Inland Salt Marsh Wetland Bank Prospectus

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and

Arrowhead Ventures
Ithaca, NY

1. Objectives

The primary goal of the **Inland Salt Marsh Wetland Bank** is to provide wetland reestablishment/establishment and protection services on a watershed scale to compensate for wetland loss. More specifically, it will provide an opportunity:

- to mitigate for lower quality wetland impacts through reestablishment of the rarest wetland type and ecological community in New York State
- to conduct scientific research on a unique habitat
- for wetland education due to its location and access

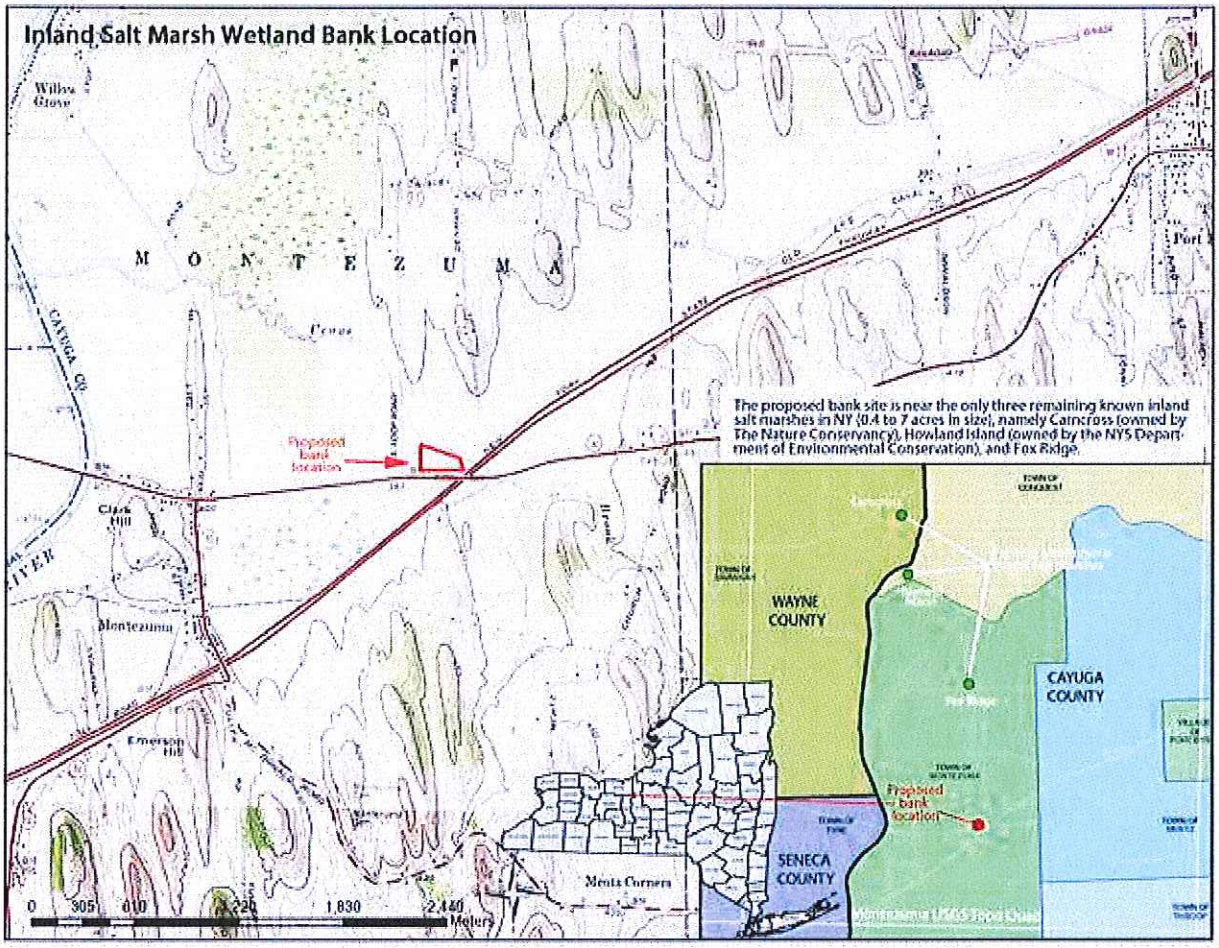

Figure 1. General location of proposed Inland Salt Marsh Wetland Bank.

2. How will it be Established and Operated?

Establishment

The Wetland Trust (TWT) will be the primary long-term land steward and Bank owner and administrator. The TWT will administer the credits and accounting, and supply the long-term

stewardship support through fee simple title ownership. The Upper Susquehanna Coalition (USC) will provide technical support, equipment for reestablishment construction activities and monitoring services.

A joint partnership of the TWT and USC will restore the site. The TWT and USC will develop the reestablishment mitigation plan and implement construction, monitoring and maintenance using USC equipment and staff from both organizations. In addition O'Brien & Gere, 33 W. Washington St. Syracuse, NY has agreed to provide expertise on salt marsh restoration through their specialist Dr. Tony Eallonardo.

Arrowhead Ventures LLC, Ithaca, NY will also invest in the bank and be availed of the first 1.13 initial release of credits to meet its mitigation needs within the Service Area.

Operations

Accounting Procedures: TWT will establish and maintain an accounting system for tracking credit production, credit transactions and financial transactions between the Bank and permittees.

Legal Responsibility for Providing Compensatory Mitigation: TWT will assume all legal responsibility for satisfying the mitigation requirements of the Clean Water Act section 404 permits for which fees have been accepted (i.e., the implementation, performance, and long-term management of the compensatory mitigation approved for this proposed Mitigation Bank).

The transfer of liability from the Permittee to the TWT is established by:

1) the approval of the proposed banking instrument; and

2) receipt by the district engineer of a credit sale form that is signed and dated by TWT that details the amount of credits sold and certifies transfer of fees from the permittee to TWT.

Default Provisions: Should the IRT determine that the Sponsor is in material default of any provision of the Mitigation Plan or Instrument, the IRT, acting through the Corps, may notify the Sponsor that the sale or transfer of any credits will be suspended until the appropriate deficiencies have been remedied. Upon notice of such suspension, the Sponsor agrees to immediately cease all sale or transfer of mitigation credits until the Corps informs the Sponsor in writing that sales or transfers may be resumed. Should the Sponsor remain in default, the IRT, acting through the Corps, may terminate operation of the site as a bank site. Upon termination,

the Sponsor agrees to perform and fulfill all obligations relating to credits that were sold or transferred prior to termination.

Closure Provisions: Prior to closure of the site as a bank site, the IRT will perform a final compliance inspection. Bank site closure will occur upon the Corps, in consultation with the other members of the IRT and the Sponsor that all applicable performance measures have been achieved, all available credits for that bank site have been debited or abandoned, and the sponsor has complied with all other terms of the Mitigation Plan and Instrument. Upon bank closure, no further credit sale or transfer may occur and the period of long-term ownership and preservation will commence.

Reporting Protocols: TWT must report to the district engineer and the IRT the following information:

a. Monitoring reports, on a schedule and for a period as defined by the Bank's mitigation plan.
b. Credit transaction notifications that establish the legal terms for compensatory mitigation by which the legal responsibility is transferred from the permittee to TWT.
c. An annual financial assurances report describing assurances established by the TWT and approved by the IRT.

3. Service Area

The proposed mitigation bank lies at Latitude 43.02° and Longitude 76.69° within the Finger Lakes 8 digit HUA (04140101). Within this region we have selected watersheds in the "Seneca Lake River" that most directly drain past the site (see below). It includes all of the Seneca and Cayuga Lake watersheds and the middle Seneca River Watershed. This proposed service area has a history of salt marshes, salt mining and exposed salt layers in the two lakes themselves. It lies over the geologic salt layer that is the basis for the salt springs that form these marshes and spans from northern West Virginia to northern Michigan to central New York (Levin 2006).

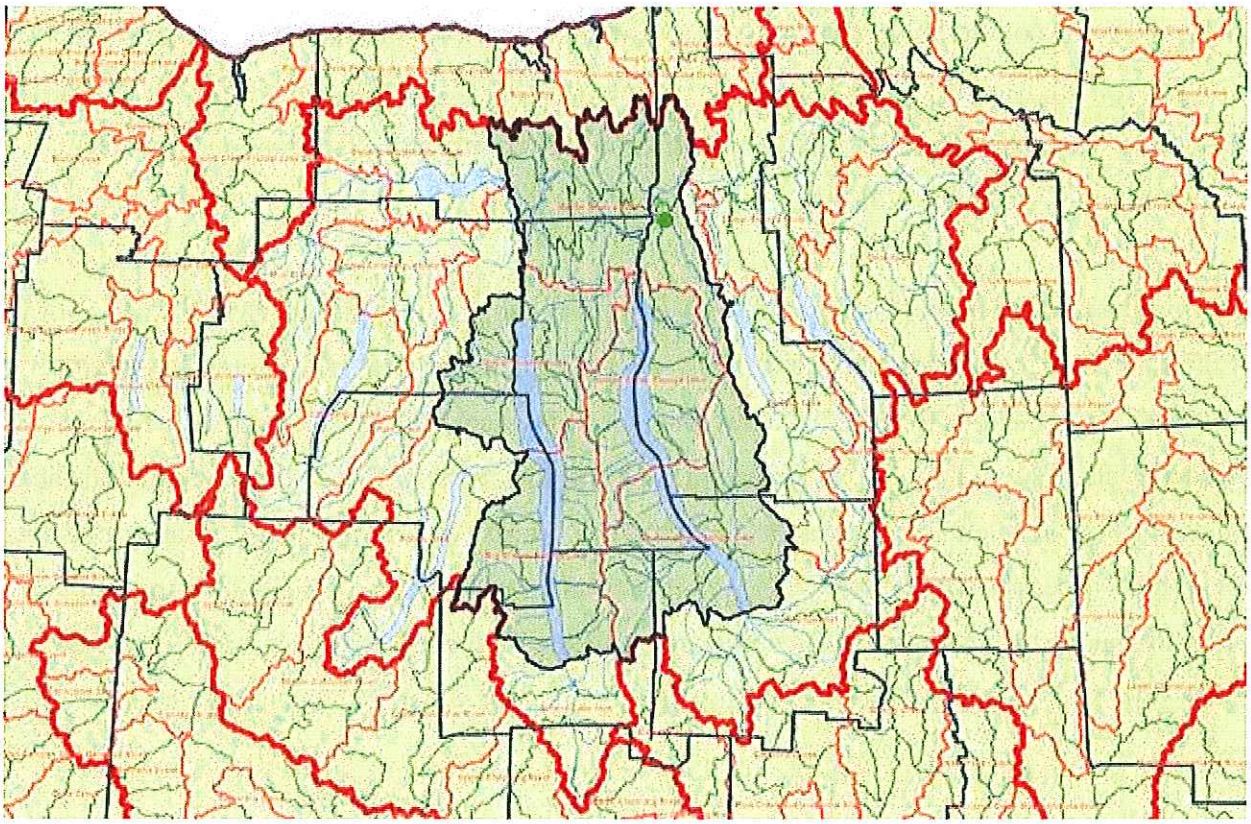

Figure 2. Proposed Service Area depicting Seneca and Cayuga lakes and surrounding drainages.

4. General Need and Technical Feasibility

Need

Inland Salt Marshes are a historically rare community (ranked by NYS Natural Heritage as G2 S1) usually occurring within a deep or shallow emergent marsh. Many sites have been destroyed or degraded by salt extraction operations, filling, and development. Extensive areas of inland salt marsh once dominated the lakeshore of Onondaga Lake in Syracuse, NY, but those historical ecosystems have largely been lost or degraded beyond recognition to development and invasive species encroachment (e.g., *Phragmites australis*). Remnants are currently known from a few sites in the Drumlin and Erie-Ontario Plain sub-zones of the Great Lakes Plain ecozone (Catling and McKay 1981; Faust and Roberts 1983; Muenscher 1927; NYNHP field surveys). Other small areas of inland salt marsh are reported from saline wetlands that were artificially created. One example is a wetland bordering Wolf Creek below an old salt factory in Wyoming County, NY.

The proposed bank site is near the only three remaining known inland salt marshes in NY (0.4 to 7 acres in size), namely Carncross (owned by The Nature Conservancy, (43.08°N, 76.71°W),), Howland Island (owned by the NYS Department of Environmental Conservation, 43.07°N, 76.70°W) and Fox Ridge (43.05°N, 76.70°W). (See Figure 1).

The proposed Bank would also provide an opportunity for research. Indeed, SUNY College of Environmental Sciences and Forestry (ESF) is planning to incorporate salt run-off treatment wetlands on its campus that will include many species typical of inland salt marshes. ESF wetlands classes will be studying the campus salt marsh and the proposed bank will provide an additional site for field trips, as its location provides for easy access being only 40 minutes away. Having an accessible, high quality restored inland salt marsh will likely facilitate improved educational opportunities for surrounding area colleges. ESF and Cornell University professors have expressed an interest in incorporating the site into course curriculum and research

Feasibility

Project collaborators have recently submitted for publication a paper that describes the primary environmental factors that create inland salt marshes in New York State and Michigan. The document will provide the most up-to-date knowledge describing important environmental considerations for inland salt marsh restoration. Below is an excerpt describing one such environmental consideration that will be incorporated into the Bank design to establish a functional wetland:

"Inland salt marshes are globally imperiled wetlands that support an uncommon and functionally-unique plant community in the northeastern United States. Elevated soil electrical conductivity alone does not appear to be sufficient for inhibiting establishment of dominance by non-native *P. australis*, and that the combined stresses of relatively frequent flooding and soil infertility appear to be needed to help facilitate long term stability. Temporal dynamics associated with the link between climate and soil electrical conductivity drive variability in species composition within and among years. These yearly dynamics likely support long-term stability of inland salt marshes as robust species are eliminated by periodic drought and associated spikes in soil electrical conductivity. Because inland salt marsh species are adaptable

to variable conditions through high stress tolerance and seed dormancy, they are well suited to application to restoring anthropogenic saline environments."(From: Spatial and temporal variability of inland salt marsh complexes of the northeastern United States
Anthony S. Eallonardo Jr.[a,b] and Donald J. Leopold[a], [a]State University of New York College of Environmental Science and Forestry Department of Environmental and Forest Biology, 1 Forestry Drive, Syracuse, NY 13210, USA, [b]Corresponding author at: O'Brien & Gere, Eco-Sciences, 333 West Washington Street, Syracuse, NY, 13221, USA. Tel.: 1-315-956-6602)

The TWT and USC also bring a unique perspective to the mitigation approach. Both organizations have goals to restore and protect wetlands and work together on various projects in NY. Although the USC usually targets Susquehanna River Basin it occasionally works within its members counties other watersheds (i.e., Finger Lake's and Delaware River) and beyond. This proposed bank was especially selected due to the rarity and uniqueness of this wetland type, the ability to utilize inland salt marsh expertise in house (Dr. Donald Leopold, TWT board member and SUNY ESF Chair, Department of Environmental and Forest Biology) and with partners (Dr. Tony Eallonardo, O'Brien & Gere) and its small size, easy access and potential for outreach and education.

Determination of Credits

The site is small and we estimate that a salt marsh of 3 to 6 acres will be established. There is also potential for additional wetland acres on the western end of the parcel. For this submittal we conservatively estimate a total or 3 salt marsh acres reestablished, which would translate into 3 credits.

5. Ownership Arrangement and Long Term Management Strategy

Ownership Arrangement

The site will be within a 10.59 acre parcel owned as fee simple by TWT including all surface and subsurface rights.

Long Term Management Strategy

The site will be developed following the Mitigation Plan outlined in this prospectus and described in detail in the complete bank instrument. The Long-term Management Strategy will be implemented once the site has successfully completed the mitigation monitoring and review period. It will describe the specific needs for optimal conservation of the individual site and also provide a general discussion of positive and negative attributes of the surrounding watershed that should be taken into account for long-term site protection. One specific issue that will be addressed is the proximity of the NY State Thruway to the site. An abandoned portion of old Route 31 helps provide a substantial vegetated buffer and the Thruway is elevated, lessening the chance of vehicles parking near the site. Usually salt deposition from a major adjacent roadway would be a negative consideration, but since this is a salt marsh, salt runoff should not be an issue. The strategy would advocate a sustainable approach, minimizing active management activities and opting for natural wetland processes to prevail. Considering that this is a unique inland salt marsh type a more active role will be described that periodically analyzes and ensures that the salt spring's flow is adequate. Each credit sold will have funds set aside in the TWT Stewardship Management endowment for permanent long-term support.

6. Qualifications of Sponsor to Complete

The Wetland Trust Organization

The Wetland Trust is a nonprofit Corporation established in New York in 2008 that meets requirements under Section 501C(3) receiving its IRS letter of determination in September 2009. The TWT will be the project sponsor and land steward, using fee simple ownership as the preferred method of protection and an endowment approach to provide long-term support of the property. It currently owns 10 parcels covering about 442 acres. Website: thewetlandtrust.org

The Wetland Trust Mission

The Wetland Trust's mission is to restore, conserve and protect wetlands through:

- Development of funds from sustainable endowments, grant proposals, partnerships, donations, wetland banking projects and in lieu fees.
- Restoration activities that increase wetland acres.

- Acquiring properties that are of high quality or can be restored to such, with an emphasis on wetland complexes having sufficient size and complexity to function under a variety of climatic conditions.
- Partnering with academia to study
  (1) the requirements for sustainable protection/conservation strategies and
  (2) restoration/construction techniques to ensure high quality functional wetlands.
- Establishment of a Wetland Center on a major TWT wetland property to house outreach, educational and research efforts that will increase wetland acres. Funding for the Center will not come from any sources meant for restoration activities.
- Education and Outreach to develop a public wetland ethic.

The Upper Susquehanna Coalition Organization

The Upper Susquehanna Coalition (USC) of Soil and Water Conservation Districts works under a Memorandum of Understanding (MOU) signed by each County District that is within the Susquehanna River Basin in NY as well the NY State Department of Agriculture and Markets. The authority to make this Understanding is found under NY Soil and Water Conservation Districts Law, as Amended Through the Laws of 2007- as of January 28, 2008. The law states "AN ACT establishing the State Soil and Water Conservation Committee, and creating Soil and Water Conservation Districts, constituting Chapter 9-B of the Consolidated Laws: **§ 10 Cooperation between districts** - The directors of any two or more districts organized under the provisions of this chapter may cooperate with one another in the exercise of any or all powers conferred in this chapter."

The MOU further assigns and directs the Tioga County Soil and Water Conservation District (SWCD), 183 Corporate Drive, Owego, NY 13827 to be the administrator for the USC. Tioga County SWCD also owns the construction equipment and employs the USC Wetland Team technical staff. Website: u-s-c.org

The Upper Susquehanna Coalition Wetland Program Goals

- Attenuate flooding by restoring wetlands, especially in headwaters areas, to increase water-holding capabilities, desynchronize rainfall runoff, reduce flood peaks and downstream erosion.
- Enhance water quality by retaining sediment and nutrients, especially on agricultural lands.

• Increase species diversity and wetland habitats acreage and connectivity.

The Upper Susquehanna Coalition Wetland Program Attributes

The USC Wetland Program is "vertically and horizontally integrated," meaning that it locates, designs, builds and secures funds for wetland projects. Having its own staff and using a mix of owned, rented and contracted equipment for construction accelerates implementation, reduces costs and provides landowners with "one stop shopping." Since 2003 USC's Wetland Program has created or restored over 500 wetland acres of all types from small ephemeral vernal pools (including 72 vernal pools for the State University of NY College of Environmental Science and Forestry (ESF), Syracuse, for a long-term research) to 50-acre emergent marshes. USC Wetland Staff include a Wetland Team Leader, Wetland Coordinator and two Wetland Biologists with over 50 years of combined natural resources experience and five field technicians/equipment operators.

Training and research on wetland restoration techniques is important. The USC has conducted hands-on vernal pool and wetland construction workshops and helped develop a textbook on restoration techniques with Tom Biebighauser, Forest Service and Northeast Wetland Restoration Institute.

The USC believes collaborating with a host of partners on wetland planning, design and construction to be a key approach to build capacity. These partners include the USACE, U.S. EPA Region 2, USFWS, U.S. Department of Agriculture Natural Resources Conservation Service, Chesapeake Bay Program, FHWA, NYSDEC, NYSDOT, Binghamton University (BU), the State University of New York Otsego Lake Biological Field Station, ESF, Cornell University, Chesapeake Bay Foundation, Finger Lakes Land Trust, Northeast Wetland Restoration Institute, Ducks Unlimited and local watershed organizations. USC staff work closely with willing landowners, which provide the majority of potential restoration sites. This synergy, coupled with expertise from state and federal partners and outreach through newspaper articles, informational meetings and media events, has resulted in a continuing list of potential wetland restoration sites.

The USC has been designated by NYSDEC to be the official NY wetland data manager for the Chesapeake Bay Program. The USC also wrote and is responsible for the wetland goals for NY in its Chesapeake Bay Tributary Strategy. And as a true wetland proponent, it was named by the Chesapeake Bay Programs as the "Wetland Champion" to promote accelerated wetland restoration in that Basin.

7. Ecological Suitability

Physical Characteristics

The site hosts a well functioning salt spring that will be the source of the salt water. It presently flows down into a watercourse that directs the flow easterly into Crane Brook. This watercourse is either a manmade ditch or the remnants of the old streambed after Crane Brook was rerouted sometime between 1938 and 1954. The plan is to spread the salt spring flow across the site toward the west, reconfiguring the ditch path and adding overflow from Crane Brook as needed. We estimate this will result in the re-establishment of approximately 3± acres of inland salt marsh. Hydrological monitoring wells will be installed to estimate flow volume, and will determine how large an area can support salt marsh vegetation. Additional monitoring wells and electrical conductivity measurements will determine the ability of the site to support additional salt pans by potentially tapping into groundwater away from the main spring discharge area. Salt pans are important features of salt marshes, where higher than average salinity levels result in mud-flat like conditions in many years, but in wet years support inland salt marsh species. Such areas are critical for maintaining the diversity of species dependent on salt marshes.

Inland salt marshes are wetlands that occur on saline mudflats associated with inland salt springs. The mucky substrate is permanently saturated and seasonally flooded. Vegetation cover varies from areas with less than 50% cover to areas with over 100% cover.

Chemical Characteristics

The salt spring is at least three times the concentration of seawater. That source water will be diluted through mixing with Crane Brook and integrating precipitation to ensure multiple changing salt concentrations as observed in the other nearby salt marshes.

Biological Characteristics

The 10.59 acre parcel under consideration has vegetation primarily consisting of European buckthorn (Rhamnus cathartica), box elder (Acer negundo), black locust (Robinia pseudoacacia), quaking aspen (Populus tremuloides) and green ash (Fraxinus pennsylvanica). Poison Ivy (Toxicodendron radicans) is abundant in mesic areas. Most of the site is consistent with "brushy cleared land" in the Draft Ecological Communities of New York State (Edinger et al. 2002), with the common reed and reed canary grass more abundant in wet areas. Due to the significant disturbance of the site, inland salt marsh species are currently not known to be present at the site and wetland species on the very small (less than 0.1 acre) of existing wetlands include common reed (Phragmites australis) and reed canary grass (Phalaris arundinacea).

7. Assurances of sufficient water rights

Crane Brook flows west along and forms the northern boundary of the parcel (Figure 7). Owning the land to the stream bank increases the ability to protect this relatively small parcel. The salt spring is located entirely within the parcel. The old alignment of State Route 31 parallels the southern boundary and the New York State Thruway, US 90, lies directly to the east. The Thruway is elevated in this area and the immediate topography results in little runoff from this roadway and any slat runoff should not be an issue due to the wetland type proposed. The old State Route 31and Thruway right of way (including "map 113, parcel 128", which is owned by the NY Thruway) should provide a stable local long-term buffer. TWT is presently discussing partnering with NYS DOT to increase the value of site. Because of the tremensously unique of this wetland re-establishmnet we beelive that even though this parcel is rather small

8. Mitigation Plan

Overview of approach

The bank instrument will describe the 12 specific USACE requirements that must be addressed a mitigation plan. Below is a synopsis of major plan components of the approach to be taken at this bank. The site is relatively small and the final design and construction efforts will utilize all available space to increase the wetland footprint. We may even develop some freshwater wetlands on the site if the final analysis and landscape permits, however it is not central to the

banks overall objective.

Construction Methods

The work area is old-field and early second growth forest. We will conduct a site survey to ensure there are no species of interest (none have been found on previous visits) and to locate any invasive species. This information will be incorporated into the final construction plan. Flow measurements from the spring and groundwater wells will be installed prior to excavation to provide data for the final design to ensure adequate salinity and hydrologic fluctuations for the marsh area. We will also address soil infertility and whitetail deer use, both of which provide positive long-term marsh benefits.

Figure 3. Proposed wetlands to be reestablished/established on this site total about 3 acres. Final tally will be determined after detailed site survey

Figure 4. The reddish pool below the salt spring is clearly visible near right side of the picture. Excavation and grading will change the topography to provide for sheet flow over the proposed marsh as depicted in Figure 3. Periodic flooding from Crane Brook will aid in the hydrologic diversity of the site.

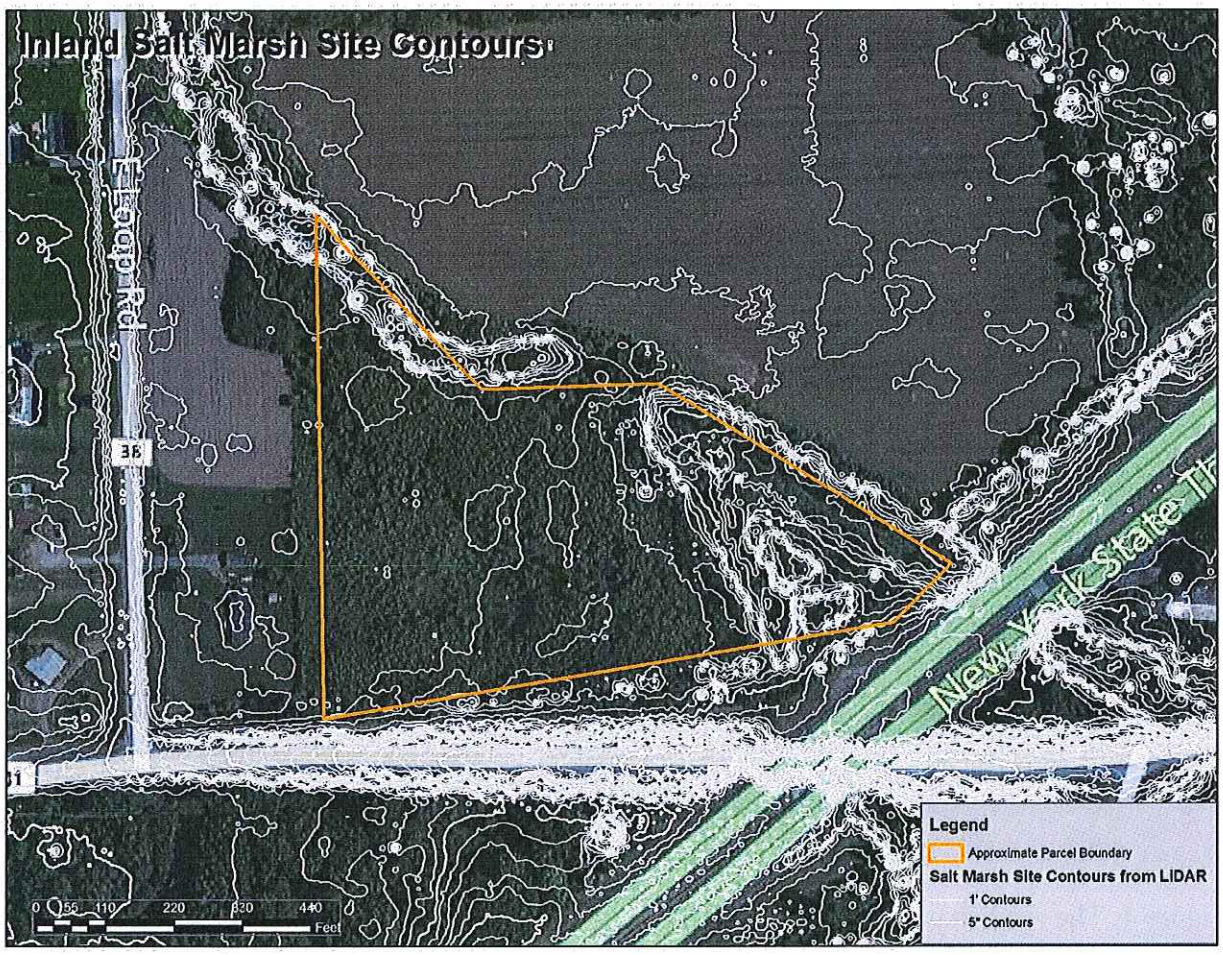

Figure 5. A topographic depiction of the site, based on LIDAR showing original contours.

Figure 6. Salt spring viewed from the east; the flow surfaces where the twigs begin. The reddish pool is the same as the one in Figure 4.

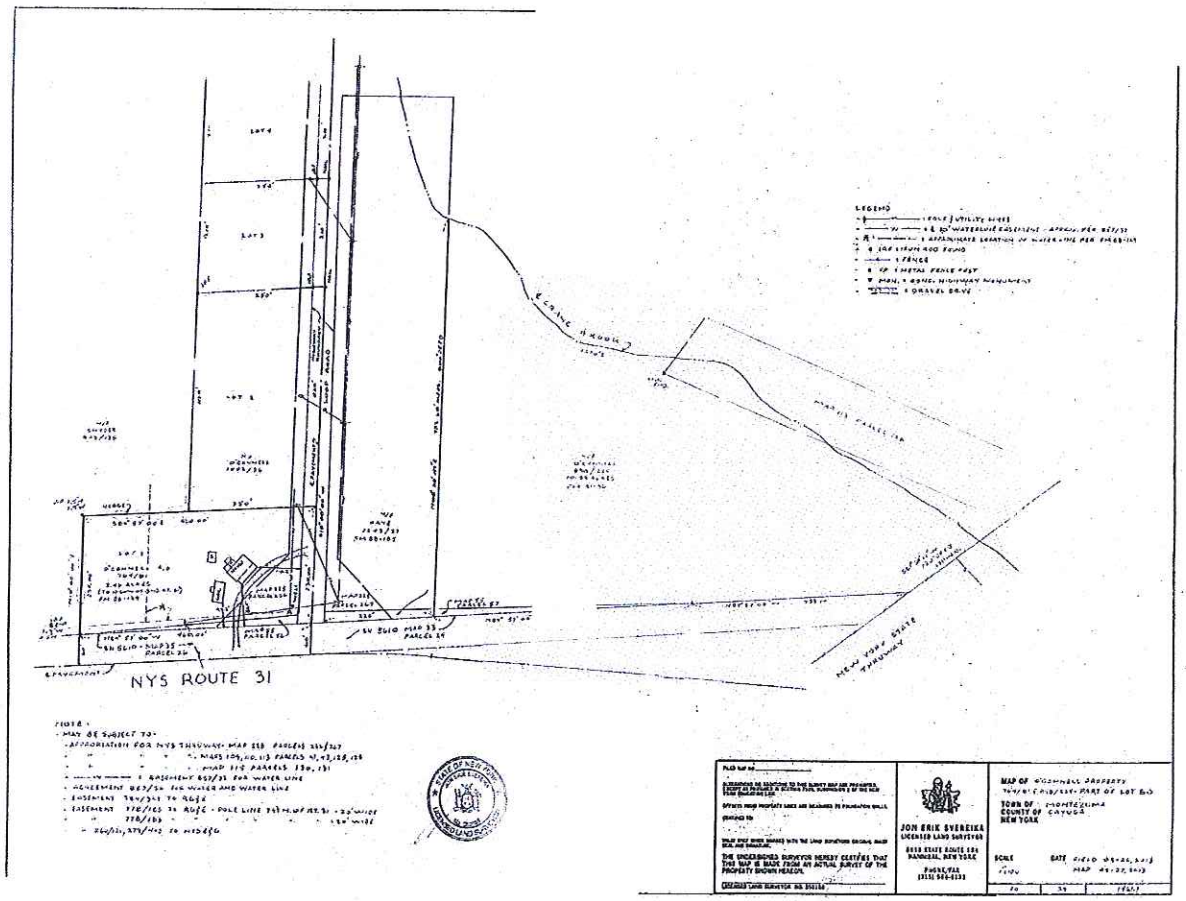

Figure 7. Official survey depicting parcel boundary and surrounding lands and easements.

Plants and Planting Methods

Because of the uniqueness of the chemical properties specific species will be planted that replicate the array of plants found at the other salt marshes. Characteristic species are salt-tolerant plants including salt marsh bulrush (*Scirpus maritimus*), seaside atriplex (*Atriplex patula*), salt marsh sandspurry (*Spergularia marina*), creeping bent grass (*Agrostis stolonifera* var. *palustris*), salt-meadow grass (*Diplachne maritima*), dwarf spikerush (*Eleocharis parvula*), and prairie cordgrass (*Spartina pectinata*).

A mix of salt marsh plants will be planted on the site, based on those that should naturally occur. We have developed a potential plant list (below). We are currently growing some plants from

seed and are in the process of getting permission to collect seeds of additional species from the nearby salt marshes to ensure adequate diversity and replicate those natural areas.

Scientific Name	Common Name	Wetland Indicator Status	State Conservation Rank	State Status
Graminoids and Forbs				
Agrostis stolonifera	salt meadow grass	FAC		
Atriplex patula	spear saltbrush	FACW	S2	Threatened
Chenopodium rubrum	red goosefoot	OBL		
Distichlis spicata	coastal salt grass	FACW		
Echinochloa walteri	long-awn cockspur grass	OBL		
Eleocharis parvula	dwarf spikerush	OBL		
Hibiscus moshcheutos	crimson eyed rose mallow	OBL		
Juncus gerrardii	salt meadow rush	OBL		
Leptochloa fusca ssp. *fascicularis*	salt meadow grass	-	S2	Rare
Ruppia maritima	widgeon grass	OBL		
Salicornia depressa	saltwort	OBL	S2/S3	Threatened
Schoenoplectus americanus	chairmaker's bulrush	OBL		
Schoenoplectus maritimus	salt marsh club rush	OBL		
Solidago sempervirens	seaside goldenrod	FACW		
Spartina alterniflora	bunch cord grass	OBL		
Spartina patens	salt meadow cord grass	FACW		
Spartina pectinata	prarie cordgrass	FACW		
Spergularia media	satin-flower	FACU		
Symphyotrichum subulatum	annual salt marsh aster	FACW	S2	Threatened
Triglochin maritima	seaside arrowgrass	OBL		
Acorcus americanus	sweetflag	OBL		
Panicum vigratum	switchgrass	FAC		
Shrubs and Trees (including pool edges and uplands)				
Acer saccharinum	silver maple	FAC		
Alnus incana ssp. *rugosa*	speckled alder	FACU		
Aronia melanocarpa	black chokeberry	FAC		

Cornus racemosa	gray dogwood	FACW
Cornus sericea	redosier dogwood	-
Illex verticilla	American winterberry	FACW
Juniperus virginiana	eastern red cedar	FACU
Myrica pensylvanica	northern bayberry	-
Prunus virginiana	chokecherry	FACU
Quercus bicolor	swamp white oak	FACW
Salix discolor	pussy willow	FACW
Sambucus canadensis	elderberry	FACW
Viburnum dendatum	arrowwood	FACW

Literature Cited

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. (Draft for review). New York Natural Heritage Program, New York Department of Environmental Conservation, Albany, NY.