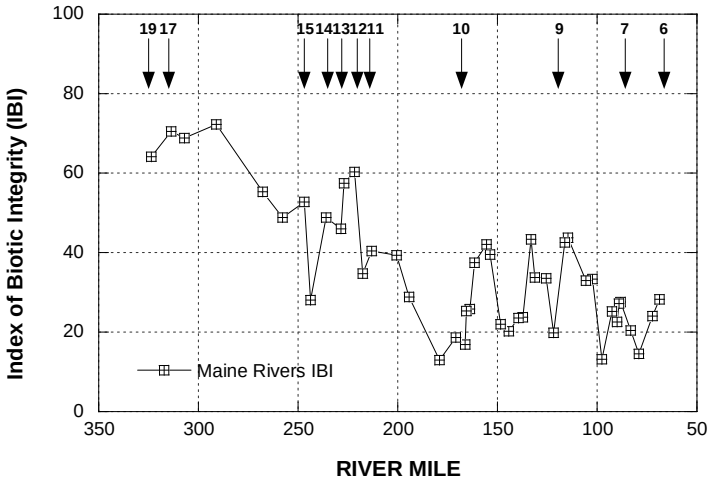


*Figure 7. Interim Maine Rivers Index of Biotic Integrity (IBI; Yoder et al. 2008) results in the upper Connecticut R. between Lake Francis and Turners Falls, 2008.*

This will be examined in pending data analyses associated with the 2009 mainstem sampling and the Region EMAP project.

The Modified Index of Well-Being (MIwb) was also used to analyze the 2008 assemblage results. This index is based on two Shannon diversity indices and both numbers and biomass, hence it acts on different attributes of the data than an IBI. It showed a general decline similar to both IBIs from the upstream most sites downstream to just above the Wilder Dam (Figure 8). However, and unlike the IBIs, the MIwb increased and "recovered" somewhat in the lower part of the 2008 study area. The MIwb reflects numbers and biomass that are contributed by species that do not impact certain IBI metrics so an assemblage that is composed of largely facultative and intermediate tolerant species will affect the MIwb moreso than an IBI.

***Data Appendices***

The data from the 2008 fish assemblage and habitat assessment are presented and summarized in Appendices A-D. Appendix A is a listing of the location of each electrofishing site and a summary of fish species with relative abundance and other data at each location. Appendix B is the Atlantic slope and Maine IBI metric values, scores, and aggregate index score. In addition the Maine IBI table reports the MIwb values. Appendix C reports the Qualitative Habitat Evaluation Index (QHEI) results as the QHEI metric values and overall index score and a QHEI matrix that sorts "good" and "modified" attributes as an interpretive tool for assessing the effect of habitat modifications. Finally Appendix D are the river mile index maps that were used to delineate the river mile (RM) assigned to each sampling location.

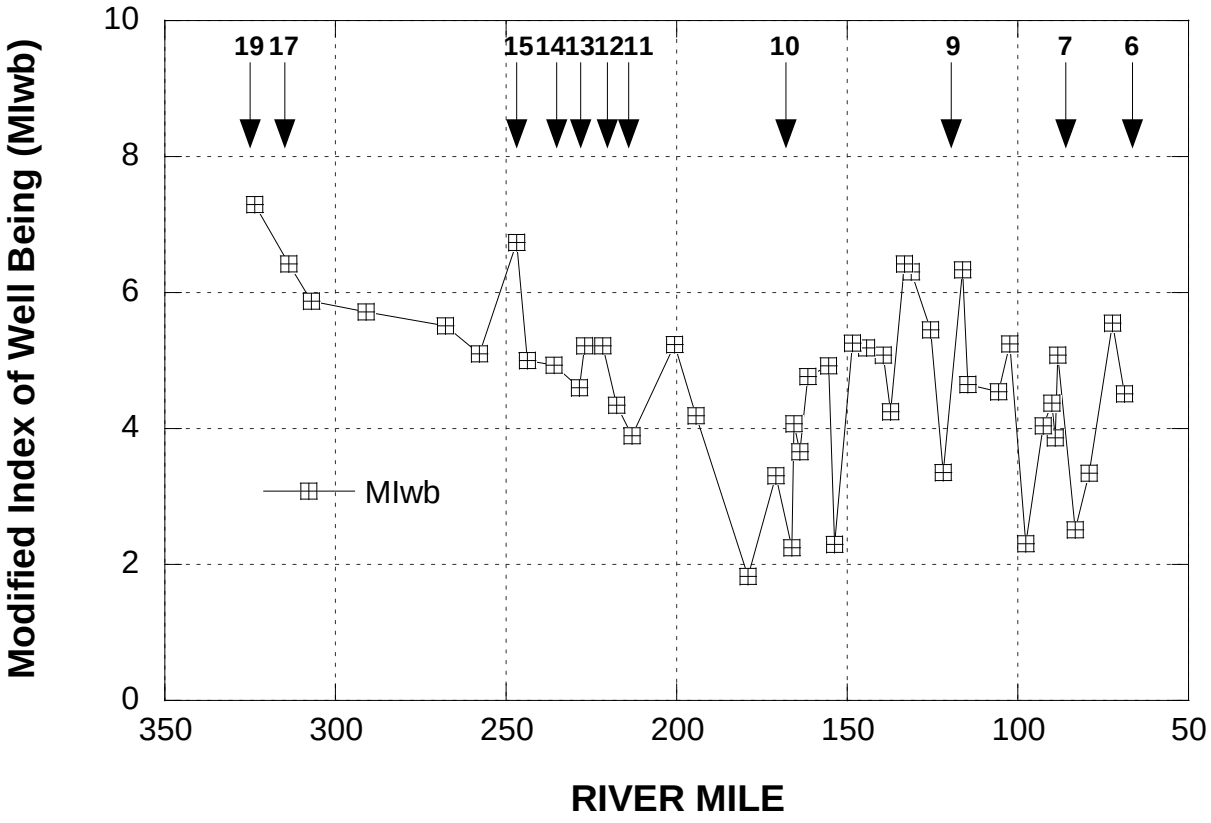


*Figure 8. Modified Index of Well-Being (MIwb) results in the upper Connecticut R. between Lake Francis and Turners Falls, 2008.*

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# Fish Assemblage and Habitat Assessment of the Upper Connecticut River

## Appendix A

## Site Catalogue
## Species Data by Date and Location

## August-October 2008

# Catalog of Fish Samples

| River Mile | Date | Samp Type | Dist Fished | Latitude | Longitude | Draing Area | Source | Invld Samp | No of Species | Location |
|---|---|---|---|---|---|---|---|---|---|---|
| 80-001 | Connecticut River | | | | | | | | | |
| 323.60 | 08/28/2008 | A | 1.000 | 45.05480 | -71.4212 | 180.6 | 99 | | 15 | DST Lake Francis, NH |
| 322.00 | 08/28/2008 | A | 1.000 | 45.02092 | -71.4637 | 259.1 | 99 | | 9 | UST Canaan Dam/UST SR 3 bridge, Stewartstown, NH |
| 313.70 | 08/29/2008 | A | 1.000 | 44.99283 | -71.5370 | 377.2 | 99 | | 14 | DST Canaan Dam, Canaan, VT |
| 307.10 | 08/29/2008 | A | 1.000 | 44.91690 | -71.5024 | 487.8 | 99 | | 13 | UST Colebrook, NH/ DST Rest Stop access |
| 291.00 | 08/30/2008 | A | 1.000 | 44.75410 | -71.6252 | 651.5 | 99 | | 10 | UST M. Stratford, NH bridge |
| 267.80 | 10/08/2008 | A | 1.000 | 44.56217 | -71.5660 | 1194.7 | 99 | | 9 | DST Wyoming Dam (breached), Guildhall, VT |
| 257.90 | 08/30/2008 | A | 1.000 | 44.48413 | -71.6057 | 1330.5 | 99 | | 8 | DST Lancaster WWTP, Lancaster, NH |
| 247.00 | 09/06/2008 | A | 1.000 | 44.41134 | -71.7225 | 1513.5 | 99 | | 14 | DST Gilman Project Dam, Gilman, VT |
| 243.80 | 09/06/2008 | A | 1.000 | 44.39891 | -71.7783 | 1557.1 | 99 | | 11 | Upper end Moore Reservoir, Littleton, NH |
| 235.90 | 09/07/2008 | A | 1.000 | 44.33926 | -71.8817 | 1614.2 | 99 | | 15 | DST Moore Dam, Littleton, NH |
| 228.50 | 10/07/2008 | A | 1.000 | 44.32188 | -72.0101 | 1635.7 | 99 | | 12 | DST Comeford Station Dam |
| 227.10 | 10/07/2008 | A | 1.000 | 44.31081 | -72.0324 | 2145.8 | 99 | | 8 | DST Passumpsic River confluence |
| 221.70 | 10/07/2008 | A | 1.000 | 44.45485 | -72.0586 | 2205.9 | 99 | | 9 | DST McIndoe Station Dam |
| 217.60 | 10/06/2008 | A | 1.000 | 44.20300 | -72.0585 | 2224.7 | 99 | | 10 | DST Ryegate dam |
| 213.10 | 10/06/2008 | A | 1.000 | 44.14986 | -72.0428 | 2749.4 | 99 | | 8 | DST Amonoosuc River confluence/ DST SR 302 bridge |
| 200.70 | 10/05/2008 | A | 1.000 | 44.04798 | -72.0664 | 2824.1 | 99 | | 8 | UST old bridge piers, near Bedell Bridge State Park |
| 194.40 | 10/06/2008 | A | 1.000 | 43.98982 | -72.1142 | 3018.4 | 99 | | 7 | DST Bradford, NH WWTP |
| 179.20 | 10/04/2008 | A | 1.000 | 43.83356 | -72.1809 | 3137.1 | 99 | | 4 | DST N. Thetford boat ramp/ near E. Thetford, VT |
| 170.90 | 10/04/2008 | A | 1.000 | 43.73931 | -72.2496 | 3317.3 | 99 | | 8 | UST Hanover, NH |
| 166.30 | 10/11/2008 | A | 1.000 | 43.69410 | -72.3023 | 3368.5 | 99 | | 8 | DST Hanover, NH WWTP |
| 165.60 | 8 /27/2008 | A | 1.000 | 43.68745 | -72.3031 | 3374.7 | 99 | | 7 | Wilder Dam Impoundment |
| 163.90 | 8 /27/2008 | A | 1.000 | 43.66365 | -72.3068 | 3378.1 | 99 | | 9 | DST Wilder Dam |
| 161.50 | 8 /28/2008 | A | 1.000 | 43.63513 | -72.3280 | 4286.1 | 99 | | 11 | DST White River/ Hartford and New Lebanon WWTP |
| 155.60 | 8 /28/2008 | A | 1.000 | 43.57559 | -72.3782 | 4555.4 | 99 | | 10 | Near N. Hartland, VT |
| 153.80 | 8 /29/2008 | A | 1.000 | 43.54864 | -72.3794 | 4558.1 | 99 | | 5 | North of Windsor near N. Hartland, VT |
| 148.50 | 8 /29/2008 | A | 1.000 | 43.47303 | -72.3853 | 4689.1 | 99 | | 7 | DST WWTP, Windsor, VT |
| 144.40 | 8 /30/2008 | A | 1.000 | 43.42803 | -72.3947 | 4694.1 | 99 | | 9 | South of Windsor near Cornish/Claremont Border |
| 139.50 | 8 /30/2008 | A | 1.000 | 43.36038 | -72.4071 | 4992.1 | 99 | | 9 | DST Claremont WWTP trib. |
| 137.40 | 8 /30/2008 | A | 1.000 | 43.34568 | -72.4007 | 4997.1 | 99 | | 7 | UST Weathersfield |
| 133.20 | 8 /31/2008 | A | 0.700 | 43.28354 | -72.4066 | 5038.1 | 99 | | 10 | DST Glidden Island, NH |
| 131.40 | 8 /31/2008 | A | 0.690 | 43.26219 | -72.4225 | 5051.2 | 99 | | 11 | UST Black River confluence and Charlestown, NH |
| 125.60 | 8 /31/2008 | A | 1.000 | 43.19328 | -72.4439 | 5278.6 | 99 | | 11 | DST Charlestown WWTP |
| 121.90 | 10/03/2008 | A | 1.000 | 43.14709 | -72.4570 | 5410.1 | 99 | | 10 | UST N. Walpole Dam/(dam pool) |
| 116.20 | 09/01/2008 | A | 0.690 | 43.07837 | -72.4375 | 5611.1 | 99 | | 10 | DST Belows Falls Dam |
| 114.70 | 9 /01/2008 | A | 1.000 | 43.06061 | -72.4578 | 5614.1 | 99 | | 12 | DST Bellows Falls WWTP |

| River Mile | Date | Samp Type | Dist Fished | Latitude/Longitude | | Draing Area | Source | Invld Samp | No of Species | Location |
|---|---|---|---|---|---|---|---|---|---|---|
| 80-001 | Connecticut River | | | | | | | | | |
| 105.70 | 9 /02/2008 | A | 1.000 | 42.96852 | -72.4912 | 5705.2 | 99 | | 8 | Near Westminster, VT |
| 102.30 | 9 /02/2008 | A | 1.000 | 42.94139 | -72.5252 | 5731.8 | 99 | | 10 | DST Putney, VT |
| 97.60 | 9 /02/2008 | A | 1.000 | 42.88562 | -72.5515 | 5765.4 | 99 | | 7 | UST West River confluence and Brattleboro, VT |
| 92.50 | 10/03/2008 | A | 1.000 | 42.81555 | -72.5421 | 6244.0 | 99 | | 12 | DST Brattleboro, VT WWTP |
| 90.10 | 10/02/2008 | A | 1.000 | 42.78747 | -72.5142 | 6257.1 | 99 | | 10 | UST Vemont Yankee Entergy thermal discharge |
| 89.00 | 10/02/2008 | A | 0.660 | 42.77442 | -72.5113 | 6258.9 | 99 | | 12 | At and DST mixing zone thermal discharge Vermont Yankee |
| 88.40 | 10/03/2008 | A | 1.000 | 42.76683 | -72.5141 | 6265.2 | 99 | | 11 | DST Vernon Dam Vernon, VT |
| 83.30 | 10/01/2008 | A | 1.000 | 42.73085 | -72.4569 | 6694.5 | 99 | | 5 | UST Northfield, NH WWTP/UST Pauchaug Brook |
| 79.20 | 10/02/2008 | A | 1.000 | 42.68238 | -72.4719 | 6721.2 | 99 | | 8 | UST SR 10 bridge |
| 72.20 | 10/01/2008 | A | 1.000 | 42.59651 | -72.4970 | 7150.1 | 99 | | 13 | UST King of France Bridge, Turner's Falls, MA |
| 68.80 | 09/27/2008 | A | 1.000 | 42.59645 | -72.5437 | 7152.4 | 99 | | 13 | Turners Falls dam pool, Turners Falls, MA |

| River Code: **80-001** | Stream: **Connecticut River** | River Segment Totals |
|---|---|---|
| Mile Range: **68.80** | | Date Range: 08/27/2008 |
| Thru: **323.60** | | Thru: 10/11/2008 |
| Dist Fished: 44.74 km | Basin: Connecticut River | No of Passes: 46 |
| | Lat: 0.000000 | Lat: 0.000000 |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 82 | 1.85 | 1.10 | 0.01 | 0.15 | 6.80 |
| American Shad | N | P | A | | 27 | 0.60 | 0.35 | 0.01 | 0.07 | 9.59 |
| Brown Trout | E | | FS | | 19 | 0.42 | 0.25 | 0.21 | 2.44 | 489.74 |
| Rainbow Trout | E | | FD | | 16 | 0.35 | 0.21 | 0.13 | 1.53 | 369.38 |
| Brook Trout [T] | | | FS | | 28 | 0.61 | 0.36 | 0.11 | 1.34 | 184.86 |
| Round Whitefish | | V | FD | I | 67 | 1.46 | 0.86 | 0.33 | 3.96 | 228.57 |
| Atlantic Salmon | E | | A | | 34 | 0.74 | 0.44 | 0.09 | 1.07 | 121.59 |
| Chain Pickerel | E | P | MG | | 39 | 0.88 | 0.52 | 0.11 | 1.32 | 122.31 |
| Northern Pike | F | P | MG | | 7 | 0.15 | 0.09 | 0.16 | 1.86 | 1,027.14 |
| White Sucker | W | O | FD | T | 652 | 14.87 | 8.80 | 3.19 | 37.98 | 223.91 |
| Longnose Sucker [E] | R | I | FS | | 6 | 0.13 | 0.08 | 0.01 | 0.18 | 113.33 |
| Common Carp | G | O | MG | T | 2 | 0.04 | 0.03 | 0.21 | 2.49 | 4,825.00 |
| Golden Shiner | N | I | MG | T | 97 | 2.11 | 1.25 | 0.02 | 0.29 | 11.41 |
| Longnose Dace | N | I | FS | R | 45 | 0.98 | 0.58 | 0.01 | 0.07 | 5.80 |
| Creek Chub | N | G | FS | T | 1 | 0.02 | 0.01 | 0.00 | 0.00 | 2.00 |
| Common Shiner | N | I | FD | | 633 | 17.79 | 10.53 | 0.03 | 0.37 | 1.87 |
| Spottail Shiner | N | I | MG | P | 600 | 13.69 | 8.10 | 0.06 | 0.70 | 4.36 |
| Mimic Shiner | N | I | FD | I | 2 | 0.04 | 0.03 | 0.00 | 0.00 | 2.00 |
| Northern Redbelly Dace | N | | MG | | 14 | 0.30 | 0.18 | 0.00 | 0.01 | 1.57 |
| Eastern Blacknose Dace | N | | | | 19 | 0.41 | 0.24 | 0.00 | 0.01 | 2.68 |
| Fallfish | N | | FD | | 917 | 20.90 | 12.37 | 0.11 | 1.31 | 4.98 |
| Bridle Shiner | N | I | | | 4 | 0.09 | 0.05 | 0.00 | 0.00 | 4.25 |
| White Catfish | E | I | MG | | 1 | 0.02 | 0.01 | 0.00 | 0.02 | 70.00 |
| Yellow Bullhead | | I | MG | T | 97 | 3.20 | 1.89 | 0.00 | 0.02 | 0.62 |
| Brown Bullhead | | I | MG | T | 22 | 0.48 | 0.28 | 0.05 | 0.60 | 106.36 |
| American Eel [T] | | C | C | | 2 | 0.05 | 0.03 | 0.07 | 0.80 | 1,205.00 |
| Eastern Banded Killifish | E | I | MG | T | 4 | 0.09 | 0.05 | 0.00 | 0.00 | 4.50 |
| Burbot [S] | | | FD | | 26 | 0.57 | 0.33 | 0.02 | 0.24 | 35.96 |
| White Crappie | S | I | MG | | 10 | 0.22 | 0.13 | 0.00 | 0.01 | 2.60 |
| Black Crappie | S | I | MG | | 23 | 0.53 | 0.32 | 0.10 | 1.22 | 198.74 |
| Rock Bass | S | C | MG | | 250 | 5.69 | 3.36 | 0.30 | 3.57 | 53.59 |
| Smallmouth Bass | F | C | MG | M | 840 | 19.24 | 11.38 | 1.54 | 18.31 | 82.24 |
| Largemouth Bass | F | C | MG | | 188 | 4.61 | 2.73 | 0.53 | 6.31 | 115.41 |
| Bluegill Sunfish | S | I | MG | P | 148 | 3.50 | 2.07 | 0.20 | 2.43 | 51.01 |
| Pumpkinseed Sunfish | S | I | MG | P | 397 | 8.87 | 5.25 | 0.16 | 1.91 | 16.95 |
| Redbreast Sunfish | S | | MG | | 2 | 0.05 | 0.03 | 0.02 | 0.18 | 275.00 |
| Hybrid X Sunfish | | | | | 1 | 0.02 | 0.01 | 0.00 | 0.00 | 10.00 |
| Walleye | F | P | MG | | 4 | 0.09 | 0.05 | 0.07 | 0.81 | 783.50 |
| Yellow Perch | | | MG | | 1,526 | 34.11 | 20.19 | 0.52 | 6.13 | 14.76 |
| Tesselated Darter | D | I | | | 138 | 3.31 | 1.96 | 0.01 | 0.09 | 2.39 |
| Slimy Sculpin | | | FS | | 272 | 5.91 | 3.50 | 0.02 | 0.21 | 2.97 |
| | *Stream Total* | | | | 7,262 | 169.00 | | 8.41 | | |
| | *Number of Species* | | | | 40 | | | | | |
| | *Number of Hybrids* | | | | 1 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **08/28/2008** |
| River Mile: **323.60** | Location: DST Lake Francis, NH | Invalid Sample: |
| Time Fished: 2893 sec | Drainage: 180.6 sq mi Depth: 120 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 45.054800 Lat: -71.421240 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Brown Trout | E | | FS | | 1 | 1.00 | 0.71 | 0.75 | 5.39 | 745.00 |
| Rainbow Trout | E | | FD | | 5 | 5.00 | 3.55 | 1.04 | 7.53 | 208.00 |
| Brook Trout [T] | | | FS | | 11 | 11.00 | 7.80 | 3.20 | 23.14 | 290.55 |
| Round Whitefish | | V | FD | I | 14 | 14.00 | 9.93 | 4.89 | 35.40 | 349.29 |
| Atlantic Salmon | E | | A | | 15 | 15.00 | 10.64 | 1.18 | 8.54 | 78.67 |
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 0.71 | 0.48 | 3.47 | 480.00 |
| White Sucker | W | O | FD | T | 23 | 23.00 | 16.31 | 1.63 | 11.80 | 70.87 |
| Longnose Sucker [E] | R | I | FS | | 4 | 4.00 | 2.84 | 0.20 | 1.45 | 50.00 |
| Longnose Dace | N | I | FS | R | 1 | 1.00 | 0.71 | 0.00 | 0.01 | 2.00 |
| Common Shiner | N | I | FD | | 2 | 2.00 | 1.42 | 0.02 | 0.14 | 10.00 |
| Northern Redbelly Dace | N | | MG | | 4 | 4.00 | 2.84 | 0.01 | 0.06 | 2.00 |
| Eastern Blacknose Dace | N | | | | 4 | 4.00 | 2.84 | 0.01 | 0.09 | 3.00 |
| Fallfish | N | | FD | | 11 | 11.00 | 7.80 | 0.13 | 0.94 | 11.82 |
| Brown Bullhead | | I | MG | T | 3 | 3.00 | 2.13 | 0.18 | 1.30 | 60.00 |
| Slimy Sculpin | | | FS | | 42 | 42.00 | 29.79 | 0.10 | 0.72 | 2.38 |
| | *Date Total* | | | | 141 | 141.00 | | 13.81 | | |
| | *Number of Species* | | | | 15 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **08/28/2008** |
| River Mile: **322.00** | Location: UST Canaan Dam/UST SR 3 bridge, | Invalid Sample: |
| Time Fished: 2731 sec | Drainage: 259.1 sq mi Depth: 100 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 45.020920 Lat: -71.463650 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Brook Trout [T] | | | FS | | 17 | 17.00 | 13.18 | 1.98 | 63.89 | 116.47 |
| Atlantic Salmon | E | | A | | 1 | 1.00 | 0.78 | 0.06 | 1.94 | 60.00 |
| White Sucker | W | O | FD | T | 6 | 6.00 | 4.65 | 0.57 | 18.39 | 95.00 |
| Longnose Dace | N | I | FS | R | 9 | 9.00 | 6.98 | 0.07 | 2.26 | 7.78 |
| Eastern Blacknose Dace | N | | | | 9 | 9.00 | 6.98 | 0.02 | 0.77 | 2.67 |
| Fallfish | N | | FD | | 10 | 10.00 | 7.75 | 0.06 | 1.77 | 5.50 |
| Brown Bullhead | | I | MG | T | 7 | 7.00 | 5.43 | 0.08 | 2.58 | 11.43 |
| Burbot [S] | | | FD | | 5 | 5.00 | 3.88 | 0.07 | 2.26 | 14.00 |
| Slimy Sculpin | | | FS | | 65 | 65.00 | 50.39 | 0.19 | 6.13 | 2.92 |
| | *Date Total* | | | | 129 | 129.00 | | 3.10 | | |
| | *Number of Species* | | | | 9 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **08/29/2008** |
| River Mile: **313.70** | Location: DST Canaan Dam, Canaan, VT | Invalid Sample: |
| Time Fished: 3367 sec | Drainage: 377.2 sq mi Depth: 220 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 44.992830 Lat: -71.537010 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Brown Trout | E | | FS | | 5 | 5.00 | 3.88 | 1.36 | 5.53 | 272.00 |
| Rainbow Trout | E | | FD | | 2 | 2.00 | 1.55 | 0.38 | 1.54 | 190.00 |
| Round Whitefish | | V | FD | I | 44 | 44.00 | 34.11 | 9.20 | 37.40 | 209.09 |
| Atlantic Salmon | E | | A | | 2 | 2.00 | 1.55 | 0.08 | 0.33 | 40.00 |
| White Sucker | W | O | FD | T | 24 | 24.00 | 18.60 | 13.27 | 53.94 | 552.92 |
| Golden Shiner | N | I | MG | T | 2 | 2.00 | 1.55 | 0.01 | 0.04 | 5.00 |
| Longnose Dace | N | I | FS | R | 4 | 4.00 | 3.10 | 0.02 | 0.07 | 4.50 |
| Common Shiner | N | I | FD | | 3 | 3.00 | 2.33 | 0.01 | 0.02 | 1.67 |
| Northern Redbelly Dace | N | | MG | | 2 | 2.00 | 1.55 | 0.00 | 0.02 | 2.00 |
| Eastern Blacknose Dace | N | | | | 5 | 5.00 | 3.88 | 0.01 | 0.06 | 2.80 |
| Fallfish | N | | FD | | 5 | 5.00 | 3.88 | 0.03 | 0.12 | 6.00 |
| Brown Bullhead | | I | MG | T | 2 | 2.00 | 1.55 | 0.07 | 0.28 | 35.00 |
| Burbot [S] | | | FD | | 1 | 1.00 | 0.78 | 0.09 | 0.37 | 90.00 |
| Slimy Sculpin | | | FS | | 28 | 28.00 | 21.71 | 0.07 | 0.28 | 2.50 |
| | *Date Total* | | | | 129 | 129.00 | | 24.60 | | |
| | *Number of Species* | | | | 14 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **08/29/2008** |
| River Mile: **307.10** | Location: UST Colebrook, NH/ DST Rest Stop access | Invalid Sample: |
| Time Fished: 3742 sec | Drainage: 487.8 sq mi Depth: 120 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 44.916900 Lat: -71.502360 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Round Whitefish | | V | FD | I | 5 | 5.00 | 2.22 | 0.31 | 1.61 | 62.80 |
| Atlantic Salmon | E | | A | | 3 | 3.00 | 1.33 | 0.00 | 0.02 | 1.33 |
| Chain Pickerel | E | P | MG | | 3 | 3.00 | 1.33 | 0.15 | 0.77 | 50.00 |
| White Sucker | W | O | FD | T | 101 | 101.00 | 44.89 | 18.46 | 94.88 | 182.81 |
| Longnose Dace | N | I | FS | R | 1 | 1.00 | 0.44 | 0.00 | 0.02 | 4.00 |
| Common Shiner | N | I | FD | | 8 | 8.00 | 3.56 | 0.04 | 0.23 | 5.50 |
| Northern Redbelly Dace | N | | MG | | 8 | 8.00 | 3.56 | 0.01 | 0.05 | 1.25 |
| Fallfish | N | | FD | | 82 | 82.00 | 36.44 | 0.28 | 1.45 | 3.44 |
| Burbot [S] | | | FD | | 2 | 2.00 | 0.89 | 0.14 | 0.72 | 70.00 |
| Smallmouth Bass | F | C | MG | M | 2 | 2.00 | 0.89 | 0.00 | 0.02 | 2.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 2 | 2.00 | 0.89 | 0.03 | 0.15 | 15.00 |
| Yellow Perch | | | MG | | 1 | 1.00 | 0.44 | 0.00 | 0.01 | 2.00 |
| Tesselated Darter | D | I | | | 7 | 7.00 | 3.11 | 0.01 | 0.06 | 1.71 |
| | *Date Total* | | | | 225 | 225.00 | | 19.46 | | |
| | *Number of Species* | | | | 13 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | | |
|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **08/30/2008** |
| River Mile: **291.00** | Location: UST M. Stratford, NH bridge | | Invalid Sample: |
| Time Fished: 2436 sec | Drainage: 651.5 sq mi | Depth: 75 cm | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 44.754100 | Lat: -71.625220 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Brown Trout | E | | FS | | 8 | 8.00 | 4.08 | 3.42 | 44.45 | 426.88 |
| Rainbow Trout | E | | FD | | 2 | 2.00 | 1.02 | 0.24 | 3.12 | 120.00 |
| Round Whitefish | | V | FD | I | 4 | 4.00 | 2.04 | 0.91 | 11.85 | 227.50 |
| Atlantic Salmon | E | | A | | 1 | 1.00 | 0.51 | 0.05 | 0.65 | 50.00 |
| White Sucker | W | O | FD | T | 17 | 17.00 | 8.67 | 2.60 | 33.85 | 152.94 |
| Longnose Dace | N | I | FS | R | 25 | 25.00 | 12.76 | 0.08 | 1.07 | 3.28 |
| Fallfish | N | | FD | | 6 | 6.00 | 3.06 | 0.04 | 0.52 | 6.67 |
| Yellow Perch | | | MG | | 1 | 1.00 | 0.51 | 0.01 | 0.13 | 10.00 |
| Tesselated Darter | D | I | | | 6 | 6.00 | 3.06 | 0.01 | 0.13 | 1.67 |
| Slimy Sculpin | | | FS | | 126 | 126.00 | 64.29 | 0.33 | 4.23 | 2.58 |
| | *Date Total* | | | | 196 | 196.00 | | 7.68 | | |
| | *Number of Species* | | | | 10 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | | |
|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **10/08/2008** |
| River Mile: **267.80** | Location: DST Wyoming Dam (breached), Guildhall, VT | | Invalid Sample: |
| Time Fished: 3606 sec | Drainage: 1194.7 sq mi | Depth: 270 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 44.562170 | Lat: -71.566010 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Brown Trout | E | | FS | | 1 | 1.00 | 0.70 | 0.37 | 35.37 | 365.00 |
| White Sucker | W | O | FD | T | 2 | 2.00 | 1.41 | 0.05 | 4.84 | 25.00 |
| Common Shiner | N | I | FD | | 33 | 33.00 | 23.24 | 0.11 | 10.66 | 3.33 |
| Fallfish | N | | FD | | 82 | 82.00 | 57.75 | 0.22 | 21.32 | 2.68 |
| Brown Bullhead | | I | MG | T | 2 | 2.00 | 1.41 | 0.04 | 3.88 | 20.00 |
| Burbot [S] | | | FD | | 6 | 6.00 | 4.23 | 0.14 | 13.08 | 22.50 |
| Pumpkinseed Sunfish | S | I | MG | P | 6 | 6.00 | 4.23 | 0.08 | 7.46 | 12.83 |
| Yellow Perch | | | MG | | 2 | 2.00 | 1.41 | 0.02 | 1.45 | 7.50 |
| Tesselated Darter | D | I | | | 8 | 8.00 | 5.63 | 0.02 | 1.94 | 2.50 |
| | *Date Total* | | | | 142 | 142.00 | | 1.03 | | |
| | *Number of Species* | | | | 9 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **08/30/2008** |
| River Mile: **257.90** | Location: DST Lancaster WWTP, Lancaster, NH | Invalid Sample: |
| Time Fished: 3868 sec | Drainage: 1330.5 sq mi Depth: 280 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 44.484130 Lat: -71.605690 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Chain Pickerel | E | P | MG | | 8 | 8.00 | 6.25 | 0.14 | 2.16 | 17.50 |
| White Sucker | W | O | FD | T | 15 | 15.00 | 11.72 | 5.87 | 90.45 | 391.60 |
| Fallfish | N | | FD | | 29 | 29.00 | 22.66 | 0.07 | 1.08 | 2.41 |
| Burbot [S] | | | FD | | 4 | 4.00 | 3.13 | 0.06 | 0.92 | 15.00 |
| Largemouth Bass | F | C | MG | | 5 | 5.00 | 3.91 | 0.03 | 0.52 | 6.80 |
| Pumpkinseed Sunfish | S | I | MG | P | 33 | 33.00 | 25.78 | 0.21 | 3.30 | 6.48 |
| Yellow Perch | | | MG | | 29 | 29.00 | 22.66 | 0.09 | 1.39 | 3.10 |
| Tesselated Darter | D | I | | | 5 | 5.00 | 3.91 | 0.01 | 0.18 | 2.40 |
| | *Date Total* | | | | 128 | 128.00 | | 6.49 | | |
| | *Number of Species* | | | | 8 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **09/06/2008** |
| River Mile: **247.00** | Location: DST Gilman Project Dam, Gilman, VT | Invalid Sample: |
| Time Fished: 4840 sec | Drainage: 1513.5 sq mi Depth: 150 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 44.411340 Lat: -71.722480 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Brown Trout | E | | FS | | 1 | 1.00 | 0.60 | 0.18 | 0.35 | 180.00 |
| Rainbow Trout | E | | FD | | 2 | 2.00 | 1.19 | 0.42 | 0.82 | 210.00 |
| Atlantic Salmon | E | | A | | 2 | 2.00 | 1.19 | 1.00 | 1.96 | 500.00 |
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 0.60 | 0.34 | 0.67 | 340.00 |
| White Sucker | W | O | FD | T | 44 | 44.00 | 26.19 | 37.13 | 72.71 | 843.86 |
| Longnose Sucker [E] | R | I | FS | | 1 | 1.00 | 0.60 | 0.34 | 0.67 | 340.00 |
| Common Shiner | N | I | FD | | 4 | 4.00 | 2.38 | 0.01 | 0.02 | 2.75 |
| Fallfish | N | | FD | | 11 | 11.00 | 6.55 | 0.37 | 0.72 | 33.27 |
| Burbot [S] | | | FD | | 8 | 8.00 | 4.76 | 0.44 | 0.86 | 55.00 |
| Rock Bass | S | C | MG | | 31 | 31.00 | 18.45 | 4.94 | 9.67 | 159.35 |
| Smallmouth Bass | F | C | MG | M | 14 | 14.00 | 8.33 | 4.74 | 9.27 | 338.29 |
| Pumpkinseed Sunfish | S | I | MG | P | 1 | 1.00 | 0.60 | 0.00 | 0.01 | 4.00 |
| Yellow Perch | | | MG | | 45 | 45.00 | 26.79 | 1.15 | 2.25 | 25.56 |
| Tesselated Darter | D | I | | | 3 | 3.00 | 1.79 | 0.01 | 0.01 | 2.00 |
| | *Date Total* | | | | 168 | 168.00 | | 51.06 | | |
| | *Number of Species* | | | | 14 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **09/06/2008** |
| River Mile: **243.80** | Location: Upper end Moore Reservoir, Littleton, NH | Invalid Sample: |
| Time Fished: 3134 sec | Drainage: 1557.1 sq mi Depth: 999 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 44.398910 Lat: -71.778310 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Northern Pike | F | P | MG | | 1 | 1.00 | 0.18 | 0.27 | 2.16 | 270.00 |
| White Sucker | W | O | FD | T | 4 | 4.00 | 0.74 | 2.24 | 17.93 | 560.00 |
| Golden Shiner | N | I | MG | T | 21 | 21.00 | 3.87 | 0.05 | 0.40 | 2.38 |
| Fallfish | N | | FD | | 18 | 18.00 | 3.31 | 0.09 | 0.72 | 5.00 |
| White Crappie | S | I | MG | | 10 | 10.00 | 1.84 | 0.03 | 0.21 | 2.60 |
| Rock Bass | S | C | MG | | 30 | 30.00 | 5.52 | 0.16 | 1.28 | 5.33 |
| Smallmouth Bass | F | C | MG | M | 33 | 33.00 | 6.08 | 5.49 | 43.94 | 166.36 |
| Largemouth Bass | F | C | MG | | 19 | 19.00 | 3.50 | 0.14 | 1.15 | 7.58 |
| Pumpkinseed Sunfish | S | I | MG | P | 224 | 224.00 | 41.25 | 1.03 | 8.24 | 4.60 |
| Yellow Perch | | | MG | | 182 | 182.00 | 33.52 | 2.99 | 23.93 | 16.43 |
| Tesselated Darter | D | I | | | 1 | 1.00 | 0.18 | 0.00 | 0.03 | 4.00 |
| | *Date Total* | | | | 543 | 543.00 | | 12.49 | | |
| | *Number of Species* | | | | 11 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

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|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **09/07/2008** |
| River Mile: **235.90** | Location: DST Moore Dam, Littleton, NH | | Invalid Sample: |
| Time Fished: 4933 sec | Drainage: 1614.2 sq mi | Depth: 300 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 44.339260 | Lat: -71.881720 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Brown Trout | E | | FS | | 1 | 1.00 | 0.18 | 0.36 | 1.50 | 360.00 |
| Atlantic Salmon | E | | A | | 2 | 2.00 | 0.36 | 1.09 | 4.53 | 545.00 |
| Chain Pickerel | E | P | MG | | 2 | 2.00 | 0.36 | 0.00 | 0.01 | 1.00 |
| White Sucker | W | O | FD | T | 18 | 18.00 | 3.24 | 17.94 | 74.64 | 996.67 |
| Golden Shiner | N | I | MG | T | 7 | 7.00 | 1.26 | 0.57 | 2.37 | 81.43 |
| Common Shiner | N | I | FD | | 3 | 3.00 | 0.54 | 0.01 | 0.02 | 2.00 |
| Mimic Shiner | N | I | FD | I | 1 | 1.00 | 0.18 | 0.00 | 0.01 | 2.00 |
| Fallfish | N | | FD | | 13 | 13.00 | 2.34 | 0.01 | 0.04 | 0.77 |
| Brown Bullhead | | I | MG | T | 1 | 1.00 | 0.18 | 0.13 | 0.54 | 130.00 |
| Rock Bass | S | C | MG | | 8 | 8.00 | 1.44 | 1.22 | 5.08 | 152.75 |
| Smallmouth Bass | F | C | MG | M | 10 | 10.00 | 1.80 | 0.64 | 2.66 | 64.00 |
| Largemouth Bass | F | C | MG | | 2 | 2.00 | 0.36 | 0.04 | 0.17 | 20.00 |
| Yellow Perch | | | MG | | 485 | 485.00 | 87.39 | 2.02 | 8.40 | 4.16 |
| Tesselated Darter | D | I | | | 1 | 1.00 | 0.18 | 0.00 | 0.01 | 2.00 |
| Slimy Sculpin | | | FS | | 1 | 1.00 | 0.18 | 0.00 | 0.01 | 2.00 |
| | *Date Total* | | | | 555 | 555.00 | | 24.04 | | |
| | *Number of Species* | | | | 15 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

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|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/07/2008** |
| River Mile: **228.50** | Location: DST Comeford Station Dam | Invalid Sample: |
| Time Fished: 2862 sec | Drainage: 1635.7 sq mi Depth: 200 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 44.321880 Lat: -72.010120 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Rainbow Trout | E | | FD | | 1 | 1.00 | 0.36 | 1.66 | 25.40 | 1,660.00 |
| White Sucker | W | O | FD | T | 11 | 11.00 | 4.01 | 1.55 | 23.72 | 140.91 |
| Longnose Sucker [E] | R | I | FS | | 1 | 1.00 | 0.36 | 0.14 | 2.14 | 140.00 |
| Golden Shiner | N | I | MG | T | 1 | 1.00 | 0.36 | 0.02 | 0.31 | 20.00 |
| Fallfish | N | | FD | | 2 | 2.00 | 0.73 | 0.03 | 0.46 | 15.00 |
| Brown Bullhead | | I | MG | T | 1 | 1.00 | 0.36 | 0.05 | 0.77 | 50.00 |
| Black Crappie | S | I | MG | | 2 | 2.00 | 0.73 | 0.04 | 0.61 | 20.00 |
| Rock Bass | S | C | MG | | 5 | 5.00 | 1.82 | 0.83 | 12.70 | 166.00 |
| Smallmouth Bass | F | C | MG | M | 4 | 4.00 | 1.46 | 0.60 | 9.10 | 148.75 |
| Pumpkinseed Sunfish | S | I | MG | P | 27 | 27.00 | 9.85 | 0.40 | 6.12 | 14.81 |
| Yellow Perch | | | MG | | 213 | 213.00 | 77.74 | 1.15 | 17.60 | 5.40 |
| Slimy Sculpin | | | FS | | 6 | 6.00 | 2.19 | 0.07 | 1.07 | 11.67 |
| | *Date Total* | | | | 274 | 274.00 | | 6.54 | | |
| | *Number of Species* | | | | 12 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/07/2008** |
| River Mile: **227.10** | Location: DST Passumpsic River confluence | Invalid Sample: |
| Time Fished: 1741 sec | Drainage: 2145.8 sq mi Depth: 250 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 44.310810 Lat: -72.032380 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Brown Trout | E | | FS | | 1 | 1.00 | 2.33 | 2.58 | 12.18 | 2,580.00 |
| Rainbow Trout | E | | FD | | 1 | 1.00 | 2.33 | 0.10 | 0.47 | 100.00 |
| Atlantic Salmon | E | | A | | 5 | 5.00 | 11.63 | 0.46 | 2.15 | 91.00 |
| White Sucker | W | O | FD | T | 27 | 27.00 | 62.79 | 17.49 | 82.54 | 647.78 |
| Longnose Dace | N | I | FS | R | 2 | 2.00 | 4.65 | 0.06 | 0.26 | 27.50 |
| Black Crappie | S | I | MG | | 1 | 1.00 | 2.33 | 0.41 | 1.93 | 410.00 |
| Smallmouth Bass | F | C | MG | M | 2 | 2.00 | 4.65 | 0.05 | 0.24 | 25.00 |
| Slimy Sculpin | | | FS | | 4 | 4.00 | 9.30 | 0.05 | 0.24 | 12.50 |
| | *Date Total* | | | | 43 | 43.00 | | 21.19 | | |
| | *Number of Species* | | | | 8 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | | |
|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **10/07/2008** |
| River Mile: **221.70** | Location: DST McIndoe Station Dam | | Invalid Sample: |
| Time Fished: 3059 sec | Drainage: 2205.9 sq mi | Depth: 160 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 44.454850 | Lat: -72.058560 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Atlantic Salmon | E | | A | | 2 | 2.00 | 2.35 | 0.17 | 2.73 | 82.50 |
| White Sucker | W | O | FD | T | 13 | 13.00 | 15.29 | 4.40 | 72.85 | 338.46 |
| Common Shiner | N | I | FD | | 2 | 2.00 | 2.35 | 0.06 | 0.99 | 30.00 |
| Fallfish | N | | FD | | 51 | 51.00 | 60.00 | 0.50 | 8.28 | 9.80 |
| Rock Bass | S | C | MG | | 7 | 7.00 | 8.24 | 0.11 | 1.82 | 15.71 |
| Smallmouth Bass | F | C | MG | M | 6 | 6.00 | 7.06 | 0.79 | 13.08 | 131.67 |
| Bluegill Sunfish | S | I | MG | P | 1 | 1.00 | 1.18 | 0.01 | 0.08 | 5.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 1 | 1.00 | 1.18 | 0.01 | 0.13 | 8.00 |
| Yellow Perch | | | MG | | 2 | 2.00 | 2.35 | 0.00 | 0.03 | 1.00 |
| | *Date Total* | | | | 85 | 85.00 | | 6.04 | | |
| | *Number of Species* | | | | 9 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/06/2008** |
| River Mile: **217.60** | Location: DST Ryegate dam | Invalid Sample: |
| Time Fished: 2645 sec | Drainage: 2224.7 sq mi Depth: 310 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 44.203000 Lat: -72.058510 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| White Sucker | W | O | FD | T | 2 | 2.00 | 5.41 | 1.08 | 37.42 | 537.50 |
| Longnose Dace | N | I | FS | R | 1 | 1.00 | 2.70 | 0.01 | 0.35 | 10.00 |
| Common Shiner | N | I | FD | | 1 | 1.00 | 2.70 | 0.01 | 0.28 | 8.00 |
| Brown Bullhead | | I | MG | T | 3 | 3.00 | 8.11 | 0.11 | 3.83 | 36.67 |
| Rock Bass | S | C | MG | | 11 | 11.00 | 29.73 | 0.65 | 22.62 | 59.09 |
| Smallmouth Bass | F | C | MG | M | 1 | 1.00 | 2.70 | 0.03 | 0.87 | 25.00 |
| Largemouth Bass | F | C | MG | | 2 | 2.00 | 5.41 | 0.14 | 4.87 | 70.00 |
| Bluegill Sunfish | S | I | MG | P | 6 | 6.00 | 16.22 | 0.33 | 11.49 | 55.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 8 | 8.00 | 21.62 | 0.50 | 17.40 | 62.50 |
| Yellow Perch | | | MG | | 2 | 2.00 | 5.41 | 0.03 | 0.87 | 12.50 |
| | *Date Total* | | | | 37 | 37.00 | | 2.87 | | |
| | *Number of Species* | | | | 10 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/06/2008** |
| River Mile: **213.10** | Location: DST Amonoosuc River confluence/ DST SR | Invalid Sample: |
| Time Fished: 2128 sec | Drainage: 2749.4 sq mi Depth: 570 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 44.149860 Lat: -72.042750 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| White Sucker | W | O | FD | T | 8 | 8.00 | 21.62 | 1.21 | 87.13 | 150.63 |
| Longnose Dace | N | I | FS | R | 2 | 2.00 | 5.41 | 0.02 | 1.45 | 10.00 |
| Fallfish | N | | FD | | 7 | 7.00 | 18.92 | 0.03 | 2.17 | 4.29 |
| Eastern Banded Killifish | E | I | MG | T | 1 | 1.00 | 2.70 | 0.01 | 0.72 | 10.00 |
| Smallmouth Bass | F | C | MG | M | 13 | 13.00 | 35.14 | 0.08 | 5.42 | 5.77 |
| Bluegill Sunfish | S | I | MG | P | 1 | 1.00 | 2.70 | 0.01 | 0.72 | 10.00 |
| Yellow Perch | | | MG | | 3 | 3.00 | 8.11 | 0.02 | 1.45 | 6.67 |
| Tesselated Darter | D | I | | | 2 | 2.00 | 5.41 | 0.01 | 0.94 | 6.50 |
| *Date Total* | | | | | 37 | 37.00 | | 1.38 | | |
| *Number of Species* | | | | | 8 | | | | | |
| *Number of Hybrids* | | | | | 0 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| River Code: | **80-001** | Stream: | **Connecticut River** | Sample Date: | **10/05/2008** |
| River Mile: | **200.70** | Location: | UST old bridge piers, near Bedell Bridge State | Invalid Sample: | |
| Time Fished: | 2427 sec | Drainage: | 2824.1 sq mi Depth: 400 | Data Source: | 99 |
| Dist Fished: | 1.00 km | Basin: | Connecticut River Flow: C | Sampler Type: | A |
| | | Lat: | 44.047980 Lat: -72.066360 | | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| White Sucker | W | O | FD | T | 4 | 4.00 | 6.56 | 0.03 | 15.63 | 7.50 |
| Spottail Shiner | N | I | MG | P | 20 | 20.00 | 32.79 | 0.02 | 12.50 | 1.20 |
| Fallfish | N | | FD | | 24 | 24.00 | 39.34 | 0.03 | 15.63 | 1.25 |
| Brown Bullhead | | I | MG | T | 1 | 1.00 | 1.64 | 0.04 | 20.83 | 40.00 |
| Bluegill Sunfish | S | I | MG | P | 2 | 2.00 | 3.28 | 0.01 | 4.17 | 4.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 4 | 4.00 | 6.56 | 0.02 | 10.42 | 5.00 |
| Yellow Perch | | | MG | | 2 | 2.00 | 3.28 | 0.02 | 10.42 | 10.00 |
| Tesselated Darter | D | I | | | 4 | 4.00 | 6.56 | 0.02 | 10.42 | 5.00 |
| | *Date Total* | | | | 61 | 61.00 | | 0.19 | | |
| | *Number of Species* | | | | 8 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/06/2008** |
| River Mile: **194.40** | Location: DST Bradford, NH WWTP | Invalid Sample: |
| Time Fished: 2298 sec | Drainage: 3018.4 sq mi Depth: 350 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.989820 Lat: -72.114220 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Spottail Shiner | N | I | MG | P | 3 | 3.00 | 7.50 | 0.01 | 1.56 | 4.00 |
| Fallfish | N | | FD | | 16 | 16.00 | 40.00 | 0.03 | 3.25 | 1.56 |
| Rock Bass | S | C | MG | | 3 | 3.00 | 7.50 | 0.07 | 9.09 | 23.33 |
| Smallmouth Bass | F | C | MG | M | 3 | 3.00 | 7.50 | 0.54 | 70.13 | 180.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 7 | 7.00 | 17.50 | 0.08 | 9.74 | 10.71 |
| Yellow Perch | | | MG | | 4 | 4.00 | 10.00 | 0.03 | 3.25 | 6.25 |
| Tesselated Darter | D | I | | | 4 | 4.00 | 10.00 | 0.02 | 2.99 | 5.75 |
| | *Date Total* | | | | 40 | 40.00 | | 0.77 | | |
| | *Number of Species* | | | | 7 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/04/2008** |
| River Mile: **179.20** | Location: DST N. Thetford boat ramp/ near E. Thetford, | Invalid Sample: |
| Time Fished: 2100 sec | Drainage: 3137.1 sq mi Depth: 610 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.833560 Lat: -72.180910 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Rock Bass | S | C | MG | | 1 | 1.00 | 5.88 | 0.06 | 10.89 | 55.00 |
| Smallmouth Bass | F | C | MG | M | 1 | 1.00 | 5.88 | 0.28 | 55.45 | 280.00 |
| Largemouth Bass | F | C | MG | | 2 | 2.00 | 11.76 | 0.02 | 2.97 | 7.50 |
| Yellow Perch | | | MG | | 13 | 13.00 | 76.47 | 0.16 | 30.69 | 11.92 |
| | *Date Total* | | | | 17 | 17.00 | | 0.51 | | |
| | *Number of Species* | | | | 4 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/04/2008** |
| River Mile: **170.90** | Location: UST Hanover, NH | Invalid Sample: |
| Time Fished: 2378 sec | Drainage: 3317.3 sq mi Depth: 730 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.739310 Lat: -72.249600 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Chain Pickerel | E | P | MG | | 2 | 2.00 | 4.65 | 0.09 | 10.47 | 45.00 |
| Mimic Shiner | N | I | FD | I | 1 | 1.00 | 2.33 | 0.00 | 0.23 | 2.00 |
| Bridle Shiner | N | I | | | 4 | 4.00 | 9.30 | 0.02 | 1.98 | 4.25 |
| Rock Bass | S | C | MG | | 1 | 1.00 | 2.33 | 0.00 | 0.47 | 4.00 |
| Largemouth Bass | F | C | MG | | 7 | 7.00 | 16.28 | 0.05 | 5.81 | 7.14 |
| Bluegill Sunfish | S | I | MG | P | 10 | 10.00 | 23.26 | 0.02 | 1.98 | 1.70 |
| Pumpkinseed Sunfish | S | I | MG | P | 1 | 1.00 | 2.33 | 0.05 | 5.81 | 50.00 |
| Yellow Perch | | | MG | | 17 | 17.00 | 39.53 | 0.63 | 73.26 | 37.06 |
| | *Date Total* | | | | 43 | 43.00 | | 0.86 | | |
| | *Number of Species* | | | | 8 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | | |
|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **10/11/2008** |
| River Mile: **166.30** | Location: DST Hanover, NH WWTP | | Invalid Sample: |
| Time Fished: 2920 sec | Drainage: 3368.5 sq mi | Depth: 360 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 43.694100 | Lat: -72.302250 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 2.00 | 0.04 | 0.93 | 40.00 |
| Spottail Shiner | N | I | MG | P | 1 | 1.00 | 2.00 | 0.00 | 0.09 | 4.00 |
| Brown Bullhead | | I | MG | T | 1 | 1.00 | 2.00 | 0.82 | 19.13 | 820.00 |
| Eastern Banded Killifish | E | I | MG | T | 1 | 1.00 | 2.00 | 0.00 | 0.09 | 4.00 |
| Rock Bass | S | C | MG | | 2 | 2.00 | 4.00 | 0.22 | 5.20 | 111.50 |
| Smallmouth Bass | F | C | MG | M | 5 | 5.00 | 10.00 | 2.47 | 57.51 | 493.00 |
| Largemouth Bass | F | C | MG | | 3 | 3.00 | 6.00 | 0.02 | 0.47 | 6.67 |
| Yellow Perch | | | MG | | 36 | 36.00 | 72.00 | 0.71 | 16.57 | 19.72 |
| | *Date Total* | | | | 50 | 50.00 | | 4.29 | | |
| | *Number of Species* | | | | 8 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /27/2008** |
| River Mile: **165.60** | Location: Wilder Dam Impoundment | Invalid Sample: |
| Time Fished: 4182 sec | Drainage: 3374.7 sq mi Depth: 200 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.687450 Lat: -72.303090 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Northern Pike | F | P | MG | | 2 | 2.00 | 4.88 | 3.18 | 40.54 | 1,590.00 |
| White Sucker | W | O | FD | T | 2 | 2.00 | 4.88 | 0.10 | 1.27 | 50.00 |
| Common Shiner | N | I | FD | | 5 | 5.00 | 12.20 | 0.01 | 0.13 | 2.00 |
| Black Crappie | S | I | MG | | 8 | 8.00 | 19.51 | 1.97 | 25.05 | 245.63 |
| Smallmouth Bass | F | C | MG | M | 3 | 3.00 | 7.32 | 1.06 | 13.51 | 353.33 |
| Largemouth Bass | F | C | MG | | 6 | 6.00 | 14.63 | 0.04 | 0.51 | 6.67 |
| Yellow Perch | | | MG | | 15 | 15.00 | 36.59 | 1.49 | 18.99 | 99.33 |
| | *Date Total* | | | | 41 | 41.00 | | 7.85 | | |
| | *Number of Species* | | | | 7 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /27/2008** |
| River Mile: **163.90** | Location: DST Wilder Dam | Invalid Sample: |
| Time Fished: 3922 sec | Drainage: 3378.1 sq mi Depth: 400 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.663650 Lat: -72.306800 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 3.85 | 0.52 | 5.57 | 520.00 |
| Common Shiner | N | I | FD | | 6 | 6.00 | 23.08 | 0.02 | 0.21 | 3.33 |
| Black Crappie | S | I | MG | | 1 | 1.00 | 3.85 | 0.85 | 9.10 | 850.00 |
| Rock Bass | S | C | MG | | 1 | 1.00 | 3.85 | 0.14 | 1.50 | 140.00 |
| Smallmouth Bass | F | C | MG | M | 12 | 12.00 | 46.15 | 6.01 | 64.34 | 501.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 1 | 1.00 | 3.85 | 0.15 | 1.61 | 150.00 |
| Walleye | F | P | MG | | 2 | 2.00 | 7.69 | 1.65 | 17.66 | 825.00 |
| Yellow Perch | | | MG | | 1 | 1.00 | 3.85 | 0.00 | 0.01 | 1.00 |
| Tesselated Darter | D | I | | | 1 | 1.00 | 3.85 | 0.00 | 0.01 | 1.00 |
| | *Date Total* | | | | 26 | 26.00 | | 9.34 | | |
| | *Number of Species* | | | | 9 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | | |
|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **8 /28/2008** |
| River Mile: **161.50** | Location: DST White River/ Hartford and New Lebanon | | Invalid Sample: |
| Time Fished: 3900 sec | Drainage: 4286.1 sq mi | Depth: 300 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 43.635130 | Lat: -72.327960 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 3 | 3.00 | 1.64 | 0.02 | 0.46 | 6.67 |
| White Sucker | W | O | FD | T | 74 | 74.00 | 40.44 | 1.16 | 26.40 | 15.68 |
| Common Shiner | N | I | FD | | 12 | 12.00 | 6.56 | 0.04 | 0.91 | 3.33 |
| Fallfish | N | | FD | | 5 | 5.00 | 2.73 | 0.05 | 1.14 | 10.00 |
| Eastern Banded Killifish | E | I | MG | T | 1 | 1.00 | 0.55 | 0.00 | 0.05 | 2.00 |
| Black Crappie | S | I | MG | | 1 | 1.00 | 0.55 | 0.03 | 0.68 | 30.00 |
| Rock Bass | S | C | MG | | 9 | 9.00 | 4.92 | 0.06 | 1.37 | 6.67 |
| Smallmouth Bass | F | C | MG | M | 52 | 52.00 | 28.42 | 2.95 | 67.14 | 56.73 |
| Pumpkinseed Sunfish | S | I | MG | P | 20 | 20.00 | 10.93 | 0.07 | 1.52 | 3.33 |
| Yellow Perch | | | MG | | 4 | 4.00 | 2.19 | 0.01 | 0.30 | 3.33 |
| Tesselated Darter | D | I | | | 2 | 2.00 | 1.09 | 0.00 | 0.05 | 1.00 |
| | *Date Total* | | | | 183 | 183.00 | | 4.39 | | |
| | *Number of Species* | | | | 11 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /28/2008** |
| River Mile: **155.60** | Location: Near N. Hartland, VT | Invalid Sample: |
| Time Fished: 4461 sec | Drainage: 4555.4 sq mi Depth: 300 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.575590 Lat: -72.378170 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Northern Pike | F | P | MG | | 2 | 2.00 | 1.71 | 0.52 | 5.51 | 260.00 |
| White Sucker | W | O | FD | T | 23 | 23.00 | 19.66 | 2.23 | 23.57 | 96.78 |
| Creek Chub | N | G | FS | T | 1 | 1.00 | 0.85 | 0.00 | 0.02 | 2.00 |
| Common Shiner | N | I | FD | | 3 | 3.00 | 2.56 | 0.00 | 0.02 | 0.67 |
| Fallfish | N | | FD | | 68 | 68.00 | 58.12 | 0.21 | 2.22 | 3.09 |
| Eastern Banded Killifish | E | I | MG | T | 1 | 1.00 | 0.85 | 0.00 | 0.02 | 2.00 |
| Rock Bass | S | C | MG | | 1 | 1.00 | 0.85 | 0.00 | 0.01 | 1.00 |
| Smallmouth Bass | F | C | MG | M | 11 | 11.00 | 9.40 | 6.48 | 68.55 | 588.64 |
| Largemouth Bass | F | C | MG | | 1 | 1.00 | 0.85 | 0.00 | 0.03 | 3.00 |
| Tesselated Darter | D | I | | | 6 | 6.00 | 5.13 | 0.00 | 0.04 | 0.67 |
| | *Date Total* | | | | 117 | 117.00 | | 9.45 | | |
| | *Number of Species* | | | | 10 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /29/2008** |
| River Mile: **153.80** | Location: North of Windsor near N. Hartland, VT | Invalid Sample: |
| Time Fished: 4100 sec | Drainage: 4558.1 sq mi Depth: | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.548640 Lat: -72.379400 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 2 | 2.00 | 11.11 | 0.01 | 0.08 | 4.00 |
| Rainbow Trout | E | | FD | | 2 | 2.00 | 11.11 | 1.85 | 19.11 | 925.00 |
| Atlantic Salmon | E | | A | | 1 | 1.00 | 5.56 | 0.05 | 0.52 | 50.00 |
| Eastern Blacknose Dace | N | | | | 1 | 1.00 | 5.56 | 0.00 | 0.01 | 1.00 |
| Smallmouth Bass | F | C | MG | M | 12 | 12.00 | 66.67 | 7.77 | 80.28 | 647.58 |
| | *Date Total* | | | | 18 | 18.00 | | 9.68 | | |
| | *Number of Species* | | | | 5 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | | |
|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **8 /29/2008** |
| River Mile: **148.50** | Location: DST WWTP, Windsor, VT | | Invalid Sample: |
| Time Fished: 3912 sec | Drainage: 4689.1 sq mi | Depth: 300 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 43.473030 | Lat: -72.385290 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 4 | 4.00 | 1.56 | 0.04 | 0.33 | 10.00 |
| White Sucker | W | O | FD | T | 16 | 16.00 | 6.25 | 8.02 | 65.36 | 500.94 |
| Fallfish | N | | FD | | 86 | 86.00 | 33.59 | 0.22 | 1.79 | 2.56 |
| Rock Bass | S | C | MG | | 8 | 8.00 | 3.13 | 0.85 | 6.93 | 106.25 |
| Smallmouth Bass | F | C | MG | M | 128 | 128.00 | 50.00 | 3.02 | 24.63 | 23.59 |
| Yellow Perch | | | MG | | 9 | 9.00 | 3.52 | 0.11 | 0.88 | 12.00 |
| Tesselated Darter | D | I | | | 5 | 5.00 | 1.95 | 0.01 | 0.08 | 2.00 |
| | *Date Total* | | | | 256 | 256.00 | | 12.26 | | |
| | *Number of Species* | | | | 7 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /30/2008** |
| River Mile: **144.40** | Location: South of Windsor near Cornish/Claremont | Invalid Sample: |
| Time Fished: 4019 sec | Drainage: 4694.1 sq mi Depth: 400 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.428030 Lat: -72.394740 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 4 | 4.00 | 1.35 | 0.03 | 0.99 | 6.25 |
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 0.34 | 0.24 | 9.49 | 240.00 |
| White Sucker | W | O | FD | T | 33 | 33.00 | 11.15 | 0.07 | 2.57 | 1.97 |
| Fallfish | N | | FD | | 102 | 102.00 | 34.46 | 0.16 | 6.13 | 1.52 |
| Rock Bass | S | C | MG | | 34 | 34.00 | 11.49 | 0.74 | 29.10 | 21.64 |
| Smallmouth Bass | F | C | MG | M | 98 | 98.00 | 33.11 | 1.04 | 41.12 | 10.61 |
| Redbreast Sunfish | S | | MG | | 1 | 1.00 | 0.34 | 0.20 | 7.91 | 200.00 |
| Yellow Perch | | | MG | | 10 | 10.00 | 3.38 | 0.03 | 1.19 | 3.00 |
| Tesselated Darter | D | I | | | 13 | 13.00 | 4.39 | 0.04 | 1.50 | 2.92 |
| | *Date Total* | | | | 296 | 296.00 | | 2.53 | | |
| | *Number of Species* | | | | 9 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /30/2008** |
| River Mile: **139.50** | Location: DST Claremont WWTP trib. | Invalid Sample: |
| Time Fished: 4062 sec | Drainage: 4992.1 sq mi Depth: 300 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.360380 Lat: -72.407130 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 3 | 3.00 | 1.49 | 0.02 | 0.62 | 6.67 |
| Northern Pike | F | P | MG | | 1 | 1.00 | 0.50 | 0.08 | 2.50 | 80.00 |
| White Sucker | W | O | FD | T | 47 | 47.00 | 23.38 | 0.60 | 18.73 | 12.77 |
| Fallfish | N | | FD | | 18 | 18.00 | 8.96 | 0.06 | 1.87 | 3.33 |
| Rock Bass | S | C | MG | | 26 | 26.00 | 12.94 | 1.07 | 33.40 | 41.15 |
| Smallmouth Bass | F | C | MG | M | 77 | 77.00 | 38.31 | 1.28 | 39.95 | 16.62 |
| Walleye | F | P | MG | | 1 | 1.00 | 0.50 | 0.00 | 0.12 | 4.00 |
| Yellow Perch | | | MG | | 7 | 7.00 | 3.48 | 0.04 | 1.25 | 5.71 |
| Tesselated Darter | D | I | | | 21 | 21.00 | 10.45 | 0.05 | 1.56 | 2.38 |
| | *Date Total* | | | | 201 | 201.00 | | 3.20 | | |
| | *Number of Species* | | | | 9 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /30/2008** |
| River Mile: **137.40** | Location: UST Weathersfield | Invalid Sample: |
| Time Fished: 3702 sec | Drainage: 4997.1 sq mi Depth: 400 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.345680 Lat: -72.400690 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 19 | 19.00 | 13.10 | 0.11 | 4.32 | 5.79 |
| White Sucker | W | O | FD | T | 21 | 21.00 | 14.48 | 0.09 | 3.34 | 4.05 |
| Fallfish | N | | FD | | 12 | 12.00 | 8.28 | 0.11 | 4.32 | 9.17 |
| Rock Bass | S | C | MG | | 9 | 9.00 | 6.21 | 0.09 | 3.69 | 10.44 |
| Smallmouth Bass | F | C | MG | M | 67 | 67.00 | 46.21 | 2.06 | 80.78 | 30.67 |
| Yellow Perch | | | MG | | 5 | 5.00 | 3.45 | 0.06 | 2.36 | 12.00 |
| Tesselated Darter | D | I | | | 12 | 12.00 | 8.28 | 0.03 | 1.18 | 2.50 |
| | *Date Total* | | | | 145 | 145.00 | | 2.54 | | |
| | *Number of Species* | | | | 7 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /31/2008** |
| River Mile: **133.20** | Location: DST Glidden Island, NH | Invalid Sample: |
| Time Fished: 4128 sec | Drainage: 5038.1 sq mi Depth: 100 | Data Source: 99 |
| Dist Fished: 0.70 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.283540 Lat: -72.406570 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| White Sucker | W | O | FD | T | 42 | 60.00 | 11.14 | 1.03 | 35.62 | 17.14 |
| Common Shiner | N | I | FD | | 253 | 361.43 | 67.11 | 0.46 | 15.84 | 1.26 |
| Fallfish | N | | FD | | 15 | 21.43 | 3.98 | 0.29 | 9.91 | 13.33 |
| Rock Bass | S | C | MG | | 11 | 15.72 | 2.92 | 0.39 | 13.37 | 24.55 |
| Smallmouth Bass | F | C | MG | M | 28 | 40.00 | 7.43 | 0.13 | 4.47 | 3.21 |
| Largemouth Bass | F | C | MG | | 6 | 8.57 | 1.59 | 0.05 | 1.73 | 5.83 |
| Pumpkinseed Sunfish | S | I | MG | P | 1 | 1.43 | 0.27 | 0.01 | 0.49 | 10.00 |
| Redbreast Sunfish | S | | MG | | 1 | 1.43 | 0.27 | 0.50 | 17.33 | 350.00 |
| Yellow Perch | | | MG | | 3 | 4.29 | 0.80 | 0.01 | 0.24 | 1.67 |
| Tesselated Darter | D | I | | | 17 | 24.29 | 4.51 | 0.03 | 1.00 | 1.18 |
| | *Date Total* | | | | 377 | 538.57 | | 2.89 | | |
| | *Number of Species* | | | | 10 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /31/2008** |
| River Mile: **131.40** | Location: UST Black River confluence and Charlestown, | Invalid Sample: |
| Time Fished: 4152 sec | Drainage: 5051.2 sq mi Depth: 300 | Data Source: 99 |
| Dist Fished: 0.69 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.262190 Lat: -72.422530 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 2 | 2.90 | 0.59 | 0.01 | 0.08 | 5.00 |
| White Sucker | W | O | FD | T | 18 | 26.09 | 5.34 | 1.88 | 11.07 | 72.22 |
| Common Shiner | N | I | FD | | 111 | 160.87 | 32.94 | 0.23 | 1.36 | 1.44 |
| Fallfish | N | | FD | | 14 | 20.29 | 4.15 | 0.26 | 1.53 | 12.86 |
| Rock Bass | S | C | MG | | 8 | 11.59 | 2.37 | 0.80 | 4.72 | 69.38 |
| Smallmouth Bass | F | C | MG | M | 18 | 26.09 | 5.34 | 0.32 | 1.87 | 12.22 |
| Largemouth Bass | F | C | MG | | 42 | 60.87 | 12.46 | 3.13 | 18.39 | 51.43 |
| Bluegill Sunfish | S | I | MG | P | 17 | 24.64 | 5.04 | 5.90 | 34.68 | 239.59 |
| Pumpkinseed Sunfish | S | I | MG | P | 11 | 15.94 | 3.26 | 1.79 | 10.52 | 112.36 |
| Yellow Perch | | | MG | | 84 | 121.74 | 24.93 | 2.65 | 15.58 | 21.79 |
| Tesselated Darter | D | I | | | 12 | 17.39 | 3.56 | 0.03 | 0.17 | 1.67 |
| | *Date Total* | | | | 337 | 488.41 | | 17.02 | | |
| | *Number of Species* | | | | 11 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **8 /31/2008** |
| River Mile: **125.60** | Location: DST Charlestown WWTP | Invalid Sample: |
| Time Fished: 3641 sec | Drainage: 5278.6 sq mi Depth: 200 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.193280 Lat: -72.443930 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 0.75 | 0.18 | 7.58 | 180.00 |
| White Sucker | W | O | FD | T | 1 | 1.00 | 0.75 | 0.01 | 0.21 | 5.00 |
| Golden Shiner | N | I | MG | T | 1 | 1.00 | 0.75 | 0.02 | 0.84 | 20.00 |
| Common Shiner | N | I | FD | | 51 | 51.00 | 38.35 | 0.10 | 4.21 | 1.96 |
| Fallfish | N | | FD | | 6 | 6.00 | 4.51 | 0.05 | 1.89 | 7.50 |
| Rock Bass | S | C | MG | | 14 | 14.00 | 10.53 | 0.31 | 12.84 | 21.79 |
| Smallmouth Bass | F | C | MG | M | 21 | 21.00 | 15.79 | 0.05 | 2.11 | 2.38 |
| Largemouth Bass | F | C | MG | | 11 | 11.00 | 8.27 | 0.10 | 4.21 | 9.09 |
| Bluegill Sunfish | S | I | MG | P | 3 | 3.00 | 2.26 | 0.21 | 8.84 | 70.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 2 | 2.00 | 1.50 | 0.45 | 18.95 | 225.00 |
| Yellow Perch | | | MG | | 22 | 22.00 | 16.54 | 0.91 | 38.32 | 41.36 |
| | *Date Total* | | | | 133 | 133.00 | | 2.38 | | |
| | *Number of Species* | | | | 11 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | | |
|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **10/03/2008** |
| River Mile: **121.90** | Location: UST N. Walpole Dam/(dam pool) | | Invalid Sample: |
| Time Fished: 2484 sec | Drainage: 5410.1 sq mi | Depth: 360 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 43.147090 | Lat: -72.457030 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Chain Pickerel | E | P | MG | | 4 | 4.00 | 3.60 | 0.41 | 3.82 | 102.50 |
| Northern Pike | F | P | MG | | 1 | 1.00 | 0.90 | 3.14 | 29.22 | 3,140.00 |
| Golden Shiner | N | I | MG | T | 16 | 16.00 | 14.41 | 0.05 | 0.47 | 3.13 |
| Spottail Shiner | N | I | MG | P | 14 | 14.00 | 12.61 | 0.03 | 0.28 | 2.14 |
| Brown Bullhead | | I | MG | T | 1 | 1.00 | 0.90 | 0.82 | 7.63 | 820.00 |
| Smallmouth Bass | F | C | MG | M | 1 | 1.00 | 0.90 | 0.56 | 5.21 | 560.00 |
| Largemouth Bass | F | C | MG | | 11 | 11.00 | 9.91 | 4.04 | 37.60 | 367.27 |
| Bluegill Sunfish | S | I | MG | P | 42 | 42.00 | 37.84 | 0.07 | 0.65 | 1.67 |
| Pumpkinseed Sunfish | S | I | MG | P | 3 | 3.00 | 2.70 | 0.66 | 6.14 | 220.00 |
| Yellow Perch | | | MG | | 18 | 18.00 | 16.22 | 0.97 | 8.98 | 53.61 |
| | *Date Total* | | | | 111 | 111.00 | | 10.75 | | |
| | *Number of Species* | | | | 10 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

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|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **09/01/2008** |
| River Mile: **116.20** | Location: DST Belows Falls Dam | Invalid Sample: |
| Time Fished: 4214 sec | Drainage: 5611.1 sq mi Depth: 200 | Data Source: 99 |
| Dist Fished: 0.69 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 43.078370 Lat: -72.437460 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 5 | 7.25 | 2.28 | 0.04 | 1.17 | 6.00 |
| Brown Trout | E | | FS | | 1 | 1.45 | 0.46 | 0.44 | 11.86 | 300.00 |
| Chain Pickerel | E | P | MG | | 3 | 4.35 | 1.37 | 1.13 | 30.82 | 260.00 |
| White Sucker | W | O | FD | T | 10 | 14.49 | 4.57 | 0.20 | 5.51 | 14.00 |
| Common Shiner | N | I | FD | | 60 | 86.96 | 27.40 | 0.17 | 4.75 | 2.00 |
| Fallfish | N | | FD | | 71 | 102.90 | 32.42 | 1.06 | 28.85 | 10.28 |
| Rock Bass | S | C | MG | | 6 | 8.70 | 2.74 | 0.19 | 5.13 | 21.67 |
| Smallmouth Bass | F | C | MG | M | 53 | 76.81 | 24.20 | 0.33 | 9.08 | 4.34 |
| Yellow Perch | | | MG | | 6 | 8.70 | 2.74 | 0.07 | 1.96 | 8.33 |
| Tesselated Darter | D | I | | | 4 | 5.80 | 1.83 | 0.03 | 0.79 | 5.00 |
| | *Date Total* | | | | 219 | 317.39 | | 3.67 | | |
| | *Number of Species* | | | | 10 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

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|---|---|---|---|---|---|
| River Code: | **80-001** | Stream: | **Connecticut River** | Sample Date: | **9 /01/2008** |
| River Mile: | **114.70** | Location: | DST Bellows Falls WWTP | Invalid Sample: | |
| Time Fished: | 3871 sec | Drainage: | 5614.1 sq mi | Depth: 200 | Data Source: 99 |
| Dist Fished: | 1.00 km | Basin: | Connecticut River | Flow: C | Sampler Type: A |
| | | Lat: | 43.060610 | Lat: -72.457770 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 1 | 1.00 | 0.58 | 0.02 | 0.24 | 20.00 |
| American Shad | N | P | A | | 1 | 1.00 | 0.58 | 0.00 | 0.04 | 3.00 |
| Rainbow Trout | E | | FD | | 1 | 1.00 | 0.58 | 0.22 | 2.63 | 220.00 |
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 0.58 | 0.03 | 0.36 | 30.00 |
| White Sucker | W | O | FD | T | 7 | 7.00 | 4.07 | 0.02 | 0.29 | 3.43 |
| Common Shiner | N | I | FD | | 64 | 64.00 | 37.21 | 0.13 | 1.55 | 2.03 |
| Fallfish | N | | FD | | 56 | 56.00 | 32.56 | 0.17 | 1.97 | 2.95 |
| Rock Bass | S | C | MG | | 5 | 5.00 | 2.91 | 0.34 | 4.07 | 68.20 |
| Smallmouth Bass | F | C | MG | M | 30 | 30.00 | 17.44 | 7.21 | 86.05 | 240.17 |
| Largemouth Bass | F | C | MG | | 3 | 3.00 | 1.74 | 0.06 | 0.66 | 18.33 |
| Bluegill Sunfish | S | I | MG | P | 1 | 1.00 | 0.58 | 0.12 | 1.43 | 120.00 |
| Yellow Perch | | | MG | | 2 | 2.00 | 1.16 | 0.06 | 0.72 | 30.00 |
| | *Date Total* | | | | 172 | 172.00 | | 8.37 | | |
| | *Number of Species* | | | | 12 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **9 /02/2008** |
| River Mile: **105.70** | Location: Near Westminster, VT | Invalid Sample: |
| Time Fished: 3798 sec | Drainage: 5705.2 sq mi Depth: 300 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 42.968520 Lat: -72.491170 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 0.92 | 0.10 | 7.97 | 100.00 |
| White Sucker | W | O | FD | T | 2 | 2.00 | 1.83 | 0.32 | 25.50 | 160.00 |
| Common Shiner | N | I | FD | | 9 | 9.00 | 8.26 | 0.01 | 0.72 | 1.00 |
| Fallfish | N | | FD | | 59 | 59.00 | 54.13 | 0.12 | 9.24 | 1.97 |
| White Catfish | E | I | MG | | 1 | 1.00 | 0.92 | 0.07 | 5.58 | 70.00 |
| Smallmouth Bass | F | C | MG | M | 32 | 32.00 | 29.36 | 0.59 | 46.69 | 18.31 |
| Largemouth Bass | F | C | MG | | 3 | 3.00 | 2.75 | 0.05 | 3.98 | 16.67 |
| Tesselated Darter | D | I | | | 2 | 2.00 | 1.83 | 0.00 | 0.32 | 2.00 |
| *Date Total* | | | | | 109 | 109.00 | | 1.26 | | |
| *Number of Species* | | | | | 8 | | | | | |
| *Number of Hybrids* | | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **9 /02/2008** |
| River Mile: **102.30** | Location: DST Putney, VT | Invalid Sample: |
| Time Fished: 3649 sec | Drainage: 5731.8 sq mi Depth: 200 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 42.941390 Lat: -72.525150 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 5 | 5.00 | 5.95 | 0.03 | 0.63 | 6.00 |
| White Sucker | W | O | FD | T | 5 | 5.00 | 5.95 | 1.86 | 39.15 | 371.40 |
| Common Shiner | N | I | FD | | 3 | 3.00 | 3.57 | 0.01 | 0.13 | 2.00 |
| Fallfish | N | | FD | | 24 | 24.00 | 28.57 | 0.08 | 1.69 | 3.33 |
| Black Crappie | S | I | MG | | 1 | 1.00 | 1.19 | 0.30 | 6.33 | 300.00 |
| Rock Bass | S | C | MG | | 1 | 1.00 | 1.19 | 0.02 | 0.38 | 18.00 |
| Smallmouth Bass | F | C | MG | M | 13 | 13.00 | 15.48 | 1.86 | 39.28 | 143.31 |
| Largemouth Bass | F | C | MG | | 5 | 5.00 | 5.95 | 0.07 | 1.48 | 14.00 |
| Bluegill Sunfish | S | I | MG | P | 1 | 1.00 | 1.19 | 0.05 | 0.95 | 45.00 |
| Yellow Perch | | | MG | | 26 | 26.00 | 30.95 | 0.47 | 9.99 | 18.23 |
| | *Date Total* | | | | 84 | 84.00 | | 4.74 | | |
| | *Number of Species* | | | | 10 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **9 /02/2008** |
| River Mile: **97.60** | Location: UST West River confluence and Brattleboro, | Invalid Sample: |
| Time Fished: 3841 sec | Drainage: 5765.4 sq mi Depth: 300 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 42.885620 Lat: -72.551510 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Rock Bass | S | C | MG | | 2 | 2.00 | 2.63 | 0.06 | 1.42 | 30.00 |
| Smallmouth Bass | F | C | MG | M | 24 | 24.00 | 31.58 | 2.17 | 51.53 | 90.42 |
| Largemouth Bass | F | C | MG | | 3 | 3.00 | 3.95 | 0.05 | 1.19 | 16.67 |
| Bluegill Sunfish | S | I | MG | P | 4 | 4.00 | 5.26 | 0.72 | 17.10 | 180.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 1 | 1.00 | 1.32 | 0.02 | 0.47 | 20.00 |
| Yellow Perch | | | MG | | 41 | 41.00 | 53.95 | 1.19 | 28.16 | 28.93 |
| Tesselated Darter | D | I | | | 1 | 1.00 | 1.32 | 0.01 | 0.12 | 5.00 |
| | *Date Total* | | | | 76 | 76.00 | | 4.21 | | |
| | *Number of Species* | | | | 7 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

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|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **10/03/2008** |
| River Mile: **92.50** | Location: DST Brattleboro, VT WWTP | | Invalid Sample: |
| Time Fished: 3335 sec | Drainage: 6244.0 sq mi | Depth: 340 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 42.815550 | Lat: -72.542070 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 3 | 3.00 | 1.36 | 0.06 | 0.37 | 20.00 |
| American Shad | N | P | A | | 2 | 2.00 | 0.91 | 0.03 | 0.18 | 15.00 |
| Chain Pickerel | E | P | MG | | 3 | 3.00 | 1.36 | 0.66 | 4.03 | 220.00 |
| White Sucker | W | O | FD | T | 1 | 1.00 | 0.45 | 1.00 | 6.10 | 1,000.00 |
| Golden Shiner | N | I | MG | T | 34 | 34.00 | 15.45 | 0.29 | 1.77 | 8.53 |
| Spottail Shiner | N | I | MG | P | 67 | 67.00 | 30.45 | 0.29 | 1.77 | 4.33 |
| Black Crappie | S | I | MG | | 3 | 3.00 | 1.36 | 0.16 | 0.98 | 53.33 |
| Rock Bass | S | C | MG | | 2 | 2.00 | 0.91 | 0.23 | 1.40 | 115.00 |
| Largemouth Bass | F | C | MG | | 10 | 10.00 | 4.55 | 9.67 | 58.99 | 966.60 |
| Bluegill Sunfish | S | I | MG | P | 15 | 15.00 | 6.82 | 0.69 | 4.21 | 46.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 4 | 4.00 | 1.82 | 0.21 | 1.28 | 52.50 |
| Yellow Perch | | | MG | | 76 | 76.00 | 34.55 | 3.10 | 18.92 | 40.79 |
| | *Date Total* | | | | 220 | 220.00 | | 16.39 | | |
| | *Number of Species* | | | | 12 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

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|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **10/02/2008** |
| River Mile: **90.10** | Location: UST Vemont Yankee Entergy thermal | | Invalid Sample: |
| Time Fished: 3921 sec | Drainage: 6257.1 sq mi | Depth: 270 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 42.787470 | Lat: -72.514150 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| American Shad | N | P | A | | 7 | 7.00 | 4.46 | 0.04 | 0.49 | 5.71 |
| Chain Pickerel | E | P | MG | | 2 | 2.00 | 1.27 | 0.05 | 0.59 | 24.00 |
| Common Carp | G | O | MG | T | 1 | 1.00 | 0.64 | 3.35 | 40.91 | 3,350.00 |
| Golden Shiner | N | I | MG | T | 10 | 10.00 | 6.37 | 0.06 | 0.67 | 5.50 |
| Spottail Shiner | N | I | MG | P | 65 | 65.00 | 41.40 | 0.17 | 2.08 | 2.62 |
| Black Crappie | S | I | MG | | 3 | 3.00 | 1.91 | 0.54 | 6.60 | 180.00 |
| Largemouth Bass | F | C | MG | | 8 | 8.00 | 5.10 | 1.27 | 15.51 | 158.75 |
| Bluegill Sunfish | S | I | MG | P | 12 | 12.00 | 7.64 | 0.38 | 4.64 | 31.67 |
| Pumpkinseed Sunfish | S | I | MG | P | 10 | 10.00 | 6.37 | 0.75 | 9.10 | 74.50 |
| Yellow Perch | | | MG | | 39 | 39.00 | 24.84 | 1.59 | 19.42 | 40.77 |
| | *Date Total* | | | | 157 | 157.00 | | 8.19 | | |
| | *Number of Species* | | | | 10 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

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|---|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | | Sample Date: **10/02/2008** |
| River Mile: **89.00** | Location: At and DST mixing zone thermal discharge | | Invalid Sample: |
| Time Fished: 2815 sec | Drainage: 6258.9 sq mi | Depth: 460 | Data Source: 99 |
| Dist Fished: 0.66 km | Basin: Connecticut River | Flow: C | Sampler Type: A |
| | Lat: 42.774420 | Lat: -72.511340 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| American Shad | N | P | A | | 1 | 1.52 | 0.51 | 0.01 | 0.09 | 8.00 |
| White Sucker | W | O | FD | T | 3 | 4.55 | 1.54 | 0.06 | 0.44 | 13.33 |
| Spottail Shiner | N | I | MG | P | 58 | 87.88 | 29.74 | 0.27 | 1.96 | 3.10 |
| Yellow Bullhead | | I | MG | T | 97 | 146.97 | 49.74 | 0.09 | 0.65 | 0.62 |
| American Eel [T] | | C | C | | 1 | 1.52 | 0.51 | 2.06 | 14.81 | 1,360.00 |
| Black Crappie | S | I | MG | | 3 | 4.55 | 1.54 | 0.42 | 3.00 | 92.00 |
| Rock Bass | S | C | MG | | 1 | 1.52 | 0.51 | 0.02 | 0.11 | 10.00 |
| Smallmouth Bass | F | C | MG | M | 2 | 3.03 | 1.03 | 4.56 | 32.77 | 1,505.00 |
| Largemouth Bass | F | C | MG | | 5 | 7.58 | 2.56 | 5.06 | 36.36 | 668.00 |
| Bluegill Sunfish | S | I | MG | P | 10 | 15.15 | 5.13 | 0.04 | 0.25 | 2.30 |
| Pumpkinseed Sunfish | S | I | MG | P | 11 | 16.67 | 5.64 | 0.27 | 1.96 | 16.36 |
| Yellow Perch | | | MG | | 3 | 4.55 | 1.54 | 1.06 | 7.62 | 233.33 |
| | *Date Total* | | | | 195 | 295.46 | | 13.92 | | |
| | *Number of Species* | | | | 12 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/03/2008** |
| River Mile: **88.40** | Location: DST Vernon Dam Vernon, VT | Invalid Sample: |
| Time Fished: 3617 sec | Drainage: 6265.2 sq mi Depth: 120 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 42.766830 Lat: -72.514090 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 23 | 23.00 | 32.39 | 0.12 | 2.06 | 5.22 |
| Chain Pickerel | E | P | MG | | 2 | 2.00 | 2.82 | 0.31 | 5.33 | 155.00 |
| White Sucker | W | O | FD | T | 1 | 1.00 | 1.41 | 1.18 | 20.29 | 1,180.00 |
| Spottail Shiner | N | I | MG | P | 2 | 2.00 | 2.82 | 0.01 | 0.17 | 5.00 |
| Fallfish | N | | FD | | 5 | 5.00 | 7.04 | 0.23 | 3.96 | 46.00 |
| Rock Bass | S | C | MG | | 2 | 2.00 | 2.82 | 0.10 | 1.72 | 50.00 |
| Smallmouth Bass | F | C | MG | M | 28 | 28.00 | 39.44 | 2.07 | 35.51 | 73.75 |
| Largemouth Bass | F | C | MG | | 1 | 1.00 | 1.41 | 0.02 | 0.34 | 20.00 |
| Bluegill Sunfish | S | I | MG | P | 1 | 1.00 | 1.41 | 0.14 | 2.41 | 140.00 |
| Walleye | F | P | MG | | 1 | 1.00 | 1.41 | 1.48 | 25.45 | 1,480.00 |
| Yellow Perch | | | MG | | 5 | 5.00 | 7.04 | 0.16 | 2.75 | 32.00 |
| | *Date Total* | | | | 71 | 71.00 | | 5.82 | | |
| | *Number of Species* | | | | 11 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/01/2008** |
| River Mile: **83.30** | Location: UST Northfield, NH WWTP/UST Pauchaug | Invalid Sample: |
| Time Fished: 3040 sec | Drainage: 6694.5 sq mi Depth: 200 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 42.730850 Lat: -72.456870 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 2 | 2.00 | 22.22 | 0.02 | 1.41 | 9.50 |
| White Sucker | W | O | FD | T | 1 | 1.00 | 11.11 | 0.18 | 12.97 | 175.00 |
| Rock Bass | S | C | MG | | 1 | 1.00 | 11.11 | 0.01 | 0.89 | 12.00 |
| Smallmouth Bass | F | C | MG | M | 4 | 4.00 | 44.44 | 1.14 | 84.14 | 283.75 |
| Yellow Perch | | | MG | | 1 | 1.00 | 11.11 | 0.01 | 0.59 | 8.00 |
| | *Date Total* | | | | 9 | 9.00 | | 1.35 | | |
| | *Number of Species* | | | | 5 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/02/2008** |
| River Mile: **79.20** | Location: UST SR 10 bridge | Invalid Sample: |
| Time Fished: 2967 sec | Drainage: 6721.2 sq mi Depth: 370 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 42.682380 Lat: -72.471910 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 3 | 3.00 | 15.00 | 0.02 | 1.08 | 6.67 |
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 5.00 | 0.20 | 10.78 | 200.00 |
| Fallfish | N | | FD | | 1 | 1.00 | 5.00 | 0.04 | 2.16 | 40.00 |
| Rock Bass | S | C | MG | | 2 | 2.00 | 10.00 | 0.04 | 2.16 | 20.00 |
| Smallmouth Bass | F | C | MG | M | 8 | 8.00 | 40.00 | 1.44 | 77.63 | 180.00 |
| Largemouth Bass | F | C | MG | | 1 | 1.00 | 5.00 | 0.06 | 3.23 | 60.00 |
| Bluegill Sunfish | S | I | MG | P | 1 | 1.00 | 5.00 | 0.02 | 0.81 | 15.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 3 | 3.00 | 15.00 | 0.04 | 2.16 | 13.33 |
| *Date Total* | | | | | 20 | 20.00 | | 1.86 | | |
| *Number of Species* | | | | | 8 | | | | | |
| *Number of Hybrids* | | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **10/01/2008** |
| River Mile: **72.20** | Location: UST King of France Bridge, Turner's Falls, | Invalid Sample: |
| Time Fished: 4176 sec | Drainage: 7150.1 sq mi Depth: 590 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 42.596510 Lat: -72.496970 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Sea Lamprey | E | P | A | | 3 | 3.00 | 4.00 | 0.03 | 0.64 | 8.67 |
| American Shad | N | P | A | | 1 | 1.00 | 1.33 | 0.01 | 0.20 | 8.00 |
| White Sucker | W | O | FD | T | 4 | 4.00 | 5.33 | 1.13 | 27.73 | 282.50 |
| Golden Shiner | N | I | MG | T | 2 | 2.00 | 2.67 | 0.02 | 0.44 | 9.00 |
| Spottail Shiner | N | I | MG | P | 14 | 14.00 | 18.67 | 0.11 | 2.58 | 7.50 |
| Fallfish | N | | FD | | 8 | 8.00 | 10.67 | 0.07 | 1.60 | 8.13 |
| American Eel [T] | | C | C | | 1 | 1.00 | 1.33 | 1.05 | 25.77 | 1,050.00 |
| Rock Bass | S | C | MG | | 3 | 3.00 | 4.00 | 0.10 | 2.45 | 33.33 |
| Smallmouth Bass | F | C | MG | M | 17 | 17.00 | 22.67 | 0.89 | 21.87 | 52.41 |
| Largemouth Bass | F | C | MG | | 1 | 1.00 | 1.33 | 0.07 | 1.60 | 65.00 |
| Bluegill Sunfish | S | I | MG | P | 5 | 5.00 | 6.67 | 0.34 | 8.22 | 67.00 |
| Pumpkinseed Sunfish | S | I | MG | P | 7 | 7.00 | 9.33 | 0.14 | 3.31 | 19.29 |
| Yellow Perch | | | MG | | 9 | 9.00 | 12.00 | 0.15 | 3.61 | 16.33 |
| | *Date Total* | | | | 75 | 75.00 | | 4.08 | | |
| | *Number of Species* | | | | 13 | | | | | |
| | *Number of Hybrids* | | | | 0 | | | | | |

| | | |
|---|---|---|
| River Code: **80-001** | Stream: **Connecticut River** | Sample Date: **09/27/2008** |
| River Mile: **68.80** | Location: Turners Falls dam pool, Turners Falls, MA | Invalid Sample: |
| Time Fished: 3712 sec | Drainage: 7152.4 sq mi Depth: 580 | Data Source: 99 |
| Dist Fished: 1.00 km | Basin: Connecticut River Flow: C | Sampler Type: A |
| | Lat: 42.596450 Lat: -72.543740 | |

| Species Name / ODNR status | IBI Grp | Feed Guild | Target Spec. | Tol | # of Fish | Relative Number | % by Number | Relative Weight | % by Weight | Ave(gm) Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| American Shad | N | P | A | | 15 | 15.00 | 2.63 | 0.17 | 1.62 | 11.33 |
| Chain Pickerel | E | P | MG | | 1 | 1.00 | 0.18 | 0.05 | 0.48 | 50.00 |
| White Sucker | W | O | FD | T | 22 | 22.00 | 3.85 | 0.33 | 3.16 | 15.09 |
| Common Carp | G | O | MG | T | 1 | 1.00 | 0.18 | 6.30 | 60.06 | 6,300.00 |
| Golden Shiner | N | I | MG | T | 3 | 3.00 | 0.53 | 0.02 | 0.23 | 8.00 |
| Spottail Shiner | N | I | MG | P | 356 | 356.00 | 62.35 | 1.79 | 17.06 | 5.03 |
| Rock Bass | S | C | MG | | 5 | 5.00 | 0.88 | 0.01 | 0.11 | 2.40 |
| Smallmouth Bass | F | C | MG | M | 7 | 7.00 | 1.23 | 0.21 | 2.00 | 30.00 |
| Largemouth Bass | F | C | MG | | 31 | 31.00 | 5.43 | 0.23 | 2.19 | 7.42 |
| Bluegill Sunfish | S | I | MG | P | 16 | 16.00 | 2.80 | 0.36 | 3.41 | 22.38 |
| Pumpkinseed Sunfish | S | I | MG | P | 9 | 9.00 | 1.58 | 0.42 | 4.00 | 46.67 |
| Hybrid X Sunfish | | | | | 1 | 1.00 | 0.18 | 0.01 | 0.10 | 10.00 |
| Yellow Perch | | | MG | | 103 | 103.00 | 18.04 | 0.58 | 5.53 | 5.63 |
| Tesselated Darter | D | I | | | 1 | 1.00 | 0.18 | 0.00 | 0.04 | 4.00 |
| | *Date Total* | | | | 571 | 571.00 | | 10.49 | | |
| | *Number of Species* | | | | 13 | | | | | |
| | *Number of Hybrids* | | | | 1 | | | | | |

# Fish Assemblage and Habitat Assessment of the Upper Connecticut River

## Appendix B

## Atlantic Slope and Interim Maine Index of Biotic Integrity Scores and Metrics
## Modified Index of Well-Being Scores

## August-October 2008

**Appendix Table 1. Atlantic Slope IBI scores and metrics at boat sites in the Connecticut River during 2008 --- DRAFT----.**

| River Mile | Type | Date | Distance (meters) | Drainage area (sq km) | Number of: Total Native♦ Species | Number of: Benth. Insect. species | Number of: Water Column Species | Number of: Terete. Minnow Species | Percent of Individuals: Gener-alists | Percent of Individuals: Insect-ivores | Percent of Individuals: Top Carni-vores | Percent of Individuals: Domi-nant Species | Percent of Individuals: Adult & Juveniles Classes | Percent of Individuals: White Suckers | Percent of Individuals: DELT anomalies | Relative Abundance | IBI | Original Iwb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Connecticut River - (80001) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |
| 68.80 | A | 09/27/2008 | 1000 | 18524 | 12(3) | 1(1) | 1(1) | 1(1) | 9.1(5) | 63(5) | 26(5) | 80.4(1) | 25.0(3) | 3.9(3) | 0.0(5) | 571(5) | **42** | 7.1 |
| 72.20 | A | 10/01/2008 | 1000 | 18518 | 12(3) | 0(1) | 1(1) | 1(1) | 34.7(3) | 19(1) | 41(5) | 30.7(5) | 42.9(5) | 5.3(3) | 1.3(1) | 75(3) | **32** | 6.9 |
| 79.20 | A | 10/02/2008 | 1000 | 17407 | 7(1) | 0(1) | 0(1) | 0(1) | 25.0(3) | 0(1) | 60(5) | 35.0(5) | 33.3(3) | 0.0(5) | 0.0(5) | 20(1) | **32** | 4.5 |
| 83.30 | A | 10/01/2008 | 1000 | 17338 | 4(1) | 0(1) | 0(1) | 0(1) | 11.1(5) | 0(1) | 67(5) | 44.4(3) | 66.7(5) | 11.1(3) | 0.0(5) | 9(1) | **34** | 3.2 |
| 88.40 | A | 10/03/2008 | 1000 | 16226 | 10(3) | 0(1) | 1(1) | 1(1) | 9.9(5) | 3(1) | 55(5) | 63.4(1) | 20.0(3) | 1.4(5) | 0.0(5) | 71(3) | **38** | 6.2 |
| 89.00 | A | 10/02/2008 | 660 | 16210 | 12(3) | 0(1) | 1(1) | 1(1) | 62.1(1) | 30(3) | 8(5) | 79.5(1) | 20.0(3) | 1.5(5) | 0.0(5) | 295(5) | **38** | 7.1 |
| 90.10 | A | 10/02/2008 | 1000 | 16205 | 9(3) | 0(1) | 1(1) | 1(1) | 21.0(3) | 41(3) | 33(5) | 66.2(1) | 50.0(5) | 0.0(5) | 0.0(5) | 157(3) | **40** | 7.0 |
| 92.50 | A | 10/03/2008 | 1000 | 16171 | 11(3) | 0(1) | 1(1) | 1(1) | 24.6(3) | 30(3) | 43(5) | 65.0(1) | 50.0(5) | 0.5(5) | 0.5(3) | 220(3) | **38** | 7.2 |
| 97.60 | A | 9 /02/2008 | 1000 | 14932 | 7(1) | 1(1) | 0(1) | 0(1) | 6.6(5) | 1(1) | 92(5) | 46.1(3) | 60.0(5) | 0.0(5) | 0.0(5) | 76(3) | **38** | 5.2 |
| 102.30 | A | 9 /02/2008 | 1000 | 14845 | 9(3) | 0(1) | 0(1) | 1(1) | 39.3(3) | 0(1) | 55(5) | 53.6(3) | 22.2(3) | 6.0(3) | 0.0(5) | 84(3) | **34** | 6.1 |
| 105.70 | A | 9 /02/2008 | 1000 | 14776 | 8(3) | 1(1) | 0(1) | 1(1) | 64.2(1) | 2(1) | 34(5) | 67.0(1) | 20.0(3) | 1.8(5) | 0.0(5) | 109(3) | **34** | 4.9 |
| 114.70 | A | 9 /01/2008 | 1000 | 14540 | 10(3) | 0(1) | 0(1) | 1(1) | 74.4(1) | 0(1) | 24(5) | 64.5(1) | 9.1(1) | 4.1(3) | 0.0(5) | 172(3) | **30** | 5.9 |
| 116.20 | A | 09/01/2008 | 690 | 14532 | 8(3) | 1(1) | 0(1) | 1(1) | 64.4(1) | 2(1) | 32(5) | 51.1(3) | 14.3(1) | 4.6(3) | 0.0(5) | 317(5) | **32** | 7.0 |
| 121.90 | A | 10/03/2008 | 1000 | 14012 | 10(3) | 0(1) | 1(1) | 1(1) | 55.9(1) | 13(1) | 32(5) | 54.1(3) | 25.0(3) | 0.0(5) | 0.0(5) | 111(3) | **34** | 6.9 |
| 125.60 | A | 8 /31/2008 | 1000 | 13671 | 11(3) | 0(1) | 0(1) | 1(1) | 48.1(1) | 0(1) | 52(5) | 54.1(3) | 22.2(3) | 0.8(5) | 0.0(5) | 133(3) | **34** | 6.3 |
| 131.40 | A | 8 /31/2008 | 690 | 13082 | 10(3) | 1(1) | 0(1) | 1(1) | 50.7(1) | 4(1) | 45(5) | 44.5(3) | 55.6(5) | 5.3(3) | 0.0(5) | 488(5) | **36** | 7.7 |
| 133.20 | A | 8 /31/2008 | 700 | 13048 | 10(3) | 1(1) | 0(1) | 1(1) | 82.8(1) | 5(1) | 13(5) | 75.1(1) | 14.3(1) | 11.1(3) | 0.0(5) | 539(5) | **32** | 6.6 |
| 137.40 | A | 8 /30/2008 | 1000 | 12942 | 6(1) | 1(1) | 0(1) | 0(1) | 22.8(3) | 8(1) | 56(5) | 55.9(1) | 16.7(3) | 14.5(3) | 0.0(5) | 145(3) | **32** | 5.2 |
| 139.50 | A | 8 /30/2008 | 1000 | 12929 | 8(3) | 1(1) | 0(1) | 0(1) | 32.3(3) | 10(1) | 56(5) | 54.2(3) | 25.0(3) | 23.4(1) | 0.0(5) | 201(3) | **32** | 6.2 |
| 144.40 | A | 8 /30/2008 | 1000 | 12157 | 8(3) | 1(1) | 0(1) | 0(1) | 46.0(1) | 4(1) | 48(5) | 65.2(1) | 33.3(3) | 11.2(3) | 0.3(3) | 296(5) | **32** | 6.0 |
| 148.50 | A | 8 /29/2008 | 1000 | 12144 | 6(1) | 1(1) | 0(1) | 0(1) | 39.8(3) | 2(1) | 57(5) | 78.9(1) | 50.0(5) | 6.3(3) | 0.4(3) | 256(5) | **34** | 5.9 |
| 153.80 | A | 8 /29/2008 | 1000 | 11805 | 3(1) | 0(1) | 0(1) | 1(1) | 5.6(5) | 0(1) | 83(5) | 66.7(1) | 25.0(3) | 0.0(5) | 0.0(5) | 18(1) | **34** | 4.2 |
| 155.60 | A | 8 /28/2008 | 1000 | 11805 | 10(3) | 1(1) | 1(1) | 2(1) | 81.2(1) | 6(1) | 13(5) | 72.7(1) | 37.5(3) | 19.7(1) | 0.0(5) | 117(3) | **30** | 5.7 |
| 161.50 | A | 8 /28/2008 | 1000 | 11100 | 10(3) | 1(1) | 1(1) | 1(1) | 60.7(1) | 2(1) | 36(5) | 63.9(1) | 28.6(3) | 40.4(1) | 0.0(5) | 183(3) | **30** | 5.7 |

* - Native species and intra-state exotics
** - Excludes fallfish

**Appendix Table 1. Atlantic Slope IBI scores and metrics at boat sites in the Connecticut River during 2008 --- DRAFT----.**

| River Mile | Type | Date | Distance (meters) | Drainage area (sq km) | Number of: Total Native♦ Species | Number of: Benth. Insect. species | Number of: Water Column Species | Number of: Terete. Minnow Species | Percent of Individuals: Gener-alists | Percent of Individuals: Insect-ivores | Percent of Individuals: Top Carni-vores | Percent of Individuals: Domi-nant Species | Percent of Individuals: Adult & Juveniles Classes | Percent of Individuals: White Suckers | Percent of Individuals: DELT anomalies | Relative Abundance | IBI | Original Iwb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 163.90 | A | 8 /27/2008 | 1000 | 8724 | 9(3) | 1(1) | 0(1) | 1(1) | 26.9(3) | 4(1) | 69(5) | 53.9(3) | 16.7(3) | 0.0(5) | 0.0(5) | 26(1) | **34** | 5.5 |
| 165.60 | A | 8 /27/2008 | 1000 | 8724 | 7(3) | 0(1) | 0(1) | 1(1) | 17.1(5) | 0(1) | 83(5) | 41.5(3) | 14.3(1) | 4.9(3) | 0.0(5) | 41(1) | **32** | 6.0 |
| 166.30 | A | 10/11/2008 | 1000 | 8724 | 8(3) | 0(1) | 2(1) | 1(1) | 2.0(5) | 4(1) | 94(5) | 82.0(1) | 0.0(1) | 0.0(5) | 0.0(5) | 50(3) | **36** | 4.9 |
| 170.90 | A | 10/04/2008 | 1000 | 8591 | 7(3) | 1(1) | 1(1) | 2(1) | 25.6(3) | 12(1) | 63(5) | 62.8(1) | 0.0(1) | 0.0(5) | 0.0(5) | 43(1) | **32** | 4.5 |
| 179.20 | A | 10/04/2008 | 1000 | 8125 | 4(1) | 0(1) | 0(1) | 0(1) | 0.0(5) | 0(1) | 100(5) | 88.2(1) | 0.0(1) | 0.0(5) | 0.0(5) | 17(1) | **32** | 3.2 |
| 194.40 | A | 10/06/2008 | 1000 | 7817 | 7(3) | 1(1) | 1(1) | 1(1) | 57.5(1) | 18(1) | 25(5) | 57.5(1) | 33.3(3) | 0.0(5) | 0.0(5) | 40(1) | **32** | 4.6 |
| 200.70 | A | 10/05/2008 | 1000 | 7314 | 8(3) | 1(1) | 1(1) | 1(1) | 57.4(1) | 39(3) | 3(3) | 72.1(1) | 0.0(1) | 6.6(3) | 0.0(5) | 61(3) | **28** | 5.6 |
| 213.10 | A | 10/06/2008 | 1000 | 7120 | 8(3) | 2(1) | 1(1) | 1(1) | 43.2(3) | 14(1) | 43(5) | 51.4(3) | 50.0(5) | 21.6(1) | 0.0(5) | 37(1) | **32** | 4.3 |
| 217.60 | A | 10/06/2008 | 1000 | 5761 | 10(3) | 1(1) | 0(1) | 2(1) | 54.1(1) | 3(1) | 43(5) | 51.4(3) | 66.7(5) | 5.4(3) | 0.0(5) | 37(1) | **32** | 5.9 |
| 221.70 | A | 10/07/2008 | 1000 | 5713 | 9(3) | 0(1) | 0(1) | 1(1) | 80.0(1) | 0(1) | 20(5) | 68.2(1) | 40.0(3) | 15.3(1) | 0.0(5) | 85(3) | **30** | 5.4 |
| 227.10 | A | 10/07/2008 | 1000 | 5557 | 6(1) | 2(3) | 0(1) | 1(1) | 62.8(1) | 14(1) | 23(5) | 72.1(1) | 20.0(3) | 62.8(1) | 2.3(1) | 43(1) | **24** | 5.4 |
| 228.50 | A | 10/07/2008 | 1000 | 4236 | 11(3) | 2(3) | 0(1) | 0(1) | 15.3(5) | 3(1) | 82(5) | 87.6(1) | 50.0(5) | 4.0(3) | 0.0(5) | 274(5) | **42** | 6.6 |
| 235.90 | A | 09/07/2008 | 1000 | 4180 | 13(5) | 3(3) | 0(1) | 2(1) | 7.6(5) | 1(1) | 92(5) | 84.7(1) | 25.0(3) | 3.2(3) | 0.2(3) | 555(5) | **40** | 6.4 |
| 243.80 | A | 09/06/2008 | 1000 | 4032 | 10(3) | 1(1) | 0(1) | 0(1) | 49.2(1) | 0(1) | 51(5) | 74.8(1) | 50.0(5) | 0.7(5) | 0.0(5) | 543(5) | **38** | 7.4 |
| 247.00 | A | 09/06/2008 | 1000 | 3919 | 12(3) | 2(3) | 0(1) | 1(1) | 35.7(3) | 2(1) | 62(5) | 43.5(3) | 22.2(3) | 26.2(1) | 1.8(1) | 168(3) | **30** | 7.3 |
| 257.90 | A | 08/30/2008 | 1000 | 3445 | 8(3) | 1(1) | 0(1) | 0(1) | 60.2(1) | 4(1) | 36(5) | 48.4(3) | 25.0(3) | 11.7(3) | 0.0(5) | 128(3) | **32** | 5.6 |
| 267.80 | A | 10/08/2008 | 1000 | 3094 | 8(3) | 1(1) | 0(1) | 1(1) | 88.0(1) | 6(1) | 6(5) | 81.0(1) | 0.0(1) | 1.4(5) | 0.0(5) | 142(3) | **32** | 5.6 |
| 291.00 | A | 08/30/2008 | 1000 | 1687 | 7(3) | 4(5) | 0(1) | 1(1) | 11.7(5) | 82(5) | 6(5) | 74.5(1) | 33.3(3) | 8.7(3) | 0.0(5) | 196(3) | **44** | 6.2 |
| 307.10 | A | 08/29/2008 | 1000 | 1263 | 12(5) | 3(3) | 0(1) | 3(3) | 89.3(1) | 6(1) | 5(3) | 56.9(1) | 16.7(3) | 44.9(1) | 0.9(3) | 225(3) | **30** | 5.9 |
| 313.70 | A | 08/29/2008 | 1000 | 976 | 11(3) | 3(3) | 0(1) | 4(5) | 33.3(3) | 59(5) | 8(5) | 55.8(1) | 16.7(3) | 18.6(1) | 0.8(3) | 129(3) | **40** | 7.0 |
| 323.60 | A | 08/28/2008 | 1000 | 467 | 12(5) | 4(5) | 0(1) | 4(5) | 33.3(3) | 43(3) | 23(5) | 46.1(3) | 20.0(3) | 16.3(1) | 0.7(3) | 141(3) | **42** | 7.8 |
| Westfield River - (80100) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |
| 15.90 | A | 07/21/2008 | 1000 | 911 | 8(3) | 2(3) | 0(1) | 1(1) | 24.4(3) | 1(1) | 75(5) | 59.6(1) | 50.0(5) | 4.4(3) | 0.0(5) | 225(3) | **38** | 7.4 |
| Chicopee River - (80200) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |

* - Native species and intra-state exotics
** - Excludes fallfish

**Appendix Table 1. Atlantic Slope IBI scores and metrics at boat sites in the Connecticut River during 2008 --- DRAFT----.**

| River Mile | Type | Date | Distance (meters) | Drainage area (sq km) | Number of: Total Native♦ Species | Number of: Benth. Insect. species | Number of: Water Column Species | Number of: Terete. Minnow Species | Percent of Individuals: Gener-alists | Percent of Individuals: Insect-ivores | Percent of Individuals: Top Carni-vores | Percent of Individuals: Domi-nant Species | Percent of Individuals: Adult & Juveniles Classes | Percent of Individuals: White Suckers | Percent of Individuals: DELT anomalies | Relative Abundance | IBI | Original Iwb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.50 | A | 07/17/2008 | 1000 | 1816 | 11(3) | 1(1) | 0(1) | 0(1) | 56.1(1) | 2(1) | 41(5) | 33.2(5) | 70.0(5) | 6.4(3) | 0.6(3) | 328(5) | **34** | 8.7 |
| Deerfield River - (80300) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |
| 15.00 | A | 07/20/2008 | 1000 | 1307 | 6(3) | 1(1) | 1(1) | 2(1) | 73.6(1) | 9(1) | 18(5) | 80.1(1) | 33.3(3) | 70.9(1) | 2.9(1) | 523(5) | **28** | 6.5 |
| West River - (80400) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |
| 1.00 | A | 09/08/2008 | 1000 | 1085 | 11(3) | 1(1) | 0(1) | 1(1) | 12.0(5) | 52(5) | 33(5) | 63.4(1) | 54.6(5) | 4.2(3) | 0.0(5) | 552(5) | **44** | 8.1 |
| 6.10 | A | 09/08/2008 | 1000 | 1043 | 9(3) | 1(1) | 1(1) | 3(3) | 46.1(1) | 11(1) | 43(5) | 58.5(1) | 33.3(3) | 5.5(3) | 0.5(3) | 219(3) | **32** | 6.2 |

* - Native species and intra-state exotics
** - Excludes fallfish

**Appendix Table 1. Maine IBI scores and metrics at boat sites in the Connecticut River.**

| River Mile | Type | Date | Distance (meters) | Drainage area (sq mi) | Number of: Total Native♦ species | Number of: Steno-therm species | Number of: Alien species | Number of: Non-Guard. Litho-phils | Percent of Individuals: Cyp-rinids** | Percent of Individuals: Native Salmonids | Percent of Individuals: Benthic OInsect-vores | Percent of Individuals: Black Basses | Percent of Individuals: Fluvial Specialist | Percent of Individuals: Macrohab. Generalists | White & Longnose Sucker (PB) | DELT anomalies | IBI | Modified Iwb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Connecticut River - (80001) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |
| 68.80 | A | 09/27/2008 | 1000 | 7152 | 6( 2.5) | 0( 0.0) | 6( 0.0) | 1( 3.0) | 63( 9.1) | 0( 0.0) | 0( 0.0) | 7( 6.3) | 4( 3.1) | 93( 0.0) | 0( 0.0) | 0.0(10.0) | **28** | 4.5 |
| 72.20 | A | 10/01/2008 | 1000 | 7150 | 8( 4.2) | 0( 0.0) | 5( 0.0) | 1( 3.0) | 21( 6.5) | 0( 0.0) | 0( 0.0) | 24( 3.2) | 16( 3.9) | 77( 1.6) | 25( 5.5) | 1.3( 0.9) | **24** | 5.6 |
| 79.20 | A | 10/02/2008 | 1000 | 6721 | 4( 0.9) | 0( 0.0) | 4( 0.5) | 0( 0.0) | 0( 0.0) | 0( 0.0) | 0( 0.0) | 45( 1.6) | 5( 3.1) | 80( 1.3) | 0( 0.0) | 0.0(10.0) | **15** | 3.3 |
| 83.30 | A | 10/01/2008 | 1000 | 6694 | 3( 0.0) | 0( 0.0) | 2( 3.6) | 1( 3.0) | 0( 0.0) | 0( 0.0) | 0( 0.0) | 44( 1.7) | 11( 3.6) | 67( 2.6) | 0( 0.0) | 0.0(10.0) | **20** | 2.5 |
| 88.40 | A | 10/03/2008 | 1000 | 6265 | 5( 1.7) | 0( 0.0) | 5( 0.0) | 1( 3.0) | 3( 4.8) | 0( 0.0) | 0( 0.0) | 41( 1.9) | 8( 3.4) | 59( 3.3) | 17( 5.0) | 0.0(10.0) | **28** | 5.1 |
| 89.00 | A | 10/02/2008 | 660 | 6258 | 5( 1.7) | 0( 0.0) | 6( 0.0) | 1( 3.0) | 30( 7.2) | 0( 0.0) | 0( 0.0) | 4( 7.8) | 2( 2.9) | 97( 0.0) | 0( 0.0) | 0.0(10.0) | **27** | 3.9 |
| 90.10 | A | 10/02/2008 | 1000 | 6257 | 5( 1.7) | 0( 0.0) | 5( 0.0) | 0( 0.0) | 48( 8.4) | 0( 0.0) | 0( 0.0) | 5( 7.0) | 0( 0.0) | 96( 0.0) | 0( 0.0) | 0.0(10.0) | **23** | 4.4 |
| 92.50 | A | 10/03/2008 | 1000 | 6244 | 7( 3.3) | 0( 0.0) | 5( 0.0) | 1( 3.0) | 46( 8.3) | 0( 0.0) | 0( 0.0) | 5( 7.3) | 0( 2.8) | 97( 0.0) | 6( 4.1) | 0.5( 1.4) | **25** | 4.0 |
| 97.60 | A | 9 /02/2008 | 1000 | 5765 | 2( 0.0) | 0( 0.0) | 4( 0.5) | 0( 0.0) | 0( 0.0) | 0( 0.0) | 1( 0.1) | 36( 2.2) | 1( 2.9) | 99( 0.0) | 0( 0.0) | 0.0(10.0) | **13** | 2.3 |
| 102.30 | A | 9 /02/2008 | 1000 | 5731 | 5( 1.7) | 0( 0.0) | 5( 0.0) | 2( 5.7) | 4( 4.8) | 0( 0.0) | 0( 0.0) | 21( 3.5) | 38( 5.6) | 56( 3.6) | 21( 5.2) | 0.0(10.0) | **33** | 5.2 |
| 105.70 | A | 9 /02/2008 | 1000 | 5705 | 4( 0.9) | 0( 0.0) | 3( 1.7) | 2( 5.7) | 8( 5.3) | 0( 0.0) | 2( 0.2) | 32( 2.5) | 66( 7.6) | 34( 5.7) | 0( 0.0) | 0.0(10.0) | **33** | 4.5 |
| 114.70 | A | 9 /01/2008 | 1000 | 5614 | 7( 3.3) | 1( 7.2) | 5( 0.0) | 2( 5.7) | 37( 7.7) | 0( 0.0) | 0( 0.0) | 19( 3.7) | 74( 8.2) | 24( 6.6) | 0( 0.0) | 0.0(10.0) | **44** | 4.7 |
| 116.20 | A | 09/01/2008 | 690 | 5611 | 6( 2.5) | 1( 7.2) | 3( 1.7) | 2( 5.7) | 27( 7.0) | 0( 0.0) | 2( 0.2) | 24( 3.2) | 67( 7.6) | 31( 6.0) | 0( 0.0) | 0.0(10.0) | **43** | 6.3 |
| 121.90 | A | 10/03/2008 | 1000 | 5410 | 5( 1.7) | 0( 0.0) | 5( 0.0) | 0( 0.0) | 27( 7.0) | 0( 0.0) | 0( 0.0) | 11( 5.1) | 0( 0.0) | 100( 0.0) | 0( 0.0) | 0.0(10.0) | **20** | 3.4 |
| 125.60 | A | 8 /31/2008 | 1000 | 5278 | 7( 3.3) | 0( 0.0) | 4( 0.5) | 2( 5.7) | 39( 7.9) | 0( 0.0) | 0( 0.0) | 24( 3.2) | 44( 6.0) | 56( 3.6) | 0( 0.0) | 0.0(10.0) | **34** | 5.5 |
| 131.40 | A | 8 /31/2008 | 690 | 5051 | 6( 2.5) | 0( 0.0) | 4( 0.5) | 2( 5.7) | 33( 7.4) | 0( 0.0) | 4( 0.4) | 18( 3.9) | 46( 6.1) | 53( 3.9) | 0( 0.0) | 0.0(10.0) | **34** | 6.3 |
| 133.20 | A | 8 /31/2008 | 700 | 5038 | 6( 2.5) | 0( 0.0) | 3( 1.7) | 2( 5.7) | 67( 9.2) | 0( 0.0) | 5( 0.5) | 9( 5.6) | 87( 9.1) | 13( 7.7) | 0( 0.0) | 0.0(10.0) | **43** | 6.4 |
| 137.40 | A | 8 /30/2008 | 1000 | 4997 | 4( 0.9) | 0( 0.0) | 2( 3.6) | 1( 3.0) | 0( 0.0) | 0( 0.0) | 8( 0.9) | 46( 1.6) | 31( 5.0) | 56( 3.6) | 0( 0.0) | 0.0(10.0) | **24** | 4.2 |
| 139.50 | A | 8 /30/2008 | 1000 | 4992 | 4( 0.9) | 0( 0.0) | 3( 1.7) | 1( 3.0) | 0( 0.0) | 0( 0.0) | 10( 1.1) | 38( 2.0) | 43( 5.9) | 56( 3.6) | 0( 0.0) | 0.0(10.0) | **24** | 5.1 |
| 144.40 | A | 8 /30/2008 | 1000 | 4694 | 6( 2.5) | 0( 0.0) | 2( 3.6) | 1( 3.0) | 0( 0.0) | 0( 0.0) | 4( 0.5) | 33( 2.4) | 50( 6.4) | 49( 4.3) | 0( 0.0) | 0.3( 1.5) | **20** | 5.2 |
| 148.50 | A | 8 /29/2008 | 1000 | 4689 | 4( 0.9) | 0( 0.0) | 2( 3.6) | 1( 3.0) | 0( 0.0) | 0( 0.0) | 2( 0.2) | 50( 1.4) | 42( 5.8) | 57( 3.5) | 41( 6.5) | 0.4( 1.5) | **22** | 5.3 |
| 153.80 | A | 8 /29/2008 | 1000 | 4558 | 3( 0.0) | 2( 8.4) | 2( 3.6) | 1( 3.0) | 6( 5.0) | 6( 9.5) | 6( 0.6) | 67( 0.7) | 17( 4.0) | 67( 2.6) | 0( 0.0) | 0.0(10.0) | **40** | 2.3 |
| 155.60 | A | 8 /28/2008 | 1000 | 4558 | 5( 1.7) | 0( 0.0) | 4( 0.5) | 2( 5.7) | 3( 4.8) | 0( 0.0) | 5( 0.6) | 10( 5.3) | 85( 9.0) | 15( 7.6) | 21( 5.3) | 0.0(10.0) | **42** | 4.9 |
| 161.50 | A | 8 /28/2008 | 1000 | 4286 | 7( 3.3) | 0( 0.0) | 3( 1.7) | 2( 5.7) | 7( 5.1) | 0( 0.0) | 1( 0.1) | 28( 2.8) | 51( 6.5) | 48( 4.4) | 23( 5.4) | 0.0(10.0) | **38** | 4.8 |

* - Native species and intra-state exotics
** - Excludes fallfish

**Appendix Table 1. Maine IBI scores and metrics at boat sites in the Connecticut River.**

| River Mile | Type | Date | Distance (meters) | Drainage area (sq mi) | Number of: Total Native♦ species | Number of: Steno-therm species | Number of: Alien species | Number of: Non-Guard. Litho-phils | Percent of Individuals: Cyp-rinids** | Percent of Individuals: Native Salmonids | Percent of Individuals: Benthic OInsect-vores | Percent of Individuals: Black Basses | Percent of Individuals: Fluvial Specialist | Percent of Individuals: Macrohab. Generalists | White & Longnose Sucker (PB) | DELT anomalies | IBI | Modified Iwb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 163.90 | A | 8 /27/2008 | 1000 | 3368 | 4( 0.9) | 0( 0.0) | 3( 1.7) | 1( 3.0) | 23( 6.7) | 0( 0.0) | 4( 0.4) | 46( 1.6) | 27( 4.7) | 73( 2.0) | 0( 0.0) | 0.0(10.0) | **26** | 3.7 |
| 165.60 | A | 8 /27/2008 | 1000 | 3368 | 3( 0.0) | 0( 0.0) | 4( 0.5) | 2( 5.7) | 12( 5.7) | 0( 0.0) | 0( 0.0) | 22( 3.4) | 17( 4.0) | 83( 1.0) | 0( 0.0) | 0.0(10.0) | **25** | 4.1 |
| 166.30 | A | 10/11/2008 | 1000 | 3368 | 4( 0.9) | 0( 0.0) | 4( 0.5) | 0( 0.0) | 2( 4.7) | 0( 0.0) | 0( 0.0) | 16( 4.2) | 0( 0.0) | 100( 0.0) | 0( 0.0) | 0.0(10.0) | **17** | 2.2 |
| 170.90 | A | 10/04/2008 | 1000 | 3317 | 4( 0.9) | 0( 0.0) | 3( 1.7) | 0( 0.0) | 12( 5.6) | 0( 0.0) | 0( 0.0) | 16( 4.1) | 0( 0.0) | 100( 0.0) | 0( 0.0) | 0.0(10.0) | **19** | 3.3 |
| 179.20 | A | 10/04/2008 | 1000 | 3137 | 1( 0.0) | 0( 0.0) | 3( 1.7) | 0( 0.0) | 0( 0.0) | 0( 0.0) | 0( 0.0) | 18( 3.9) | 0( 0.0) | 100( 0.0) | 0( 0.0) | 0.0(10.0) | **13** | 1.8 |
| 194.40 | A | 10/06/2008 | 1000 | 3018 | 3( 0.0) | 0( 0.0) | 3( 1.7) | 0( 0.0) | 8( 5.2) | 0( 0.0) | 10( 1.1) | 8( 6.0) | 50( 6.4) | 50( 4.2) | 0( 0.0) | 0.0(10.0) | **29** | 4.2 |
| 200.70 | A | 10/05/2008 | 1000 | 2824 | 5( 1.7) | 0( 0.0) | 2( 3.6) | 1( 3.0) | 33( 7.4) | 0( 0.0) | 7( 0.7) | 0(10.0) | 52( 6.4) | 48( 4.4) | 0( 0.0) | 0.0(10.0) | **39** | 5.2 |
| 213.10 | A | 10/06/2008 | 1000 | 2749 | 5( 1.7) | 0( 0.0) | 2( 3.6) | 2( 5.7) | 5( 5.0) | 0( 0.0) | 11( 1.2) | 35( 2.3) | 51( 6.5) | 49( 4.3) | 72( 8.2) | 0.0(10.0) | **40** | 3.9 |
| 217.60 | A | 10/06/2008 | 1000 | 2224 | 6( 2.5) | 0( 0.0) | 4( 0.5) | 3( 7.3) | 5( 5.0) | 0( 0.0) | 3( 0.3) | 8( 5.8) | 11( 3.6) | 89( 0.4) | 35( 6.2) | 0.0(10.0) | **35** | 4.3 |
| 221.70 | A | 10/07/2008 | 1000 | 2205 | 6( 2.5) | 1( 7.2) | 3( 1.7) | 2( 5.7) | 2( 4.7) | 2( 9.5) | 0( 0.0) | 7( 6.2) | 78( 8.4) | 20( 7.1) | 99( 9.3) | 0.0(10.0) | **60** | 5.2 |
| 227.10 | A | 10/07/2008 | 1000 | 2145 | 4( 0.9) | 4( 9.6) | 4( 0.5) | 3( 7.3) | 5( 5.0) | 12( 9.4) | 14( 1.5) | 5( 7.2) | 81( 8.7) | 7( 8.3) | 127(10.0) | 2.3( 0.6) | **58** | 5.2 |
| 228.50 | A | 10/07/2008 | 1000 | 1635 | 8( 4.2) | 3( 9.1) | 4( 0.5) | 3( 7.3) | 0( 4.5) | 0( 0.0) | 3( 0.3) | 1(10.0) | 8( 3.3) | 92( 0.1) | 31( 5.9) | 0.0(10.0) | **46** | 4.6 |
| 235.90 | A | 09/07/2008 | 1000 | 1614 | 9( 5.0) | 3( 9.1) | 4( 0.5) | 3( 7.3) | 2( 4.7) | 0( 9.5) | 0( 0.0) | 2( 9.1) | 7( 3.3) | 93( 0.1) | 75( 8.3) | 0.2( 1.8) | **49** | 4.9 |
| 243.80 | A | 09/06/2008 | 1000 | 1557 | 5( 1.7) | 0( 0.0) | 5( 0.0) | 1( 3.0) | 4( 4.9) | 0( 0.0) | 0( 0.0) | 10( 5.4) | 4( 3.1) | 96( 0.0) | 24( 5.5) | 0.0(10.0) | **28** | 5.0 |
| 247.00 | A | 09/06/2008 | 1000 | 1513 | 9( 5.0) | 5(10.0) | 4( 0.5) | 4( 8.4) | 2( 4.7) | 1( 9.5) | 2( 0.3) | 8( 5.8) | 44( 6.0) | 55( 3.7) | 84( 8.7) | 1.8( 0.8) | **53** | 6.7 |
| 257.90 | A | 08/30/2008 | 1000 | 1330 | 6( 2.5) | 1( 7.2) | 1( 6.0) | 2( 5.7) | 0( 0.0) | 0( 0.0) | 4( 0.4) | 4( 7.6) | 41( 5.8) | 59( 3.4) | 123( 9.9) | 0.0(10.0) | **49** | 5.1 |
| 267.80 | A | 10/08/2008 | 1000 | 1194 | 7( 3.3) | 2( 8.4) | 1( 6.0) | 3( 7.3) | 23( 6.7) | 0( 0.0) | 6( 0.6) | 0(10.0) | 93( 5.8) | 7( 8.3) | 0( 0.0) | 0.0(10.0) | **55** | 5.5 |
| 291.00 | A | 08/30/2008 | 1000 | 651 | 6( 2.5) | 5(10.0) | 3( 1.7) | 3( 7.3) | 13( 5.8) | 1( 9.5) | 82( 9.0) | 0(10.0) | 97( 5.8) | 3( 8.7) | 39( 6.4) | 0.0(10.0) | **72** | 5.7 |
| 307.10 | A | 08/29/2008 | 1000 | 487 | 10( 5.8) | 3( 9.1) | 2( 3.6) | 5( 9.3) | 8( 5.2) | 1( 9.5) | 6( 0.6) | 1(11.3) | 89( 9.3) | 9( 8.1) | 113( 9.7) | 0.9( 1.1) | **69** | 5.9 |
| 313.70 | A | 08/29/2008 | 1000 | 377 | 11( 6.6) | 6(10.0) | 3( 1.7) | 7(10.0) | 12( 5.7) | 2( 9.5) | 63( 6.9) | 0(10.0) | 60( 9.3) | 39( 5.3) | 77( 8.4) | 0.8( 1.2) | **71** | 6.4 |
| 323.60 | A | 08/28/2008 | 1000 | 180 | 12( 7.5) | 7(10.0) | 3( 1.7) | 7(10.0) | 8( 5.3) | 18( 9.3) | 46( 5.1) | 0(10.0) | 74( 9.3) | 16( 7.5) | 0( 0.0) | 0.7( 1.2) | **64** | 7.3 |
| Westfield River - (80100) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |
| 15.90 | A | 07/21/2008 | 1000 | 352 | 4( 0.9) | 1( 7.2) | 4( 0.5) | 2( 5.7) | 0( 4.5) | 0( 0.0) | 1( 0.1) | 35( 2.3) | 9( 3.4) | 61( 3.1) | 30( 5.8) | 0.0(10.0) | **36** | 6.3 |
| Chicopee River - (80200) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |

* - Native species and intra-state exotics
** - Excludes fallfish

**Appendix Table 1. Maine IBI scores and metrics at boat sites in the Connecticut River.**

| River Mile | Type | Date | Distance (meters) | Drainage area (sq mi) | Number of: Total Native♦ species | Number of: Steno-therm species | Number of: Alien species | Number of: Non-Guard. Litho-phils | Percent of Individuals: Cyp-rinids** | Percent of Individuals: Native Salmonids | Percent of Individuals: Benthic OInsect-vores | Percent of Individuals: Black Basses | Percent of Individuals: Fluvial Specialist | Percent of Individuals: Macrohab. Generalists | White & Longnose Sucker (PB) | DELT anomalies | IBI | Modified Iwb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.50 | A | 07/17/2008 | 1000 | 701 | 5( 1.7) | 0( 0.0) | 5( 0.0) | 1( 3.0) | 0( 0.0) | 0( 0.0) | 2( 0.3) | 14( 4.4) | 23( 4.5) | 59( 3.4) | 19( 5.1) | 0.6( 1.3) | **20** | 7.6 |
| Deerfield River - (80300) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |
| 15.00 | A | 07/20/2008 | 1000 | 504 | 3( 0.0) | 0( 0.0) | 2( 3.6) | 2( 5.7) | 8( 5.3) | 0( 0.0) | 3( 0.3) | 17( 4.1) | 76( 8.4) | 22( 6.8) | 0( 0.0) | 2.9( 0.5) | **29** | 6.2 |
| West River - (80400) | | | | | | | | | | | | | | | | | | |
| Year: 2008 | | | | | | | | | | | | | | | | | | |
| 1.00 | A | 09/08/2008 | 1000 | 419 | 7( 3.3) | 0( 0.0) | 5( 0.0) | 1( 3.0) | 52( 8.6) | 0( 0.0) | 0( 0.0) | 20( 3.6) | 6( 3.2) | 91( 0.2) | 29( 5.8) | 0.0(10.0) | **31** | 6.3 |
| 6.10 | A | 09/08/2008 | 1000 | 403 | 7( 3.3) | 1( 7.2) | 3( 1.7) | 3( 7.3) | 12( 5.7) | 0( 9.5) | 1( 0.2) | 39( 2.0) | 56( 6.8) | 43( 4.8) | 66( 7.9) | 0.5( 1.4) | **48** | 5.6 |

* - Native species and intra-state exotics
** - Excludes fallfish

# Fish Assemblage and Habitat Assessment of the Upper Connecticut River

## Appendix C

## Qualitative Habitat Evaluation Index (QHEI) Scores and Metric Values

## August-October 2008

**Table 1. QHEI attributes report for sites sampled in the Connecticut River during 2008.**

Key QHEI Components

| River Mile | QHEI | Gradient (ft/mile) | Good Attributes: No Channelization/Recovered | Boulder, Cobble, Gravel Substrates | Silt Free Substrates | Good/Excellent Development | Five or More Substrate Types | Extensive-Moderate Cover | Fast Current/Eddies | Low-Normal Overall Embeddedness | Max Depth > 1 m | Low-Normal Riffle/Run Embeddedness | Good Habitat Attributes | Modified Attributes: Impounded | Channelized or No Recovery | Silt/Muck Substrates | Sparse or No Cover | Max Depth < 70 cm | Recovering Channel | High/Moderate Silt Cover | Fair-Poor Development | Only 1-2 Cover Types | Slow or No Flow | High-Mod Overall Embeddedness | High-Mod Riffle-Run Embeddedness | No Riffle/Run | Total Modified Attributes | Modified: Good Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (80-001) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Year: | 2008 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 323.6 | **92.5** | 13.80 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 10 | | | | | | | | | | | | | | 0 | 0.00 |
| 322.0 | **89.0** | 20.10 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 10 | | | | | | | | | | | | | | 0 | 0.00 |
| 313.7 | **82.5** | 2.00 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 10 | | | | | | | | | | | | | | 0 | 0.00 |
| 307.1 | **65.0** | 2.00 | ■ | ■ | | | ■ | ■ | ■ | | ■ | | 6 | | | | | | | ■ | | | ■ | | ■ | | 3 | 0.50 |
| 291.0 | **87.0** | 16.60 | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 9 | | | | | | | | | | | | | | 0 | 0.00 |
| 267.8 | **70.8** | 1.30 | | | | | ■ | ■ | ■ | | ■ | ■ | 5 | | | | | | ■ | | ■ | | | ■ | | | 3 | 0.60 |
| 257.9 | **55.5** | 1.50 | ■ | | | | | ■ | | | ■ | | 4 | | | | | | | ■ | ■ | | | ■ | | ■ | 4 | 1.33 |
| 247.0 | **88.3** | 2.50 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 10 | | | | | | | | | | | | | | 0 | 0.00 |
| 243.8 | **58.0** | 2.50 | | ■ | | | ■ | ■ | | | ■ | | 3 | ◆ | | | ◆ | | | ■ | ■ | | ■ | ■ | | ■ | 7 | 1.75 |
| 235.9 | **71.0** | 2.50 | | ■ | | | ■ | ■ | ■ | ■ | ■ | | 5 | | | | | | ■ | | ■ | | | | | ■ | 3 | 0.50 |
| 228.5 | **74.0** | 2.50 | | ■ | | | ■ | ■ | ■ | ■ | ■ | | 5 | | | | | | ■ | | ■ | | | | | ■ | 3 | 0.50 |
| 227.1 | **89.3** | 2.50 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 10 | | | | | | | | | | | | | | 0 | 0.00 |
| 221.7 | **76.0** | 2.50 | ■ | ■ | | | ■ | ■ | ■ | ■ | ■ | | 7 | | | | | | | ■ | ■ | | | | | ■ | 3 | 0.43 |
| 217.6 | **83.3** | 2.50 | ■ | ■ | | ■ | | ■ | ■ | ■ | ■ | ■ | 9 | | | | | | | | | | | | | | 0 | 0.00 |
| 213.1 | **93.0** | 2.50 | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 10 | | | | | | | | | | | | | | 0 | 0.00 |
| 200.7 | **50.0** | 2.50 | | ■ | | | ■ | ■ | | | ■ | | 4 | ◆ | | | ◆ | | | ■ | | | ■ | ■ | | ■ | 6 | 1.50 |
| 194.4 | **50.8** | 2.50 | | | | | | ■ | | | ■ | | 2 | ◆ | | | | | | ■ | | | ■ | ■ | | ■ | 5 | 2.50 |
| 179.2 | **53.0** | 2.50 | | ■ | | | ■ | ■ | | | ■ | | 3 | ◆ | | | | | | ■ | ■ | | ■ | ■ | | ■ | 6 | 1.50 |
| 170.9 | **53.0** | 2.50 | | ■ | | | ■ | ■ | | | ■ | | 3 | ◆ | | | | | | ■ | ■ | | ■ | ■ | | ■ | 6 | 1.50 |
| 166.3 | **63.0** | 2.50 | | ■ | | | ■ | ■ | | | ■ | | 4 | ◆ | | | | | | ■ | ■ | | ■ | ■ | | ■ | 6 | 1.50 |
| 165.6 | **46.0** | 0.10 | | | | ■ | | ■ | | | ■ | | 3 | ◆ | ◆ | | | | | ■ | | | ■ | ■ | | ■ | 6 | 2.00 |
| 163.9 | **67.0** | 2.50 | ■ | ■ | | ■ | | | ■ | ■ | ■ | | 7 | | | | ◆ | | | | | ■ | | | ■ | | 3 | 0.50 |
| 161.5 | **71.5** | 2.50 | ■ | ■ | | ■ | ■ | ■ | | | ■ | | 6 | | ◆ | | | | | | | | | | ■ | | 2 | 0.33 |
| 155.6 | **51.0** | 2.00 | | | | | | ■ | | | ■ | | 2 | ◆ | ◆ | | | | | ■ | ■ | | | ■ | ■ | | 6 | 3.00 |
| 153.8 | **62.8** | 2.00 | | ■ | ■ | | | | | ■ | ■ | ■ | 6 | | | | ◆ | | ■ | | ■ | ■ | | ■ | | | 5 | 1.00 |
| 148.5 | **68.0** | 2.00 | | ■ | | | | ■ | ■ | | ■ | | 4 | | | | | | ■ | ■ | ■ | | | ■ | ■ | | 5 | 1.25 |
| 144.4 | **63.5** | 2.00 | ■ | ■ | | | | ■ | | | ■ | | 4 | | | | | | | ■ | ■ | | ■ | ■ | ■ | | 5 | 1.25 |
| 139.5 | **68.0** | 2.00 | ■ | | | ■ | ■ | ■ | | | ■ | ■ | 5 | | ◆ | | | | | ■ | | | ■ | ■ | | | 4 | 0.67 |
| 137.4 | **68.0** | 2.00 | ■ | ■ | | | | ■ | | | ■ | | 4 | | | | | | | ■ | ■ | | ■ | ■ | ■ | | 5 | 1.25 |
| 133.2 | **49.0** | 2.00 | ■ | | | | | ■ | | | ■ | | 3 | | ◆ | | | | | ■ | ■ | | ■ | ■ | | | 5 | 1.67 |
| 131.4 | **51.0** | 2.00 | ■ | | | | | | | | ■ | | 3 | | ◆ | | | | | ■ | ■ | | ■ | ■ | | | 5 | 2.50 |

**Table 1. QHEI attributes report for sites sampled in the Connecticut River during 2008.**

Key QHEI Components

| River Mile | QHEI | Gradient (ft/mile) | Good Attributes: No Channelization/Recovered | Boulder, Cobble, Gravel Substrates | Silt Free Substrates | Good/Excellent Development | Five or More Substrate Types | Extensive-Moderate Cover | Fast Current/Eddies | Low-Normal Overall Embeddedness | Max Depth > 1 m | Low-Normal Riffle/Run Embeddedness | Good Habitat Attributes | Modified Attributes: Impounded | Channelized or No Recovery | Silt/Muck Substrates | Sparse or No Cover | Max Depth < 70 cm | Recovering Channel | High/Moderate Silt Cover | Fair-Poor Development | Only 1-2 Cover Types | Slow or No Flow | High-Mod Overall Embeddedness | High-Mod Riffle-Run Embeddedness | No Riffle/Run | Total Modified Attributes | Modified: Good Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (80-001) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Year: | 2008 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 125.6 | **48.5** | 0.10 | ■ | | | ■ | | ■ | | | ■ | | 4 | ◆ | ◆ | | | | | ■ | | | ■ | ■ | ■ | 6 | 1.50 |
| 121.9 | **49.0** | 2.50 | | | | | ■ | ■ | | | ■ | | 2 | ◆ | ◆ | | | | | ■ | ■ | | ■ | ■ | ■ | 7 | 2.33 |
| 116.2 | **79.0** | 2.00 | | ■ | | | ■ | ■ | | | ■ | ■ | 4 | | | | | | ■ | | ■ | | | ■ | | 3 | 0.60 |
| 114.7 | **63.0** | 2.00 | ■ | | | | | ■ | | ■ | ■ | | 4 | | | | | | | ■ | ■ | | ■ | | ■ | 4 | 1.00 |
| 105.7 | **70.0** | 2.00 | ■ | | | ■ | | ■ | | ■ | ■ | | 5 | | | | | | | | | | ■ | | ■ | 2 | 0.40 |
| 102.3 | **59.5** | 2.00 | ■ | | | | | ■ | | ■ | ■ | | 4 | | ◆ | | | | | ■ | | | ■ | | ■ | 4 | 1.00 |
| 97.6 | **54.0** | 2.00 | ■ | | | ■ | | | | | ■ | | 4 | | ◆ | | ◆ | | | ■ | | | ■ | ■ | ■ | 6 | 2.00 |
| 92.5 | **55.0** | 2.50 | | | | | ■ | ■ | | | ■ | | 2 | ◆ | ◆ | | | | | ■ | ■ | | ■ | ■ | ■ | 7 | 2.33 |
| 90.1 | **48.0** | 2.50 | | | | | | ■ | | | ■ | | 2 | ◆ | ◆ | | | | | ■ | ■ | | ■ | ■ | ■ | 7 | 3.50 |
| 89.0 | **52.0** | 2.50 | | | | | | ■ | ■ | | ■ | | 3 | ◆ | ◆ | | | | | ■ | ■ | | | ■ | ■ | 6 | 2.00 |
| 88.4 | **95.5** | 2.50 | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 9 | | | | | | | | | | | | | 0 | 0.00 |
| 83.3 | **62.5** | 2.50 | ■ | ■ | | | ■ | ■ | | ■ | ■ | | 5 | | | | | | | | ■ | | | | ■ | 2 | 0.33 |
| 79.2 | **64.3** | 2.50 | ■ | ■ | | | | ■ | | ■ | ■ | | 5 | | | | | | | | ■ | | ■ | | ■ | 3 | 0.60 |
| 72.2 | **74.0** | 2.50 | ■ | ■ | | | ■ | ■ | ■ | ■ | ■ | | 7 | | | | | ◆ | | | ■ | | | | ■ | 3 | 0.43 |
| 68.8 | **54.5** | 2.50 | | | | | | ■ | | | ■ | | 2 | ◆ | | | | | | | ■ | | ■ | ■ | ■ | 5 | 2.50 |

**Appendix Table 1. QHEI metric scores for stations sampled in Connecticut River basin during 2008.**

| River Mile | QHEI | QHEI Metrics: Substrate | Cover | Channel | Riparian | Pool | Riffle | Gradient & Score |
|---|---|---|---|---|---|---|---|---|
| (80001) Connecticut River | | | | | | | | |
| Year: 2008 | | | | | | | | |
| 323.6 | **92.50** | 21.0 | 16.0 | 20.0 | 9.50 | 11.0 | 8.0 | 13.80 - ( 8) |
| 322.0 | **89.00** | 21.0 | 16.0 | 18.0 | 10.00 | 11.0 | 8.0 | 20.10 - ( 6) |
| 313.7 | **78.50** | 19.0 | 15.0 | 18.0 | 5.00 | 12.0 | 7.5 | 0.00 - ( 2) |
| 307.1 | **65.00** | 14.0 | 16.0 | 14.0 | 5.00 | 10.0 | 0.0 | 2.00 - ( 6) |
| 291.0 | **87.00** | 20.0 | 14.0 | 19.0 | 6.00 | 12.0 | 8.0 | 16.60 - ( 8) |
| 267.8 | **70.80** | 11.0 | 16.0 | 11.0 | 2.80 | 12.0 | 8.0 | 1.30 - (10) |
| 247.0 | **88.30** | 21.0 | 13.0 | 17.0 | 8.30 | 12.0 | 8.0 | 2.50 - (10) |
| 243.8 | **58.00** | 13.0 | 14.0 | 5.0 | 10.00 | 5.0 | 0.0 | 2.50 - (10) |
| 235.6 | **71.00** | 16.0 | 15.0 | 9.0 | 10.00 | 10.0 | 0.0 | 2.50 - (10) |
| 228.5 | **74.00** | 20.0 | 11.0 | 11.0 | 10.00 | 11.0 | 0.0 | 2.50 - (10) |
| 227.1 | **89.50** | 21.0 | 13.0 | 19.0 | 6.50 | 12.0 | 8.0 | 2.50 - (10) |
| 221.7 | **76.00** | 16.0 | 13.0 | 15.0 | 10.00 | 11.0 | 0.0 | 2.50 - (10) |
| 217.6 | **81.00** | 14.0 | 15.0 | 17.0 | 6.00 | 12.0 | 7.0 | 2.50 - (10) |
| 213.1 | **93.00** | 19.0 | 14.0 | 20.0 | 9.00 | 12.0 | 8.0 | 2.50 - (10) |
| 200.7 | **50.00** | 12.0 | 12.0 | 5.0 | 6.00 | 5.0 | 0.0 | 2.50 - (10) |
| 194.4 | **50.80** | 9.0 | 16.0 | 4.0 | 6.80 | 5.0 | 0.0 | 2.50 - (10) |
| 179.2 | **53.00** | 13.0 | 15.0 | 5.0 | 5.00 | 5.0 | 0.0 | 2.50 - (10) |
| 170.9 | **53.00** | 13.0 | 15.0 | 4.0 | 6.00 | 5.0 | 0.0 | 2.50 - (10) |
| 166.3 | **63.00** | 13.0 | 19.0 | 7.0 | 9.00 | 5.0 | 0.0 | 2.50 - (10) |
| 153.8 | **62.80** | 13.0 | 6.0 | 11.0 | 6.80 | 9.0 | 7.0 | 2.00 - (10) |
| 148.5 | **68.00** | 13.0 | 12.0 | 9.0 | 8.00 | 10.0 | 6.0 | 2.00 - (10) |
| 144.4 | **63.50** | 11.0 | 14.0 | 10.0 | 8.50 | 8.0 | 2.0 | 2.00 - (10) |
| 139.5 | **68.00** | 8.0 | 14.0 | 13.0 | 10.00 | 8.0 | 5.0 | 2.00 - (10) |
| 137.4 | **68.00** | 11.0 | 15.0 | 12.0 | 8.00 | 8.0 | 4.0 | 2.00 - (10) |
| 133.2 | **49.00** | 0.0 | 12.0 | 12.0 | 5.00 | 8.0 | 2.0 | 2.00 - (10) |
| 131.4 | **51.00** | 6.0 | 3.0 | 14.0 | 8.00 | 8.0 | 2.0 | 2.00 - (10) |
| 125.6 | **48.50** | 5.0 | 15.0 | 11.5 | 5.00 | 6.0 | 0.0 | 0.10 - ( 6) |
| 121.9 | **49.00** | 8.0 | 15.0 | 5.0 | 6.00 | 5.0 | 0.0 | 2.50 - (10) |
| 116.2 | **79.00** | 17.0 | 16.0 | 10.0 | 10.00 | 10.0 | 6.0 | 2.00 - (10) |
| 114.7 | **63.00** | 8.0 | 14.0 | 14.0 | 10.00 | 6.0 | 0.0 | 2.00 - (10) |
| 105.7 | **70.00** | 11.0 | 16.0 | 16.0 | 10.00 | 6.0 | 0.0 | 2.00 - (10) |
| 102.3 | **59.50** | 7.0 | 16.0 | 11.0 | 9.50 | 6.0 | 0.0 | 2.00 - (10) |
| 97.6 | **54.00** | 4.0 | 9.0 | 17.0 | 8.00 | 6.0 | 0.0 | 2.00 - (10) |
| 92.5 | **55.00** | 7.0 | 17.0 | 5.0 | 10.00 | 5.0 | 0.0 | 2.50 - (10) |

**Appendix Table 1. QHEI metric scores for stations sampled in Connecticut River basin during 2008.**

| River Mile | QHEI | QHEI Metrics: Substrate | Cover | Channel | Riparian | Pool | Riffle | Gradient & Score |
|---|---|---|---|---|---|---|---|---|
| (80001) Connecticut River | | | | | | | | |
| Year: 2008 | | | | | | | | |
| 90.1 | **48.00** | 1.0 | 17.0 | 4.0 | 10.00 | 5.0 | 0.0 | 2.50 - (10) |
| 89.0 | **52.00** | 6.0 | 13.0 | 4.0 | 10.00 | 8.0 | 0.0 | 2.50 - (10) |
| 88.4 | **95.50** | 17.0 | 18.0 | 19.0 | 10.00 | 12.0 | 8.0 | 2.50 - (10) |
| 83.3 | **62.50** | 13.0 | 14.0 | 11.0 | 5.50 | 9.0 | 0.0 | 2.50 - (10) |
| 79.2 | **64.30** | 13.0 | 15.0 | 12.0 | 7.30 | 7.0 | 0.0 | 2.50 - (10) |
| 72.2 | **74.00** | 16.0 | 14.0 | 13.0 | 10.00 | 10.0 | 0.0 | 2.50 - (10) |
| 68.8 | **54.50** | 10.0 | 15.0 | 5.0 | 10.00 | 4.0 | 0.0 | 2.50 - (10) |
| (80100) Westfield River | | | | | | | | |
| Year: 2008 | | | | | | | | |
| 15.9 | **84.00** | 20.0 | 17.0 | 17.0 | 0.00 | 12.0 | 8.0 | 8.30 - (10) |
| (80200) Chicopee River | | | | | | | | |
| Year: 2008 | | | | | | | | |
| 6.5 | **96.00** | 20.0 | 17.0 | 20.0 | 10.00 | 11.0 | 8.0 | 7.40 - (10) |
| (80300) Deerfield River | | | | | | | | |
| Year: 2008 | | | | | | | | |
| 15.0 | **61.00** | 18.0 | 16.0 | 6.0 | 10.00 | 6.0 | 0.0 | 1.00 - ( 4) |
| (80400) West River | | | | | | | | |
| Year: 2008 | | | | | | | | |
| 6.1 | **90.00** | 21.0 | 15.0 | 20.0 | 10.00 | 10.0 | 8.0 | 19.20 - ( 6) |
| 1.0 | **48.00** | 10.0 | 17.0 | 5.0 | 6.00 | 6.0 | 0.0 | 1.00 - ( 4) |

# Fish Assemblage and Habitat Assessment of the Upper Connecticut River

## Appendix D

## River Mile Maps

## August-October 2008

# Fish Assemblage Survey of Selected New England Rivers Connecticut River

Vermont

New Hampshire

Massachusetts

Connecticut

River

45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 22 23 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

**Head of Tide, River Mile 0**
**1,000 ft upstream of I-291**

1 inch equals 10 miles

0 5 10 20

Scale In Miles

73°0'0"W

72°0'0"W

43°0'0"N

42°0'0"N

# Fish Assemblage Survey of Selected New England Rivers Connecticut River

73°0'0"W
72°0'0"W
71°0'0"W
45°0'0"N
44°0'0"N

Québec

Vermont

New Hampshire

104 103 102 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44

1 inch equals 10 miles

0 5 10 20

Scale In Miles

SHEET 104

71°13'30"W

71°12'0"W

45°15'0"N

River Mile 351.0

Daniel Webster

River Mile 350.0

*Pittsburg*

45°13'30"N

River Mile 349.0

71°13'30"W

45°13'30"N

71°12'0"W

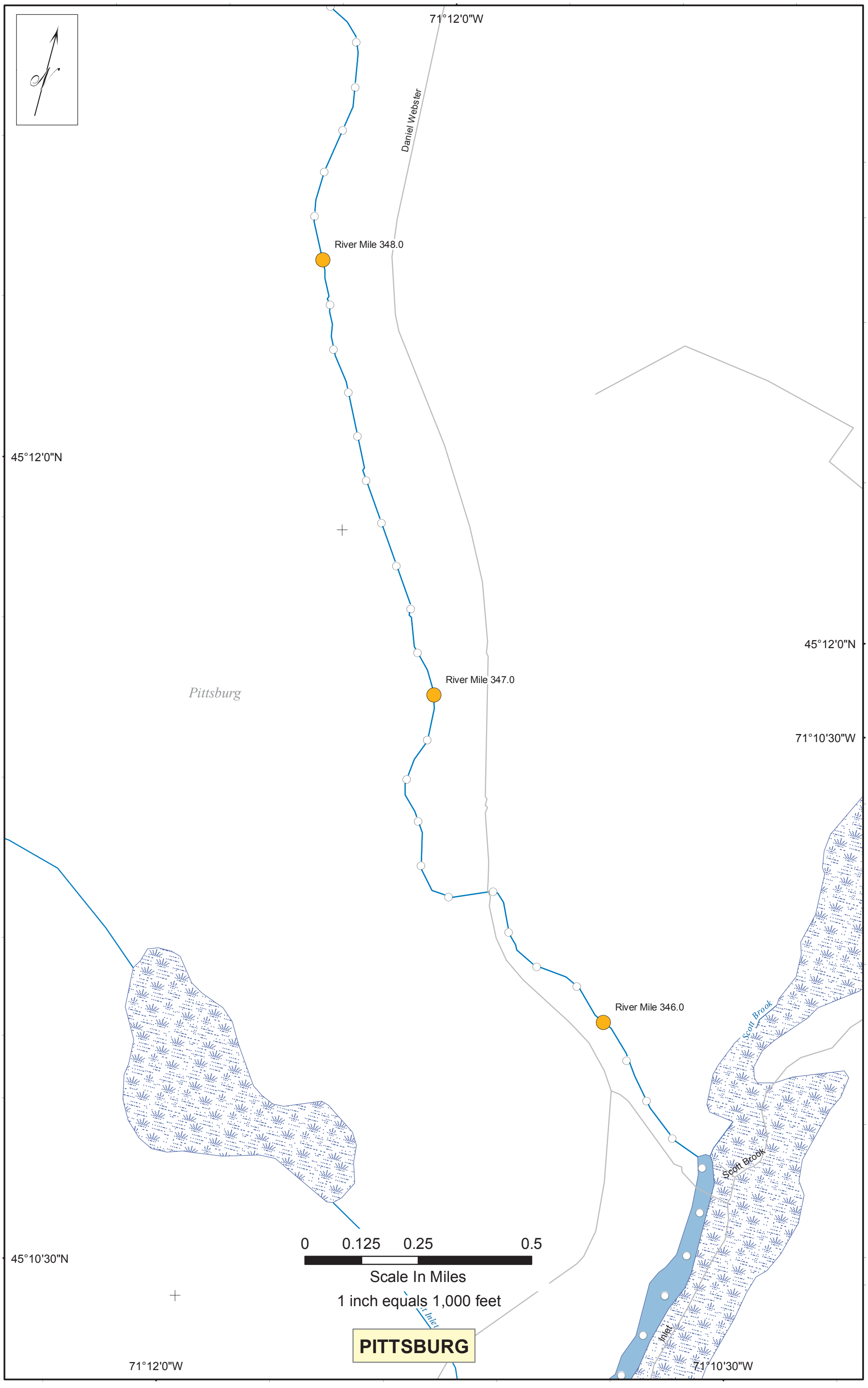
0 0.125 0.25 0.5

Scale In Miles

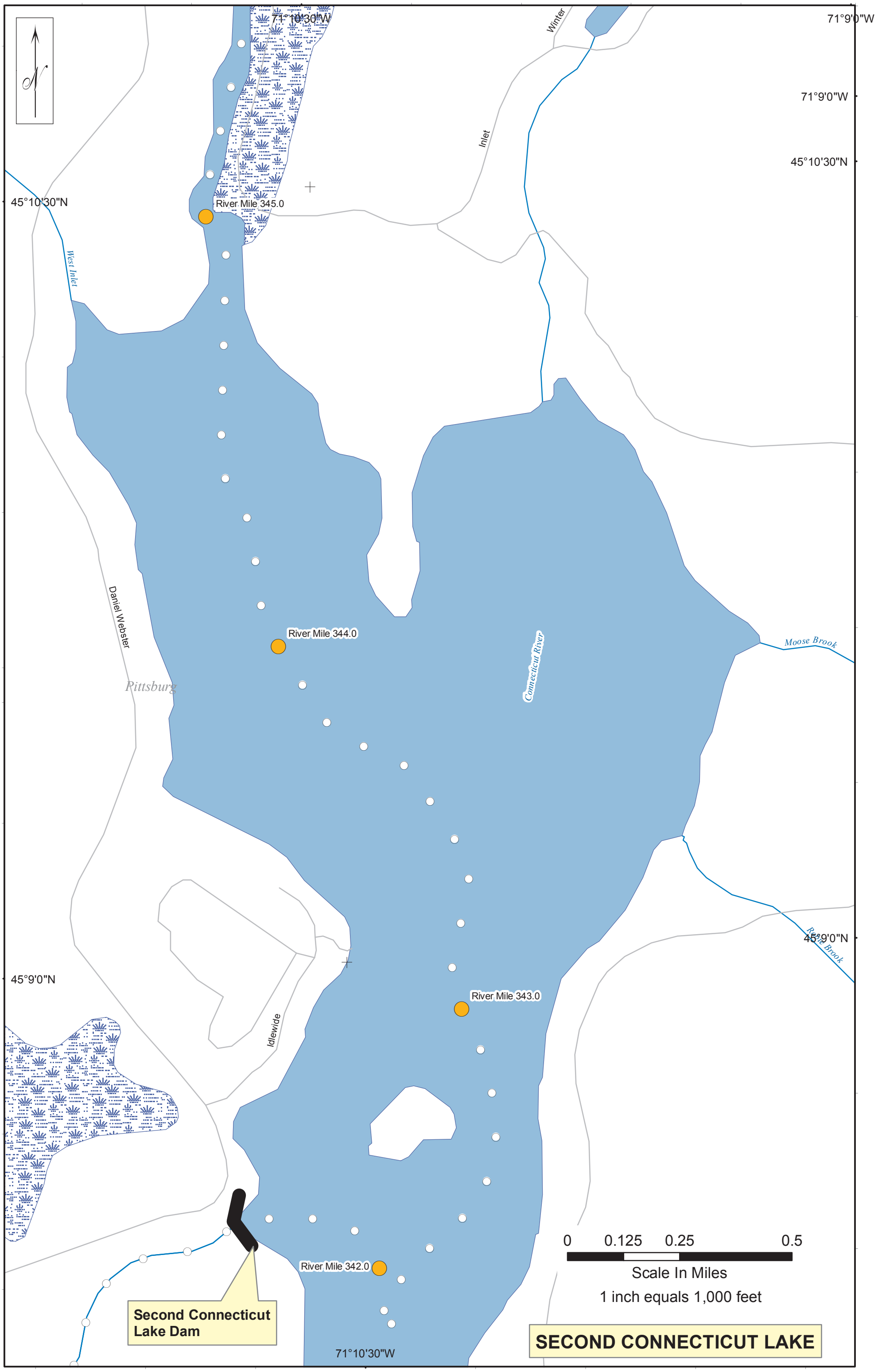
1 inch equals 1,000 feet

**CT RIVER HEADWATERS (PITTSBURG)**

SHEET 103


71°12'0"W
Daniel Webster
River Mile 348.0
45°12'0"N
River Mile 347.0
Pittsburg
71°10'30"W
River Mile 346.0
Scott Brook
Scott Brook
45°10'30"N
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
Inlet
Inlet
PITTSBURG
71°12'0"W
71°10'30"W

SHEET 102


71°10'30"W
71°9'0"W
45°10'30"N
River Mile 345.0
West Inlet
Winter
Inlet
Daniel Webster
Pittsburg
River Mile 344.0
Connecticut River
Moose Brook
45°9'0"N
River Mile 343.0
Idlewide
River Mile 342.0
Second Connecticut Lake Dam
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
SECOND CONNECTICUT LAKE

SHEET 101

71°12'0"W

45°9'0"N

71°10'30"W

45°7'30"N

71°13'30"W

Second Connecticut Lake Dam

River Mile 342.0

River Mile 341.0

River Mile 340.0

River Mile 339.0

River Mile 338.0

Daniel Webster

Pittsburg

Smith Branch

Smith Brook

Magalloway

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

# SECOND CONNECTICUT LAKE DAM

SHEET 100

45°7'30"N 71°13'30"W

45°7'30"N

71°15'0"W

45°6'0"N

71°13'30"W

Daniel Webster

Magalloway

River Mile 338.0

Machos

Camp Otter

Baldwin

Kendall

Currier

Pittsburg

River Mile 337.0

Connecticut River

Merrill

Lake Shore

The Glen

Timberland

River Mile 336.0

River Mile 335.0

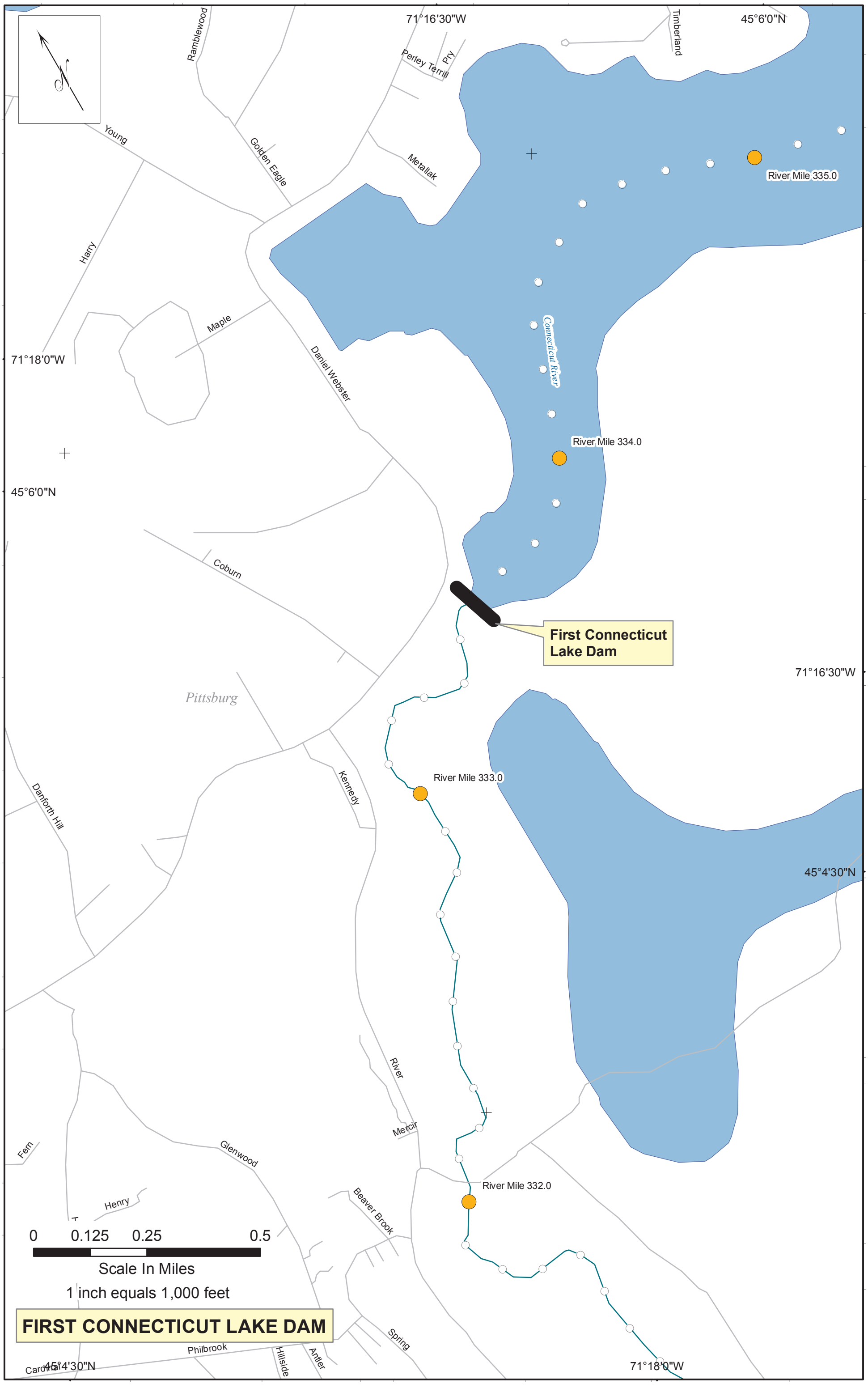
0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**FIRST CONNECTICUT LAKE**

SHEET 99


71°16'30"W
45°6'0"N
Timberland
Ramblewood
Perley Terrill
PIY
Young
Golden Eagle
Metallak
River Mile 335.0
Harry
Maple
71°18'0"W
Daniel Webster
Connecticut River
River Mile 334.0
45°6'0"N
Coburn
First Connecticut
Lake Dam
71°16'30"W
Pittsburg
River Mile 333.0
Danforth Hill
Kennedy
45°4'30"N
River
Mercir
Fern
Glenwood
Henry
River Mile 332.0
Beaver Brook
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
FIRST CONNECTICUT LAKE DAM
Spring
Philbrook
Hillside
Antler
Cardinal
45°4'30"N
71°18'0"W

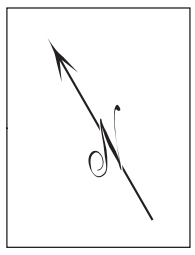
SHEET 98

45°4'30"N

71°18'0"W

71°16'30"W

River Mile 332.0



71°16'30"W

Spring

River Mile 331.0

River

Porcupine

Spring

Hillside

Fieldstone

45°3'0"N

Pittsburg

River

River Mile 330.0

71°19'30"W

45°3'0"N

River Mile 329.0

71°18'0"W

Clarksville

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**UPPER FRANCIS LAKE**

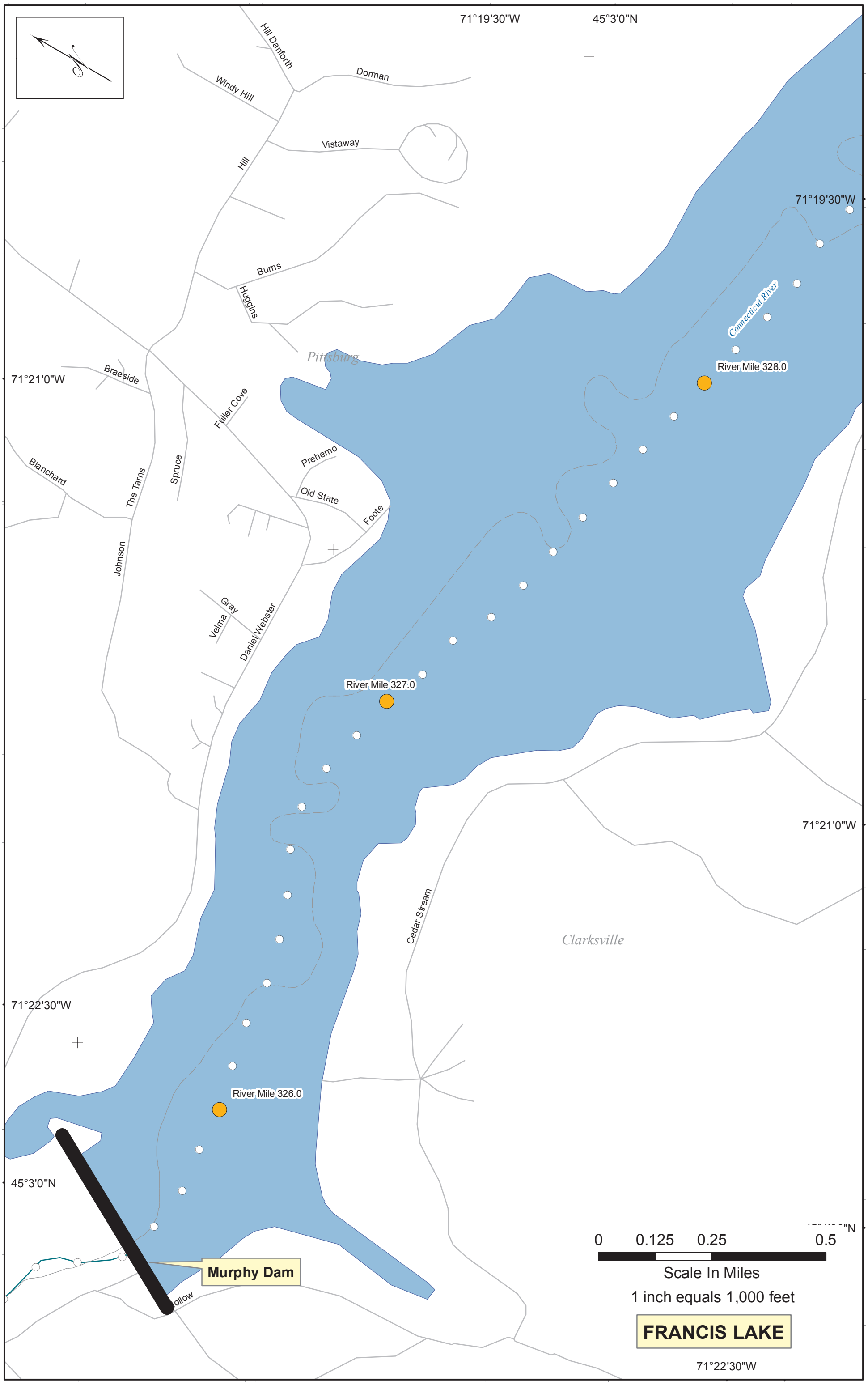
45°1'30"N

Cedar Stream

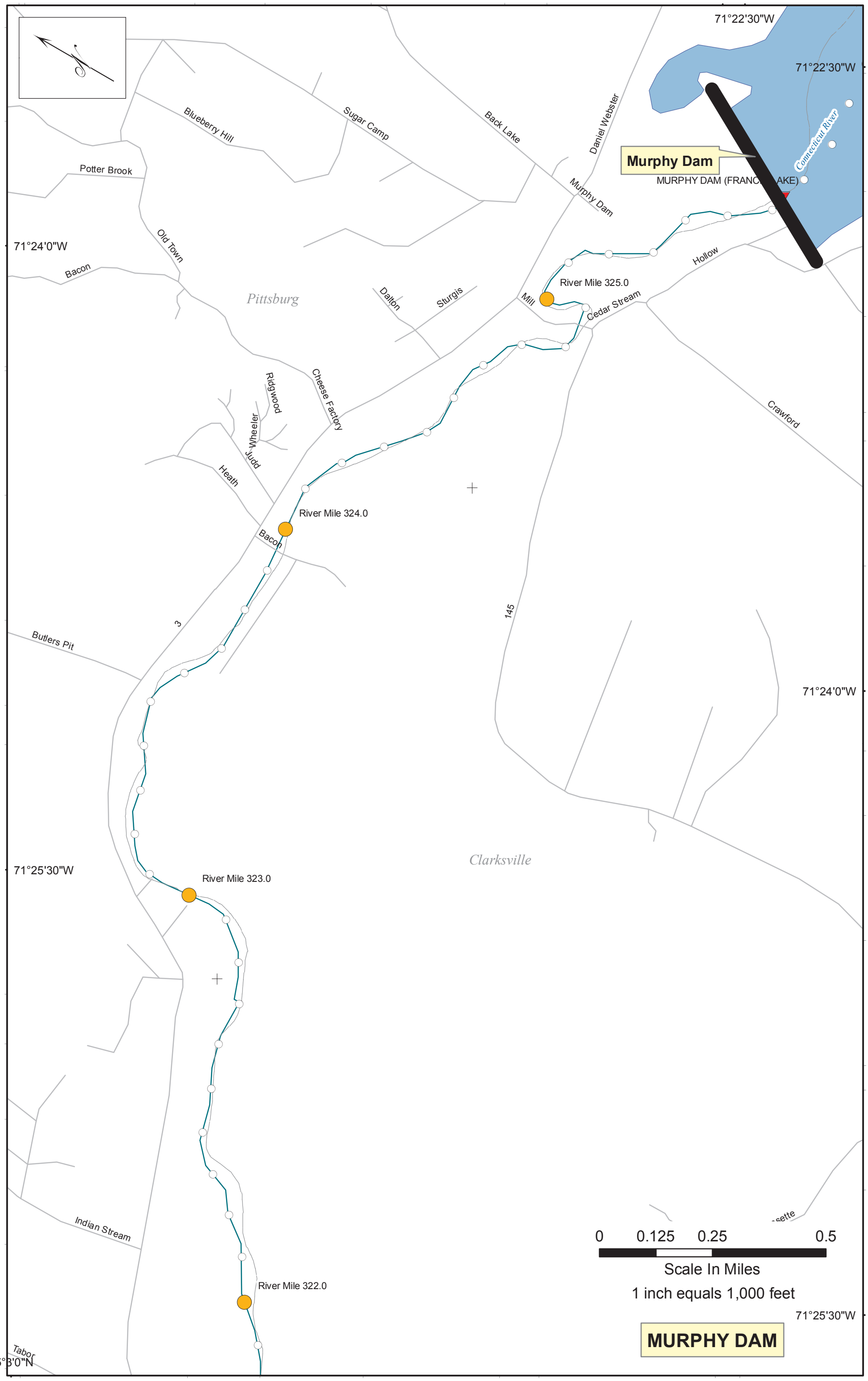
71°19'30"W

45°1'30"N

SHEET 97


71°19'30"W
45°3'0"N
71°19'30"W
71°21'0"W
71°21'0"W
71°22'30"W
45°3'0"N
Hill Danforth
Windy Hill
Dorman
Vistaway
Hill
Burns
Huggins
Pittsburg
Braeside
Fuller Cove
Prehemo
Old State
Foote
Blanchard
The Tarms
Spruce
Johnson
Gray
Velma
Daniel Webster
Cedar Stream
Clarksville
Connecticut River
River Mile 328.0
River Mile 327.0
River Mile 326.0
Murphy Dam
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
FRANCIS LAKE

SHEET 96


71°22'30"W
71°22'30"W
Murphy Dam
MURPHY DAM (FRANC AKE)
Connecticut River
Daniel Webster
Back Lake
Sugar Camp
Blueberry Hill
Potter Brook
Murphy Dam
71°24'0"W
Old Town
Bacon
Pittsburg
Dalton
Sturgis
Mill
River Mile 325.0
Cedar Stream
Hollow
Crawford
Cheese Factory
Ridgwood
Wheeler
Judd
Heath
River Mile 324.0
Bacon
3
Butlers Pit
145
71°24'0"W
Clarksville
71°25'30"W
River Mile 323.0
Indian Stream
River Mile 322.0
Tabor
45°3'0"N
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
71°25'30"W
MURPHY DAM

SHEET 95

71°27'0"W

45°3'0"N

Tabor

Indian Stream

River Mile 322.0

Pittsburg

River Mile 321.0

Washburn

3

River Mile 320.0

45°1'30"N

Clarksville

Beecher Falls

River Mile 319.0

Canaan

River

Haynes

71°27'0"W

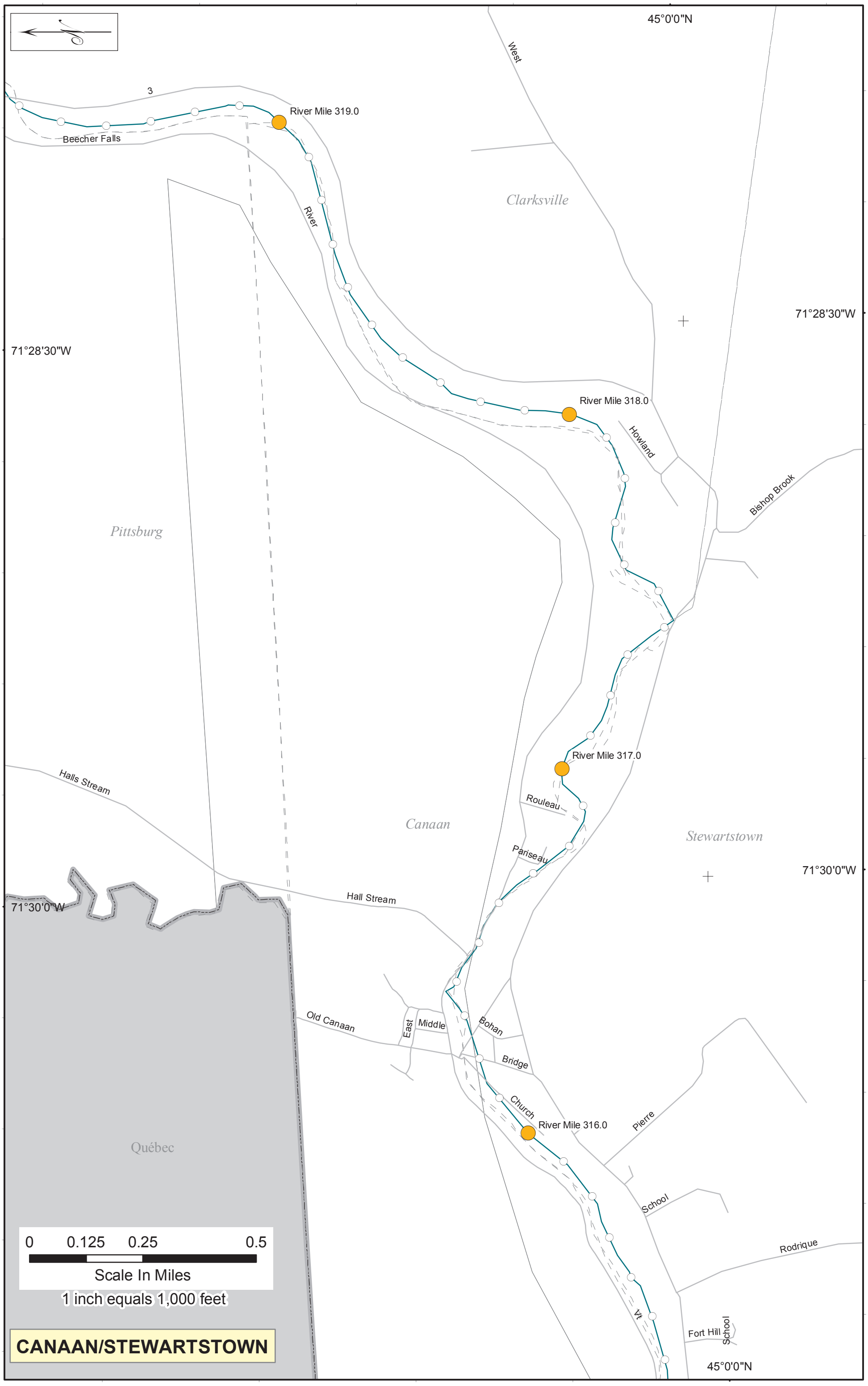
0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**PITTSBURG/CLARKSVILLE**

SHEET 94


45°0'0"N
71°28'30"W
71°30'0"W
3
Beecher Falls
River Mile 319.0
River
West
Clarksville
River Mile 318.0
Howland
Bishop Brook
Pittsburg
River Mile 317.0
Rouleau
Halls Stream
Canaan
Stewartstown
Pariseau
Hall Stream
Old Canaan
East
Middle
Bohan
Bridge
Church
River Mile 316.0
Pierre
School
Rodrique
Vt
Fort Hill
School
Québec
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
CANAAN/STEWARTSTOWN

SHEET 93

71°31'30"W

45°0'0"N

44°58'30"N

Vt

Green Hill

Hilltop Reservoir

Holmes

Routhier

River Mile 315.0

Vt

3

Fort Hill School

School

Pierre

Rodrique

Ethan Allen

Nathan

Gale

Kingsley

Power House

Park

School

Canaan Mobile Home

Mill

Centre

Main

Rancourt

Park

High

Creamery

Frechette

Treatment Plant

River Mile 314.0

Stewartstown

Back Pond

Recycling

Harriman

County Farm

Canaan Hill

River Mile 313.0

Kemp Hill

Trooper Leslie G Lord

Daniel Webster

Canaan

River Mile 312.0

Chamberlain

Vt

River Mile 311.0

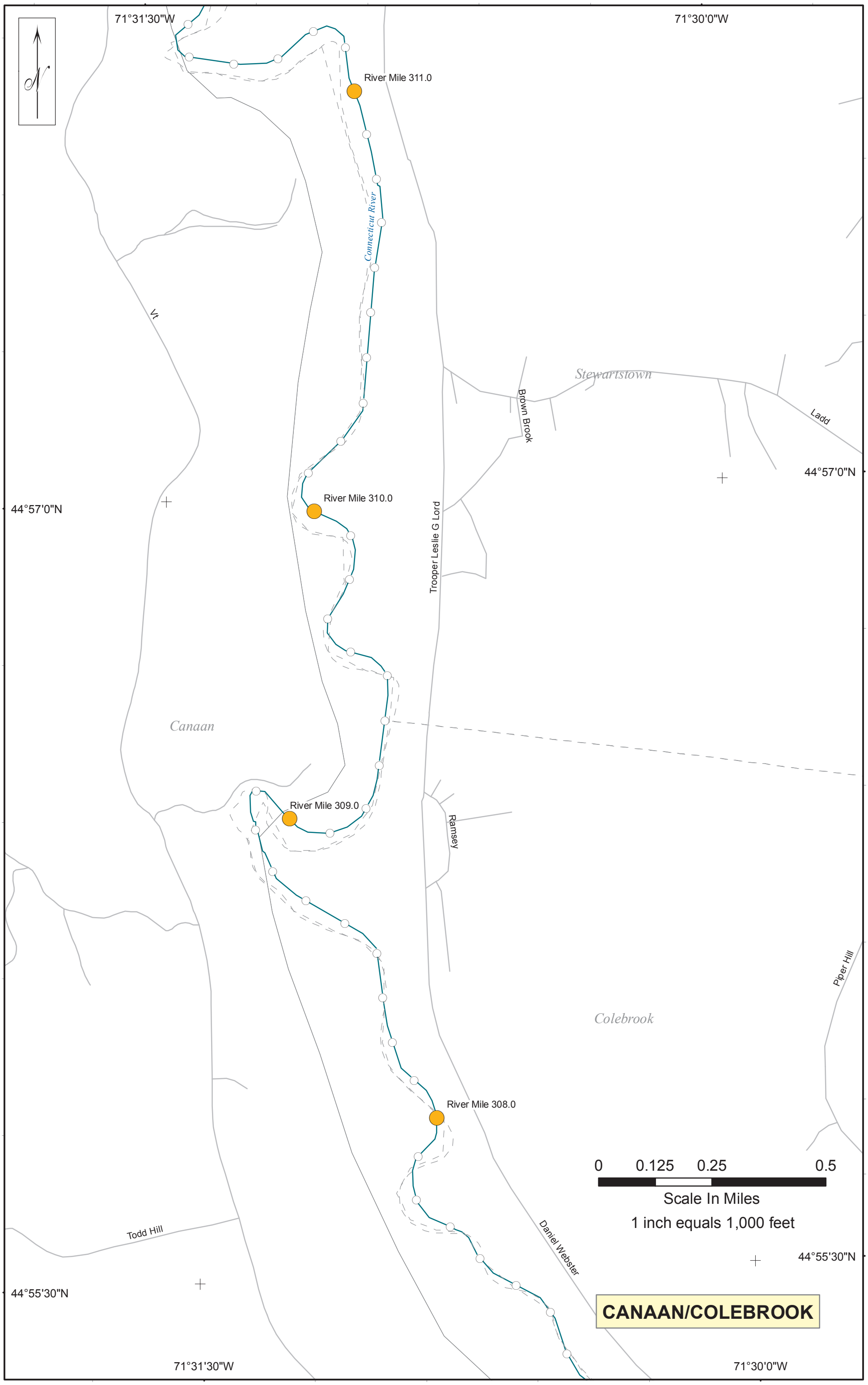
0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**CANAAN/STEWARTSTOWN**

SHEET 92


71°31'30"W
71°30'0"W
44°57'0"N
44°55'30"N
River Mile 311.0
River Mile 310.0
River Mile 309.0
River Mile 308.0
Connecticut River
Vt
Stewartstown
Brown Brook
Ladd
Trooper Leslie G Lord
Canaan
Ramsey
Piper Hill
Colebrook
Daniel Webster
Todd Hill
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
CANAAN/COLEBROOK

SHEET 91

71°31'30"W

71°30'0"W

44°55'30"N

44°54'0"N

Gould Hill

Piper Hill

Jeffers

Jeffers

Jeffers

River Mile 307.0

Luc

Canaan

Vt

Daniel Webster

Jackson

River Mile 306.0

Hughes

Cummings

Couture

Covell

River

River Mile 305.0

Edwards

Fire Tower

Beecher

Lemington

Mountain View

Lambert

Lynch

Gould

Bridge

Merrill

Park

Monadnock

Academy

Lombard

Pleasant

Brandy Lee

Hill

Colebrook

Cross

Parsons

Creamery

Dumont

High

Spring

River Mile 304.0

Titus Hill

Colby

Sunset

Main

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**LEMINGTON/COLEBROOK**

SHEET 90

71°31'30"W

Main

Colebrook

River Mile 303.0

44°52'30"N

River

P Meadow

Daniel Webster

71°33'0"W

Lemington

River Mile 302.0

Old Us 3

Columbia

44°52'30"N

Old Us 3

Trask

71°31'30"W

River Mile 301.0

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**LEMINGTON/COLUMBIA**

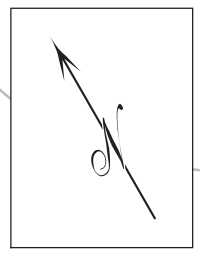
71°33'0"W

44°51'0"N

71°31'30"W

44°51'0"N

SHEET 89



71°33'0"W

44°51'0"N

Sims Hill

River

River Mile 300.0

Lyman

Jordan Hill

Simms

44°51'0"N

Lemington

River Mile 299.0

Daniel Webster

Columbia

71°34'30"W

Connecticut River

Jordan Hill

44°49'30"N

71°33'0"W

River Mile 298.0

Bloomfield

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**LEMINGTON/COLUMBIA**

44°49'30"N

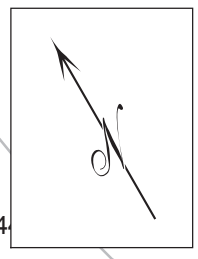
Crank

River Mile 297.0

71°34'30"W

Jenkins

SHEET 88



71°34'30"W

71°33'0"W

44°48'0"N

71°36'0"W

River Mile 297.0

River Mile 296.0

River Mile 295.0

River Mile 294.0

Crank

Jenkins

Hamel

Columbia

Spur

Stevens

Iva Fuller

Airport

Vt

Bloomfield

Cross

Fuller

Daniel Webster

Connecticut River

Meriden Hill

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**BLOOMFIELD/COLUMBIA**

SHEET 87

71°36'0"W

River Mile 294.0

Meriden Hill

Snow Hill

Fuller

Mill Brook

Buzzell Hill

Columbia

44°46'30"N

Gravel Pit

River Mile 293.0

River Mile 292.0

71°37'30"W

44°46'30"N

Bloomfield

Spencer Hill

Stratford

Nugent

Covey

71°36'0"W

Daniel Webster

Vt

44°45'0"N

River Mile 291.0

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**BLOOMFIELD/STRATFORD**

Tetreault

Farnsworth

Marshall

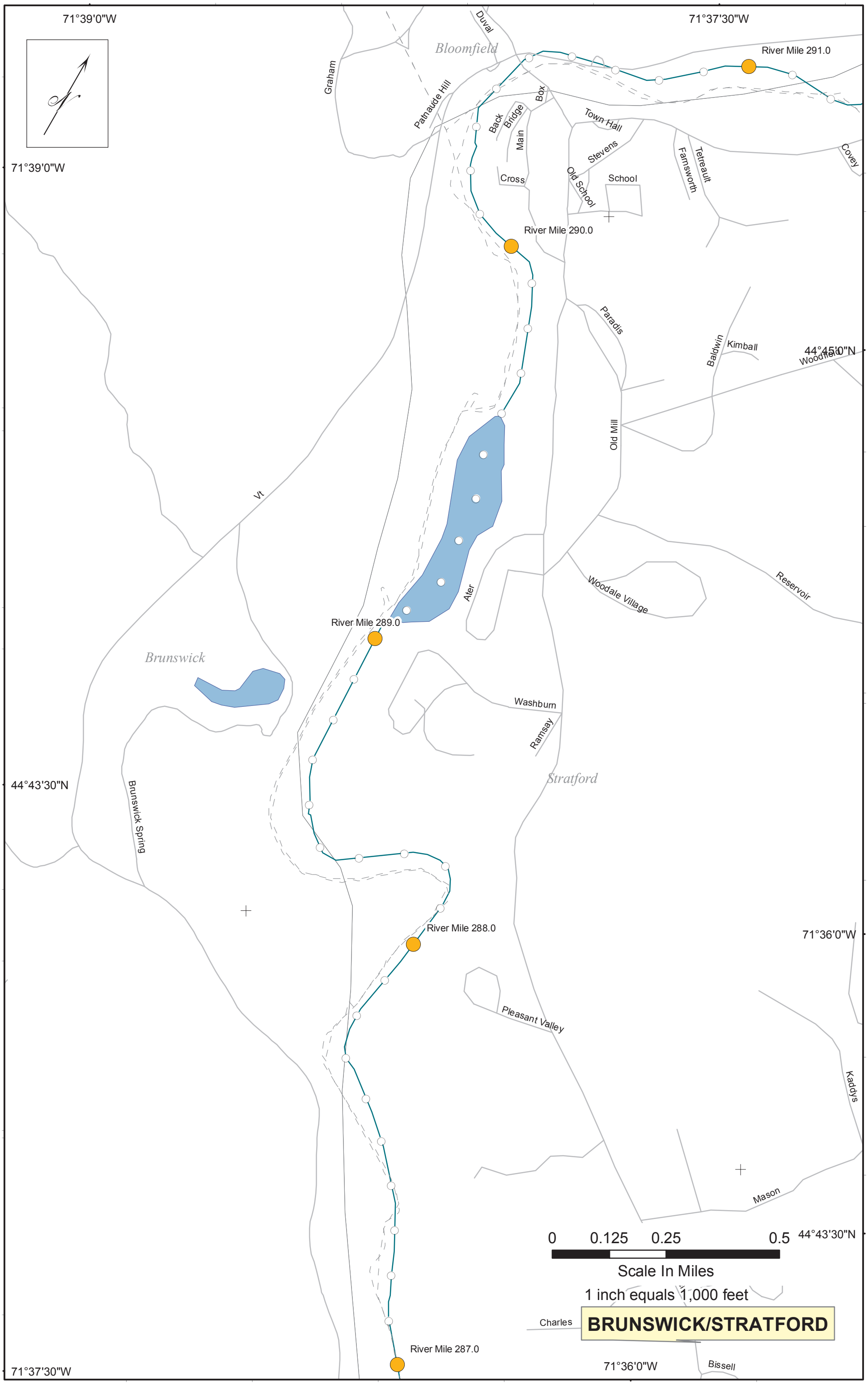
Stevens

71°37'30"W

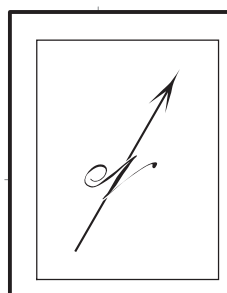
44°45'0"N

Baldwin

SHEET 86


71°39'0"W
71°37'30"W
Duval
Bloomfield
Graham
River Mile 291.0
Patnaude Hill
Box
Back
Bridge
Main
Town Hall
Stevens
Cross
Old School
School
Farnsworth
Tetreault
Covey
River Mile 290.0
Paradis
Baldwin
Kimball
Woodard
44°45'0"N
Old Mill
Vt
Ater
Woodale Village
Reservoir
River Mile 289.0
Brunswick
Washburn
Ramsay
Stratford
44°43'30"N
Brunswick Spring
River Mile 288.0
71°36'0"W
Pleasant Valley
Kaddys
Mason
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
Charles
BRUNSWICK/STRATFORD
Bissell
River Mile 287.0

SHEET 85



71°37'30"W

River Mile 287.0

Charles

71°36'0"W

Goulet

44°42'0"N

71°37'30"W

River Mile 286.0

Daniel Webster

Smith

Brunswick

Stratford

Maidstone Lake Access

River Mile 285.0

Maidstone Lake

44°42'0"N

Rainville

Fuller

Diamond

Scott

Vt

River Mile 284.0

44°40'30"N

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

71°34'30"W

**BRUNSWICK/STRATFORD**

Maidstone

71°36'0"W

71°34'30"W

SHEET 84

71°36'0"W

River Mile 284.0

71°34'30"W

Cheever

Levi

Hog Back

Percy

Mountain View

Pine

44°40'30"N

71°36'0"W

Brunswick

Plumley

River Mile 283.0

Vt

River Mile 282.0

Stratford

Daniel Webster

Milky Lane

Powerline

Mount View

Bog

Spur

Theberge

Hollow

Maidstone Bridge

Lamoureux

River Mile 281.0

44°39'0"N

River Mile 280.0

71°33'0"W

Maidstone

Mapleton Station

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

71°34'30"W

71°33'0"W

**MAIDSTONE/STRATFORD**

SHEET 83

71°34'30"W

71°33'0"W

44°39'0"N

Stratford

River Mile 279.0

River Mile 278.0

Maidstone

44°37'30"N

River Mile 277.0

River Mile 276.0

Ball

44°37'30"N

Connecticut River

Vt

Northumberland

Davenport

Daniel Webster

Brown

Mayhew

River Mile 275.0

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**MAIDSTONE/NORTHUMBERLAND**

71°33'0"W

SHEET 82

River Mile 275.0

71°33'0"W

Brown

44°36'0"N

River Mile 274.0

Craggy

44°36'0"N

River Mile 273.0

River Mile 272.0

Maidstone

River Mile 271.0

River Mile 270.0

44°34'30"N

Main

Vt

River Mile 269.0

Northumberland

Guildhall

44°34'30"N

0 0.125 0.25 0.5

71°31'30"W

Scale In Miles

1 inch equals 1,000 feet

**MAIDSTONE/NORTHUMBERLAND**

River Mile 268.0

Bridge

Marietta

Dean Brook

York

71°33'0"W

71°31'30"W

SHEET 81

71°34'30"W

Maidstone

44°34'30"N

Guildhall

River Mile 268.0

Courthouse

School

Courthouse

Bridge

Vt

North

River Mile 267.0

Main

Perras

River Mile 266.0

71°36'0"W

Northumberland

44°33'0"N

River Mile 265.0

Cloutier

44°33'0"N

River Mile 264.0

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**NORTHUMBERLAND**

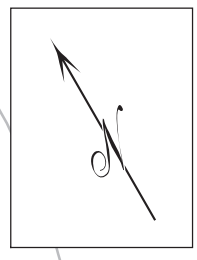
71°36'0"W

Vt

71°34'30"W

Lancaster

SHEET 80



71°34'30"W

44°31'30"N

River Mile 263.0

Old Groveton

Mayberry

Lancaster

Pine Haven

Main

44°31'30"N

River Mile 262.0

71°36'0"W

Stockwell

Vt

River Mile 261.0

Connecticut River

Fellows

44°30'0"N

River Mile 260.0

71°34'30"W

Guildhall

Bridge

River Mile 259.0

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**GUILDHALL/LANCASTER**

Gorham Hill

2

44°30'0"N

71°36'0"W

SHEET 79

71°36'0"W

44°30'0"N

Bridge

Vt

Gorham Hill

Water

Guildhall

River Mile 258.0

71°37'30"W

44°30'0"N

Morin

71°36'0"W

River Mile 257.0

44°28'30"N

Connecticut River

Town

Lancaster

Lunenburg

River Mile 256.0

Elm

River Mile 255.0

2

71°39'0"W

0 0.125 0.25 0.5 /

Scale In Miles

1 inch equals 1,000 feet

Bobbin Mill

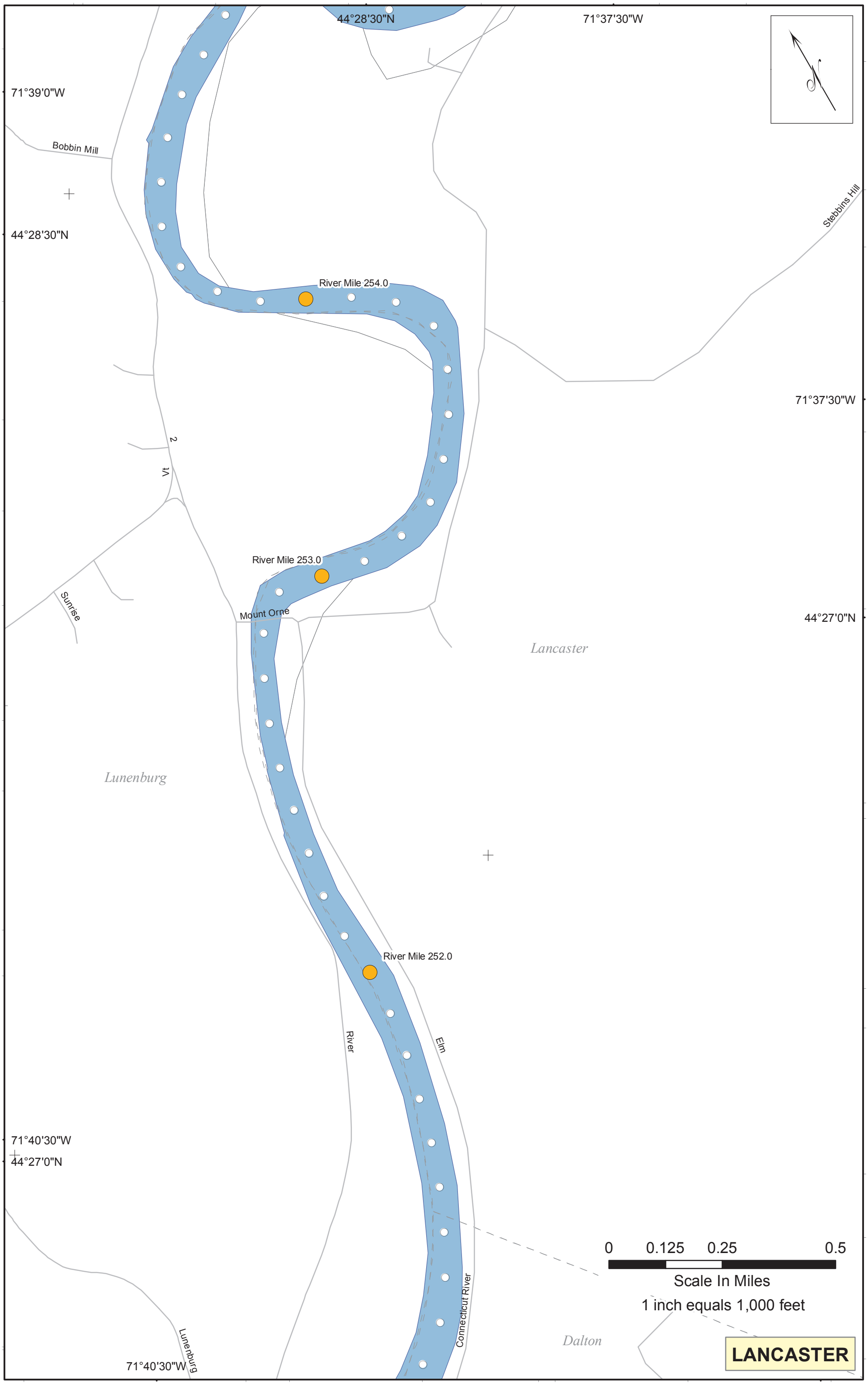
71°39'0"W

Bobbin Mill

44°28'30"N

**UPPER LUNENBURG/LANCASTER**

SHEET 78


44°28'30"N
71°37'30"W
71°39'0"W
Bobbin Mill
44°28'30"N
Stebbins Hill
River Mile 254.0
71°37'30"W
2
Vt
River Mile 253.0
Sunrise
Mount Orne
44°27'0"N
Lancaster
Lunenburg
River Mile 252.0
River
Elm
Connecticut River
71°40'30"W
44°27'0"N
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
Dalton
71°40'30"W
Lunenburg
LANCASTER

SHEET 77

44°27'0"N

71°39'0"W

44°25'30"N

71°40'30"W

71°42'0"W

Connecticut River

Bush

River Mile 251.0

Lunenburg

Whitefield

French

Connecticut River

River Mile 250.0

River

Town

Dalton

Maillett

Dalton

Simonds

Big Hill

Lunenburg

River Mile 249.0

Town

Blakslee

Town

River Mile 248.0

Gilman Farm

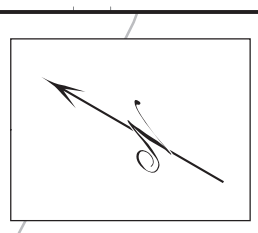
0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**LUNENBURG**

SHEET 76



44°25'30"N

71°42'0"W

71°43'30"W

71°45'0"W

44°24'0"N

River Mile 248.0

River Mile 247.0

River Mile 246.0

River Mile 245.0

Connecticut River

Baptist Hill

Church

Commercial

Elm

Town

River

Cedar

Jefferson

Commercial

Dodge

Lunenburg

Dalton

Mcginty

Riverside

Bridge Hill

Cushton

Nichols

Union

Smith

Duval

Landry

Landry

Landry

Harriman

Walker Pit

Pit

River

De Briggaman

Concord

Hynes

Cozy Nook

Littleton

Buck

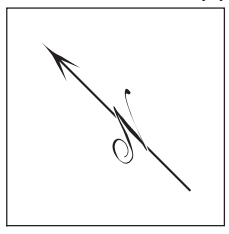
0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**LUNENBURG/DALTON**

SHEET 75



71°46'30"W

44°24'0"N

Cozy Nook

Dalton

River Mile 244.0

Littleton

71°48'0"W

Concord

River Mlle 243.0

Littleton

Connecticut River

Bombard

44°24'0"N

River Mile 242.0

Johnson

44°22'30"N

0 0.125 0.25 0.5

Scale In Miles

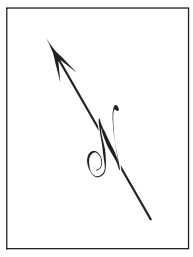
1 inch equals 1,000 feet

**CONCORD/LITTLETON**

44°22'30"N 71°48'0"W

Dalton

SHEET 74



71°48'0"W

44°22'30"N

71°49'30"W

River Mile 241.0

Littleton

Dalton

Littleton

Perkins Landing

Riverview

71°48'0"W

44°22'30"N

Connecticut River

Grist Mill Pit

River Mile 240.0

Concord

Littleton

44°21'0"N

River Mile 239.0

Ready

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**CONCORD/LITTLETON**

71°51'0"W

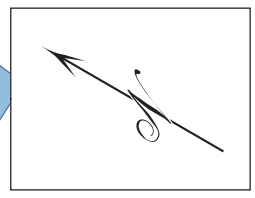
Waterford

71°51'0"W

44°21'0"N

71°49'30"W

SHEET 73



44°21'0"N

71°49'30"W

71°49'30"W

Concord

Old Waterford

71°51'0"W

River Mile 238.0

Connecticut River

Waterford

River Mile 237.0

71°51'0"W

Littleton

Old County

44°21'0"N

71°52'30"W

Riverside Cemetery

44°19'30"N

River Mile 236.0

Moore Dam

Saint Johnsbury

Vt

River Mile 235.0

18

Connecticut River

93

0 0.125 0.25 0.5

Scale In Miles

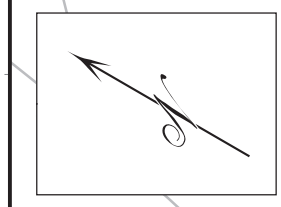
1 inch equals 1,000 feet

MOORE DAM

71°52'30"W

44°19'30"N

SHEET 72



71°54'0"W

44°21'0"N

River Mile 235.0

Whitemore

Vt

Connecticut River

Maple

Monroe

Connecticut River

River Mile 234.0

71°54'0"W

Lower Waterford

71°55'30"W

Waterford

Littleton

River Mile 233.0

44°21'0"N

Skinny Ridge

44°19'30"N

71°55'30"W

River Mile 232.0

Duck Pond

71°57'0"W

Connecticut River

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**WATERFORD/LITTLETON**

Chamberlain

71°57'0"W

44°19'30"N

SHEET 71

71°57'0"W

44°21'0"N

71°58'30"W

44°21'0"N

71°57'0"W

44°19'30"N

71°58'30"W

44°19'30"N

Duck Pond

Hale

Waterford

Lower Waterford

Chamberlain

Deer Run

Copenhagen

Birch Tree

River Mile 231.0

Littleton

Connecticut River

Monroe

Stanton

River Mile 230.0

Barnet

Connecticut River

Monroe

Littleton

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**WATERFORD/LITTLETON**

SHEET 70

72°1'30"W

72°0'0"W

44°19'30"N

Comerford Dam

River Mile 229.0

Dam

Denio

Barnet

River Mile 228.0

Connecticut River

Comerford Dam

44°19'30"N

Ward

Little France

River Mile 227.0

Monroe

91

Buffum

44°18'0"N

Sunset

5

72°3'0"W

Knight

Tammys

Littleton

Judys

River Mile 226.0

Tyler

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**COMERFORD DAM**

44°18'0"N

72°1'30"W

SHEET 69

72°3'0"W

44°18'0"N

72°1'30"W

River Mile 226.0

Judys

Tammys

Tyler

Knights

5

72°1'30"W

Sunnyside

Gilchrest

Littleton

Anderson

Barnet

Church

Farman

Mill Hill

Creamery

Nelson

44°18'0"N

River Mile 225.0

5 Carter

Grange Hall

Bimson

Main

Granger

Barnet

Monroe

Barnet

Monroe

44°16'30"N

River Mile 224.0

91

Gilmore

72°4'30"W

Garland Hill

Pearlmont

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

River Mile 223.0

River Mile 222.0

Main

Fairfield

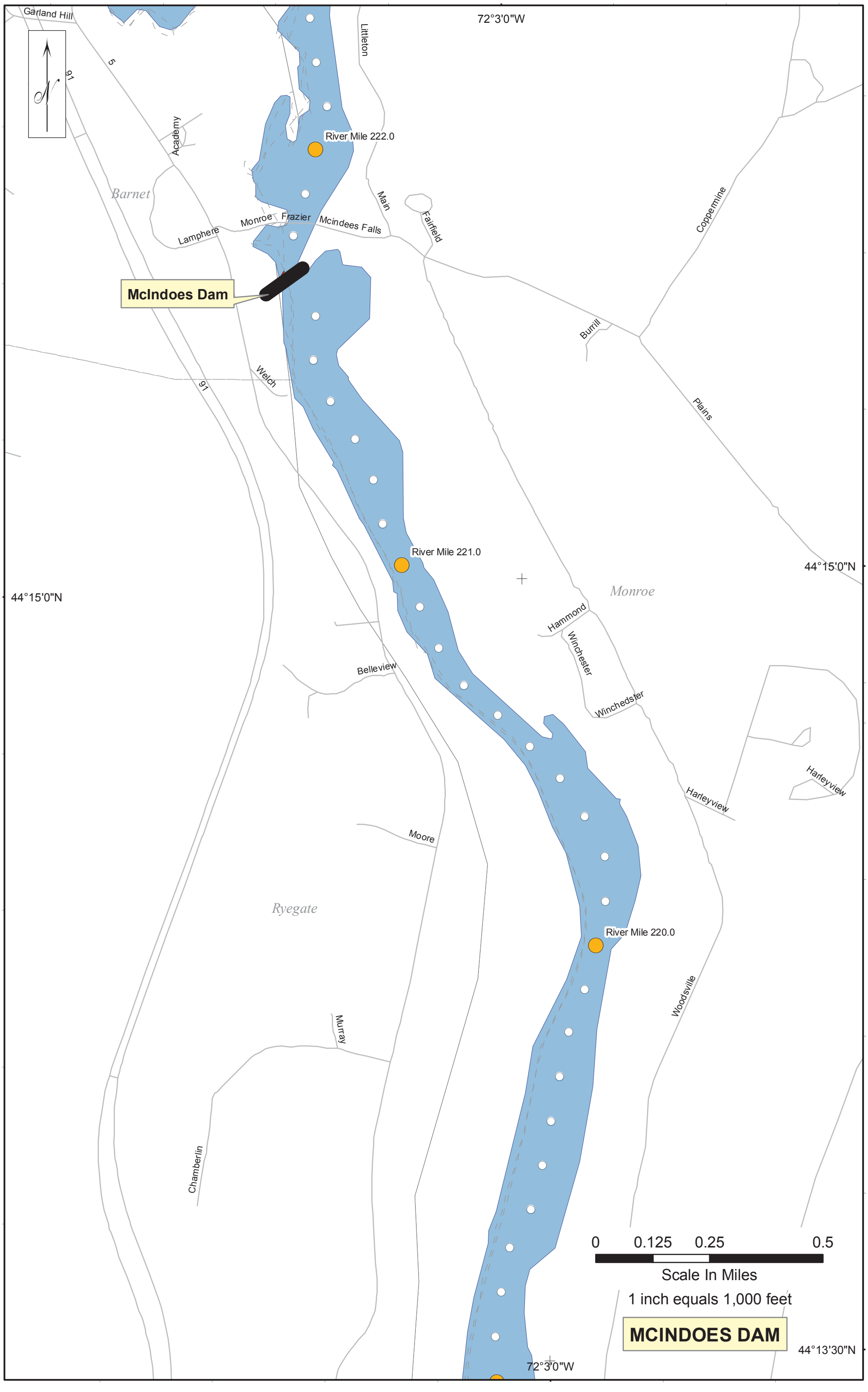
44°16'30"N

**BARNET/MONROE**

72°4'30"W

72°3'0"W

SHEET 68


72°3'0"W
Garland Hill
5
91
Littleton
Academy
River Mile 222.0
Barnet
Main
Monroe
Frazier
Mcindees Falls
Lamphere
Fairfield
Coppermine
McIndoes Dam
Burrill
Welch
91
Plains
River Mile 221.0
44°15'0"N
44°15'0"N
Monroe
Hammond
Winchester
Belleview
Winchedster
Harleyview
Harleyview
Moore
Ryegate
River Mile 220.0
Woodsville
Murray
Chamberlin
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
MCINDOES DAM
44°13'30"N
72°3'0"W

SHEET 67

72°4'30"W

72°3'0"W

44°13'30"N

44°12'0"N

River Mile 219.0

River Mile 218.0

River Mile 217.0

River Mile 216.0

Ryegate Dam

RYEGATE/BATH

Ryegate

Monroe

Bath

Woodsville

Monroe

P Flint

Locke

Gibson

Longmoore

East

Davenella

Birchwood

Davidson

Dargie

Keenan

Reservoir Hill

Papermill

Wallace

Farm

Russell

River

School

Wilson

Weesner

5

91

91

Connecticut River

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

SHEET 66

72°4'30"W

72°3'0"W

Davidson

91

Elliot

44°10'30"N

72°4'30"W

River Mile 216.0

Locke

Monroe

Ryegate

River Mile 215.0

Bath

5

44°10'30"N

Mountain View

Bayley Hazen

Bible Hill

River Mile 214.0

Randall Hill

Newbury

Water

302

Mill

Roystan Ridge

Main

Maple

Shaeffer Hill

Bristol

44°9'0"N

Creamery

Grove

Center

Engle

Johnson

Railroad

Abbott

River Mile 213.0

Haverhill

Pleasant

Central

Court

72°3'0"W

72°1'30"W

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**RYEGATE/BATH**

72°1'30"W

SHEET 65

72°3'0"W

Ryegate

Bible Hill

Cemetery

Water

Maple

Shaeffer Hill

Johnson

Monroe

Abbott

Bath

Mill

Roystan Ridge

Creamery

Grove

Railroad

Engle

Central

Court

Oak Hill

Ammonoosuc

Holly

Locust

Nelson

Cherry

Gordon

Gibson

Highland

Gordon

Pleasant

Old Farm

River Mile 213.0

Connecticut

School

Railroad

Maple

Elm

Perkins

Hospital

Pine

Beech

Smith

Mill

King

Park

King

High

Terrace

Central

Montebello

Birch

Smith

Forest

44°9'0"N

44°9'0"N

302

Tullar

Main

Elm

Newbury

River Mile 212.0

5

Court

Melody

Hospital

Hastings

Baldwin

Dartmouth College

Round Barn

Ledger

River Mile 211.0

44°7'30"N

44°7'30"N

River Mile 210.0

Haverhill

0 0.125 0.25 0.5

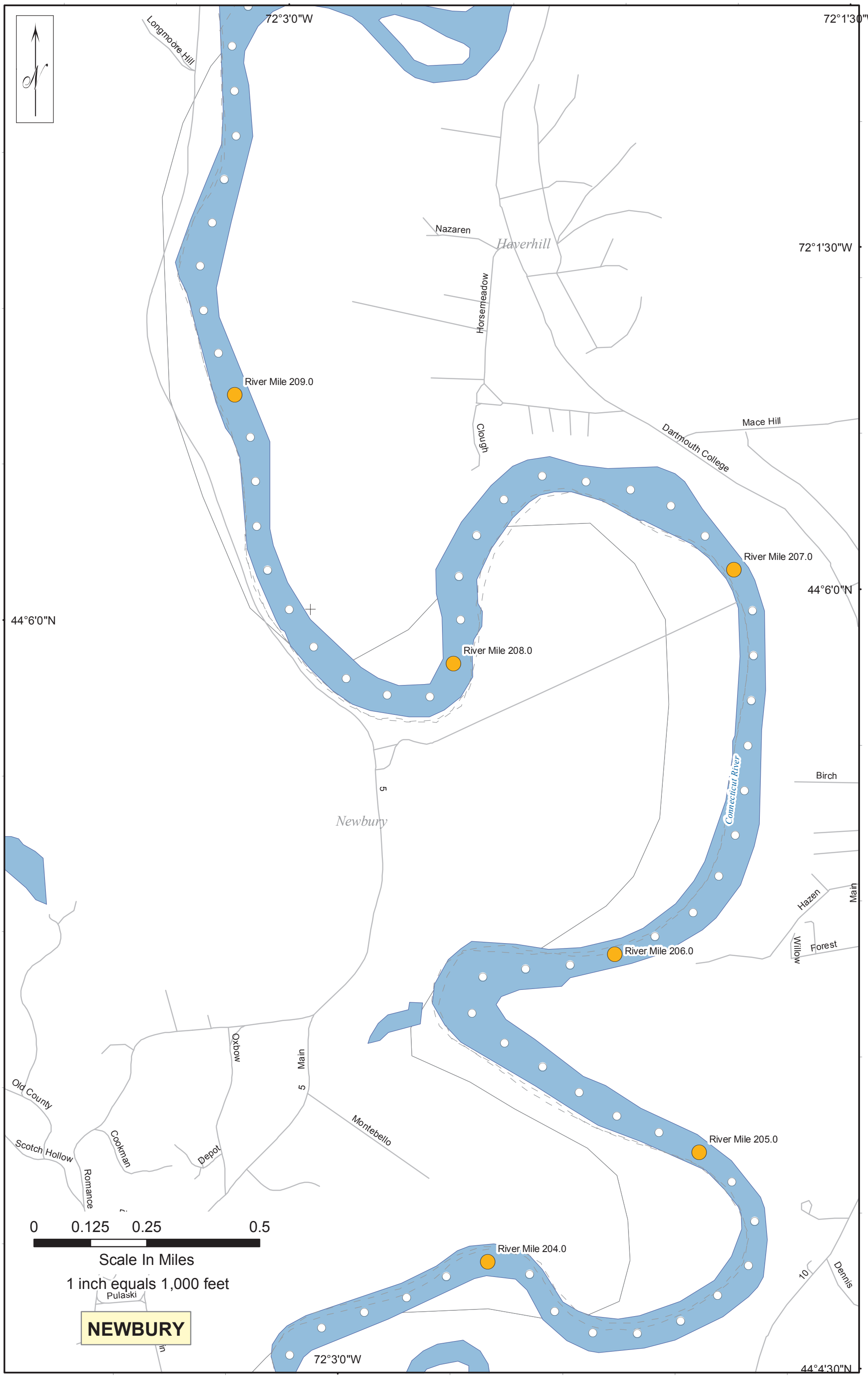
Scale In Miles

1 inch equals 1,000 feet

**UPPER NEWBURY**

72°3'0"W

SHEET 64


72°3'0"W
72°1'30"W
Longmoore Hill
Nazaren
Haverhill
72°1'30"W
Horsemeadow
River Mile 209.0
Clough
Mace Hill
Dartmouth College
River Mile 207.0
44°6'0"N
44°6'0"N
River Mile 208.0
Connecticut River
Birch
5
Newbury
Hazen
Main
Willow
Forest
River Mile 206.0
Oxbow
5 Main
Old County
Montebello
Scotch Hollow
Cookman
Depot
Romance
River Mile 205.0
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
River Mile 204.0
10
Dennis
Pulaski
NEWBURY
72°3'0"W
44°4'30"N

SHEET 63

72°3'0"W

72°1'30"W 44°4'30"N

72°1'30"W

44°4'30"N

72°4'30"W

44°3'0"N

72°3'0"W

72°4'30"W

Main

5

Montebello

Oxbow

Depot

Cookman

Pine

Chapel

Pulaski

Pulaski

Main

Trailer Park

10

River Mile 204.0

River Mile 203.0

River Mile 202.0

River Mile 201.0

Newbury Crossing

Newbury Street Newbury

Tail Gate

Newbury

Haverhill

Moore Hill

Scott

County

Depot

Rowley

Cemetery

Hollins

Ladd

Slight

Tannery

Pine

Lawrence

Mount Moosilauke

Meadow

Merchants

Stonecrest

Stone Crest

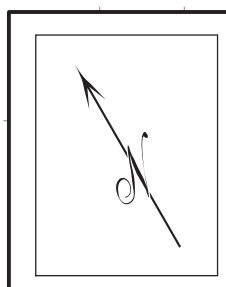
0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**NEWBURY/HAVERHILL**

SHEET 62



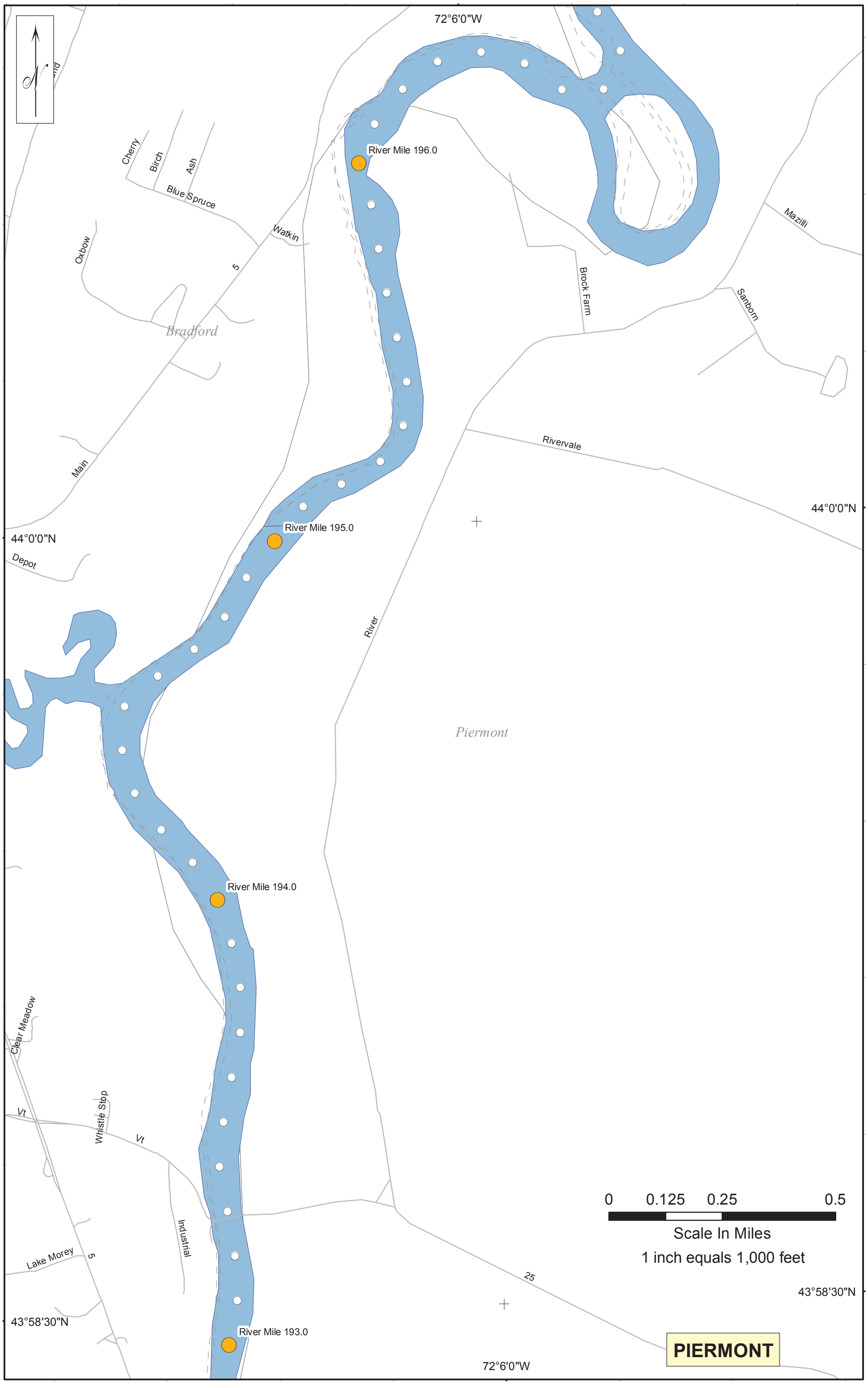
72°4'30"W
44°3'0"N
72°3'0"W
72°3'0"W
44°3'0"N
72°6'0"W
44°1'30"N
72°4'30"W
44°1'30"N
72°6'0"W

Ladd
Tannery
Pine
Lawrence
Mount Moosilauke
Merchants
Stonecrest
Stone Crest
Slateridge
Meadow
Bed And Bridge
Pleasant View Pleasant View
10
5
Toll House
Scott
Snake
Doe Hill
Doe
Connecticut River
River Mile 200.0
River Mile 199.0
River Mile 198.0
River Mile 197.0
Haverhill
Newbury
Bradford
Roaring Brook

0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet

**BRADFORD**

SHEET 61


72°6'0"W
River Mile 196.0
Cherry
Birch
Ash
Blue Spruce
Watkin
Oxbow
5
Bradford
Brock Farm
Mazilli
Sanborn
Main
Rivervale
44°0'0"N
River Mile 195.0
Depot
River
Piermont
River Mile 194.0
Clear Meadow
Vt
Whistle Stop
Vt
Industrial
Lake Morey
5
25
43°58'30"N
River Mile 193.0
72°6'0"W
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
PIERMONT

SHEET 60

72°6'0"W

43°58'30"N

Industrial

25

River Mile 193.0

Piermont

Wakefield

River Mile 192.0

Perry Wendell

Charlies Farm

Darling

Pratt

River Mile 191.0

Bradford

Bean Brook

Alan

5

Mallary

River Mile 190.0

Fairlee

43°57'0"N

River Mile 189.0

Grimes Hill

10

Orford

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**UPPER FAIRLEE/ORFORD**

72°6'0"W

SHEET 59

72°7'30"W

River Mile 188.0

43°55'30"N

Maurice Roberts Memorial

Private

Fairlee

Redmond

72°9'0"W

43°55'30"N

Lake Morey

River Mile 187.0

Joes

Clubhouse

Brennan

Fairview

Terry Hill

Main

Adams

River Mile 186.0

72°7'30"W

43°54'0"N

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**FAIRLEE/ORFORD**

72°9'0"W

43°54'0"N

SHEET 58

72°9'0"W

43°54'0"N

Clubhouse

Lake Morey

Brennan

Fairview

Main

Adams

River Mile 185.0

Ackerman

Woodland

Terry Hill

Dump

Knox The

Batchelder

Old Farm

Pierson

Birch Meadow

Indian Acres

43°54'0"N

72°10'30"W

Hemlock

Brackett

Orford

River Mile 184.0

Fairlee

Oak

5

72°9'0"W

43°52'30"N

Bragg Hill

Private

Sunrise

Vt

River Mile 183.0

River

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**FAIRLEE/ORFORD**

Ely

River Mile 182.0

Lyme

Breck Hill

Thetford

91

43°52'30"N

72°10'30"W

SHEET 57

43°52'30"N

72°10'30"W

91

5

Ely

River Mile 182.0

River Mile 181.0

Clay

Breck Hill

43°51'0"N

Lyme

Gregory

River Mile 180.0

Connecticut River

43°51'0"N

72°12'0"W

Cider Mill

Bridge

Thetford

River

Schoolhouse Hill

River Mile 179.0

Turnpike

Park

Latham

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**THETFORD/LYME**

72°12'0"W

72°10'30"W

SHEET 56

72°10'30"W

43°49'30"N

River

River Mile 178.0

Lyme

43°49'30"N

Sanborn

72°12'0"W

Wilson

Depot

Vt

River Mile 177.0

72°10'30"W

Church

Cadwell

Berger

43°48'0"N

All Season

5

Thetford

Vt

Evans

Rock Pine

Cobble Hill

Cobble Hill

Asa Burton

Pavillion

Chiott

Vaughan

River Mile 176.0

Quail John

Connecticut River

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**THETFORD/LYME**

91

Godfrey

91

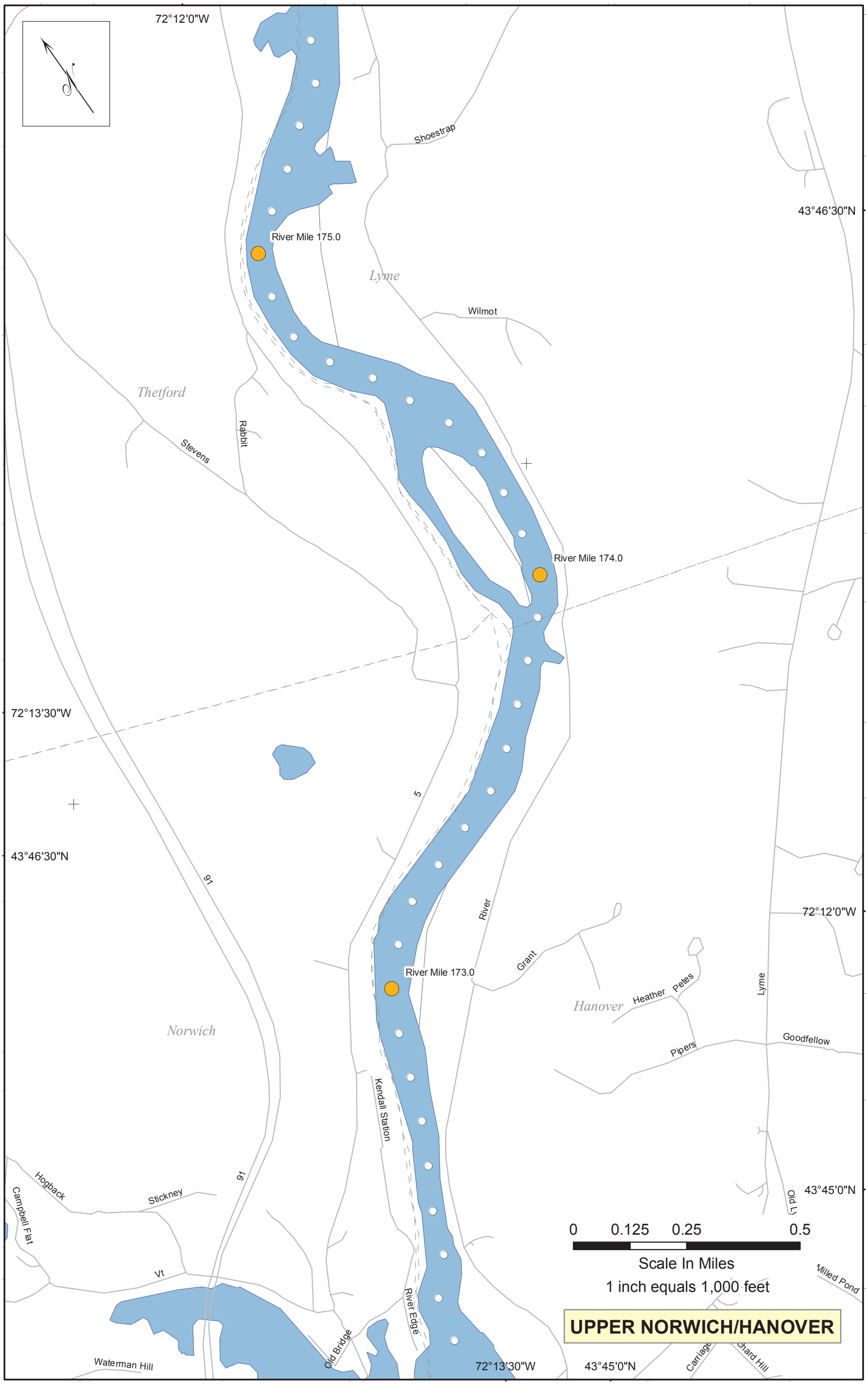
Stevens

Shoestrap

43°48'0"N

72°12'0"W

SHEET 55


72°12'0"W
43°46'30"N
Shoestrap
River Mile 175.0
Lyme
Wilmot
Thetford
Stevens
Rabbit
River Mile 174.0
72°13'30"W
43°46'30"N
5
91
River
Grant
River Mile 173.0
Hanover
Heather
Petes
Lyme
Goodfellow
Pipers
Norwich
Kendall Station
91
Hogback
Campbell Flat
Stickney
Vt
Old Bridge
River Edge
Waterman Hill
72°13'30"W
43°45'0"N
Carriage
Old Ly
43°45'0"N
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
UPPER NORWICH/HANOVER

SHEET 54

72°13'30"W

43°45'0"N

River

Kendall Station

Stickney

gback

Campbell Flat

Old Bridge

River Mile 172.0

Vt

Hemlock

Drewry

Waterman Hill

72°13'30"W

72°15'0"W

Carriage

Lindy

Pinneo Hill

River Mile 171.0

Norwich

Hanover

Farrell

Oakridge

Farrel

91

Connecticut River

5

72°15'0"W

River Mile 170.0

43°45'0"N

Town Farm

72°16'30"W

43°43'30"N

Lyme

Butternut

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

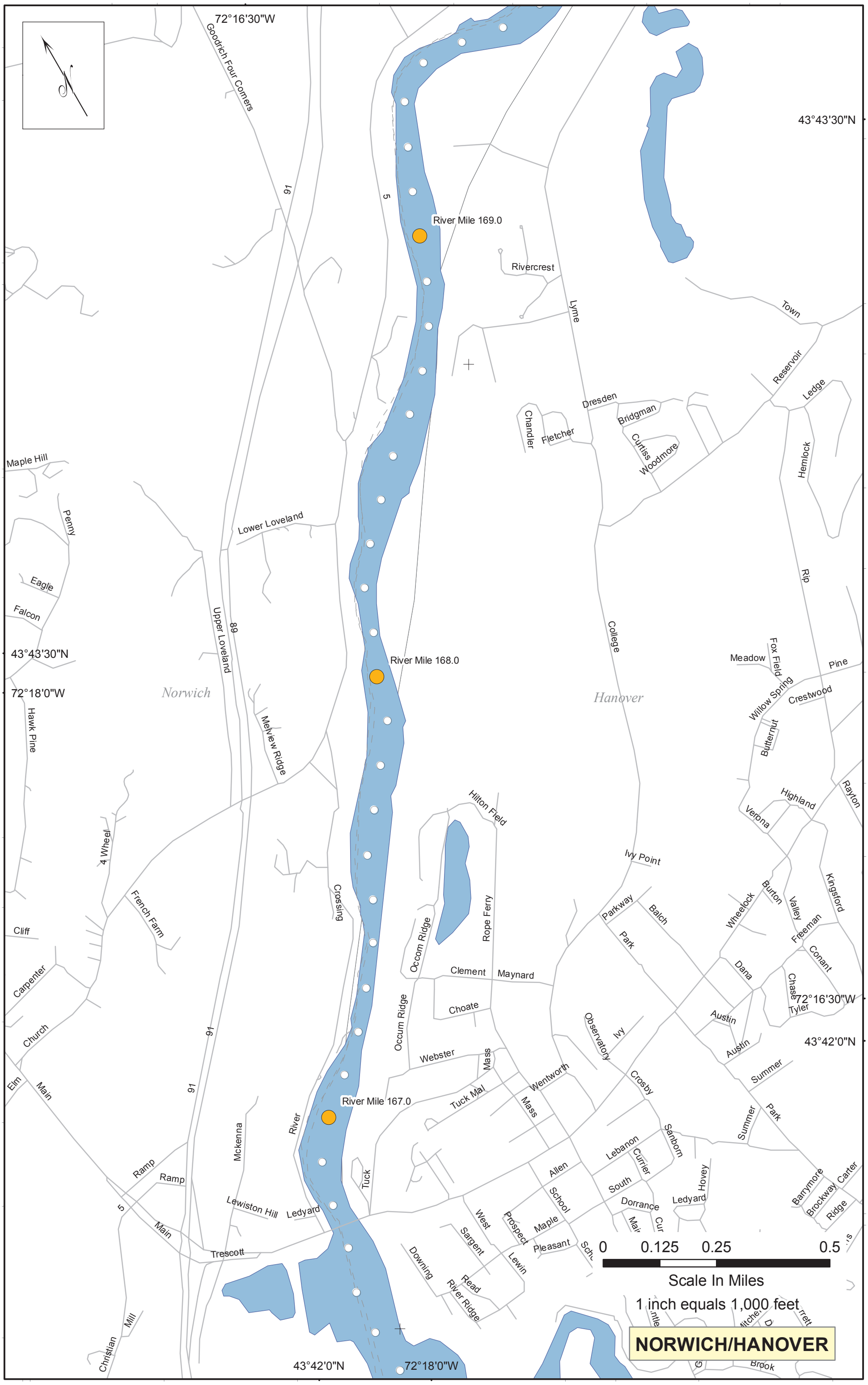
**NORWICH/HANOVER**

72°16'30"W

43°43'30"N

Town

SHEET 53


72°16'30"W
43°43'30"N
Goodrich Four Corners
91
5
River Mile 169.0
Rivercrest
Lyme
Town
Reservoir
Ledge
Dresden
Bridgman
Chandler
Fletcher
Curtiss
Woodmore
Hemlock
Maple Hill
Penny
Eagle
Falcon
43°43'30"N
72°18'0"W
Lower Loveland
Upper Loveland
89
River Mile 168.0
Norwich
Hanover
Meadow
Fox Field
Pine
Willow Spring
Crestwood
Buttternut
Rip
College
Hawk Pine
Melview Ridge
4 Wheel
French Farm
Hilton Field
Ivy Point
Crossing
Occom Ridge
Rope Ferry
Clement
Maynard
Cliff
Carpenter
Church
Choate
Webster
Mass
Wentworth
Observatory
Ivy
Crosby
Austin
Summer
Park
Sanborn
Lebanon
Currier
South
Dorrance
Ledyard
Hovey
Allen
School
Maple
Pleasant
West
Prospect
Sargent
Lewin
Downing
Read
River Ridge
Tuck Mal
Tuck
River
Mckenna
Elm
Main
Ramp
Lewiston Hill
Trescott
Christian
Mill
Parkway
Balch
Park
Wheelock
Burton
Valley
Freeman
Kingsford
Conant
Dana
Chase
Tyler
Austin
Highland
Verona
Rayton
Barrymore
Brockway
Carter
Ridge
Brook
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
NORWICH/HANOVER

SHEET 52


72°18'0"W
43°42'0"N
43°40'30"N
Norwich
Hanover
Hartford
Lebanon
River Mile 166.0
River Mile 165.0
River Mile 164.0
Wilder Dam
Connecticut River
Hopson
Palmer
Olcott
Barrister
Laurel
Jericho
Billings Farm
Hartford
91
Christian
Candlelight
Oak Knoll
Kinsman
Chestnut
Hitchcock
Elm
Gillette
Hawthorn
Locust
Division
Fern
Norwich
Depot
Lexington
Passumpsic
Wilder Dam
Walnut
Cranberry
Wilder
Coburn
Lakeview
Dartmouth Field
Richardson
Indian Ridge
Gould
Oakridge
Scott
Oak Ridge
Wildwood
Pinewood Village
Wyeth Farm
Gilson
Cambridge
Beacon
Lash
Birch Brook
Longwood
Claflin
Dunster
Mourlyn
Spencer
Hunter
Esker
Wyeth
Hilltop
Chambers
Faraway
Granger
Huntley
Buell
Ledyard
Currier
Main
Ripley
School
Dorrance
Hovey
Pleasant
Maple
Prospect
Lewin
Read
River Ridge
West
Downing
Allen
School
Lebanon
South
Sanborn
Crosby
Mitchell
Dayton
Brook
Barrett
La Haye
Davis
Perkins
Morning Glory
Colonial
Ravenswood
Half Penny
Horseshoe
Taft
Albert
Grovner
Ridge View
Addison
Chandler
Avis
Stonecrest
Brookmeade
Bugbee
Sterling Springs
Sanctuary
Magnolia
Sycamore
Skyline
Ramp
Taft
Fairview
Gifford
Hewitt
Hanover
Wilder
Demers
Advent
Gilman
Hartford
A
Frost
Manning
Hollow
South
C
Kriskarli
Oconnell
James
Main
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
WILDER DAM

SHEET 51

72°19'30"W

72°18'0"W

43°39'0"N

43°38'0"N

43°37'30"N

River Mile 163.0

River Mile 162.0

River Mile 161.0

River Mile 160.0

Connecticut River

Hartford

Lebanon

Truell
Ry Kris
Christian
Hughs
Paula
Sycamore
Fairview
Taft
Hewitt
Gifford
Hanover
Wilder
Advent
Demers
Pierce
Gilman
Saunders
Main
91
Ledgeside
Maple
Hebard
Highland
Abbey
Cascadnac
Victory
Worcester
Sargent
Leaf
Union
Hazen
Mill
Woodstock
Round House
Lantern
Pine
Prospect
Chandler
Beyerle
Estabrook
Crafts
Crafts Hill
Pearl
Maple
Winter
Green
Spring
Butternut
Pasture
Highland
Bridge
Commercial
Prospect
Dana
Timothy
White
Central
Railroad
Tracy
Mack
Hillcrest
Fairview
Forest Hills
Talbert
Marshall
Charles
Abbott
Templeton
Maplewood
Church
Main
Joe Reed
Gates
Chellis
Bullard
Stacy
3rd
Birchwood
Spring Creek
Lily Pond
Spring
Winter
Walsh
Connecticut River
Hebert
Lantham Works
Harrison
Nutt
Acorn
Butternut
Airport
Oak
Cedar
Beech
Ash
Ramp
Hartland
Beswick
Sykes Mountain
Lower Hyde
Hickory Ridge
Dewitt
Holiday
Farmvu
Bowling
Church
Pleasant
Orcutt
Farman
Village Green
Seminary Hill
Floyd
Batchelder
Aldrich
Crawford
Johnson
Whitcomb
Jones
Powers
Cottage
Tenley
Armstrong
Hathorn
Elm
Birch
Hampshire
Glen
Benning
Ramp
Ramp
Grosbeak
Plainfield
Interchange
Plaza Heights
Cdr
Waterman
Ext
Romano
Technology
Commerce
72°18'0"W
72°19'30"W

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**HARTLAND/LEBANON**

SHEET 50

72°21'0"W
43°37'30"N
72°19'30"W
43°37'30"N
43°36'0"N
72°21'0"W
72°19'30"W

Hartland
Moonshine
Interchange
River Mile 160.0
Connecticut River
Lebanon
Plainfield
Brower
Blake
Woodside
Aspen
Family
Cherry Tree
Maxfield
5
91
12a
River Mile 159.0
Trues Brook
River Mile 158.0
Clay Hill
Mill
Dry Kiln
Depot
River Mile 157.0
River
Pierce
Beauty Hill
Old County

0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet

**HARTLAND**

SHEET 49

72°22'30"W

72°21'0"W

43°34'30"N

43°33'0"N

Clay Hill

Mill

Dry Kiln

Cardinal

Depot

Green Acres

Pierce

Webster

Hartland

Plainfield

Connecticut River

River Mile 157.0

River Mile 156.0

River Mile 155.0

River Mile 154.0

91

River

Freeman

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**HARTLAND/PLAINFIELD**

SHEET 48

72°24'0"W

72°22'30"W

43°33'0"N

43°31'30"N

Lovers

Merritt

Meadow View

Lull Farm

Balhart Ridge

Edgewood

Quechee

Eastman

Vt

Bischoff

Durphy

Blodgett

Station

Kerwin

River Mile 153.0

Bohaka

James

Legion

Hartland

Sleeper

Martinsville

Depot

Ferry

Connecticut River

Rice

River Mile 152.0

Studebaker

Railroad

Ramp

Ramp

Ramp

42nd

River

Plainfield

Freeman

Carvel

Ferry Crossing Hill

12a

Mill

River Mile 151.0

Harlar Kenden

Park

Ruth Carney

Windsor

91

Hillside

Cornish

Hildreth

Wilson

Platt

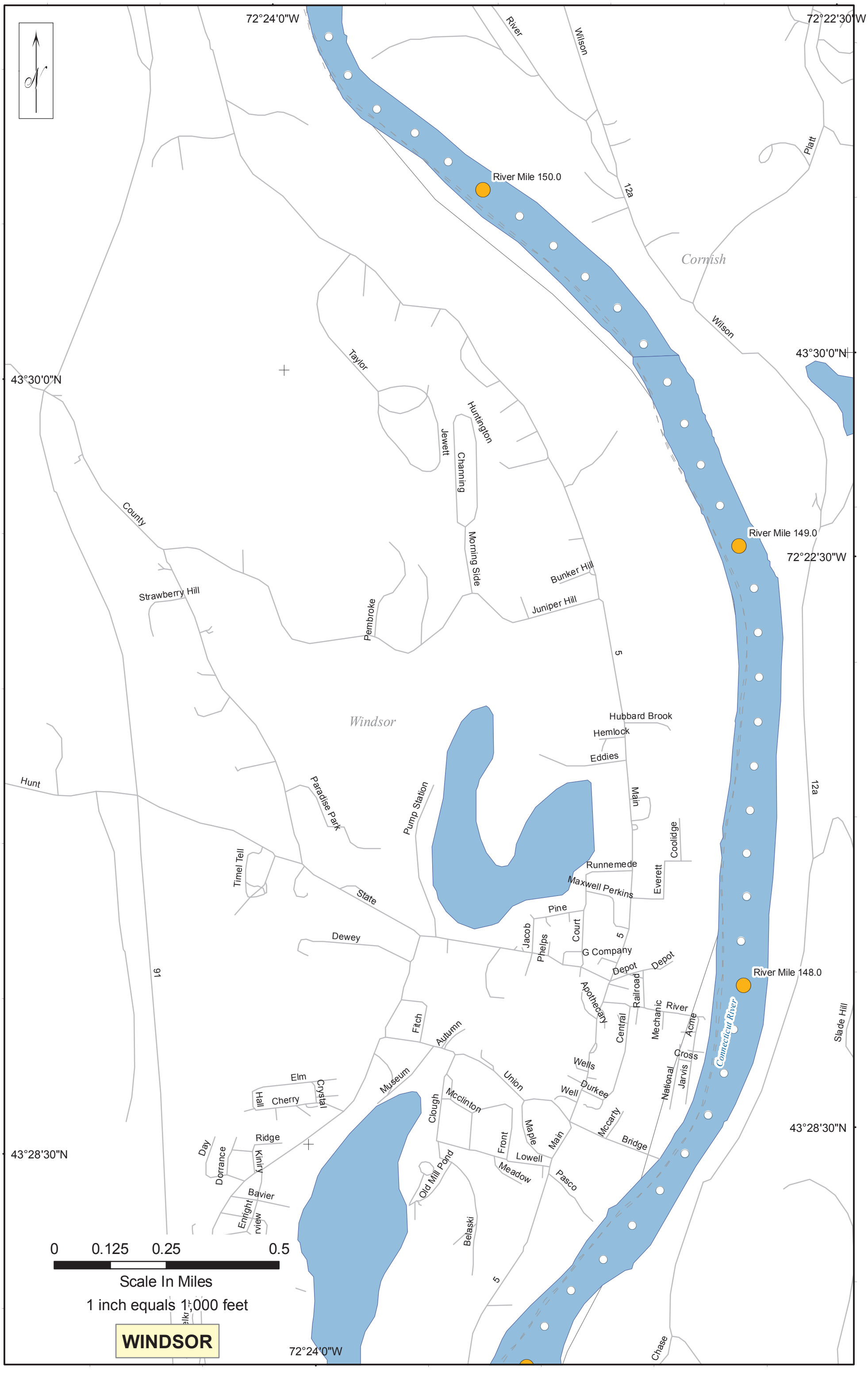
0 0.125 0.25 0.5

Scale In Miles

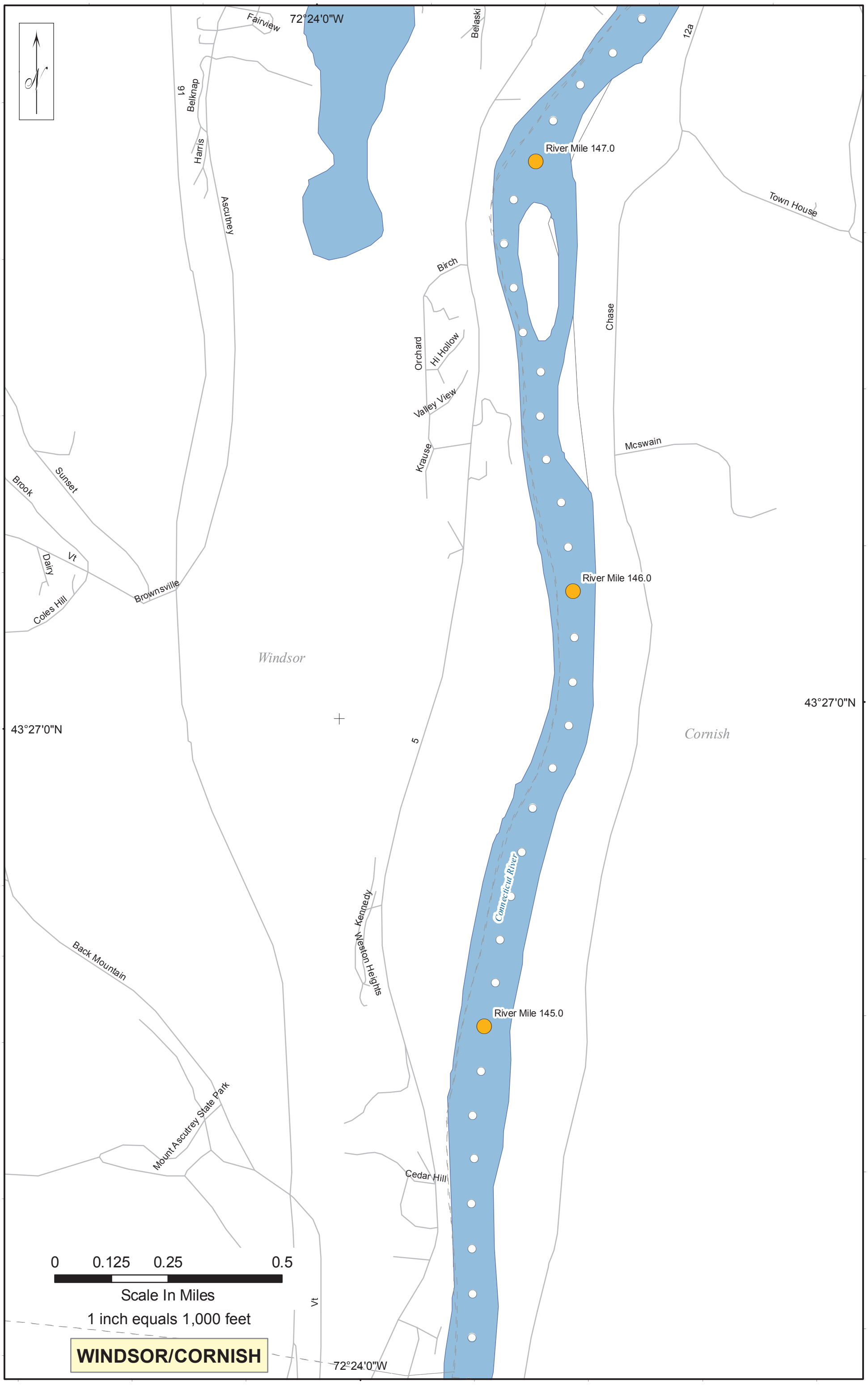
1 inch equals 1,000 feet

**HARTLAND/PLAINFIELD**

SHEET 47


72°24'0"W
72°22'30"W
River
Wilson
Platt
River Mile 150.0
12a
Cornish
Wilson
43°30'0"N
Taylor
Huntington
Jewett
Channing
County
River Mile 149.0
72°22'30"W
Morning Side
Bunker Hill
Strawberry Hill
Pembroke
Juniper Hill
5
Windsor
Hubbard Brook
Hemlock
Eddies
Hunt
Paradise Park
Pump Station
Main
Coolidge
Runnemede
Maxwell Perkins
Everett
Timel Tell
State
Pine
Dewey
Jacob
Phelps
Court
5
G Company
Depot
Depot
91
River Mile 148.0
Apothecary
Railroad
Central
Mechanic
River
Acme
Cross
Slade Hill
Fitch
Autumn
Connecticut River
Wells
Union
Well
Durkee
National
Jarvis
Elm
Crystal
Hall
Cherry
Museum
Clough
Mcclinton
Mccarty
Bridge
Ridge
Day
Dorrance
Kinsley
Front
Maple
Main
Lowell
Meadow
Pasco
Old Mill Pond
Bavier
Enright
rview
Belaski
43°28'30"N
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
WINDSOR
72°24'0"W
Chase

SHEET 46


72°24'0"W
Fairview
Belaski
12a
91
Belknap
Harris
Ascutney
River Mile 147.0
Town House
Birch
Chase
Orchard
Hi Hollow
Valley View
Krause
Mcswain
Sunset
Brook
Dairy
Vt
Brownsville
Coles Hill
River Mile 146.0
Windsor
43°27'0"N
Cornish
5
Kennedy
Weston Heights
Back Mountain
Mount Ascutney State Park
River Mile 145.0
Cedar Hill
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
WINDSOR/CORNISH
72°24'0"W

SHEET 45

72°24'0"W

Windsor

Cornish

Vt

Chase

Back Mountain

River Mile 144.0

43°25'30"N

43°25'30"N

Vt

Running Bear

Skyline

Hill Top

1st

12a

Allison

Stardust

5

Patrick

2nd

Red Maple

End

3rd

Sunset

Cherry

Punkshire Hill

Thrasher

Fire House

Fire House

Riley

Brian Jones

Jason Smith

River Mile 143.0

Schoolhouse

Tillman

Weathersfield

Martin

Turner

Connecticut River

Garden

Village View

Hastings

Cemetery

Ascutney Store R

Claremont

Vt

Old Bridge

Windsor

Ramp

Hidden Glen

Ramp

Connecticut River

Main

West

Tenney Hill

43°24'0"N

43°24'0"N

Lawrence Farm

River Mile 142.0

91

Jarvis Hill

0 0.125 0.25 0.5

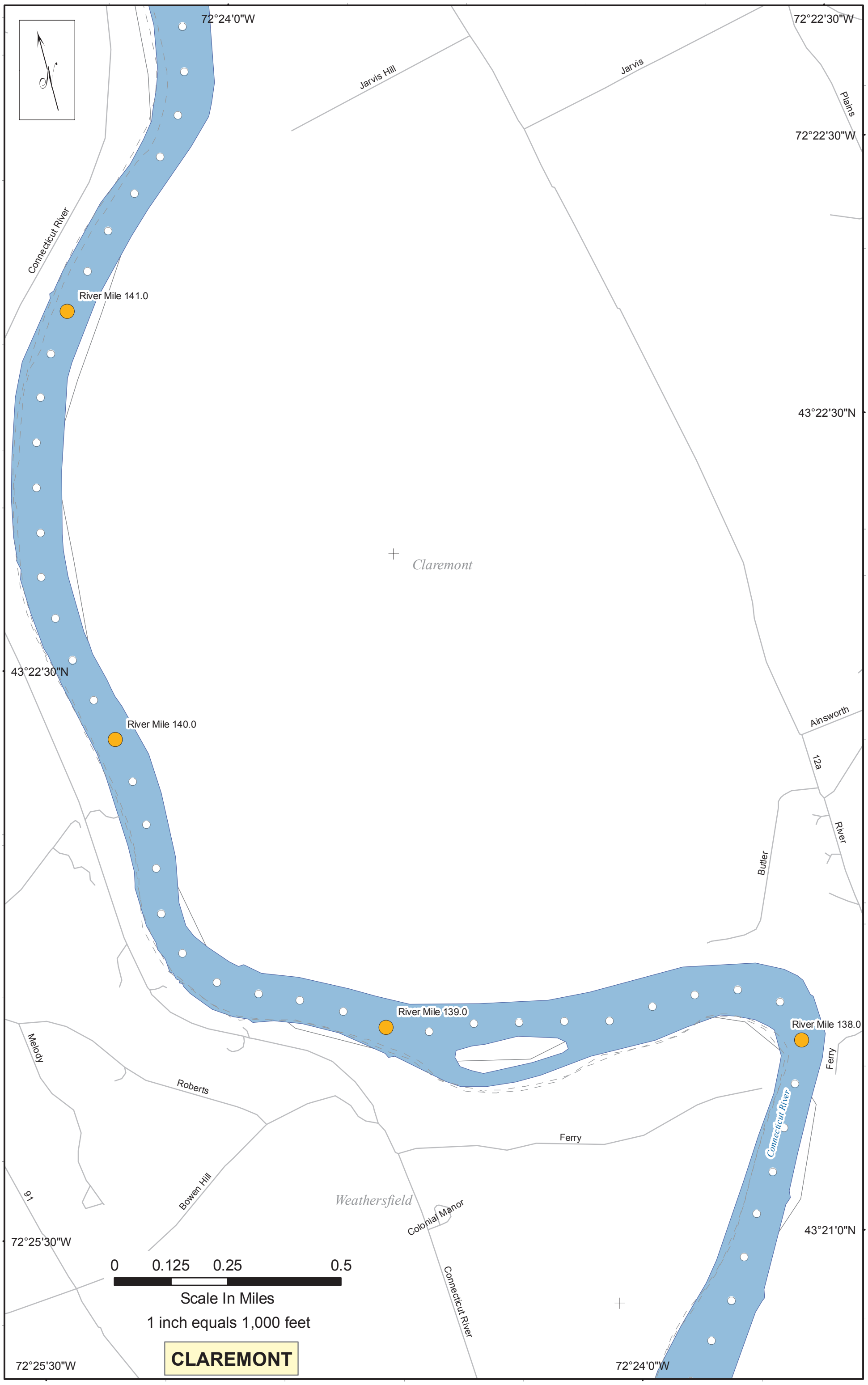
Scale In Miles

1 inch equals 1,000 feet

**WEATHERSFIELD/CLAREMONT**

72°24'0"W

SHEET 44


72°24'0"W
72°22'30"W
Jarvis Hill
Jarvis
Plains
72°22'30"W
Connecticut River
River Mile 141.0
43°22'30"N
Claremont
43°22'30"N
River Mile 140.0
Ainsworth
12a
River
Butler
River Mile 139.0
River Mile 138.0
Ferry
Melody
Roberts
Ferry
Connecticut River
Bowen Hill
91
Weathersfield
Colonial Manor
43°21'0"N
72°25'30"W
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
CLAREMONT
72°25'30"W
72°24'0"W

SHEET 43

72°24'0"W

72°22'30"W

43°21'0"N

Connecticut River

12a

72°22'30"W

River Mile 137.0

Weathersfield

Claremont

Grissom

Sandy

Connecticut River

Burma

Cardinal

Calavant Hill

River Mile 136.0

Skitchewaug

River

43°19'30"N

Charlestown

Cedarwood

Sunnyside

Great Country

River Bend

River Mile 135.0

Judland

91

Springfield

Putnam

72°25'30"W

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**WEATHERSFIELD**

River Mile 134.0

72°25'30"W

72°24'0"W

SHEET 42

72°24'0"W

43°18'0"N

43°16'30"N

72°25'30"W

River Mile 134.0

River Mile 133.0

River Mile 132.0

Putnam

Connecticut River

Old Connecticut River

Springfield

Charlestown

River

Depot Hill

Buttonwood

River

Unity Stage

Egypt

Tehran

Jeffrey

Claremont

Gowen

12a

Salt Shed

Shutters

Class 6

Scenic Hill

Wheeler Rand

Old Town Farm

Old Claremont

Fidelski

Scotts

Hidden Valley

Caryl

White Pine

State

Oak

Cobb

Chas

Ceda

Michael

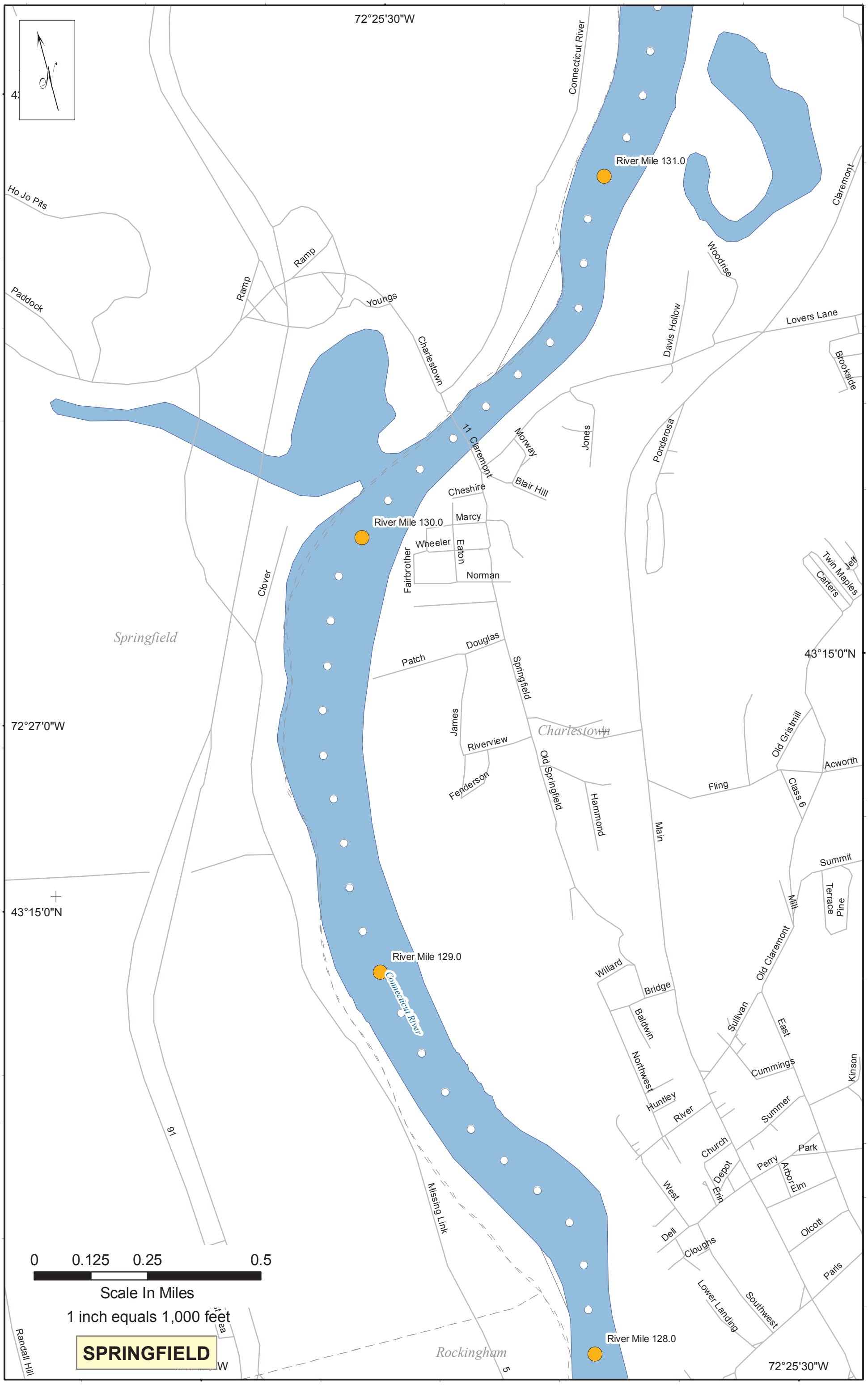
0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**SPRINGFIELD/CHARLESTOWN**

SHEET 41


72°25'30"W
Connecticut River
River Mile 131.0
Ho Jo Pits
Paddock
Ramp
Ramp
Youngs
Charlestown
Woodrise
Davis Hollow
Lovers Lane
Claremont
Brookside
11 Claremont
Monway
Jones
Ponderosa
Cheshire
Blair Hill
River Mile 130.0
Marcy
Wheeler
Eaton
Fairbrother
Norman
Clover
Springfield
Twin Maples
Jeff
Carters
Douglas
Patch
James
Springfield
Riverview
Fenderson
Old Springfield
Hammond
Charlestown
Old Gristmill
Acworth
Fling
Class 6
Main
Summit
Mill
Terrace
Pine
Old Claremont
Willard
Bridge
Baldwin
Northwest
Huntley
River
Sullivan
East
Cummings
Kinson
Summer
Church
Depot
Perry
Park
Arbor
Elm
Erin
West
Dell
Cloughs
Olcott
Paris
Lower Landing
Southwest
Missing Link
91
5
Randall Hill
Springfield
Rockingham
43°15'0"N
72°27'0"W
43°15'0"N
River Mile 129.0
Connecticut River
River Mile 128.0
72°25'30"W
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
SPRINGFIELD

SHEET 40

72°27'0"W

Springfield

Dell

Southwest

Lower Landing

River Mile 128.0

Meadow

Lagoon

River Fort

Randall Hill

43°13'30"N

43°13'30"N

Connecticut River

Alden Hill

River Mile 127.0

Rockingham

Charlestown

91

Upper Meadow

12

River Mile 126.0

Bellows Falls

Old Cheshire

43°12'0"N

43°12'0"N

5

Bowen

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**CHARLESTOWN**

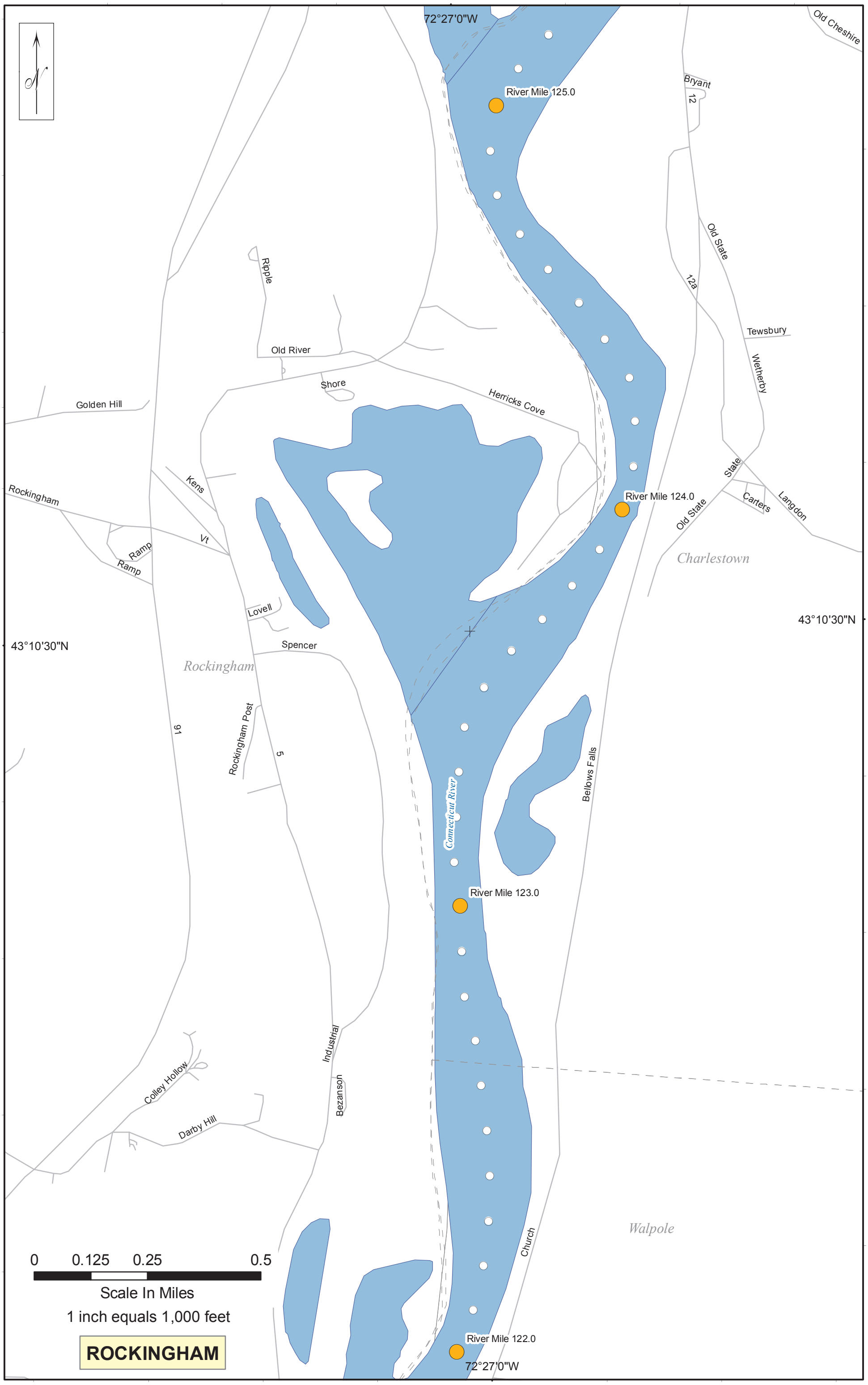
Bryant

12

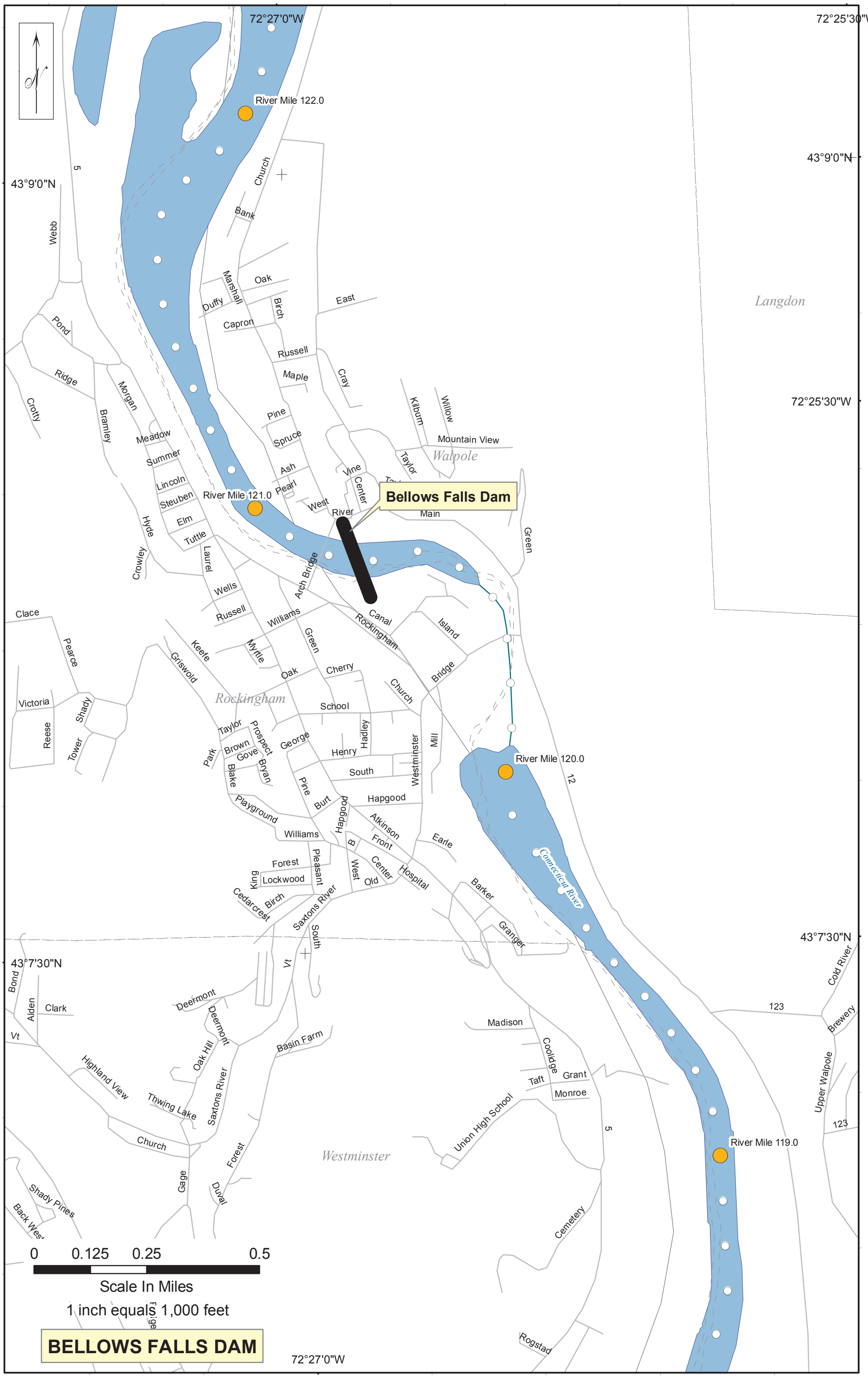
River Mile 125.0

72°27'0"W

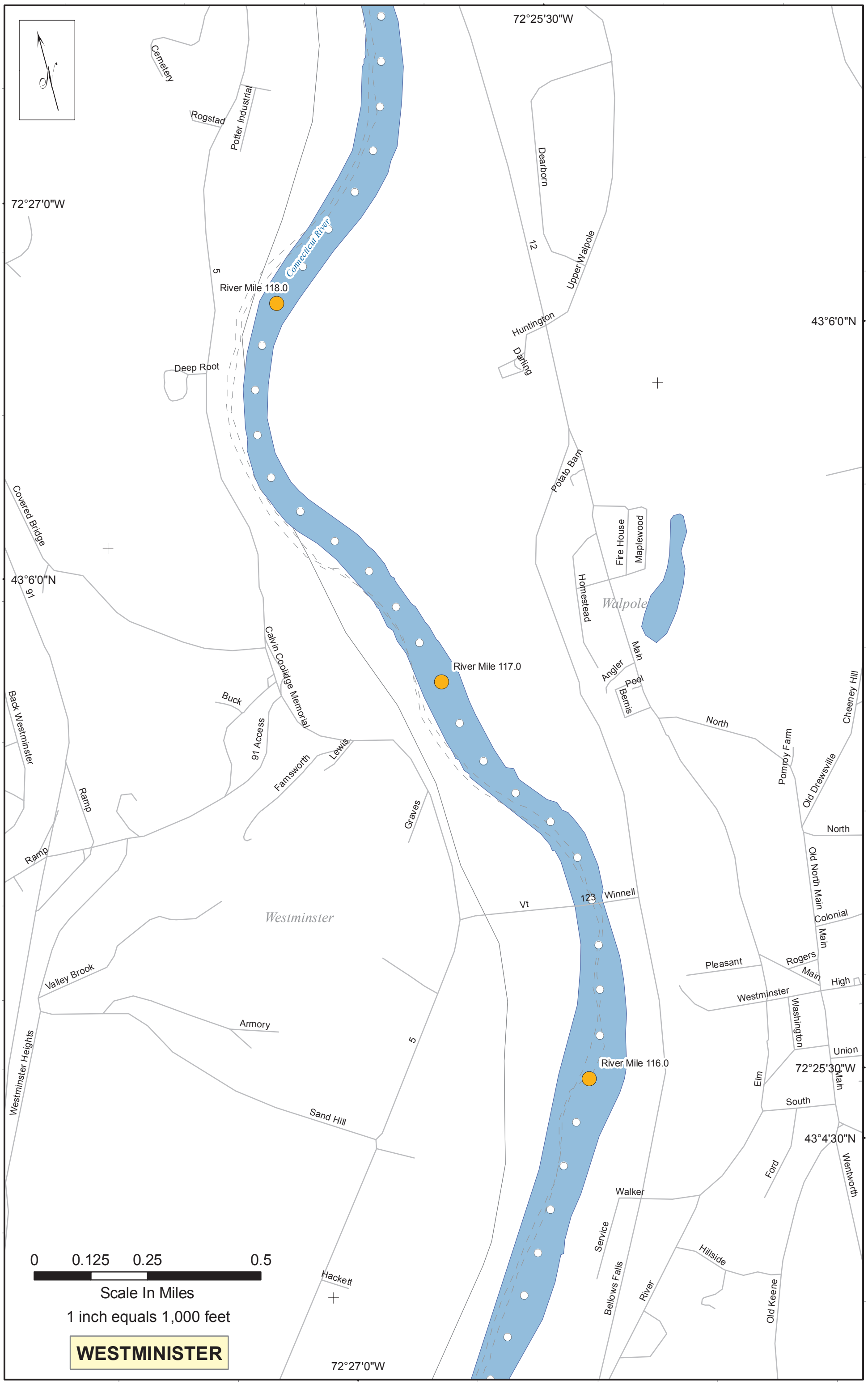
SHEET 39


72°27'0"W
Old Cheshire
Bryant
12
River Mile 125.0
Old State
12a
Tewsbury
Wetherby
Ripple
Old River
Shore
Herricks Cove
Golden Hill
Kens
Rockingham
Vt
Ramp
Ramp
River Mile 124.0
State
Carters
Langdon
Old State
Charlestown
Lovell
43°10'30"N
43°10'30"N
Spencer
Rockingham
Rockingham Post
91
5
Connecticut River
Bellows Falls
River Mile 123.0
Industrial
Bezanson
Colley Hollow
Darby Hill
Walpole
Church
River Mile 122.0
72°27'0"W
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
ROCKINGHAM

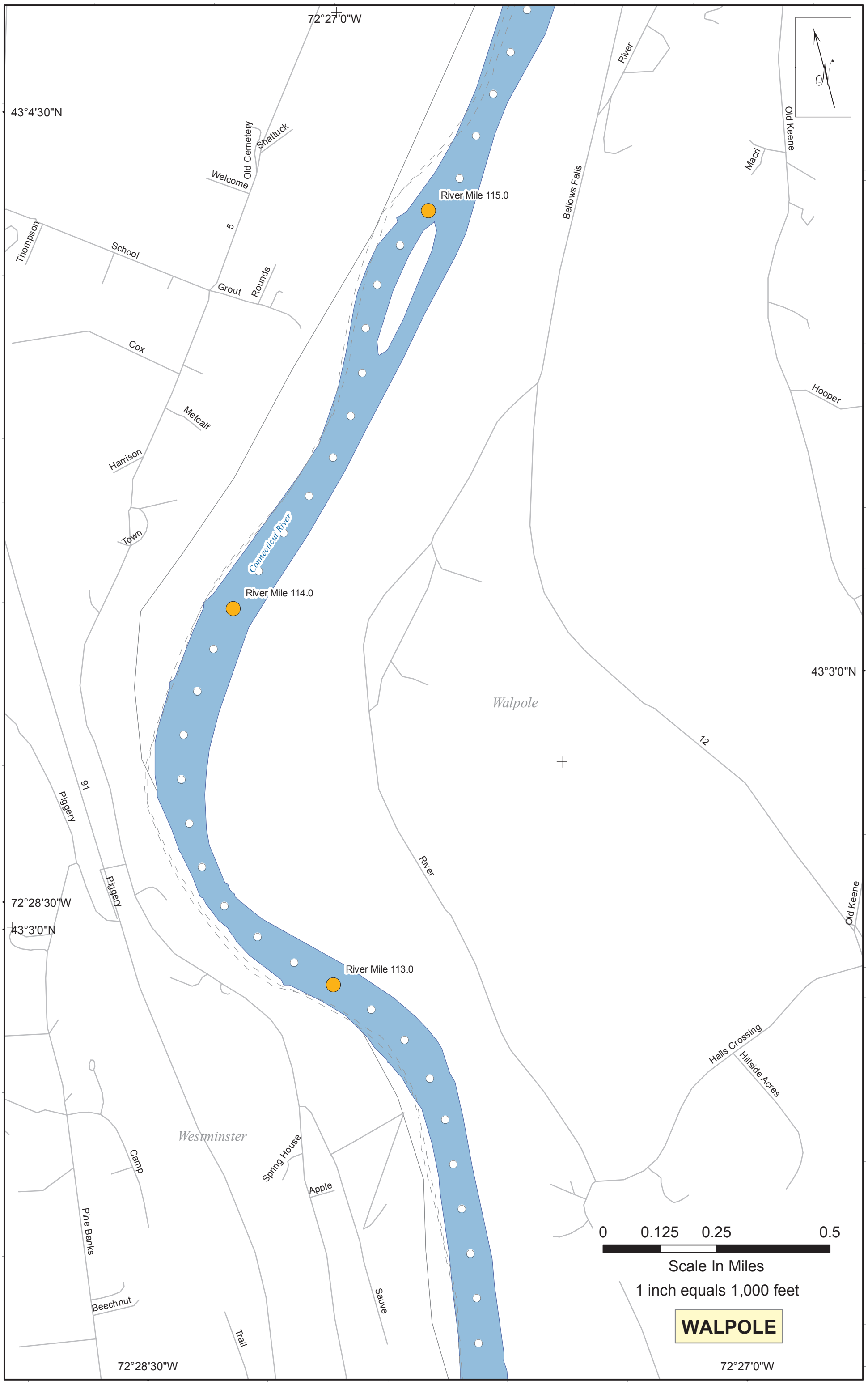
SHEET 38


72°27'0"W
72°25'30"W
43°9'0"N
River Mile 122.0
Church
Bank
Webb
5
Marshall
Oak
Duffy
Birch
East
Capron
Pond
Russell
Ridge
Maple
Cray
Morgan
Crotty
Bramley
Pine
Kilburn
Willow
Meadow
Spruce
Mountain View
Summer
Ash
Taylor
Lincoln
Vine
Center
Steuben
Pearl
River Mile 121.0
Bellows Falls Dam
West
River
Main
Elm
Tuttle
Hyde
Crowley
Laurel
Arch Bridge
Green
Wells
Russell
Williams
Canal
Rockingham
Island
Clace
Pearce
Keefe
Griswold
Myrtle
Green
Oak
Cherry
Bridge
Church
Victoria
Rockingham
School
Shady
Reese
Taylor
Prospect
Hadley
Tower
Park
Brown
George
Westminster
Mill
Gove
Henry
Bryan
South
Blake
Pine
Hapgood
Playground
Burt
Hapgood
Atkinson
Williams
B
Front
Earle
Forest
Pleasant
West
Center
Hospital
King
Lockwood
Old
Barker
Cedarcrest
Birch
Saxtons River
Granger
South
Vt
43°7'30"N
Bond
Alden
Clark
Deerfmont
Deermont
Vt
Basin Farm
Oak Hill
Highland View
Thwing Lake
Saxtons River
Church
Forest
Gage
Duval
Shady Pines
Back West
Madison
Coolidge
Taft
Grant
Monroe
Union High School
5
Cemetery
Rogstad
River Mile 120.0
12
Connecticut River
Langdon
Walpole
Cold River
Brewery
123
Upper Walpole
River Mile 119.0
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
BELLOWS FALLS DAM

SHEET 37


72°25'30"W
72°27'0"W
43°6'0"N
43°4'30"N
Cemetery
Rogstad
Potter Industrial
Connecticut River
River Mile 118.0
River Mile 117.0
River Mile 116.0
Deep Root
Dearborn
12
Upper Walpole
Huntington
Darling
Potato Barn
Fire House
Maplewood
Homestead
Walpole
Angler
Main
Pool
Bemis
North
Cheeney Hill
Pomroy Farm
Old Drewsville
North
Old North Main
Colonial
Main
Rogers
Pleasant
Main
High
Westminster
Washington
Union
Elm
Main
South
Ford
Wentworth
Walker
Service
Bellows Falls
River
Hillside
Old Keene
Covered Bridge
91
Calvin Coolidge Memorial
Buck
91 Access
Farnsworth
Lewis
Graves
Back Westminster
Ramp
Ramp
Vt
123
Winnell
Westminster
Valley Brook
Armory
Westminster Heights
Sand Hill
Hackett
5
5
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
WESTMINISTER

SHEET 36


72°27'0"W
43°4'30"N
River
Old Keene
Macri
Shattuck
Old Cemetery
Welcome
River Mile 115.0
Bellows Falls
5
Thompson
School
Grout
Rounds
Cox
Metcalf
Harrison
Hooper
Town
Connecticut River
River Mile 114.0
Walpole
43°3'0"N
12
91
Piggery
River
Old Keene
72°28'30"W
43°3'0"N
River Mile 113.0
Halls Crossing
Hillside Acres
Westminster
Spring House
Apple
Camp
Pine Banks
Beechnut
Trail
Sauve
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
WALPOLE
72°28'30"W
72°27'0"W

SHEET 35

72°27'0"W

Sauve

River Mile 112.0

River

Walpole

Black Jack Crossing

43°1'30"N

Seward

12

Industrial Park

Old Rt 12

Westminster

43°1'30"N

River Mile 111.0

Westmoreland

Connecticut River

Town Line

River Mile 110.0

72°28'30"W

Fort Hill

Green Hill

Feral

King

Ridge

Ompawmet

Beam

Putney

Taylor

43°0'0"N

Mountain View

River Mile 109.0

Great Meadow Ferry

5

Sunter

63

43°0'0"N

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

**PUTNEY/WESTMORELAND**

72°28'30"W

Abenaqui Ridge

River

Aplin

Chickering

72°27'0"W

SHEET 34

43°0'0"N

72°27'0"W

River Mile 108.0

River Mile 107.0

River Mile 106.0

River Mile 105.0

Old Moore

Abenaqui Ridge

Aplin

Aplin

Alpin

Alpine

Putney Falls

River

Spaulding Hill

Pratt

Putney Ferry

Ferry

63

42°58'30"N

Cemetery

Partridge Brook

Wardon

Priest

Connecticut River

Earls

Putney

72°30'0"W

72°28'30"W

Atherton Hill

Westmoreland

Poocham

Reynolds

Hi Lo Biddy

91

River

Old County

Reynolds

Garage

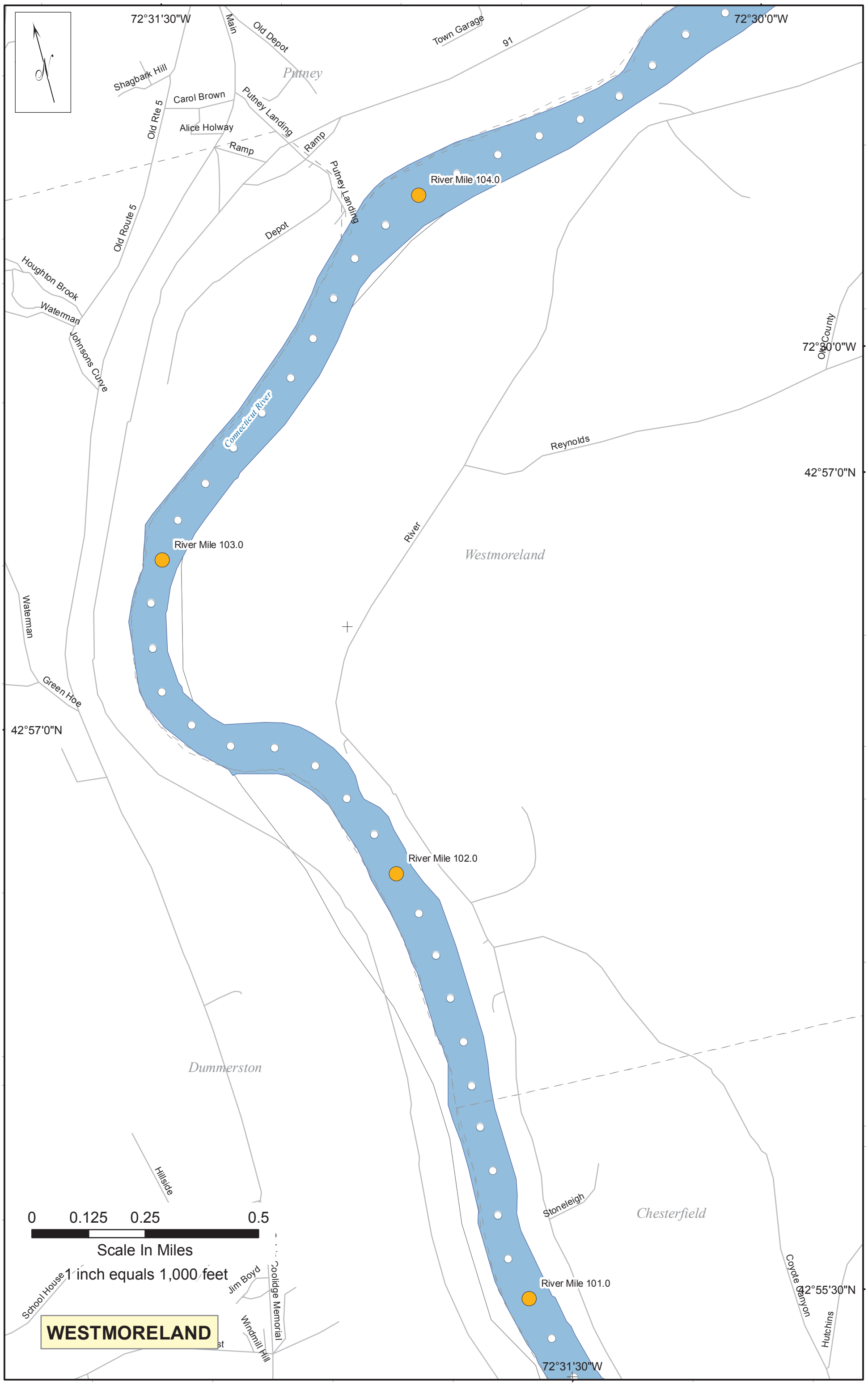
0 0.125 0.25 0.5

Scale In Miles

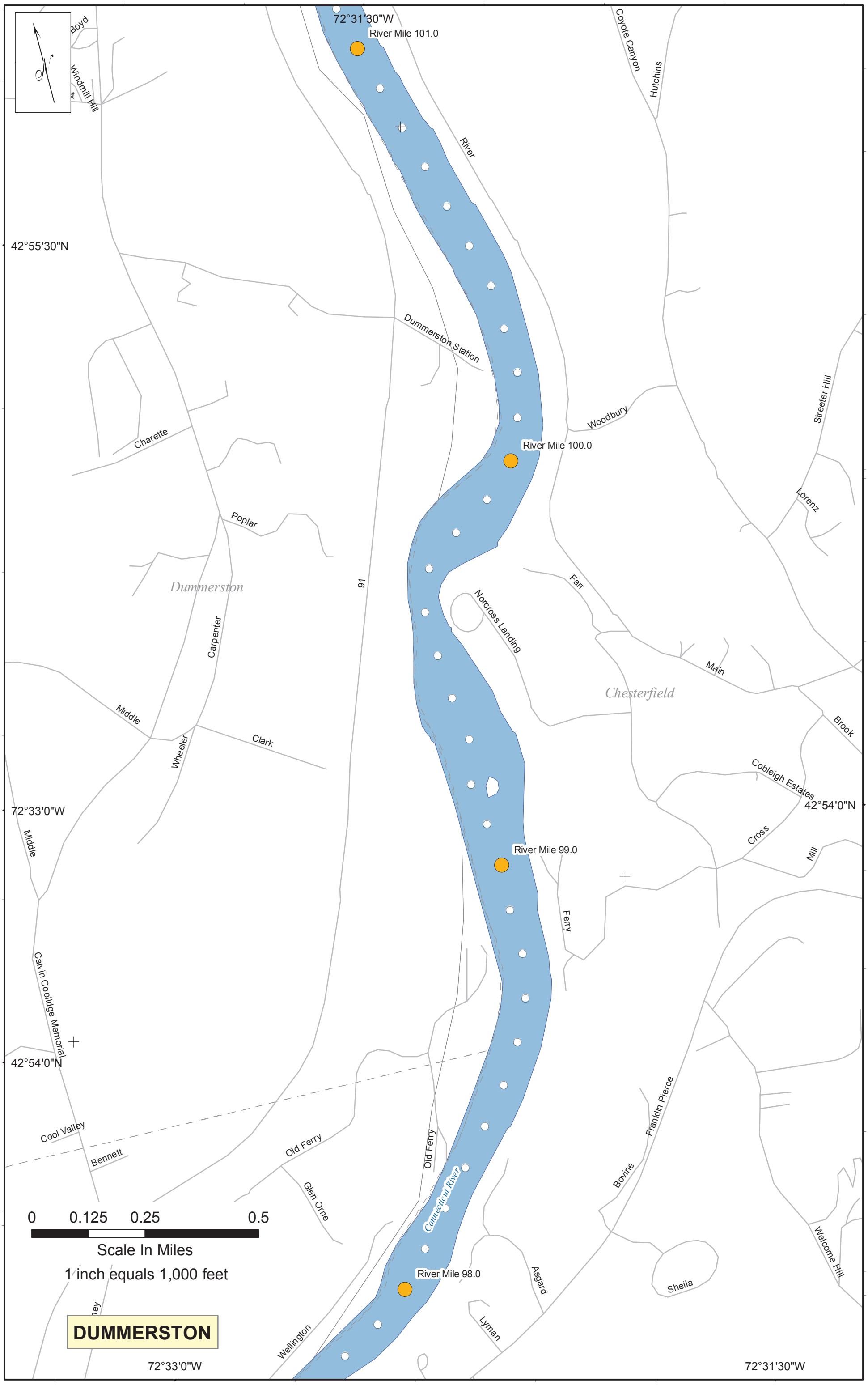
1 inch equals 1,000 feet

**PUTNEY**

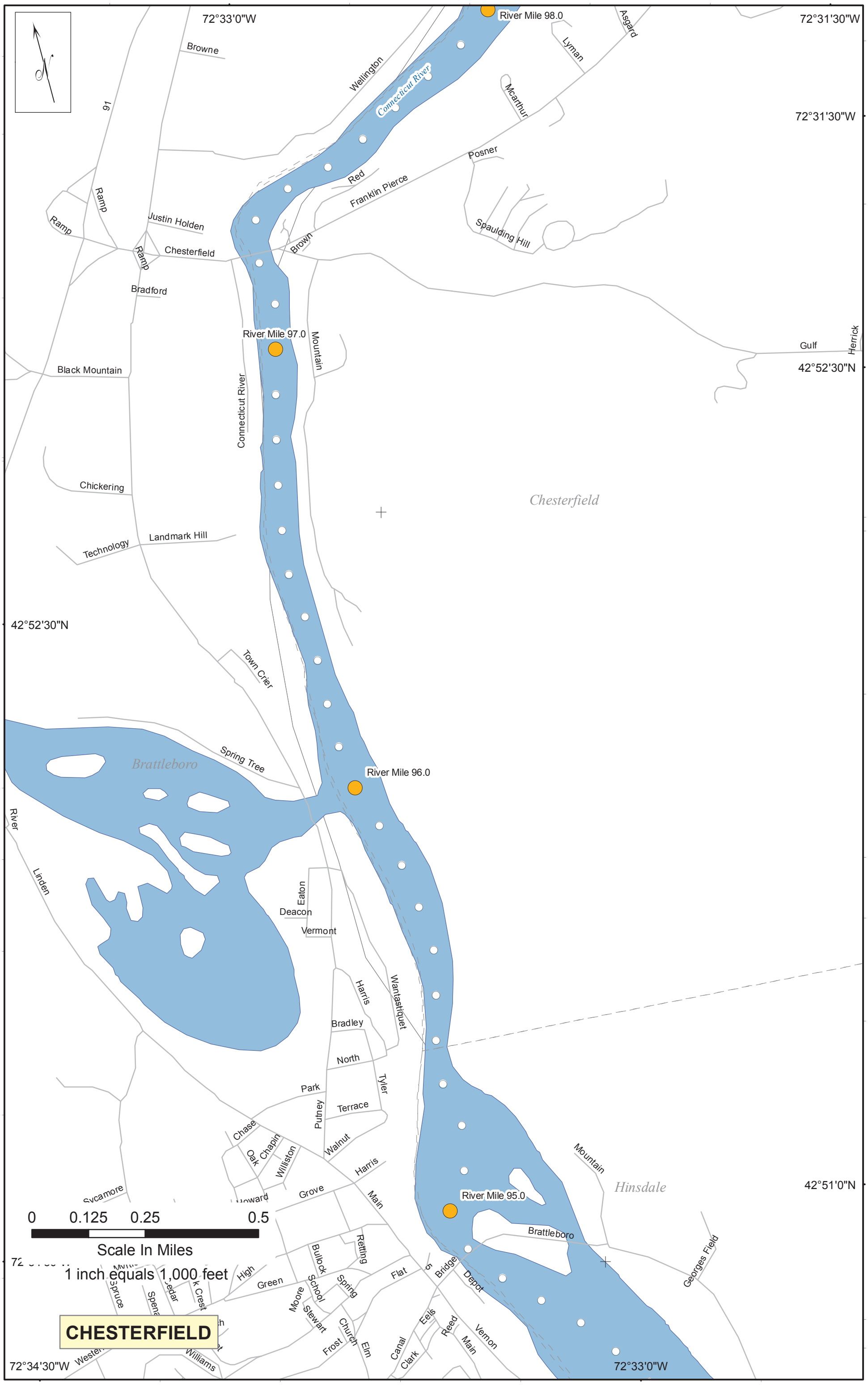
SHEET 33


72°31'30"W
72°30'0"W
42°57'0"N
42°55'30"N
Main
Old Depot
Town Garage
91
Putney
Shagbark Hill
Carol Brown
Putney Landing
Old Rte 5
Alice Holway
Ramp
Ramp
Putney Landing
River Mile 104.0
Old Route 5
Depot
Houghton Brook
Waterman
Johnsons Curve
Old County
Connecticut River
Reynolds
River Mile 103.0
River
Westmoreland
Waterman
Green Hoe
River Mile 102.0
Dummerston
Hillside
Stoneleigh
Chesterfield
Coyote Canyon
Hutchins
River Mile 101.0
School House
Jim Boyd
Coolidge Memorial
Windmill Hill
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
WESTMORELAND

SHEET 32


72°31'30"W
River Mile 101.0
Boyd
Windmill Hill
Coyote Canyon
Hutchins
River
42°55'30"N
Dummerston Station
Woodbury
Streeter Hill
Charette
River Mile 100.0
Lorenz
Poplar
Dummerston
91
Carpenter
Farr
Norcross Landing
Main
Chesterfield
Middle
Wheeler
Clark
Brook
Cobleigh Estates
72°33'0"W
42°54'0"N
Middle
Cross
Mill
River Mile 99.0
Ferry
Calvin Coolidge Memorial
42°54'0"N
Cool Valley
Bennett
Old Ferry
Old Ferry
Franklin Pierce
Bovine
Glen Orne
Connecticut River
Welcome Hill
River Mile 98.0
Asgard
Sheila
Lyman
Wellington
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
DUMMERSTON
72°33'0"W
72°31'30"W

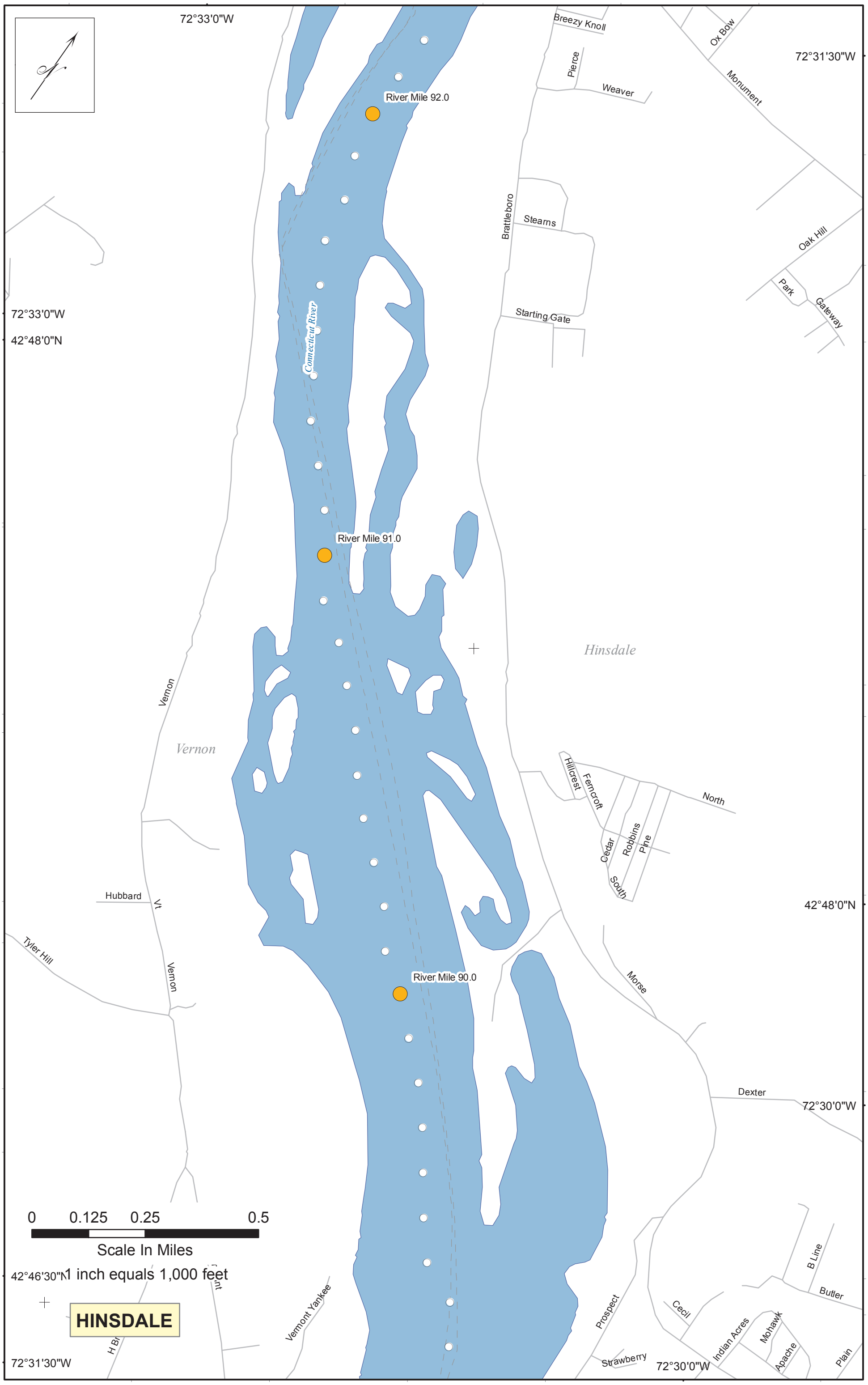
SHEET 31


72°33'0"W
72°31'30"W
42°52'30"N
42°51'0"N
River Mile 98.0
River Mile 97.0
River Mile 96.0
River Mile 95.0
Connecticut River
Browne
Wellington
Lyman
Asgard
Mcarthur
Posner
Red
Franklin Pierce
Justin Holden
Chesterfield
Brown
Spaulding Hill
Ramp
Ramp
Ramp
91
Bradford
Black Mountain
Mountain
Gulf
Herrick
Chickering
Technology
Landmark Hill
Chesterfield
Town Crier
Spring Tree
Brattleboro
Eaton
Deacon
Vermont
Harris
Wantastiquet
Bradley
North
Park
Putney
Terrace
Tyler
Chase
Oak
Chapin
Williston
Walnut
Harris
Sycamore
Howard
Grove
Main
Mountain
Hinsdale
Brattleboro
Georges Field
Retting
Bullock
High
Green
School
Spring
Flat
Bridge
Depot
Moore
Stewart
Church
Elm
Frost
Canal
Clark
Eels
Reed
Main
Vernon
Williams
Linden
River
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
CHESTERFIELD
72°34'30"W
72°33'0"W

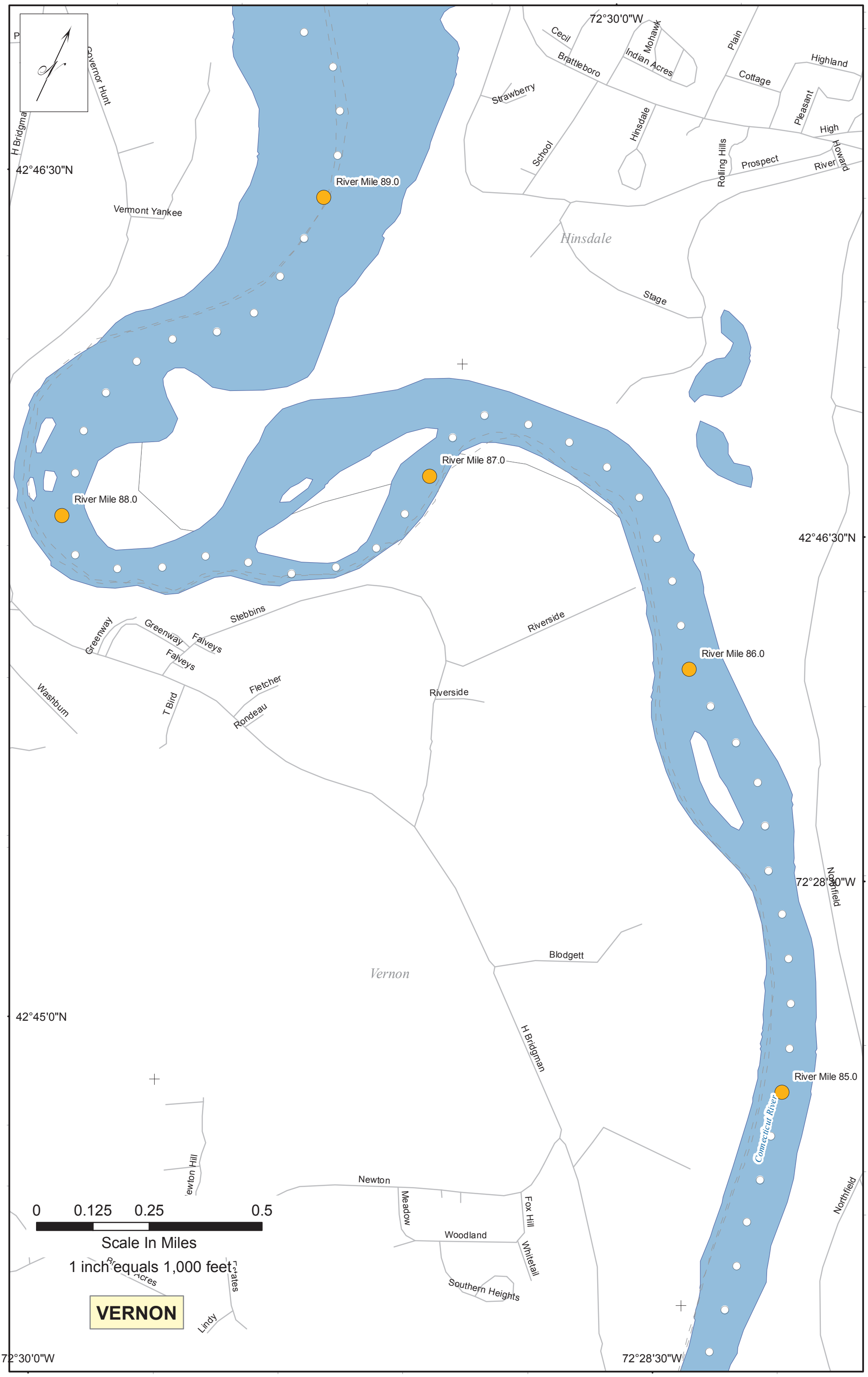
SHEET 30


72°33'0"W
River Mile 95.0
Western
High
Green
Union
Beech
Elliot
Baker
School
Bullock
Retting
Spring
Main
Flat
Bridge
Depot
Mountain
Frost
Elm
Clark Lawrence
Reed
Georges Field
Chestnut
Organ
Birge
Estey
Vine
Pleasant
Cottage
Cherry
Southern
Horton
Prospect
Pearl
Thomas
Washington
Highland
Central
Pellett
Pine
Maple
Canal
Winter
Fairview
Belmont
Lexington
Fuller
Clark
Oak Grove
Blakeslee
Coombs
Cross
Valgar
Mornings ide
42°51'0"N
Wilson Woods
Fairground
Generous
Parkside
Moreland
Home
Mountain View
Brattleboro
Atwood
Marlboro
King
Ramp
Sunny Acres
Hunt
Valley
Dummer
Cotton Mill Hill
Vernon
Riverside
Brattleboro
John Seitz
G S P
91
Old Guilford
Martel
Fort Dummer
Vt
Hinsdale
42°49'30"N
Mercury
River Mile 94.0
Old Brattleboro
River Mile 93.0
Susan
Guilford
Connecticut River
Steephill
Oxcart
Broad Brook
Vernon
Ox Bow
Charles
Paddock
Breezy Knoll
Monument
Pierce
Weaver
72°31'30"W
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
BRATTLEBORO
River Mile 92.0
72°33'0"W
72°31'30"W

SHEET 29


72°33'0"W
72°31'30"W
42°48'0"N
42°46'30"N
72°30'0"W
River Mile 92.0
River Mile 91.0
River Mile 90.0
Connecticut River
Breezy Knoll
Ox Bow
Pierce
Weaver
Monument
Brattleboro
Stearns
Starting Gate
Oak Hill
Park
Gateway
Hinsdale
Vernon
Hillcrest
Femcroft
North
Cedar
Robbins
Pine
South
Hubbard
Vt
Tyler Hill
Morse
Dexter
B Line
Butler
Cecil
Indian Acres
Mohawk
Apache
Plain
Prospect
Strawberry
Vermont Yankee
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
HINSDALE

SHEET 28


72°30'0"W
Cecil
Brattleboro
Mohawk
Indian Acres
Plain
Highland
Cottage
Pleasant
High
Howard
River
Prospect
Rolling Hills
Hinsdale
School
Strawberry
Governor Hunt
H Bridgman
42°46'30"N
River Mile 89.0
Vermont Yankee
Hinsdale
Stage
River Mile 87.0
River Mile 88.0
42°46'30"N
Stebbins
Greenway
Greenway
Falveys
Falveys
Riverside
River Mile 86.0
Washburn
T Bird
Fletcher
Rondeau
Riverside
72°28'30"W
Northfield
Blodgett
Vernon
42°45'0"N
H Bridgman
River Mile 85.0
Connecticut River
Newton Hill
Newton
Meadow
Fox Hill
Woodland
Whitetail
Southern Heights
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
VERNON
Lindy
72°30'0"W
72°28'30"W

SHEET 27

72°28'30"W

72°27'0"W

42°45'0"N

River Mile 84.0

Hinsdale

Parish

Winchester

Bolton

Homestead

Valley View

Valley View

Pond

Vernon

New Hampshire

Vermont

H Bridgman

Old Depot

River Mile 83.0

Northfield

Avery

Scofield Mount

Vermont

New Hampshire

Massachusetts

Massachusetts

Old Depot

Adams

Railroad Station

Gerrish

42°43'30"N

42°43'30"N

Ashuelot

Hinsdale

River Mile 82.0

Connecticut River

Wanamaker

NORTHFIELD

Mount Hermon Station

Northfield

Main

Caldwell

Northfield

Moody

Pine Highland

River

Randall

0 0.125 0.25 0.5

Scale In Miles

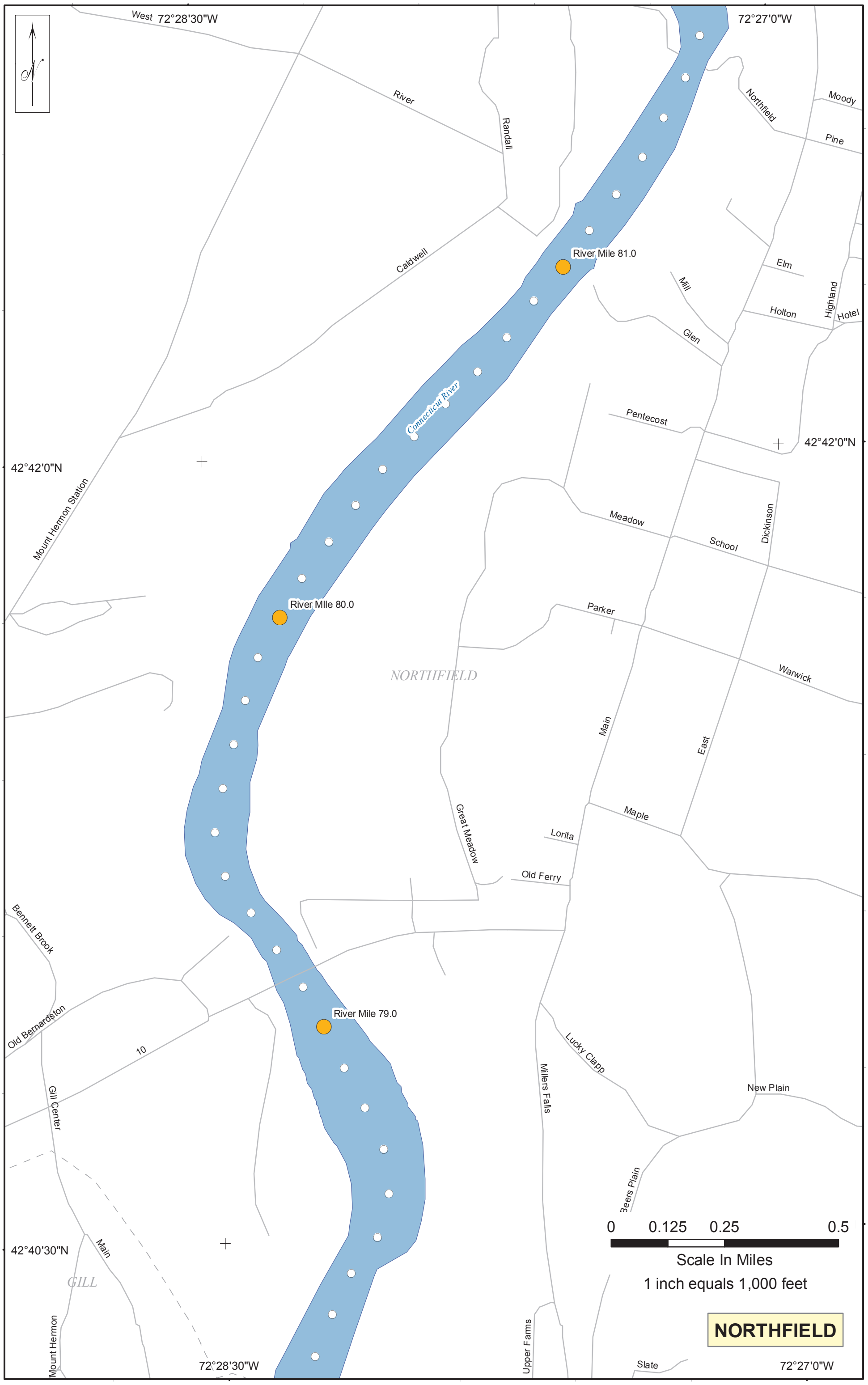
1 inch equals 1,000 feet

**MA/VT/NH BORDER**

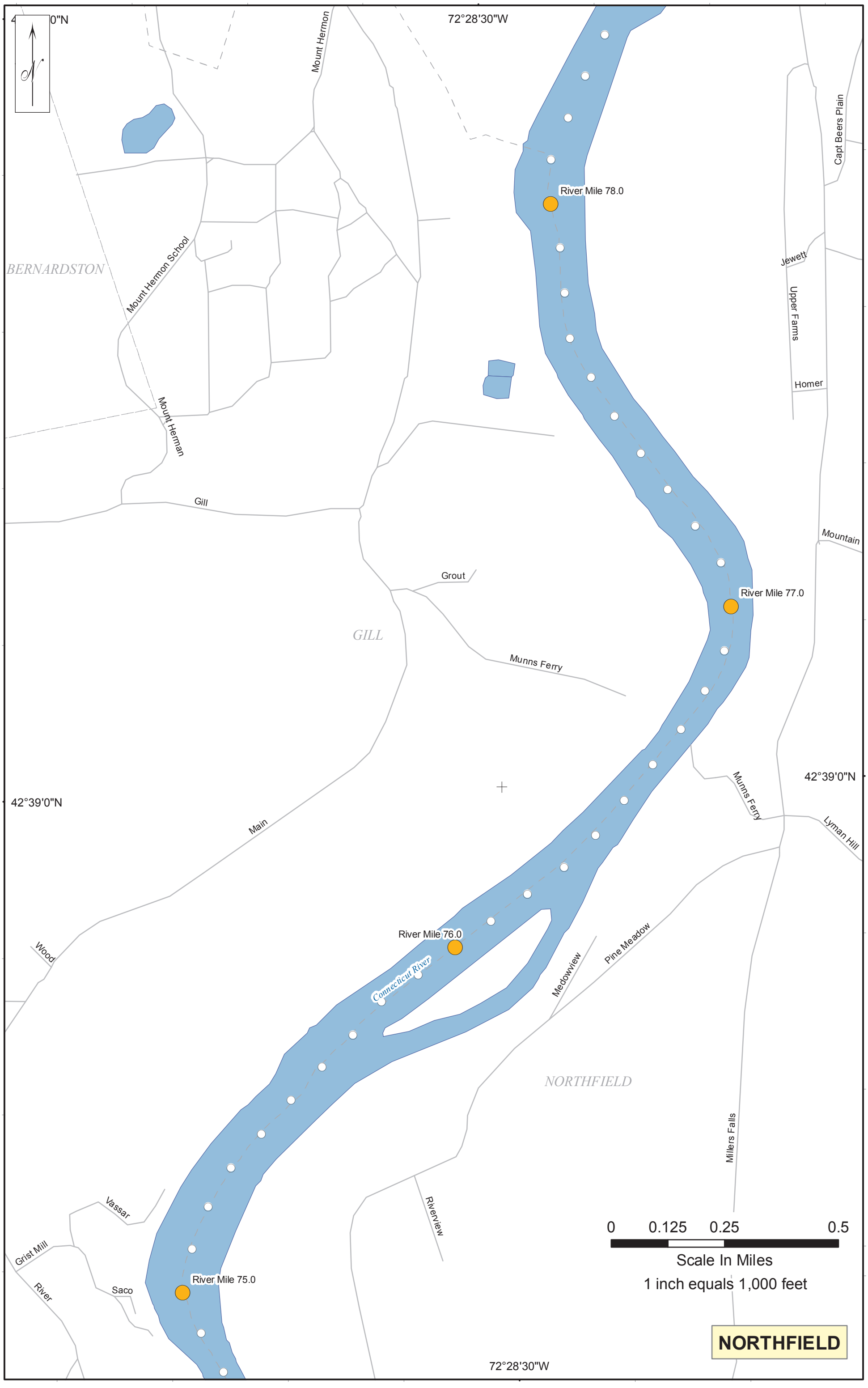
72°28'30"W

72°27'0"W

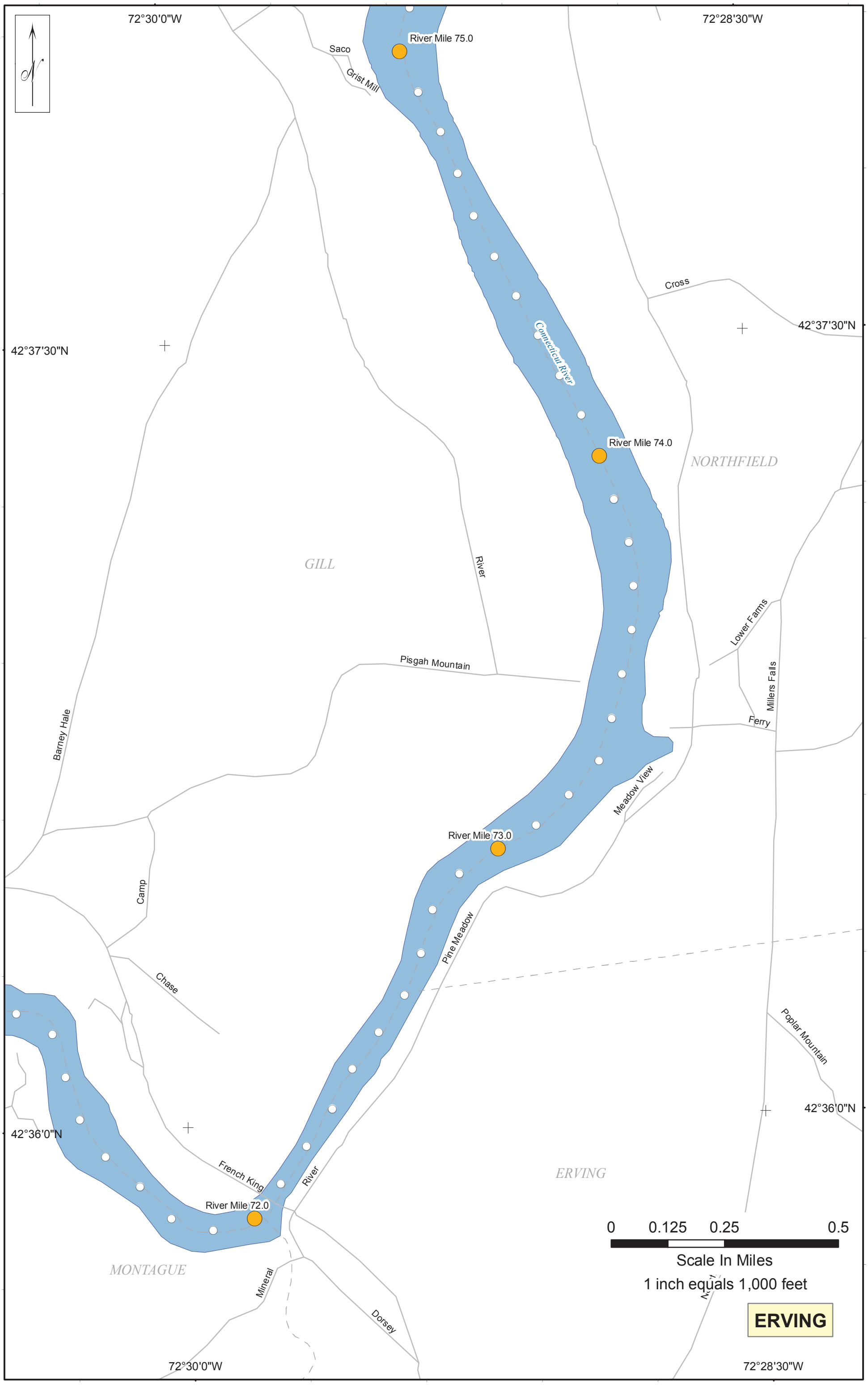
SHEET 26


West
72°28'30"W
72°27'0"W
River
Randall
Northfield
Moody
Pine
Caldwell
River Mile 81.0
Elm
Mill
Holton
Highland
Hotel
Glen
Connecticut River
Pentecost
42°42'0"N
42°42'0"N
Mount Hermon Station
Meadow
School
Dickinson
River Mlle 80.0
Parker
NORTHFIELD
Warwick
Main
East
Great Meadow
Maple
Lorita
Old Ferry
Bennett Brook
River Mile 79.0
Old Bernardston
10
Lucky Clapp
Millers Falls
New Plain
Gill Center
Beers Plain
0
0.125
0.25
0.5
Scale In Miles
1 inch equals 1,000 feet
42°40'30"N
Main
GILL
NORTHFIELD
Mount Hermon
72°28'30"W
Upper Farms
Slate
72°27'0"W

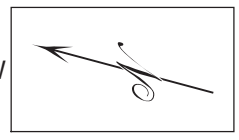
SHEET 25


42°40'0"N
72°28'30"W
Mount Hermon
Capt Beers Plain
River Mile 78.0
BERNARDSTON
Mount Hermon School
Jewett
Upper Farms
Homer
Mount Herman
Gill
Mountain
Grout
River Mile 77.0
GILL
Munns Ferry
42°39'0"N
Main
Munns Ferry
Lyman Hill
River Mile 76.0
Wood
Pine Meadow
Medowview
Connecticut River
NORTHFIELD
Millers Falls
Vassar
Riverview
Grist Mill
River Mile 75.0
Saco
River
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
NORTHFIELD
72°28'30"W

SHEET 24


72°30'0"W
72°28'30"W
42°37'30"N
42°36'0"N
River Mile 75.0
River Mile 74.0
River Mile 73.0
River Mile 72.0
Saco
Grist Mill
Cross
Connecticut River
NORTHFIELD
GILL
River
Pisgah Mountain
Barney Hale
Camp
Chase
Pine Meadow
Meadow View
Lower Farms
Millers Falls
Ferry
Poplar Mountain
French King
River
ERVING
MONTAGUE
Mineral
Dorsey
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet
ERVING

SHEET 23



72°30'0"W

42°36'0"N

Pisgah Mountain

River

ERVING

Dorsey

River Mile 72.0

Camp

Chase

Barney Hale

72°30'0"W

Mineral

Taylor

Peterson

River Mile 71.0

Trenholm

Horseshoe View

GILL

Industrial

72°31'30"W

French King

Mountain

Highland

Aviation

River Mile 70.0

MONTAGUE

72°31'30"W

Chappell

Bickford

Lake Pleasant Access

Millers Falls

Reservoir

Cove View

View

Deep Hole

Norman

Walnut

Hillside

Oak

Riverview

Connecticut River

Grove

Pine

River Mile 69.0

Wentworth

Cross

Turnpike

Vladish

72°33'0"W

Riverside

0 0.125 0.25 0.5

Scale In Miles

1 inch equals 1,000 feet

MONTAGUE

Goddard

Maple

Chestnut

Hillside

Carlisle

Unity

Grove

Worchester

Wrightson

Madison

Henry

Edward

George

Coolidge

James

Morris

Alice

Emund

Turners Falls

1st

Williams

3rd

Prospect

Central

2nd

4th

Spring

Park

High

Crocker

Charron

Keith

C

Griswold

Dell

Davis

Dunton

Willmark

Bulkley

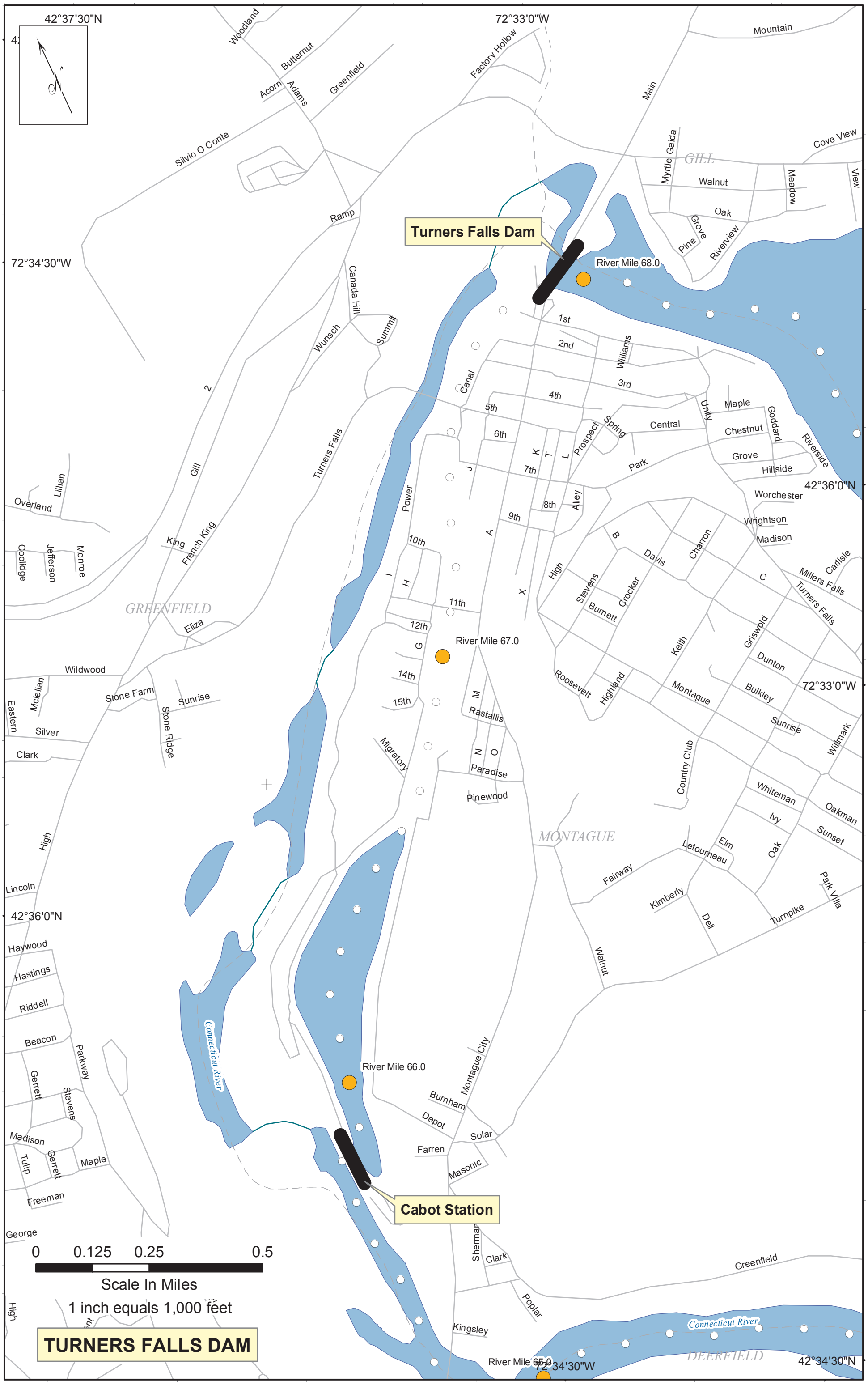
Linda

Montague

42°36'0"N

72°33'0"W

SHEET 22


42°37'30"N
72°33'0"W
72°34'30"W
42°36'0"N
42°34'30"N
Turners Falls Dam
River Mile 68.0
River Mile 67.0
River Mile 66.0
River Mile 65.0
Cabot Station
TURNERS FALLS DAM
Connecticut River
GILL
GREENFIELD
MONTAGUE
DEERFIELD
Mountain
Factory Hollow
Woodland
Butternut
Acorn
Adams
Greenfield
Main
Silvio O Conte
Ramp
Canada Hill
Summit
Wunsch
Turners Falls
Gill
Power
Canal
1st
2nd
3rd
4th
5th
6th
7th
8th
9th
10th
11th
12th
14th
15th
Williams
Unity
Maple
Goddard
Riverside
Chestnut
Central
Spring
Prospect
Park
Grove
Hillside
Worchester
Wrightson
Madison
Carlisle
Millers Falls
Turners Falls
Griswold
Dunton
Bulkley
Sunrise
Willmark
Montague
Keith
Roosevelt
Highland
Country Club
Whiteman
Oakman
Ivy
Sunset
Elm
Oak
Letourneau
Fairway
Kimberly
Dell
Turnpike
Park Villa
Walnut
Myrtle Gaida
Cove View
Meadow
View
Oak
Grove
Pine
Riverview
Davis
Charron
Stevens
Crocker
Burnett
High
Rastallis
Paradise
Pinewood
Migratory
Alley
Overland
Lillian
Coolidge
Jefferson
Monroe
King
French King
Eliza
Wildwood
Mclellan
Eastern
Silver
Clark
Stone Farm
Stone Ridge
Sunrise
Lincoln
Haywood
Hastings
Riddell
Beacon
Parkway
Gerrett
Stevens
Madison
Tulip
Maple
Freeman
George
Montague City
Burnham
Depot
Solar
Farren
Masonic
Sherman
Clark
Poplar
Kingsley
Greenfield
0 0.125 0.25 0.5
Scale In Miles
1 inch equals 1,000 feet