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APPENDIX A

Data Source Documentation

Name	Date	Source
Political boundaries	2021	NH GRANIT/VCGI
Roads	2021	NH DOT/VCGI
Deeryards	2021	NH GRANIT
Surface water (National Hydrography Dataset)	2006	US Geological Survey
Watershed boundaries (National Hydrography Dataset)	2006	US Geological Survey
Wetlands (National Wetlands Inventory)	2020	US Fish and Wildlife Service
Soils	2020	NRCS Soil Survey
Rare species and communities	2021	NH Natural Heritage Bureau
Topography	2021	NH GRANIT
Vernal Pools	2021	Charlestown Conservation Commission
Wildlife Siting and Crossings	2021	Charlestown Conservation Commission
Prominent Peaks	2021	Charlestown Conservation Commission
Working Farms	2021	Charlestown Conservation Commission
Conserved Land	2021	Town of Charlestown
Current Use Land	2021	Town of Charlestown
Tax Map Parcels	2021	Town of Charlestown
Zoning Districts	2021	Town of Charlestown
Wildlife Habitat Type and Tier (Wildlife Action Plan)	2015	NH Fish and Wildlife Service
National Land Cover Dataset	2016	Multi-Resolution Land Characteristics (MRLC) consortium
Climate Change Resilience Dataset	2016	The Nature Conservancy
Aquifers	2007	US Geological Survey
Public Water Supplies	2016	NH Department of Environmental Services
Wellhead Protection Areas	2020	NH Department of Environmental Services
Flood Hazard Areas	2021	Federal Emergency Management Agency
Shoreland Protection area	2020	NH Department of Environmental Services

Data distributed by NH GRANIT, the state’s GIS Clearinghouse, are periodically updated, as new data sources become available and conditions on the ground change.

NH GRANIT Data Disclaimer:

Digital data in NH GRANIT represent the efforts of the contributing agencies to record information from the cited source materials. Complex Systems Research Center (CSRC), under contract to the Office of Energy and Planning (OEP), and in consultation with cooperating agencies, maintains a continuing program to identify and correct errors in these data. OEP, CSRC, and the cooperating agencies make no claim as to the validity or reliability or to any implied uses of these data.

APPENDIX B

Soil Survey Descriptions

This data dictionary provides essential information about the soil attributes contained in the spreadsheet tables located on the NH NRCS web site http://www.nh.nrcs.usda.gov/Soil_Data/Soil_Data or the attribute table accompanying the NRCS soil spatial data distributed through GRANIT (NHSoilMaster.dbf). The description, units of measure and labeling of soil attributes conforms to the standards of the USDA National Cooperative Soil Survey (NCSS) and the National Soil Information System (NASIS). The data contained within the tables are consistent with, and are derived from, the NRCS National Soil Information System. The tables located on the NH NRCS web site reflect the official soil dataset for New Hampshire. They take precedence over any other source of soil information. The attribute information is specific for each survey area and reflects the most current level of understanding of soil properties and their behavioral characteristics. This data may not agree with previously published soil survey reports that represent historical records of our level of knowledge at the time of publication. Likewise, the attribute data that is provided in these tables are subject to change as the soil survey program continues to refine our ability to measure and interpret soil physical and chemical properties. It is the responsibility of the users of this information to adequately document when these attributes were retrieved for a specific purpose and that any land use decision made based on these attributes reflect the NCSS standards at that time. Because this data is subject to change, it is the user's responsibility to update their records as appropriate and not to rely on data previously downloaded from the NH NRCS web site or from the GRANIT web site.

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Forest Soil Group

NH Forest Soil Groups (NHFSGs) consist of map units that are similar in their potential for commercial forest products, their suitability for native tree growth, and their use and management. Considered in grouping the map units are depth to bedrock, texture, saturated hydraulic conductivity, available water capacity, drainage class, and slope. The grouping applies only to soils in the State of New Hampshire.

The NHFSGs have been developed to help land users and managers in New Hampshire evaluate the relative productivity of soils and to better understand patterns of plant succession and how soil and site interactions influence management decisions. The soils are assigned to one of five groups (IA, IB, IC, IIA, and IIB). Several map units in New Hampshire either vary so greatly or have such a limited potential for commercial forest products that they have not been assigned to an NHFSG (NC). Examples of NC map units are very poorly drained soils and soils at high elevations. The kinds of tree species generally growing in climax stands in each of the five NHFSGs vary from county to county. This information is available through local NRCS field offices.

IA—This group consists of very deep, loamy, moderately well drained or well drained soils. Generally, these soils are more fertile than other soils and have the most favorable soil moisture relationships.

IB—The soils in this group are generally sandy or loamy over sandy material and are slightly less fertile than group IA soils. Group IB soils are moderately well drained or well drained. Their soil moisture is adequate for good tree growth, but it may not be quite as abundant as that in group IA soils.

IC—The soils in this group are in areas of outwash sand and gravel. They are moderately well to excessively drained. Their soil moisture is adequate for good softwood growth but is limited for hardwoods.

IIA—This diverse group includes many of the same soils as those in groups IA and IB. The soils are separated into a unique group, however, because they have physical limitations that make forest management more difficult and costly, i.e., steep slopes, bedrock outcrops, erosive textures, surface boulders, and extreme rockiness.

IIB—The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface. Productivity is generally less than that of soils in the other groups.

NC—The map units in this category either vary so greatly or have such a limited potential for commercial forest products that they have not been assigned to an NHFSG. Commonly, onsite visit would be required to evaluate the situation.

Hydric Soils

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the

"Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Gravel Source

Gravel consists of natural aggregates (2 to 75 millimeters in diameter) suitable for commercial use with a minimum of processing. It is used in many kinds of construction. Specifications for each use vary widely. Only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains gravel, the soil is considered a likely source regardless of thickness. The assumption is that the gravel layer below the depth of observation exceeds the minimum thickness. The ratings are for the whole soil, from the surface to a depth of about 6 feet. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be gravel.

The soils are rated "good," "fair," or "poor" as potential sources of gravel. A rating of "good" or "fair" means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Sand Source

Sand is a natural aggregate (0.05 millimeter to 2 millimeters in diameter) suitable for commercial use with a minimum of processing. It is used in many kinds of construction. Specifications for each use vary widely. Only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand, the soil is considered a likely source regardless of thickness. The assumption is that the sand layer below the depth of observation exceeds the minimum thickness. The ratings are for the whole soil, from the surface to a depth of about 6 feet.

The soils are rated "good," "fair," or "poor" as potential sources of sand. A rating of "good" or "fair" means that sand is likely to be in or below the soil. The bottom layer and the thickest layer of the soil are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand. The number 0.00 indicates that the layer is a "poor source." The number 1.00 indicates that the layer is a "good source." A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

APPENDIX C
Connecticut River Important Bird Area

The Middle Connecticut River Important Bird Area

The New Hampshire and Vermont Important Bird Area Programs are part of a national and international effort to identify areas that provide critical habitat to birds during some stage of their annual cycle. In New Hampshire the program is a partnership of the Audubon Society of New Hampshire, the New Hampshire Fish and Game Department, and the University of New Hampshire Cooperative Extension. In Vermont it is coordinated by Audubon Vermont, a state office of the National Audubon Society. IBAs are identified based on strict scientific criteria, including 1) the presence of threatened or endangered species, 2) other species and habitats of conservation concern, and 3) areas where birds congregate during breeding, migration, or winter. It is hoped that recognition of IBAs can help guide future conservation and research efforts at areas that meet these criteria.

The Middle Connecticut River meets categories 1-3 of the IBA criteria, as follows:

1) Endangered and threatened species

Two pairs of Bald Eagles nest within this IBA, including the only known nest in Vermont near Herrick's Cove. In addition, between 4 and 10 eagles frequent this stretch of river during the winter.

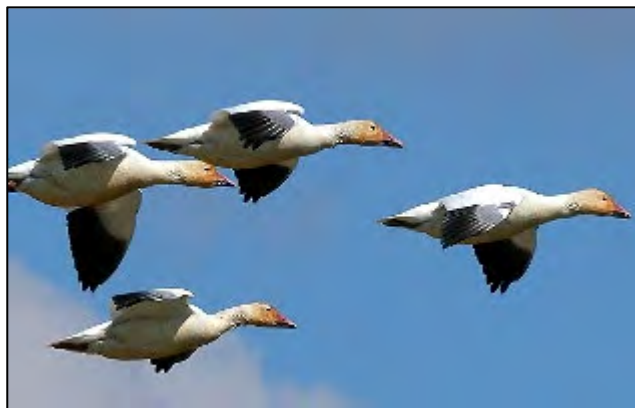
2) Other habitats and species of conservation concern

Extensive wetlands associated with the Vernon and Bellows Falls dams provide habitat to several species of locally uncommon marshbirds, including Pied-billed Grebe, Least and American Bitterns, Virginia Rail, Sora, Common Moorhen, and Marsh Wren. Remnant floodplain forest associated with the river hosts birds such as Red-bellied Woodpecker, Yellow-throated Vireo, and Blue-gray Gnatcatcher, all near the northern limits of their ranges in New England. Grasslands – primarily agricultural areas – provide important feeding habitat to migrating waterfowl and other species.



3) Congregatory species

By far the most noticeable birds that use the Middle Connecticut River are waterfowl. Between October and April hundreds or thousands of ducks and geese of up to 30 species use the area, with the highest numbers generally reported in the spring. The Connecticut River may be the primary migration corridor for Snow Geese in New Hampshire, while other common species include Canada Goose, American Black Duck, Mallard, and Ring-necked Duck. Common Goldeneyes and Common Mergansers are common wintering birds on the open stretches of the river, and may congregate in large flocks during migration in the impoundment above Vernon Dam.



Other congregatory species that use the river's varied habitats include shorebirds, herons, and passerines. While the numbers of shorebirds using the Connecticut Valley are small relative to Lake Champlain or the New Hampshire seacoast, these species do stop in when water levels are relatively low. Similarly, Great Blue Herons and Great Egrets gather in the marshes in late summer. During fall and winter, old agricultural fields provide food to flocks of Horned Larks, Snow Buntings, and other seed-eaters.

For the purposes of the IBA Program, the Middle Connecticut River IBA extends from the Massachusetts Border to the area around Charlestown (NH) and Springfield (VT). It is largely restricted to the river and its floodplain, as partially delineated by topographic features such as the lower terrace formed by glacial Lake Hitchcock. Issues facing the IBA include changes in land use (agricultural conversion, development), pollution, invasive plants, and changes in hydrology associated with the two dams.

For more information on the New Hampshire Important Bird Area Program, contact:

Pam Hunt
Audubon Society of New Hampshire
3 Silk Farm Road
Concord, NH 03301

(603) 224-9909 extension 328
email: phunt@nhaudubon.org



More details on the IBA Program are also available at:

<http://www.nhbirdrecords.org/bird-conservation/IBA.htm>



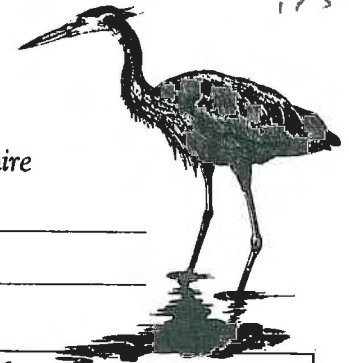
APPENDIX D

Birding Checklist for Charlestown Meadows

Source: Stan McCumber, 2009

Birds of New England Field Checklist

Produced by the Audubon Society of New Hampshire



Observers: _____

Notes: _____

Dates and Locations:

1. *Charlestown Meadows*
 2. *Stan M^c Cumber Observer*
 3. *2005-2008*

* - breeding birds
 R - very rare

* American Pipit	✓		
Bohemian Waxwing	✓		
* Cedar Waxwing	✓		
Warblers			
* Blue-winged Warbler			
* Golden-winged Warbler			
* Tennessee Warbler			
R Orange-crowned Warbler			
* Nashville Warbler	✓		
* Northern Parula	✓		
* Yellow Warbler	✓		
* Chestnut-sided Warbler	✓		
* Magnolia Warbler	✓		
* Cape May Warbler			
* Black-throated Blue Warbler	✓		
* Yellow-rumped Warbler	✓		
* Black-throated Green Warbler	✓		
* Blackburnian Warbler			
R Yellow-throated Warbler			
* Pine Warbler	✓		
* Prairie Warbler			
* Palm Warbler	✓		
* Bay-breasted Warbler			
* Blackpoll Warbler	✓		
*R Cerulean Warbler			
* Black-and-white Warbler	✓		
* American Redstart	✓		
*R Prothonotary Warbler			
* Worm-eating Warbler			
* Ovenbird	✓		
* Northern Waterthrush	✓		
* Louisiana Waterthrush			
*R Kentucky Warbler			
R Connecticut Warbler			
* Mourning Warbler			
* Common Yellowthroat	✓		
* Hooded Warbler			
* Wilson's Warbler	✓		
* Canada Warbler			
* Yellow-breasted Chat			
Tanagers • Sparrows			
R Summer Tanager			
* Scarlet Tanager	✓		
R Western Tanager			
* Eastern Towhee	✓		
American Tree Sparrow	✓		
* Chipping Sparrow	✓		
R Clay-colored Sparrow			
* Field Sparrow			
* Vesper Sparrow			
R Lark Sparrow			

* Savannah Sparrow	✓		
* Grasshopper Sparrow			
*R Henslow's Sparrow			
* Saltmarsh Sharp-tailed Sparrow			
Nelson's Sharp-tailed Sparrow			
* Seaside Sparrow			
* Fox Sparrow	✓		
* Song Sparrow	✓		
* Lincoln's Sparrow			
* Swamp Sparrow	✓		
* White-throated Sparrow	✓		
R Harris's Sparrow			
White-crowned Sparrow	✓		
* Dark-eyed Junco	✓		
Lapland Longspur	✓		
Snow Bunting	✓		
* Northern Cardinal	✓		
* Rose-breasted Grosbeak	✓		
R Black-headed Grosbeak			
R Blue Grosbeak			
* Indigo Bunting	✓		
R Dickcissel			
Blackbirds • Finches			
* Bobolink	✓		
* Red-winged Blackbird	✓		
* Eastern Meadowlark	✓		
Western Meadowlark			
R Yellow-headed Blackbird			
* Rusty Blackbird			
* Common Grackle	✓		
* Brown-headed Cowbird	✓		
* Orchard Oriole			
* Baltimore Oriole	✓		
R Bullock's Oriole			
* Pine Grosbeak			
* Purple Finch	✓		
* House Finch	✓		
* Red Crossbill			
* White-winged Crossbill			
Common Redpoll			
R Hoary Redpoll			
* Pine Siskin			
* American Goldfinch	✓		
* Evening Grosbeak	✓		
* House Sparrow	✓		
Total Species			

This checklist is produced by the Audubon Society of New Hampshire. It is based on a design by Lynn C. Harper. ASNH (11/99)

Loons • Grebes			
Red-throated Loon			
R Pacific Loon			
* Common Loon	✓		
Pied-billed Grebe	✓		
Horned Grebe	✓		
Red-necked Grebe			
R Eared Grebe			
R Western Grebe			
Shearwaters • Petrels			
Northern Fulmar			
Cory's Shearwater			
Greater Shearwater			
Sooty Shearwater			
* Manx Shearwater			
Wilson's Storm-Petrel			
* Leach's Storm-Petrel			
Gannets • Cormorants • Herons • Vultures			
Northern Gannet			
* Double-crested Cormorant	✓		
* Great Cormorant			
* American Bittern	✓		
* Least Bittern			
* Great Blue Heron	✓		
* Great Egret	✓		
* Snowy Egret			
* Little Blue Heron			
* Tricolored Heron			
* Cattle Egret			
* Green Heron	✓		
* Black-crowned Night-Heron			
*R Yellow-crowned Night-Heron			
* Glossy Ibis			
R Black Vulture			
* Turkey Vulture	✓		

Swans • Geese • Ducks			
R Greater White-fronted Goose	✓		
Snow Goose	✓		
* Canada Goose	✓		
Brant			
* Mute Swan			
R Tundra Swan			
* Wood Duck	✓		
* Gadwall	✓		
R Eurasian Wigeon			
* American Wigeon	✓		
* American Black Duck	✓		
* Mallard	✓		
* Blue-winged Teal	✓		
* Northern Shoveler	✓		
* Northern Pintail	✓		
* Green-winged Teal	✓		
Canvasback			
Redhead			
* Ring-necked Duck	✓		
R Tufted Duck			
Greater Scaup	✓		
Lesser Scaup			
King Eider			
* Common Eider			
Harlequin Duck			
Surf Scoter			
White-winged Scoter			
Black Scoter			
Oldsquaw	✓		
Bufflehead	✓		
* Common Goldeneye	✓		
Barrow's Goldeneye			
* Hooded Merganser	✓		
* Common Merganser	✓		

* Red-breasted Merganser			
* Ruddy Duck			
Osprey • Eagles • Hawks • Falcons			
* Osprey	✓		
* Bald Eagle	✓		
* Northern Harrier	✓		
* Sharp-shinned Hawk	✓		
* Cooper's Hawk	✓		
* Northern Goshawk			
* Red-shouldered Hawk			
* Broad-winged Hawk	✓		
* Red-tailed Hawk	✓		
Rough-legged Hawk			
*R Golden Eagle			
* American Kestrel	✓		
Merlin	✓		
Gyr Falcon			
* Peregrine Falcon	✓		
Pheasants • Rails • Coot • Crane			
*R Gray Partridge			
* Ring-necked Pheasant	✓		
* Ruffed Grouse	✓		
* Spruce Grouse			
* Wild Turkey	✓		
* Northern Bobwhite			
R Yellow Rail			
* Clapper Rail			
*R King Rail			
* Virginia Rail			
* Sora			
R Purple Gallinule			
* Common Moorhen			
* American Coot			
R Sandhill Crane	✓		
Plovers • Sandpipers • Snipe • Phalaropes			
Black-bellied Plover	✓		
American Golden-Plover			
Semipalmated Plover	✓		
* Piping Plover			
* Killdeer	✓		
* American Oystercatcher			
R American Avocet			
Greater Yellowlegs	✓		
Lesser Yellowlegs	✓		
Solitary Sandpiper	✓		
* Willet			
* Spotted Sandpiper	✓		
* Upland Sandpiper			
Whimbrel			
Hudsonian Godwit			
R Marbled Godwit			

Ruddy Turnstone			
Red Knot			
Sanderling			
Semipalmated Sandpiper	✓		
Western Sandpiper			
Least Sandpiper	✓		
White-rumped Sandpiper			
Baird's Sandpiper			
Pectoral Sandpiper	✓		
Purple Sandpiper			
Dunlin			
R Curlew Sandpiper			
Stilt Sandpiper			
Buff-breasted Sandpiper			
R Ruff			
Short-billed Dowitcher			
Long-billed Dowitcher			
* Common Snipe	✓		
* American Woodcock	✓		
* Wilson's Phalarope			
Red-necked Phalarope			
Red Phalarope			
Jaegers • Gulls • Terns • Auks			
Great Skua			
R South Polar Skua			
Pomarine Jaeger			
Parasitic Jaeger			
Long-tailed Jaeger			
* Laughing Gull			
Little Gull			
Black-headed Gull			
* Bonaparte's Gull	✓		
* Ring-billed Gull	✓		
* Herring Gull			
Iceland Gull	✓		
R Lesser Black-backed Gull			
Glaucous Gull			
* Great Black-backed Gull			
R Sabine's Gull			
Black-legged Kittiwake			
R Gull-billed Tern			
Caspian Tern			
R Royal Tern			
R Sandwich Tern			
* Roseate Tern			
* Common Tern			
* Arctic Tern			
* Forster's Tern			
* Least Tern			
R Sooty Tern			
* Black Tern			

* Black Skimmer			
Dovekie			
Common Murre			
Thick-billed Murre			
* Razorbill			
* Black Guillemot			
* Atlantic Puffin			
Doves • Cuckoos • Owls			
* Rock Dove	✓		
* Mourning Dove	✓		
* Black-billed Cuckoo	✓		
* Yellow-billed Cuckoo			
* Barn Owl			
* Eastern Screech-Owl			
* Great Horned Owl			
Snowy Owl			
R Northern Hawk-Owl			
* Barred Owl	✓		
R Great Gray Owl			
* Long-eared Owl			
* Short-eared Owl	✓		
R Boreal Owl			
* Northern Saw-whet Owl			
Nightjars • Hummingbird • Woodpeckers			
* Common Nighthawk	✓		
*R Chuck-will's Widow			
* Whip-poor-will			
* Chimney Swift	✓		
* Ruby-throated Hummingbird	✓		
* Belted Kingfisher	✓		
* Red-headed Woodpecker			
* Red-bellied Woodpecker	✓		
* Yellow-bellied Sapsucker	✓		
* Downy Woodpecker	✓		
* Hairy Woodpecker	✓		
*R Three-toed Woodpecker			
* Black-backed Woodpecker			
* Northern Flicker	✓		
* Pileated Woodpecker	✓		
Flycatchers • Shrikes • Vireos • Jays • Crows			
* Olive-sided Flycatcher			
* Eastern Wood-Pewee			
* Yellow-bellied Flycatcher			
* Acadian Flycatcher			
* Alder Flycatcher	✓		
* Willow Flycatcher	✓		
* Least Flycatcher	✓		
* Eastern Phoebe	✓		
* Great Crested Flycatcher	✓		
R Western Kingbird			
* Eastern Kingbird	✓		

*R Loggerhead Shrike			
Northern Shrike			
* White-eyed Vireo			
* Yellow-throated Vireo			
* Blue-headed Vireo	✓		
* Warbling Vireo	✓		
* Philadelphia Vireo			
* Red-eyed Vireo	✓		
* Gray Jay			
* Blue Jay	✓		
* American Crow	✓		
* Fish Crow			
* Common Raven	✓		
Larks • Swallows • Chickadees • Nuthatches			
* Horned Lark	✓		
* Purple Martin			
* Tree Swallow	✓		
* N. Rough-winged Swallow	✓		
* Bank Swallow	✓		
* Cliff Swallow	✓		
* Barn Swallow	✓		
* Black-capped Chickadee	✓		
* Boreal Chickadee			
* Tufted Titmouse	✓		
* Red-breasted Nuthatch	✓		
* White-breasted Nuthatch	✓		
* Brown Creeper	✓		
Wrens • Kinglets • Thrushes			
* Carolina Wren	✓		
* House Wren	✓		
* Winter Wren	✓		
*R Sedge Wren			
* Marsh Wren	✓		
* Golden-crowned Kinglet			
* Ruby-crowned Kinglet	✓		
* Blue-gray Gnatcatcher	✓		
R Northern Wheatear			
* Eastern Bluebird	✓		
* Veery	✓		
Gray-checked Thrush			
* Bicknell's Thrush			
* Swainson's Thrush			
* Hermit Thrush	✓		
* Wood Thrush	✓		
* American Robin	✓		
R Varied Thrush			
Mockingbirds • Pipits • Waxwings			
* Gray Catbird	✓		
* Northern Mockingbird	✓		
* Brown Thrasher	✓		
* European Starling	✓		

APPENDIX E

Wildlife Sightings in Charlestown

Source: James Fowler, 2009

Compiled by Jim Fowler of Charlestown (with additions by Jan Lambert of Charlestown)

Please note- This list includes sightings from 2008, and also sightings from past years.

Site 1 – Cornfields and Oxbow Beaver Pond south of Hidden Valley Rd.

BIRDS

Many ducks and migratory waterfowl, most unidentified, but including:

Canada Goose	<i>Branta canadensis</i>	common in spring and fall
Mallard	<i>Anas platyrhynchos</i>	common spring and fall – always at least one mated pair that nests here in the summer
Common Merganser	<i>Lophodytes cucullatus</i>	At least two or three pairs in spring and fall. I’ve seen them wing dance across the beaver pond in the spring.

Other migratory birds:

Golden Eagle	<i>Aquila chrysaetos</i>	I’ve lived here for fourteen years and twice seen the eagles in the fall in flocks of four and five.
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Birds who spend the summers if not year round:

Black-capped		
Chickadee	<i>Parus atricapillus</i>	likely the most common bird
Tufted Titmouse	<i>Parus bicolor</i>	very common
White-breasted		
Nuthatch	<i>Sitta carolinensis</i>	very common
Red-breasted		
Nuthatch	<i>Sitta canadensis</i>	uncommon
American Robin	<i>Turdus migratorius</i>	very common
Blue Jay	<i>Cyanocitta cristata</i>	very common
Mourning Dove	<i>Zenaida macroura</i>	very common
Slate-colored Junco	<i>Junco hyemalis</i>	very common in winter
Rose-breasted		
Grosbeak	<i>Pheucticus ludovicianus</i>	a pair or two every summer
American Goldfinch	<i>Carduelis tristis</i>	very common
Pine Siskin	<i>Carduelis pinus</i>	if heavy snowfall winters, common
House Finch	<i>Carpodacus mexicanus</i>	two or three pairs in summer
Northern Cardinals	<i>Cardinalis cardinalis</i>	common year round
Gray Catbird	<i>Dumetella carolinensis</i>	common around the cornfield
Cedar Waxwings	<i>Bombycilla cedrorum</i>	uncommon; in the grapes in winter
White-throated		
Sparrow	<i>Zonotrichia leucophrys</i>	common along brook that runs through the cornfields
Chipping sparrow	<i>Spizella passerina</i>	common

There are many warblers that summer in the brush along the beaver pond. I’m only sure of one.

Yellow Warbler	<i>Dendroica petechia</i>	common
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	very common – my herald of spring
American Crow	<i>Corvus brachyrhynchos</i>	very common in the cornfield
Barn Swallow	<i>Hirundo rustica</i>	common over the evening fields
Downy Woodpecker	<i>Picoides pubescens</i>	very common
Hairy Woodpecker	<i>Picoides villosus</i>	common
Common Flicker	<i>Colaptes auratus</i>	common in cornfield
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	rare – the first time I saw it, I verified it with the Ascutney area Audubon chapter.
Pileated Woodpecker	<i>Dryocopus pileatus</i>	though thought of as rare, there are many pairs in town, one in this area
Great Blue Heron	<i>Ardea herodias</i>	one pair nests somewhere around the beaver pond every year
American Bittern	<i>Botaurus lentiginosus</i>	I've twice seen one in the pond and heard them occasionally in the spring
Wild Turkey	<i>Meleagris gallopavo</i>	There's a large flock who live in Hemingway's fields up by route 12 that occasionally come down to the cornfields.
Ring-necked Pheasant	<i>Phasianus colchicus</i>	stocked in the cornfield, twice have survived the winter
Ruffed Grouse	<i>Bonasa umbellus</i>	at least one pair down beside the cornfield. One visits my feeding area
Bald Eagle	<i>Haliaeetus leucocephalus</i>	I see one three or four times a year hunting over the beaver pond
Red-tailed Hawk	<i>Buteo jamaicensis</i>	seen numerous times over cornfields
Broad-winged Hawk	<i>Buteo platypterus</i>	uncommon
I've seen other Buteo hawks, but those two are the only ones I can identify.		
Cooper's Hawk	<i>Accipiter cooperii</i>	Once; one was found the next day in Claremont, dead of EEE
Peregrine Falcon	<i>Falco peregrinnus</i>	I haven't seen these in four or five years. They used to nest in the cliffs across the river

On 24 November this year I saw a pointed wing raptor which was smaller than the peregrine. It was diving at five mourning doves backed up against three cornstalks the farmer left behind. I think it was likely a Merlin *Falco columbarius* but I can't verify it.

I'm probably leaving out some birds I have seen, maybe even a few common ones.

ANIMALS

Little Brown

Myotis Bat	<i>Myotis lucifugus</i>	Common – one flies inside my house at least once a year
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Eastern Chipmunk	<i>Tamias striatus</i>	very common around the cornfields
Gray Squirrel	<i>Sciurus carolinensis</i>	very common, as most of the woods around the cornfields are oak
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	uncommon
Muskrat	<i>Ondatra zibethicus</i>	common in beaver pond and brook
Beaver	<i>Castor canadensis</i>	common, at least one in the pond at all times though the farmer traps
Red Fox	<i>Vulpes vulpes</i>	common
Gray Fox	<i>Urocyon cinereoargenteus</i>	I've had one in my yard a few times under the bird feeder
Raccoon	<i>Procyon lotor</i>	Tracks along brook, once the neighborhood dogs killed one
Black Bear	<i>Ursus americanus</i>	Once seen crossing the cornfields
Striped Skunk	<i>Mephitis mephitis</i>	very common in neighborhood
The color variation in the skunks is unusual; most here have very wide white stripes, so much so that a couple look almost all white.		
Mink	<i>Mustela vison</i>	Twice have had a pair winter in the brook's bank
River Otter	<i>Lutra canadensis</i>	Some occasionally come up from the river, once a pair wintered in the brook.
White-tailed Deer	<i>Odocoileus virginianus</i>	common
Moose	<i>Alces alces</i>	A couple years ago a moose spent some of the summer in the swamp around the beaver pond

REPTILES AND AMPHIBIANS

There are numerous turtles in the pond. I once met a man down there who was studying some rare turtle. He was closed mouth so I didn't get the species from him. I'm only going to identify the one turtle species that I have seen.

Snapping Turtle	<i>Chelydra serpentina</i>	Most springs I see them digging
Eastern Garter Snake	<i>Thamnophis sitalis</i> (spp)	common
Milk Snake	<i>Lampropeltis traingulum</i>	uncommon – I've seen three, I'm not sure which milk snake they are. I would guess the Eastern.
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Seen once, squashed by a car alongside the cornfield in spring
American Toad	<i>Bufo americanus</i> (spp)	common
Gray Treefrog	<i>Hyla versicolor</i>	uncommonly seen, lots of spring calls
Spring Peeper	<i>Pseudacris crucifer</i>	common
Green Frog	<i>Rana clamitans</i>	very common

INSECTS

The first three or four years I lived here the Monarch Butterflies *Danaus plexippus* would congregate in the fall in the cornfields, but then it stopped. I've seen hundreds all together down

there. There are also many species of dragonflies. I don't know them well enough to identify them.

Site 2 – Reservoir Town Forest off North Hemlock Road- (Jim)

While in grad school, I did my flora study on this forest so spent a lot of time there. I also used to walk or run the trails daily. I still do get out a few times a month and do trail maintenance.

BIRDS

Chickadee	<i>Parus atricapillus</i>	very common
White-breasted Nuthatch	<i>Sitta carolinensis</i>	common
Blue Jay	<i>Cyanocitta cristata</i>	common
Downy Woodpecker	<i>Picoides pubescens</i>	common
Pileated Woodpecker	<i>Dryocopus pileatus</i>	I can't go out without hearing one call
Belted Kingfisher	<i>Megaceryle alcyon</i>	A pair around the reservoir
Northern Raven	<i>Corvus corax</i>	There is a pair nesting somewhere in the area. I've seen them numerous times soaring over

ANIMALS

White-tailed Deer	<i>Odocoileus virginianus</i>	common
Beaver	<i>Castor canadensis</i>	uncommon, sometimes winter over in the reservoir, now that the dam has been breached, this might not happen any longer
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	very common
Gray Squirrel	<i>Sciurus carolinensis</i>	common
Eastern Chipmunk	<i>Tamias striatus</i>	very common
Black Bear	<i>Ursus americanus</i>	rare, one early winter I tracked a bear through this forest and through the Hall Pond Forest, before I found steaming scat and decided to stop

REPTILES AND AMPHIBIANS

Red Eft (Red-spotted Newt)	<i>Notophthalmus viridescens</i>	very common
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Site 3 – downtown and other area sites

Fling Road – above dump

Spotted Salamander	<i>Ambystoma maculatum</i>	every spring they cross and get squashed by the traffic
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Downtown

Striped Skunk	<i>Mephitis mephitis</i>	common
Opossum	<i>Didelphis virginiana</i>	Twice I've road-killed opossums on the southern end of Main Street

Bird – Old Claremont Road by Peach Blow Farm- 1 pair Mockingbirds nesting

Additions by Jan- In the village of Charlestown I have commonly seen or heard cardinals, robins, rock doves(pigeons), mockingbirds, and big flocks of some kind of black birds. A birder told me that the peregrine falcons come over from the cliffs along Rt. 5 in VT to prey on the Charlestown pigeons!

I have seen a flock of 75 turkeys, up on the hill behind the village on John Olsen’s property.

Site 4-Adjacent to Connecticut River south of town (Jan)

Beaver	<i>Castor canadensis</i>	common as bank beaver in river
Northern Leopard Frog	<i>Rana pipiens</i>	rare, found 4; on record with RAARP
Pickerel Frog	<i>Rana palustris</i>	uncommon
Wood Frog	<i>Rana sylvatica</i>	common in early spring

Also Green Frogs, Grey Tree Frogs, American Toads, Spring Peepers, Snapping Turtles, and Painted Turtles.

Fields along river host migratory waterfowl including Canada Goose, Snow Goose, white egrets (not sure of species), mallards, and kestrels (*Falco sparverius*). Buffer zones planted along edge have many grassland sparrows. Sand banks have colonies of bank swallows (*Riparia riparia*.)

Note: It is a big concern of mine that the area directly south of town along Rt. 12 is a prime amphibian migration area, since they have to cross the highway from the woods to the east to breed in the meadow vernal pools and Dickerson Brook. Many get crushed by vehicles.

Site 5-Little Sugar River, N. Charlestown village (Jan)

Wood Turtle	<i>Clemmys insculpta</i>	rare, found one, reported to RAARP
Mudpuppy	<i>Necturus maculosus</i>	found a few in larval stage near Conn. R.

Site 6-Upland hardwood forest-Hemlock-Acworth-Sam Putnam Roads (Jan)

Note: I’m not repeating scientific names that have appeared previously.

BIRDS

Most common- Black-capped Chickadee, Robin, Crow, Raven, Slate-colored Junco, Blue Jay, Mourning Dove, White-Breasted Nuthatch, Downy Woodpecker, Turkey

Common-

Phoebe	<i>Sayornis phoebe</i>
Hummingbird	<i>Archilochis colubris</i>
Veery	<i>Catharus fuscescens</i>
Wood Thrush	<i>Hylocichla mustelina</i>
Hermit Thrush	<i>Catharus guttatus</i>
Barred Owl	<i>Strix varia</i>
Pileated Woodpecker	
Ruffed Grouse	
Red Tailed Hawk	
Rose-Breasted Grosbeak	

Uncommon: Woodcock *Scolopax minor* One in my driveway years ago, and they're still courting in the fields in early spring.

Also uncommon are various warblers passing through

ANIMALS

Most common- Chipmunks, Mice, Red Squirrels, Gray Squirrels, moles, voles, shrews, Deer

<u>Common-</u> Raccoon		once a month or so at night, in road dead or alive
Red Fox		usually at night crossing the road
Coyotes	<i>Canis latrans</i>	a pack howling and yipping at night (2008)
Porcupines	<i>Erethizon dorsatum</i>	
<u>Uncommon-</u> Fisher	<i>Martes pennanti</i>	Seen off and on over the years, and once saw two babies up on a tree limb.
Moose		Last year saw one on my driveway; spotted by my neighbors in previous years; saw one last year at Hall Pond.
Black Bear		Neighbors saw mother with cub on my driveway a few years ago.
Ermine	<i>Mustela ermine</i>	Saw one on my property years ago in full white coat in late Fall.
Striped skunk		Not nearly as common upland as in the village, from my observations, However, two summers ago there was a mother with five babies nesting in our shed- Sure was glad when they left!
Snowshoe Hare	<i>Lepus americanus</i>	Have seen tracks repeatedly on Sam's Hill.

REPTILES AND AMPHIBIANS

Very Common reptiles: Garter snakes, snapping turtles, painted turtles

Common reptiles: Red-bellied snake *Storeria o. occipitamaculata*

	Ring-necked snake	<i>Diadophis punctatus edwardsii</i>	
	Milk snake		had one under my house
<u>Rare reptiles(?)</u> :	Worm Snake	<i>Carphophis a. amoenus</i>	Dug one up out of my garden years ago, but according to my guide NH is out of its range

Very Common Amphibians: Green Frogs, Spring Peepers, Wood Frogs, Gray Tree Frogs, American Toads, Red-Backed salamanders (*Plethodon cinereus*), red-spotted newts in wetlands and their juvenile red efts on land.

Common Amphibians:

Pickerel frog		
Spotted salamander		seem to be less common in the past year
Two-lined salamander	<i>Eurycea bislineata</i>	once I found a mother with a clutch of newborns under a rock in a very small stream.

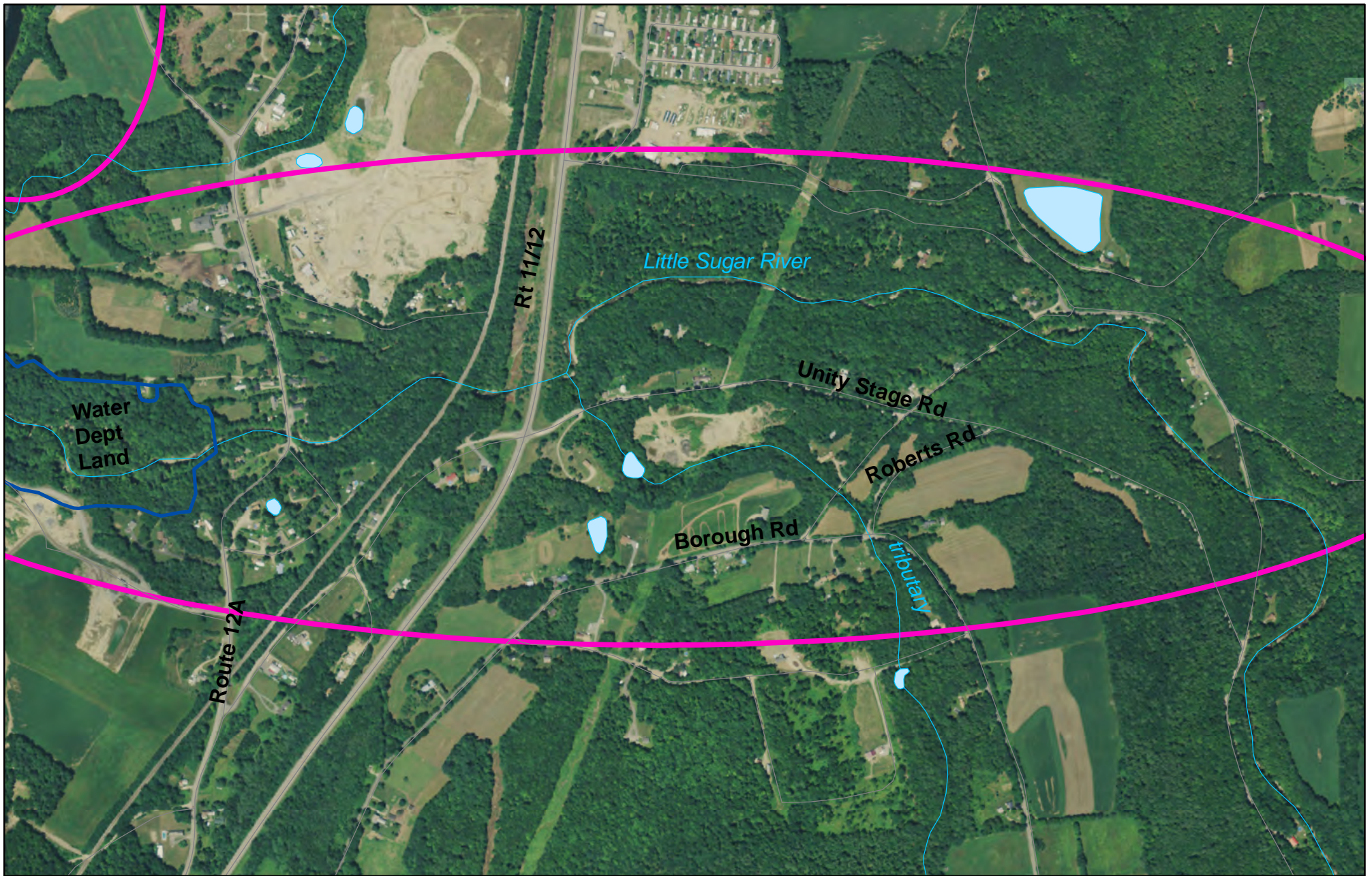
Other Amphibians:

Bull frogs (*Rana catesbeiana*) have been rather common in the recent past, but I heard none this year (2008). In the year 2000, Jim and I were involved in surveying some severely malformed and diseased (bloated and multiple limbed) bull frog tadpoles just over the town line in Acworth. I'm wondering if the malady has spread and wiped out the area bull frogs.

APPENDIX F

Supporting Documentation for Focus Areas

Source: Charlestown Conservation Commission, 2009

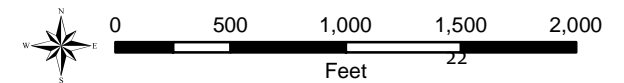


Focus on Little Sugar River corridor upstream of Water Dept land and upstream along tributary to the Borough Rd

Conservation Focus Area: Little Sugar River

Volunteer Name:

Survey Date:



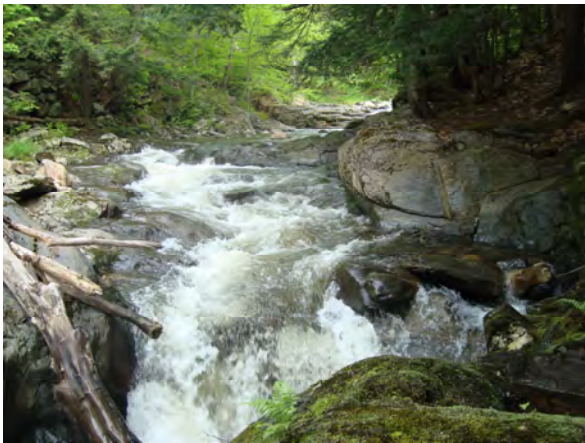
Little Sugar River – Photos from Field Survey



River from Closed Bridge, looking east



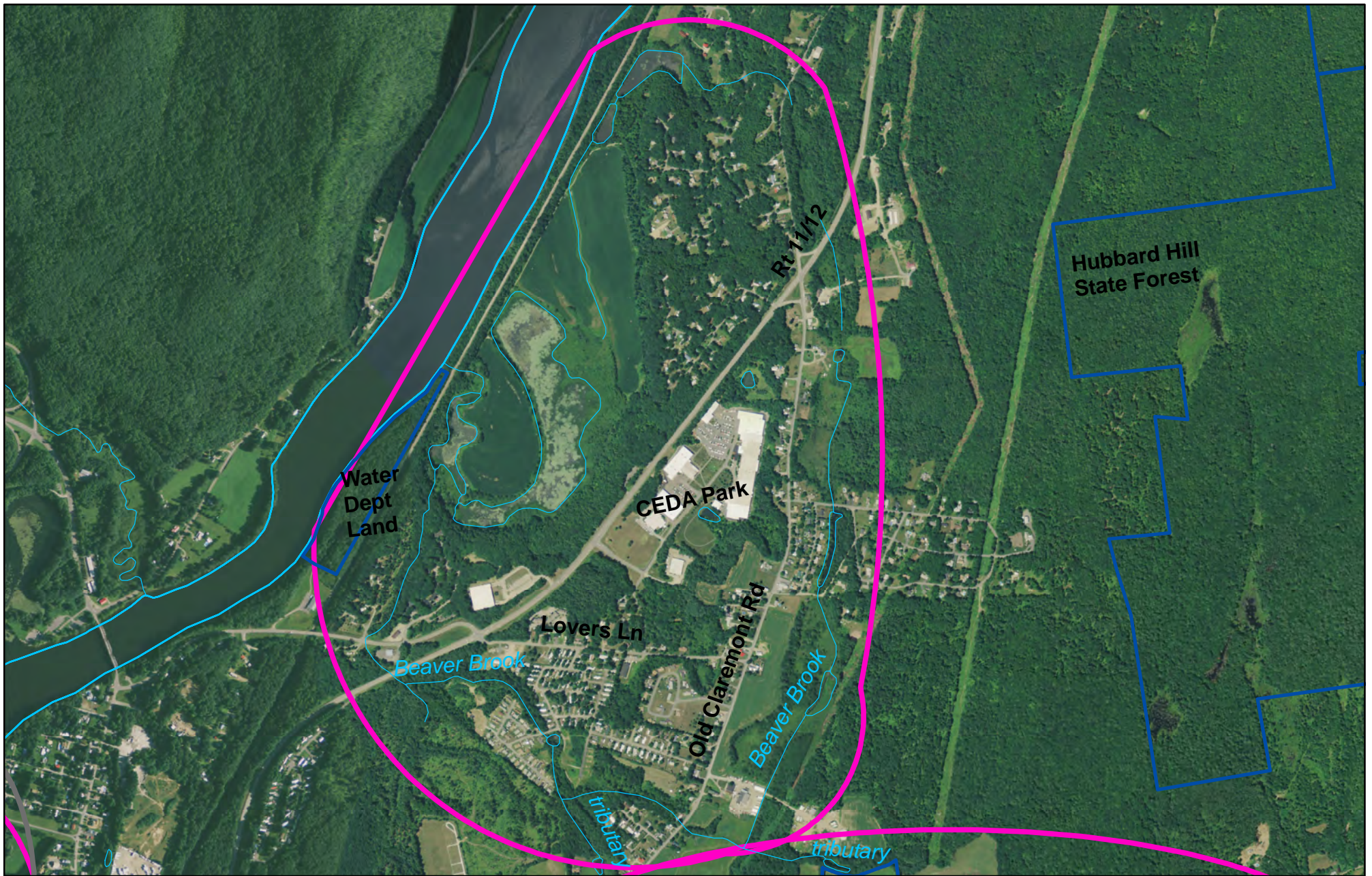
Densely vegetated river corridor



Rapids



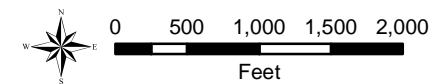
Pool



Conservation Focus Area: Oxbow Wetland & Beaver Brook

Volunteer Name:

Survey Date:



Oxbow Wetland/Beaver Brook – Photos from Field Survey



Oxbow from Center Field



Beaver Brook near Beaudry's



Beaver Brook wetlands, looking west from powerlines



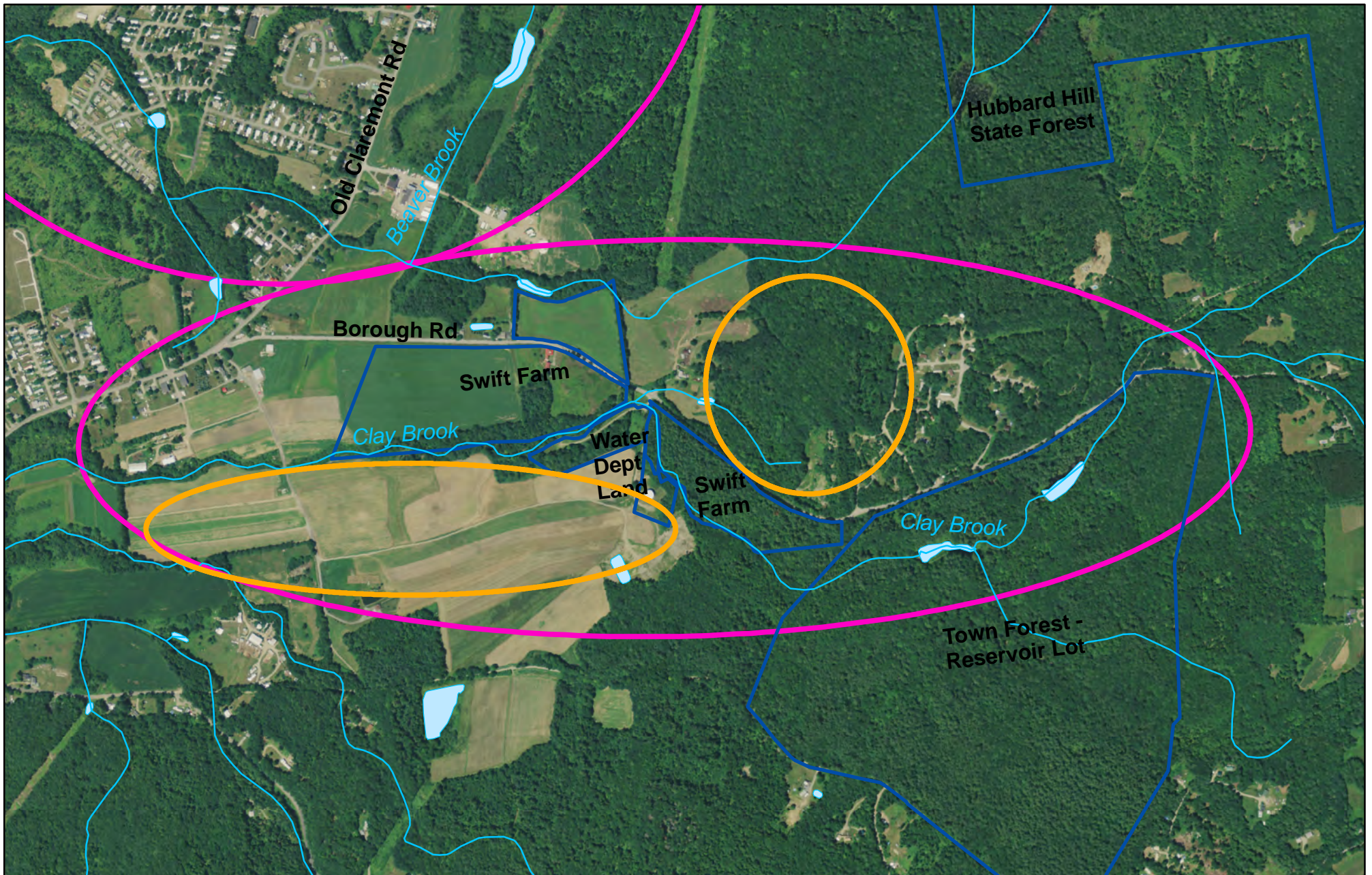
Wetlands on west side of Beaver Brook



Oxbow wetland from cornfield



Feeder brook from CEDA Park

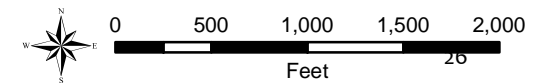


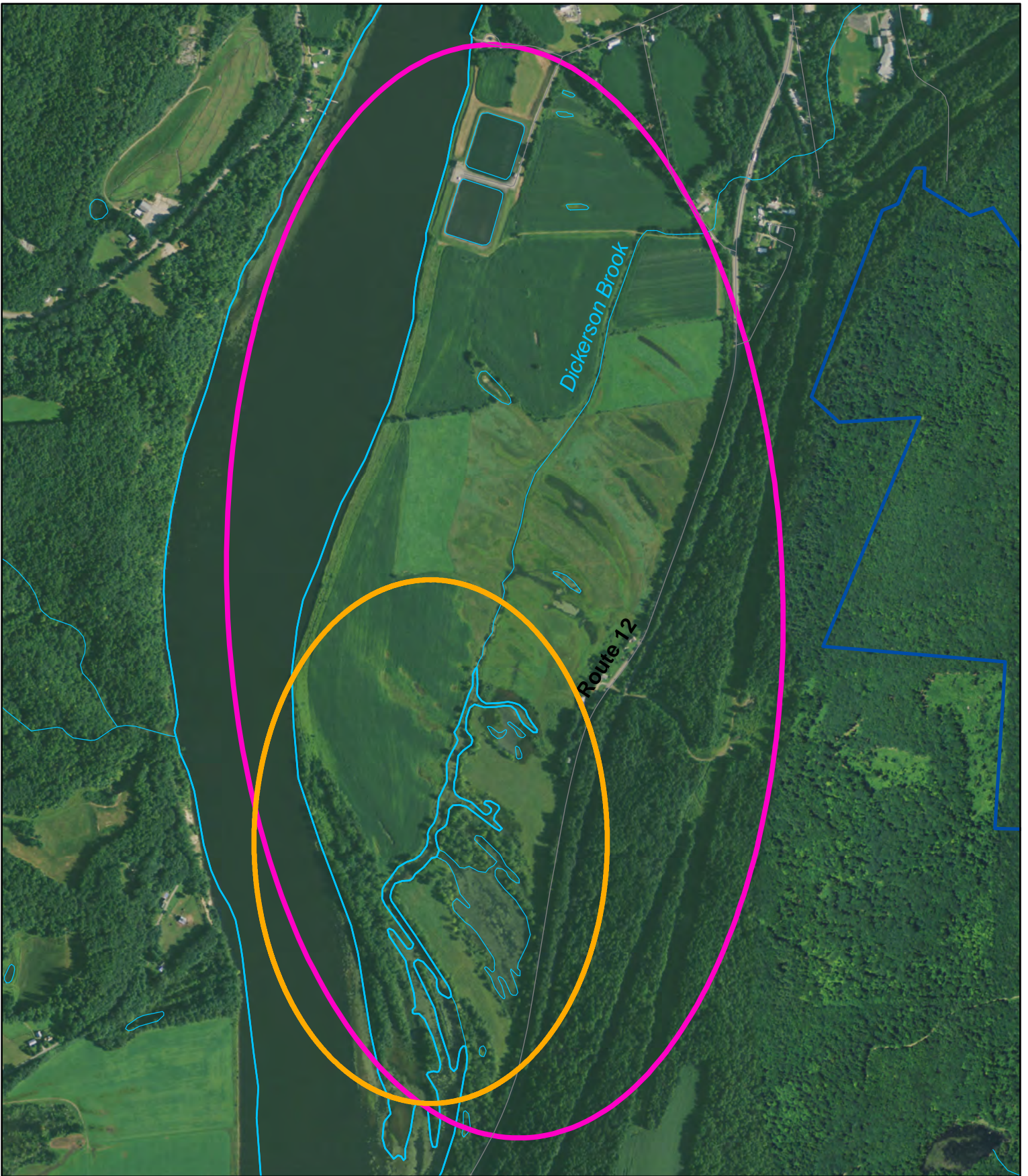
Focus survey on Clay Brook corridor land that is not already protected and the areas circled in orange.

Conservation Focus Area: Clay Brook

Volunteer Name:

Survey Date:

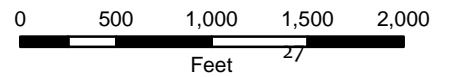


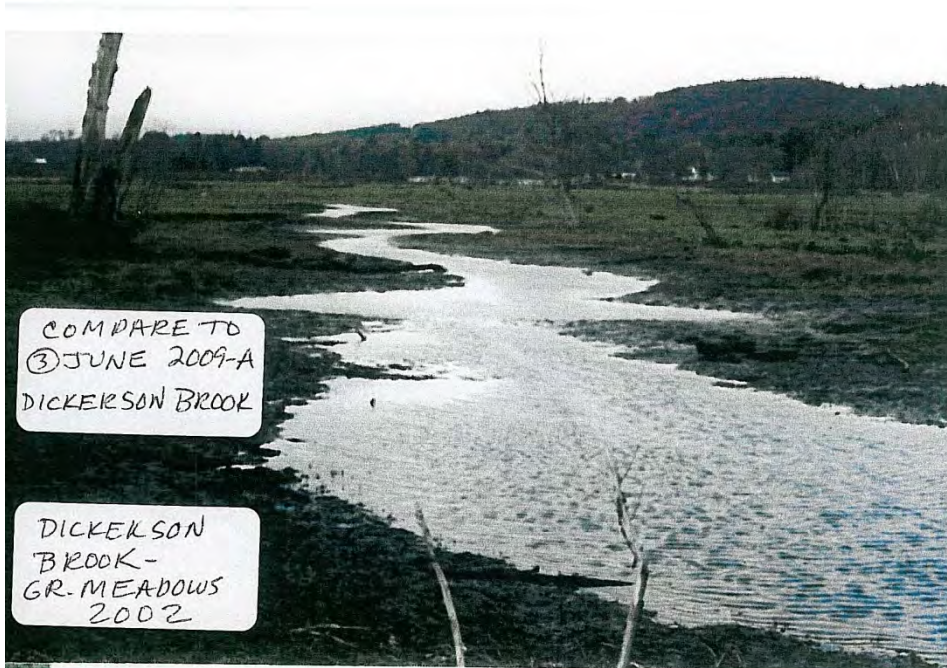


Focus on all agricultural fields, with special emphasis on area circled in orange. Conservation Focus Area: Great Meadow

Volunteer Name:

Survey Date:





COMPARE TO
③ JUNE 2009-A
DICKERSON BROOK

DICKERSON
BROOK -
GR. MEADOWS
2002

③ JUNE 2009 - A



③ JUNE 2009 - B



COMPARE TO
JUNE - 2009 -
B

DICKERSON BROOK
& COW PASTURE
2002



Great Meadow prior to Riparian Buffer Planting

Photos: Jan Lambert

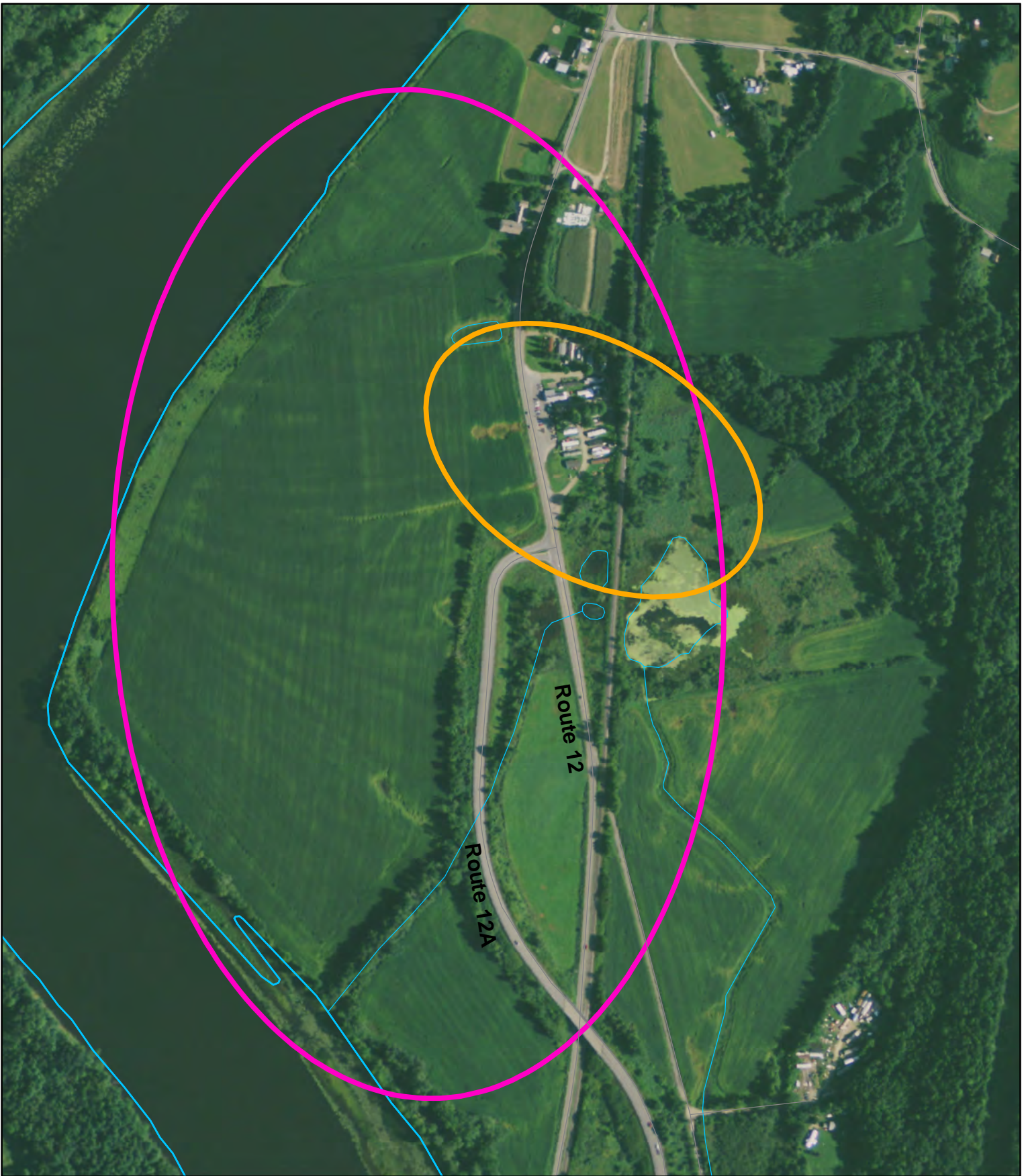
Great Meadow, 2009, 7 years after buffer planting



Great Meadow prior to Riparian Buffer Planting

Photos: Jan Lambert

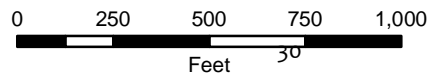
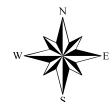
Great Meadow, 2009, 7 years after buffer planting



Focus on the fields west of Rtes 12/12A and also on the area circled in orange. Conservation Focus Area: Lower Meadows

Volunteer Name:

Survey Date:



Lower Meadows – Photos from Field Survey



Bank Erosion, looking north



Community Well



Looking north up Lower Meadows



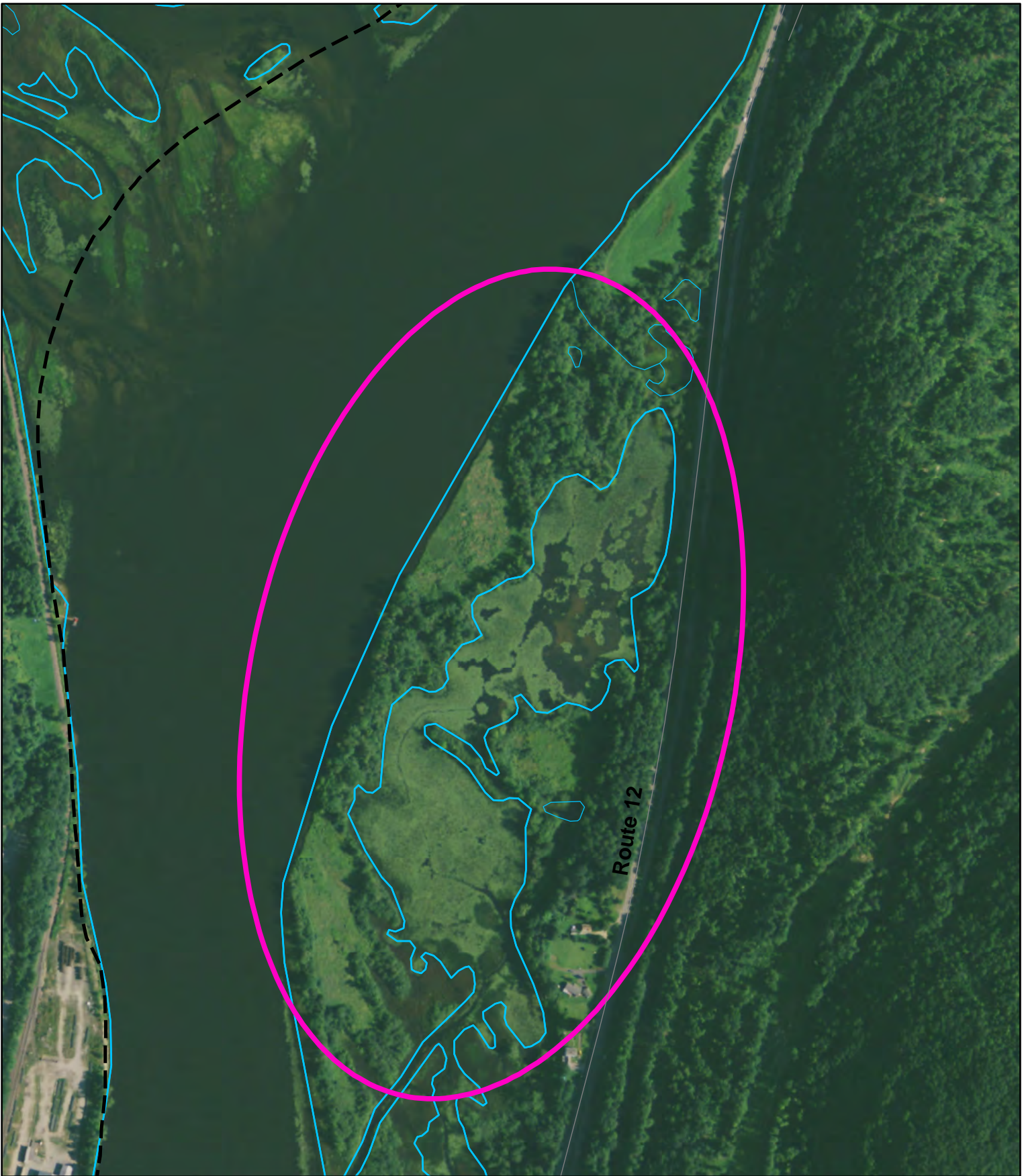
Looking west at Route 12/12A junction



Pond east of railroad tracks



Riparian buffer zone, looking north

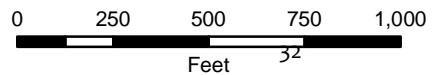
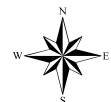


Focus on wetland areas west of Route 12

Conservation Focus Area: Meany's Cove

Volunteer Name:

Survey Date:



Meanys Cove – Photos from Field Survey



Large pond on south end of cove



Shagbark Hickory



River frontage, looking north



From south end of field, looking north



Access road to field, showing erosion



Public access to Meanys Cove

APPENDIX G

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