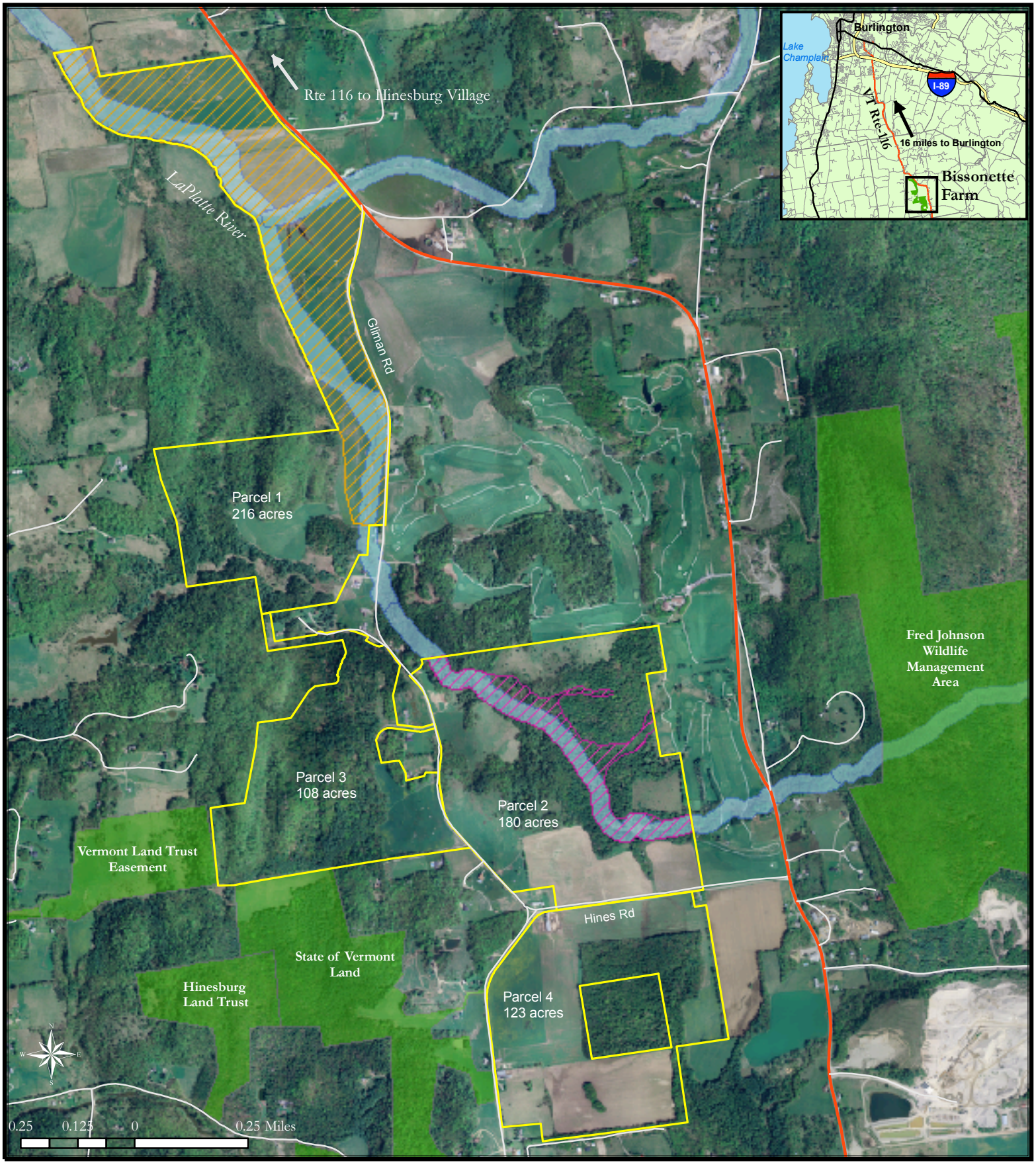

Overview Map of LaPlatte Headwaters Initiative on Bissonette Farm

- Bissonette Property Boundaries- 628 acres
- River Restoration Corridor
- Other Conserved Lands (public and private)
- Wetland Restoration Area - 131 acres
- Wetland Protection Area - 29 acres

Town of Hinesburg provided digital orthophotos and parcel data. Conserved Lands data from Vermont Land Trust. River restoration corridor based on meander belt widths from geomorphic analysis. 7-14-2006

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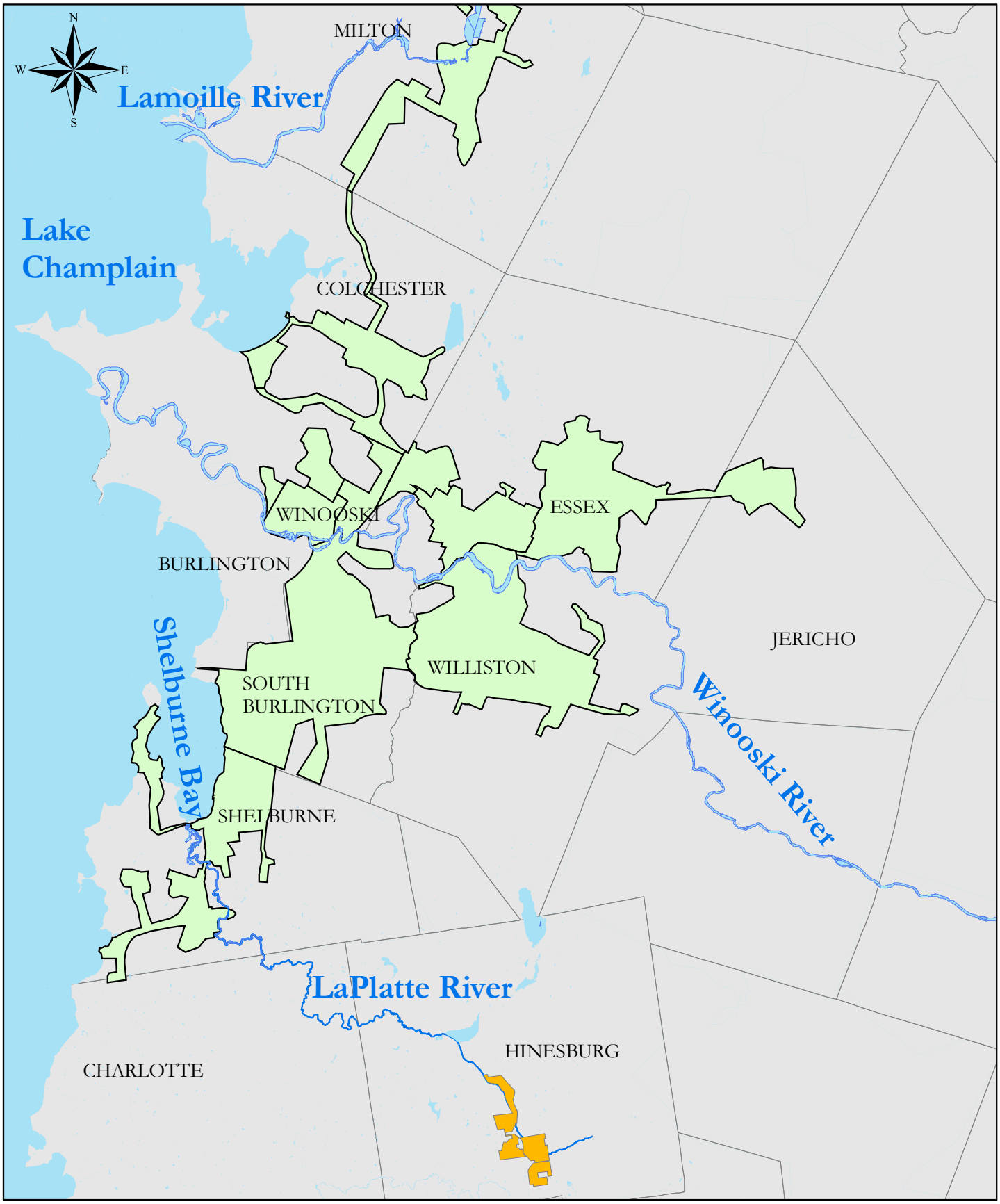
Vermont Land Trust
Conserving Land for the Future of Vermont



Bissonette Farm

Champlain Water District

0 1 2 4 6 Miles

Areas that Obtain Drinking Water from Shelburne Bay and the LaPlatte River

Drinking water service area data from Champlain Water District, Bissonette boundaries from survey, all other data from VCGI.

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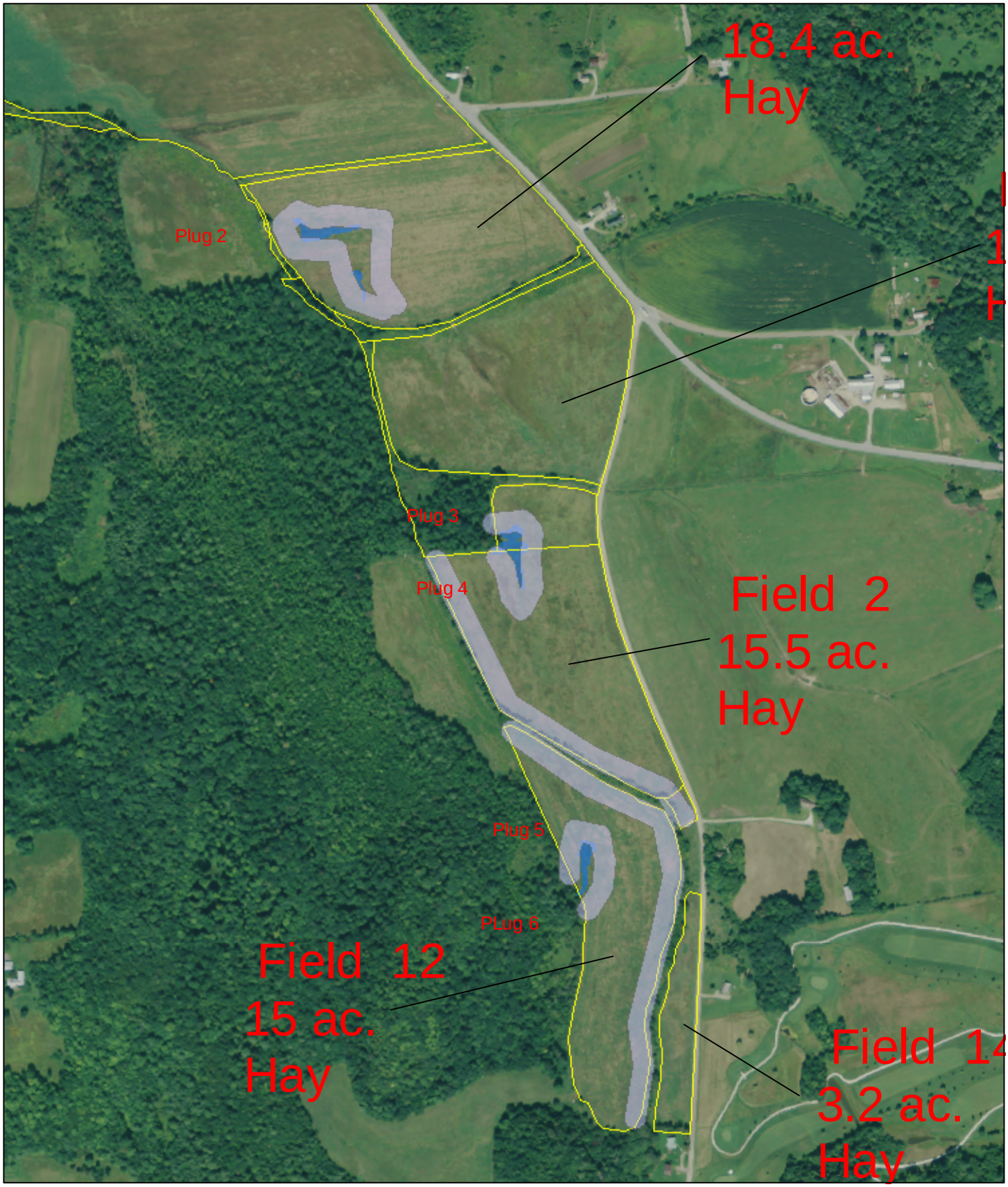
G:/GIS_data/Bissonette_Farm/full_drinking_water 2/06

Assisted By: DANIEL N PEET
Customer(s): WAYNE R BISSONETTE

WRP restoration plan

Date: 3/30/2010

Field Office: WILLISTON SERVICE CENTER
Agency: NRCS



Legend

- 50 foot buffers to be planted
- Consplan
- Poned Water

1 inch equals 600 feet

PRELIMINARY LA PLATTE RIVER CORRIDOR AND WETLAND MANAGEMENT PLAN: SPECIAL TREATMENT AREA PARCEL 1
LaPlatte Headwaters Initiative
Former Bissonette Property
Hinesburg, Vermont

October 10, 2007

I. Intent and Purposes of the Management Plan

The intent of the LaPlatte River Corridor and Wetland Management Plan for Special Treatment Area (STA) Parcel 1 (and its tributary streams) is to allow the perennial watercourses on the former Bissonette Property to re-establish their natural meander patterns and access to natural floodplains which will: restore historic wetlands and conserve existing intact wetlands; reduce erosion hazards; improve water quality by reducing sedimentation and phosphorus loading; and conserve and enhance aquatic and wildlife habitats and natural processes associated with the former Bissonette Property for present and future generations.

The intent of this Plan shall be carried out as follows:

1. To accommodate the anticipated equilibrium conditions and associated physical adjustment processes of the LaPlatte River and tributaries.
2. To minimize, to the extent consistent with (1) above, future conflicts between the anticipated physical adjustment processes of the river and tributaries and incompatible land use and channel management activities on the property.
3. To restore historic wetlands and conserve intact wetlands on the property.

These purposes will be advanced by conserving the former Bissonette Property because it possesses the following attributes:

a) Contains approximately 2.25 miles of frontage on the LaPlatte River and its perennially flowing tributaries,
b) Includes 131 acres of land, in which the watercourses are unconstrained by permanent structural modifications and improvements,
c) Provides corridor widths to accommodate the dimension, pattern, and profile of the LaPlatte River and tributaries in equilibrium,
d) Provides for hydrologic, sediment, and nutrient attenuation,
e) Provides flood inundation and fluvial erosion hazard mitigation benefits,
f) Includes approximately 130 acres of former wetland area that have a high potential for successful restoration,
g) Contributes to a sustainable economic, social, and ecological community relationship with the LaPlatte River.

Implementation of the River Corridor and Wetland Management Plan, in conjunction with the Parcels 1 and 3B Grant of Development Rights, Conservation, Restrictions, and Public Access Easement, will prevent conflicts between future public and private investments and public safety hazards that will arise from the conversion of riparian corridor lands and associated wetland areas to uses incompatible with the anticipated physical adjustments of the LaPlatte River. The Plan will also prevent the use or development of the property for any purpose or in any manner which would conflict with the maintenance of the Intent and Purposes of this Plan as set forth above.

All work associated with the Plan will comply with state and federal regulations. The Plan will be submitted for permits to the Army Corps of Engineers and Department of Environmental Conservation Wetlands Program and River Management. No local permits are required for the anticipated work.

II. Natural History of the Property

The subject property has a long history of agricultural use. Given the nature of the hydric soils, hydrologic manipulations have been used to make the site suitable for agriculture, including ditching of streams and wetlands. The open fields have most recently been used for pasture and hay. Row crops may also have grown on the site in the past. The LaPlatte River in this area was also regularly dredged to prevent flooding of the site. The result of this activity is a series of straightened streams, a straightened and deeply incised river, and a near monoculture of reed canary grass on the property.

Prior to the agricultural activities, this property was a significantly different landscape. Review of historic orthophotos (1942 series) indicates the presence of meandering streams crisscrossing the property. These streams likely flooded the fields on a regular basis and the LaPlatte River likely had access to its floodplain.

The soils present at the site suggest a combination of natural community types that were likely present prior to agricultural activity. The areas of Limerick soils (historic floodplain of the LaPlatte River) were likely dominated by riverine floodplain forests (such as the silver maple/sensitive fern forest type) and secondarily alluvial shrub swamps and alder swamps. Anecdotally, the current landowner has suggested that extensive alder swamps were present on the property prior to hydrologic manipulations. The areas with Scantic silt loams may have been characterized by red maple/black ash swamp or possible conifer swamp. Adjacent undisturbed wetland areas are dominated by white cedar, supporting the proposal that the disturbed property may well have contained areas of conifer vegetation too.

The small area of upland soils (Winooski fine sandy loam), was most likely characterized by riverine flood plain forest (such as silver maple/ sensitive fern).

It is likely that this large parcel had a combination of community types: riverine floodplain forest along the La Platte, alluvial and alder swamps along the meandering streams, and pockets of sedge meadow or emergent marsh in wetter depressional areas.

III. LaPlatte River Geomorphic Condition Summary

Stream geomorphic assessments have been conducted on the section of the LaPlatte River contained within Parcel 1. The reach of the LaPlatte River contained within the subject property is labeled as M17. The following summary notes were obtained from these studies which were completed in 2004.

M17

Reach M17 is a low gradient stream running through a very broad, unconfined valley setting. This reach of the LaPlatte appears to have been entirely straightened with berms present on the left bank in some areas. Channel sinuosity is low due to extensive straightening, although the upstream most section has some bends. The riparian buffer for this reach is in poor condition, being only 5-25 feet wide with mostly shrubs and saplings.

Cross section measurements show poor entrenchment and incision ratios, signifying extreme bed degradation. Therefore the reach does not have access to the floodplain and could experience higher erosion rates. Historic degradation, bank scour at riffles, and mid channel bars signal that major widening of the channel has begun. Filling of pools with fine sediment deposition and mid channel bars signal minor aggradation within the reach. Bank erosion, flood chutes crossing meander bends and historic channel straightening signal major planform adjustment is also underway. Overall, the geomorphology of reach M17 is in "poor" condition. The extreme historic degradation with major widening and planform adjustments suggest this reach has gone through stage II and is entering stage III of the channel evolution process. In stages III through IV, the channel may be expected to undergo further widening and planform changes as aggradation (sediment deposition) continues. The desired equilibrium conditions will exist when the channel reaches stage V of the channel evolution process where new floodplains have developed and the LaPlatte has a more stable dimension, pattern and, profile.

IV. Management Plan

A. River Corridor

The most important step in developing a River Corridor Management Plan is to define the corridors that will accommodate equilibrium conditions. Corridors are promoted to: 1) include farming and forestry practices (outside of designated wetland restoration and conservation areas) but with a wooded buffer to create more stable and sustainable channel boundaries; and 2) allow only those channel or floodplain structures and management activities that accommodate the river and tributaries in establishing and maintaining the dimension, pattern, profile, and floodplain access associated with their equilibrium condition.

The corridor widths developed for this plan were derived from Phase 1 and Phase 2 Stream Geomorphic Assessments. The corridor was shifted to be contained within the subject property as

portrayed on the attached Management Plan Map. A generally 100' wide (to be measured from the top of the bank) naturally vegetated buffer will be re-established and will extend along approximately 6700 feet of the LaPlatte River within Parcel 1. The buffer will be allowed to float with the changing planform of the river, thus maintaining a constant 100ft vegetated corridor. Native trees will be planted and also natural regeneration will be allowed to contribute to the reforestation of floodplain forest natural community.

B. Wetlands

A Wetland Restoration Plan has been developed for Parcel 1 on the subject property. The Restoration Plan is described as follows and presented in the Attachment. Cost share dollars were secured through the WRP (Wetland Reserve Program), a program with the USDA-NRCS, to fund the Wetland Restoration project. Through use of both contracted services for excavation and volunteers for planting the restoration plan will be implemented. Contract with NRCS stipulates that the restoration plan be implemented within 2 years upon receiving all necessary permits.

The Restoration Plan for Parcel 1 involves both active plantings and hydraulic manipulations within Parcel 1 of the site. The plantings and manipulations are recommended as a means to reestablish the historical natural communities and hydrology of the site (described in Section II of this plan). These activities are summarized below.

1. Plantings

The Wetland Restoration Plan involves five planting zones that seek to reestablish pre-agricultural community conditions: silver maple/sensitive fern riverine floodplain forest; alluvial shrub swamp; shallow emergent marsh and sedge meadow. The proposal involves creating a 100' width naturally vegetated buffer along the LaPlatte River. Within that buffer, plantings characterizing a riverine floodplain forest are proposed. Within the open meadow areas, a series of ditch plugs and excavated depressions are proposed to recreate areas of open water and saturation. Within these zones emergent marsh and possibly sedge meadow species are proposed. Along the previously ditched streams (which will no longer be maintained) plantings characterizing alluvial shrub swamps and floodplain forest are proposed. The small area of upland soils on the property, still contained within the floodplain of the La Platte River, are to be revegetated with drier end tree species contained within the valley clay plain forest community type.

Plantings for each desired natural community type are proposed as follows:

Silver maple/sensitive fern riverine floodplain forest (RFP): The following plantings are proposed for the silver maple/sensitive fern RFP along the LaPlatte River: silver maple; green ash; American elm; swamp white oak; black willow; box elder; cottonwood; and sensitive fern.

Alluvial shrub swamp: The following plantings are proposed for the alluvial shrub swamp areas along the currently ditched streams: speckled alder, pussy willow, and Bebb's willow.

Shallow emergent marsh: The following plantings are proposed for the shallow emergent marsh areas: tussock sedge, bulrushes, and bur-reeds in the herb layer; meadow sweet, steeplebush, pussywillow, Bebb's willow, and speckled alder scattered in the shrub layer; and scattered red maple.

Sedge meadow: The following plantings are proposed for the sedge meadow areas: tussock sedge, lake sedge, beaked sedge, and bladder sedge.

Valley clay plain forest (upland): white oak; shagbark hickory; red maple; and sugar maple.

In addition to the five natural community zones described above, the project proposes to establish two additional vegetative zones: grassland and early successional scrubland. While these communities did not likely occur on the natural landscape on the property (or in the State), they are recognized as valuable wildlife habitats and add diversity to the ecological community. The grassland area is proposed in a field dominated by reed canary grass. A small upland area along one of the ditched streams is proposed for establishment of an early successional scrubland (grey dogwood) for species such as woodcock, rabbit, and raptors. These communities are proposed as enhancement habitats for birds and small mammals on the property.

2. Hydrologic Manipulations

Consistent with the stream equilibrium processes and subject to the Restrictions on Use as defined below in Section IV.3., the wetland restoration plan involves:

i. Ditch Plugs in six agricultural ditches. The intent behind the plugging is to reestablish native hydrology on the site. Ditch plug design and engineering details will be included in the final plan.
ii. Depressional Areas excavated in three areas. The depressions mimic old meanders of streams on the property (ascertained from 1942 orthophotos). The intent behind the excavations is to provide some open water habitat and reestablish the native hydrology on the site. Depressional area design details will be included in the final plan.

In achieving equilibrium conditions, the LaPlatte River and/or its tributary stream may adjust and evolve to a planform which erodes through the ditch plugs and depressional

areas placed within the corridor. This process will not be impeded with the use of structures or activities intended to stop the adjustments of the river.

3. Management Restrictions

i. Early Successional Habitat: Brushhogging will occur after July 15th but before September 1st every 3-5 years in the designated early successional habitat areas. Brushhogging will keep early successional habitat (old field habitat) as the dominant habitat type in these areas. It will provide food, cover, and breeding sites for many different type of fauna. Some species found in this part of Vermont that use this habitat type for part or all of their lifecycle include: red-tailed hawk, ruffed grouse, great-horned owl, willow flycatcher, eastern bluebird, field and vesper sparrows, eastern cottontail, white-footed mouse, coyote, red fox, and white-tailed deer.

ii. Grassland Habitat: To protect the primary bird nesting season and allow for fall growth for winter and spring cover, mowing shall only occur after July 15th and before September 1st once each year. The proposed management would involve annual mowing in the late summer/early fall to promote habitat for grassland bird species.

iii. Openwater habitat: Excavated depressions/oxbows will be established and managed to provide open water habitat for waterfowl and breeding sites for amphibians. The oxbows will be shallow (18-24 inches deep, have gently sloping sides of 7:1 or flatter, and have an average size of 30x50feet). The desired macrotopographic features will have rough surfaces on all side slopes and top, an undulating bottom and ragged shoreline. Cattails will be controlled if they become established and develop a monotypic stand. These oxbow type depressions will simulate the type of microtopography that may have been present in the area before its conversion to agriculture. Water levels within depressions will fluctuate with runoff events. Woody debris shall be distributed within the anticipated open water zones. Woody debris provides sunning and resting areas for herptiles; loafing sites for waterfowl; is a source of organic soil material; provides additional vertical and horizontal habitat; and is an excellent substrate for invertebrates.

iv. With the exception of the brushhogging referenced above, no agriculture or agricultural activities will be allowed in the designated wetland restoration area.

v. Invasive Plant Species Monitoring: Monitoring of the sites will occur for the spread of purple loosestrife and phragmites. When exotics are found they will be managed through hand pulling, mowing, biological controls, or herbicide application before seed is produced.

vi. Existing intact wetlands within the corridor will be preserved and untouched, with the exception of enhancements that may be planned such as invasive

species control and plantings, or for the implementation of the wetland restoration plan.

vii. Riparian Buffers: The naturally vegetated buffers along the LaPlatte and associated streams will be inspected periodically and protected from adverse impacts such as excessive pedestrian use, invasive plant colonization, and pest infestations. The proposed restoration plan involves both active plantings and hydraulic manipulations of the site. The plantings and manipulations are recommended as a means to reestablish the historical natural communities and hydrology of the site.

viii. Ingress and Egress: A new ROW providing access across Parcel 1 to the adjoining Wilson parcel is shown on the attached plan. The ROW is to be maintained as a farm trail, with no improvements to natural condition. Any proposed replacement of the existing culvert within said ROW shall comply with the guidelines put forth in the Vermont Department of Fish and Wildlife most recent version of the **Guidelines for the Design of Stream/Road Crossings for the Passage of Aquatic Organisms in Vermont**.

4. Monitoring and Maintenance

The Parcel 1 project area shall be monitored following the implementation of the Wetland Restoration Plan to ensure the proper functioning of the structures, to monitor the condition of the plantings, to control the spread of nuisance exotic plants, and to report on the progress of the restoration. Monitoring will follow the protocols established through the NRCS contract for the first fifteen years. The need for further monitoring will be evaluated in future management plans. The NRCS has provided a standard monitoring form for use in the annual inspections.

Hydrologic manipulations are to be assessed for success in reestablishing native hydrology at the site. Depressional areas will be reviewed for creation of open water habitat. Measurements of average depth and surface area of open water will be recorded for each depressional area. Observations of waterfowl usage of depressional areas will be noted.

Ditch plugs will be reviewed for creation of either open water or emergent marsh habitat. Area of ponded water or area of saturated soils will be estimated for each plug. Structural integrity of each plug will be reviewed, specifically looking at erosion and sediment transport problems.

Monitoring shall include the establishment of permanent photographic stations of the area. Photographs shall be taken at these stations at the same time of year during the height of the growing season during the first fifteen years following implementation.

An annual summary of the monitoring results, including assessment of the overall progress and performance of the project, any recommended remedial measures where appropriate, and photographs shall be completed.

A final, fourth report summarizing the monitoring results, including photographs, shall be completed no later than 90 days after completion of the 15-year monitoring period. This final report shall also include an assessment of the success of the project and any recommendations for remedial work.

IV. Restrictions on Use

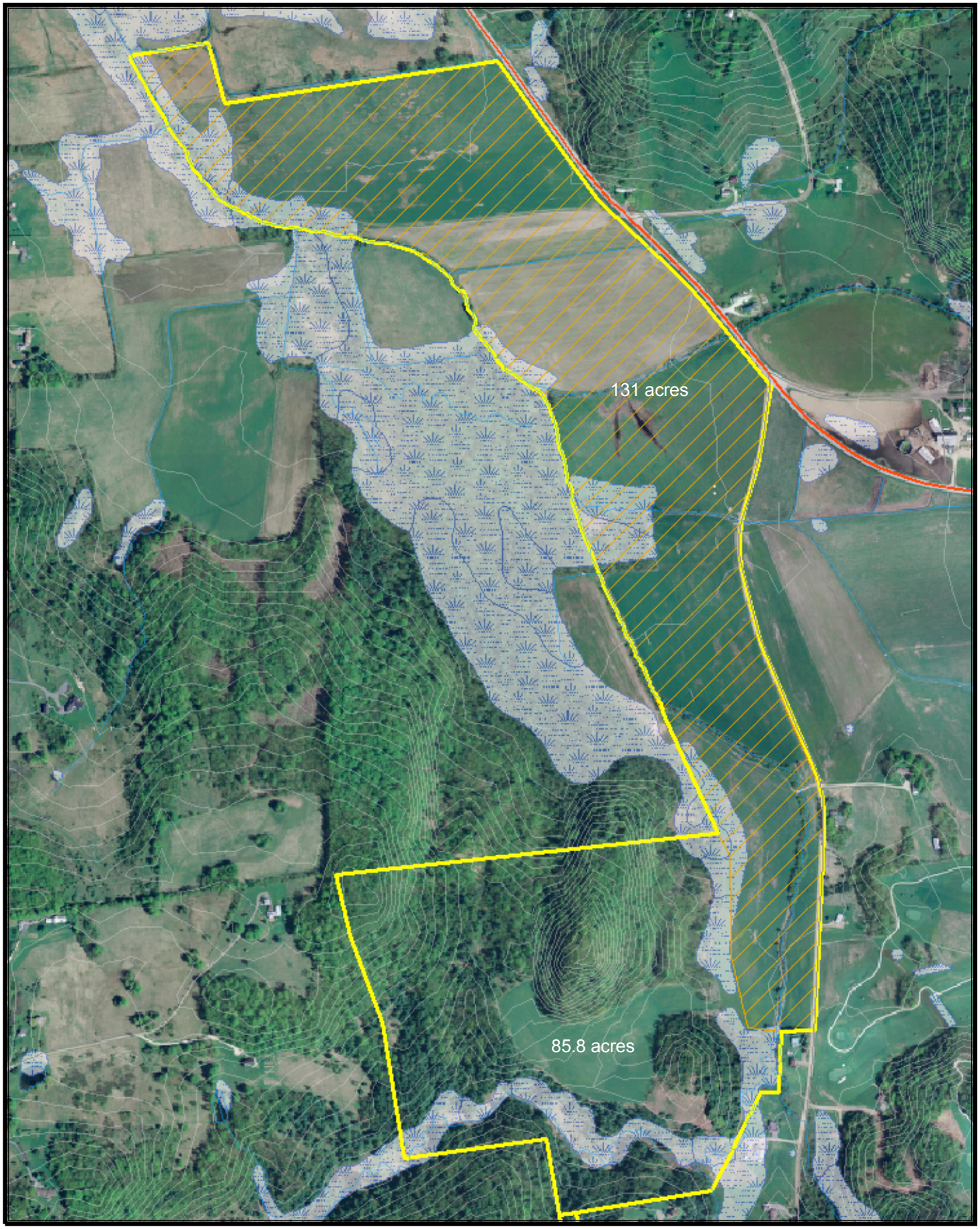
Special Treatment Area Parcel 1 has a long history of agricultural use. The result of this activity is a series of straightened streams, a straightened and deeply incised river, and a near monoculture of reed canary grass on the property. The proposed management Plan offers an active approach to reestablish viable wetland ecosystems and a passive approach to allow the River to go through the necessary adjustments to reach equilibrium conditions.

The following activities are not permitted within Parcel 1:

1. Place, construct, erect, create or move permanent structures. For the purpose of this provision, "structure" means an assembly of materials for occupancy or use, including a building, mobile home or trailer, sign, wall, road, bridge, culvert, waste management facility, and livestock housing. Structure does not include a fence erected for the purpose of animal containment or exclusion, or at-grade fords of streams.

   **Non-permanent structures, such as recreation trails and bridges, are permitted on the property. Said structures shall move with the course of the River. New development within the established River Corridor and/or wetland and associated buffers will be planned in collaboration with the Agency of Natural Resources.

2. Cause filling, excavation, or removal of top soil, sand, gravel, rocks, and minerals or otherwise change the topography of the land, except in connection with the wetland restoration activities described in this plan.
3. Place, repair, remove or modify structural elements such as river bank revetments, levees, or fill encroachments, remove or deposit sand, gravel, or rock, or otherwise manipulate the natural watercourses, wetlands or other water bodies or otherwise undertake any activity which will alter the natural water level or flow, or intervene in the natural physical adjustment of water bodies, except in connection with the wetland restoration activities described in this plan.



Bissonette Farm - Parcel 1

Parcel 1 - 216.84 acres total

Wetland Restoration Area - 131 acres

Wetlands

10 foot contours

N
W
E
S

500 250 0 500 Feet