

# Donnabeth Lippman Park



## Master Plan

August 2012

Prepared For:

Town of Windham  
8 School Road  
Windham, Maine 04062

Prepared By:

**Mitchell  
& Associates**  
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August 15, 2012

Mr. Brian Ross, Parks and Recreation Director  
Town of Windham  
8 School Street  
Windham, Maine 04062

**Re: Donnabeth Lippman Park  
Master Plan**

Dear Brian,

It is with great pleasure that Mitchell & Associates, in association with Stantec Environmental Consultants, Albert Frick Associates and Becker Structural Engineers, presents to the Town of Windham the following community park master plan for the Donnabeth Lippman Park. This 123 + acre property is a rare jewel located in the middle of the busiest commercial and highly traveled area in Windham that has the opportunity to become a vibrant community park to be enjoyed by residents and visitors alike. The rich diversity of environmental habitat and spaciousness of the property lends itself to a variety of experiences and recreational uses. The opportunity to have assisted you and the Town in developing the plan has truly been a rewarding experience for our team.

Sincerely,  
Mitchell & Associates



Robert B. Metcalf, RLA  
Principal



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### APPENDIX

## **Proposed Improvements**

### **Demolition**

- Well house building No. 1 was evaluated as part of the structural evaluation by Becker Structural Engineers, of all existing site structures. Well house No. 1 requires a significant amount of work to stabilize the structure for reuse and may be considered for demolition. Should the structure be demolished, the existing foundation and slab should be removed, remove top portion of sealed well head as necessary, and restore the area to natural grade and revegetate as necessary.

### **Site Improvements**

#### **Main Trail:**

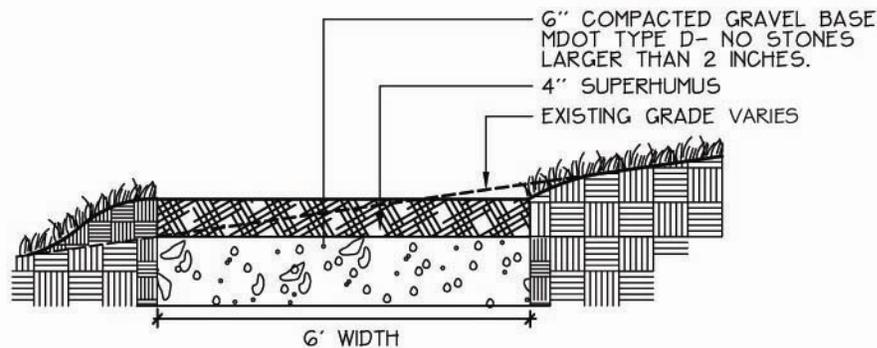
#### **Design Improvements**

Improvements along the existing trail should follow the same alignment with exception of where relocation due to the seasonal wet conditions would warrant relocation. The existing trail sections along the westerly side of the pond should be provided with a surfacing of "Superhumus" or equivalent to stabilize the surface area to prevent erosion and exposure of tree roots. Where minor seasonal wet conditions warrant, the trail should be raised by removing organic surface and placing well draining gravel and surfacing with Superhumus. Where high seasonal water conditions are excessive and fill is not feasible a raised boardwalk is recommended. Where conditions are too extreme the trail should be relocated to an alternative route, abandon the existing trail and re-vegetate as necessary to stabilize and to permit re-vegetation to occur. The design of relocated trail sections where necessary should maintain or enhance a minimum 50 foot wooded buffer adjacent to residential properties. Additional proposed trail sections/connections will provide greater access and diversity for park users. Park trail sections that have inadvertently been developed on adjacent property should be relocated and offsite conditions should be restored to a natural condition.

The existing trail along the westerly side of Boody Meadow lends itself to being an ADA compliant trail due to it relatively flat topography. To improve the ADA accessibility, the grades should be modified where exposed roots are encountered and where the cross slope of the trail exceeds two percent, The organic surface layer should be removed and replaced with suitable compacted well draining gravel and surfaced with compacted stone dust to provide a stable surface to accommodate for wheel chair and other assisted devices that may be used by handicapped individuals.

**Trail Design:** The trail should be six (6) feet wide to accommodate for two (2) individuals to walk side by side or to pass. A minimum twenty-five (25) foot setback should be maintained from the top of high water line in Chaffin Pond and Outlet Brook. Limb existing tree branches to maintain a minimum 10 foot head clearance where extending over the trail. Proposed overlook seating areas should limit disturbance to the minimum necessary and integrate new structure into the surroundings and provide access to trails.

- Trail material to consist of compacted gravel stabilized base, crushed aggregate, processed reclaim material or stone dust surface for ADA accessible trails and Superhumus for other trails. Grading of trail not to exceed five percent with a maximum two percent cross slope for ADA trails and all trails shall be graded to direct runoff to vegetated areas on the in board side of the trail to avoid runoff entering the brook and pond.
- Add supplemental plantings of native trees, shrubs and groundcover to maintain and enhance natural character where disturbance associated with proposed improvements are in conflict with the trail elements.
- Lay out trail to avoid trees and to limit extent of deep cut and fill situations as much as possible. Trail location along the pond edge for fishing access to the pond should be coordinate with a certified arborist to identify trees and or understory vegetation to be removed.
- Limb overhead branching to maintain a minimum ten (10) foot clearance.



#### WOODLAND PATH

NOT TO SCALE

- Provide a walking surface of “superhumus” or organic wood product material of equal quality and performance.
- Provide a compacted gravel base to provide a stable and uniform surface as necessary subject to existing soil conditions.

- Construction of all trail sections should limit disturbance to defined trail alignment and avoid disturbance of adjacent area. Use of small construction equipment such as a 'Bobcat' is recommended. In areas closest to existing trees, excavation should be limited, hand work as may be necessary to protect tree roots. Alternative is to provide gravel fill over root areas to avoid disturbance. No fill shall occur within the drip line of trees exceeding six inches.

### **Raised Boardwalk Trails and Overlooks:**

Location: The raised boardwalk trail will be field located to avoid removal of existing trees and desired understory. The trail should generally follow the alignment as shown on the concept plan through the areas that are currently impassible due to wet seasonal conditions.

- The raised boardwalk should be five (5) feet wide to minimize disturbance and cost.



### **Athletic Fields:**

The sport field area shall include two Little League size baseball diamonds, including fencing along the foul lines only, with two overlapping soccer/multipurpose fields, one fenced basketball court and one volleyball court. In addition to the fields, a concession/storage building with public restroom facilities is proposed.

An irrigation system is proposed for maintaining the turf fields and installation of a new well to provide potable water for the concession/restroom facility and the irrigation system is proposed. The prime location for the engineered subsurface waste disposal field coincides with the proposed athletic fields. The size of the system will depend upon the anticipated user population and seasonal variation.

Given the location of the proposed fields in proximity to adjacent residential properties and sensitive environmental habitat, the use of sport facility lighting is discouraged.

### **Improved Road and Parking Areas:**

The existing gravel access road shall be widened to accommodate two-way traffic and emergency vehicle access. As part of the access road improvements the existing culvert that allows Outlet Brook to flow towards Rt. 302 shall be replaced with a larger culvert or multiple culverts to be sized at the time design is completed. The existing parking area outside of the gate should be expanded as shown on the Improvement Plan if an expanded easement can be obtained from the abutting land owner. Two additional parking areas, one near the pond and the other associated with the athletic fields are proposed to be constructed in different phases of the project construction. These should be gravel travel ways and stabilized turf parking spaces to minimize environmental and visual impacts.



## **Picnic Area:**

The designated picnic area consists of roughly .60 acres located along the south side of the pond.

### Design

- Recommendations include removal of minimal vegetation and necessary grading and trail construction. Options for picnic facilities include at minimum providing picnic tables with the potential to add covered shelters and or pavilions.



## **Dog Park**

The dog park located along the westerly side of the park should be field located to avoid the seasonal wet conditions that are prevalent on that side of the pond. The layout should avoid the need to remove an extensive amount of trees; removal should be limited to hazards, multiple stem trees nearing or at maturity subject to blow down conditions. The understory vegetation should be grubbed as necessary to provide a usable surface/play area. The area should be provided with a minimum of four inches of “Superhumus” or equivalent wood mulch to stabilize the surface. The grades may necessitate bringing in a fill that should be a well draining material. Pet waste disposal bag dispensers should be provided and a carry out policy implemented to avoid a maintenance cost to the town.

## Natural Playground

Natural playgrounds are site specific play spaces that rely primarily on natural materials for play. Play structures are integrated among manipulated landforms, plant material and exposed natural processes to create safe and playful natural environments. Natural playgrounds grow and change as they are used and users often find new experiences upon each visit.

While natural playgrounds vary widely depending on site, they typically incorporate the following elements:

- **Entrance & Art:**

The entrance area defines the play space and is a good location to incorporate signage that educates visitors on the concept of natural play. Communities can use local art resources to work with children to create an entrance area that reflects the local population.



- **Water Feature:**

Water is a wonderful play element that continuously engages children. It provides opportunities for both learning and play.



- **Climbing Structure:**

Climbing structures challenge children's gross motor skills while encouraging imaginative play.

- **Swings:**

Swings can be social environments as well as providing the necessary vestibular motion important to healthy development.

- **Slide:**

Slides are inherently fun; a slide nestled into the side of a natural slope is even more fun.

- **Hills & Paths:**

Hills and paths provide definition to the play space and create special places for children to explore.

- **Plant material:**

Plant material is essential to natural play environments. Plants create dynamic environments that grow and change with the seasons. Leaves and branches provide loose parts for children to manipulate while shrubs and trees create imaginative spaces.



## **Donnabeth Lippman Park, Natural Playground**

The cost of a natural playground varies on the size and intensity of development of the space. The concept plan for the Donnabeth Lippman Park Natural Playspace incorporates the elements below into a moderately sloped wooded hillside.

### **Site**

The area designated for the play space is primarily upland consisting of woody vegetation. Grading and drainage for the play area should address storm water quality standards and avoid direct discharge toward the brook.

### **Play Elements**

Many of the elements incorporated in the concept design can be materials found on site. Logs and boulders can be used to define safety surfacing edges and should be used extensively throughout the site for climbing and play. The main elements of the play area will include net climbing structures woven horizontally through the trees. Two fort structures are proposed at either end of the climbing nets and the entire play area is surrounded by adventure paths through plants. The swings may be located outside of the designated play space to take advantage of pond views. Where possible, wooden play elements like the fort & entrance art should be designed and constructed by local craftsmen, children and community members. Plant material should be primarily native species and chosen for hardiness, low maintenance, and interest. Willow (shrub) is often used on natural playgrounds because it grows fast and can be used to construct play forts and tunnels. If the site is used in conjunction with an education program, some of the willow structures could mimic animal habitats.



## **Surfacing & Materials**

Engineered wood fiber and sand are cost effective materials for safety surfacing. Paths may be constructed of stone dust or superhumus and may require minimal annual maintenance. Wood bridges and structures should be constructed of cedar or other naturally rot resistant material. A playground maintenance plan should be developed along with the final construction plans.

**Note** An accurate topographic survey shall be required prior to further development of this space for construction.

## **Site Furnishings:**

Site furnishings should be coordinated with the Town of Windham. The following cost estimates will provide an idea of what the recommended site furnishings should cost.

### **Drinking Fountain:**

A minimum of two drinking fountains is recommended for use in the park. These should be located in central locations between the playground, picnic area, and the sport fields. As it is apparent that dogs will be using the park as well as people, a fountain with a dog spigot is recommended.

### **Seating:**

A variety of seating options are recommended to be used throughout the park. In many of the informal seating areas, wood benches or granite block can be incorporated into the landscape. Manufactured benches may be used in addition to the granite. A minimum of 6 manufactured benches located along the main and river front trail for seating options are recommended.



Unique seating options can reflect the character of the location

### **Trash Receptacle:**

To reduce maintenance cost, it is recommended that a carry-in carry-out rule be considered to reduce the need to accommodate for a regular trash removal. Should trash containers be used, trash receptacles should be located near the main gathering areas including the picnic area, ball fields, and play area and at the primary entrances. Dog waste bag dispensers should be located at entry points to the park and strategic locations within the park, assume a minimum of 4 locations.

### **Bike Racks:**

Bike racks located at strategic areas in the park are recommended. Areas to be considered include the ball field and picnic area. Bike racks should be a durable low maintenance metal system permanently anchored.

### **Signage:**

Informational signage may be used throughout the park to explain the history of the site, geologic formation, specific site and regional ecology. These panels could show historic images of the site and explain the importance of the brook to early settlers or discuss the importance of the wetland ecosystem and its role in buffering the lakes from pollution. Directional and general informational signage is also recommended throughout the park. The most affordable and durable option for signage is an aluminum plate sign with a digital print image and laminate for protection.



**Lighting:**

Lighting is recommended, at minimum on the existing structures to be retained and new concession/public restrooms as developed, for security purposes. Lighting of the park roads is not necessary given the operation being limited from sun rise to sun set. Given the location of the proposed fields in proximity to adjacent residential properties and sensitive environmental habitat, the use of sport facility lighting is discouraged.

## **Site Evaluation**

### **Location:**

Donnabeth Lippman Park is 113.13 acre parcel located in the lakes region of Maine. The property, located off of Route 302, is accessed via a gravel road (Chaffin Pond Road) and is bound by both commercial and residential uses. Jamar, Inc. (Lippman Family) granted a conservation and recreation easement to the Town for passive recreation use of a 10 acre parcel retained from the original 123.13 acre PWD parcel, situated on the southwesterly portion of the park, providing a total park area of 123.13 acres. Chaffin Pond, a 13.89 +/- acre pond is at the center of the property with informal trail access via Anglers Road from the northwest and a connection to an adjacent private parcel near Mud Pond along the northeast property line. The property has an access easement across the Home Depot property located near the southerly property line providing access to Franklin Drive. There are a series of existing walking trails on site which, with improvement, could provide the community with a system of connecting trails between adjacent residential neighborhood and commercial uses.

### **History:**

Donnabeth Lippman Park previously referred to as the Chaffin Pond Preserve has been utilized primarily for its natural resources. The large pond, brook and meadow have provided excellent habitat for fish and wildlife. As a result, the pond and brook have been used throughout history for trout fishing. Route 302 road improvements included the installation of a new culvert to carry Outlet Brook under the road, appears to have impacted the flow of the brook and impacting upon the native brook trout habitat and the Boody Meadow ecosystem. In the mid 1930's the property was acquired by the Portland Water District (PWD). Chaffin Pond and the underlying sand and gravel aquifer served as a public water source for North Windham until the early 1990's, when a fuel spill on a neighboring commercial property on Route 302 occurred. The nature of the spill and potential ground water impact to the aquifer and drinking water resource lead PWD to discontinue the service. PWD has retained an easement for an existing water main and overland seasonal water service. In 2011, the property was purchased by the Town of Windham through a generous donation by the Lippman family for use as a community park.

### **Site Inventory and Analysis:**

#### **Ecology:**

An ecological report completed by Stantec Consulting in 2008 and subsequent addenda in 2009, noted that the Chaffin Pond Preserve (Donnabeth Lippman Park) property is highly valued as a diverse natural resource. The ecology of the site includes approximately 72 acres of oak-pine upland and approximately 51 acres of wetland/stream and pond areas.



- Legend**
-  Wetland identified by Stantec
  -  Stream
  -  Wading bird and waterfowl habitat
  -  Project boundary
  -  Wetland designator per wetland report
  -  Potential vernal pool

**NOTES:**  
 1. Wetland boundaries are based upon a reconnaissance level survey. Streams were mapped using aerial photo interpretation.  
 2. PVP points were located utilizing Trimble Pro-XR and Garmin eTrex receivers.  
 3. Aerial photos, and Inland wading bird and waterfowl habitat layer obtained from MEGIS. Aerial photo date 2003.



Of the five wetland communities, one was defined as exemplary by Maine Natural Areas Program MNAP and includes a variety of native plant species. The wetlands provide wading bird and waterfowl habitat while the wetland fringes and vernal pools are valued for providing breeding habitat for amphibians. The pond supports warmwater, coldwater fisheries and aquatic vegetation. Fish and reptile species observed in the pond include large mouth bass, chain pickerel and painted turtles. Maine Inland Fisheries & Wildlife stocks the pond with brook trout annually.



It is rare that property located adjacent to urban development retains the level of diversity seen in Donnabeth Lippman Park. There is great potential for this site to serve as an environmental education resource as well as provide a significant open space for future development as identified in the Master Plan for Downtown North Windham, providing easy access to nature trails. Through improving the existing trail system and adding raised walkways, signage and overlooks, access to nature will be more available to the community.

### **Site/ Topography:**

The site topography consists of steep slopes of greater than 10% on the east and west shores of Chaffin Pond. There are also significant slopes at the southerly portion of the site adjacent to the access easement nearest Home Depot. The remainder of the site consists of relatively flat, wet, lowland areas and moderately sloped upland areas. The Flood Hazard Boundary map identifies the area adjacent to the pond, Outlook Brook and Boody Meadow in the 100 year flood zone A.

### **Vegetation Complex:**

The vegetation present on site consists of a diverse assortment of native plant material. The character of the wooded upland forest includes a tree canopy, shrub understory and an herbaceous ground layer. The predominant tree species include pine, oak and beech. There are five wetlands on site; the largest, including Boody Meadow, supports forested, shrub-scrub and emergent wetlands. This wetland was defined in the 2008 Stantec Consulting report as exemplary based on the presence of a diverse shrub layer and an excellent variety of herbaceous plant material including many plants which are uncommon throughout Maine.

Of the plant material on site, there were no non-native invasive species found in the upland and wetland communities with only one small patch of invasive bittersweet found along Outlet Brook.

### **Structures:**

There are four structures on site that were once used by the Portland Water District these include:

- Maintenance Building
- Pump House
- Well House 1
- Well House 2



Pump House



Well House 1



Maintenance Building



Well House 2

All of the buildings are centrally located nearest the entrance off of Chaffin Pond Road and along the southern edge of the pond. A structural assessment was performed by Becker Structural Engineers in December, 2011. For a further detailed description of the building conditions and recommendations, refer to the structural report in the appendix.

### **Site Access:**

The park is currently accessed from Chaffin Pond Road off of Route 302 with parking outside of the gated entrance located partially on the abutting property through an easement. The existing gravel road, that crosses Outlet Brook, is narrow and provides access for maintenance vehicles. To provide community access, widening the road is recommended to support increased traffic, safety and establishing a parking lot within the park.

There is the potential to have additional access to the property from Anglers Road to the west. Donnabeth Lippman Park abuts a vacant parcel that is owned by the Town of Windham Economic Development Corporation. When this parcel is developed, there is the potential to provide a parking facility that could be shared with park goers. In the meanwhile, we recommend developing a temporary gravel parking lot and access road off of Anglers Road to increase access to the park without the need to increase parking facilities within the park.

The park currently has 2 miles of walking trails accessible from Chaffin Pond Road and from informal linkages to adjacent properties. Additional trail sections could be added and trail access could be expanded to include a trail connection to the shopping district via Franklin Drive. This connection would require improvements across an existing access easement on the Home Depot property. Improving trail connections could add health and fitness opportunities that could benefit both the downtown community and surrounding neighborhoods.

An existing off-site trail, located to the north, connects to the existing trails within the park. Presently the extension of the on-site trail leading to Lower Mud Pond is posted for no access. Exploration of potential permitted connectivity with the abutting land owner is recommended to establish an open space continuum that could possibly tie into the master plan being developed for Down Town North Windham.

## **Utilities:**

Public sewer is not available and future sewer expansion plans do not include this area for the foreseeable future. Soils were tested for septic suitability and an area of upland west of the pond was found to be suitable for a septic system. Albert Frick Associates was retained to conduct on-site subsurface waste disposal evaluation to identify opportunities to locate a system to serve the park use. In December of 2011, Albert Frick Associates completed soil test pit evaluation to determine soil types and suitable areas to accommodate an engineered subsurface waste disposal system to serve an active community park. The report identified suitable areas and addressed intensity of use. Smaller systems for passive recreation uses have greater flexibility with a number of potential locations. A higher intensity use such as athletic fields is limited to the area located along the ridge between Chaffin Pond and Boody Meadow on the soils identified as Adams/Colton. Refer to the Preliminary Subsurface Wastewater Disposal Analysis report dated December 16, 2011 prepared by Albert Frick Associates, Inc. included in the Appendix,

Public water is available from a PWD water main line that extends into the property from Route 302 and terminates at a gate valve near the former pump house. An above ground seasonal water line extends across the property to the southeasterly boundary to server seasonal homes off of Sandbar Road.

Electric Service to the site is by overhead from Route 302 terminating approximately 250 feet in from Route 302 to a pole opposite the rear of the Sherwin Williams store. The former service to the pump house has been discontinued. We propose to continue the primary electric service underground from the terminal pole to the pump house with new service locations extended as necessary.

## **Environmental Assessment Study**

The Town of Windham retained the services of Summit Environmental Consultants, Inc. to conduct Phase I and Phase II Environmental Site Assessment (ESA) reports for the Donnabeth Lippman Park in 2011. The purpose of the studies was to determine if there are environmental conditions from past use or impacts from adjacent uses that have adverse effects on the planned uses for the park.

The Phase I ESA report was completed in January 2011 identified historical off-site potential impact of groundwater contamination from a fuel spill, containing the additive methyl tertiary butyl ether (MTBE) from the former Christy's Citgo on Route 302 that resulted in the Portland Water Districts (PWD) abandoning the use of the well system at Chaffin Pond to provide the public water supply for North Windham. This condition was identified as a continued potential for impact to the groundwater. The study also identified a 1,700 gallon underground storage tank located to the north of the PWD control building (Pump House) that had been used to contain spent chemicals used in the water treatment process. The tank was identified

as a potential issue that needed to be evaluated. Also noted was the potential presence of asbestos due to the timeframe in which the existing structures were constructed. Further testing was recommended. Refer to the complete Phase I ESA report included in the Appendix.

The Phase II ESA report was completed in 2012. The purpose of the Phase II ESA report was to determine if the recognized environmental conditions identified in the Phase I ESA report had associated impacts affecting the site. The main focus was to determine if the fuel spill containing the fuel additive MTBE was still detectable in the groundwater on-site. Summit Environmental Consultants and MDFEP conducted an on-site evaluation that include installing monitoring well, collected water samples and soil samples for laboratory testing. The results included identification of levels of arsenic at levels just above the state tolerance for park users adjacent to the maintenance building and Well House # 1 and low level of lead in the groundwater sampling. Refer to the complete Phase II ESA report on-file with the Town.

Phase II (supplemental) ESA report was conducted in December 2011 to determine the viability of re-developing the groundwater resource as a potential public water source for revenue generation or community use. Refer to the complete Phase II ESA report included in the Appendix.

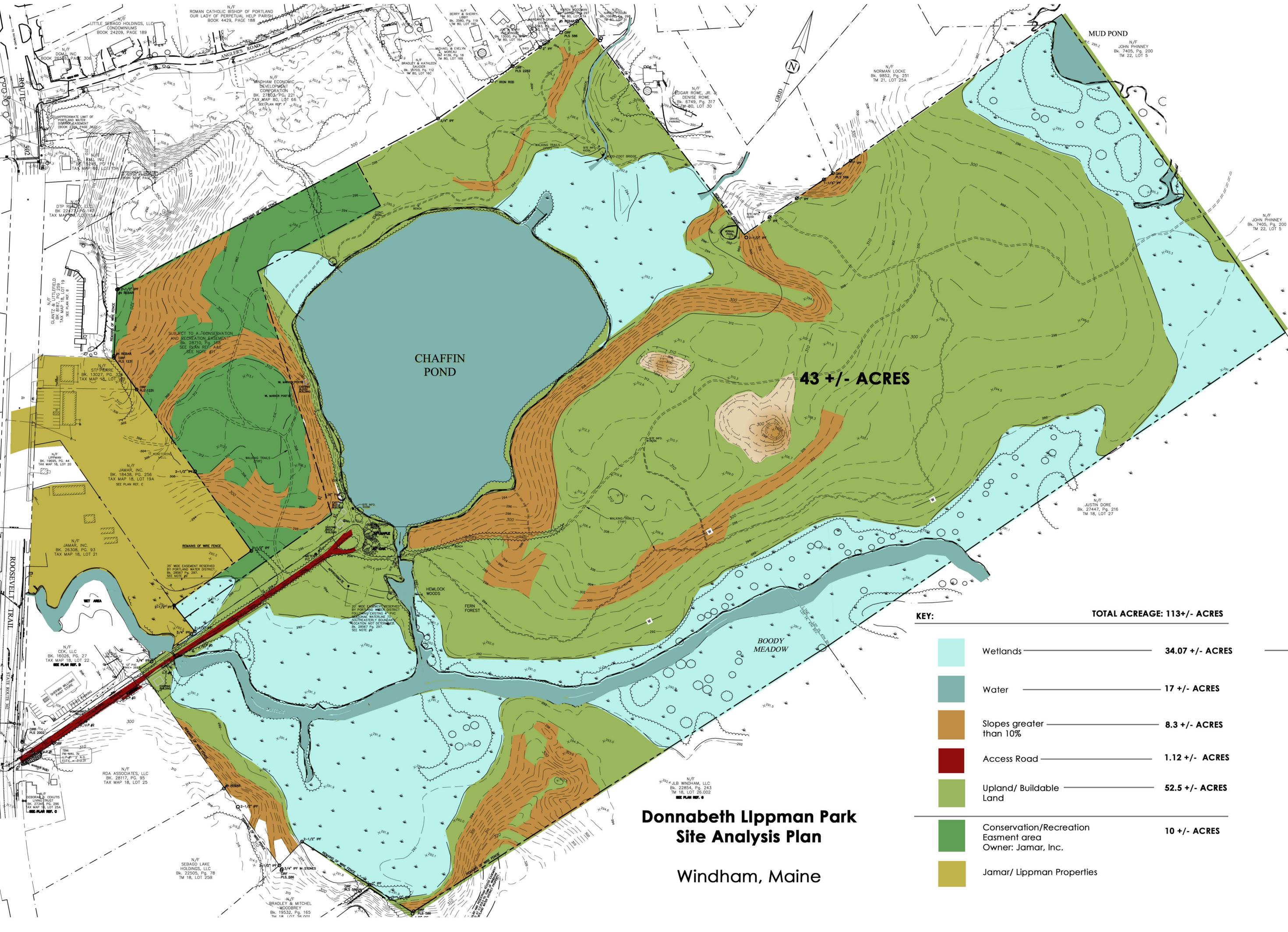
### **Site Restrictions:**

The town owned Donnabeth Lippman Park is a 113.13 acre parcel. While the property has great recreation opportunity, there are development limitations defined by easement restrictions, environmental site conditions and regulatory requirements. The recreation and conservation easement granted by JAMR, Inc. (Lippman Family) limits the use within these 10 acres to passive recreation that includes trails, trail maintenance and seating. No permanent structures or other improvements are permitted.

The following is an assessment of the 113.13 acre parcel environmental characteristics to identify usable area:

• Wetland Area	34.07 +/- Acres
• Water Bodies; Ponds and Streams	17.00 +/- Acres
• Steep Slopes Greater Than 10%	8.30 +/- Acres
• Access Road	1.12 +/- Acres
• Upland Developable Area	52.50 +/- Acres

Note: of the 52.50 acres of developable land, 43.00+/- acres are located within the core of the site with the remaining area disbursed through out the property.



CHAFFIN POND

43 +/- ACRES

BOODY MEADOW

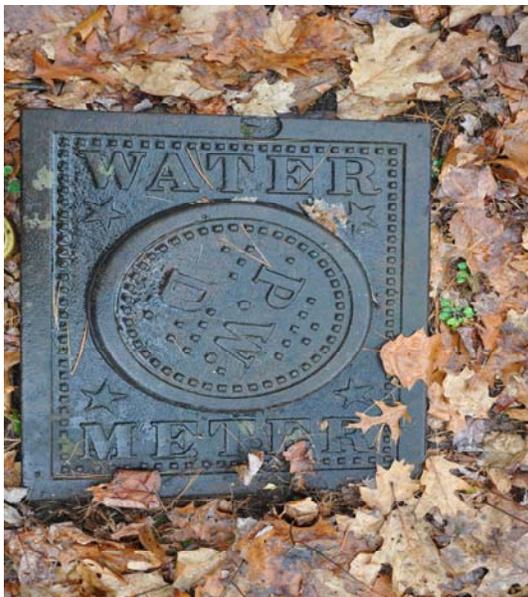
**Donnabeth Lippman Park  
Site Analysis Plan**  
Windham, Maine

KEY:		TOTAL ACREAGE: 113+/- ACRES
	Wetlands	34.07 +/- ACRES
	Water	17 +/- ACRES
	Slopes greater than 10%	8.3 +/- ACRES
	Access Road	1.12 +/- ACRES
	Upland/ Buildable Land	52.5 +/- ACRES
	Conservation/Recreation Easement area Owner: Jamar, Inc.	10 +/- ACRES
	Jamar/ Lippman Properties	

## Utilities

### Water Service

There is an existing water main that extends just to the south of the existing pump house. There is an existing seasonal, above grade service, off the main that runs cross country along Boody Meadow and extends to Sand Bar Road providing seasonal service to properties on Little Sebago. Water for park uses may be tapped with a new service line from the main line or a new seasonal service for the athletic field area can be extended from the existing overland seasonal service. Extending water service to the dog park on the westerly side of the park has not been included in the opinion of cost. Discussion with the Maine DHS concerning the potential of a shallow dug well for the park indicated that there would be permitting requirements to address public health standards. These conditions were not pursued as they could be extensive for a water service for just the dog park. Extension of a seasonal cross country line would be about 1,400 linear feet.



### Electric Service

There is an existing overhead three phase service extending from Roosevelt Trail, Route 302 along Chaffin Pond Road approximately 350 feet. The previous service for the water district has been discontinued. Discussions with CMP indicate that a new single phase or three phase service can be extended to serve the proposed park. New service requirements, including underground service, transformers or poles would be the responsibility of the town. Electrical service demands were not included in the scope however; based on the design concepts it is expected that a single phase service is all that would be required.

## Telephone Service

Telephone service is available and can be extended along Chaffin Pond Road with the power extension.

## Sanitary Sewer

Currently there is no existing public sewer available to serve the Donnabeth Lippman Park and there is no long range plan in-place at this time to extend sewer to this are of North Windham. To address sanitary waste disposal, Albert Frick Associates conducted an on-site evaluation of suitable soil conditions to support and engineered subsurface waste disposal field to serve the park. The area best suited for a disposal area is the higher portion of the site located to the east side of Chaffin Pond where the proposed athletic fields are situated. The subsurface system can be installed below the fields. The size of the field will be based upon the projected population using the park. Alternatives to subsurface system would be portable toilets or fixed structures that can be pumped out, such as those used in state and federal parks.

## **Public Process**

The public participation in the development of the Master Plan for the Donnabeth Lippman Park was invaluable to arrive at the a final master plan that offers a fluid dynamic depending upon financial commitment and ever changing opportunities in the community that may affect the final development option for the Donnabeth Lippman Park. A Stakeholder group was recommended by town staff to solicit input from various user and potential user groups, these include youth sports, scouting, senior community members, conservation interest as well as the needs of the Parks and Recreation program.

Key to obtaining public input was making the public aware of the parcel that the town obtained from the Lippman family. Public knowledge of the park is limited to a small user group. To gain a broader outreach to the greater Windham community a public survey was prepared and located on the town website. A reasonable public response of 285 respondents provided information concerning identified needs for passive and active recreation, environmental concerns as well as an awareness of the existence of the park. As summary of the survey results as well as minutes of the various meetings held during the process follow.

- Stakeholder meeting January 19, 2012
- Public Information Meeting January 31, 2012
- Public Hearing on Design Concepts March 29, 2012
- Town Council Workshop April 24, 2012
- Town Council Public Hearing June 26, 2012
- Summary of Public Survey

## Stake Holder Mtg 1-19-12:

### Attendees:

Glenn Lynd: Lakes Region Senior Center  
Martin Shuer: Windham Boy Scouts troop 805  
Shelly Afthim: Windham Little League  
Marjorie Govoni: Windham Community Garden  
Peter Keef: Windham Drifters (snowmobile club)  
Davis H. (?): Windham Land Trust

There were a few comments regarding the potential for access from the rear of Home Depot. Can parking go there?

Comment about how muddy it is along (N) western side  
Question about Mitchell Associates resume-bob spoke of Ft Williams, Spring Pt and Hinkley Pond  
Question about environmental factors on site.

Land Trust: any connection with easements to Mud Pond?  
Brian: No private property is in between the 2 properties

Boyscout Leader: Any lead paint issues? Potential for buildings to house gift shop to cover overall park maintenance costs.  
Capital costs for the project could be high-will it get support?

Senior Rep: trails

Snowmobile Club: Would recommend loop trails for snowshoeing & separate trail for snowmobiles. The club has the potential to maintain trails for activities including hiking trails and x-country skiing/ snowmobile- they have the equipment. Main interest in getting youth involved and outside in nature.

Community Garden Rep: If soil is good a community garden would be great as they are maxed out in their current site. Need a min ½ acre and quality of soil is important.

Some concern about interaction of snowmobiles and pedestrians.

Boyscout Rep: Camping, fishing, canoeing, kayaking. Low impact are for camping event- could be 20-200 people. 20-30 people for a local event. Boy Scouts offer many community service opportunities: marking trails, bridge building, picnic tables, gardening

Is there potential to get donation from new greenhouse project in Windham? Corporate sponsors?

Snowmobile Rep: New Lippman hotel could add economic benefit. Windham could be stopping point along snowmobile trail. There are connections all around state on trails and into Canada. Potential to host regional snowmobiling event. The Windham club currently maintains 50 miles of trails –Bob asked for trail map.

Little League Rep: 400 kids in baseball softball program. Many fields are in poor to dangerous conditions. They have one field for teeball – majors-400 games. Desperately in need of better fields. Currently cannot host tournaments- good field complex could have economic benefit to Windham.

Need: 3 fields & snack shack with night lighting. Kids benefit from exercise. Currently have to shuttle to numerous fields. Capable of fundraising.

Comment that road and parking would be a big issue. Need to look at Westbrook's field and parking facilities.

Some concerns about fertilizers for the fields and the adjacent pond. LL says willing to do organic applications.

General comment about getting organizations together to better meet kids needs –school and town

Senior Rep: Interest in gardens, walking on safe trails, potential for mentoring opportunities

Little League: Looking at a Challenger (handicap) league for Windham

Scout: Would like to see dog park similar to Portland. Would require 2-3 acres

Eagle scouts do signage project. Girl scouts have community service requirement. Interest in swimming beach front, hiking, fishing docks, canoe, kayak

Equestrian Trails

Fundraising potential through local business donations for signage- Aquafina?

Community Building- vision for a rustic multi-use facility to represent community interests. With gathering area, winter camping, fire ring- look at Holt Pond in Bridgton.

Further discussion about access point from Home Depot location. Bird watching/ wildlife

Any deed restrictions? Yes,PWD has above ground seasonal water line  
Potential for tapping water line for future use

Potential for aquaculture facilities- possible hatchery? Current trout stocking

- possibly add age limit 16 & under for ice fishing

for next meeting bring handouts\ Maps \ visuals

## Public Mtg 1-31-12:

### Speaking Attendees:

Stan Burke: Lakes Region Senior Center  
Martin Shuer: Windham Boy Scouts troop 805  
Joe Coffey: Windham Community Garden  
Dennis Hawks: Windham Land Trust  
Linda Griffin: Historic Preservation Society  
Dave Nado: (previous) planning board member

Dave Nado: commented that there may be 10 spaces behind Home Depot that are for public use (part of HD approvals).

Stan Burke: lives on Montgomery Rd, states that he and people he has talked with have a lot of interest in a dog park. Requires 1-1.5 acres fenced in area divided into 2 sections (lg & sm dog runs) with a sally port entrance gate and access to water. There are over 2000 dogs licensed in Windham and a dog park would be used 365 days/year. He thinks the area behind home depot would be a good location.

Bob mentioned about Ft Williams Park and their unleashed area. Stan prefers a fenced in dog park.

Martin Shuer: Interest in hiking, camping, and fishing. He thinks this park has a great opportunity for allowing community service activities for eagle scouts and boy and girl scouts.

He is concerned about the large capital investment required to create a park. He thinks consensus is important but the price tag is equally important. May need to involve local businesses asking for material or monetary donations.

He also prefers a fenced in dog park

Joe Coffey (Mt Hunger Shore Rd) Thinks connections to adjacent walking trails are very important. Spoke of a trail to mud pond which there may be the potential to access from this parcel

He is also interested in looking at restoring the original flow of outlet brook.

Dennis Hawks: Concerned about putting the park on a fast track to design and missing some opportunities. Links to adjacent trails are important as well as great educational opportunities. Many people he has spoken with on the trail like it the way it is. Concerned about destroying habitat that we don't realize is there.

Cautious of approach and concerned about environmental impacts of intensive uses.

Linda Griffin- spoke about her organizations efforts to create a historic town center for windham

Dave Nado: Pointing out steep slopes, 10 acre easement area, wetlands..people have to understand environmental impacts. Development will be limited due to slopes. He does not see ball fields but nature preserve, camping. Towns Community park vision may not be feasible.

Martin: Dog park behind Home Depot works well. Good development examples at Gisland Farm. Parking will be the issue and limiting factor. Access issues.

Bob mentioned use of buildings for educational progams.

Dennis Hawks: unmanned? Everything comes with cost. Picnic tables=more trash  
Left side of pond is very wet and needs to be fixed.

Dave had ideas about a cranberry bog for educational purposes, geocaching, blueberry plantings for foraging, having a plan for eagle scouts for future projects, observatories.

## **Council Mtg 4-24-12:**

### Council Comments:

Scott Heyman: Thought both plans could be merged to accommodate all elements on one plan. May take a long time to implement due to cost.

Thomas Gleason: Thinks project needs a stated timeframe for completion. He is concerned about money.

Dave N. Develop first part, entrance area and develop in stages around park.

Matt: Both plans need to accommodate all users- concern @ elderly users and access to trail- concern ADA access- park needs to be inclusive

Misleading cost organization in powerpoint

### **Public comments**

Windham youth lacrosse board member: Need Fields

Tim Cummings: Need Fields- would add tennis court where concept A dog park is located.

Donna Chapman: Economy issue- can't afford. Project needs 3-5 yr strategic plan. Arent there more convenient locations for fields? Buskie field, Fire Barn parcel, make location of fields visible to minimize vandalism.

Rotary fields- Swimming not advised in Chaffin pond due to snapping turtles and leeches. Recommends composting toilets for cheaper option to septic installation, Climbing wall is dangerous/expensive for monitoring.

Liz Wycott: Concerned about money, need to do less impacts than shown on Plan B, no paved walks, slow improvements to afford, this is a pristine area- need to respect beauty and wildlife. No amphitheater, no cars, minimal parking, concerned about safety if the park becomes popular and big

Scott Butts (Baseball coach): Windham recreation development is way behind surrounding communities. Need Fields, 450 kids in little league

Sheri W (Windham Youth Soccer) Concept A Windham Needs Fields- 500 kids in soccer.

Neil Rhode: Need Fields

## **Survey Results Overview:**

285 people took the survey

### **Respondent Characteristics:**

- The greatest percentage of respondents were between the ages of 30-45 years. All age groups were represented in the survey.
- 99% of those surveyed were Windham residents
- 24% of those surveyed were unfamiliar with Chaffin Pond. The majority did not know it existed or didn't know it was available for use.

### **How respondents use Park:**

- 48% hike
- 44% surveyed never visit Chaffin Pond.
  - Main reason is that they did not know about it
  - Nothing to do there
  - Too wet
- Other uses include Dog walking and snowshoeing

45% of users bring children to Chaffin Pond. Children of all ages use the park but the majority of kids are between 5-16 yrs old. They typically come to the pond 2 kids per adult with the occasional large group visit (Boy/Girl Scouts, School Kids)

Most surveyed access the park via car from 0-5 miles.

Majority of current uses include:

1. Hiking
2. Dog Walking
3. Snowshoeing

Survey respondents thought the following current uses needed facilities improved:

1. Swimming facilities
2. Picnic facilities
3. Biking facilities
4. Hiking facilities

Those surveyed thought the following amenities would attract more people to the park:

1. Restrooms
2. Picnic Facilities- tables, grills
3. Playground
4. Play Trails
5. Larger Parking Facilities
6. Swimming Facilities

Write in: numerous comments requesting a Dog Park

Paved Trails, Ball fields and Campground Areas were noted as unsuitable uses by a majority of respondents.

Main concerns about the Park:

1. Maintenance & Vandalism
2. Cost

Other activities which could attract users to the park:

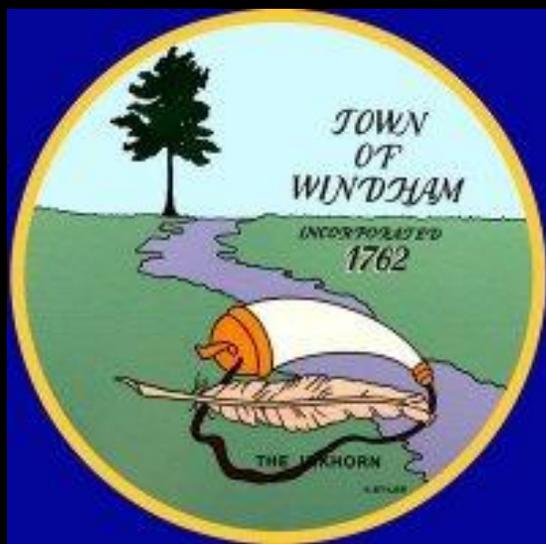
1. Ice Skating
2. Cross Country Ski Trails
3. Nature Education Programs

Write In Comments: Dog Park, Canoe & Kayaking

**285 SURVEY RESPONDENTS**

Characteristics:

**99%**  
Windham  
Residents



**AGE:**  
Under 18



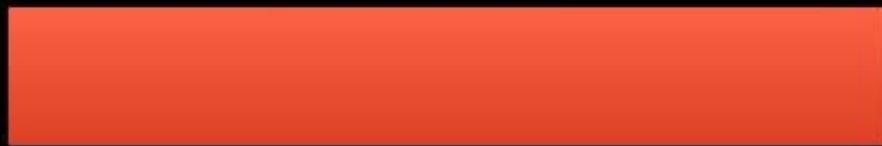
18-29



30-45



45-65



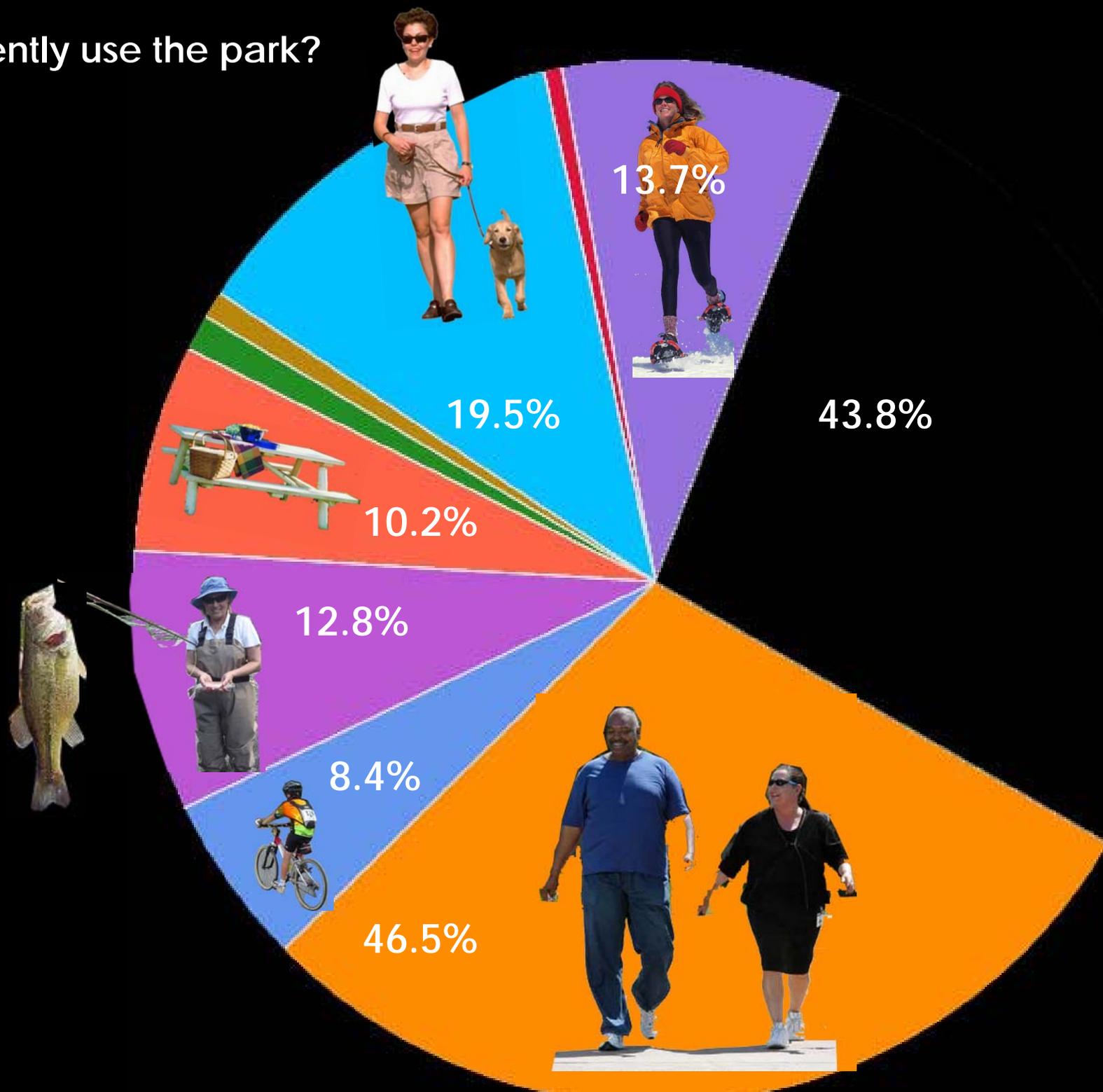
Over 65



**1/4** of those surveyed were not familiar with Chaffin Pond

**47.7%** Do not visit Chaffin Pond      **43%** Visit Chaffin Pond 1-6 times /year

# How do you currently use the park?



# What amenities do you think would attract more people to the park?



Restrooms 76.8%



Picnic Facilities 65.6%



Playground 59.8%



Larger Parking Facilities 49.6%



Play Trail 49.1%



Swimming Facilities 47.3%



Gardens 39.7%



Sport Fields 35.7%



Environmental Center 29.0%



Paved Trails 24.6%

## Additional Ideas:

- Signage
- Dog Park
- Amphitheater
- Canoe/Kayak access
- Improved Trail
- Ice Skating
- X-country ski trails
- Volleyball Court

# What amenities do you think are suitable for the park?



Restrooms **Suitable Use 93.2%**



Picnic Facilities **Suitable Use 95.4%**



Playground **Suitable Use 78.7%**



Larger Parking Area **Suitable Use 84.6%**



Play Trail **Suitable Use 90.5%**



Swimming Facilities **Suitable Use 68.9%**



Gardens **Suitable Use 90.3%**



Sport Fields **Unsuitable Use 57.4%**



Interpretive Signage **Suitable Use 73.8%**



Paved Trails **Unsuitable Use 56.5%**

## **Design Intent**

The design intent for the Donnabeth Lippman Park master plan is to appreciate and preserve the character and quality of the natural environment while providing recreation and active living opportunities for the Town of Windham community. The design intent was developed from a series of community meetings, workshops and a town wide survey where community members were active participants in defining the program and reviewing concept plans.

The wildness of the 123 acre park site is treasured among many in the community as a natural oasis among the neighboring commercial development. The existing trail system provides 2 +/- miles of access to woodlands, wetlands and ponds. Goals of the design were to maintain the majority of the site for passive and nature-centered active recreation opportunities providing increased access to wildlife viewing, an improved trail system, environmental education signage, canoe and kayak opportunities, picnic facilities and playful opportunities to engage with nature.

Through the public meetings it was apparent that the town needs recreation fields for numerous youth sports including baseball, soccer and lacrosse. While this is a large property, development of the site for sport fields was limited by the 13+ acre pond, 38+/- acres of wetlands, steep slopes and limited vehicle access off of Route 302. The design maximizes sport use opportunities in a small area through providing flexible field space that allows multiple sports to use the fields at varying times of the year. The master plan accommodates two Little League size baseball diamonds with two overlapping soccer fields. In an effort to minimize site impacts due to parking requirements, parking facilities were concentrated in two parking areas located near the park entrance with a short walk required to access the fields. A small building is proposed to serve as a concession stand, equipment storage building and public restroom facility.

In addition to the desire for sport facilities, a majority of residents wanted to continue to use the park for its natural resources. The park design includes various enhancements which improve access to the sites wonderful natural elements. An improved trail system will allow year-round access throughout the park. Trail improvements incorporate the use of raised walkways through wet areas, signage and overlook points with seating and wildlife viewing opportunities. The plan also includes a boat launch for canoe and kayak access into Outlet Brook. Picnic and seating areas are proposed to be located throughout the park with a higher concentration of facilities nearest the parking and entrance drive. The new trail system provides connections between neighboring residential areas and retail shops.

To accommodate some of the parks youngest users, various natural play elements are integrated along the trail system to engage children and encourage movement and exercise. A 'tree fort' located along the trail at the northern end of Chaffin

Pond will allow playful users of all ages to climb into the tree canopy and enjoy a birds-eye view of the pond. A unique play space celebrating the playfulness of the natural environment is planned in a wooded section adjacent to the ball field area. This play space will integrate play elements into the wooded area utilizing slopes and plant material for play, encouraging children to interact playfully with the natural environment. Environmental education elements that are accessible to both adults and children are proposed throughout the park. A small informal campground area is proposed in the remote north side of the park. This campground could be used for community youth groups including Boy and Girl Scout troops. The community expressed great interest in involving youth groups in the maintenance, upkeep and improvement of the park in an effort to promote stewardship.

Through the community survey and public meetings, there were numerous requests for a dog park. The master plan proposes to locate a 2 acre +/- fenced dog park along the western side of the pond closest to Anglers Road. The intention is to negotiate shared parking facilities on the adjacent Anglers Road parcel currently owned by the Windham Economic Development Corporation that could provide parking for trail and dog park users.

Of the four existing buildings on site, it was determined that three have strong potential for reuse. A structural assessment was performed on each of the buildings to understand existing conditions and potential issues associated with renovating the buildings. Through the public process a number of potential options were identified and are listed later. The master plan proposes converting the Pump House, located near the pond, into an information/environmental education center with a limited restroom facility. The Maintenance Building located at the park entrance closest to Rt. 302 could be used as a community building for canoe and kayak storage, as well as, a location to host park related workshops. Well House 2 is a unique, bunker-type of building, in good condition that is built into the side of the hill. This building could be used as a concession stand, watercraft rental or visitor information center. Well House 1 is a concrete block structure with signs of structural decay that would require extensive repairs for reuse as a structure. A reuse option identified in the master plan is to make limited repairs to seal the exterior of the building and roof, converting the structure into a climbing wall element. The structure as it stands has no redeeming qualities that make it a strong element to be retained as a usable building. If the climbing wall option is not feasible or desired it is recommended that this building be demolished and the area be restored to a natural condition.

A preliminary opinion of cost was prepared for the proposed park improvements to establish an estimated cost to complete the park improvements identified in the master plan. To assess an implementation plan town staff provided guidance in developing the following prioritized phased approach to undertaking the park development. The prioritization can be modified over time in response to funding sources. Development of the park, dependent on funding, has been prioritized as follows:

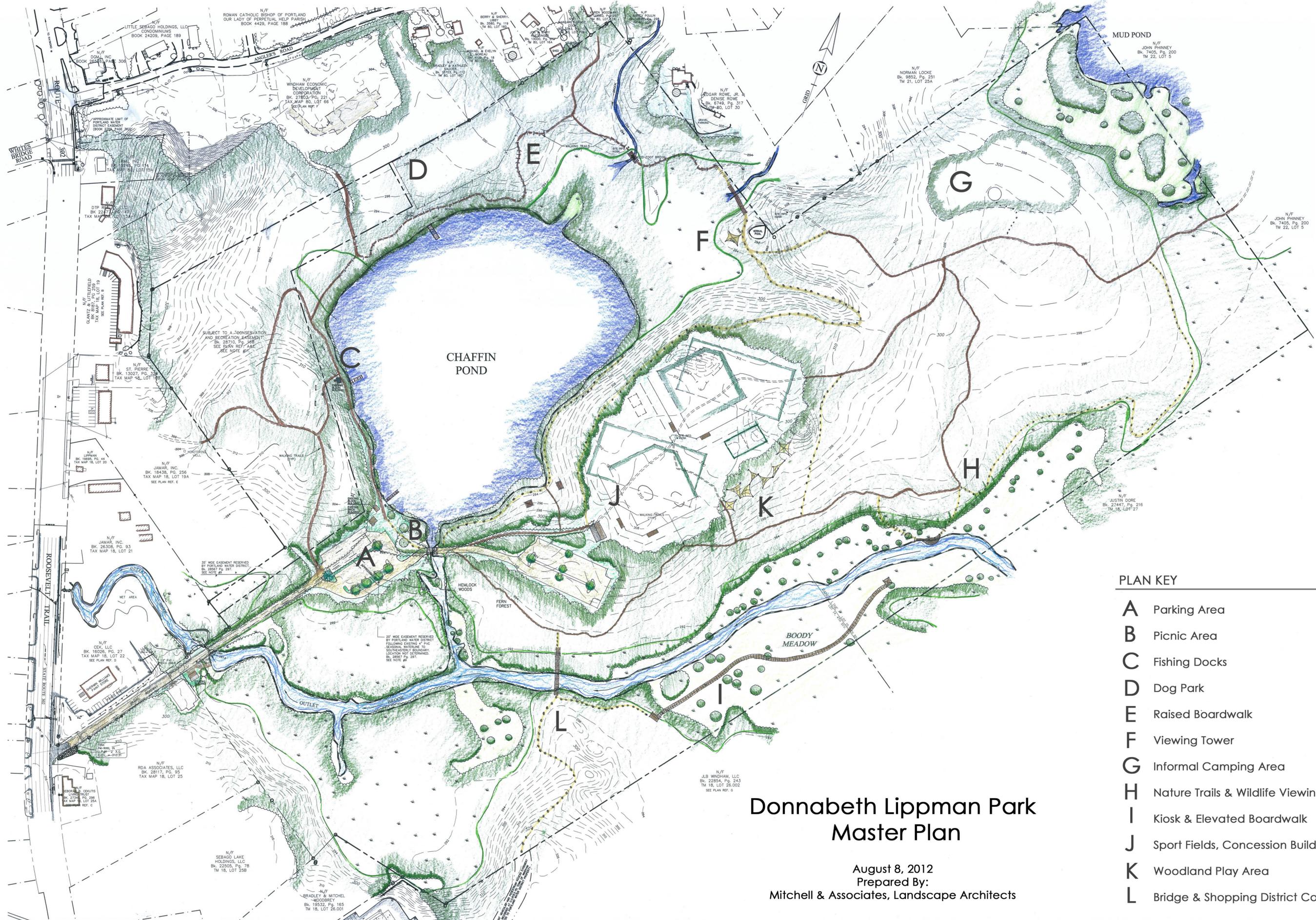
- Phase I: Widen the entry road, construct parking lot 1, expand existing parking lot along Chaffin Pond Road , subject to expanded easement area, extend new underground electric service to pump house area, dog park, fishing dock, complete recommended repairs to existing maintenance building, new entry gate and park sign.
- Phase II: Trail improvements including raised walkways through seasonal wet areas, footbridges, trail signage, construction of new and realigned trails, seating areas and play trails, picnic shelters, play-trail improvements, signage, canoe/kayak launch area and marsh trail overlook. Phase II trail construction includes only improvements on the west side of Outlet Brook
- Phase III: Construction of athletic fields, basketball court and volleyball court including the construction of a vehicle bridge across the stream connecting Chaffin Pond to Outlet Brook, construction of parking lot 2 and construction of concession/storage building, public restrooms and subsurface waste disposal field, extension of public water, irrigation system and new service well.
- Phase IV: Construction of the woodland playground, Interpretive Nature Center (pump house) with bathrooms, picnic pavilion and picnic area improvements and fishing docks.
- Phase V: Construction of the bridge across Outlet Brook, elevated boardwalk through Boody Meadow, observation platforms, develop new trail access and footpath from Home Depot, the trail connector to the Home Depot retail area and Chaffin Pond observation tower.
- Phase VI: Construction of gravel parking area along Home Depot access easement.

The phasing of improvements outlined above provides a potential scenario for implementing the park design and limit potential impacts to completed improvements during the completion of the park. Implementation of the plan is subject to available funding and as such, phases need to be evaluated and adjusted accordingly. Improvements associated with the redevelopment or use of the existing structures is limited in the priority list and will be addressed as an appropriate use is determined.

## **Concept Master Plan**

Development of the final concept master plan was based upon the ideas developed during the public process that lead to the development of Concept A and Concept B. The final plan was derived from modifications of concepts A & B based upon public input and Town Council guidance. The Final Concept Master Plan identifies potential uses and improvements identified as community desires for the Donnabeth Lippman Park. The final outcome of the park improvements will be determined by available funding and program needs. The various elements defined in all three of the concept plans are fluid and allow for flexibility as the development of the park moves forward and community needs evolve.

- Final Concept Master Plan
- Concept Plan A
- Concept Plan B
- Concept B Enlargements

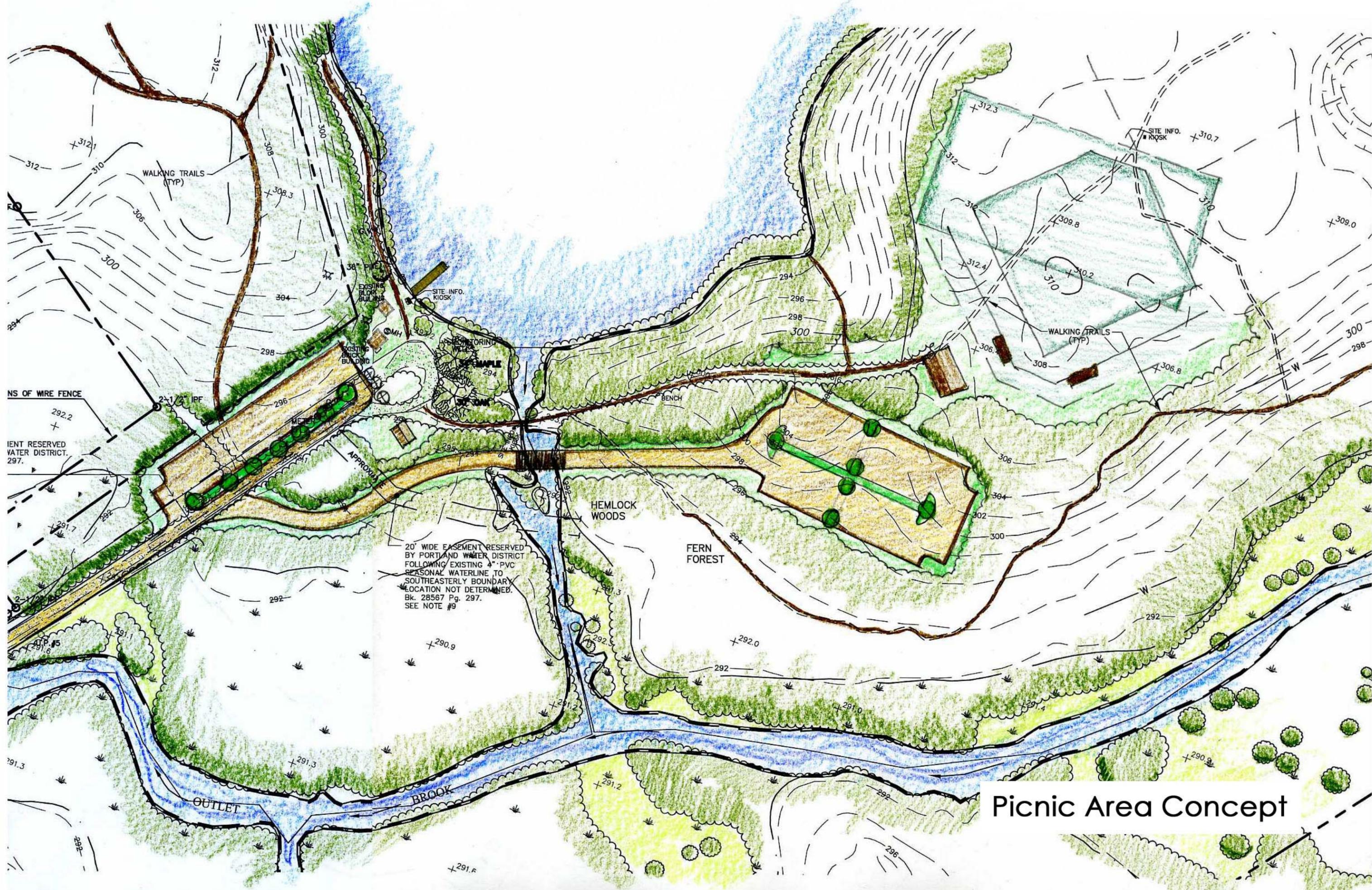


**PLAN KEY**

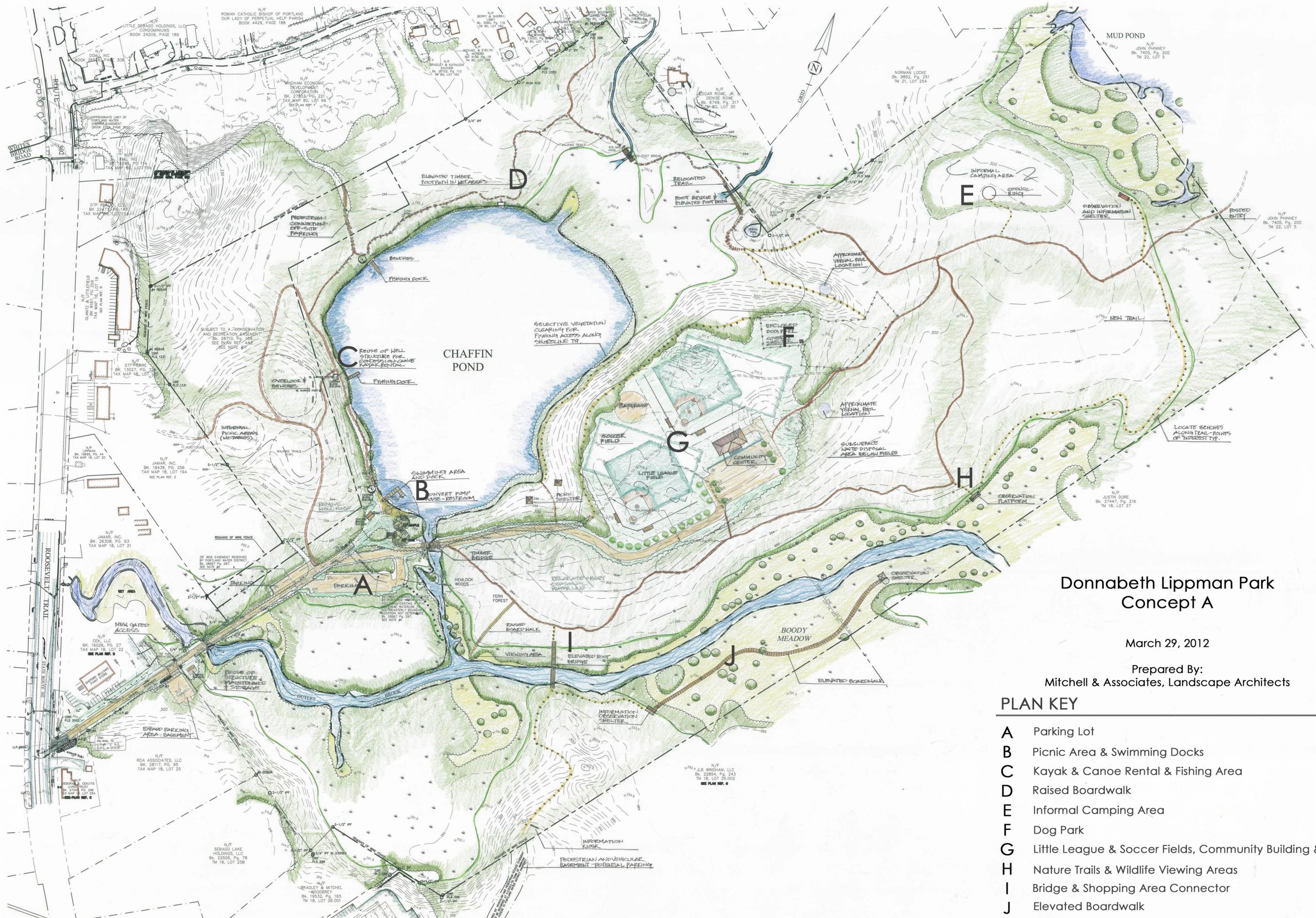
<b>A</b>	Parking Area
<b>B</b>	Picnic Area
<b>C</b>	Fishing Docks
<b>D</b>	Dog Park
<b>E</b>	Raised Boardwalk
<b>F</b>	Viewing Tower
<b>G</b>	Informal Camping Area
<b>H</b>	Nature Trails & Wildlife Viewing Areas
<b>I</b>	Kiosk & Elevated Boardwalk
<b>J</b>	Sport Fields, Concession Building & Parking
<b>K</b>	Woodland Play Area
<b>L</b>	Bridge & Shopping District Connector

# Donnabeth Lippman Park Master Plan

August 8, 2012  
 Prepared By:  
 Mitchell & Associates, Landscape Architects



Picnic Area Concept



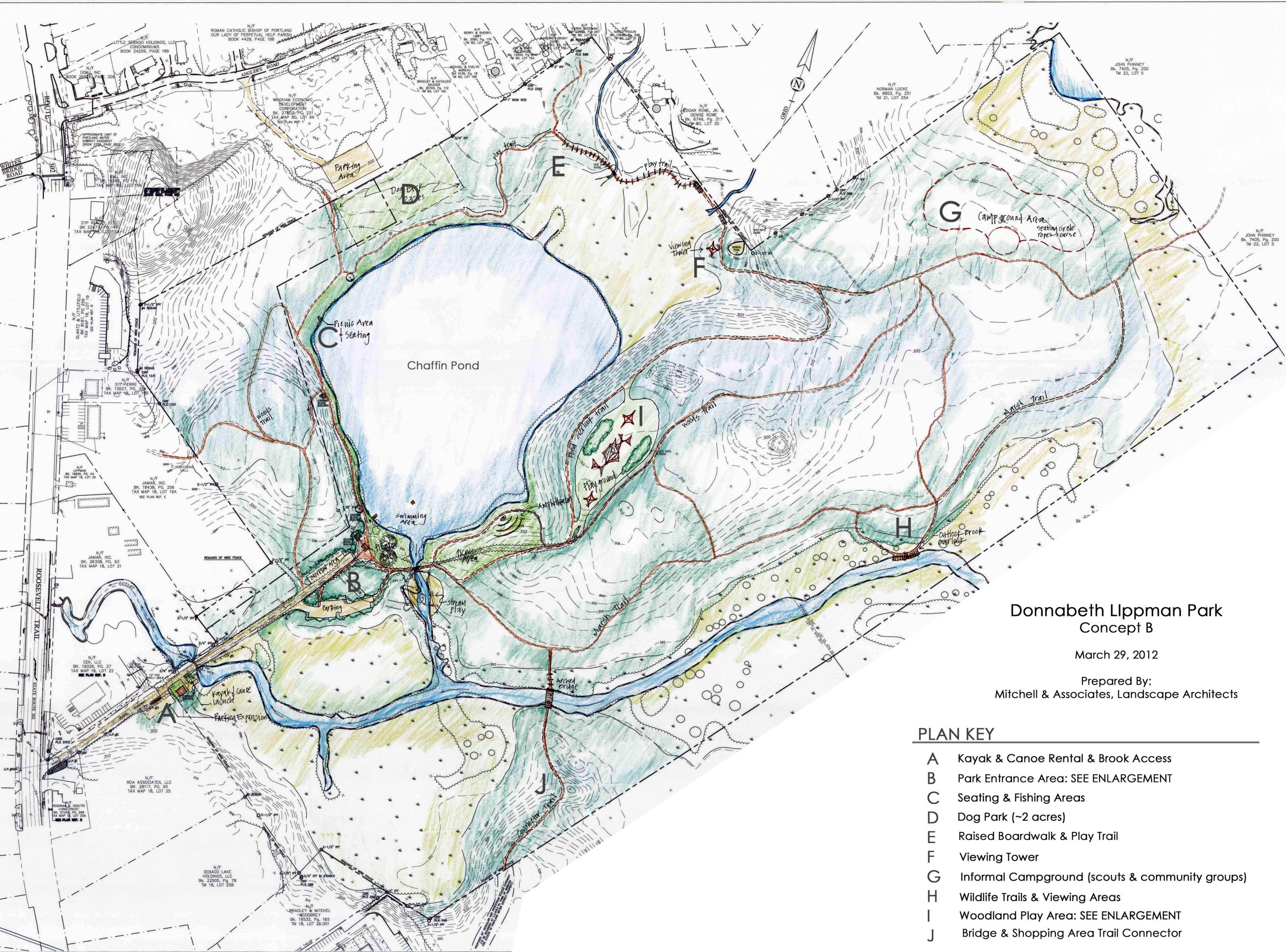
# Donnabeth Lippman Park Concept A

March 29, 2012

Prepared By:  
Mitchell & Associates, Landscape Architects

## PLAN KEY

- A** Parking Lot
- B** Picnic Area & Swimming Docks
- C** Kayak & Canoe Rental & Fishing Area
- D** Raised Boardwalk
- E** Informal Camping Area
- F** Dog Park
- G** Little League & Soccer Fields, Community Building & Playground
- H** Nature Trails & Wildlife Viewing Areas
- I** Bridge & Shopping Area Connector
- J** Elevated Boardwalk



# Donnabeth Lippman Park Concept B

March 29, 2012

Prepared By:  
Mitchell & Associates, Landscape Architects

## PLAN KEY

- A Kayak & Canoe Rental & Brook Access
- B Park Entrance Area: SEE ENLARGEMENT
- C Seating & Fishing Areas
- D Dog Park (~2 acres)
- E Raised Boardwalk & Play Trail
- F Viewing Tower
- G Informal Campground (scouts & community groups)
- H Wildlife Trails & Viewing Areas
- I Woodland Play Area: SEE ENLARGEMENT
- J Bridge & Shopping Area Trail Connector





**Concept B**  
**Woodland Play Area**  
scale: 1"=40'  
north 

## **Proposed Improvements**

### **Demolition**

- Well house building No. 1 was evaluated as part of the structural evaluation by Becker Structural Engineers, of all existing site structures. Well house No. 1 requires a significant amount of work to stabilize the structure for reuse and may be considered for demolition. Should the structure be demolished, the existing foundation and slab should be removed, remove top portion of sealed well head as necessary, and restore the area to natural grade and revegetate as necessary.

### **Site Improvements**

#### **Main Trail:**

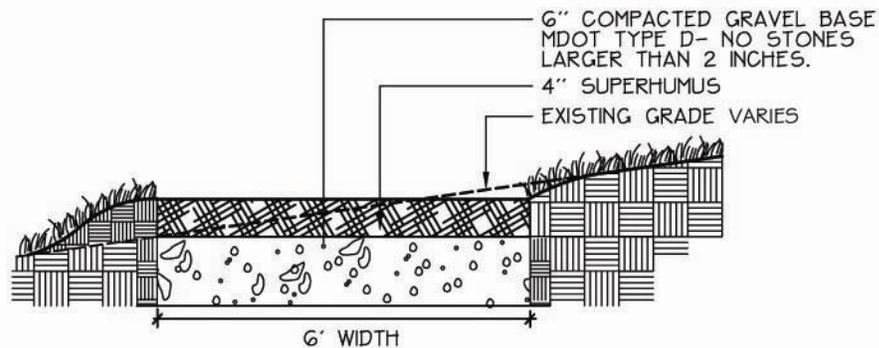
#### **Design Improvements**

Improvements along the existing trail should follow the same alignment with exception of where relocation due to the seasonal wet conditions would warrant relocation. The existing trail sections along the westerly side of the pond should be provided with a surfacing of "Superhumus" or equivalent to stabilize the surface area to prevent erosion and exposure of tree roots. Where minor seasonal wet conditions warrant, the trail should be raised by removing organic surface and placing well draining gravel and surfacing with Superhumus. Where high seasonal water conditions are excessive and fill is not feasible a raised boardwalk is recommended. Where conditions are too extreme the trail should be relocated to an alternative route, abandon the existing trail and re-vegetate as necessary to stabilize and to permit re-vegetation to occur. The design of relocated trail sections where necessary should maintain or enhance a minimum 50 foot wooded buffer adjacent to residential properties. Additional proposed trail sections/connections will provide greater access and diversity for park users. Park trail sections that have inadvertently been developed on adjacent property should be relocated and offsite conditions should be restored to a natural condition.

The existing trail along the westerly side of Boody Meadow lends itself to being an ADA compliant trail due to it relatively flat topography. To improve the ADA accessibility, the grades should be modified where exposed roots are encountered and where the cross slope of the trail exceeds two percent, The organic surface layer should be removed and replaced with suitable compacted well draining gravel and surfaced with compacted stone dust to provide a stable surface to accommodate for wheel chair and other assisted devices that may be used by handicapped individuals.

**Trail Design:** The trail should be six (6) feet wide to accommodate for two (2) individuals to walk side by side or to pass. A minimum twenty-five (25) foot setback should be maintained from the top of high water line in Chaffin Pond and Outlet Brook. Limb existing tree branches to maintain a minimum 10 foot head clearance where extending over the trail. Proposed overlook seating areas should limit disturbance to the minimum necessary and integrate new structure into the surroundings and provide access to trails.

- Trail material to consist of compacted gravel stabilized base, crushed aggregate, processed reclaim material or stone dust surface for ADA accessible trails and Superhumus for other trails. Grading of trail not to exceed five percent with a maximum two percent cross slope for ADA trails and all trails shall be graded to direct runoff to vegetated areas on the in board side of the trail to avoid runoff entering the brook and pond.
- Add supplemental plantings of native trees, shrubs and groundcover to maintain and enhance natural character where disturbance associated with proposed improvements are in conflict with the trail elements.
- Lay out trail to avoid trees and to limit extent of deep cut and fill situations as much as possible. Trail location along the pond edge for fishing access to the pond should be coordinate with a certified arborist to identify trees and or understory vegetation to be removed.
- Limb overhead branching to maintain a minimum ten (10) foot clearance.



#### WOODLAND PATH

NOT TO SCALE

- Provide a walking surface of “superhumus” or organic wood product material of equal quality and performance.
- Provide a compacted gravel base to provide a stable and uniform surface as necessary subject to existing soil conditions.

- Construction of all trail sections should limit disturbance to defined trail alignment and avoid disturbance of adjacent area. Use of small construction equipment such as a 'Bobcat' is recommended. In areas closest to existing trees, excavation should be limited, hand work as may be necessary to protect tree roots. Alternative is to provide gravel fill over root areas to avoid disturbance. No fill shall occur within the drip line of trees exceeding six inches.

### **Raised Boardwalk Trails and Overlooks:**

Location: The raised boardwalk trail will be field located to avoid removal of existing trees and desired understory. The trail should generally follow the alignment as shown on the concept plan through the areas that are currently impassible due to wet seasonal conditions.

- The raised boardwalk should be five (5) feet wide to minimize disturbance and cost.



### **Athletic Fields:**

The sport field area shall include two Little League size baseball diamonds, including fencing along the foul lines only, with two overlapping soccer/multipurpose fields, one fenced basketball court and one volleyball court. In addition to the fields, a concession/storage building with public restroom facilities is proposed.

An irrigation system is proposed for maintaining the turf fields and installation of a new well to provide potable water for the concession/restroom facility and the irrigation system is proposed. The prime location for the engineered subsurface waste disposal field coincides with the proposed athletic fields. The size of the system will depend upon the anticipated user population and seasonal variation.

Given the location of the proposed fields in proximity to adjacent residential properties and sensitive environmental habitat, the use of sport facility lighting is discouraged.

### **Improved Road and Parking Areas:**

The existing gravel access road shall be widened to accommodate two-way traffic and emergency vehicle access. As part of the access road improvements the existing culvert that allows Outlet Brook to flow towards Rt. 302 shall be replaced with a larger culvert or multiple culverts to be sized at the time design is completed. The existing parking area outside of the gate should be expanded as shown on the Improvement Plan if an expanded easement can be obtained from the abutting land owner. Two additional parking areas, one near the pond and the other associated with the athletic fields are proposed to be constructed in different phases of the project construction. These should be gravel travel ways and stabilized turf parking spaces to minimize environmental and visual impacts.



## **Picnic Area:**

The designated picnic area consists of roughly .60 acres located along the south side of the pond.

### Design

- Recommendations include removal of minimal vegetation and necessary grading and trail construction. Options for picnic facilities include at minimum providing picnic tables with the potential to add covered shelters and or pavilions.



## **Dog Park**

The dog park located along the westerly side of the park should be field located to avoid the seasonal wet conditions that are prevalent on that side of the pond. The layout should avoid the need to remove an extensive amount of trees; removal should be limited to hazards, multiple stem trees nearing or at maturity subject to blow down conditions. The understory vegetation should be grubbed as necessary to provide a usable surface/play area. The area should be provided with a minimum of four inches of “Superhumus” or equivalent wood mulch to stabilize the surface. The grades may necessitate bringing in a fill that should be a well draining material. Pet waste disposal bag dispensers should be provided and a carry out policy implemented to avoid a maintenance cost to the town.

## Natural Playground

Natural playgrounds are site specific play spaces that rely primarily on natural materials for play. Play structures are integrated among manipulated landforms, plant material and exposed natural processes to create safe and playful natural environments. Natural playgrounds grow and change as they are used and users often find new experiences upon each visit.

While natural playgrounds vary widely depending on site, they typically incorporate the following elements:

- **Entrance & Art:**

The entrance area defines the play space and is a good location to incorporate signage that educates visitors on the concept of natural play. Communities can use local art resources to work with children to create an entrance area that reflects the local population.



- **Water Feature:**

Water is a wonderful play element that continuously engages children. It provides opportunities for both learning and play.



- **Climbing Structure:**

Climbing structures challenge children's gross motor skills while encouraging imaginative play.

- **Swings:**

Swings can be social environments as well as providing the necessary vestibular motion important to healthy development.

- **Slide:**

Slides are inherently fun; a slide nestled into the side of a natural slope is even more fun.

- **Hills & Paths:**

Hills and paths provide definition to the play space and create special places for children to explore.

- **Plant material:**

Plant material is essential to natural play environments. Plants create dynamic environments that grow and change with the seasons. Leaves and branches provide loose parts for children to manipulate while shrubs and trees create imaginative spaces.



## **Donnabeth Lippman Park, Natural Playground**

The cost of a natural playground varies on the size and intensity of development of the space. The concept plan for the Donnabeth Lippman Park Natural Playspace incorporates the elements below into a moderately sloped wooded hillside.

### **Site**

The area designated for the play space is primarily upland consisting of woody vegetation. Grading and drainage for the play area should address storm water quality standards and avoid direct discharge toward the brook.

### **Play Elements**

Many of the elements incorporated in the concept design can be materials found on site. Logs and boulders can be used to define safety surfacing edges and should be used extensively throughout the site for climbing and play. The main elements of the play area will include net climbing structures woven horizontally through the trees. Two fort structures are proposed at either end of the climbing nets and the entire play area is surrounded by adventure paths through plants. The swings may be located outside of the designated play space to take advantage of pond views. Where possible, wooden play elements like the fort & entrance art should be designed and constructed by local craftsmen, children and community members. Plant material should be primarily native species and chosen for hardiness, low maintenance, and interest. Willow (shrub) is often used on natural playgrounds because it grows fast and can be used to construct play forts and tunnels. If the site is used in conjunction with an education program, some of the willow structures could mimic animal habitats.



## **Surfacing & Materials**

Engineered wood fiber and sand are cost effective materials for safety surfacing. Paths may be constructed of stone dust or superhumus and may require minimal annual maintenance. Wood bridges and structures should be constructed of cedar or other naturally rot resistant material. A playground maintenance plan should be developed along with the final construction plans.

**Note** An accurate topographic survey shall be required prior to further development of this space for construction.

## **Site Furnishings:**

Site furnishings should be coordinated with the Town of Windham. The following cost estimates will provide an idea of what the recommended site furnishings should cost.

### **Drinking Fountain:**

A minimum of two drinking fountains is recommended for use in the park. These should be located in central locations between the playground, picnic area, and the sport fields. As it is apparent that dogs will be using the park as well as people, a fountain with a dog spigot is recommended.

### **Seating:**

A variety of seating options are recommended to be used throughout the park. In many of the informal seating areas, wood benches or granite block can be incorporated into the landscape. Manufactured benches may be used in addition to the granite. A minimum of 6 manufactured benches located along the main and river front trail for seating options are recommended.



Unique seating options can reflect the character of the location

### **Trash Receptacle:**

To reduce maintenance cost, it is recommended that a carry-in carry-out rule be considered to reduce the need to accommodate for a regular trash removal. Should trash containers be used, trash receptacles should be located near the main gathering areas including the picnic area, ball fields, and play area and at the primary entrances. Dog waste bag dispensers should be located at entry points to the park and strategic locations within the park, assume a minimum of 4 locations.

### **Bike Racks:**

Bike racks located at strategic areas in the park are recommended. Areas to be considered include the ball field and picnic area. Bike racks should be a durable low maintenance metal system permanently anchored.

### **Signage:**

Informational signage may be used throughout the park to explain the history of the site, geologic formation, specific site and regional ecology. These panels could show historic images of the site and explain the importance of the brook to early settlers or discuss the importance of the wetland ecosystem and its role in buffering the lakes from pollution. Directional and general informational signage is also recommended throughout the park. The most affordable and durable option for signage is an aluminum plate sign with a digital print image and laminate for protection.



**Lighting:**

Lighting is recommended, at minimum on the existing structures to be retained and new concession/public restrooms as developed, for security purposes. Lighting of the park roads is not necessary given the operation being limited from sun rise to sun set. Given the location of the proposed fields in proximity to adjacent residential properties and sensitive environmental habitat, the use of sport facility lighting is discouraged.

**Donnabeth Lippman Park  
Opinion of Cost by Phase**

**Phase I**

• Upgraded Access Road from RT 302	\$ 45,000
• Park Sign	\$ 2,000
• Underground Electric (Pump House)	\$ 17,375
• Entry Gate	\$ 2,500
• Expanded Entry Parking	\$ 12,000
• Picnic Area Parking	\$ 60,000
• Dog Park (4 FT High Fence Enclosure)	\$ 32,000
• Fishing Dock (2)	\$ 9,600
• Picnic Tables ( 8 Tables)	\$ 2,000
• Bicycle Rack (2)	\$ 1,500
• Landscape Allowance	\$ 10,000
• Maintenance Building Repairs (Allowance)	\$ 8,000
• Well House No. 1 Stabilize (Allowance)	<u>\$ 5,000</u>
• Total Estimate	\$ 206,975

**Phase II**

• Trail Improvements	
○ Accessibility Improvements (Boody Meadow Trail)	\$ 30,000
• Accessibility (West side)	
○ Trail stabilization and alignment (Super humus)	\$ 20,000
○ Trail Signage (Allowance)	\$ 5,000
○ Marsh Trail Overlook	\$ 2,800
○ Stream Crossing Foot Bridge (Two)	\$ 4,000
○ New Trail Sections (Eastside of Pond) Allowance	\$ 30,000
• Raised Wood Foot Path (Westside of Pond) Allowance	\$ 60,000
• Play Trail Improvements	\$ 20,000
• Trail Seating (8 Benches Allowance)	\$ 5,000
• Picnic Structures (4 – 10 FT x 10 FT Structures)	\$ 15,000
• Canoe-Kayak Launch (Gravel Access Improvements)	<u>\$ 1,500</u>
• Total Estimate	\$ 193,300

### Phase III

• Athletic Fields	\$ 362,000
• Basket Ball Court	\$ 26,000
• Volley Ball Court	\$ 2,000
• Subsurface Waste Disposal *	\$ 122,000
• Extend Water Service (Seasonal Shallow Bury)	\$ 4,500
• Extend Electric Service (Underground)	\$ 31,500
• Field Irrigation	\$ 34,845
• Irrigation Well (Allowance \$ 6,500)	\$ 6,500
• Athletic Field Parking	\$ 70,000
• Bicycle Rack (2)	\$ 1,500
• Access Road to Athletic Fields (Includes outlet crossing)	\$ 40,000
• Concession Building/Public Restrooms (26 FT x 36 FT)	<u>\$ 46,800</u>
• Total Estimate	\$ 747,645

### Phase IV

• Woodland Play Area	\$ 130,000
• Picnic Pavilion (Allowance)	\$ 25,000
• Pump House – Interpretative Nature Center (Allowance)	\$ 20,000
• Well House No. 2 - Climbing Wall (Allowance)	\$ 3,000
• Fishing Dock – Picnic Area	<u>\$ 4,800</u>
• Total Estimate	\$ 182,800

### Phase V

• New Trail to Boardwalk (easterly side of Outlook Brook)	\$ 4,000
• Outlook Brook Bridge & Elevated Boardwalk	\$ 60,000
• Observation Platforms/Shelters	\$ 18,000
• Boody Meadow Boardwalk	\$ 72,000
• Observation Tower	\$ 12,000
• Footpath From Home Depot	\$ 3,700
• Landscaping Allowance	<u>\$ 15,000</u>
• Total Estimate	\$ 184,700

### Phase VI

• Construct Gravel Parking Along Home Depot Easement	\$ 60,000
• Landscape Allowance	<u>\$ 10,000</u>
• Total Estimate	\$ 70,000

<b>Subtotal</b>	\$1,585,420
Ten Percent Contingency	<u>\$ 158,420</u>
<b>Total Opinion of Cost</b>	<b>\$1,743,962</b>

\*The subsurface waste disposal system option is based on a high user volume based on the number of parking spaces and average number of people per vehicle to establish cost (Average daily use during peak season >1,000 + per day). Option to consider:

- Smaller design system to accommodate limited activity associated with low volume usage and using portable units to address peak user times/events such as athletic programs and festivals.

\*\* The sports field lighting was not included in the project opinion of cost as a result of further evaluation and discussion with town staff. Lighting of the proposed fields, which are in very close proximity to the adjacent residential neighborhood and significant wildlife habitat, are not conducive to the area and could have an adverse impact upon the wildlife. It is highly recommended that the use of field lighting not be permitted. For information purpose, the estimated budget for field lighting is \$390,000.

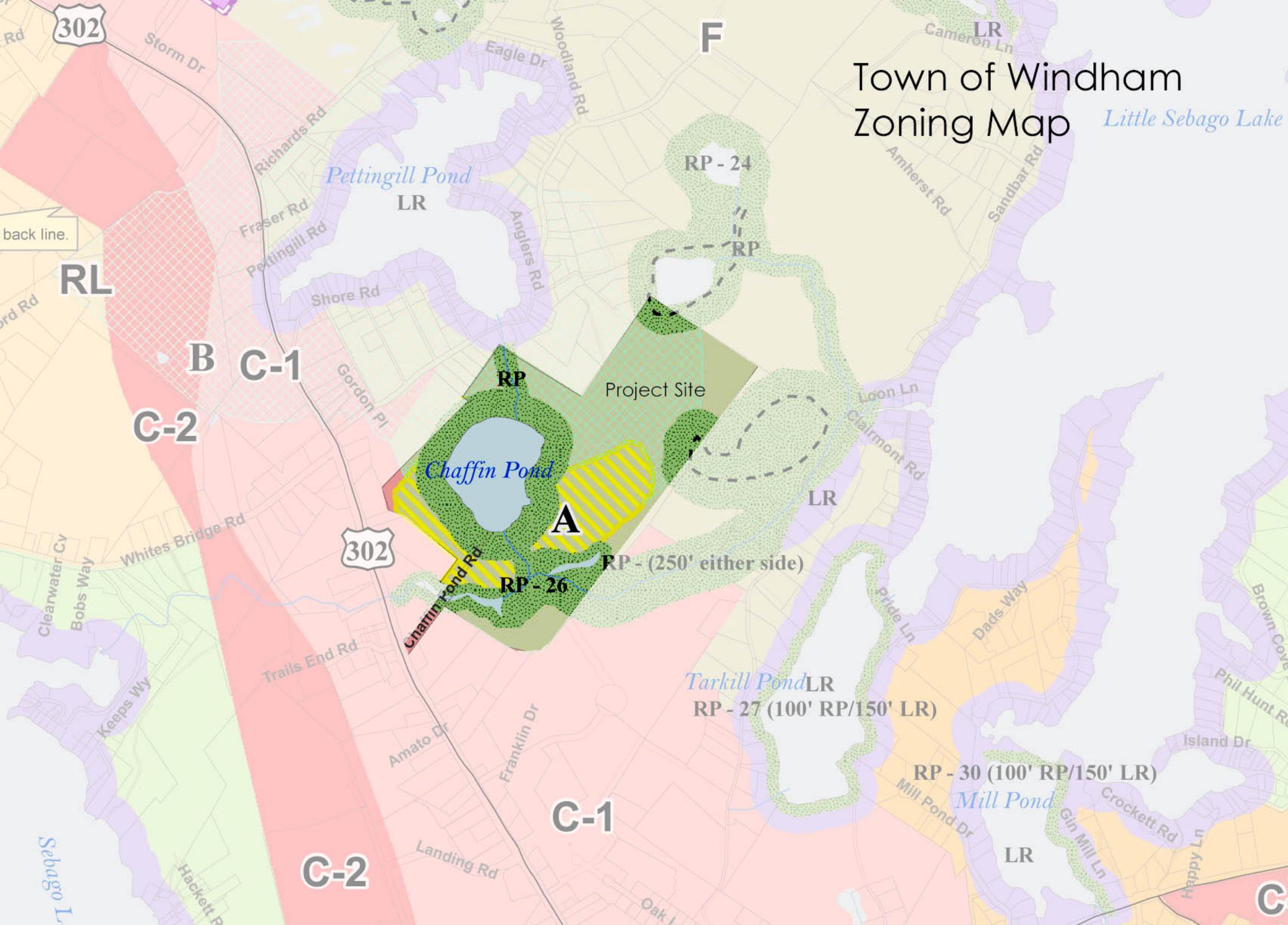
Note:

1. The estimate does not include the following improvements: cost associated with the reuse options for the existing structures and improvements associated with the identified camping area site amenities.
2. The opinion of cost estimates are based on concept level detail and not construction drawings.
3. Improvement costs do not include design or permitting fees.

## Zoning Regulations

The following designations apply to the Donnabeth Lippman Park parcel, including the ten (10) acre conservation easement area.

- The underlying zone is the Farm (F) district that will permit the uses proposed by the Improvement Plan.
- Approximately one third (1/3) of the property on the southerly edge of the property and easterly of Chaffin Pond is located within the Aquifer Protection (APA) overlay district. The permitted uses within this zone would limit uses to passive recreation a use only, the remainder of the property, with exception of a small area in the northeasterly corner, is located in the Aquifer Protection (APB) overlay district and is less restrictive and permits all of the uses within the underlying zone including conditional uses. The only areas of town with the Aquifer Protection overlay zones are associated with the former PWD water supply facility for North Windham.
  - Note: The Aquifer Protection designation was associated with the former Portland Water District public water supply for North Windham. Due to potential ground water contamination from an underground fuel tank serving a local fueling station on Rout 302, the water supply system was abandoned. Conversation with PWD indicates that they have no objection with the removal of the Aquifer designation being eliminated. According to the zoning regulations, the Town Council could make the determination to remove the designation for the two aquifer areas.
- Resource Protection overlay district encompasses Chaffin Pond, Lower Mud Pond, Outlet Brook, and the stream inlet from Pettengil Pond. Restrictions established by this zone apply to several of the proposed improvements and will require Planning Board review and approval.



# Town of Windham Zoning Map

*Little Sebago Lake*

302

F

RL

B

C-1

C-2

302

C-1

C-2

LR

RP - 24

RP

RP

Project Site

LR

A

RP - (250' either side)

RP - 26

LR

Tarkill Pond  
RP - 27 (100' RP/150' LR)

RP - 30 (100' RP/150' LR)

Mill Pond

LR

C

## Regulatory Permitting Requirements

The following permitting requirements have been identified pursuant to the proposed concept improvements for the Donnabeth Lippman Park:

### Town of Windham

- New structures and or improvements to the existing structures will require a building permit from the code Enforcement Officer.
- Total site disturbance exceeding 25,000 square feet within a five (5) year period will require Site Plan review and approval from the Planning Board.
- Proposed improvements associated with the upgrade of the existing access road and parking will require Site Plan review and approval from the Planning Board.
- The proposed athletic fields, concession/public restroom facilities, subsurface waste disposal area and parking will require Site Plan review and approval from the Planning Board, Code enforcement officer and from the Department of Health and Human Services.
- The proposed camp fire ring (council ring seating area) located in the identified camping area for the scouting programs will require review and approval from the Windham Fire Department and from the Maine Forest Service.
- Tree removal activity around Chaffin Pond (footpaths associated with fishing and trails) will require identification of trees to be removed by a Certified Arborist.

### Maine Department of Environmental Protection

- Stream crossings associated with the upgrade to the main access road, access to the parking associated with the athletic fields, footbridge crossing for Outlet Brook and streams entering Chaffin Pond will require a stream crossing permit from the MDEP.
- The proposed raised board walk, overlook platforms within wetland areas associated with Boody Meadow will require an NRPA permit that will also include review by the Army Corp of Engineers.
- Total site disturbance of an acre or more will require a Storm Water permit subject to Chapter 500 regulations.
- Total site disturbance exceeding one acre may require a Site Location of Development permit depending upon the scope of the project.

## **Donnabeth Lippman Park Building Reuse Options**

The following recommendations have been identified as potential reuse options for the existing structures that served the former Portland Water District (PWD) public water supply for North Windham. Documentation provided by PWD indicates that the main brick pump station was constructed in 1937 with subsequent modifications made up to 1990. There is no information when the existing wood frame maintenance structure was built, given the type of structure and asphalt “imitation brick” siding would indicate that it was sometime in the 1950’s or earlier. Well House # 1 was constructed in 1962 and well house # 2 appears to have been constructed in 1974. Based upon public comment during the master plan process and town staff input the following options ranked the highest.

### **Existing Maintenance Building**

- Option One: Repair building, based upon structural evaluation report and continue use as maintenance and equipment storage building for the park.
- Option Two: Repair building based upon structural evaluation report; modify building to use as an interpretative education nature center, (no bathroom facilities or water service).
- Option Three: Repair building based upon structural evaluation report and modify for use as meeting space for scouting groups, conservation groups etc.

### **Existing Pump House**

- Option One: Make exterior repairs based upon structural evaluation report, convert building to public restrooms.
- Option Two: Make exterior repairs based upon structural evaluation report, convert building to an interpretative education nature center with public restroom.
- Option Three: Make exterior repairs based upon structural evaluation report, and convert building to a concession building with public restroom.
- Option Four: Make exterior repairs based upon structural evaluation report and stabilize interior space and mothball building until suitable use is determined,

### **Well House No. 1**

- Option One: Make limited structural repairs based upon structural evaluation report and convert building to a climbing wall with required grading improvements and safety surfacing material and use for storage.
- Option Two: Make structural repairs and use the building as a storage facility for park fixtures.
- Option Three: Make limited structural repairs based upon structural evaluation report and restore well for sports field irrigation system. **Note:** PWD has sealed the existing wells with concrete slurry to prevent ground water contamination, reactivation of this well unlikely.
- Option Four: Remove structure, cap well head below finish grade and restore area to natural condition.

### **Well House No. 2**

- Option One: Renovate interior to use as a rental shop for canoe's and kayak's and or limited concession.
- Option Two: Use building as a storage facility for park equipment.
- Option Three: Use the building for a visitor information and environmental education center.

Note: Discussion also included the potential reuse of the wells and restoration of the pump house to reactivate the water supply operation as a potential revenue generator for the Town. Follow up discussions with the Portland Water District established that the wells were sealed with concrete slurry to seal the wells to prevent potential ground water contamination.

## **APPENDIX**

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**Stantec Consulting: Chaffin Pond Ecological Characterization Report, 2008**

**Stantec Consulting: Chaffin Pond Ecological Characterization Report, Addenda 2009 on-file with the Town**

**Becker Structural Engineers: Structural Review of Out Buildings, 2011**

**Albert Frick Associates Soils Report: Preliminary Wastewater Disposal Analysis, December 2011**

**Public Survey Results on-file with the Town**

**Summit Environmental Consultants Report on-file with the Town**

## Playscape Features

### Water



### Nets



### Boulders/Climbing



## Sign Graphics



**STANTEC'S NATURAL RESOURCE MAP**



Stantec Consulting Services Inc.  
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 Tel. 207.729.1199  
 Fax. 207.729.2715  
 www.stantec.com



Client/Project  
 Portland Water District  
 Windham, Maine

Figure No.  
 2.0

Title  
 Chaffin Pond  
 Natural Resource Map

## SUMMARY OF ECOLOGICAL REPORT (PAGE 1 OF 6)

(By Stantec Consulting 9/08)

Chaffin Pond, Ecological Characterization Report, Windham, ME

Page 1

### 1.0 INTRODUCTION

Stantec Consulting (Stantec) completed an ecological characterization of the approximately 123-acre Chaffin Pond parcel in Windham, Maine. The project site is located east of Route 302 in the village of North Windham (Figure 1). The project site includes Chaffin Pond (approximately 13 acres) and Outlet Brook. The ecological characterization included an overall characterization of the natural communities, as well as identification of regulated resources present within the project site. Stantec also evaluated the ecological mitigation potential available at the Chaffin Pond site. The identification and evaluation of the natural resources present within the project site included a reconnaissance-level wetland and stream survey; identification of Significant or Essential Wildlife Habitats<sup>1</sup> such as vernal pools or deer wintering areas; and a survey and habitat assessment for rare, threatened, and endangered (RTE) species. The information contained within this report is suitable for preliminary site planning purposes. More detailed information (i.e., a formal wetland delineation and seasonally-appropriate vernal pool evaluations) is generally required for state and federal permitting.

### 2.0 METHODOLOGY

Stantec completed meander surveys throughout the project site in order to characterize and evaluate the natural resources present. During these surveys, Stantec collected data on dominant species composition, wildlife use, habitat condition, and evidence of past disturbance. Representative photographs were taken as appropriate. The locations of any Significant or Essential Wildlife Habitat or other significant feature identified, including RTE plants or natural communities, were located with the use of a Global Positioning System (GPS) receiver and aerial photography interpretation. The approximate wetland and vernal pool boundaries were located with a Trimble Pro-XR® GPS receiver.

Stantec also reviewed *Beginning with Habitat* information and contacted the Maine Department of Inland Fisheries and Wildlife (MDIFW), the Maine Department of Environmental Protection (MDEP), and the Maine Natural Areas Program (MNAP) regarding known occurrences of rare species and Significant Wildlife Habitat within and in the vicinity of the property.

### 3.0 RESULTS

Stantec conducted the field surveys on July 14, 15, and 18, 2008. The following presents a characterization and assessment of the natural communities and significant natural resources present within the site. Natural communities present were classified according to *Natural Landscapes of Maine: A Classification of Vegetated Natural Communities and Ecosystems*.<sup>2</sup> This classification utilizes species composition, topography, and landscape setting to classify the different natural community types present in Maine. Figure 2 includes the locations of natural communities including wetlands, PVPs, and other significant natural resources. It is important to note that the seasonality of the field survey (i.e., mid summer) did not allow for conclusive determinations to be made regarding vernal pools. Representative site photos are included in Appendix A.

#### 3.1 Upland Natural Community Characterization

The dominant upland forest within the project site is characterized as an Oak-Pine Forest. Dominant tree species include red oak (*Quercus rubra*), white pine (*Pinus strobus*), white oak (*Quercus alba*), and American beech (*Fagus grandifolia*). The understory is generally open with regeneration of canopy species scattered throughout. Dominant shrubs include black huckleberry (*Gaylussacia baccata*), lowbush blueberry (*Vaccinium angustifolium*), beaked hazelnut (*Corylus cornuta*), and black cherry

<sup>1</sup> Significant Wildlife Habitats are defined and regulated under the Maine Natural Resources Protection Act (38 M.R.S.A §480-B(10)). Essential Wildlife Habitats are defined and regulated under the Maine Endangered Species Act (12 M.R.S.A §12804, 12806).

<sup>2</sup> Gawler, S.C. and A.R. Cutko. 2004. *Natural Landscapes of Maine: A Classification of Vegetated Natural Communities and Ecosystems (DRAFT)*. Maine Natural Areas Program, Department of Conservation, Augusta, Maine.

## SUMMARY OF ECOLOGICAL REPORT, CONT. (PAGE 2 OF 6)

(By Stantec Consulting 9/08)

Chaffin Pond, Ecological Characterization Report, Windham, ME

Page 2

(*Prunus serotina*). Herbaceous plants include Canada mayflower (*Maianthemum canadense*), bracken fern (*Pteridium aquilinum*), wild sarsaparilla (*Aralia nudicaulis*), bellwort (*Uvularia sessilifolia*), teaberry (*Gaultheria procumbens*), starflower (*Trientalis borealis*), princess-pine (*Lycopodium obscurum*), and Indian cucumber-root (*Medeola virginiana*). Historical timber harvests and fire are evident throughout the site. The upland forests in the northern portion of the project area have a denser understory than the upland forests in the southern portion of the site. These conditions suggest that the forests in the northern portion of the site have been harvested and/or burned more recently.

### 3.2 Wetland Natural Community Characterization

The wetland communities are additionally classified according to the *Classification of Wetlands and Deepwater Habitats of the United States*.<sup>3</sup> The following wetland identifiers correspond to the wetland identifiers on Figure 2.

#### 3.2.1 Wetland 1

Wetland 1 is a large wetland complex that includes forested, scrub-shrub, and emergent wetlands that border Outlet Brook. The dominant wetland community within this wetland complex is a Red Maple-Sensitive Fern Swamp. Red maple (*Acer rubrum*) is the dominant tree species within the wetland. The shrub stratum is well-developed and diverse with highbush blueberry (*Vaccinium corymbosum*), maleberry (*Lyonia ligustrina*), winterberry (*Ilex verticillata*), smooth alder (*Alnus serrulata*), speckled alder (*Alnus incana*), buttonbush (*Cephalanthus occidentalis*), meadowsweet (*Spiraea alba* var. *latifolia*), sweet gale (*Myrica gale*), leatherleaf (*Chamaedaphne calyculata*), and poison sumac (*Toxicodendron vernix*) as the common shrub species. The herbaceous stratum is exceptionally diverse with numerous common and uncommon plant species present. Dominant herbaceous plants include cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), tussock sedge (*Carex stricta*), bluejoint (*Calamagrostis canadensis*), marsh fern (*Thelypteris palustris*), tuckahoe (*Peltandra virginica*), star sedge (*Carex echinata*), lake-bank sedge (*Carex lacustris*), marsh St. Johnswort (*Triadenum virginicum*), and swamp candles (*Lysimachia terrestris*). Many plants that are uncommon in Maine are locally common within this wetland complex. These species include poison sumac, tuckahoe, Virginia chain fern (*Woodwardia virginica*), smooth alder, water willow (*Decodon verticillatus*), and swamp loosestrife (*Lysimachia thyrsiflora*). According to a review of the available *Beginning with Habitat* information, portions of this wetland community has been mapped as an exemplary community by MNAP.

The wetland complex also includes components of a Mixed Graminoid-Shrub Marsh along Outlet Brook. Red maple trees are much more sparse within this community. However, the shrub and herbaceous species diversity is very similar to the forested wetland.

Outlet Brook appears to be largely impounded, as the result of a malfunctioning culvert located under Route 302. As a consequence, the habitat and communities within Outlet Brook are more typical to that of a pond. Rooted, floating, and submerged aquatic plants are common within the impounded waters of Outlet Brook. The dominant species include lesser duckweed (*Lemna minor*), greater duckweed (*Spirodella polyrrhiza*), yellow water-lily (*Nuphar variegata*), an aquatic moss (*Fontinalis* sp.), and muskgrass algae (*Chara* sp.). Algal blooms are abundant throughout the ponded area. The substrate is very mucky. Water depths were approximately 2 to 3 feet deep during the field surveys. Chain pickerel (*Esox niger*), pickerel frog (*Rana palustris*), snapping turtle (*Chelydra serpentina*), beaver (*Castor canadensis*), and painted turtle (*Chrysemys picta*) were observed within the ponded areas.

The outlet stream from Chaffin Pond flows southerly into Outlet Brook. The stream channel is slow flowing with a soft silt-dominated substrate. The stream channel averages 8 to 12 feet in width with approximately 10 to 14 inches of water. Beaver activity has impounded portions of the stream which has resulted in over-bank flooding into the adjacent wetlands.

<sup>3</sup> Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. U.S. Department of the Interior, Washington, D.C.

## SUMMARY OF ECOLOGICAL REPORT, CONT. (PAGE 3 OF 6)

(By Stantec Consulting 9/08)

Chaffin Pond, Ecological Characterization Report, Windham, ME

Page 3

No state listed RTE species were observed during the field surveys within this wetland complex. However, the wetland complex provides suitable habitat for rare species of wildlife such as spotted turtle (*Clemmys guttata*) or Blanding's turtle (*Emydoidea blandingii*). The wetland complex also provides suitable wading bird and waterfowl habitat.

Two potential vernal pools (PVP) were observed within the wetland community near the Chaffin Pond outlet stream. The following describes each pool.

### **Potential Vernal Pool A**

PVP A is an excavated burrow adjacent to the forested wetland. The pool basin is approximately 15 feet by 8 feet in area, with approximately 2 to 3 inches of standing water present at the time of the field survey. Vegetation within the pool basin included royal fern.

### **Potential Vernal Pool B**

PVP B is located adjacent to the outlet stream from Chaffin Pond. The pool is dominated by shrubs of winterberry with herbs of royal fern, bluejoint, lesser duckweed, and jewelweed (*Impatiens capensis*). The pool basin is approximately 10,000 square feet in area and contained approximately 6 to 8 inches of standing water at the time of the field survey. The abundant shrubs and coarse woody debris present within the pool provides potential attachment sites for amphibian egg masses.

### **3.2.2 Wetland 2**

Wetland 2 is a Red Maple-Sensitive Fern Swamp located adjacent to the northern portion of Chaffin Pond. Red maple dominates the tree stratum. Common shrubs include highbush blueberry, silky dogwood (*Cornus amomum*), maleberry, mountain holly (*Nemopanthus mucronatus*), and winterberry. Dominant and common herbaceous plants include cinnamon fern, royal fern, Massachusetts fern (*Thelypteris simulata*), tussock sedge, bluejoint, beggar's ticks (*Bidens* spp.), southern three-lobed bedstraw (*Galium tinctorium*), marsh skullcap (*Scutellaria galericulata*), and Virginia chain fern. A PVP C was located within the wetland community at the base of a fallen tree. The pool basin was small (approximately 40 square feet in area) with approximately 12 inches of standing water at the time of the field survey. Furthermore, the pit and mound microtopography throughout the wetland community may provide several additional small seasonally pooled areas that could potentially provide breeding opportunities for vernal pool dependent species.

Two streams flow southerly through this wetland into Chaffin Pond. Both streams are slow flowing with a soft substrate. Stream widths averaged between 8 and 12 feet wide with water depths between 6 and 14 inches deep at the time of the field survey. Small unidentified minnows were observed within the stream channels. The stream channels become braided and dissipate within the forested wetland before flowing into Chaffin Pond.

### **3.2.3 Wetland 3**

Wetland 3 is a boggy scrub-shrub and emergent Mixed Graminoid-Shrub Marsh located in the northern portion of the project area adjacent to Mud Pond. The wetland is dominated by tussock sedge, leatherleaf, maleberry, and beggar's ticks. Beaver activity has altered the hydrology of the wetland, resulting in inundation in portions of the wetland. Consequently, dead trees of red maple and white pine are located throughout the wetland. Inundated and pooled areas throughout the wetland contain floating aquatic species such as lesser duckweed and common bladderwort (*Utricularia macrorhiza*). Several small unidentified minnows were observed within these inundated areas. The open wetlands provide suitable wading bird and waterfowl habitat.

**SUMMARY OF ECOLOGICAL REPORT, CONT. (PAGE 4 OF 6)**

(By Stantec Consulting 9/08)

**3.2.4 Wetland 4**

Wetland 4 is a small PVP (PVP D) scrub-shrub wetland. The pool basin is isolated within the upland forests. Vegetation within the pool includes buttonbush and wool-grass (*Scirpus cyperinus*). Approximately 3 to 5 inches of standing water was present in the central portion of the pool at the time of the field survey. The vegetation and coarse woody debris within the pool provide potential attachment sites for amphibian egg masses.

**3.2.5 Wetland 5**

Similar to Wetland 4, Wetland 5 is a small and isolated PVP (PVP E) scrub-shrub wetland. Shrubs of winterberry, Labrador-tea (*Rhododendron groenlandicum*), and highbush blueberry as well as herbs of wool-grass, royal fern, and cinnamon fern dominate the wetland area. At the time of the field survey, 4 to 6 inches of standing water was present within the pool. The vegetation within the pool basin provides potential attachment sites for amphibian egg masses.

**3.2.6 Additional Potential Vernal Pools**

Two additional PVPs were identified within the project area. These areas are isolated non-wetland pool basins within the upland forest communities. Each are further described below.

**Potential Vernal Pool F**

PVP F is a natural isolated basin in the central portion of the project area (approximately 900 square feet in area). No vegetation was present within the pool; and as such, it is not considered a wetland area. Approximately 8 inches of standing water was present at the time of the field survey. The substrate of the pool was firm and covered with leaves. Coarse woody debris within the pool provides potential attachment sites for amphibian egg attachment. At the time of the field survey several wood frog (*Rana sylvatica*) metamorphs were present within and around the pool, suggesting that the pool is likely a functioning vernal pool. However, the overall significance of the pool could not be determined at the time of the field survey.

**Potential Vernal Pool G**

PVP G is a small (approximately 300 square feet in area), non-vegetated isolated basin located in the southern portion of the project area. At the time of the field survey, approximately 4 inches of water was present over the leaf-covered substrate. In addition, several wood frog metamorphs were present within the pool suggesting that the pool is likely a functioning vernal pool. However, due to the seasonality of the field survey, the overall significance of the pool could not be determined.

**3.3 Chaffin Pond**

Chaffin Pond is an approximately 13 acre pond that provides warmwater fisheries. Aquatic vegetation is common around the perimeter of the pond and includes yellow water-lily, tapegrass (*Vallisneria americana*), white water-lily (*Nymphaea odorata*), lesser duckweed, tuckahoe, water-willow, and water bulrush (*Schoenoplectus subterminalis*). Waters from Pettingill Pond to the northwest of the project area flow into Chaffin Pond. Chaffin Pond drains southerly into Outlet Brook and eventually into Sebago Lake. Species of fish observed within the pond include largemouth bass (*Micropterus salmoides*) and chain pickerel along with painted turtles. According to the Significant Sand and Gravel Aquifer maps available for the North Windham quadrangle by the Maine Geological Survey, Chaffin Pond is located over a significant groundwater aquifer<sup>4</sup>.

<sup>4</sup> Maine Geological Survey. 1998. Significant Sand and Gravel Aquifers, North Windham Quadrangle, Maine. Open-

## **SUMMARY OF ECOLOGICAL REPORT, CONT. (PAGE 5 OF 6)**

(By Stantec Consulting 9/08)

### **3.4 Summary of Significant Natural Resources**

The project area includes several significant and potentially significant natural resources, including large, intact, and exemplary wetland and aquatic habitats, PVPs, and wading bird and waterfowl habitat. Although no state or federally listed RTE species of plants or wildlife were observed during the field surveys, the wetland communities provide suitable habitat and could potentially support several species of RTE plants and wildlife such as reptiles, amphibians, breeding birds, or invertebrates. **The upland communities are common community types throughout the region.** Based on the site topography, past disturbances, and present species composition, the likelihood of the upland forested communities to support RTE species is low. In general, non-native invasive plant species were not observed within the upland or wetland communities. Only one small patch of the non-native bittersweet nightshade (*Solanum dulcamara*) was observed along Outlet Brook.

The presence of wood frog metamorphs within several of the PVP areas indicates that some of the pools are functioning vernal pools. However, seasonally appropriate surveys (i.e., spring) would be necessary to more accurately assess the viability and functionality of the pools, as to determine if they meet the MDEP definition of a *Significant Vernal Pool*.

Portions of Wetland 1 have been identified as an exemplary natural community by MNAP. While the Red Maple-Sensitive Fern Swamp is a common natural community type in Maine, the overall size, species composition, limited evidence of disturbance, and landscape setting makes this wetland community significant on a statewide level.

**Suitable wading bird and waterfowl habitat is present within the wetland areas along Outlet Brook in Wetland 1 as well as the wetland areas (Wetland 3) around Mud Pond in the northern portion of the project area.** Both wetland areas contain open wetland communities dominated by mixed shrubs and herbs along with a considerable amount of open water. According to the response from the MDIFW, portions of the wetland areas around Mud Pond and Outlet Brook have been mapped as wading bird and waterfowl habitat. Species of wading birds and waterfowl observed during the field surveys include great blue heron (*Ardea herodias*) and black duck (*Anas rubripes*).

Responses from the MDEP, MDIFW and MNAP are included in Appendix A. The MDIFW has noted that Outlet Brook supports wild brook trout (*Salvelinus fontinalis*).

### **3.5 Landscape Setting**

**The project site is located within a larger, contiguous forested landscape approximately 350 acres in size and is nearly continuous to Little Sebago Lake.** This forested block includes small ponds, streams, large wetland complexes, vernal pools, wading bird and waterfowl habitat, and interior forested habitat. The various habitats within the project area site are expected to support a large diversity of wildlife species including large and small mammals, migratory and resident birds, reptiles, amphibians, fish, and invertebrates. **The project area provides aquatic and wetland habitats, early successional habitats, mixed forest edge habitat, and mixed interior forest habitats.** The project area and the adjacent undeveloped forested land provides habitat for species of wildlife that are generally less tolerant of human presence and development. These include species such as ovenbird (*Seiurus aurocapillus*), wood thrush (*Hylocichla mustelina*), bobcat (*Lynx rufus*), mink (*Mustela vison*), and gray fox (*Urocyon cinereoargenteus*).

## **4.0 POTENTIAL MITIGATION OPPORTUNITIES**

The Chaffin Pond project area provides potential mitigation opportunities through preservation, enhancement, and restoration. **The wetland communities associated with Outlet Brook, Chaffin Pond, and Mud Pond include significant wildlife habitats (e.g., wading bird and waterfowl habitat) and an exemplary natural community with several uncommon plant species as well as potential to support**

## **SUMMARY OF ECOLOGICAL REPORT, CONT. (PAGE 6 OF 6)**

(By Stantec Consulting 9/08)

Chaffin Pond, Ecological Characterization Report, Windham, ME

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species of rare, threatened, and endangered wildlife. As such, preservation of these wetland areas along with appropriate buffers will continue to maintain the existing functions and values of these wetland complexes. The project area is located adjacent to a developed landscape. Therefore, introductions of non-native invasive plant species are possible. Such introductions could change the characteristics and lower the overall value of the existing plant and wildlife habitats present within the wetlands and uplands at the project site. Potential invasive species introductions include giant reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), Japanese knotweed (*Fallopia japonica*), Japanese barberry (*Berberis thunbergii*), glossy buckthorn (*Frangula alnus*), Morrow's honeysuckle (*Lonicera morrowii*), and oriental bittersweet (*Celastrus orbiculata*) among others. At the time of the 2008 field surveys, observations of non-native invasive plant species were limited to a single patch of bittersweet nightshade in the wetland along Outlet Brook. Preservation of the wetland communities and the associated buffers should include invasive plant species monitoring. Furthermore, enhancement of the Outlet Brook wetlands can be accomplished through the removal of existing populations of non-native invasive plant species.

Potential preservation opportunities are also possible within the upland communities in order to maintain habitat connectivity between upland and wetland communities including travel corridors between the potential vernal pools.

Outlet Brook appears to have been impounded as a result of malfunctioning culvert located outside of the project area. As such, this provides opportunities to restore the hydrology and fisheries habitat of Outlet Brook to historical conditions.

### **5.0 CONCLUSIONS**

The project site provides valuable wildlife habitat and botanical resources on a local and statewide level. These include several PVPs, wading bird and waterfowl habitat, an exemplary natural community, and interior forest habitat. Although no rare, threatened, or endangered species of plants or wildlife were observed during the field surveys, the wetland communities and aquatic habitats within the project area have moderate potential to support rare, threatened, or endangered species of plants or wildlife. Furthermore, the Chaffin Pond parcel is contiguous with a larger forested block extending northeasterly to Little Sebago Lake. Maintaining this habitat connectivity creates opportunities for wildlife movement throughout the forest, which in turn results in increased ecological viability of the wildlife populations.

The project area includes several mitigation opportunities including preservation, enhancement, and restoration of functions and values of the wetland communities.

To conclusively determine the status of PVPs within the project site, Stantec recommends seasonally-appropriate (i.e., April and May) field surveys to document use by obligate vernal pool species.

MAINE IF&W FISHERY SUMMARY (PAGE 1 OF 4)

Maine Department of Inland  
Fisheries and Wildlife  
358 Shaker Road  
Gray, Maine 04039



Telephone: 207-657-2345 ext.113  
Fax: 207-657-2980  
Email: brian.lewis@maine.gov

John Elias Baldacci, Governor

Roland Martin, Commissioner

September 16, 2008

Jessica Haider  
30 Park Drive  
Topsham, Maine 04086

RE: Chaffin Pond, Windham

Dear Jessica Haider,

I have reviewed your request for fishery resource information, and there are no known threatened/endangered fish species or habitat in the vicinity of the proposed project. The main fisheries resource in the area indicated is Chaffin Pond itself. This pond offers a secluded and undeveloped fishing experience only a stones throw from the most developed portion of Windham. Also of note is the excellent water quality of the pond and its potential to support a high quality stocked brook trout fishery. While the inlet of Chaffin Pond is small and intermittent, the outlet of Chaffin (Outlet Brook) and one of its tributaries support wild brook trout. Also present within the outlined parcel are Upper and Lower Mud ponds. Although Upper Mud Pond has sufficient water quality for coldwater fisheries management, the lack of access and the presence of competing warmwater fish species make such management impractical. Both Mud ponds are shallow and support typical warm water fish communities dominated by bass, chain pickerel, pumpkinseed sunfish, and assorted minnows. Our regional riparian buffer policy is outlined below.

Stream systems are vulnerable to environmental impacts associated with increased development and encroachment. If present, this project should be sensitive to these resource issues by including provisions for riparian buffers and minimizing any other potential stream impacts. Our regional buffer policy requests 100 foot undisturbed buffers along both sides of any stream or stream-associated wetlands. Buffers should be measured from the upland wetland edge of stream-associated wetlands, and if the natural vegetation has been previously altered then restoration may be warranted. This buffer requirement improves erosion/sedimentation problems; reduces thermal impacts; maintains water quality; supplies leaf litter and woody debris for the system; and provides valuable wildlife habitat. Protection of these important riparian functions insures that the overall health of the stream habitat is maintained.

Stream crossings, if applicable, must include provisions for adequate fish passage, and any in-stream work needs to be done between the first of July and the first of October. Project design should minimize the number of stream crossings. If you have any additional questions or concerns then feel free to contact us.

Sincerely,

Brian Lewis  
Fishery Specialist  
MDIFW

MAINE IF&W FISHERY SUMMARY, CONT. (PAGE 2 OF 4)**DRAFT LAKE FISHERY INVESTIGATION (08/03/03)**

**Lake:** Chaffin Pond, Windham (3718)

**Purpose:** Initial lake survey to collect baseline information, and to examine existing fisheries and potential for future stocking programs (Town of Windham considering recreation potential and some form of public access). Data collection effort was also utilized as a training session for an experimental volunteer program using Sebago TU members.

**Regulations:** Open under statewide general law regulations for both openwater and ice fishing seasons.

**Stocking History:** None

**Findings:**Pond Morphology/Physical Character:

-The majority of Chaffin Pond has relatively steep shorelines that quickly slope to deeper water areas. The exceptions are two shallow areas, one located at the southern end of the pond and another in the northeastern corner. There is also a shallow point originating from the southeast shore.

-Maximum and mean depths are 40 feet and 17 feet, respectively.

-Pond substrate was predominantly sand, gravel, and cobble. The predominant point bar featured cobble to boulder sized substrate.

-Emergent, submergent, and floating vegetation was relatively light and located primarily in the shallower areas noted above (see map). In addition, there were also large floating mats of slimy algae located predominantly along the eastern and northeastern shores.

-The inlet, which is the outlet of Pettingill Pond, was dry. However, evidence of toys (i.e. ball and plastic boat) suggests the inlet flows relatively heavy during certain times of the year.

-There is no dam at the outlet. The lack of any inlets and relatively high discharge from the outlet suggests the presence of active springs within the pond.

Riparian Area/Character:

- Upland areas around the pond have a mixture of hardwoods and softwoods of varying age classes with a good percentage of older/mature trees.

- There are no camps on the pond. The only structure was a small, brick building presumably an old pump-house.

-The pond is located only a short distance from downtown Windham, yet it has the feel and character of a remote trout pond.

Water Quality:

-Water clarity was excellent.

-At the time of sampling there was a limited band of cold, oxygenated water available for coldwater fisheries management.

-Large decaying algal mats may be contributing to low dissolved oxygen in the hypolimnion.

## MAINE IF&W FISHERY SUMMARY, CONT. (PAGE 3 OF 4)

~Pond had unusually high pH and alkalinity compared to other local ponds, which may be related to historical water treatments by the water district.

### Existing Fisheries:

- ~One minnow trap was set for 2.7 hours and caught no fish.
- ~One gillnet was set for 2.8 hours and caught 1 12" yellow perch.
- ~Two seine passes yielded 166-LMB 1.4"- 11.4", 2-PKS 1"-2.2"
- ~Observed several larger bass from the canoe including one fish in the 3-4 lb class. Anecdotal reports suggest anglers catch a fair number of 8-14" bass.

### Access:

- ~Existing access road to the pond is currently gated and there is no public access allowed. Yet, there was evidence of several well-used trails along the pond and signs of fishing activity (i.e. bobbers, worm containers).
- ~Mark Robinson of Windham Parks and Recreation called us last spring and explained the water district had granted the property to the Town. He was exploring potential recreational opportunities for the property including the possibility of private/State stocking programs.

### Conclusions:

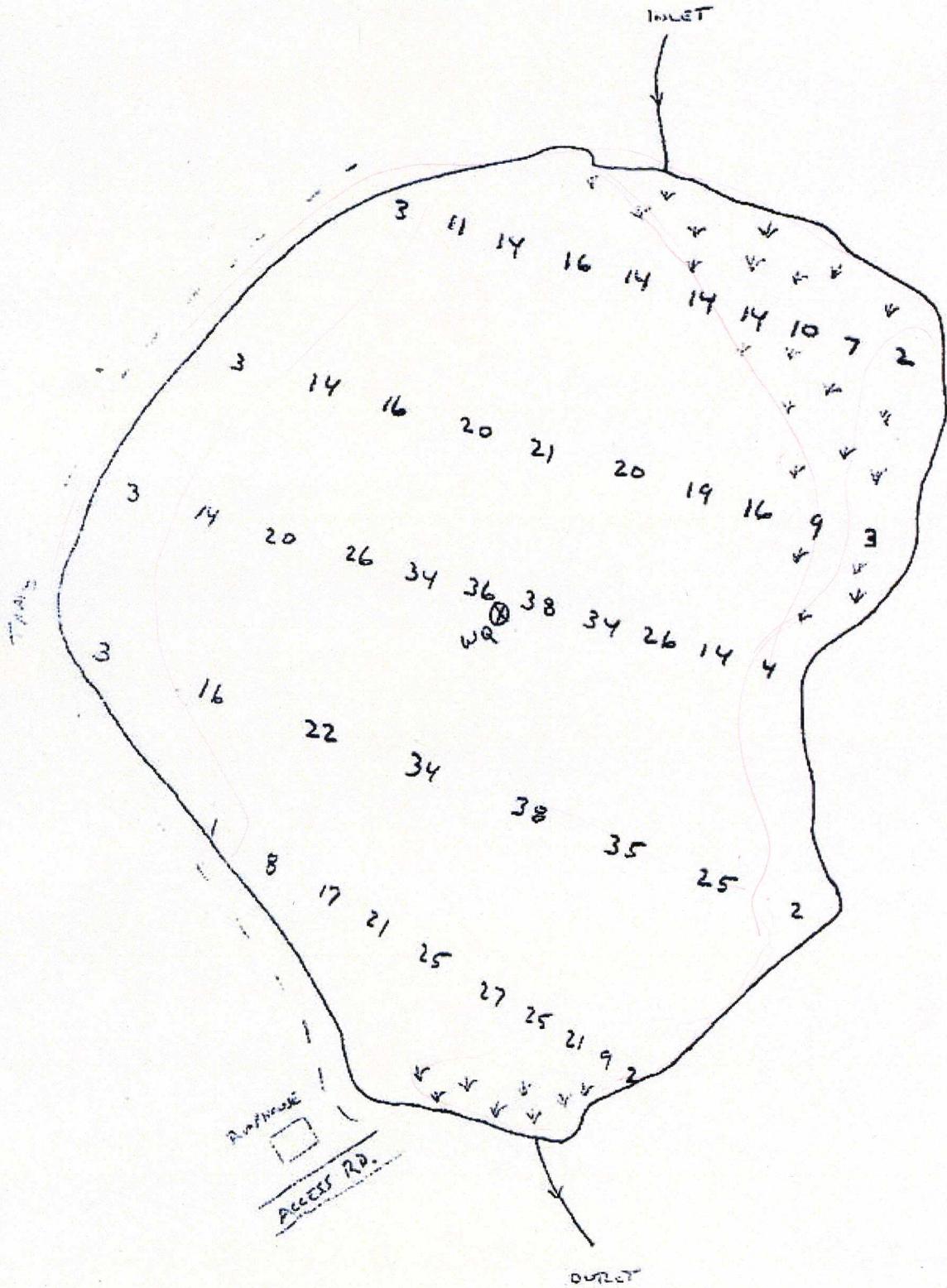
- ~The pond is currently providing a bass fishery, but abundance and size quality appears to be limited by existing conditions.
- ~Late summer water quality is marginal for coldwater fisheries management, but there is a small band of cold, oxygenated water available. On the other hand, the potential presence of springs in the pond would benefit coldwater species and may provide a thermal refuge. MDIFW would consider an annual stocking program if suitable public access was obtained.
- ~The occurrence of warmwater fish populations would compete with salmonids and likely preclude a quality put-and-grow trout fishery. The pond has many characteristics making it suitable for chemical reclamation (i.e. single landowner, no camps); however, unfortunately there is no way to overcome the potential for undesirable species dropping down from Pettingill Pond.

### Recommendations:

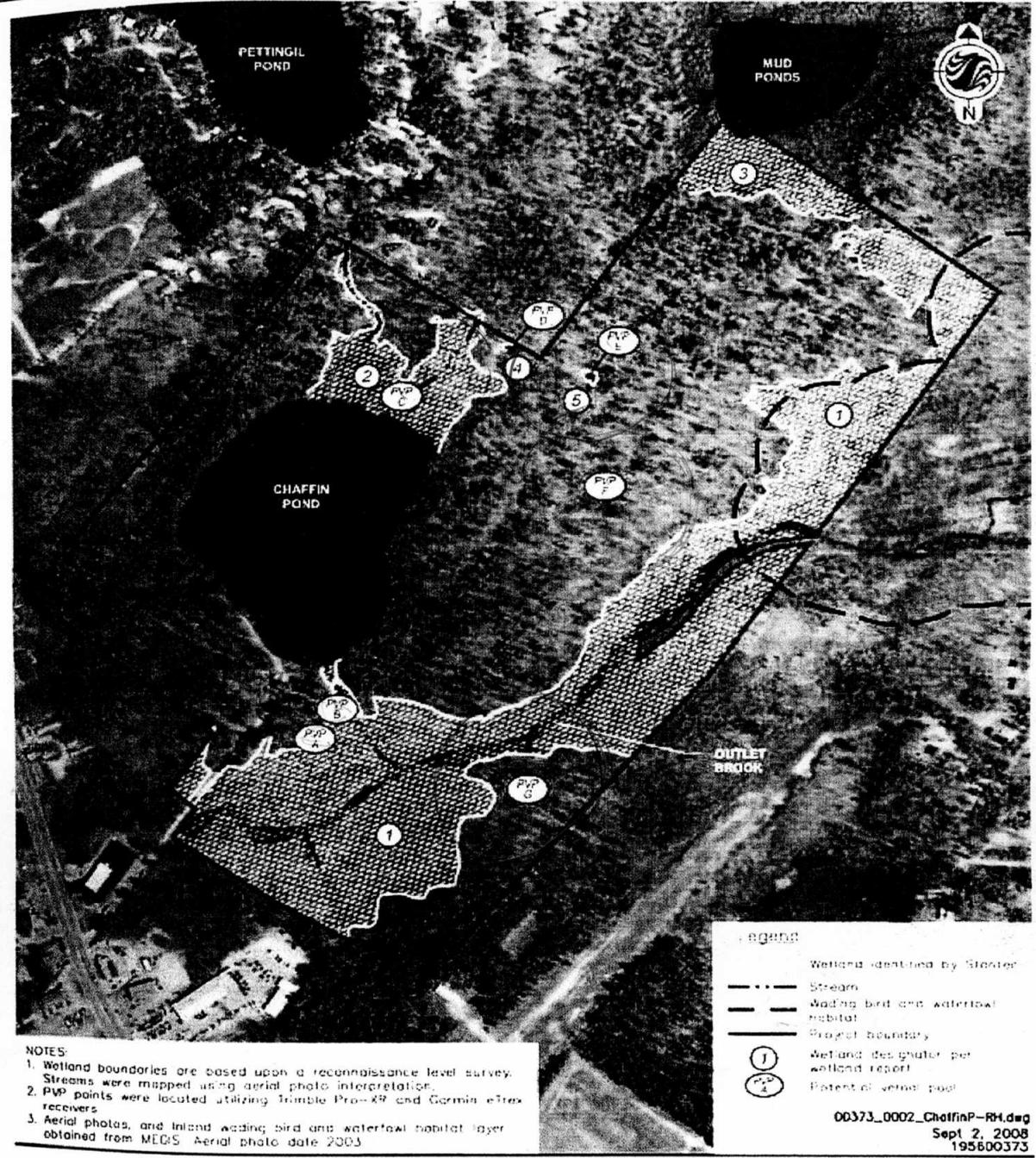
- ~Once the Town works access and parking issues initiate a BKT stocking program, 200 SY BKT annually. Initial stockings should be relatively light to fully explore growth and holdover potential. Evaluate the fishery within 3 years after stocking.
- ~Limited growth and summer holdover would likely shift management to a put-and-take program. This would likely mean higher spring stocking rates, and potentially the addition of a fall stocking program with AFF BKT and a small number of FY BKT to provide winter angling. If this option is pursued, this water is potentially a good candidate for higher stocking rate(s) and unscheduled fish due to its proximity to large population centers, and its handicapped & shore accessibility.

**Prepared by:** James Pellerin

MAINE IF&W FISHERY SUMMARY, CONT. (PAGE 4 OF 4)



# STANTEC'S NATURAL RESOURCE MAP



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Client/Project  
Portland Water District  
Windham, Maine

Figure No.  
2.0

Title  
Chaffin Pond  
Natural Resource Map

## SUMMARY OF ECOLOGICAL REPORT (PAGE 1 OF 6)

(By Stantec Consulting 9/08)

Chaffin Pond, Ecological Characterization Report, Windham, ME

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### 1.0 INTRODUCTION

Stantec Consulting (Stantec) completed an ecological characterization of the approximately 123-acre Chaffin Pond parcel in Windham, Maine. The project site is located east of Route 302 in the village of North Windham (Figure 1). The project site includes Chaffin Pond (approximately 13 acres) and Outlet Brook. The ecological characterization included an overall characterization of the natural communities, as well as identification of regulated resources present within the project site. Stantec also evaluated the ecological mitigation potential available at the Chaffin Pond site. The identification and evaluation of the natural resources present within the project site included a reconnaissance-level wetland and stream survey; identification of Significant or Essential Wildlife Habitats<sup>1</sup> such as vernal pools or deer wintering areas; and a survey and habitat assessment for rare, threatened, and endangered (RTE) species. The information contained within this report is suitable for preliminary site planning purposes. More detailed information (i.e., a formal wetland delineation and seasonally-appropriate vernal pool evaluations) is generally required for state and federal permitting.

### 2.0 METHODOLOGY

Stantec completed meander surveys throughout the project site in order to characterize and evaluate the natural resources present. During these surveys, Stantec collected data on dominant species composition, wildlife use, habitat condition, and evidence of past disturbance. Representative photographs were taken as appropriate. The locations of any Significant or Essential Wildlife Habitat or other significant feature identified, including RTE plants or natural communities, were located with the use of a Global Positioning System (GPS) receiver and aerial photography interpretation. The approximate wetland and vernal pool boundaries were located with a Trimble Pro-XR® GPS receiver.

Stantec also reviewed *Beginning with Habitat* information and contacted the Maine Department of Inland Fisheries and Wildlife (MDIFW), the Maine Department of Environmental Protection (MDEP), and the Maine Natural Areas Program (MNAP) regarding known occurrences of rare species and Significant Wildlife Habitat within and in the vicinity of the property.

### 3.0 RESULTS

Stantec conducted the field surveys on July 14, 15, and 18, 2008. The following presents a characterization and assessment of the natural communities and significant natural resources present within the site. Natural communities present were classified according to *Natural Landscapes of Maine: A Classification of Vegetated Natural Communities and Ecosystems*.<sup>2</sup> This classification utilizes species composition, topography, and landscape setting to classify the different natural community types present in Maine. Figure 2 includes the locations of natural communities including wetlands, PVPs, and other significant natural resources. It is important to note that the seasonality of the field survey (i.e., mid summer) did not allow for conclusive determinations to be made regarding vernal pools. Representative site photos are included in Appendix A.

#### 3.1 Upland Natural Community Characterization

The dominant upland forest within the project site is characterized as an Oak-Pine Forest. Dominant tree species include red oak (*Quercus rubra*), white pine (*Pinus strobus*), white oak (*Quercus alba*), and American beech (*Fagus grandifolia*). The understory is generally open with regeneration of canopy species scattered throughout. Dominant shrubs include black huckleberry (*Gaylussacia baccata*), lowbush blueberry (*Vaccinium angustifolium*), beaked hazelnut (*Corylus cornuta*), and black cherry

<sup>1</sup> Significant Wildlife Habitats are defined and regulated under the Maine Natural Resources Protection Act (38 M.R.S.A §480-B(10)). Essential Wildlife Habitats are defined and regulated under the Maine Endangered Species Act (12 M.R.S.A §12804, 12806).

<sup>2</sup> Gawler, S.C. and A.R. Cutko. 2004. *Natural Landscapes of Maine: A Classification of Vegetated Natural Communities and Ecosystems (DRAFT)*. Maine Natural Areas Program, Department of Conservation, Augusta, Maine.

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(*Prunus serotina*). Herbaceous plants include Canada mayflower (*Maianthemum canadense*), bracken fern (*Pteridium aquilinum*), wild sarsaparilla (*Aralia nudicaulis*), bellwort (*Uvularia sessilifolia*), teaberry (*Gaultheria procumbens*), starflower (*Trientalis borealis*), princess-pine (*Lycopodium obscurum*), and Indian cucumber-root (*Medeola virginiana*). Historical timber harvests and fire are evident throughout the site. The upland forests in the northern portion of the project area have a denser understory than the upland forests in the southern portion of the site. These conditions suggest that the forests in the northern portion of the site have been harvested and/or burned more recently.

### 3.2 Wetland Natural Community Characterization

The wetland communities are additionally classified according to the *Classification of Wetlands and Deepwater Habitats of the United States*.<sup>3</sup> The following wetland identifiers correspond to the wetland identifiers on Figure 2.

#### 3.2.1 Wetland 1

Wetland 1 is a large wetland complex that includes forested, scrub-shrub, and emergent wetlands that border Outlet Brook. The dominant wetland community within this wetland complex is a Red Maple-Sensitive Fern Swamp. Red maple (*Acer rubrum*) is the dominant tree species within the wetland. The shrub stratum is well-developed and diverse with highbush blueberry (*Vaccinium corymbosum*), maleberry (*Lyonia ligustrina*), winterberry (*Ilex verticillata*), smooth alder (*Alnus serrulata*), speckled alder (*Alnus incana*), buttonbush (*Cephalanthus occidentalis*), meadowsweet (*Spiraea alba* var. *latifolia*), sweet gale (*Myrica gale*), leatherleaf (*Chamaedaphne calyculata*), and poison sumac (*Toxicodendron vernix*) as the common shrub species. The herbaceous stratum is exceptionally diverse with numerous common and uncommon plant species present. Dominant herbaceous plants include cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), tussock sedge (*Carex stricta*), bluejoint (*Calamagrostis canadensis*), marsh fern (*Thelypteris palustris*), tuckahoe (*Peltandra virginica*), star sedge (*Carex echinata*), lake-bank sedge (*Carex lacustris*), marsh St. Johnswort (*Triadenum virginicum*), and swamp candles (*Lysimachia terrestris*). Many plants that are uncommon in Maine are locally common within this wetland complex. These species include poison sumac, tuckahoe, Virginia chain fern (*Woodwardia virginica*), smooth alder, water willow (*Decodon verticillatus*), and swamp loosestrife (*Lysimachia thyrsiflora*). According to a review of the available *Beginning with Habitat* information, portions of this wetland community has been mapped as an exemplary community by MNAP.

The wetland complex also includes components of a Mixed Graminoid-Shrub Marsh along Outlet Brook. Red maple trees are much more sparse within this community. However, the shrub and herbaceous species diversity is very similar to the forested wetland.

Outlet Brook appears to be largely impounded, as the result of a malfunctioning culvert located under Route 302. As a consequence, the habitat and communities within Outlet Brook are more typical to that of a pond. Rooted, floating, and submerged aquatic plants are common within the impounded waters of Outlet Brook. The dominant species include lesser duckweed (*Lemna minor*), greater duckweed (*Spirodella polyrrhiza*), yellow water-lily (*Nuphar variegata*), an aquatic moss (*Fontinalis* sp.), and muskgrass algae (*Chara* sp.). Algal blooms are abundant throughout the ponded area. The substrate is very mucky. Water depths were approximately 2 to 3 feet deep during the field surveys. Chain pickerel (*Esox niger*), pickerel frog (*Rana palustris*), snapping turtle (*Chelydra serpentina*), beaver (*Castor canadensis*), and painted turtle (*Chrysemys picta*) were observed within the ponded areas.

The outlet stream from Chaffin Pond flows southerly into Outlet Brook. The stream channel is slow flowing with a soft silt-dominated substrate. The stream channel averages 8 to 12 feet in width with approximately 10 to 14 inches of water. Beaver activity has impounded portions of the stream which has resulted in over-bank flooding into the adjacent wetlands.

<sup>3</sup> Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. U.S. Department of the Interior, Washington, D.C.

## SUMMARY OF ECOLOGICAL REPORT, CONT. (PAGE 3 OF 6)

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No state listed RTE species were observed during the field surveys within this wetland complex. However, the wetland complex provides suitable habitat for rare species of wildlife such as spotted turtle (*Clemmys guttata*) or Blanding's turtle (*Emydoidea blandingii*). The wetland complex also provides suitable wading bird and waterfowl habitat.

Two potential vernal pools (PVP) were observed within the wetland community near the Chaffin Pond outlet stream. The following describes each pool.

### *Potential Vernal Pool A*

PVP A is an excavated burrow adjacent to the forested wetland. The pool basin is approximately 15 feet by 8 feet in area, with approximately 2 to 3 inches of standing water present at the time of the field survey. Vegetation within the pool basin included royal fern.

### *Potential Vernal Pool B*

PVP B is located adjacent to the outlet stream from Chaffin Pond. The pool is dominated by shrubs of winterberry with herbs of royal fern, bluejoint, lesser duckweed, and jewelweed (*Impatiens capensis*). The pool basin is approximately 10,000 square feet in area and contained approximately 6 to 8 inches of standing water at the time of the field survey. The abundant shrubs and coarse woody debris present within the pool provides potential attachment sites for amphibian egg masses.

### 3.2.2 Wetland 2

Wetland 2 is a Red Maple-Sensitive Fern Swamp located adjacent to the northern portion of Chaffin Pond. Red maple dominates the tree stratum. Common shrubs include highbush blueberry, silky dogwood (*Cornus amomum*), maleberry, mountain holly (*Nemopanthus mucronatus*), and winterberry. Dominant and common herbaceous plants include cinnamon fern, royal fern, Massachusetts fern (*Thelypteris simulata*), tussock sedge, bluejoint, beggar's ticks (*Bidens* spp.), southern three-lobed bedstraw (*Galium tinctorium*), marsh skullcap (*Scutellaria galericulata*), and Virginia chain fern. A PVP C was located within the wetland community at the base of a fallen tree. The pool basin was small (approximately 40 square feet in area) with approximately 12 inches of standing water at the time of the field survey. Furthermore, the pit and mound microtopography throughout the wetland community may provide several additional small seasonally pooled areas that could potentially provide breeding opportunities for vernal pool dependent species.

Two streams flow southerly through this wetland into Chaffin Pond. Both streams are slow flowing with a soft substrate. Stream widths averaged between 8 and 12 feet wide with water depths between 6 and 14 inches deep at the time of the field survey. Small unidentified minnows were observed within the stream channels. The stream channels become braided and dissipate within the forested wetland before flowing into Chaffin Pond.

### 3.2.3 Wetland 3

Wetland 3 is a boggy scrub-shrub and emergent Mixed Graminoid-Shrub Marsh located in the northern portion of the project area adjacent to Mud Pond. The wetland is dominated by tussock sedge, leatherleaf, maleberry, and beggar's ticks. Beaver activity has altered the hydrology of the wetland, resulting in inundation in portions of the wetland. Consequently, dead trees of red maple and white pine are located throughout the wetland. Inundated and pooled areas throughout the wetland contain floating aquatic species such as lesser duckweed and common bladderwort (*Utricularia macrorhiza*). Several small unidentified minnows were observed within these inundated areas. The open wetlands provide suitable wading bird and waterfowl habitat.

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### 3.2.4 Wetland 4

Wetland 4 is a small PVP (PVP D) scrub-shrub wetland. The pool basin is isolated within the upland forests. Vegetation within the pool includes buttonbush and wool-grass (*Scirpus cyperinus*). Approximately 3 to 5 inches of standing water was present in the central portion of the pool at the time of the field survey. The vegetation and coarse woody debris within the pool provide potential attachment sites for amphibian egg masses.

### 3.2.5 Wetland 5

Similar to Wetland 4, Wetland 5 is a small and isolated PVP (PVP E) scrub-shrub wetland. Shrubs of winterberry, Labrador-tea (*Rhododendron groenlandicum*), and highbush blueberry as well as herbs of wool-grass, royal fern, and cinnamon fern dominate the wetland area. At the time of the field survey, 4 to 6 inches of standing water was present within the pool. The vegetation within the pool basin provides potential attachment sites for amphibian egg masses.

### 3.2.6 Additional Potential Vernal Pools

Two additional PVPs were identified within the project area. These areas are isolated non-wetland pool basins within the upland forest communities. Each are further described below.

#### *Potential Vernal Pool F*

PVP F is a natural isolated basin in the central portion of the project area (approximately 900 square feet in area). No vegetation was present within the pool; and as such, it is not considered a wetland area. Approximately 8 inches of standing water was present at the time of the field survey. The substrate of the pool was firm and covered with leaves. Coarse woody debris within the pool provides potential attachment sites for amphibian egg attachment. At the time of the field survey several wood frog (*Rana sylvatica*) metamorphs were present within and around the pool, suggesting that the pool is likely a functioning vernal pool. However, the overall significance of the pool could not be determined at the time of the field survey.

#### *Potential Vernal Pool G*

PVP G is a small (approximately 300 square feet in area), non-vegetated isolated basin located in the southern portion of the project area. At the time of the field survey, approximately 4 inches of water was present over the leaf-covered substrate. In addition, several wood frog metamorphs were present within the pool suggesting that the pool is likely a functioning vernal pool. However, due to the seasonality of the field survey, the overall significance of the pool could not be determined.

### 3.3 Chaffin Pond

Chaffin Pond is an approximately 13 acre pond that provides warmwater fisheries. Aquatic vegetation is common around the perimeter of the pond and includes yellow water-lily, tapegrass (*Vallisneria americana*), white water-lily (*Nymphaea odorata*), lesser duckweed, tuckahoe, water-willow, and water bulrush (*Schoenoplectus subterminalis*). Waters from Pettingill Pond to the northwest of the project area flow into Chaffin Pond. Chaffin Pond drains southerly into Outlet Brook and eventually into Sebago Lake. Species of fish observed within the pond include largemouth bass (*Micropterus salmoides*) and chain pickerel along with painted turtles. According to the Significant Sand and Gravel Aquifer maps available for the North Windham quadrangle by the Maine Geological Survey, Chaffin Pond is located over a significant groundwater aquifer<sup>4</sup>.

<sup>4</sup> Maine Geological Survey. 1998. Significant Sand and Gravel Aquifers, North Windham Quadrangle, Maine. Open-

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### 3.4 Summary of Significant Natural Resources

The project area includes several significant and potentially significant natural resources, including large, intact, and exemplary wetland and aquatic habitats, PVPs, and wading bird and waterfowl habitat. Although no state or federally listed RTE species of plants or wildlife were observed during the field surveys, the wetland communities provide suitable habitat and could potentially support several species of RTE plants and wildlife such as reptiles, amphibians, breeding birds, or invertebrates. The upland communities are common community types throughout the region. Based on the site topography, past disturbances, and present species composition, the likelihood of the upland forested communities to support RTE species is low. In general, non-native invasive plant species were not observed within the upland or wetland communities. Only one small patch of the non-native bittersweet nightshade (*Solanum dulcamara*) was observed along Outlet Brook.

The presence of wood frog metamorphs within several of the PVP areas indicates that some of the pools are functioning vernal pools. However, seasonally appropriate surveys (i.e., spring) would be necessary to more accurately assess the viability and functionality of the pools, as to determine if they meet the MDEP definition of a *Significant Vernal Pool*.

Portions of Wetland 1 have been identified as an exemplary natural community by MNAP. While the Red Maple-Sensitive Fern Swamp is a common natural community type in Maine, the overall size, species composition, limited evidence of disturbance, and landscape setting makes this wetland community significant on a statewide level.

Suitable wading bird and waterfowl habitat is present within the wetland areas along Outlet Brook in Wetland 1 as well as the wetland areas (Wetland 3) around Mud Pond in the northern portion of the project area. Both wetland areas contain open wetland communities dominated by mixed shrubs and herbs along with a considerable amount of open water. According to the response from the MDIFW, portions of the wetland areas around Mud Pond and Outlet Brook have been mapped as wading bird and waterfowl habitat. Species of wading birds and waterfowl observed during the field surveys include great blue heron (*Ardea herodias*) and black duck (*Anas rubripes*).

Responses from the MDEP, MDIFW and MNAP are included in Appendix A. The MDIFW has noted that Outlet Brook supports wild brook trout (*Salvelinus fontinalis*).

### 3.5 Landscape Setting

The project site is located within a larger, contiguous forested landscape approximately 350 acres in size and is nearly continuous to Little Sebago Lake. This forested block includes small ponds, streams, large wetland complexes, vernal pools, wading bird and waterfowl habitat, and interior forested habitat. The various habitats within the project area site are expected to support a large diversity of wildlife species including large and small mammals, migratory and resident birds, reptiles, amphibians, fish, and invertebrates. The project area provides aquatic and wetland habitats, early successional habitats, mixed forest edge habitat, and mixed interior forest habitats. The project area and the adjacent undeveloped forested land provides habitat for species of wildlife that are generally less tolerant of human presence and development. These include species such as ovenbird (*Seiurus aurocapillus*), wood thrush (*Hylocichla mustelina*), bobcat (*Lynx rufus*), mink (*Mustela vison*), and gray fox (*Urocyon cinereoargenteus*).

## 4.0 POTENTIAL MITIGATION OPPORTUNITIES

The Chaffin Pond project area provides potential mitigation opportunities through preservation, enhancement, and restoration. The wetland communities associated with Outlet Brook, Chaffin Pond, and Mud Pond include significant wildlife habitats (e.g., wading bird and waterfowl habitat) and an exemplary natural community with several uncommon plant species as well as potential to support

File No. 98-159. Available online: <http://www.state.me.us/doc/nrimc/mgs/pubs/online/aquifers/aquifers-ad.htm>

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species of rare, threatened, and endangered wildlife. As such, preservation of these wetland areas along with appropriate buffers will continue to maintain the existing functions and values of these wetland complexes. The project area is located adjacent to a developed landscape. Therefore, introductions of non-native invasive plant species are possible. Such introductions could change the characteristics and lower the overall value of the existing plant and wildlife habitats present within the wetlands and uplands at the project site. Potential invasive species introductions include giant reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), Japanese knotweed (*Fallopia japonica*), Japanese barberry (*Berberis thunbergii*), glossy buckthorn (*Frangula alnus*), Morrow's honeysuckle (*Lonicera morrowii*), and oriental bittersweet (*Celastrus orbiculata*) among others. At the time of the 2008 field surveys, observations of non-native invasive plant species were limited to a single patch of bittersweet nightshade in the wetland along Outlet Brook. Preservation of the wetland communities and the associated buffers should include invasive plant species monitoring. Furthermore, enhancement of the Outlet Brook wetlands can be accomplished through the removal of existing populations of non-native invasive plant species.

Potential preservation opportunities are also possible within the upland communities in order to maintain habitat connectivity between upland and wetland communities including travel corridors between the potential vernal pools.

Outlet Brook appears to have been impounded as a result of malfunctioning culvert located outside of the project area. As such, this provides opportunities to restore the hydrology and fisheries habitat of Outlet Brook to historical conditions.

### 5.0 CONCLUSIONS

The project site provides valuable wildlife habitat and botanical resources on a local and statewide level. These include several PVPs, wading bird and waterfowl habitat, an exemplary natural community, and interior forest habitat. Although no rare, threatened, or endangered species of plants or wildlife were observed during the field surveys, the wetland communities and aquatic habitats within the project area have moderate potential to support rare, threatened, or endangered species of plants or wildlife. Furthermore, the Chaffin Pond parcel is contiguous with a larger forested block extending northeasterly to Little Sebago Lake. Maintaining this habitat connectivity creates opportunities for wildlife movement throughout the forest, which in turn results in increased ecological viability of the wildlife populations.

The project area includes several mitigation opportunities including preservation, enhancement, and restoration of functions and values of the wetland communities.

To conclusively determine the status of PVPs within the project site, Stantec recommends seasonally-appropriate (i.e., April and May) field surveys to document use by obligate vernal pool species.

MAINE IF&W FISHERY SUMMARY (PAGE 1 OF 4)

Maine Department of Inland  
Fisheries and Wildlife  
358 Shaker Road  
Gray, Maine 04039



Telephone: 207-657-2345 ext.113  
Fax: 207-657-2980  
Email: brian.lewis@maine.gov

John Elias Baldacci, Governor

Roland Martin, Commissioner

September 16, 2008

Jessica Haider  
30 Park Drive  
Topsham, Maine 04086

RE: Chaffin Pond, Windham

Dear Jessica Haider,

I have reviewed your request for fishery resource information, and there are no known threatened/endangered fish species or habitat in the vicinity of the proposed project. The main fisheries resource in the area indicated is Chaffin Pond itself. This pond offers a secluded and undeveloped fishing experience only a stones throw from the most developed portion of Windham. Also of note is the excellent water quality of the pond and its potential to support a high quality stocked brook trout fishery. While the inlet of Chaffin Pond is small and intermittent, the outlet of Chaffin (Outlet Brook) and one of its tributaries support wild brook trout. Also present within the outlined parcel are Upper and Lower Mud ponds. Although Upper Mud Pond has sufficient water quality for coldwater fisheries management, the lack of access and the presence of competing warmwater fish species make such management impractical. Both Mud ponds are shallow and support typical warm water fish communities dominated by bass, chain pickerel, pumpkinseed sunfish, and assorted minnows. Our regional riparian buffer policy is outlined below.

Stream systems are vulnerable to environmental impacts associated with increased development and encroachment. If present, this project should be sensitive to these resource issues by including provisions for riparian buffers and minimizing any other potential stream impacts. Our regional buffer policy requests 100 foot undisturbed buffers along both sides of any stream or stream-associated wetlands. Buffers should be measured from the upland wetland edge of stream-associated wetlands, and if the natural vegetation has been previously altered then restoration may be warranted. This buffer requirement improves erosion/sedimentation problems; reduces thermal impacts; maintains water quality; supplies leaf litter and woody debris for the system; and provides valuable wildlife habitat. Protection of these important riparian functions insures that the overall health of the stream habitat is maintained.

Stream crossings, if applicable, must include provisions for adequate fish passage, and any in-stream work needs to be done between the first of July and the first of October. Project design should minimize the number of stream crossings. If you have any additional questions or concerns then feel free to contact us.

Sincerely,

Brian Lewis  
Fishery Specialist  
MDIFW

MAINE IF&W FISHERY SUMMARY, CONT. (PAGE 2 OF 4)**DRAFT LAKE FISHERY INVESTIGATION (08/03/03)**

**Lake:** Chaffin Pond, Windham (3718)

**Purpose:** Initial lake survey to collect baseline information, and to examine existing fisheries and potential for future stocking programs (Town of Windham considering recreation potential and some form of public access). Data collection effort was also utilized as a training session for an experimental volunteer program using Sebago TU members.

**Regulations:** Open under statewide general law regulations for both openwater and ice fishing seasons.

**Stocking History:** None

**Findings:**Pond Morphology/Physical Character:

- The majority of Chaffin Pond has relatively steep shorelines that quickly slope to deeper water areas. The exceptions are two shallow areas, one located at the southern end of the pond and another in the northeastern corner. There is also a shallow point originating from the southeast shore.
- Maximum and mean depths are 40 feet and 17 feet, respectively.
- Pond substrate was predominantly sand, gravel, and cobble. The predominant point bar featured cobble to boulder sized substrate.
- Emergent, submergent, and floating vegetation was relatively light and located primarily in the shallower areas noted above (see map). In addition, there were also large floating mats of slimy algae located predominantly along the eastern and northeastern shores.
- The inlet, which is the outlet of Pettingill Pond, was dry. However, evidence of toys (i.e. ball and plastic boat) suggests the inlet flows relatively heavy during certain times of the year.
- There is no dam at the outlet. The lack of any inlets and relatively high discharge from the outlet suggests the presence of active springs within the pond.

Riparian Area/Character:

- Upland areas around the pond have a mixture of hardwoods and softwoods of varying age classes with a good percentage of older/mature trees.
- There are no camps on the pond. The only structure was a small, brick building presumably an old pump-house.
- The pond is located only a short distance from downtown Windham, yet it has the feel and character of a remote trout pond.

Water Quality:

- Water clarity was excellent.
- At the time of sampling there was a limited band of cold, oxygenated water available for coldwater fisheries management.
- Large decaying algal mats may be contributing to low dissolved oxygen in the hypolimnion.

**MAINE IF&W FISHERY SUMMARY, CONT. (PAGE 3 OF 4)**

-Pond had unusually high pH and alkalinity compared to other local ponds, which may be related to historical water treatments by the water district.

**Existing Fisheries:**

- One minnow trap was set for 2.7 hours and caught no fish.
- One gillnet was set for 2.8 hours and caught 1 12" yellow perch.
- Two seine passes yielded 166-LMB 1.4"- 11.4", 2-PKS 1"-2.2"
- Observed several larger bass from the canoe including one fish in the 3-4 lb class. Anecdotal reports suggest anglers catch a fair number of 8-14" bass.

**Access:**

- Existing access road to the pond is currently gated and there is no public access allowed. Yet, there was evidence of several well-used trails along the pond and signs of fishing activity (i.e. bobbers, worm containers).
- Mark Robinson of Windham Parks and Recreation called us last spring and explained the water district had granted the property to the Town. He was exploring potential recreational opportunities for the property including the possibility of private/State stocking programs.

**Conclusions:**

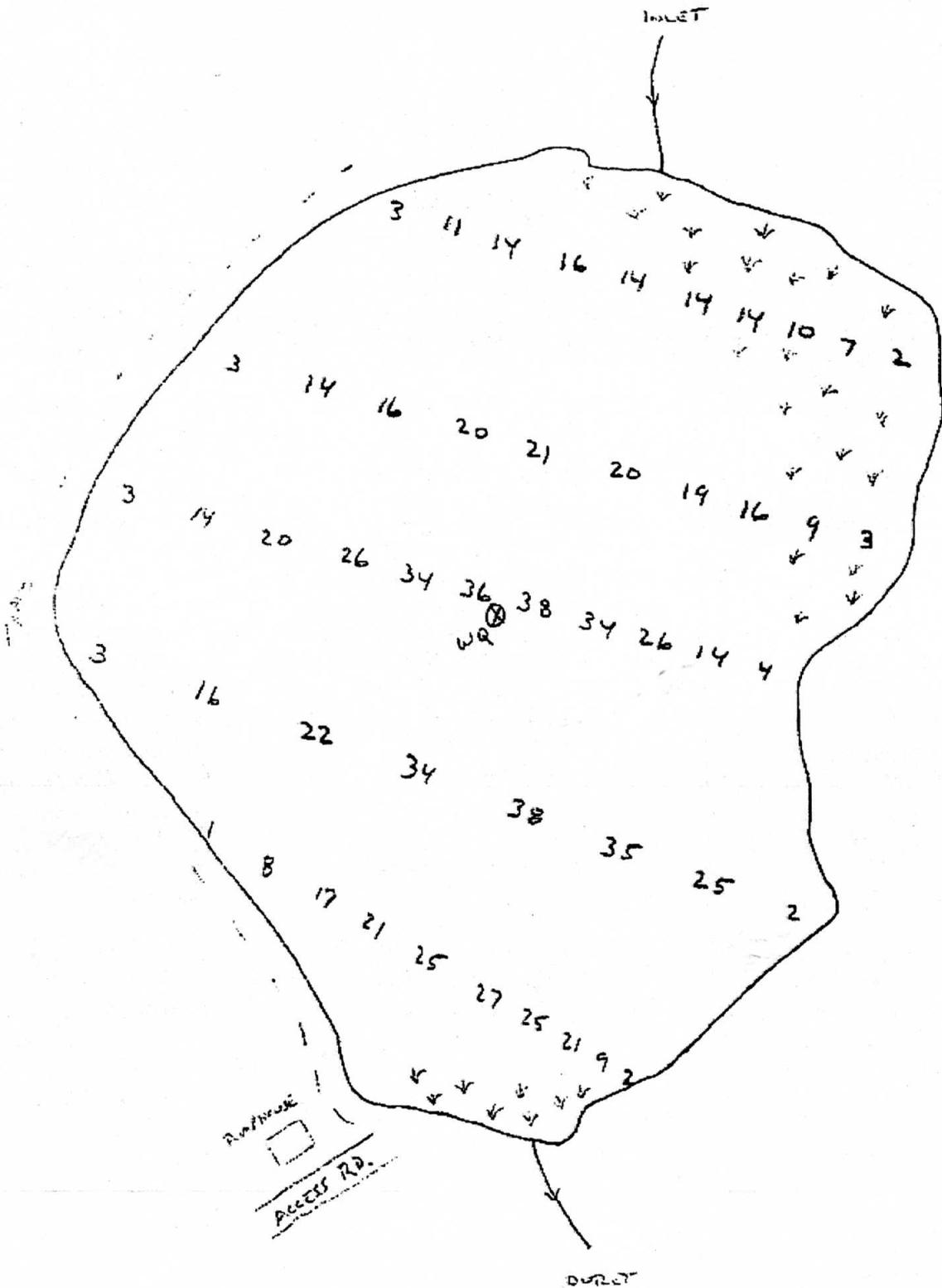
- The pond is currently providing a bass fishery, but abundance and size quality appears to be limited by existing conditions.
- Late summer water quality is marginal for coldwater fisheries management, but there is a small band of cold, oxygenated water available. On the other hand, the potential presence of springs in the pond would benefit coldwater species and may provide a thermal refuge. MDIFW would consider an annual stocking program if suitable public access was obtained.
- The occurrence of warmwater fish populations would compete with salmonids and likely preclude a quality put-and-grow trout fishery. The pond has many characteristics making it suitable for chemical reclamation (i.e. single landowner, no camps); however, unfortunately there is no way to overcome the potential for undesirable species dropping down from Pettingill Pond.

**Recommendations:**

- Once the Town works access and parking issues initiate a BKT stocking program, 200 SY BKT annually. Initial stockings should be relatively light to fully explore growth and holdover potential. Evaluate the fishery within 3 years after stocking.
- Limited growth and summer holdover would likely shift management to a put-and-take program. This would likely mean higher spring stocking rates, and potentially the addition of a fall stocking program with AFF BKT and a small number of FY BKT to provide winter angling. If this option is pursued, this water is potentially a good candidate for higher stocking rate(s) and unscheduled fish due to its proximity to large population centers, and its handicapped & shore accessibility.

**Prepared by: James Pellerin**

MAINE IF&W FISHERY SUMMARY, CONT. (PAGE 4 OF 4)



**SITE IMPROVEMENTS**

GROUND COVER: Mixed natural growth woodland reportedly "managed" by the Town of Windham as an outdoor passive recreation area.

## ONSITE:

WATER SOURCE None noted or reported

SEPTIC None noted or reported

LANDSCAPING: None

DRIVEWAY, PARKING: Single lane

YARD LIGHTING: None beyond minimal at road access gate at Route #302

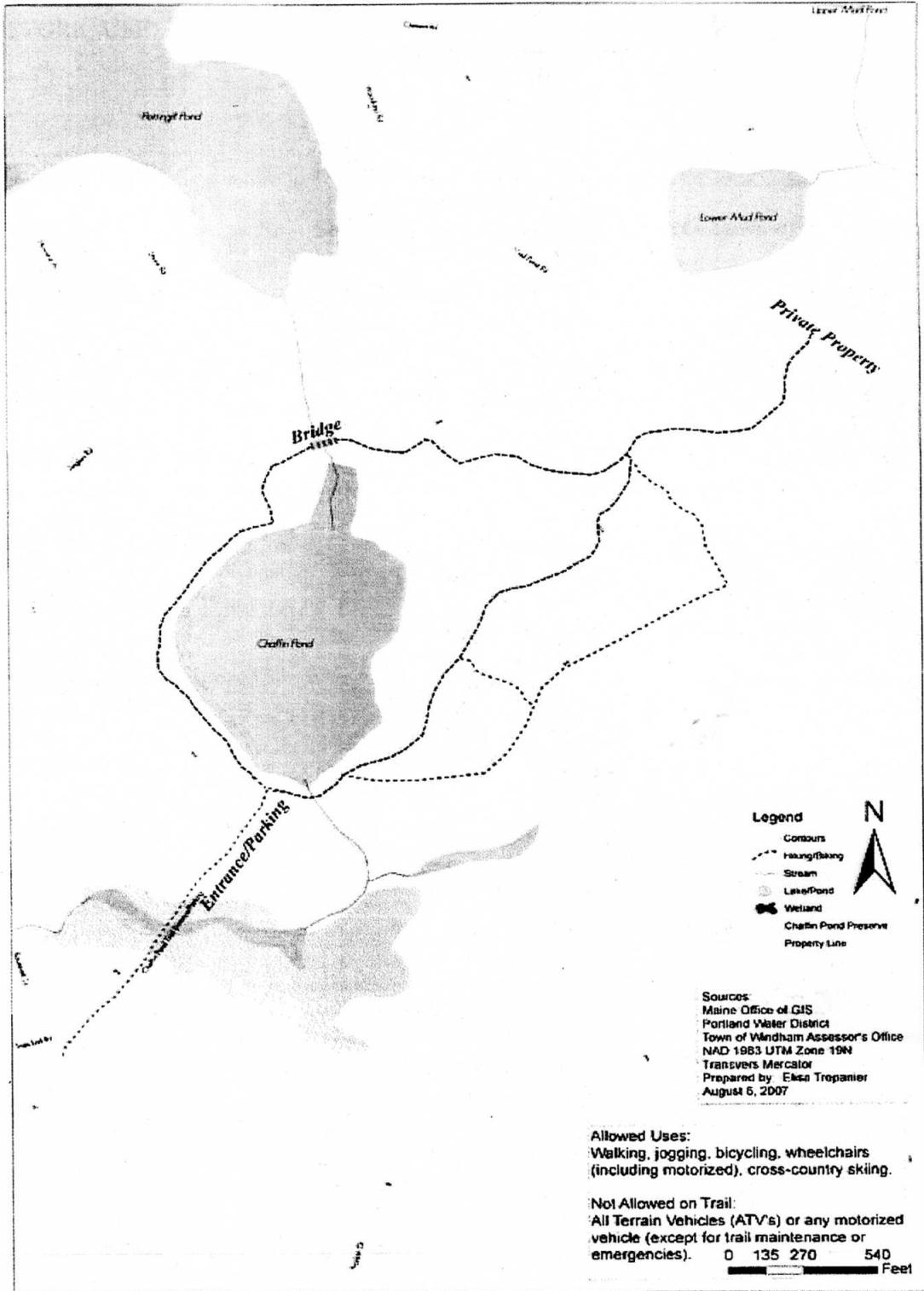
FENCING: None beyond security gate at Route #302 Chaffin Pond Road entrance.

**BUILDING IMPROVEMENTS**

TYPE: 1940's vintage, 520± S.F. wood frame with imitation brick siding, assumed former pump house.

USE: Passive to inactive cold storage considered noncontributory to value.

**SITE PLAN - CURRENT CONDITIONS FOOT TRAIL SYSTEM BY LESSEE**



Chaffin Pond Preserve, Windham, Maine

Portland Water District  
Chaffin Pond, Windham, Maine

Ecological Characterization Report Addendum  
Vernal Pool Survey

May 2009



PREPARED FOR

PORTLAND WATER DISTRICT  
225 DOUGLASS STREET  
P.O. BOX 3553  
PORTLAND, MAINE 04104

PREPARED BY

STANTEC CONSULTING  
30 PARK DRIVE  
TOPSHAM, MAINE 04086

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- Appendix 2 Vernal Pool Data Forms

PN 195600373

## 1.0 INTRODUCTION

In 2008, Stantec Consulting (Stantec) completed an ecological characterization<sup>1</sup> of the approximately 123-acre Chaffin Pond parcel, located east of Route 302 in the village of North Windham, Maine (Figure 1). The ecological characterization included an overall characterization of the natural communities, as well as identification of regulated resources present within the project site. The identification and evaluation of the natural resources present within the project site included a reconnaissance-level wetland and stream survey; identification of Significant or Essential Wildlife Habitats<sup>2</sup> such as vernal pools or deer wintering areas; and a survey and habitat assessment for rare, threatened, and endangered species. As a result of this ecological characterization, several potential vernal pool areas were identified. In April 2009 (i.e., the breeding period for obligate vernal pool species), subsequent field surveys were conducted by Stantec in order to assess the potential vernal pool habitat within the project site. This addendum presents the results of these vernal pool surveys.

## 2.0 SURVEY METHODOLOGY

In April 2009, each potential vernal pool identified by Stantec in 2008 was surveyed by slowly wading through the pool basin, searching for amphibian breeding activity, including the presence of egg masses and use by other vernal pool-dependent species. Additional meander surveys were also completed in the wetland areas identified by Stantec in 2008 in order to locate additional vernal pool habitat that may not have been apparent during the initial late summer field surveys. During the surveys, egg masses for each vernal pool-dependent amphibian species were counted and recorded. In addition, the presence of other life stages of these amphibians were noted, as was the presence of other vernal pool-dependent species or associated species. Data also were collected on the physical characteristics of the pool including hydrology, vegetation, substrate characteristics, and surrounding upland habitat conditions. Information on the biological and physical characteristics of each pool was used to determine if the vernal pools met the criteria of a Significant Vernal Pool as defined in Chapter 335 Section 9 of the Maine Department of Environmental Protection (MDEP) Natural Resources Protection Act (NRPA). According to this section, a vernal pool is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanently flowing inlet or outlet and no viable populations of predatory fish.

In addition, a Significant Vernal Pool contains one or any combination of the following:

- 40 or more wood frog (*Lithobates sylvatica*) egg masses;
- 20 or more spotted salamander (*Ambystoma maculatum*) egg masses;
- 10 or more blue spotted salamander (*Ambystoma laterale*) egg masses;
- Presence of fairy shrimp (*Eubranchipus* spp.); or
- Any state-listed threatened or endangered species such as Blanding's turtle (*Emydoidea blandingii*), spotted turtle (*Clemmys guttata*), or ringed boghaunter (*Williamsonia lintneri*).

The information collected at each vernal pool was also used to determine if the pool met the vernal pool criteria of the U.S. Army Corps of Engineers (Corps).<sup>3</sup> According to the State of Maine Programmatic General Permit (PGP), Appendix A (NAE-2005-2164), vernal pools are “temporary to permanent bodies of water occurring in shallow depressions that fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp, and provide habitat for other wildlife including several endangered and threatened species.”

---

<sup>1</sup> Stantec Consulting. *Ecological Characterization Report, Chaffin Pond, Windham, Maine*, September, 2008. Prepared for Portland Water District.

<sup>2</sup> Significant Wildlife Habitats are defined and regulated under the Maine Natural Resources Protection Act (38 M.R.S.A §480-B(10)). Essential Wildlife Habitats are defined and regulated under the Maine Endangered Species Act (12 M.R.S.A §12804, 12806).

A Global Positioning System (GPS) Trimble® Pro-Series receiver was used to locate the boundary of each vernal pool envelope. GPS data were then used to produce the attached map (Figure 2).

Vernal pools are dynamic habitats that vary in water level, vegetative cover, and other physical characteristics during the course of a year, as well as from year to year. In addition, the breeding activity of amphibians, particularly the initiation of breeding, is dependent upon seasonal environmental parameters such as temperature and precipitation. Due to this variability, the presence and number of egg masses may differ between breeding seasons and during the course of a given breeding season. The presence, absence, and number of egg masses presented in this report reflect the results of this survey. Based on Stantec's observations of the on-site vernal pools, the survey event was conducted at the appropriate time to characterize vernal pools.

### 3.0 SURVEY RESULTS

Stantec conducted field surveys on April 16 and April 28, 2009. As a result of the field surveys, five vernal pools were identified within the project area. Representative photographs are included in Appendix 1, and completed Vernal Pool data forms are included in Appendix 2. The following characterizes the five on-site vernal pool habitats.

#### Vernal Pool A

Vernal Pool A (VP-A) is a small, isolated, and naturally occurring scrub-shrub vernal pool located northeast of Chaffin Pond. The pool is dominated by shrubs of buttonbush (*Cephalanthus occidentalis*), winterberry (*Ilex verticillata*), and highbush blueberry (*Vaccinium corymbosum*). At the time of the April 16 field survey, water depths averaged approximately 3 feet in the center of the pool. During the April 16 survey, Stantec observed 2 spotted salamander egg masses and 18 wood frog egg masses. During the April 28 field survey, 3 spotted salamander egg masses and approximately 11 wood frog egg masses were observed in the pool. The substrate was firm and leaf covered. Based on field surveys conducted by Stantec in August 2008, this pool has ephemeral to semi-permanent hydrology. This pool does not meet the MDEP definition of a Significant Vernal Pool based on the number of amphibian egg masses observed within the pool. However, the Corps will regulate this vernal pool because it occurs within a wetland.

#### Vernal Pool B

Vernal Pool B (VP-B) is a small, isolated, and naturally occurring scrub-shrub vernal pool located east of VP-A and northeast of Chaffin Pond. The pool is dominated by shrubs of winterberry. At the time of the April 16 field survey, the pool was approximately 50 percent frozen. At the time of the April 28 field survey, seven wood frog egg masses and one spotted salamander egg mass were observed within the pool. Water depths averaged approximately 2.5 feet with a firm, leaf-covered substrate. Based on the August 2008 field surveys, this pool has ephemeral hydrology. This pool does not meet the MDEP definition of a Significant Vernal Pool based on the number of amphibian egg masses observed within the pool. However, the Corps will regulate this vernal pool because it occurs within a wetland.

#### Vernal Pool C

Vernal Pool C (VP-C) is a small, isolated, naturally occurring vernal pool located in the central portion of the project site, east of Chaffin Pond. At the time of the April 16 field survey, 8 wood frog egg masses were observed within this pool. At the time of the April 28 field survey, 9 wood frog egg masses were observed. Water depths within the pool averaged approximately three feet with a soft, leaf covered substrate. Based on the August 2008 field surveys, this pool has ephemeral hydrology. The pool does not contain any vegetation. This pool does not meet the MDEP definition of a Significant Vernal Pool based on the number of amphibian egg masses observed within the pool. In addition, the Corps will not regulate this vernal pool because it is not located within a jurisdictional wetland.

#### Vernal Pool D

Vernal Pool D (VP-D) is a small, isolated, naturally occurring vernal pool located in the southeast portion of the project site. At the time of the April 16 field survey, 9 wood frog egg masses and 3 spotted salamander egg masses were observed within this pool. At the time of the April 28 field survey, 12 wood

frog and 16 spotted salamander egg masses were observed. Water depths within the pool averaged approximately two feet with a soft, leaf covered substrate. Based on the August 2008 field surveys, this pool has ephemeral hydrology. The pool does not contain any vegetation. This pool does not meet the MDEP definition of a Significant Vernal Pool based on the number of amphibian egg masses observed within the pool. In addition, the Corps will not regulate this vernal pool because it is not located within a jurisdictional wetland.

#### Vernal Pool E

Vernal Pool E (VP-E) is a small, isolated, naturally occurring vernal pool located in the southeastern portion of the project site, south of VP-D. At the time of the April 16 field survey, 3 wood frog egg masses were observed within the pool. At the time of the April 28 field survey, 2 wood frog egg masses were observed. Water depths within the pool were very shallow, averaging 12 to 18 inches deep with a firm, leaf covered substrate. The pool has ephemeral hydrology and is sparsely vegetated with small winterberry shrubs. This pool does not meet the MDEP definition of a Significant Vernal Pool based on the number of amphibian egg masses observed within the pool. In addition, the Corps will not regulate this vernal pool because it is not located within a jurisdictional wetland.

The following Table 1 summarizes the vernal pools within the Chaffin Pond site.

**Table 1. Vernal Pool Summary: Chaffin Pond  
April 15, 2009 and April 28, 2009**

Vernal Pool #	NRPA		Corps Regulated Vernal Pool	Number of Egg Masses <sup>1</sup>			Presence <sup>2</sup>		Comments
	Vernal Pool	Significant Vernal Pool		Wood Frog	Spotted Salamander	Blue-spotted salamander	Fairy Shrimp	Other Indicator Species <sup>3</sup>	
VP-A	X		X	18 11	2 3	0 0	— —	— —	Scrub-shrub pool
VP-B	X		X	0 7	0 1	0 0	— —	— —	Scrub-shrub pool
VP-C	X			8 9	0 0	0 0	— —	— —	Non-vegetated basin
VP-D	X			9 12	3 16	0 0	— —	— —	Non-vegetated basin
VP-E	X			3 2	0 0	0 0	— —	— —	Non-vegetated basin

<sup>1</sup> The number in the upper left corner represents the results of the April 16 survey, and the number in the lower right represents the results of the April 29, 2009 survey.

<sup>2</sup> Presence indicates observation during vernal pool survey. Use of a “—” indicates that these species were not observed during the vernal pool survey.

<sup>3</sup>BT = Blanding’s Turtle; ST = Spotted Turtle; RB = Ringed Boghaunter Dragonfly; WT = Wood Turtle; RS = Ribbon Snake; SD = Swamp Darner Dragonfly; CD = Comet Darner Dragonfly

P = Present

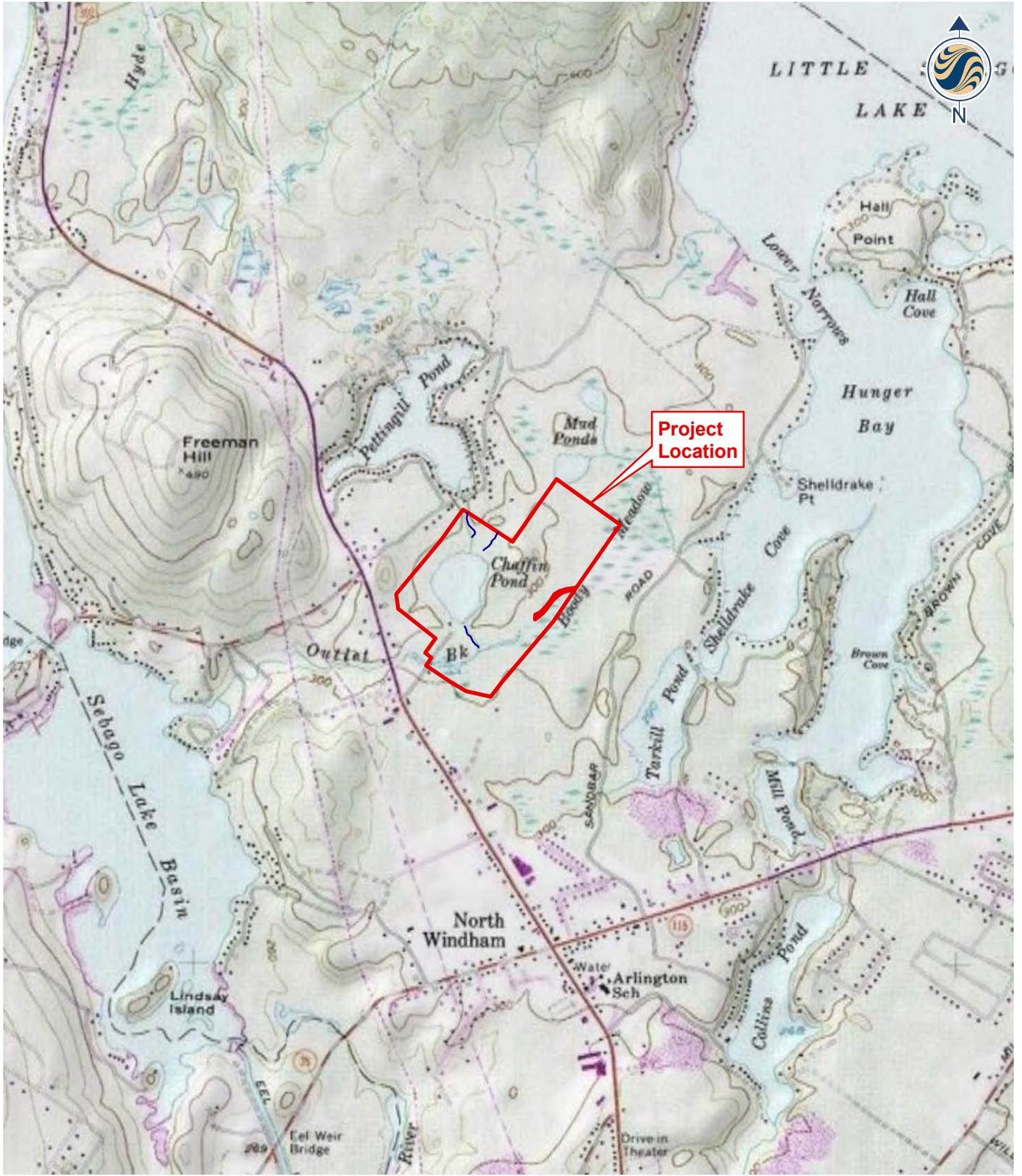
#### **4.0 REGULATORY INFORMATION**

Maine NRPA Chapter 335, Significant Wildlife Habitat, regulates Significant Vernal Pools as Significant Wildlife Habitat. Chapter 335 details specific definitions and standards regarding characterization and protection of Significant Vernal Pools in Maine. In summary, unavoidable impacts to a Significant Vernal Pool, which includes the critical terrestrial habitat within 250 feet of the high water line of the actual pool, may require an Individual Permit. The concurrent adoption of a Permit by Rule (PBR), Chapter 305 Section 19, allows some activities within 250 feet of Significant Vernal Pools or Potential Significant Vernal Pool if the standards of this PBR can be met. If impacts to the Significant Vernal Pool cannot be avoided and the standards for the PBR cannot be met, an Individual Permit may be required. Based upon surveys conducted in 2009, none of the vernal pools observed within the project area are considered Significant Vernal Pools under the NRPA definition.

Certain development projects in Maine may also be regulated under Chapter 375, Site Location of Development (i.e., Site Law). Vernal pools that are ecologically significant on a landscape level may be regulated by the MDEP under Site Law. Under some circumstances, setbacks beyond 250 feet may be required by MDEP from these high functioning vernal pools.

The Corps may also regulate impacts to vernal pools and the adjacent habitat if the project results in wetland impacts. The PGP for the State of Maine, which is issued by the Corps for projects involving "minimal" wetland impacts, also addresses protection of vernal pools. Under the Maine PGP, if the Corps has jurisdiction over the project, projects are required to avoid and minimize impacts to uplands within 500 feet of any vernal pool. If the project results in wetland impacts and a Corps application is reviewed by the U.S. Fish and Wildlife Service or the Environmental Protection Agency, this recommended area of upland protection may be extended to 750 feet.

**FIGURE 1**  
**SITE LOCATION MAP**



**Stantec Consulting Services, Inc.**

30 Park Drive  
 Topsham, ME USA  
 04086  
 Phone (207) 729-1199  
 Fax: (207) 729-2715  
 www.stantec.com



Client/Project  
 Portland Water District  
 Chaffin Pond  
 Windham, Maine

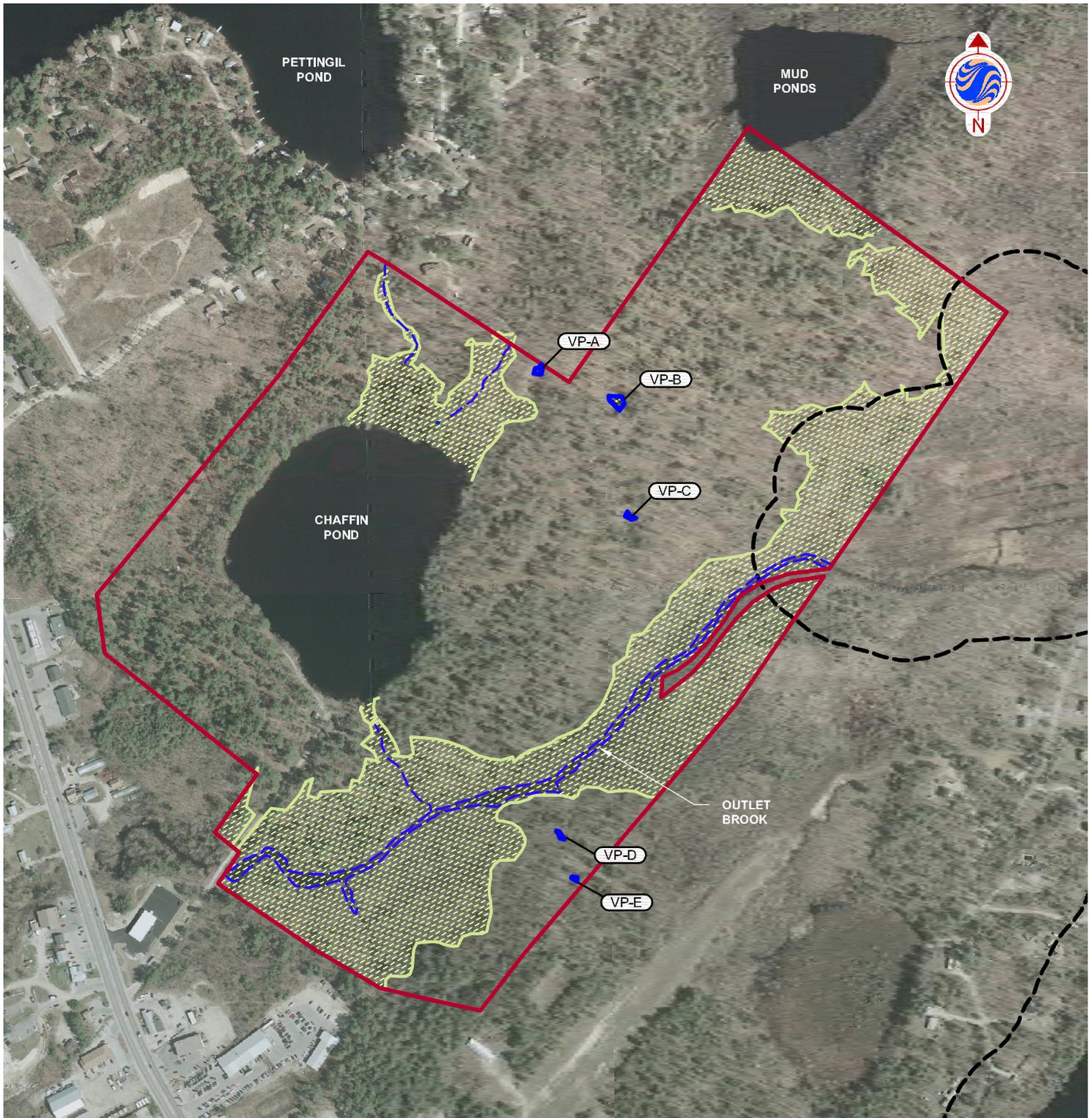
195600373-F001-location.mxd

Figure No.  
**1**

Title  
**Site Location Map**  
 08/14/2008

**FIGURE 2**

**VERNAL POOLS MAP**



**NOTES:**

1. Vernal pools identified using criteria established by USACE and MDEP and located utilizing a Trimble Pro-Series receiver.
2. Wetland boundaries are based upon a reconnaissance level survey. Stream were mapped using aerial photo interpretation.
3. Aerial photos, and Inland wading bird and waterfowl habitat layer obtained from MEGIS. Aerial photo date 2003.

**Stantec Consulting Services Inc. Legend**

30 Park Drive  
 Topsham ME U.S.A.  
 04086  
 Tel. 207.729.1199  
 Fax. 207.729.2715  
 www.stantec.com

-  Wetland previously identified by Stantec
-  Vernal pool identified by Stantec
-  Approximate stream location
-  Project boundary
-  Vernal pool identification
-  Wading bird and waterfowl habitat

Client/Project 195600373  
 Portland Water District  
 Windham, Maine

Figure No. 2

Title  
 Chaffin Pond Site  
 Vernal Pool Survey  
 April 28, 2009



## **APPENDIX 1**

### **REPRESENTATIVE SITE PHOTOS**



**Photo 1.** Vernal Pool A. Stantec Consulting, April 16, 2009.



**Photo 2.** Vernal Pool B. Stantec Consulting, April 28, 2009.



**Photo 3.** Vernal Pool C. Stantec Consulting, April 16, 2009.



**Photo 4.** Vernal Pool D. Stantec Consulting, April 16, 2009.



**Photo 5.** Vernal Pool E. Stantec Consulting, April 16, 2009.

## **APPENDIX 2**

### **VERNAL POOL DATA FORMS**

**Significant Vernal Pool Data Collection Form**

Project: Chaffin Pond, 195600373

Survey Date (1<sup>st</sup>):4/16/09

Town/County: Windham, Cumberland

Surveyor's Initials (1<sup>st</sup>):MPA

Associated Wetland ID (if applicable):

Survey Date (2<sup>nd</sup>):4/28/09

Vernal Pool ID:VP-A (02ma)

Surveyor's Initials (2<sup>nd</sup>):MPA

**VERNAL POOL SURVEY INFORMATION:** Is this pool?:  SVP or  VP

**Photos:\*** 3- overview of basin

\*Number and Location

**Wetland Habitat Characterization:**

▪ **Choose the best descriptor for the physical setting**

- Isolated Wetland Depression       Pool associated with larger wetland complex  
 Isolated Upland Depression       Floodplain Depression  
 Other: \_\_\_\_\_

▪ **Check all wetland types that best apply to this pool:**

- Forested swamp       Wet meadow       Slow stream  
 Shrub swamp       Shallow pond       Floodplain overflow  
 Peatland (fen or bog)       Abandoned beaver flowage       Headwater seepage  
 Emergent marsh       Active beaver flowage       Other: \_\_\_\_\_

**Vernal Pool Status under the Natural Resources Protection Act (NRPA)**

**Natural Origin**

▪ **Select the pool's origin:**

- Natural       Natural-Modified       Unnatural       Unknown

If modified, unnatural or unknown, describe any modern or historic impacts to the wetland:

**Hydrology**

▪ **Select the pool's estimated hydroperiod AND provide rationale for opinion:**

- Permanent       Semi-permanent       Ephemeral       Unknown

Semi-permanent: drying partially in all years and completely in drought years

Ephemeral: drying out during the growing season in most years

Some standing water observed in late August 2008

▪ **Maximum depth at survey:**

- Visit 1:  0-12"       12-36"       23-60"       >60"  
Visit 2:  0-12"       12-36"       23-60"       >60"

▪ **Approximate size of pool (at spring highwater):**

Width:20 ft.      Length:30 ft.

▪ **Faunal indicators (check all that apply):**

- Fish (list species if known): \_\_\_\_\_       Bull or green frog tadpoles

**Inlet/Outlet Permanency**

Type of inlet or outlet:

- No inlet or outlet       Permanently flowing inlet or outlet  
 Ephemeral inlet or outlet       Other (explain): \_\_\_\_\_

▪ **Predominant substrate:**

- Mineral soil (bare, leaf-litter bottom, upland mosses)       Organic matter (muck, mud): shallow or restricted to deepest area  
 Mineral soil (sphagnum moss present)       Organic matter (muck, mud): deep and wide spread

**Significant Vernal Pool Data Collection Form (Page 2 of 2)**

▪ **Non-woody pool vegetation (check all that apply):**

- |                                                                                                          |                                                                                    |
|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <input type="checkbox"/> Terrestrial nonvascular species,<br>(e.g., haircap moss <i>Lycopodium</i> spp.) | <input type="checkbox"/> Sphagnum moss                                             |
| <input type="checkbox"/> Dry site ferns<br>(e.g., spinulose wood ferns, lady fern, polypody fern)        | <input checked="" type="checkbox"/> Wet site ferns<br>(e.g. <i>Osmunda</i> spp.)   |
| <input type="checkbox"/> Moist site ferns<br>(e.g., sensitive fern, marsh fern, NY fern)                 | <input checked="" type="checkbox"/> Wet site graminoids<br>(e.g., grasses, sedges) |
| <input type="checkbox"/> Moist site vasculars<br>(e.g., skunk cabbage, jewelweed)                        | <input type="checkbox"/> Aquatic vasculars<br>(e.g., pickerelweed)                 |
| <input type="checkbox"/> Floating submerged aquatics<br>(e.g. water lilies, bladderwort)                 |                                                                                    |

**Abundance Criteria:**

- Was the entire pool comprehensively surveyed for egg masses?  Yes  No

Indicator Species	Egg Masses				Tadpoles/Larvae					
	#		Method of Verification*		Confidence Level**		Method of Verification*		Confidence Level**	
Wood frog	18	11	S	S	3	3				
Spotted salamander	2	3	S	S	3	3				
Blue-spotted salamander	0	0								

\* Method of verification: S = Seen; H = Handled; P = Photographed

\*\* Confidence level: 1 = <60%; 2 = 60-95%, 3 = >95%

- **Fairy shrimp observed:**  Yes  No

**Rarity Criteria:**

- Was a specific effort made to survey for rare species:  Yes  No
- Note any rare species associated with pool. Check the method(s) of verification and fill in the confidence level (CL) for each species observation.

Species	Method of Verification*				CL	Species	Method of Verification*				CL
	V	P	H	S			V	P	H	S	
Blanding's turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Comet darter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\* Method of verification: V = Vouchered; P = Photographed; H = Handled; S = Seen

**Field Sketch:**

**Significant Vernal Pool Data Collection Form**

Project: Chaffin Pond, 195600373

Survey Date (1<sup>st</sup>):4/16/09

Town/County: Windham, Cumberland

Surveyor's Initials (1<sup>st</sup>):MPA

Associated Wetland ID (if applicable):

Survey Date (2<sup>nd</sup>):4/28/09

Vernal Pool ID:VP-B (06ma)

Surveyor's Initials (2<sup>nd</sup>):MPA

**VERNAL POOL SURVEY INFORMATION:** Is this pool?:  SVP or  VP

**Photos:\*** 1- overview of basin

\*Number and Location

**Wetland Habitat Characterization:**

▪ **Choose the best descriptor for the physical setting**

- Isolated Wetland Depression       Pool associated with larger wetland complex  
 Isolated Upland Depression       Floodplain Depression  
 Other: \_\_\_\_\_

▪ **Check all wetland types that best apply to this pool:**

- Forested swamp       Wet meadow       Slow stream  
 Shrub swamp       Shallow pond       Floodplain overflow  
 Peatland (fen or bog)       Abandoned beaver flowage       Headwater seepage  
 Emergent marsh       Active beaver flowage       Other: \_\_\_\_\_

**Vernal Pool Status under the Natural Resources Protection Act (NRPA)**

**Natural Origin**

▪ **Select the pool's origin:**

- Natural       Natural-Modified       Unnatural       Unknown

If modified, unnatural or unknown, describe any modern or historic impacts to the wetland:

**Hydrology**

▪ **Select the pool's estimated hydroperiod AND provide rationale for opinion:**

- Permanent       Semi-permanent       Ephemeral       Unknown

Semi-permanent: drying partially in all years and completely in drought years

Ephemeral: drying out during the growing season in most years

Limited standing water observed in late August 2008

▪ **Maximum depth at survey:**

- Visit 1:  0-12"       12-36"       23-60"       >60"  
Visit 2:  0-12"       12-36"       23-60"       >60"

▪ **Approximate size of pool (at spring highwater):**

Width:30 ft.      Length:30 ft.

▪ **Faunal indicators (check all that apply):**

- Fish (list species if known): \_\_\_\_\_       Bull or green frog tadpoles

**Inlet/Outlet Permanency**

Type of inlet or outlet:

- No inlet or outlet       Permanently flowing inlet or outlet  
 Ephemeral inlet or outlet       Other (explain): \_\_\_\_\_

▪ **Predominant substrate:**

- Mineral soil (bare, leaf-litter bottom, upland mosses)       Organic matter (muck, mud): shallow or restricted to deepest area  
 Mineral soil (sphagnum moss present)       Organic matter (muck, mud): deep and wide spread

**Significant Vernal Pool Data Collection Form (Page 2 of 2)**

▪ **Non-woody pool vegetation (check all that apply):**

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Terrestrial nonvascular species,<br>(e.g., haircap moss <i>Lycopodium</i> spp.)<br><br><input type="checkbox"/> Dry site ferns<br>(e.g., spinulose wood ferns, lady fern, polypody fern)<br><br><input type="checkbox"/> Moist site ferns<br>(e.g., sensitive fern, marsh fern, NY fern)<br><br><input type="checkbox"/> Moist site vasculars<br>(e.g., skunk cabbage, jewelweed)<br><br><input type="checkbox"/> Floating submerged aquatics<br>(e.g. water lilies, bladderwort) | <input type="checkbox"/> Sphagnum moss<br><br><input checked="" type="checkbox"/> Wet site ferns<br>(e.g. <i>Osmunda</i> spp.)<br><br><input checked="" type="checkbox"/> Wet site graminoids<br>(e.g., grasses, sedges)<br><br><input type="checkbox"/> Aquatic vasculars<br>(e.g., pickerelweed) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Abundance Criteria:**

- Was the entire pool comprehensively surveyed for egg masses?  Yes  No

Indicator Species	Egg Masses				Tadpoles/Larvae					
	#		Method of Verification*		Confidence Level**		Method of Verification*		Confidence Level**	
Wood frog	0	7	S	S	3	3				
Spotted salamander	0	1	S	S	3	3				
Blue-spotted salamander	0	0								

\* Method of verification: S = Seen; H = Handled; P = Photographed

\*\* Confidence level: 1 = <60%; 2 = 60-95%, 3 = >95%

- **Fairy shrimp observed:**  Yes  No

**Rarity Criteria:**

- Was a specific effort made to survey for rare species:  Yes  No
- Note any rare species associated with pool. Check the method(s) of verification and fill in the confidence level (CL) for each species observation.

Species	Method of Verification*				CL	Species	Method of Verification*				CL
	V	P	H	S			V	P	H	S	
Blanding's turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Comet darter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\* Method of verification: V = Vouchered; P = Photographed; H = Handled; S = Seen

**Field Sketch:**

## Significant Vernal Pool Data Collection Form

Project: Chaffin Pond, 195600373

Survey Date (1<sup>st</sup>):4/16/09

Town/County: Windham, Cumberland

Surveyor's Initials (1<sup>st</sup>):MPA

Associated Wetland ID (if applicable):

Survey Date (2<sup>nd</sup>):4/28/09

Vernal Pool ID:VP-C (03ma)

Surveyor's Initials (2<sup>nd</sup>):MPA

**VERNAL POOL SURVEY INFORMATION:** Is this pool?:  SVP or  VP

**Photos:\*** 1- overview of basin

\*Number and Location

### **Wetland Habitat Characterization:**

▪ **Choose the best descriptor for the physical setting**

- |                                                                |                                                                      |
|----------------------------------------------------------------|----------------------------------------------------------------------|
| <input type="checkbox"/> Isolated Wetland Depression           | <input type="checkbox"/> Pool associated with larger wetland complex |
| <input checked="" type="checkbox"/> Isolated Upland Depression | <input type="checkbox"/> Floodplain Depression                       |
| <input type="checkbox"/> Other: _____                          |                                                                      |

▪ **Check all wetland types that best apply to this pool:**

- |                                                |                                                   |                                              |
|------------------------------------------------|---------------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Forested swamp        | <input type="checkbox"/> Wet meadow               | <input type="checkbox"/> Slow stream         |
| <input type="checkbox"/> Shrub swamp           | <input type="checkbox"/> Shallow pond             | <input type="checkbox"/> Floodplain overflow |
| <input type="checkbox"/> Peatland (fen or bog) | <input type="checkbox"/> Abandoned beaver flowage | <input type="checkbox"/> Headwater seepage   |
| <input type="checkbox"/> Emergent marsh        | <input type="checkbox"/> Active beaver flowage    | <input type="checkbox"/> Other: _____        |

### **Vernal Pool Status under the Natural Resources Protection Act (NRPA)**

#### Natural Origin

▪ **Select the pool's origin:**

- Natural     Natural-Modified     Unnatural     Unknown

If modified, unnatural or unknown, describe any modern or historic impacts to the wetland:

#### Hydrology

▪ **Select the pool's estimated hydroperiod AND provide rationale for opinion:**

- Permanent     Semi-permanent     Ephemeral     Unknown

Semi-permanent: drying partially in all years and completely in drought years

Ephemeral: drying out during the growing season in most years

Limited standing water observed in late August 2008

▪ **Maximum depth at survey:**

- Visit 1:  0-12"     12-36"     23-60"     >60"  
Visit 2:  0-12"     12-36"     23-60"     >60"

▪ **Approximate size of pool (at spring highwater):**

Width: 20 ft.    Length: 20 ft.

▪ **Faunal indicators (check all that apply):**

- Fish (list species if known): \_\_\_\_\_     Bull or green frog tadpoles

#### Inlet/Outlet Permanency

Type of inlet or outlet:

- No inlet or outlet     Permanently flowing inlet or outlet  
 Ephemeral inlet or outlet     Other (explain): \_\_\_\_\_

▪ **Predominant substrate:**

- |                                                                                            |                                                                                               |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Mineral soil (bare, leaf-litter bottom, upland mosses) | <input type="checkbox"/> Organic matter (muck, mud):<br>shallow or restricted to deepest area |
| <input type="checkbox"/> Mineral soil (sphagnum moss present)                              | <input type="checkbox"/> Organic matter (muck, mud):<br>deep and wide spread                  |

**Significant Vernal Pool Data Collection Form (Page 2 of 2)**

▪ **Non-woody pool vegetation (check all that apply):**

- |                                                                                                          |                                                                         |
|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <input type="checkbox"/> Terrestrial nonvascular species,<br>(e.g., haircap moss <i>Lycopodium</i> spp.) | <input type="checkbox"/> Sphagnum moss                                  |
| <input type="checkbox"/> Dry site ferns<br>(e.g., spinulose wood ferns, lady fern, polypody fern)        | <input type="checkbox"/> Wet site ferns<br>(e.g. <i>Osmunda</i> spp.)   |
| <input type="checkbox"/> Moist site ferns<br>(e.g., sensitive fern, marsh fern, NY fern)                 | <input type="checkbox"/> Wet site graminoids<br>(e.g., grasses, sedges) |
| <input type="checkbox"/> Moist site vasculars<br>(e.g., skunk cabbage, jewelweed)                        | <input type="checkbox"/> Aquatic vasculars<br>(e.g., pickerelweed)      |
| <input type="checkbox"/> Floating submerged aquatics<br>(e.g. water lilies, bladderwort)                 |                                                                         |

**Abundance Criteria:**

- Was the entire pool comprehensively surveyed for egg masses?  Yes  No

Indicator Species	Egg Masses				Tadpoles/Larvae					
	#		Method of Verification*		Confidence Level**		Method of Verification*		Confidence Level**	
Wood frog	8	9	S	S	3	3				
Spotted salamander	0	0								
Blue-spotted salamander	0	0								

\* Method of verification: S = Seen; H = Handled; P = Photographed

\*\* Confidence level: 1 = <60%; 2 = 60-95%, 3 = >95%

- **Fairy shrimp observed:**  Yes  No

**Rarity Criteria:**

- Was a specific effort made to survey for rare species:  Yes  No
- Note any rare species associated with pool. Check the method(s) of verification and fill in the confidence level (CL) for each species observation.

Species	Method of Verification*				CL	Species	Method of Verification*				CL
	V	P	H	S			V	P	H	S	
Blanding's turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Comet darter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\* Method of verification: V = Vouchered; P = Photographed; H = Handled; S = Seen

**Field Sketch:**

## Significant Vernal Pool Data Collection Form

Project: Chaffin Pond, 195600373

Survey Date (1<sup>st</sup>):4/16/09

Town/County: Windham, Cumberland

Surveyor's Initials (1<sup>st</sup>):MPA

Associated Wetland ID (if applicable):

Survey Date (2<sup>nd</sup>):4/28/09

Vernal Pool ID:VP-E (05ma)

Surveyor's Initials (2<sup>nd</sup>):MPA

**VERNAL POOL SURVEY INFORMATION:** Is this pool?:  SVP or  VP

**Photos:\*** 1 - overview of basin

\*Number and Location

### **Wetland Habitat Characterization:**

▪ **Choose the best descriptor for the physical setting**

- |                                                                |                                                                      |
|----------------------------------------------------------------|----------------------------------------------------------------------|
| <input type="checkbox"/> Isolated Wetland Depression           | <input type="checkbox"/> Pool associated with larger wetland complex |
| <input checked="" type="checkbox"/> Isolated Upland Depression | <input type="checkbox"/> Floodplain Depression                       |
| <input type="checkbox"/> Other: _____                          |                                                                      |

▪ **Check all wetland types that best apply to this pool:**

- |                                                |                                                   |                                              |
|------------------------------------------------|---------------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Forested swamp        | <input type="checkbox"/> Wet meadow               | <input type="checkbox"/> Slow stream         |
| <input type="checkbox"/> Shrub swamp           | <input type="checkbox"/> Shallow pond             | <input type="checkbox"/> Floodplain overflow |
| <input type="checkbox"/> Peatland (fen or bog) | <input type="checkbox"/> Abandoned beaver flowage | <input type="checkbox"/> Headwater seepage   |
| <input type="checkbox"/> Emergent marsh        | <input type="checkbox"/> Active beaver flowage    | <input type="checkbox"/> Other: _____        |

### **Vernal Pool Status under the Natural Resources Protection Act (NRPA)**

#### Natural Origin

▪ **Select the pool's origin:**

- Natural     Natural-Modified     Unnatural     Unknown

If modified, unnatural or unknown, describe any modern or historic impacts to the wetland:

#### Hydrology

▪ **Select the pool's estimated hydroperiod AND provide rationale for opinion:**

- Permanent     Semi-permanent     Ephemeral     Unknown

Semi-permanent: drying partially in all years and completely in drought years

Ephemeral: drying out during the growing season in most years

Very shallow pool

▪ **Maximum depth at survey:**

- Visit 1:  0-12"     12-36"     23-60"     >60"  
Visit 2:  0-12"     12-36"     23-60"     >60"

▪ **Approximate size of pool (at spring highwater):**

Width: 10 ft.    Length: 20 ft.

▪ **Faunal indicators (check all that apply):**

- Fish (list species if known): \_\_\_\_\_     Bull or green frog tadpoles

#### Inlet/Outlet Permanency

Type of inlet or outlet:

- No inlet or outlet     Permanently flowing inlet or outlet  
 Ephemeral inlet or outlet     Other (explain): \_\_\_\_\_

▪ **Predominant substrate:**

- |                                                                                            |                                                                                               |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Mineral soil (bare, leaf-litter bottom, upland mosses) | <input type="checkbox"/> Organic matter (muck, mud):<br>shallow or restricted to deepest area |
| <input type="checkbox"/> Mineral soil (sphagnum moss present)                              | <input type="checkbox"/> Organic matter (muck, mud):<br>deep and wide spread                  |

**Significant Vernal Pool Data Collection Form (Page 2 of 2)**

▪ **Non-woody pool vegetation (check all that apply):**

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Terrestrial nonvascular species,<br>(e.g., haircap moss <i>Lycopodium</i> spp.)<br><br><input type="checkbox"/> Dry site ferns<br>(e.g., spinulose wood ferns, lady fern, polypody fern)<br><br><input type="checkbox"/> Moist site ferns<br>(e.g., sensitive fern, marsh fern, NY fern)<br><br><input type="checkbox"/> Moist site vasculars<br>(e.g., skunk cabbage, jewelweed)<br><br><input type="checkbox"/> Floating submerged aquatics<br>(e.g. water lilies, bladderwort) | <input type="checkbox"/> Sphagnum moss<br><br><input type="checkbox"/> Wet site ferns<br>(e.g. <i>Osmunda</i> spp.)<br><br><input type="checkbox"/> Wet site graminoids<br>(e.g., grasses, sedges)<br><br><input type="checkbox"/> Aquatic vasculars<br>(e.g., pickerelweed) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Abundance Criteria:**

- Was the entire pool comprehensively surveyed for egg masses?  Yes  No

Indicator Species	Egg Masses				Tadpoles/Larvae					
	#		Method of Verification*		Confidence Level**		Method of Verification*		Confidence Level**	
Wood frog	3	2	S	S	3	3				
Spotted salamander	0	0			#	#				
Blue-spotted salamander	0	0								

\* Method of verification: S = Seen; H = Handled; P = Photographed

\*\* Confidence level: 1 = <60%; 2 = 60-95%, 3 = >95%

- **Fairy shrimp observed:**  Yes  No

**Rarity Criteria:**

- Was a specific effort made to survey for rare species:  Yes  No
- Note any rare species associated with pool. Check the method(s) of verification and fill in the confidence level (CL) for each species observation.

Species	Method of Verification*				CL	Species	Method of Verification*				CL
	V	P	H	S			V	P	H	S	
Blanding's turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Comet darter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\* Method of verification: V = Vouchered; P = Photographed; H = Handled; S = Seen

**Field Sketch:**

## Significant Vernal Pool Data Collection Form

Project: Chaffin Pond, 195600373

Survey Date (1<sup>st</sup>):4/16/09

Town/County: Windham, Cumberland

Surveyor's Initials (1<sup>st</sup>):MPA

Associated Wetland ID (if applicable):

Survey Date (2<sup>nd</sup>):4/28/09

Vernal Pool ID:VP-D (04ma)

Surveyor's Initials (2<sup>nd</sup>):MPA

**VERNAL POOL SURVEY INFORMATION:** Is this pool?:  SVP or  VP

**Photos:\*** 1- overview of basin

\*Number and Location

### **Wetland Habitat Characterization:**

▪ **Choose the best descriptor for the physical setting**

- |                                                                |                                                                      |
|----------------------------------------------------------------|----------------------------------------------------------------------|
| <input type="checkbox"/> Isolated Wetland Depression           | <input type="checkbox"/> Pool associated with larger wetland complex |
| <input checked="" type="checkbox"/> Isolated Upland Depression | <input type="checkbox"/> Floodplain Depression                       |
| <input type="checkbox"/> Other: _____                          |                                                                      |

▪ **Check all wetland types that best apply to this pool:**

- |                                                |                                                   |                                              |
|------------------------------------------------|---------------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Forested swamp        | <input type="checkbox"/> Wet meadow               | <input type="checkbox"/> Slow stream         |
| <input type="checkbox"/> Shrub swamp           | <input type="checkbox"/> Shallow pond             | <input type="checkbox"/> Floodplain overflow |
| <input type="checkbox"/> Peatland (fen or bog) | <input type="checkbox"/> Abandoned beaver flowage | <input type="checkbox"/> Headwater seepage   |
| <input type="checkbox"/> Emergent marsh        | <input type="checkbox"/> Active beaver flowage    | <input type="checkbox"/> Other: _____        |

### **Vernal Pool Status under the Natural Resources Protection Act (NRPA)**

#### Natural Origin

▪ **Select the pool's origin:**

- Natural     Natural-Modified     Unnatural     Unknown

If modified, unnatural or unknown, describe any modern or historic impacts to the wetland:

#### Hydrology

▪ **Select the pool's estimated hydroperiod AND provide rationale for opinion:**

- Permanent     Semi-permanent     Ephemeral     Unknown

Semi-permanent: drying partially in all years and completely in drought years

Ephemeral: drying out during the growing season in most years

Limited standing water observed in late August 2008

▪ **Maximum depth at survey:**

- Visit 1:  0-12"     12-36"     23-60"     >60"  
Visit 2:  0-12"     12-36"     23-60"     >60"

▪ **Approximate size of pool (at spring highwater):**

Width: 15 ft.    Length: 15 ft.

▪ **Faunal indicators (check all that apply):**

- Fish (list species if known): \_\_\_\_\_     Bull or green frog tadpoles

#### Inlet/Outlet Permanency

Type of inlet or outlet:

- No inlet or outlet     Permanently flowing inlet or outlet  
 Ephemeral inlet or outlet     Other (explain): \_\_\_\_\_

▪ **Predominant substrate:**

- |                                                                                            |                                                                                               |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Mineral soil (bare, leaf-litter bottom, upland mosses) | <input type="checkbox"/> Organic matter (muck, mud):<br>shallow or restricted to deepest area |
| <input type="checkbox"/> Mineral soil (sphagnum moss present)                              | <input type="checkbox"/> Organic matter (muck, mud):<br>deep and wide spread                  |

**Significant Vernal Pool Data Collection Form (Page 2 of 2)**

▪ **Non-woody pool vegetation (check all that apply):**

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Terrestrial nonvascular species,<br>(e.g., haircap moss <i>Lycopodium</i> spp.)<br><br><input type="checkbox"/> Dry site ferns<br>(e.g., spinulose wood ferns, lady fern, polypody fern)<br><br><input type="checkbox"/> Moist site ferns<br>(e.g., sensitive fern, marsh fern, NY fern)<br><br><input type="checkbox"/> Moist site vasculars<br>(e.g., skunk cabbage, jewelweed)<br><br><input type="checkbox"/> Floating submerged aquatics<br>(e.g. water lilies, bladderwort) | <input type="checkbox"/> Sphagnum moss<br><br><input type="checkbox"/> Wet site ferns<br>(e.g. <i>Osmunda</i> spp.)<br><br><input type="checkbox"/> Wet site graminoids<br>(e.g., grasses, sedges)<br><br><input type="checkbox"/> Aquatic vasculars<br>(e.g., pickerelweed) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Abundance Criteria:**

- Was the entire pool comprehensively surveyed for egg masses?  Yes  No

Indicator Species	Egg Masses				Tadpoles/Larvae					
	#		Method of Verification*		Confidence Level**		Method of Verification*		Confidence Level**	
Wood frog	9	12	S	S	3	3				
Spotted salamander	3	16	S	S	#	#				
Blue-spotted salamander	0	0								

\* Method of verification: S = Seen; H = Handled; P = Photographed

\*\* Confidence level: 1 = <60%; 2 = 60-95%, 3 = >95%

- **Fairy shrimp observed:**  Yes  No

**Rarity Criteria:**

- Was a specific effort made to survey for rare species:  Yes  No
- Note any rare species associated with pool. Check the method(s) of verification and fill in the confidence level (CL) for each species observation.

Species	Method of Verification*				CL	Species	Method of Verification*				CL
	V	P	H	S			V	P	H	S	
Blanding's turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Comet darter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\* Method of verification: V = Vouchered; P = Photographed; H = Handled; S = Seen

**Field Sketch:**

**PHASE I  
ENVIRONMENTAL SITE ASSESSMENT  
18 CHAFFIN POND ROAD  
WINDHAM, MAINE**

**EXECUTIVE SUMMARY**

Summit Environmental Consultants, Inc. (Summit) completed a Phase I Environmental Site Assessment (ESA) on the commercial property located at 18 Chaffin Pond Road in Windham, Maine (the Site), to determine whether the property has recognized environmental conditions, as defined by the ASTM International (ASTM) Standard E 1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and in compliance with the All Appropriate Inquiry (AAI) Rule. This Phase I ESA was completed by Mr. Garth Armstrong under the direction of Mr. John K. Cressey an Environmental Professional as defined in §312.10 of 40 CFR 312.

The Site consists of approximately 123 acres of public land along the north side of Roosevelt Trail. Four buildings are located on the property. The buildings are currently unoccupied; however, well pumps and supplies for the Portland Water District remain within the buildings. The Town of Windham Tax Assessor identifies the Site as Map 18, Lot 23. The parcel was purchased in the 1930's as 4 separate lots that have been combined into 1 lot. The Cumberland County Registry of Deeds has a legal description of the Site recorded in Book 1558 Page 285, Book 1555, Page 298, Book 1560, Page 318 and Book 1564, Page 6. Summit could not find evidence of the 4 lots being consolidated since the purchases in 1938 as neither the Town of Windham nor the Portland Water District could provide a book and page number for a current deed.

Summit conducted historical research, reviewed State records, completed a Site visit and interviewed city officials and persons having knowledge of the Site in order to evaluate the property for evidence of past, existing, or material threat of future releases of hazardous substances and petroleum products.

A FirstSearch™ Environmental Database Search of State and Federal Records completed for the Site and vicinity, and review of Maine Department of Environmental Protection (MEDEP) records identified:

- No federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) listing within a 0.5-mile radius of the Site;
- No state listed hazardous waste locations within a one-mile radius of the Site;
- Neither the Site nor adjoining properties as Resource Conservation and Recovery Act (RCRA) facilities;
- No spill incidents at the Site;
- Sixty-two state spill incidents within a 0.5-mile radius of the Site; and,
- No registered underground storage tank locations at the Site.

Historical documents and interviews with individuals knowledgeable about the Site suggest that the primary use of the Site has been as a public water source and presently as a recreational area. The Site was discontinued as a water source in 1999 due to concerns of methyl tertiary-

butyl ether (MTBE) contamination in the groundwater of a gasoline station on an adjacent property.

Hazardous substances in the form of a five-gallon pail of a petroleum product were observed in the Main Entrance Building.

MEDEP spill responses were not identified for the Site.

Based on review of local, state, and historic records, and observations of the Site, Recognized Environmental Conditions, or historic Recognized Environmental Conditions, were identified during the completion of this Phase I ESA

- Although hydraulically upgradient from the Site and that the water supply wells formerly located on the Site were abandoned in 1999, past pumping activities have created a situation in which the potential exists for contamination of the Site resulting from Windham Christy's CITGO (refer to Section 4.2.6).
- The 1,700-gallon holding tank located to the north of the Control Building was connected to two chemical analyzers that emptied spent reagents into the tank. The tanks also collected discharge from floor drains from the Control Building and Pump House #1.

-The concrete form release oil present in the Main Entrance Building and Universal Waste in the form of broken fluorescent light bulbs should be removed and properly disposed as a De Minimus Condition.

Summit has performed this Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05, Standard Practices for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

### **5.8.2 Interior Observations**

Waste disposal and/or waste treatment pits, lakes, or lagoons, or evidence of their presence (i.e.; staining, corrosion) were not observed on the interior of the Site building.

## **5.9 STAINED SURFACES OR DISTRESSED VEGETATION**

### **5.9.1 Exterior Observations**

Stained surfaces were not observed during the Site visit.

### **5.9.2 Interior Observations**

Stained surfaces were not observed within the Site buildings.

## **5.10 UNDERGROUND STRUCTURES**

Summit was informed of a 1,700 gallon holding tank located to the north of the Control Building. The tank was connected to floor drains and two chemical analyzers that emptied spent reagents into the tank. The tank was used until 1999, when it was pumped out. David McCaskill of the MEDEP informed Summit that holding tanks are not considered to be UST's and are exempt from state registration.

## **5.11 FLOOR DRAINS AND SUMPS**

Floor drains were observed in the Control Building and Pump House #1. The floor drains are connected to the holding tank located to the north of the Control building.

## **5.12 HEATING AND COOLING**

Heat sources for the buildings were disconnected prior to the Site visit and air conditioning units were not observed.

## **5.13 SOLID WASTE DISPOSAL**

### **5.13.1 Exterior Observations**

Evidence of solid waste dumping at the Site was not observed during the Site visit.

### **5.13.2 Interior Observations**

Evidence of solid waste inside the Site buildings was not present during the Site visit.

## **5.14 WASTE WATER DISPOSAL**

### **5.14.1 Exterior Observation**

Waste water disposal was not observed during the Site visit.

### **5.14.2 Interior Observations**

Disposal of waste water was not observed during the Site visit.

## **5.15 Universal Waste**

Universal Waste was identified in Pump House #1 in the form of broken fluorescent lights still connected to the fixtures.

## **5.16 ASBESTOS CONTAINING MATERIALS**

Pursuant to 29 Code of Federal Regulations (CFR) 1926.1101, for buildings constructed prior to 1980, all building materials are assumed to contain asbestos until laboratory analysis proves

## 7.0 FINDINGS

Based on review of local, state, and historic records, and observations of the Site, the following Recognized Environmental Conditions, or historic Recognized Environmental Conditions, were identified during the completion of this Phase I ESA;

- Although hydraulically upgradient from the Site and that the water supply wells formerly located on the Site were abandoned in 1999, the potential exists for contamination of the Site resulting from Windham Christy's CITGO (refer to Section 4.2.6).
- The 1,700-gallon holding tank located to the north of the Control Building was connected to two chemical analyzers that emptied spent reagents into the tank. The tanks also collected discharge from floor drains from the Control Building and Pump House #1.

The concrete form release oil present in the Main Entrance Building and Universal Waste in the form of broken fluorescent light bulbs should be removed and properly disposed as a De Minimus Condition.

## 8.0 OPINION

Based on the investigations conducted for this Phase I ESA, conditions indicative of releases or threatened releases of hazardous substances, pollutants, contaminants, petroleum or petroleum products and/or controlled substances on, at, in or to the subject property were identified. Recognized environmental conditions (as defined by ASTM) are currently present at the Site.

It is the opinion of the investigator(s) that, based upon the results of this Phase I ESA for the Site, additional investigations to detect or identify the presence of hazardous substances or petroleum products are recommended for this Site.

## 9.0 DATA GAPS

Significant data gaps were not identified during the completion of the Phase I ESA for the Site.

## 10.0 CONCLUSIONS/RECOMENDATIONS

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-05 on the 18 Chaffin Pond Road, Windham, Maine (the Site). Any exceptions to, or deletions from, this practice are described in Section 1.4 of this report. Recognized environmental conditions (as defined by ASTM) are currently not present at the Site.

However the following recommendations are based upon the findings presented in this report:

- The container of concrete form release oil and broken fluorescent light bulbs should be removed and properly disposed.
- An asbestos identification survey and LBP assessment should be conducted to determine if these materials are present at the buildings and to assist in future, re-use planning.
- The 1,700-gallon holding tank located to the north of the Control Building should be removed and the surrounding soil investigated based on screening/observations following tank removal..

- The floor drains in the Site buildings should be abandoned/sealed.
- If available, the Windham Christy's CITGO monitoring wells located adjacent to the Site property boundary should be sampled for MBTE.

### **11.0 DEVIATIONS**

This assessment was completed without deviations or deletions from the scope of the ASTM E 1527-05 Standard or with client-imposed constraints on the performance of this work.

### **12.0 ADDITIONAL SERVICES**

Additional services, beyond the scope of practice described in the ASTM E 1527-05 Standard were not required or included in this report.



January 30, 2012

Mr. Bob Metcalf  
Mitchell Associates  
70 Center Street  
Portland, ME 04101

WO 2729  
Donnabeth Lippman Park  
Structural Review of Out Buildings  
18 Chaffin Pond Road, Windham, Maine

Dear Bob,

On December 22, 2011 I visited the above noted location with you to visually observe the four existing outbuildings to provide feedback on the structural condition of each building. The observations were based on conditions which were visible and accessible without the benefit of testing or removal of finishes. The following observations are provided for your use.

**Maintenance Building:** The maintenance building is conventionally platform framed with dimensional lumber. The building is board sheathed on the walls and roof. The exterior siding is an asphalt shingle patterned to look like brick. The roof is covered with traditional asphalt shingles. Wall and roof shingles are well past their effective lifespan and need replacement. In general the framing appeared to be in good condition as the building envelope remains largely watertight despite the condition of the roof and sidewall shingles. An area of noted concern is the condition of the wood sill at the base of the walls. The exterior grade appears to have been raised over the years due to an accumulation of forest debris. The resulting moisture from the higher grade has caused a deterioration of the wooded wall sill. This is not necessarily visible from the interior of the building as the wood carcass of the sill remains intact. The deterioration is found from the exterior when the wall base is probed with a sharp stick or screwdriver. Significant amounts of wood debris can be removed from the sill.

**Recommendations:**

1. Replace roof shingles and all roof flashing and drip edges. Provide ice and water shield at eaves, ridges and rakes.
2. Replace all sidewall shingles with cement board siding or other durable, low maintenance product.
3. Replace all existing sills with pressure treated sills.
4. Prep, prime and paint all wood trim, replacing any missing or deteriorated pieces.
5. Trim or remove trees in close proximity to the building to decrease leave debris which accumulates on the roof and retains moisture.

**Pump House:** The Pump House is a brick masonry building constructed of 8 inch thick two wythe masonry walls. The interior space is divided into two rooms. There are no windows and just one door to the exterior. The floor is a concrete slab on ground. A raised concrete tank is located in one room and the electrical service is located in the other. A "hard" plaster type ceiling is located within the building. There is a hatch in the ceiling directly above the concrete tank. An exterior wood framed "closet" is located to the left of the exterior door. The roof of the building is covered in slate. There is a brick chimney extending up above the roof on the gable end.

In general the building is in good condition as it was of substantial construction of durable materials but there has been deferred maintenance which now requires attention. The building is located in a low spot adjacent to the pond. There has been an attempt to create a swale around the structure to divert water but it seems ineffective. The site has become overgrown with alder trees which also prevent the site from getting adequate daylight to dry the structure. The result on the building is a condition called "rising damp" in which the brick masonry walls draw or wick the groundwater up into the wall. This causes damage to the masonry wall by promoting freeze-thaw damage in winter and fungal growth in summer. The interior of the building also suffers due to the added moisture which enters the building through the walls and slab on ground. It is unlikely that the slab has any type of moisture or vapor barrier beneath it.

**Recommendations:**

1. Repair/Replace roof slate which is missing, damaged or loose. Repair/Replace roof flashing as necessary.
2. Repoint exterior brick masonry wall surfaces using the Secretary of the Interiors Guidelines for Historic Structures. These guidelines are intended to ensure repair methods are not harmful to the existing materials and mortar selection is matched to the strength and durability of the brick based on age and in-place condition.
3. Repair existing chimney or remove existing chimney and cap it. If removed, salvage bricks for future repairs.
4. Repair holes in exterior walls using salvaged brick if possible.
5. Replace brick door header "blonde" brick with red brick or salvaged brick if possible.
6. Prep, prime and paint all wood trim, replacing any missing or deteriorated pieces.
7. Remove exterior "shed".
8. Trim or remove trees in close proximity to the building to decrease leaf debris which accumulates on the roof and retains moisture.
9. Improve site drainage to eliminate or reduce standing water at building.

**Well House No. 1:** This is a concrete block structure built using 12 inch wide masonry units. The building is constructed with a one story section and a two story "tower". The building is not in good structural condition. The masonry block units do not appear to be grouted solid nor do they appear to be reinforced with vertical reinforcing. Many masonry joints are cracked or open and many have moss growing out of the joints. The block has been coated with what appears to be a cementitious coating which may have served to lock moisture into the block. Many block units are cracked, with some severely cracked. The rear of the structure (west face) receives little sunlight and is very wet with abundant moss growth at joints and on units.

**Recommendations:**

1. Structural repairs will include cleaning of the structure with hi pressure water, rake and re-point the entire structure, paint the entire structure and repair/replace roof membrane and replace roof flashing and caps. Given the cost of repairs, if there is not a specific program need for this building, we recommend this structure be demolished.

**Well House No. 2:** Well House No. 2 was not unlocked at the time of my visit so the interior could not be viewed. It is a small square building approximately 9 ft tall, build into the side of a hill. It is a complete concrete building with exterior walls constructed of cast-in-place concrete using a form liner to achieve a checkerboard pattern finish. The roof is constructed of precast concrete slabs approximately 4 inches thick. The roof is covered with a rubber membrane and contains a raised curb where the well head may have been located. The structure is in excellent condition and requires very little maintenance. It is a unique building, of interesting design and worthy of re-purposing.

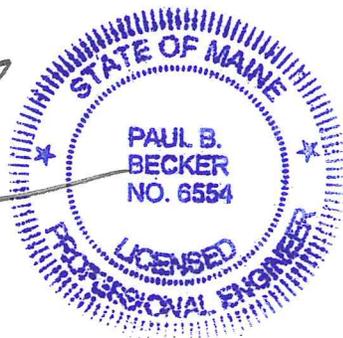
**Recommendations:**

1. Replace exterior door.
2. Clean and paint exterior door sill.
3. Clean, prep and paint exterior steel column.
4. Replace roofing and flashing.
5. Excavate around building on three sides to install free draining soil and drain pipes to reduce trapped moisture and "rising damp".

Please refer to attached photos for reference and additional information. I trust this information meets your needs at this time. We would be pleased to provide more specific information or repair documents and specifications to define specific repair work necessary.

Sincerely,  
Becker Structural Engineers, Inc.

Paul B. Becker, P.E.  
President





Maintenance Building from the rear. Note brick-like side wall shingles and pine needle covered roof shingles. Both need replacement.



Wood debris located by poking a stick through base of sidewall shingles.



Pump House. Note upward moisture migration at base of wall. This is "rising damp".

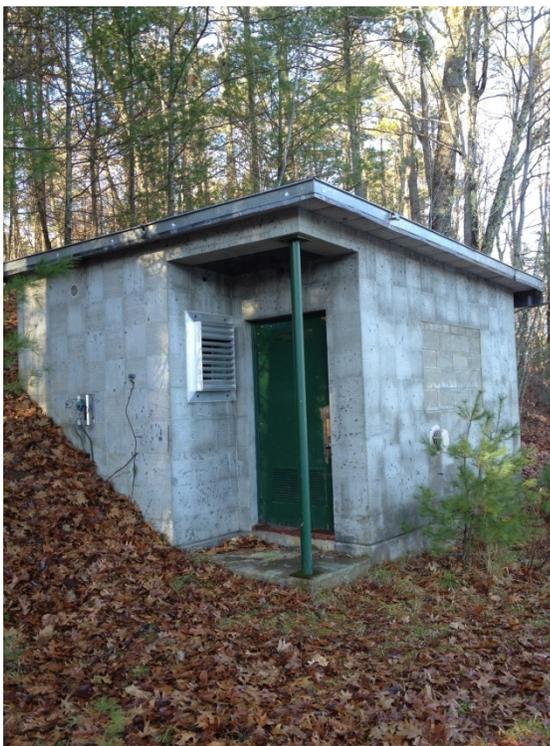


Well House No 1; Note moisture and moss on north and west side. These areas need extensive structural repair.



Northwest corner: Freeze-thaw damage to block. Typical condition. Requires removal of damaged areas and replacement, or removal and patching with concrete repair mortar.

Well House No. 2  
In good Condition





**Albert Frick Associates, Inc.**

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Noel Dunn, Office Manager

Chaffin Pond

Chaffin Pond Preserve Road

Windham

PRELIMINARY

Subsurface Wastewater Disposal Analysis

December 16, 2011

Albert Frick Associates, participating with the Mitchell Associates TEAM (Robert Metcalf) was responsible for evaluating the subsurface wastewater disposal of the parcel.

Subsurface Wastewater Disposal Potential:

The upland area of this parcel is comprised predominately of well and moderately well drained sandy and gravelly soil derived from stratified drift sediments (i.e. Adams, Colton, and Croghan)

The **Adams/Colton soils** are well drained sandy or gravelly soils that are classified as suitable for septic use with a medium hydraulic loading requirement (2.6 sq. ft. /gallon per day of wastewater generation. These soils are found on the higher terraces and along the ridges.

The **Croghan soil** is a moderately well drained, sandy soil that is classified as suitable for septic use with a medium hydraulic loading requirement (2.6 sq. ft. /gallon per day of wastewater generation. The seasonal high ground water table is between 15 to 40 inches from the existing ground surface, so site modification (i.e. fill) is required for constructing the septic system to achieve the required 24 inches separation distance from the bottom of the disposal area to the top of the seasonal high ground water table.

The **Naumburg soil** is somewhat poorly to poorly drained, derived from stratified drift sediments. This soil is not suitable for Septic use. Portions of Naumburg soils are hydric and can be classified as jurisdictional wetland areas.

The **Sebago soil** is very poorly drained soil derived from organic material and are wetlands and not suitable for septic use.

CONCLUSIONS:

There is ample flexibility of this site for on-site wastewater disposal.

If limited wastewater generation is proposed for passive recreation type uses than septic systems can be sited throughout the **Adams/Colton** and/or **Croghan Soils**.

If a more intensive recreational use is proposed (such as athletic fields) that would potentially generate greater volumes of wastewater, than the **Adams/Colton** locations would be more advantages for larger septic system siting

Please note that once a more specific developmental plan evolves with a better understanding of proposed use(s) and siting, than more site specific test pit evaluations will be needed to refine and permit the septic system designs

Please contact me if you have any questions or matters for additional discussion.

Respectfully

*Albert Frick*





**Albert Frick Associates, Inc.**

Environmental Consultants

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MITCHELL & ASSOCIATES  
CHAFFIN POND  
Proposed Recreation Center  
Chaffin Pond Preserve Road  
Windham, Maine

SOIL NARRATIVE REPORT

DATE: Soil profiles observed on December 12, 2011.

BASE MAP: Contour map 20-foot intervals, scaled 1"=200', provided by Mitchell & Associates.

GROUND CONTROL: Test pits located by GPS.

THE SOIL MAPPING CONFORMS WITH A MEDIUM-INTENSITY CLASS C SURVEY.

Class C - Soil Survey

1. Mapping units of 3 acres or greater.
2. Scale of 1" = 500' or larger.
3. Up to 50% inclusions in mapping units of which no more than 35% may be dissimilar soils.
4. Ground control - aerial photo interpretation utilizing natural features.
5. Base map does not require contour lines.

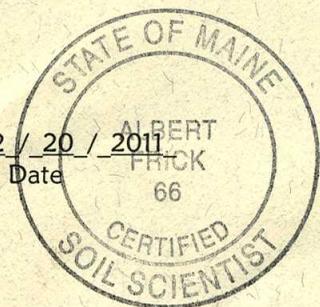
This was prepared for a proposed recreation center facility.

The accompanying soil profile descriptions, soil map and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

Albert Frick

C.S.S. #66, S.E. #163

12 / 20 / 2011  
Date



# ADAMS-COLTON (Typic Haplorthods)

## SETTING

<b>Parent Material:</b>	Derived from outwash, stratified drift material.
<b>Landform:</b>	Occupy outwash terraces and sand plains, deltas, lake plains, moraines, terraces and eskers.
<b>Position in Landscape:</b>	Usually occupies the upper positions of landform.
<b>Slope Gradient Ranges:</b>	(C) 8-20%

## COMPOSITION AND SOIL CHARACTERISTICS

**Drainage Class:** Somewhat excessively to excessively well drained, with no evidence of high groundwater table within 3.5 feet of the soil surface.

**Typical Profile Description (for Adams)**

**Surface layer:** Pinkish gray sand, 0-4"  
**Subsurface layer:** Dark brown loamy sand, 4-10"  
**Subsoil layer:** Brown & yellowish brown sand, 10-26"  
**Substratum:** Grayish brown sand, 26-70"

**Typical Profile Description (for Colton):**

**Surface layer:** Grayish brown gravelly loamy sand, 0-7"  
**Subsurface layer:** Dark reddish brown gravelly loamy sand, 7-11"  
**Subsoil layer:** Reddish brown gravelly loamy sand, 11-16"  
**Substratum:** Yellowish brown and pale brown very gravelly sand, 16-70"

**Note:** These soils in a non-regular, non-repeating pattern that could not be separated out at the scale of mapping.

<b>Hydrologic Group:</b>	Group A
<b>Surface Run Off:</b>	Very slow to medium
<b>Permeability:</b>	Rapid or very rapid
<b>Depth to Bedrock:</b>	Very deep, greater than sixty inches
<b>Hazard to Flooding:</b>	None

## INCLUSIONS (Within Mapping Unit)

<b>Similar:</b>	Hermon
<b>Dissimilar:</b>	Croghan soils that are moderately well drained and occur in shallow depressions

## USE AND MANAGEMENT

**Development with subsurface wastewater disposal:** Adams and Colton soils are suitable for subsurface wastewater disposal in accordance with State of Maine Rules for Subsurface Wastewater Disposal. These soils require a 24-inch separation distance from the bottom of the disposal area and the seasonal high groundwater table. This soil requires a minimum hydraulic loading rate of 2.6 and 1.3 square feet/gpd for disposal beds and chamber area, respectively. Adams/Colton soil is suited for building site development.



# CROGHAN (Aquic Haplorthods)

## SETTING

- Parent Material:** Derived from outwash or deltaic sand.
- Landform:** Occupy outwash terraces and sand plains.
- Position in Landscape:** Usually are found in intermediate or upper positions in the landscape.
- Slope Gradient Ranges:** (B) 3-8% (C) 8-20%

## COMPOSITION AND SOIL CHARACTERISTICS

- Drainage Class:** Moderately well-drained, with an apparent water table 1.5 to 2.0 feet below the soil surface from November through May. The water table fluctuates from approximately 1.5 feet during prolonged wet periods to depths greater than 4 feet in dry seasons.
- Typical Profile Description:**
- Surface layer:** Dark brown sand, 0-7"
  - Subsurface layer:** Strong brown/yellowish brown, brown & pale brown sand with mottles below 13", 7-52"
  - Substratum:** Grayish brown loose sand, 52-60"
- Hydrologic Group:** Group B
- Surface Run Off:** Slow to medium
- Permeability:** Rapid to very rapid in the lower horizons.
- Depth to Bedrock:** Deep, greater than 40".
- Hazard to Flooding:** None

## INCLUSIONS (Within Mapping Unit)

- Similar:** Adams, Colton
- Dissimilar:** Nicholville, Naumburg

## USE AND MANAGEMENT

**Development with subsurface wastewater disposal:** The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended. Croghan soils are suitable for subsurface wastewater disposal in accordance with State of Maine Rules for Subsurface Wastewater Disposal. This soil requires a 24-inch separation distance from the bottom of the disposal area and the seasonal high groundwater table. This soil requires a minimum hydraulic loading rate of 2.6 and 1.3 sq.ft/gpd for disposal beds and chamber area, respectively.



# DIXFIELD (Typic Haplorthods)

## SETTING

<b>Parent Material:</b>	Compact loamy glacial till.
<b>Landform:</b>	Glaciated uplands and drumlins.
<b>Position in Landscape:</b>	Upper portions of landform.
<b>Slope Gradient Ranges:</b>	(B) 3-8% (C) 8-20%

## COMPOSITION AND SOIL CHARACTERISTICS

<b>Drainage Class:</b>	Moderately well drained, with a perched water table 1.5 to 2.5 feet beneath the existing soil surface from November through April and during periods of excessive precipitation.
<b>Typical Profile Description:</b>	<b>Surface layer:</b> Grayish brown and dark brown fine sandy loam, 0-6" <b>Subsurface layer:</b> Strong brown and dark yellowish brown fine sandy loam, 6-19" <b>Subsoil layer:</b> Light olive brown gravelly fine sandy loam, 19-24" <b>Substratum:</b> Light olive brown gravelly sandy loam, 24-65"
<b>Hydrologic Group:</b>	Group C
<b>Surface Runoff:</b>	Moderate in the solum, moderately slow or slow in the compact substratum.
<b>Permeability:</b>	Moderate in the solum, moderately slow or slow in the compact substratum.
<b>Depth to Bedrock:</b>	Very deep, greater than 60".
<b>Hazard to Flooding:</b>	None
<b>Erosion Factors:</b>	K: .17 - .24

## INCLUSIONS (Within Mapping Unit)

<b>Similar:</b>	Hermon, Skerry, Becket, Croghan, Marlow, Adams
<b>Dissimilar:</b>	Colonel, Tunbridge (20-40" to bedrock), Lyman

## USE AND MANAGEMENT

**Development with subsurface wastewater disposal:** The limiting factor for building site development is wetness due to the presence of a perched water table 1.5 to 2.5 feet beneath the existing soil surface for a significant portion of the year. Proper foundation drainage is recommended for construction. Dixfield soil is suitable for subsurface wastewater disposal and requires a 12-inch separation distance from the bottom of any disposal area to the seasonal high groundwater table. Dixfield soil also requires 3.3 and 1.7 sq ft/gpd for disposal beds and chamber area, respectively. The Very Stony phase of Dixfield soil has up to 3% of the soil surface covered with stones.

# NAUMBURG (Aeric Haplaquods)

## SETTING

- Parent Material:** Derived from outwash, stratified drift and deltaic sediments.
- Landform:** Usually occupies low sand plains and terraces.
- Position in Landscape:** Naumburg soil is found in the lower positions of landscape.
- Slope Gradient Ranges:** (A) 0-3% (B) 3-8% (C) 8-20%

## COMPOSITION AND SOIL CHARACTERISTICS

- Drainage Class:** Somewhat poorly to poorly drained, with an apparent water table 0 to 1.5 feet below the soil surface from November through May. The water table fluctuates from 0 feet during prolonged wet periods to depths greater than 1.5" in dry seasons.
- Typical Profile Description:**
- Surface layer:** Black organic, 6" thick
  - Subsurface layer:** Reddish gray loamy sand, 0-6"
  - Subsoil layer:** Mottled dark reddish brown, dark brown, and yellowish brown sand, fine sand or loamy sand, 6-30"
  - Substratum:** Light brownish gray sand, 30-60"
- Hydrologic Group:** Group C
- Surface Run Off:** Very slow
- Permeability:** Rapid
- Depth to Bedrock:** Deep, greater than 40".

## INCLUSIONS

(Within Mapping Unit)

- Similar:** Au Gres, Finch (with cementation), Enosburg (Swanton), Roundabout
- Dissimilar:** Sebago, Naumburg (Variant – very poorly drained)

## USE AND MANAGEMENT

**Development with subsurface wastewater disposal:** The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended. Portions of this map may be suitable for subsurface wastewater disposal, where the depth to limiting factor is greater than 12" from the existing soil surface outside shoreland zone areas. Naumburg (poorly drained) may be classified as wetlands, based on the combined consideration of hydric conditions hydrology, and vegetation.



# SEBAGO (Fibric Borohemists)

## SETTING

<b>Parent Material:</b>	Thick organic deposits formed from herbaceous and woody plants.
<b>Landform:</b>	Bogs, marshes, and swamps.
<b>Position in Landscape:</b>	Nearly level low-lying areas and depressions in landscapes.
<b>Slope Gradient Ranges:</b>	(A) 0-3%

## COMPOSITION AND SOIL CHARACTERISTICS

<b>Drainage Class:</b>	Very poorly drained, with an apparent water table within 0.5 feet of the soil surface from September through July.
<b>Typical Profile Description:</b>	<b>Surface layer:</b> Dark reddish-brown sapric material, black mucky peat, 0-24" <b>Subsurface layer:</b> ) Dark reddish-brown to <b>Subsoil layer:</b> ) black sapric material, 24-51"+
<b>Hydrologic Group:</b>	Group D
<b>Surface Run Off:</b>	Moderately rapid to rapid.
<b>Permeability:</b>	Moderately rapid.
<b>Depth to Bedrock:</b>	Deep (greater than 40").
<b>Hazard to Flooding:</b>	None, though may be ponded in spring and during periods of heavy precipitation.

## INCLUSIONS

(Within Mapping Unit)

**Similar:** Chocorua

## USE AND MANAGEMENT

**Development with subsurface wastewater disposal:** The limiting factor for building site development is wetness due to the presence of a water table at or near the soil surface for a significant portion of the year. Sebago soil has severe limitations for construction, due to the instability of the thick organic deposits and ponding. Sebago soil is unsuitable for subsurface wastewater disposal as defined by State of Maine Rules for Subsurface Wastewater Disposal. Sebago soil is usually classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.



Town, City, Plantation  
WINDHAM

Street, Road Subdivision  
CHAFFIN POND PRESERVE ROAD

Owner's Name  
PARKS AND RECREATION

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP A-1  Test Pit  Boring  
\_\_\_\_\_ " Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
LOAMY SAND			
	FRIABLE	YELLOW BROWN	
GRAVELLY COARSE SAND			
LIMIT OF EXCAVATION			

Soil Classification: S Profile, B Condition  
Slope: 0-3 %  
Limiting Factor: \_\_\_\_\_  
 Ground Water  
 Restrictive Layer  
 Bedrock  
 Pit Depth

COLTON

Observation Hole TP A-2  Test Pit  Boring  
\_\_\_\_\_ " Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
LOAMY SAND		YELLOW BROWN	
	FRIABLE		
		LIGHT BROWN	
LIMIT OF EXCAVATION			

Soil Classification: S Profile, B Condition  
Slope: 0-3 %  
Limiting Factor: \_\_\_\_\_  
 Ground Water  
 Restrictive Layer  
 Bedrock  
 Pit Depth

ADAMS

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP A-3  Test Pit  Boring  
\_\_\_\_\_ " Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
LOAMY SAND		YELLOW BROWN	
	FRIABLE		
COARSE SAND		LIGHT BROWN	FEW, FAINT
LIMIT OF EXCAVATION			

Soil Classification: S Profile, C Condition  
Slope: 0-3 %  
Limiting Factor: 1B  
 Ground Water  
 Restrictive Layer  
 Bedrock  
 Pit Depth

CROGHAN

Observation Hole TP A-4  Test Pit  Boring  
\_\_\_\_\_ " Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
LOAMY SAND			
	FRIABLE	DARK YELLOW BROWN	
COARSE SAND		LIGHT BROWN	
LIMIT OF EXCAVATION			

Soil Classification: S Profile, B Condition  
Slope: 0-3 %  
Limiting Factor: \_\_\_\_\_  
 Ground Water  
 Restrictive Layer  
 Bedrock  
 Pit Depth

ADAMS

*Albert Frick*  
Site Evaluator / Soil Scientist Signature

163/66

SE/CSS \*

12/12/2011

Date

Town, City, Plantation  
**WINDHAM**

Street, Road Subdivision  
**CHAFFIN POND PRESERVE ROAD**

Owner's Name  
**PARKS AND RECREATION**

**SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)**

Observation Hole TP B-1  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
STONY LOAMY SAND	FRIABLE	DARK YELLOW BROWN	
	SOMEWHAT FIRM	LIGHT YELLOW BROWN	FEW, FAINT
REFUSAL IN LARGE ROCKS			

Soil Classification Profile <b>3</b>	Slope <b>0-3 %</b>	Limiting Factor <b>20"</b>	<input checked="" type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth
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Observation Hole TP B-2  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
STONY LOAMY SAND	FRIABLE	DARK YELLOW BROWN	
	SOMEWHAT FIRM	LIGHT YELLOW BROWN	FEW, FAINT COMMON, DISTINCT
REFUSAL IN LARGE ROCKS			

Soil Classification Profile <b>3</b>	Slope <b>0-3 %</b>	Limiting Factor <b>15"</b>	<input checked="" type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth
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**SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)**

Observation Hole TP B-3  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
		DARK BROWN	
LOAMY SAND WITH STONES	FRIABLE	DARK YELLOW BROWN	FEW, FAINT
	SOMEWHAT FIRM	LIGHT OLIVE BROWN	COMMON, DISTINCT
REFUSAL IN LARGE ROCKS			

Soil Classification Profile <b>3</b>	Slope <b>0-3 %</b>	Limiting Factor <b>14"</b>	<input checked="" type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth
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Observation Hole TP B-4  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
COARSE LOAMY SAND		DARK YELLOW BROWN	
MEDIUM SAND	FRIABLE	LIGHT YELLOW BROWN	FEW, FAINT
FINE AND MEDIUM SANDS		PALE OLIVE	
LIMIT OF EXCAVATION			

Soil Classification Profile <b>5</b>	Slope <b>0-3 %</b>	Limiting Factor <b>22"</b>	<input checked="" type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth
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**PARKS AND RECREATION**

**SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)**

Observation Hole TP B-5  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		BROWN	
	FRIABLE	DARK YELLOW BROWN	
COARSE LOAMY SAND			
MEDIUM SAND		LIGHT YELLOW BROWN	EFW, FAINT
FINE AND MEDIUM SANDS		PALE OLIVE	
LIMIT OF EXCAVATION @ 52"			

Soil Classification  
**S**  
Profile

Slope  
**0-3** %

Limiting Factor  
**36** "

Ground Water  
 Restrictive Layer  
 Bedrock  
 Pit Depth

Observation Hole TP B-6  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
LOAMY SAND		DARK YELLOW BROWN	
GRAVELLY LOAMY SAND AND SAND	FRIABLE	YELLOW BROWN	NONE EVIDENT
GRAVELLY MEDIUM AND COARSE SAND			
LIMIT OF EXCAVATION			

Soil Classification  
**S**  
Profile

Slope  
**0-3** %

Limiting Factor  
"

Ground Water  
 Restrictive Layer  
 Bedrock  
 Pit Depth

**SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)**

Observation Hole TP B-7  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
GRAVELLY LOAMY SAND		DARK YELLOW BROWN	
COBBLY COARSE SAND	FRIABLE	YELLOW BROWN OVER LIGHT OLIVE BROWN	NONE EVIDENT
LIMIT OF EXCAVATION			

Soil Classification  
**S**  
Profile

Slope  
**0-3** %

Limiting Factor  
"

Ground Water  
 Restrictive Layer  
 Bedrock  
 Pit Depth

Observation Hole TP B-8  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
GRAVELLY LOAMY SAND	FRIABLE	DARK YELLOW BROWN	
GRAVELLY LOAMY SAND AND SAND		YELLOW BROWN	
COBBLY GRAVELLY COARSE SAND		LIGHT OLIVE BROWN	
LIMIT OF EXCAVATION (REFUSAL IN COBBLES)			

Soil Classification  
**S**  
Profile

Slope  
**0-3** %

Limiting Factor  
"

Ground Water  
 Restrictive Layer  
 Bedrock  
 Pit Depth

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PARKS AND RECREATION

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP B-9  Test Pit  Boring  
2 " Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
LOAMY SAND		DARK YELLOW BROWN	
LOAMY SAND AND SAND		YELLOW BROWN	
MEDIUM SAND	FRIABLE	LIGHT OLIVE BROWN	NONE EVIDENT
GRAVELLY MEDIUM COARSE SAND			
LIMIT OF EXCAVATION (REFUSAL IN STONES)			

Soil Classification Profile <u>S</u>	Slope <u>0-3 %</u>	Limiting Factor <u>"</u>	<input type="checkbox"/> Ground Water
Condition <u>B</u>		<input type="checkbox"/> Restrictive Layer	<input type="checkbox"/> Bedrock
		<input type="checkbox"/> Pit Depth	

Observation Hole TP B-10  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
LOAMY SAND		DARK YELLOW BROWN	
LOAMY SAND AND SAND	FRIABLE	YELLOW BROWN	
MEDIUM SAND		LIGHT OLIVE BROWN	NONE EVIDENT
LIMIT OF EXCAVATION			

Soil Classification Profile <u>S</u>	Slope <u>0-3 %</u>	Limiting Factor <u>"</u>	<input type="checkbox"/> Ground Water
Condition <u>B</u>		<input type="checkbox"/> Restrictive Layer	<input type="checkbox"/> Bedrock
		<input type="checkbox"/> Pit Depth	

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP B-11  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
LOAMY SAND		YELLOW BROWN	
FINE AND MEDIUM SANDS	FRIABLE	LIGHT OLIVE BROWN	FEW, FAINT
		PALE OLIVE	△△△ FREE WATER
LIMIT OF EXCAVATION			

Soil Classification Profile <u>S</u>	Slope <u>0-3 %</u>	Limiting Factor <u>24 "</u>	<input checked="" type="checkbox"/> Ground Water
Condition <u>C</u>		<input type="checkbox"/> Restrictive Layer	<input type="checkbox"/> Bedrock
		<input type="checkbox"/> Pit Depth	

Observation Hole TP B-12  Test Pit  Boring  
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SANDY LOAM		DARK BROWN	
LOAMY SAND		DARK YELLOW BROWN	
FINE AND MEDIUM SANDS	FRIABLE	YELLOW BROWN	FEW, FAINT
		LIGHT OLIVE BROWN	△△△ FREE WATER
LIMIT OF EXCAVATION			

Soil Classification Profile <u>S</u>	Slope <u>0-3 %</u>	Limiting Factor <u>16 "</u>	<input checked="" type="checkbox"/> Ground Water
Condition <u>C</u>		<input type="checkbox"/> Restrictive Layer	<input type="checkbox"/> Bedrock
		<input type="checkbox"/> Pit Depth	

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