

STATE OF MAINE
LAND USE REGULATION COMMISSION

IN THE MATTER OF DEVELOPMENT)	Pre-Filed Direct Testimony of
APPLICATION DP 4889)	David Raphael on behalf of
CHAMPLAIN WIND, LLC)	Champlain Wind, LLC
BOWERS WIND PROJECT)	

On behalf of Champlain Wind, LLC, David Raphael of LandWorks is submitting this pre-filed direct testimony in support of the Bowers Wind Project (“Project”).

I. QUALIFICATIONS AND BACKGROUND

My name is David Raphael and I am a Professional Landscape Architect and Planner and owner of LandWorks, as well as a Lecturer in the School of Natural Resources at the University of Vermont. I began my career as a landscape architect and planner working for the State of Massachusetts Department of Environmental Management. Since 1986 I have been the Principal and owner of LandWorks, a multidisciplinary planning, design and communications firm based in Middlebury, Vermont. LandWorks serves both public and private sector clients in Vermont and the Northeast. Our areas of expertise include visual, aesthetic and environmental assessment, site and master planning, graphic communications and GIS mapping, permit planning, participatory and community planning, downtown revitalization, open space and conservation planning, zoning ordinance and design review development, landscape architecture and environmental design. At LandWorks we have worked as advocates for communities, appellants, the State of Vermont and private corporations. I personally have presented and served as an expert witness before most of the District Commissions in Vermont and the Environmental Board, as well as the Public Service Board.

LandWorks has extensive experience with regard to visual impact assessments (VIA's) and the design and installation of utility facilities and structures. We have been a consultant in this capacity for the Vermont Department of Public Service. We have evaluated the aesthetic and environmental impact of transmission lines and corridors (throughout the state of Vermont and New Hampshire); transmission structures (throughout the state of Vermont and the PV20 line removal along the Route 2 causeway in Milton/South Hero); proposed telecommunication facilities and windpower turbines (Searsburg and Kingdom Community Wind projects developed by Green Mountain Power Corp and multiple other wind projects in the states of Vermont, Maine and Massachusetts). I have provided VIA's for a number of utility scale wind power projects including the Sheffield Wind Farm and the Georgia Mountain Community Wind projects in Vermont, which have received Certificates of Public Good from the Board, as well as the Rollins Wind and Oakfield Wind projects in Maine, which were permitted by the Maine Department of Environmental Protection. I have served as a member of the Design Issues Study Committee appointed by the Secretary of the Vermont Agency of Natural Resources, an initiative which clarified the application of the Quechee Analysis for aesthetics and which resulted in the publication of *Vermont's Scenic Landscapes: A Guide for Growth and Protection*. In addition we have prepared zoning ordinances and Management Plans based on scenery preservation and environmental protection guidelines (such as the Town of Stowe Ridgeline and Hillside Overlay District, and the award winning Lake George Upland Protection Program Manual), prepared scenic highway corridor studies (Interstate 91 in Brattleboro, The Molly Stark Byway Management Plan and the Route 100B Scenic Byway Management Plan) and authored a study and state policy which was adopted for permit review of the night lighting of ski areas (Agency of Natural Resources).

Additionally, I have been a delegate to the Addison County Regional Planning Commission and continue as chairman of my town's Design Review Board and Planning Commission, a position I have held for over 20 years. Attached as Exhibit A is my resume.

II. INVOLVEMENT WITH THE BOWERS WIND PROJECT

I was responsible for field evaluation, site photography, and preparation of the visual impact assessment (VIA) for the Bowers Wind Project. The VIA was based on a review of the Bowers Wind Application, including the civil design plans. In addition, the VIA reflects extensive fieldwork conducted on June 5, July 16, and July 17, 2010. We visited all areas with state or national significance that would have potential views of the Project to observe the Project site and determine its relative visibility. We visited the study area by automobile, motorboat, and on foot in 2010 and again in 2011. Fieldwork was limited to lands that were open to the public; no attempt was made to investigate potential impacts on individual private properties. In addition to the field work, we have conducted research and analysis related to nature and extent of the use the resource and viewer expectations. This analysis relied on a host of diverse sources, including survey information, interviews with local guides, business owners, and selectboard members, background polling, studies, guide books, publications, online media, anecdotal sources, as well as general field observations, that, coupled with our years of experience in assessing recreational resources, and in participating personally in recreation in Maine, inform and support our conclusions in the VIA.

I also oversaw the preparation of viewshed analysis and computer-generated models of the Project by members of my staff. A detailed description of the process used to prepare the photosimulations and other computer mapping is included in Section 2.3 of the VIA.

This testimony provides a summary of the VIA provided in Exhibit 18 of the application

submitted to LURC by Champlain Wind for the Bowers Wind Project (“the Application”), as supplemented by responses to agency review comments prepared by the Portland Research Group and LandWorks and filed with the Commission on May 27, 2011.

III. SUMMARY OF KEY FINDINGS

The VIA was prepared in accordance with the scenic impact assessment requirements of the Wind Energy Act (found at 35-A M.R.S.A. § 3452, et seq.). As a result of our work, both in the VIA and as reflected in the supplemental materials provided to the Commission, we have concluded that the proposed Project conforms with the provisions of the Act, is well sited and designed and would not have an unreasonable adverse effect on the scenic values and existing uses related to the scenic character of the area, or on uses of or views from scenic resources of state or national significance.

There is one National Historic Register site, Springfield Congregational Church, but the Project is not visible from this location. There are 13 great ponds identified within the Project viewshed having outstanding or significant scenic quality: 4 lakes will have potential visibility of the Project within 3 miles; 4 lakes will have potential visibility of the Project within 3-8 miles; 3 lakes will have potential visibility of the Project, but the nearest *visible* turbine is beyond 8-miles for each lake; and, 2 lakes will have no visibility of the Project due to intervening topography.

Although the Project area is valued for its landscape qualities and recreational resources and is appealing to those who live in and travel to the area, these resources do not possess unique and highly sensitive qualities that preclude the addition of an array of wind turbines within their viewshed. This is not a pristine landscape, and has long been a working landscape that has been used and developed for its recreational, timber and water resources. It is a similar landscape to other nearby areas and lake-region landscapes elsewhere in Maine. Landscapes that are very

scenic or outstanding and as a result more sensitive to visual change, usually have prominent distinctions between landforms, such as a flat open field in combination with a steeply rising mountain, or have unique focal points and distinct, memorable profiles. Those types of features are not present here and, as a result, the landscape in the Project area is generally able to accommodate the presence of turbine without fundamentally changing the scenery or adversely impacting recreational uses of the lake resources.

In addition, there is a growing body of evidence that the presence of wind turbines in the viewshed of the types of resources present here will not unreasonably adversely impact either scenic quality or, importantly, the continued use and enjoyment of those resources. This evidence includes intercept surveys conducted in Maine, a survey of users of lake where there is significant visibility of the Stetson project, studies done in New England and elsewhere on the impact of wind turbines on tourism in the area, public polling, and more anecdotal information gathered from people who live, work and recreate in the Project area.

IV. EVALUATION OF VISUAL IMPACTS

A. Project Description and Context of the Area

The Project will be located in Penobscot County and Washington County and includes up to 27 wind turbines with a hub height of 80 meters (130.5 m to the tip), associated access roads, a 34.5-kilovolt (kV) electrical collector system, an electrical collection substation, an Operations and Maintenance (O&M) building, and up to four permanent 80-meter meteorological (met) towers. Some of the turbines and met towers would be lit at night per FAA requirements.

The Project will be constructed on three ridges in the project area: Bowers Mountain and an unnamed ridge to the south (“South Peak”) in Carroll Plantation, and Dill Hill in Kossuth Township. Access roads will connect each turbine location and will provide construction and

maintenance access from Route 6. The electrical collector line will connect each turbine location and will then travel north for approximately 5 miles towards a proposed substation located adjacent to Line 56.

The proposed Project is part of five hills ranging in elevation from 750 to 1120 feet above sea level and consisting of moderately steep to gentle sloping sides. The relief as viewed from lakes in the area is not dramatic or unique. All of these rolling hills are located directly south of Route 6 and cross the town boundary from Carroll to Kossuth.

Much of the land in the study area is privately owned and has been heavily harvested, showing evidence of extensive historic and recent forest management activity. There are also a number of publicly and privately conserved lands in the 8-mile study area, which includes nearly 39,000 acres of the Sunrise Conservation Easement, and the 890-acre lot owned by the Bureau of Parks and Lands (BPL) situated between Keg and Duck Lakes. The Sunrise Conservation Easement is part of a larger conservation effort to support the continued use of the area as a working forestry, to conserve and enhance wildlife habitat, to maintain an undeveloped shoreline, and to protect historic public recreation. The BPL land is managed primarily for forestry and wildlife related uses.

This region of Maine is most notably known for its very low population, undeveloped areas, and vast woodlands used primarily for forestry related uses. Most of the residential development, predominantly characterized by seasonal camps, is scattered along Route 6 and along the many miles of shoreline in the 8-mile study area. All of the region's major employment centers, like Lincoln, are relatively far. The immediate area around the Project site is used locally but is not a significant destination area for tourism. Thus, most of the commercial and retail activity is found outside the study area.

The West Grand Lake/Grand Lake Stream area is located approximately 17 miles from the Project and is famous for its fishing, boating and bird watching. The recreational and guiding activities based out of that area extend predominantly to West Grand Lake and the immediate vicinity. It is also a hub of commercial forestry, and millions of surrounding acres are in active forest management. For more than 100 years, these uses have existed in concert with one another. Outdoor recreation and commercial forestry are not mutually exclusive pursuits, and the network of land management roads constructed by timber companies is used by thousands of hunters, fishers, boaters, wildlife watchers and other outdoor enthusiasts. Similarly, and as our experience and investigation here has shown, the presence of turbines in the viewshed of the lakes in the Project area and the continued recreation and use and enjoyment of those lakes are not mutually exclusive pursuits.

B. Scenic Resources of State or National Significance and Applicable Review Criteria

As part of our work on this Project, LandWorks identified all scenic resources of state or national significance located within eight miles of any Project element, irrespective of whether there was visibility of the Project from that resource. Each of those resources is identified in Table 1 below and an assessment for each lake is provided in Section C. Detailed descriptions and evaluations for each resource are also provided in the VIA.

Table 1. Summary of Resources of State or National Significance Within 8 Miles of Any Project Element

	Town	Status [Significant (S), Outstanding (O)]	Distance to Nearest Visible Turbine¹	# of Turbines Visible within 8 Miles¹ (27 total)
GREAT PONDS				
Within 3 miles of the Project				
Pleasant Lake ³ (2.42 sq. mi.)	T6 R1 NBPP	State (O)	2.16 mi.	0-27
Shaw Lake ⁴ (0.39 sq. mi.)	T6 R1 NBPP	State (S)	2.6 mi.	0-25
Duck Lake (0.41 sq. mi.)	Lakeville	State (S)	2.7 mi.	0-18
Junior Lake ² (6.25 sq. mi.)	T5 R1 NBPP	State (S)	2.99 mi.	0-23
Within 3-8 miles of the Project				
Scraggly Lake (2.56 sq. mi.)	T6 R1 NBPP	State (S)	3.3 mi.	0-26
Keg Lake (0.58 sq. mi.)	Lakeville	State (S)	3.78 mi.	0-18
Bottle Lake (0.40 sq. mi.)	Lakeville	State (S)	5.1 mi.	0-13
Sysladobsis Lake (1.08 sq. mi.)	Lakeville	State (S)	6.34 mi.	0-22
West Musquash Lake (2.05 sq. mi.)	T6 R1 NBPP	State (O)	NA ⁵	NA ⁵
Lombard Lake (0.43 sq. mi.)	Lakeville	State (O)	None Visible	0
Norway Lake (0.19 sq. mi.)	T5 R1 NBPP	State (S)	NA ⁵	NA ⁵
Upper Sysladobsis Lake (1.62 sq. mi.)	Lakeville	State (S)	None Visible	0
Horseshoe Lake (0.206 sq. mi.)	Lakeville	State (S)	NA ⁵	NA ⁵
NATIONAL REGISTER OF HISTORIC PLACES				
	Town	Project Visibility		
Springfield Congregational Church	Springfield	None		

¹Based on Exhibit 4: Viewshed Map (topography and vegetation/from the hub)

²An insignificant portion of the lake is within the 3-mile radius - only about 350 feet from the northern shoreline.

³About 1/3 of the lake is within the 3-mile radius.

⁴A little over 1/3 of the lake is within the 3-mile radius.

⁵NA=Not Applicable since nearest visible turbine is beyond 8 miles

There are no other scenic resources of state or national significance within eight miles of any Project element, including the following: national natural landmarks; national or state parks; segments of rivers or streams identified as having unique or outstanding scenic attributes in the Maine Rivers Study; scenic viewpoints located on state public reserved land or on a trail that is used exclusively for pedestrian use that the Department of Conservation has designated by rule; scenic turnouts constructed by the Department of Transportation on a public road designated as a scenic highway; or scenic viewpoints located in coastal areas ranked as having state or national significance.

Additionally, as reflected in Table 1, only eight of the fourteen resources of state or national significance have visibility of any Project element located within eight miles. A complete discussion of the Project's visibility on those eight lake resources is provided in the VIA as supplemented by our May 27, 2011 Response to Review Comments, and is summarized in Section D below.

The Project is subject to the six evaluation criteria set forth by the Maine Wind Energy Act, which determines whether an expedited wind energy development significantly compromises views from a scenic resource of state or national significance such that the development has unreasonable adverse effects on the scenic character or existing uses related to scenic character of the resource. While these are accepted criteria, the Act does not specifically delineate how a VIA is to be conducted, nor does it specify what tools to use. Aesthetic experts generally agree on these evaluation methods and categories, but we believe it is important to understand that a comprehensive VIA is more than just the sum of its parts. Thus, we have addressed the six criteria outlined in the Act, but have also included useful concepts and accepted

elements for evaluation among landscape professionals to provide an additional layer by which to 1) understand the value (or significance) of the resource, 2) understand Project visibility and, 3) effect on public use and enjoyment, as described below. We believe these additional categories are useful, informative and add more understanding to the assessment of impacts. These criteria are outlined below and inform our findings and conclusions regarding the significance of Project visibility on these resources.

1. Significance of the Resource

The Wind Energy Act requires the review agency to consider the significance of the potentially affected resource, the existing character of the surrounding area, and the expectations of the typical viewer. 35-A M.R.S.A. § 3452(3)(A-C). The following considerations provide information that assists the review agency in doing so.

Significance/uniqueness. This category assesses the overall significance of the resource based on its unique, distinctive or exceptional character. If a resource is a one of kind scenic environment, with a corresponding opportunity for the user/viewer to experience a unique experience that cannot be readily experienced elsewhere, then it will rank higher for significance and uniqueness. Lakes with highly scenic attributes and unique scenic traits are more sensitive to change and development.

Character. This category includes information on the overall landscape character of the resource and its environs. Character includes the physical geography, the visual qualities of the area as well as the land uses present in the landscape. It is a description and understanding of the existing conditions and landscape type, including the development that is present or likely to continue. The character of the surrounding area helps to inform our understanding of the scenic qualities and sensitivity of the landscape to change. The physical geography also affects the

ability of the landscape to “visually absorb” or accommodate the development without significantly altering the quality or character of the resource.

Level of Use. This category includes information on the number and types of users of the resource. As discussed in Section C, quantitative data is limited, but there are a number of studies that coupled with our more informal mean of collecting information have informed our conclusions on the level and types of use of the resources in question. A cautionary note is necessary, however, in evaluating the significance of the level of use of a resource. For example, it might be assumed that high use is an indication of high scenic value (people are more attracted to it than other similar resources) and that an adverse visual impact on such a resource is more significant because affects a higher number of individuals. That is not always the case. For example, resources that afford easy access may be located in more developed areas and the users may not expect an undeveloped landscape. Similarly, although a scenic resource that receives low public use might suggest that an adverse impact is less significant because few people will be affected, that is also not necessarily the case. For example, there are some resources that receive low public use because they are in remote locations that are difficult to access. Some of those resources have high scenic value in part due to their remote location and therefore it cannot be assumed that low use necessarily means that an adverse impact is less significant. Instead, the significance of the resource and the basis for the relative use levels must be considered in drawing any conclusions about the significance of the use levels. It should be noted that LURC defines "remote ponds" as Management Class 6 lakes that are "inaccessible, undeveloped lakes with coldwater fisheries," but none of the lakes in the Study Area have this designation.

Viewer expectations. This is a more difficult category to assess insofar as every individual has a different perspective, purpose and expectation that he or she may bring to the

experience of the resource. One key consideration in this regard is the predominant types of recreational use of the resources considered, which are primarily lakes and ponds. Each user group has different expectations although some of those expectations may be shared among user groups. Additionally, it is difficult to obtain quantitative data on user expectations and, as a result, it requires qualitative judgment informed by objective information and survey results, professional experience, observations and field work, as well as more anecdotal and informal information from users. The sources relied on to evaluate user expectations are discussed more fully in Section C.

2. Project Visibility

The Wind Energy Act also requires the agency to consider the extent and scope of Project visibility on scenic resources of state or national significance. 35-A M.R.S.A. § 3452(3)(F). The following factors assist in understanding and evaluating Project visibility.

Proximity/Distance Zones. The closer the project is to the resource, the greater the potential exists for visual impacts. Aesthetic experts agree that the visual impact of wind turbines diminishes over distance, and the Act has established that turbines visible beyond 8-miles are deemed insignificant. LandWorks' use of proximity and distance is directly related to perceived impact and therefore we consider it to be a valuable tool for evaluating scope, scale and effect. The presence of the wind turbines, for example, in a "background zone" when seen from a particular vantage point, diminishes its perceived impact. The distance zones used for the Bowers Wind Project are discussed in more detail in Section 2.4 of the VIA.

Extent and Nature of Visibility. This category accounts for the number of turbines visible and the extent of that visibility - factoring in how much of the individual structures and rotors are visible. The greater the number of turbines visible, and the greater extent of the each turbine that

is visible, results in a higher impact and correlating ranking.

Duration of View. This evaluation is based on whether a user of the resource or viewer will have an extended and involuntary view of a project (high impact) or if the duration of view is limited either by the extent of visibility from the resource or if there are other views and locations which the viewer can experience the resource from with minimal or no visibility of the project.

Visual Absorption. Visual absorption is an established criterion among experts for evaluating visual impact and addresses the ability of the landscape to accommodate development. It is part of our holistic approach to understanding the potential for a landscape to accommodate change and the degree to which the qualities of that landscape or perception of that landscape are affected by the presence of turbines. Our experience in the field indicates that this concept is particularly compelling when actually viewing landscapes that will have wind turbines in view. For example, the turbine arrays may be close, but they still may not dominate the 360-degree view and instead may occupy only a small portion of the view. Other elements within that view, which attract the eye and views in other directions, may diminish the overall effect of turbine visibility. The concept of visual absorption helps us understand the significance of visibility and goes beyond simply the number of turbines visible from a particular location.

3. Impact to Use and Enjoyment

The Wind Energy Act also requires the review agency to ascertain the extent to which visibility of the Project has an impact on the user's ability to enjoy and fully experience the resource. 35-A M.R.S.A. § 3452(3)(E). This analysis is informed by both the significance of the resource as well as visibility of the turbines from the resource. Additionally, a number of factors can affect use and enjoyment, including the viewer's attitude towards wind, the type of

activity the viewer is engaged in, and whether there are options for experiencing the resource without viewing the Project if the user considers visibility of the Project undesirable. As with user expectations, this is a more difficult category on which to obtain objective data and requires the exercise of qualitative judgments informed by user surveys, experience with existing projects, and other sources of anecdotal information. The sources relied on for this determination are discussed more fully in Section C.

C. **Public Use, User Expectations and Impact on Continued Use and Enjoyment**

As Dr. Palmer acknowledges in his review of this and other wind power projects in Maine, it is difficult to obtain data on the public's use of scenic resources of state or national significance. Likewise, assessing user expectations and evaluating the effect of project visibility on the public's continued use and enjoyment of such resources can be challenging and requires qualitative as well as quantitative judgments. As discussed below, we have relied on a number of different sources that collectively inform our analysis of these issues. Importantly, several consistent themes have emerged that indicate visibility of the Bowers Project will not have an unreasonable adverse effect on the scenic character or the existing uses related to scenic character.

1. Public Use

Our assessment of public use of the scenic resources of state or national significance located within the Project area is based on the following: field observations, which provide important indicators of public use; evidence or lack thereof of tourism related facilities and infrastructure (i.e. no signs to indicate where or how to get to these lakes); informal interviews of individuals who live, work or recreate in the area; the results of a telephone survey and a snowmobile survey conducted by the Portland Research Group (discussed below); the results of

surveys conducted on recreational use and resource analysis in the Baskahegan watershed (discussed below); guide books and on-line sources describing recreational opportunities and uses in the region; State publications including the Maine State Comprehensive Outdoor Recreation Plan 2009-2014 (SCORP) and the MDIFW Fishing Guide; and other area recreational reports. These sources collectively demonstrate the following;

- Overall these lakes experience relatively low use by the public, particularly in comparison to other higher use lakes in the region such as Baskahegan or West Grand Lakes.
- The principal use of the lakes in the study area is for fishing, primarily on motorized boats.
- The majority of users are local to (i.e. have second homes or camps) or live in the area. This is especially true for lakes that have some camp development but are otherwise difficult to access, such as Keg Lake.

2. User Expectations and Impact of Turbine Visibility on Continued Use and Enjoyment

As with evaluation of public use, we have relied on a diversity of data sources that collectively allow us to make informed conclusions on user expectations and the impact of Project visibility on the continued use and enjoyment of scenic resources within the study area. These sources include informal interviews with individuals who live, work or recreate in the Project area; research based on guide books, web sites, state publications and other sources of data on recreational opportunities in the area; evaluation of background polling on wind power; surveys relating to wind power projects in Maine and New England; as well as more general recreational studies. A list of the sources relied on is included as Exhibit B.

In addition to the sources identified above, we have relied upon our extensive professional experience in order to make reasonable assumptions in terms of use and viewer expectations. LandWorks has been involved with the aesthetic assessment of wind energy development for over 15 years, beginning with our review, on behalf of the Vermont Department

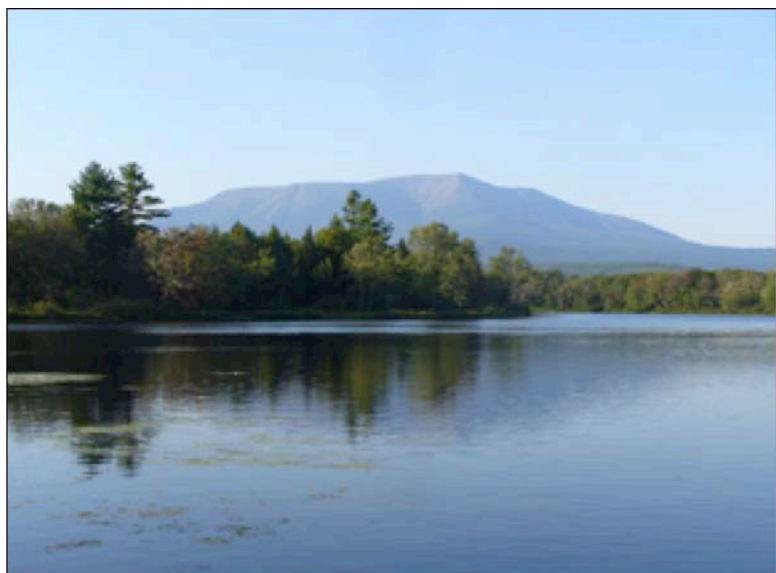
of Public Service, of the Searsburg Wind Farm in Searsburg, Vermont, the first utility-scale wind energy development in New England. We have been involved in 10 different utility-scale or net-metered wind energy projects, several of which are in operation today. We have been involved in evaluating aesthetic impacts of wind and solar energy, biomass facilities, nuclear power and major transmission facilities throughout northern New England. From these experiences and the corresponding evolution of the technical means by which to conduct such analyses, we have learned that visual and aesthetic impact evaluation is an inexact science. Our ability to assess visual and aesthetic impacts, while relying heavily on technical methodologies such as visual simulations and viewshed mapping using GIS technologies, also requires the distinct capability to synthesize the technical analyses and data with a broader understanding of the project's context, its fit within the physical and cultural geography of the region, and its consistency overall with the intent of the governing legislation. Our experience has led us to a qualitative approach to determining overall scenic impact to the resource. This qualitative approach draws heavily on our field experience and observations, all of which have informed our understanding of how the viewer engages in recreation on lakes and what they typically do and expect to see or experience.

a. Unique Scenic Features

In our overall analysis, LandWorks concluded that while the Project area is indeed valued for its landscape qualities and recreational resources and is appealing to those who live in and travel to the area, these resources and characteristics do not offer unique and highly sensitive qualities that preclude the addition of an array of wind turbines within the view of users on portions of the lakes. This is not a pristine landscape, and has long been a working landscape that has been used and developed for its recreational, timber and water resources. It is a similar landscape to other nearby areas and lake-region landscapes elsewhere in Maine. Landscapes that are very scenic or outstanding usually have prominent distinctions between landforms, such as a flat open field in combination with a steeply rising mountain, or have unique focal points and distinct, memorable profiles. The striking view of Mount Katahdin from the Penadumcook Lakes is a good example of this (see accompanying photo). It is such iconic landscapes that are more sensitive to changes in the viewshed, but those features are not present here. As discussed in connection with absorption, the landscape in the Project area is generally able to accommodate the presence of turbines without fundamentally changing the scenery or adversely impacting recreational uses of the lake resources.

b. User Surveys

A number of wind power projects in Maine have utilized intercept surveys to evaluate public use, user expectations, and impact of project visibility on use



Mount Katahdin as seen from the Penadumcook Lakes.

and enjoyment of scenic resources. Although there are limitations to the intercept and other forms of surveys, they provide information on recreational uses and user expectations that, when synthesized with other data, helps inform our evaluation of the review criteria under the Wind Energy Act.¹ Portland Research Group, a professional market research firm, conducted two studies specific to the Project area. The first study was a telephone survey of users of outdoor resources in Maine. The purpose of the study was to measure awareness and use of the lake resources in the Project area, and to understand both user expectations and the potential impact of turbine visibility on those users. Key findings from this survey include:

- **The Study Area is not well known as a tourist or recreational destination.** More than one-third of respondents (37%) are not aware of any of the lakes in the Study Area. Out of all the individuals asked, only five percent use at least one of the eight lakes mentioned from the Study Area more than just rarely.
- **The primary recreational use in this region is fishing.** Two-fifths (42%) of those who use the Study Area reported fishing as the outdoor activity they most frequently participate in, followed distantly by hiking (19%), camping (10%) and canoeing or kayaking (10%);
- **Users are likely to return if a wind farm were in view.** Over two-thirds of the respondents (68%) were either more likely to return or would be unaffected by seeing a wind farm;
- **Users could go elsewhere if the view of a wind farm affected them.** Most respondents (84%) indicated that they could go elsewhere in Maine to participate in their outdoor activity of choice; three quarters (73%) of respondents for whom seeing wind farms would have a negative impact indicated that they could go elsewhere.

The second study was an intercept survey of snowmobilers who attended a ride-in at the Stetson Mountain project. That study also sought to evaluate awareness and use of the lake resources in the Project area. Findings from this survey are very similar to the telephone survey and include:

¹ Surveys often times are self-selecting because only people with an interest in responding do so. Additionally, due to typically limited samplings, the results may not statistically significant or necessarily reflective of broader trends. With that cautionary note, we believe the surveys done for this Project and others provide helpful insights.

- **The primary recreational use in the region is fishing.** Two-thirds of respondents (66%) indicated that fishing is their most frequent outdoor activity in the Study Area, followed by ATV riding (59%), and motor boating (52%)
- **Wind power in Maine is highly supported.** Almost three-quarters of respondents (72%) support the development of commercial-scale wind energy in Maine. One-quarter (25%) is neutrally disposed to it; none of those interviewed indicated a negative disposition.
- **Overall a wind farm in view would not negatively impact users enjoyment of the resource.** One-half (50%) indicated that seeing a wind farm would have a positive effect on their overall enjoyment, while only 5% indicated that this would have a negative effect.
- **Users would be likely to return if a wind farm were in view.** One-half (50%) indicated that seeing a wind farm would make them more likely to return to the region, while less than one-tenth (8%;) would make them less likely to return.

In addition to these two surveys specific to the Project area, there have been a number of user surveys at other wind power project sites in Maine, including the Redington Project, the Spruce Mountain Project, the Bull Hill Project and the Highland Project. The key themes that emerge from these user surveys include the following:

- Visibility of wind projects is viewed as positive or neutral by the majority of respondents.
- Visibility of wind projects overall does not have a negative impact on recreational users' enjoyment of the resource.
- Visibility of wind turbines does not seem to greatly affect recreational users' likelihood to return.
- Visibility of other forms of human activity, such as ski trails and facilities, second home development, power lines, clear cuts, and other industrial facilities from scenic / recreational areas is considered much less desirable than views of wind projects.

The results of these user surveys are consistent with surveys conducted at projects outside of Maine. The literature and evidence with regard to the impact of wind energy projects on tourism also substantiates the conclusion that the visibility of such projects does not adversely

impact visitor's enjoyment or willingness to return to the resources or attractions of the area. For example, Todd Comen, Associate Professor of Hospitality and Tourism Management at Johnson State College in Johnson, Vermont, and Managing Director of the Institute for Integrated Rural Tourism, conducted intercept surveys of tourists in the vicinity of the Searsburg Wind Project. He found that after the project was built in Southern Vermont, a major tourism destination in New England, 100% of the visitors interviewed "said that the wind farm did not deter them from visiting specific attractions in the area. 100% also said that additional wind towers would not deter them from visiting the Southern Vermont Region in the future."² Additionally he interviewed the owners of 5 local businesses in the hospitality industry. "All of those interviewed observed no negative impact on their business and in fact were proud that the wind farm was located in their region of Vermont."³

Although Dr. Palmer suggests that reliance on professional judgment to synthesize the data to evaluate overall scenic impact is misplaced, I respectfully disagree. Some degree of deductive reasoning and expert experience is not only valid and useful in evaluating the individual review criteria under the Wind Energy Act, but is necessary in reaching overall conclusions. These issues do not lend themselves solely to a quantitative or objective analysis. For example, not only is it challenging, but it may be impossible to obtain statistically significant data through the user intercept surveys preferred by Dr. Palmer. Indeed, the results of any such survey provide only a snapshot of data that may not give the complete picture of use and viewer expectations through all seasons, and we must be cautious about overstating the significance of the results of such surveys. Nonetheless surveys, when combined with other information, provide a basis on

² Prefiled Direct Testimony of Todd Commen on Behalf of the East Haven Windfarm, November 17, 2003, State of Vermont Public Service Board. Docket #7192, page 26.

³ Prefiled Direct Testimony of Todd Commen on Behalf of the East Haven Windfarm, November 17, 2003, State of Vermont Public Service Board. Docket #7192, page 23.

which to draw meaningful and substantiated conclusions.

c. The Stetson Experience

Finally, the presence of existing projects in the Maine landscape also provides an opportunity to understand the impact of wind turbines on use and enjoyment of lakes and other resources. Attached as Exhibit C are photographs of wind turbines visible from various scenic and recreational locations. For many people, visibility of turbines is compatible with the continued use and enjoyment of the resource. Indeed, a recent study entitled “Baskahegan Stream Watershed Recreation Use & Resource Analysis,” conducted in the Summer of 2010 by Andrea Ednie, Ph.D. of the University of Maine at Machias (and Chad Everett, a student at UMM and John Daigle, Ph.D. at the University of Maine) (the “Baskahegan Study”) provides evidence that visibility of turbines on a lake that receives relatively high recreational use has not had any impact, let alone an adverse impact, on the public’s continued use and enjoyment of that lake. A copy of the Baskahegan Study is attached as Exhibit D. The purpose of the Baskahegan Study was to evaluate recreation use patterns and site conditions around the Baskahegan watershed area, including Baskahegan Lake, which is 7,145 acres in size and is described as the “defining feature of the landscape.” Baskahegan Study at 1. At its closest distance, the lake is approximately 5.1 miles from the existing Stetson Mountain Project and there are expansive views of the turbines from the lake. Attached as Exhibit E is the simulation of visibility of the project from the boat launch, at a distance of approximately 8.9 miles.

Although the Baskahegan Study did not evaluate visibility of the Stetson Project on recreational uses (indeed the study did not address wind power or the Stetson Project in any manner), it nonetheless provides useful information that contributes to our understanding of the significance of turbine visibility on recreational uses in the region. The goal of the Baskahegan

Study was to obtain and present accurate information that would serve as a foundation for informed decisionmaking for the planning and management of the area's resources and recreational opportunities. Baskahegan Study at 1. The study utilized four different methods for gathering data: a visitor survey that included 24 days between May 30 and September 5, 2010; observations of groups on Baskahegan Lake on 16 days; vehicle counts at the Brookton and Danforth boat launches; and in-depth interviews with persons identified as frequent and long-term visitors to the watershed. The study identified several conclusions resulting from the recreational use monitoring, including the following:

- The primary users of the Baskahegan Lake are people who fish; the fishing on the lake is excellent and affords great opportunities for children learning how to fish.
- The lakes and streams also provide a special place for family groups to enjoy the scenery, the quietness, and the opportunity to camp.
- The undeveloped shorelines, recreational access, and wild character of the resource are important to visitors and should be protected.
- Items that required improvement related to infrastructure (parking, outhouse facilities, and boat launching improvements or changes).

Baskahegan Study at 16. **What is particularly telling, however, is that not a single person interviewed mentioned the presence of the turbines in the watershed.** This was so surprising that we followed up with the principal author, Professor Ednie (Phone interview conducted by Neil Kiely May 15, 2011). She noted that while there were no specific questions regarding the wind project in the survey or interviews, she was equally surprised that no one referenced turbines in any of the responses. She assumes that people just did not attach any significance to them. By contrast she confirmed that residential development seems to be perceived much more negatively.

The fact that the presence of the wind project did not emerge as an issue affecting use and enjoyment on Baskahegan Lake suggests that users of the lakes within the Bowers project area (who are most likely to be of the same demographic makeup with the same proclivities towards recreation activities) are likely to continue recreating on those lakes after the construction of the Project and will not find the view of the wind turbines to be detrimental to their experience or create an unreasonable adverse effect on the recreational and scenic resources of the area.

D. Lake by Lake Assessment

1. PLEASANT LAKE

Significance

Pleasant Lake is approximately 1,550 acres and situated between 2-5 miles from the nearest proposed turbine. The shoreline is primarily undeveloped, with a mix of white cedar and other evergreen trees. The scenery and topography visible from the lake is typical of the region with low rolling hills and mixed forest cover. It has a pleasant, but not dramatic or unique, scenic quality. In the Scenic Lakes Character Evaluation, it scored 50, the lowest point score possible to attain a lake rating of Outstanding. Maine Wilderness Camps, a sporting camp with RV sites, seven cabins, and some campsites is located on the northeast shore, and also holds a lease to a campground with 19 sites, which are primarily rented seasonally for individuals to park their campers, and a boat launch on the southern shore. Evidence of logging is visible on nearby Bowers Ridge, and aerial photographs indicate logging activity in extensive areas around the lake, most notably in the vicinity of the Project site. Accessing Pleasant Lake from Amazon Road, which clearly serves as a major access road for logging, also sets a tone of being in a working landscape. Pleasant Lake and the surrounding working landscape do not possess particularly unique visual qualities that would elevate the resource to a high level of visual

sensitivity.

Based on the results of the PRG survey, this lake is not well-known outside of the local area. Interviews with Kathy Whitney, former manager of the campground, and the owners of the Maine Wilderness Camp, confirm that its scenic qualities don't appear to be the major reason for attracting visitors. The lake receives a moderate amount of use for the area and is used mostly by fishermen as well as for camping and paddling. We agree with Dr. Palmer's review of the Pleasant Lake, in which he notes, "This lake and the surrounding area are not a well-known scenic or recreation destination in Maine. While it is not heavily developed, neither is it remote. This would suggest that the scenic expectations of users would not be high. The most common activity appears to be fishing perhaps accompanied by boating, followed by paddling, hiking, and camping. There is some evidence that scenic quality may be less important to people engaged in fishing or motor boating as compared to those hiking or paddling (Palmer 1999)."

Project Visibility

The views of the turbines are within the middleground zone to background zone. From the boat launch, the site of Visual Simulation 10, the closest visible turbine will be on Dill Hill 4.5 miles away, and the farthest on Bowers Mountain 6.6 miles away.

Up to 27 turbines, or portions of turbines, may be visible at the southeastern end of the lake. Due to orientation and intervening vegetation, no views of the Project are expected from Maine Wilderness Camps. From the boat launch, an intervening ridge blocks a portion of Bowers Mountain, and only a sliver of Dill Hill is visible above the hills southeast of Dill Hill. This has the effect of visually reducing the height of many turbines since only small sections of their towers would be visible. When traveling toward the Project, these turbines would become more obscured by intervening topography and fewer would be visible when approaching the

northwestern end of the lake, with no visibility along the northern shoreline. Visual isolation would also be possible within portions of Dark Cove, which is considered to be the most desirable section of the lake for paddlers.

Although the turbines are visible throughout much of the lake, we do not feel that they would be an unduly dominant visual presence. The nearest visible turbine would be 2.16 miles from the lake, and, as Dr. Palmer notes, under no circumstances would the viewer perceive that the turbines are “looming” over them, as a result of their distance and the height of the turbines in relation to the surrounding vegetation and topography. There are two primary viewpoints on this lake: from Maine Wilderness Camps, where no views are expected, and from the boat launch on the southern shore, where the nearest visible turbine will be 4.5 miles away. See Exhibit F-1 for visual simulations from these locations.

Given that fishing by boat is the predominant use of the lake, one could argue that the focus of a fisherman’s attention is on the water itself and the shoreline. A local fishing guide described fishermen as having ‘tunnel vision’ in this respect, with much less focus on the surrounding landscape. In addition, the direction of view for fishermen shifts frequently as they seek out good fishing locations, often in coves and along shorelines, many of which are visually isolated from the project. From the center of the lake, the view toward the project site takes up only approximately 15% of the 360-degree panorama, and views toward other hills not affected by the Project. For example, there are views of Trout Lake ridge to the northeast and a couple of unnamed peaks between Pleasant Lake and West Musquash Lake (see Exhibit F-1).

The boat launch / camping area has a more fixed view toward the project. However, many of the campers are set back from the water and have a filtered view through trees. In addition, camping activities such as cooking, eating and drinking, and conversation are often

focused inward on the campsite itself. See Exhibit F-1 for a diagram illustrating the angle of view from this vantage point.

Effect On Public Use And Enjoyment

Our understanding of the nature of the lake's use and subsequent viewer expectations do not suggest that the Project would result in a significant negative impact on use and enjoyment of the lake. As noted in Dr. Palmer's review of Pleasant Lake, "To date surveys of hikers have found that proposed grid-scale wind projects in Maine will have a slightly negative effect on their recreation enjoyment, though it will not significantly affect the likelihood they will return. One survey investigated the effect on water-based activities. It found that the Bull Hill wind turbines would have no effect on respondents' likelihood of returning to Donnell Pond for water activities such as boating, paddling, swimming or fishing, and it is likely to be similar here (Robertson and MacBride 2010). Respondents were not asked about its effect on enjoyment. In addition, fishing is anticipated to be the primary use and Palmer (1999) found that fishing was an activity where people did not appear to place as high a value on scenic quality as people who hiked or paddled."

Due to the vast and open character of the lake, the complex and rolling hills, and the height proportions of the turbines in relation to the topography, we believe that the landscape is able to help 'visually absorb' the project while maintaining the landscape's integrity. We agree with Dr. Palmer's assessment that the effect on continued use and enjoyment is Low.

Overall Conclusion

Our overall visual impact rating for Pleasant Lake is Medium-High, closer to Medium, primarily because scenic quality is not generally thought to be central to the types of activities that are expected to be most common, and as Dr. Palmer concurred, the effect on the public's

continued use and enjoyment of the lake is expected to be Low.

2. SHAW LAKE

Significance

Shaw Lake is approximately 251 acres and located 2.5-3.7 miles from the nearest proposed turbine. Access to the lake is very difficult and there are no identified boat launches or public camping areas. Although there is a logging road that passes by the lake to the south, it appears to be impassable. Shaw Lake can be accessed from Scraggly Lake to the south, less than 1/8 of a mile away, via a canoe or kayak portage over the logging road, which divides the two lakes, along an unclearly marked, densely wooded streamside path, leading to a debris filled shallow stream which connects to Shaw Lake upstream. Use of this lake is therefore most likely limited to adventurous, inveterate paddlers and anglers.

The landscape and topography around this lake is typical of the region with only a few, low rolling hills visible. Mixed forest characterizes the hillside vegetation, while the undeveloped shoreline is dominated by evergreen tree species. A relatively horizontal ridge, visible just above the tree line, defines the majority of the long distance views to the north. Shaw has a scenic rating of Significant, and we feel that the character of the lake and the surrounding working landscape do not possess particularly unique visual qualities that would elevate the resource to a high level of visual sensitivity.

Of all the lakes with visibility within 8 miles of the project, this lake definitely has the lowest use, and it is likely not known by people outside the local area. Access is very difficult, it is not connected to any other lakes, and it is very modest in size. There is no boat launch. This lake's extremely low level of use means that very few people would even see the wind turbines from this vantage point. We agree with Dr. Palmer's assessment in his review of Shaw Lake, in

which he notes “This lake and the surrounding area are not a well-known scenic or recreation destination in Maine. While it is not heavily developed, neither is it remote. This would suggest that the scenic expectations of users would not be high. The most common activity appears to be fishing perhaps accompanied by boating, followed by paddling, hiking, and camping. There is some evidence that scenic quality may be less important to people engaged in fishing or motor boating as compared to those hiking or paddling (Palmer 1999).”

Project Visibility

Up to 25 turbines may be visible from the southern shore of Shaw Lake and the views of the turbines are within the middleground zone to background zone. The closest visible turbine will be on Dill Hill 2.6 miles away, and the farthest on Bowers Mountain 6.6 miles away. For as many as 8 of these turbines, however, only views of blades would be likely. While Dill Hill is visible from Shaw Lake, the other ridges with proposed turbines are not visible due to the intervening topography associated with Vinegar Hill and unnamed ridges. As such, the majority of the visible turbines tend to visually ‘hug the ridgeline,’ thereby lessening their potential visual impact. Dill Hill has a very flat and indistinct form from this vantage point, while Vinegar Hill and the peak directly northeast of it appear as the most pronounced hills when looking toward the Project site. The visual forms of these hills would remain dominant compared to the turbines visible around them.

Although the turbines are visible throughout much of the lake, we do not feel that they would be an unduly dominant visual presence. The nearest visible turbine would be 2.6 miles from the lake. Under no circumstances would the viewer perceive that the turbines are “looming” over them, as a result of their distance and the height of the turbines in relation to the surrounding vegetation and topography. Further discussion regarding the visibility of the

turbines can be found in section 4.1.8 of Section 17 in the Application. See Exhibit F-2 for a visual simulation from Shaw Lake.

Given that fishing is likely the predominant use of the lake (which is very minimal), one could argue that the focus of a fisherman's attention is on the water itself and the shoreline. A local fishing guide described fishermen as having 'tunnel vision' in this respect, with much less focus on the surrounding landscape. In addition, the direction of view for fishermen shifts frequently as they seek out good fishing locations, often in coves and along shorelines, many of which are visually isolated from the project. See Exhibit F-2 for a diagram illustrating the angle of view from the southern shore. From the northwest cove of Shaw Lake, views of other peaks unaffected by the project are possible, including Whitney Cove Mountain to the southeast (Exhibit F-2).

Due to the complex, rolling hills and the height proportions of the turbines in relation to the topography, we believe that the landscape is able to help 'visually absorb' the project while maintaining the landscape's integrity.

Effect On Public Use And Enjoyment

Our understanding of the nature of the lake's use and subsequent viewer expectations do not suggest that the Project would result in a significant negative impact on use and enjoyment of the lake. Of all the lakes with visibility within 8 miles of the Project, this lake definitely has the lowest use, and it is likely not known by people outside the local area. This lake's extremely low level of use means that very few people would even see the turbines from vantage points on this lake. We agree with Dr. Palmer's assessment that "scenic quality is not thought to be central to the types of activities that are expected to be common" and we also agree that the "effect on continued use and enjoyment is Low."

Overall Conclusion

The visual impact rating for Shaw Lake is Medium-High, closer to Medium, primarily because there is a very low level of recreation use and scenic quality is not thought to be central to the types of activities expected. In addition, as Dr. Palmer concurred, the effect on the public's continued use and enjoyment of the lake is expected to be Low.

3. DUCK LAKE

Significance

Duck Lake is approximately 262 acres and is located 2.5-3.2 miles from the nearest proposed turbine. A fair amount of camp or home development can be found on this lake, with approximately 37 structures, the highest density of which is located in the vicinity of the boat launch along the northern shore. Approximately three-quarters of the shoreline is privately owned and developed. The remaining quarter, located along the western shore, is designated as Maine Public Reserved Land, but is interspersed with private residential development. A communications tower located on Almanac Mountain is also visible above a nearby ridge to the southwest. Boating, fishing, and paddling are the predominant activities on this lake.

Mixed forest cover and low-lying hills and mountains surround this lake, and the shoreline is wooded and interspersed with marsh areas. From the southern shoreline, the top of Bowers Mountain is visible just above the intervening tree lined ridge, but the most prominent topographic feature from Duck Lake is nearby Getchell Mountain to the north. The eye is also drawn to more distinct hills within view to the east, including Penobscot Bald Mountain (with highly visible ridgeline logging) and Junior Mountain. Duck Lake is rated as Significant, but as Dr. Palmer noted, "It is somewhat surprising that there are no points taken off for Inharmonious Development, since there are a great number of residences along the shore and many of the older

ones are not screened by vegetation. Its rating is Low.” We feel that Duck Lake does not possess particularly unique visual qualities that would elevate the resource to a high level of visual sensitivity.

Fishing, boating and paddling appear to be the predominant activities on this lake. A motorboat launch with very limited parking is located at the northwest end of the lake at the end of Duck Road, providing public access. Kayaks and canoes can also access this lake from Junior Lake via a narrow stream connection at the southeast end of the lake.

As Dr. Palmer noted in his review of the Duck Lake, “This lake and the surrounding area are not a well-known scenic or recreation destination in Maine. While it is heavily developed, one suspects that people come to their camps to get away and be closer to nature. However, nothing in this assumption suggests that the scenic expectations would be high. The most common activity appears to be fishing perhaps accompanied by boating, followed by paddling, hiking, and camping. There is some evidence that scenic quality may be less important to people engaged in fishing or motor boating as compared to those hiking or paddling (Palmer 1999).”

Project Visibility

Up to 18 turbines may be visible primarily as middleground views, but the majority of views will be of fewer than 12 turbines, or portions of those turbines. Views of turbines are not likely at the boat launch. There is no visibility from a third of the lake, and although the nearest visible turbines are 2.5 miles away, they will not be visually dominant. The six most visible turbines would take up only a very narrow portion of the overall viewshed; for other visible turbines, only a blade or portion of a rotor might be visible just above treeline. See Exhibit F-3 for a diagram illustrating the angle of view from the southwestern shore at the visual simulation location. As users travel towards the Project, fewer turbines would be visible due to intervening

shoreline vegetation. Views of other peaks unaffected by the project are possible, including the prominent Getchell Mountain to the north and Penobscot Bald and Junior Mountain to the east (see Exhibit F-3.)

Given that fishing by boat is the predominant use of the lake, one could argue that the focus of a fisherman's attention is on the water itself and the shoreline. In addition, the direction of view for fishermen shifts frequently as they seek out good fishing locations. The limited visibility of the turbines and the visual dominance of the shoreline vegetation and nearby topography results in a 'visual absorption' of the project that helps maintain the landscape's integrity.

Effect On Public Use And Enjoyment

Our understanding of the nature of the lake's use and subsequent viewer expectations do not suggest that the Project would result in a significant negative impact on use and enjoyment of the lake. The visible presence of camp and home development along the northern shore serves to lessen the expectation of scenic quality. We agree with Dr. Palmer's review of Duck Lake, that "fishing was an activity where people did not appear to place as high a value on scenic quality as people who hiked or paddled. It is assumed that the effect on continued use and enjoyment is Low."

Overall Conclusion

Our visual impact rating for Duck Lake is Low-Medium, closer to the Low end, primarily because there is a modest level of recreation use and scenic quality is not thought to be central to the types of activities expected. In addition, as Dr. Palmer concurred, the effect on the public's continued use and enjoyment of the lake is expected to be Low.

4. JUNIOR LAKE

Significance

Junior Lake is one of the largest lakes in the 8-mile region at approximately 4,000 acres and nearly 29 miles of shoreline. There has been significant residential development in recent years, and there are approximately 87 camps and homes on large lots along the shoreline, many of which are along the western shore. Private docks, play equipment, and patio furniture can be seen near the water's edge in some locations. Evidence of logging on nearby ridges is also visible.

The character of this lake is not unique, with low hills and mixed forest cover typical of other lakes in the region. The scenery of the surrounding landscape is generally indistinct, except for views to the west-northwest, which include Almanac Mountain, Lombard Mountain, and Dill Ridge. A number of rocky islands in the vicinity of McKinney Point add more visual interest to the landscape than the hills of the proposed Project. With a lake rating of Significant, we feel that Junior Lake does not possess particularly unique visual qualities that would elevate the resource to a high level of visual sensitivity.

Fishing, boating, paddling, swimming and camping are the primary recreational uses of the lake. Locals tend to fish here, and there is a relatively high amount of recreational boating, especially when motorboat access is possible from Bottle Lake Stream in late spring early summer. There are no motorboat launches on the lake although there are three hand-carry boat launches with limited parking.

As Dr. Palmer noted in his review of the Junior Lake, "This lake and the surrounding area are not a well-known scenic or recreation destination in Maine. While it is somewhat developed, one suspects that people come to their camps to get away and be closer to nature. However,

nothing in this assumption suggests that the scenic expectations would be high. The most common activity appears to be fishing perhaps accompanied by boating, followed by paddling, hiking, and camping. There is some evidence that scenic quality may be less important to people engaged in fishing or motor boating as compared to those hiking or paddling (Palmer 1999).”

Project Visibility

At over 5 miles long, and stretching away from the Project site, the Project’s visibility differs noticeably depending of the position of the viewer. Up to 23 turbines may be visible from portions of the lake. The closest visible turbine is at 2.99 miles, while the majority of views will be beyond 3 miles. The northern half of the lake will have middleground views of up to 13 turbines. The southern half of the lake will have background views of up to 23 turbines.

Because the lake is so large, the landscape has a feeling of expansiveness when viewed from the water. As such, the landscape is capable of visually absorbing the views of the proposed Project without undermining its essential visual qualities. See Exhibit F-4 for a visual simulation from Junior Lake. From the northwest shore of the lake, where the majority of camps and homes are located, the turbines do not dominate the view due to the relationship between the number/scale of visible turbines and the topography. The presence of some large shoreline homes within the viewshed are a visual reminder that that is not a pristine landscape. From the southern end of the lake, a wide panorama of hills is visible to the north, with Getchell Mountain and Penobscot Bald Mountain appearing more distinct than the Project ridges. From portions of the lake, views of the distinct peaks of Lombard Mountain and Almanac Mountain draw the eye (Exhibit F-4).

Given that fishing by boat is the predominant use of the lake, one could argue that the focus of a fisherman’s attention is on the water itself and the shoreline. In addition, the direction

of view for fishermen shifts frequently as they seek out good fishing locations. From the water, the view toward the project site takes up less than 6% of the 360-degree panorama. See Exhibit F-4 for a diagram illustrating the angle of view from the northwestern end of the lake. In addition, views toward other hills not affected by the project are possible, including the distinct forms of Almanac Mountain and Lombard Mountain to the west (see Exhibit F-4.)

Effect On Public Use And Enjoyment

Our understanding of the nature of the lake's use and subsequent viewer expectations do not suggest that the Project would result in a significant negative impact on use and enjoyment of the lake. Although a considerable portion of the lake has potential visibility of the project, there are a number of areas that provide visual isolation, including the northern and eastern shorelines and the many islands on this lake. The islands, in fact, represent one of the most striking feature of the lake while on the water, and the visual appreciation of this foreground feature would be unaffected by middleground or background views of turbines. The publicly accessible campsite on McKinney Point would continue to have views of the Big Islands and the distinct landform of Almanac Mountain, while no turbines would be visible from that vantage point. Other island campsites are also likely to have limited visibility due to intervening vegetation.

Overall Conclusion

Our visual impact rating for Junior Lake is Medium, primarily because scenic quality is not generally thought to be central to the types of activities that are expected to be most common, and as Dr. Palmer concurred, the effect on the public's continued use and enjoyment of the lake is expected to be Low.

5. SCRAGGLY LAKE

Significance

Scraggly Lake is approximately 1,641 acres and between 3-6 miles from the nearest proposed turbine. While the lake is only 3.5 miles long, the varied shoreline extends nearly 20 miles through marshy coves and remote islands. The scenery and topography visible from the lake is typical of the region, with low rolling hills, mixed forest cover, and marshy coves, while the irregularity of the shoreline and the presence of some small islands does add a level of visual interest. Evidence of logging is visible on nearby Bowers Ridge, and aerial photographs indicate logging activity in extensive areas around the lake, most notably in the vicinity of the Project. Accessing Scraggly Lake from Amazon Road, which clearly serves as a major access road for logging, also sets a tone of being in a working landscape. With a lake rating of Significant, we feel that Scraggly Lake and the surrounding working landscape do not possess particularly unique visual qualities that would elevate the resource to a high level of visual sensitivity.

There is one hand-carry boat launch on the eastern shore, located approximately 9 miles from Route 6; the access road to the boat launch is very rough and requires a high-clearance, off-road vehicle. Motorboat access is only possible by connecting through Junior Lake. This passage is shallow and rocky, limiting access to non-motorized boats and smaller motorized boats with depth gauges. The difficulty in accessing the lake and limited development along the shoreline creates a feeling of remoteness (but it is not designated as remote by LURC). The lake sees a moderate amount of fishing, boating, paddling, and camping for the area. Although bass fishing is particularly good at this lake, paddlers might be more common due to access issues. According to the results of the PRG survey, this lake is not a well-known lake outside of the local area.

We agree with Dr. Palmer's review of Scraggly Lake, that "This lake and the surrounding area are not a well-known scenic or recreation destination in Maine. While it is not heavily developed, neither is it remote. This would suggest that the scenic expectations of users would not be high. The most common activity appears to be fishing perhaps accompanied by boating, followed by paddling, hiking, and camping. There is some evidence that scenic quality may be less important to people engaged in fishing or motor boating as compared to those hiking or paddling." Due to the vast and open character of the lake, the complex and rolling hills, and the height proportions of the turbines in relation to the topography, we believe that the landscape is able to help 'visually absorb' the project while maintaining the landscape's integrity.

Project Visibility

Up to 26 turbines may be visible, and the views of the turbines are middleground, approaching background, views. The nearest visible turbine would be 3.3 miles from the lake. There are direct views of Bowers Mountain from the boat launch, but Dill Hill is not visible, where approximately 8 turbines are proposed. As such, none of these turbines would be visible from this vantage point. From the majority of the lake, Penobscot Bald Mountain represents the tallest and most distinct landform when looking toward the Project, thereby drawing the eye (Exhibit F-5). Vinegar Hill and the unnamed hill northeast of it completely or partially block views of some turbines on Bowers Mountain, serving to visually break-up views of the Project. Shoreline vegetation obscures portions of the turbines on Dill Hill as well, thereby lessening their visual impact. See Exhibit F-5 for a visual simulation from Scraggly Lake.

Scraggly Lake has a complex shoreline with several coves, many of which would provide visual isolation from the turbines. The numerous wooded islands would also buffer or block views of the Project, and the enjoyment of their picturesque qualities would not be undermined.

Few to no turbines would be visible when approaching the northern shore of the lake due to intervening topography and vegetation.

Although the turbines are visible throughout much of the lake, we do not feel that they would be an unduly dominant visual presence. Under no circumstances would the viewer perceive that the turbines are “looming” over them, as a result of their distance and the height of the turbines in relation to the surrounding vegetation and topography.

Given that fishing by boat is the predominant use of the lake, one could argue that the focus of a fisherman’s attention is on the water itself and the shoreline. In addition, the direction of view for fishermen shifts frequently as they seek out good fishing locations. From the middle of the lake, the view toward the project site takes up approximately 15% of the 360-degree panorama, and views toward other hills not affected by the project, such as Whitney Cove Mountain to the south, are possible. See Exhibit F-5 for a diagram illustrating the angle of view from Hasty Cove.

Due to the vast and open character of the lake, the complex and rolling hills, and the height proportions of the turbines in relation to the topography, we believe that the landscape is able to help ‘visually absorb’ the project while maintaining the landscape’s integrity.

Effect On Public Use And Enjoyment

Our understanding of the nature of the lake’s use and subsequent viewer expectations do not suggest that the Project would result in a significant negative impact on use and enjoyment of the lake. As noted in Dr. Palmer’s review of Scraggly Lake, “fishing is anticipated to be the primary use and Palmer (1999) found that fishing was an activity where people did not appear to place as high a value on scenic quality as people who hiked or paddled. It is assumed that the effect on continued use and enjoyment is Low.”

Overall Conclusion

The visual impact rating for Scraggly Lake is Medium-High, closer to Medium, primarily because of the moderate to low level of recreational use of this lake, which is surely a factor of access difficulty, and as Dr. Palmer concurred, the effect on the public's continued use and enjoyment of the lake is expected to be Low.

6. KEG LAKE

Significance

Keg Lake is approximately 371 acres and is located 3.6-5.1 miles from the nearest proposed turbine. The character of Keg Lake is similar to adjacent Duck Lake, with mixed forest cover, low-lying hills and less extensive development. With a lake rating of Significant, we feel that Keg Lake does not possess particularly unique visual qualities that would elevate the resource to a high level of visual sensitivity. The western cove of the lake has moderately dense development, with about 15 camps or homes, while the remaining shoreline is largely undeveloped. There is no public boat access or designated public parking or camping areas; the lake is primarily used by private camp owners and receives low use overall.

We agree with Dr. Palmer's assessment of viewer expectations at Keg Lake, in which he states that, "This lake and the surrounding area are not a well-known scenic or recreation destination in Maine. While it is somewhat developed, one suspects that people come to their camps to get away and be closer to nature. However, nothing in this assumption suggests that the scenic expectations would be high. The most common activity appears to be fishing perhaps accompanied by boating, followed by paddling, hiking, and camping. There is some evidence that scenic quality may be less important to people engaged in fishing or motor boating as compared to those hiking or paddling (Palmer 1999)."

Project Visibility

Up to 18 turbines might be visible from the western cove of Keg Lake as middleground and background views. The closest visible turbine is approximately 3.78 miles away. Overall, a relatively limited percentage of the overall view would include the Project. Depending on the viewer's position, Getchell Mountain and/or Penobscot Bald Mountain would remain visually dominant due to their height and mass. There are a number of areas within the lake without Project visibility, notably along the northern shore and on the eastern side of the lake.

Due to very limited public access to Keg Lake, the visual impact would be primarily to owners and visitors of camps and homes along the southern shore. Given that fishing by boat is the predominant use of the lake, one could argue that the focus of a fisherman's attention is on the water itself and the shoreline. In addition, the direction of view for fishermen shifts frequently as they seek out good fishing locations. From the water, the view toward the project site takes up less than 5% of the 360-degree panorama. See Exhibit F-6 for a diagram illustrating the angle of view from the southern end of the lake. In addition, views toward other hills not affected by the project are possible, including Getchell Mountain to the north and Vinegar Hill and Penobscot Bald Mountain to the northwest (see Exhibit F-6). See Exhibit F-6 for a visual simulation from Keg Lake. Due to the fairly expansive character of the lake, the complex and rolling hills, and the height proportions of the turbines in relation to the topography, we believe that the landscape is able to help 'visually absorb' the project while maintaining the landscape's integrity.

Effect On Public Use And Enjoyment

Our understanding of the nature of the lake's use and subsequent viewer expectations do not suggest that the Project would result in a significant negative impact on use and enjoyment of

the lake. As noted in Dr. Palmer's review of Keg Lake, "fishing is anticipated to be the primary use and Palmer (1999) found that fishing was an activity where people did not appear to place as high a value on scenic quality as people who hiked or paddled." We agree with his assessment that the effect on continued use and enjoyment is Low.

Overall Conclusion

Our visual impact rating for Keg Lake is Low-Medium, tending toward Low, primarily because of the difficulty of access and low level of use by the public.

7. BOTTLE LAKE

Significance

Bottle Lake is approximately 258 acres and is located 4.7-5.3 miles from the nearest proposed turbine. It is the most densely developed lake within the Project study area with roughly 100 camps or homes concentrated around most of the shoreline and experiences some of the highest use in the study area. Many of the camps are close to the shore with little intervening tree screening, and are quite visible. Private docks and recreational equipment can be seen near the water's edge in several locations. In addition, power lines and a communications tower are also visible from the lake. Boating, water skiing, paddling, fishing and swimming are the predominant recreational uses. Although parking is limited at the informal, privately-owned boat launch, this lake receives a relatively high amount of use, much of which is associated with motor boats, due to the high density of camp development and the fact that it can be used to access Junior Lake via Bottle Lake Stream during a portion of the season.

Bottle Lake is rated as Significant, but as Dr. Palmer noted, "It is somewhat surprising that there are no points taken off for Inharmonious Development, since there are a great number of residences along the shore and many of the older ones are not screened by vegetation. Its

rating is Low.” We feel that Bottle Lake does not possess particularly unique visual qualities that would elevate the resource to a high level of visual sensitivity.

Of particular note is the highly visible and dense shoreline development, which affects viewer expectations. Our understanding of the nature of the lake’s use and viewer expectations do not suggest that the Project would result in a significant negative impact on use and enjoyment of the lake.

As noted in Dr. Palmer’s review of Bottle Lake, “this is one of the most developed lakes in LURC’s jurisdiction. While one suspects people come to their camps to get away and be closer to nature, they must expect to see a shoreline with a large number of residences, many of which have little or no vegetative screening.”

Project Visibility

Up to 13 turbines may be visible primarily as background views in portions of the southern part of the lake, where the closest visible turbine is approximately 5.1 miles away. See Exhibit F-7 for a visual simulation from Bottle Lake. The majority of the lake would have no visibility of the Project, and there is no visibility from the public boat launch. Motor boating appears to be dominant public use of this lake, and much of this activity is likely to be traffic from the boat launch to Bottle Stream to access Junior Lake. There is no visibility of the Project from within this path of travel. Where there is visibility along the southern shore, boat orientation is highly variable and only certain vantage points and viewing directions would include limited views of the Project (Exhibit F-7). From the southern shore of the lake, the view towards the Project takes up less than 4% of the 180-degree panorama (see Exhibit F-7). Instead the viewer’s eye would be drawn to distinct hills to the northwest, including Almanac Mountain with a communications tower clearly visible, and views in the direction of the Project are defined

by a rather flat and undifferentiated landscape with highly visible homes and power lines along the northern shore. The limited visibility of the turbines and the visual dominance of the highly visible and dense shoreline development and nearby topography results in a ‘visual absorption’ of the project that helps maintain the landscape’s integrity.

Effect On Public Use And Enjoyment

Our understanding of the nature of the lake’s use and subsequent viewer expectations do not suggest that the Project would result in a significant negative impact on use and enjoyment of the lake. We agree with Dr. Palmer’s review of Bottle Lake that, “there is some evidence that scenic quality may be less important to people engaged in fishing or motor boating ... It is assumed that the effect on continued use and enjoyment is Low.”

Overall Conclusion

Our visual impact rating for Bottle Lake is Low, primarily because of the highly visible and dense shoreline development as well as the limited visibility from the majority of the lake.

8. SYSLADOBSIS LAKE

Significance

Sysladobsis Lake is approximately 5,401 acres, although only the upper 691 acres are located within 8 miles of the Project. This lake is 5.8-13.6 miles from the nearest proposed turbine. The area within 8 miles is separated from the southern part of the lake by “The Narrows” a channel that creates a natural distinction from the majority of the lake that is outside 8 miles. Consistent with the character of the surrounding region, this lake is surrounded by low hills and mixed forest cover. The lake is narrow and long with a generally rocky shoreline, interspersed by several sandy beaches. There are several shoals and rocky points, and at least eight identified islands throughout the lake, adding to the lake’s interest. At the upper end of the

lake, coves with marshy, weedy shorelines are evident. Within eight miles of the Project, there are about 52 private camps and homes scattered along the lakeshore, with more concentrated development on the eastern shore. A private campground is located along the northwestern shore, but it is unclear if it is still in business. A public boat launch is located adjacent to the private campground and there is also a hand-carry boat launch at the northeastern shore. Additional access to this lake is provided by additional boat launches beyond 8 miles. With a lake rating of Significant, we feel that Sysladobsis Lake does not possess particularly unique visual qualities that would elevate the resource to a high level of visual sensitivity.

Fishing, boating, and paddling are common recreational uses of this lake. A local fishing and hunting guide confirmed that this lake receives medium to high frequency of use by anglers (in boats), notably in the spring during salmon fishing season. As Dr. Palmer noted in his review of the Sysladobsis Lake, “This lake and the surrounding area are not a well-known scenic or recreation destination in Maine. While it is not heavily developed, neither is it remote. This would suggest that the scenic expectations of users would not be high. The most common activity appears to be fishing perhaps accompanied by boating, followed by paddling, hiking, and camping. There is some evidence that scenic quality may be less important to people engaged in fishing or motor boating as compared to those hiking or paddling (Palmer 1999).”

Project Visibility

Up to 22 turbines may be visible as background views, with the closest turbine being over 6 miles away. The majority of the lake is beyond 8 miles. In addition to the northern and eastern shore, the cove that connects to Upper Sysladobsis Lake would have no visibility, and the large islands on the lake would buffer or block views as well. Home and camp development along the eastern shore would be visible when viewing the Project from portions of the lake. Due to the

distance and angle of view, the most visible turbines would appear relatively clustered and small, and they would take up a narrow portion of the overall viewshed. Due to the fairly expansive character of the lake, the complex and rolling hills, and the height proportions of the turbines in relation to the topography, we believe that the landscape is able to help ‘visually absorb’ the project while maintaining the landscape’s integrity.

Given that fishing by boat is the predominant use of the lake, one could argue that the focus of a fisherman’s attention is on the water itself and the shoreline. In addition, the direction of view for fishermen shifts frequently as they seek out good fishing locations. From the center of the lake within 8 miles, the view toward the project site takes up less than 4% of the 360-degree panorama. See Exhibit F-8 for a diagram illustrating the angle of view from this vantage point. In addition, views toward other hills not affected by the project are possible, including Bear Mountain and Almanac Mountain to the northwest (see Exhibit F-8.)

Effect On Public Use And Enjoyment

Our understanding of the nature of the lake’s use and subsequent viewer expectations do not suggest that the Project would result in a significant negative impact on use and enjoyment of the lake. As noted in Dr. Palmer’s review of Sysladobsis Lake, “To date surveys of hikers have found that proposed grid-scale wind projects in Maine will have a slightly negative effect on their recreation enjoyment, though it will not significantly affect the likelihood they will return. One survey investigated the effect on water-based activities. It found that the Bull Hill wind turbines would have no effect on respondents’ likelihood of returning to Donnell Pond for water activities such as boating, paddling, swimming or fishing, and it is likely to be similar here (Robertson and MacBride 2010). Respondents were not asked about its effect on enjoyment. In addition, fishing is anticipated to be the primary use and Palmer (1999) found that fishing was an

activity where people did not appear to place as high a value on scenic quality as people who hiked or paddled. It is assumed that the effect on continued use and enjoyment is Low”.

Overall Conclusion

Our visual impact rating for Sysladobsis Lake is Low-Medium, closer to Low, primarily because the nearest visible turbine is more than six miles from the lake and turbines will comprise a very narrow angle of the overall viewshed. We concur with Dr. Palmer’s assessment that the effect on the public’s continued use and enjoyment of the lake is expected to be Low.

E. Associated Facilities

The majority of the associated facilities will not be visible from resources of State or National significance. As stated in the VIA, the express collector line, the transmission line, the O&M building, and the substation are all located on the north side of the Project ridges and will not be visible from scenic resources. The collector line is lower than the height of the surrounding trees and would only be potentially visible from relatively close distances where tree clearings allow views. In addition to the collector line, the only visual impacts from associated facilities that we anticipate would be from tree clearing and grading associated with the turbine pads and access roads. We depicted these potential visual impacts of the collector line and tree clearing and grading associated with the turbine pads and access roads in three visual simulations (Pleasant Lake Boat Launch, Junior Lake, Duck Lake) that represent a sampling of the full range of viewing angles and from the various lakes and are located at a range of viewing distances. Detailed descriptions of the potential visibility of these associated facilities were provided in the VIA for each of these simulations. A summary of the potential visibility of all associated facilities from great ponds is shown in Table 2 below.

Visibility of Associated Facilities from Resources of State or National Significance

Bowers Wind Project

Visibility Analysis

A summary of resources of state significance within an eight-mile radius is provided in the table below.

Table 2. Visibility of Associated Facilities from Resources of State or National Significance

Great Ponds	Nearest Associated Facility	Substation Visible	O&M Visible	Access Roads/Crane Path Visible	MET Towers Visible	Express Collector Visible
Duck Lake	Approx. 3.3 miles (road/clearing)	No	No	Yes (limited)	Yes	No
Junior Lake	Approx. 4.4 miles (road/clearing)	No	No	Yes (limited)	Yes	No
Pleasant Lake	Approx. 3.0 miles (MET)	No	No	Yes (limited)	Yes	No
Shaw Lake	Approx. 4.3 miles (MET)	No	No	No	Yes	No
Bottle Lake	Approx. 7.0 miles (MET)	No	No	No	Yes	No
Keg Lake	Approx. 5.2 miles (MET)	No	No	Yes (limited)	Yes	No
Scraggly Lake	Approx. 4.3 miles (MET)	No	No	Yes (limited)	Yes	No
Sysladobsis Lake	Approx. 7.7 miles (MET)	No	No	No	Yes	No
Horseshoe Lake	N/A ⁱ	N/A	N/A	N/A	N/A	N/A
West Musquash Lake	N/A	N/A	N/A	N/A	N/A	N/A
Norway Lake	N/A	N/A	N/A	N/A	N/A	N/A
Upper Sysladobsis Lake	N/A	N/A	N/A	N/A	N/A	N/A
Lombard Lake	N/A	N/A	N/A	N/A	N/A	N/A

National Register of Historic Places	Nearest Associated Facility	Substation Visible	O&M Visible	Access Roads/Crane Path Visible	MET Towers Visible	Express Collector Visible
Springfield Congregational Church	N/A	N/A	N/A	N/A	N/A	N/A

¹ N/A= Not Applicable due to no visibility within 8 miles.

Evaluation Matrix

In light of the approach used on other projects before the Commission, we have modified the matrix on page 40 of the VIA somewhat to facilitate a coordinated review. Although we are now presenting our findings as a low/medium/high rating instead of a numerical approach, our conclusions have not changed.

Table 3. Evaluation Matrix

Resource	Significance	Project Visibility	Impact to Enjoyment	Overall Scenic Impact
Pleasant Lake	Medium	Medium-High	Low	Medium
Shaw Lake	Medium	Medium-High	Low	Medium
Duck Lake	Low	Low-Medium	Low	Low
Junior Lake	Medium	Medium	Low	Medium
Scraggly Lake	Medium	Medium-High	Low	Medium
Keg Lake	Low	Medium	Low	Low
Bottle Lake	Low	Low	Low	Low
Sysladobsis Lake	Low-Medium	Low	Low	Low
Horseshoe Lake	NA*	NA*	NA*	NA*
Lombard Lake	NA*	NA*	NA*	NA*
Norway Lake	NA*	NA*	NA*	NA*
Springfield Congregational Church	NA*	NA*	NA*	NA*
Upper Sysladobsis Lake	NA*	NA*	NA*	NA*
West Musquash Lake	NA*	NA*	NA*	NA*

*NA= Not applicable due to no visibility within 8 miles

V. OVERALL CONCLUSION

These lakes are indeed part of the landscape character of the region but are not unique resources that stand out as one-of-a-kind scenic environments.

The lakes and the experience they provide will not be substantially altered or undermined by a wind energy development visible at a distance of 2 to 8 miles most often as part of the background view. The shorelines will remain intact, the waters will still be quiet, the fishery will not be affected, and it will still attract the avid and recreational fishing enthusiast. This is not to discount the fact that there will be visual impacts, and that in some instances there will be significant visibility that changes the view. However, there is a growing body of evidence that for many people who recreate in Maine, the presence of wind turbines in the viewshed has no impact on their use and enjoyment of the resource and, in some instances, positively impacts their experience. Thus, the assumption that visibility of turbines negatively impacts recreational users is not always true. While some people would prefer not to look at turbines, many people are indifferent and others find them beautiful. This concept is reflected in the Wind Energy Act, which specifically states that visibility alone is not a basis for determining there is an unreasonable adverse impact; rather, the agency must evaluate the extent to which visibility results in an unreasonable adverse impact on scenic character or existing uses related to scenic character. That is a much more nuanced inquiry, and for the reasons set forth in the VIA and here, we do not believe that visibility of the Project will sufficiently impact the scenic character or use and enjoyment of the resource to warrant a conclusion of unreasonable adverse impact.

In summary, the Project area is not in the remote core of the jurisdiction where recreational users may have a heightened expectation of a pristine landscape. Instead, it is located on the edge of the jurisdiction and in an area that the Legislature specifically identified as

appropriate for wind power. The Project area is generally able to accommodate the presence of turbines without fundamentally changing the scenery or adversely impacting recreational uses of the lake resources. This is due in part to the following considerations:

- The lake resources and surrounding landscapes do not present unique and highly sensitive qualities that preclude the addition of an array of wind turbines within the viewshed.
- While scenic and valued for its recreational qualities, the region is a similar landscape to other nearby areas and lake-region landscapes elsewhere in Maine.
- The landscape does not have the prominent distinctions between landforms, such as a flat open field in combination with a steeply rising mountain, or have unique focal points and distinct, memorable profiles that are characteristic of iconic landscapes that are more sensitive to changes in the viewshed.

Additionally, the data cited, the surveys generated, the intercept surveys reviewed, interviews conducted, and field observations noted all indicate that wind power does not and will not, in this case, prevent users from returning and enjoying this region and its lakes. Taken together, these considerations and this broader perspective of wind energy and its potential visual impacts, support our conclusion that the Bowers Wind Project (and its associated facilities), in accordance with the evaluation standards of the Maine Wind Energy Act (35-A MRSA Section 3452) will not result in “an unreasonable adverse effect to the scenic character or existing uses related to the scenic character of the scenic resource of state or national significance.”

Date: 6.10.11

David Raphael
David Raphael

STATE OF VERMONT
County of Addison

Date: 6-10-11

Personally appeared before me the above named David Raphael, who, being duly sworn, did testify that the foregoing testimony was true and correct to the best of his knowledge and belief.

Before me,

Wanda F. [Signature]

Notary Public

My commission expires: 2-10-15

Raphael Pre-Filed Direct Testimony Exhibits

- Exhibit A: Raphael Resume
- Exhibit B: List of Resources
- Exhibit C: Photographs of Wind Turbines in Maine
- Exhibit D: Baskahegan Study
- Exhibit E: Photo simulation of Baskahegan Lake
- Exhibit F: Lake-by-Lake Material

3380399_1.DOC

David Raphael, B.A., M.L.A. | Principal/Landscape Architect & Planner

EDUCATION

M.L.A., Harvard University Graduate School of Design, 1977 *Cambridge, Massachusetts*

B.A. in English, Tufts University, Cum Laude, Minor in Ecology, 1972 *Medford, Massachusetts*

School of the Museum of Fine Arts, 1971, *Boston, Massachusetts*

Diploma, Dartmouth College Outward Bound Program, 1970, *Hanover, New Hampshire*

EMPLOYMENT HISTORY, PROFESSIONAL SKILLS, AND DUTIES

1986-present: *LandWorks*, Middlebury, Vermont; Founded the firm and has been Principal Landscape Architect & Planner for most of the company's projects.

1984 - 1985: *Alexander, Truex, deGroot, Architects*, Burlington, Vermont; Consultant and staff Landscape Architect/Planner

1980 - 1982: *Kiley-Walker*, Charlotte, Vermont; Associate Landscape Architect

1976 - 1979: *Massachusetts Department of Environmental Management*, Planner/Landscape Architect

TEACHING/ACADEMIC APPOINTMENTS

1982-present: Lecturer, Rubenstein School of Environment & Natural Resources, University of Vermont

1992-1994: Visiting Instructor, Middlebury College, Middlebury, VT

1991-1993: Adjunct Faculty Member, Vermont Technical College

1988- 1989: Director; "Design Vermont" project of the Vermont Council on the Arts and the Governor's Institute on the Arts, funded by the National Endowment of the Arts & held at Castleton State College, July 1989

1983: Visiting Assistant Professor, School of Architecture, University of Arkansas

1982-1984: Adjunct Associate Professor, Graduate Program in Urban and Environmental Policy, Tufts University

PROFESSIONAL REGISTRATIONS

- Registered Landscape Architect - State of Rhode Island
- Passed Uniform National Examination: eligible for registration in other states
- Registered with the Professional Ski Instructors of America

MEMBERSHIPS

- Member, American Society of Landscape Architects
- Member, American Planning Association
- Member, Society of Environmental Graphic Designers
- Member, Board of Trustees, Lake Champlain Land Trust
- Member, Board of Directors, Vermont State Craft Center at Frog Hollow
- Chairman, Town of Panton Planning Commission and Development Review Board 1985 - present
- Delegate, Addison County Regional Planning Commission
- Member, Agency of Natural Resources, Design Issues Study Committee
- Member, Town of Middlebury, Design Advisory Committee
- Member, Vermont Natural Resources Council

PARTIAL LISTING OF RESEARCH and PUBLICATIONS

"Aesthetics & Utilities, The Aesthetic Assessment and Mitigation Process", Presented to the IEEE Power Engineering Society, Montreal, CA, 2006

"Wayfinding Principles & Practice," American Society of Landscape Architects, Landscape Architecture Technical Information Series, 2006

"BGOC (Big Graphics on Campus) Signs and environmental graphics that impact collegiate environments" Signs of the Times, Oct. 2003

"A New Vision for Vermont," Landscape Architecture Magazine, December 1999

Special Correspondent, Burlington Free Press, Burlington, Vermont, 1994 to 1998

"Brave New Vermont," Vermont Magazine, June 1995, Contributor.

Sign Management: Aesthetics, Economics, Environment - The Vermont Experience, 1992
("Best of the Conference" award at national conference on sign management, 1992)

"Prospect," Landscape Architecture Magazine, September/October 1985.

"Grounds for Playful Renaissance," Landscape Architecture Magazine, July 1975.

Richard P. White Award, Horticultural Research Institute, Washington, D.C., 1983-1984 Windbreaks and Shelterbelts for the Northeast

Rivers Downtown: Riverfront Revitalization in Vermont, for the Winooski Valley Park District, October 1981; funded with a Housing and Urban Development and Research Grant

"Evolutionary Trends and Essential Themes of Wilderness Preservation" in *Public Space*, Peter Trowbridge, Ed. and with an Introduction by J.B. Jackson; Harvard University, Cambridge 1975.

AWARDS

- 2010 **Vergennes Municipal Development Plan** | *Plan of the Year*
Vermont Planner's Association
- 2007 **Lake George Upland Protection Program** | *Award of Excellence*
Vermont Chapter American Society of Landscape Architects
- 2007 **Guiding Growth in Burke** | *Certificate of Merit for Outstanding Planning Project*
Vermont Chapter American Society of Landscape Architects
- 2005 **View From the Road** | *Public Space Award*
Vermont Chapter American Society of Landscape Architects
- 2005 **Island Line Sign & Amenities Plan** | *Award of Excellence*
Vermont Chapter American Society of Landscape Architects
- 2005 **Lake Morey Resource Conservation Project** | *Merit Award*
Vermont Chapter American Society of Landscape Architects Public Space
- 2005 **Danville Transportation Enhancement Project** | *Public Space Award Honorable Mention*
Vermont Chapter American Society of Landscape Architects
- 2004 **Manchester Design Guidelines** | *Honor Award*
Vermont Chapter American Society of Landscape Architects
- 2003 **The Pownal Municipal Plan & Land Use Regulations** | *Certificate of Merit for Outstanding Planning Project*
Vermont Planners Association
- 2002 **Danville Route 2, Danville, Vermont** | *Certificate of Merit for Engineering Excellence*
American Council of Engineering Companies
- 2001 **Stowe Ridgeline Ordinance: Ridgeline & Hillside Overlay District** | *Merit Award*
Vermont Chapter American Society of Landscape Architects
- 2001 **The University of Vermont Wayfinding System & Design Standards** | *Certificate of Merit for Outstanding Planning Project*
Vermont Planners Association

Summary of Sources Evaluated for Criteria E

In order to evaluate the "extent, nature and duration of potentially affected public uses of the scenic resources ... and the potential effect ... on the public's continued use and enjoyment" (Criteria E from the Wind Energy Act), several reference materials were identified and evaluated. The information collected from these resources yielded similar results that we believe directly inform and further substantiate our understanding of both public uses and viewer expectations. Many of these sources were identified in the VIA in section 2.3.4. Additional information was identified after submission of the VIA; those sources are noted below with an asterisk.

A. Tour Guide Services

We conducted a general search for guide services that provide trips in the general vicinity of the project area. The results of this search indicated that fishing and hunting are the primary activities for which guide services are engaged.

- Sunrise County Canoe Expeditions (www.sunrise-exp.com)
- Wilderness Inquiry (www.wildernessinquiry.org)
- Maine Guides Online (www.maineguides.com)
- Almanac Mountain Outfitters (Springfield, ME)
- Blue Moose Hideaway Guide Service (Lee, ME)
- Grand Lake Stream Guides Association (www.grandlakestreamguides.com)
- Hunting and Fishing Guides – list of members (many in Grand Lake Stream)
- Canoe-Maine (Canoe Trips and Expeditions Statewide) Princeton, ME

B. Guidebooks

Because fishing was identified as one of the primary activities on these lakes, we evaluated several guidebooks that provided further information about fishing in Maine. This information provided data to support our own personal and professional understanding of the recreational resources in these lakes, compared to other locations in Maine.

- AMC River Guide, Maine
- Quiet Water Maine: Canoe and Kayak Guide (Appalachian Mountain Club) by Alex Wilson and John Hayes
- Fishing Maine Guide Book by Tom Seymour
- Fishing Maine, 2nd: An Angler's Guide to More than 80 Fresh- and Saltwater Fishing Spots
- Fisherman's Guide to Maine by Tracewski

C. Websites

In addition to the specific guidebooks and tour services described above, we also reviewed several websites that provided further information about potential recreational activities available in the general vicinity of the project. Although little information was available about specific activities in specific lakes, the information on these websites was consistent with the findings from the guide services and guidebooks; fishing and paddling are primary uses for these relatively inaccessible lakes.

- www.trails.com
- www.goingoutside.com
- www.sunriselocations.com/cathancelake.htm
- www.wildernessinquiry.org/destinations/index.php?dest=juniorlakes
- www.maine-guides.com
- www.bluemoosehideaway.com
- www.grandlakestreamguide.com
- www.mainewildernesscamps.com

D. Reports and Fieldwork for the Project Area

- * "Bowers Mountain Wind Project. Outdoor Activities Users Research, Telephone Survey" Portland Research Group, January 2011.
A summary of the preliminary findings was included in the VIA and the complete results were subsequently provided to Dr. Palmer for his review.
- * "Bowers Mountain Wind Project. Outdoor Activities Users Research, Snowmobiler Survey" Portland Research Group, February 2011.
This survey was not complete at the time the VIA was submitted. However, the complete results were provided to Dr. Palmer for his review.
- Results of interviews with individuals with knowledge of uses on lakes.
LandWorks conducted multiple telephone interviews with members of the Selectboard in Lakeville, because they are likely to have information about the public uses of the five scenic lakes that are within Lakeville. During these interviews, we inquired about the recreational activities on the lakes, the number of motor boats and paddlers that were typically seen on each of the lakes, the principal uses at each of the lakes, and the proportion of tourist to local resident use for the lakes.

During fieldwork on these lakes, LandWorks also conducted multiple informal conversations with guides and other individuals on the lakes. Data gathered from these conversations were consistent with the information gathered during telephone interviews with selectboard members in Lakeville.

LandWorks also interviewed the author of *Quiet Waters Maine*, Alex Wilson.

* In addition, an interview was conducted with the owners of Maine Wilderness Camps on Pleasant Lake in May 2011.

The findings of these interviews are included in this Appendix.

- Fieldwork in May and July 2010 provided information on public's uses of the lakes. This information was included in the individual descriptions of each lake in the VIA Section 4.1.8. In particular, public access at lakes is limited by the type of boat launch available, and amount of available parking. The primary public access points for the project are summarized below:
 - Bottle Lake has a privately-owned gravel ramp, with multiple No Parking signs in the vicinity of the ramp.
 - Duck Lake has a privately-owned gravel ramp, with limited parking locations.
 - Scraggly Lake has a gravel launch, with limited capability to support a trailered launch, and limited parking
 - Pleasant Lake has a private boat launch at Maine Wilderness Camps for guests and an informal public gravel launch on the southern side of the lake.
 - Sysladobsis Lake has the only publicly-owned ramp at any of these lakes.
 - There are also multiple informal hand-carry boat launch sites on several of the lakes but these are mostly unmarked and on private land.

- 1998 Recreation Study and 2008 Relicensing Report conducted by Domtar for the West Grand Lake Watershed

This information provides general information about the types of recreational activities on some of these lakes and includes information about recreational activities on other lakes not within eight miles of the Project. The information in this report was used to confirm the research and fieldwork described above.

- * Maine Fishing Guide (www.maine.gov/ifw/fishing/fishingGuide.html)

The Maine Fishing Guide was developed by the Fisheries Division of the Maine Department of Inland Fisheries and Wildlife (MDIFW) to assist anglers in locating Maine's most common sportfish and to help plan for their next outdoor fishing adventure. This Google Earth application allows anglers to readily locate principal lake and pond fisheries for coldwater species and bass; as well as the presence of other warmwater sportfish species identified as principal fisheries or present. The application also identifies the locations of sporting camps, based on information provided by the Maine Sporting Camp Association, and identifies guides and sporting camps that have indicated they take clients to particular lakes.

No guides or sporting camps are listed for Bottle, Duck, Keg, Scraggly, Shaw, or Pleasant Lakes. One guide is listed for Junior Lake and two guides are listed for

Sysladobsis Lake. In contrast, multiple guides are listed for other lakes in the area, including Pug Lake, Junior Bay, West Grand Lake, and Baskahegan Lake.

MDIFW identifies fisheries present in each lake, as shown in Table 1. Landlocked salmon is present in three lakes while smallmouth bass is likely the primary attraction in most of the lakes.

	Pickarel	White Fish	Landlocked Salmon	Smallmouth bass	White Perch	Yellow Perch
Duck	x			x	x	x
Keg	x			x	x	x
Bottle	x			x	x	x
Junior	x		x	x	x	x
Pleasant		x	x		x	x
Scraggley	x			x	x	x
Shaw	x			x	x	x
Sysladobsis	x	x	x	x	x	x

E. Reports Related to Other Proposed or Existing Wind Projects in Maine and New England

Our review of the various user intercept surveys that have been conducted all point to similar conclusions – 1) that the view of wind projects are viewed as positive or neutral by the majority of respondents and 2) that view does not seem to greatly affect their likelihood to return. In addition, the results of a study at Baskahegan Lake, within 8 miles of the operational Stetson Wind Project, support these findings.

- “Public Acceptance Study of the Searsburg Wind Power Project: Year One Post-Construction,” Clinton Solutions, December 1997.
- “Critical Insights on Maine Tracking Survey: Residents’ Views on Politics, the Economy & Issues Facing the State of Maine,” Critical Insights, November 2009
- “Report to MREA: Highlights of Survey Findings,” Pan Atlantic SMS Group, May 2010
- Vermont Department of Public Service website on Vermont’s Energy Future - <http://www.vermontenergyfuture.info/Final>.
- “Bull Hill User Intercept Survey for Blue Sky East,” Market Decisions, October 2010.
- * “Little Bigelow User Intercept Survey for Highland Wind,” Portland Research Group, Summer/Fall 2010.
- * “Hikers Study for Highland Wind,” Portland Research Group, August 2010.
- * “Mount Blue User Intercept Study for Patriot Renewables,” Market Decisions, September 2010.
- “Spruce Mountain User Intercept Study for Spruce Mountain Wind,” Market Decisions, May 2010.
- * Baskahegan Stream Watershed Recreation Use & Resource Analysis,” Ednie, Andrea, Everett, C., and Daigle, J., University of Maine, Summer 2010.

F. Other Reports

The following reports are also referenced in this response or in the original VIA.

- Scenic Lakes Character Evaluation in Maine's Unorganized Towns, Maine State Planning Office, December 1986.
- Maine Wildlands Lake Assessment. Maine Department of Conservation, Land Use Regulation Commission, 1987.
- Maine's Finest Lakes: Results of the Maine Lakes Study. State Planning Office, Maine Critical Areas Program, 1989
- Maine State Comprehensive Outdoor Recreation Plan 2009 – 2014.
- Comprehensive Land Use Plan for Areas Within the Jurisdiction of the Maine Land Use Regulation Commission, 2010.

- Wind Power in View by Pasqualetti, Gipe, et al., (San Diego: Academic Press, 2002)
- *Development of Obstruction Lighting Standards for Wind Turbine Farms*, James W. Patterson Jr., (For the Federal Aviation Administration, 2005)
- Landscape and Images by John R. Stilgoe (Charlottesville: University of Virginia Press, 2005).
- The National Forest's Handbook on Scenery Management
- "Visual Screening Potential of Forest Vegetation" in Urban Ecology 4, Robert Brush, Julius Fabos, and Dennis Williamson, 1979
- *Landscape Aesthetics A Handbook for Scenery Management*, United States Forest Service
Agriculture Handbook Number 701, pp. 1-15 - 1-18



Rollins from northern shore of Madagascal Pond, at public beach and boat launch.

From this location, the closest turbine at Rollins is approximately 2.5 miles away. Photo taken by TJDA, June 6-7, 2011.



Rollins from Upper Pond. From this location, the closest turbine at Rollins is approximately 2.5 miles away. Photo taken by TJDA, June 6-7, 2011.



Rollins from gazebo in downtown Lincoln. From this location, the closest turbine at Rollins is approximately 5.5 miles away. Photo taken by TJDA, June 6-7, 2011.



Mars Hill from a road in Mars Hill. Photo taken by TJDA, June 6-7, 2011.



Kibby from Sarampus Falls, near rest area. From this location, the closest turbine at Kibby is approximately 1.5 miles away. Photo taken by Geoff West, June 6, 2011.

***Baskahegan Stream Watershed Recreation
Use & Resource Analysis***

Summer, 2010

**Funded by Washington County TIF
&
Stetson Mountain Fund Committee**

In Partnership with the Forest Society of Maine

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INTRODUCTION

The purpose of this study was to illuminate the characteristics of recreation use patterns and site conditions around the Baskahegan watershed area. The goal was to obtain and present accurate information that will serve as a foundation for informed decision-making pertaining to the planning and management of the area's resources and the recreational opportunities provided. A related goal was to establish a baseline of information to be used for comparison with future research initiatives.

To fulfill the purpose and goals of the study, the research concentrated on three main objectives:

1. Gather, analyze and map recreational use data including: visitor counts, indicators of visitor use (recent campfires and other evidence of recent recreational traffic), distribution of visitors throughout the study area, and travel patterns collected through observation, onsite survey cards, and interviews with local frequent visitors.
2. Inventory, analyze and map recreation resources including: identifying and mapping existing campsites and trails; assessing, recording, and mapping campsite condition and size (including indications of overuse); and identifying, recording, and mapping existing problems (such as trash/human waste, continuous camping by one party that prevents visitor opportunities).
3. To develop design considerations and suggestions for facilities deemed necessary based on use and resource inventories such as parking lots and sanitary facilities.

Background on Baskahegan Watershed and Area Characteristics

Located in northern Washington County, the Baskahegan watershed is situated in the Maine/New Brunswick Lowland biophysical region (McMahon, 1990). The watershed feeds the Mattawamkeag River, a tributary of the Penobscot. Peat bogs occupy a relatively high proportion of the landscape, roughly ten percent. These include unusual eccentric fens noted in Davis and Anderson's *The Eccentric Bogs of Maine*. The defining feature of the landscape is Baskahegan Lake, one of Maine's largest, comprising 7,145 acres. Also notable is the Crooked Brook flowage, an impoundment created by a dam in Danforth, which provides excellent wading waterfowl habitat and 23% of the high-value wetland in Washington County. The lake, streams, and land features provide unique opportunities for recreation.

The Baskahegan watershed has a rich cultural history that is a direct result of the interaction of the natural resources and the people (Scott and Wilson, 2000). Natives used the watershed as an important travel and trade route between the St. John River, NB and the Penobscot River, ME. Early settlements were followed by many logging camps, sawmills, and farms in the 1800s and 1900s. Most of the land today remains undeveloped and the local population depends primarily on forest products industry for employment. However, this rural sparsely populated region supports a small but robust recreation economy created by hunters, anglers and snowmobilers. There are sporting camps in Kossuth, Topsfield, Brookton, Forest City, Danforth and Weston which serve visitors who enjoy the landlocked salmon fishery, abundant deer, moose, waterfowl and partridge, and the extensive snowmobile trail system. Spednick and East Grand Lakes in the adjacent St. Croix watershed are well known for their coldwater fisheries, while warm water

anglers enjoy Baskahegan Lake and the Crooked Brook Flowage. A strong connection to the environment is felt by many of the residents and it is this connection and the natural and cultural resources that have formed the basis for the local economy.

The Baskahegan Company, founded in 1920, owns and manages 101,620 acres of forestlands in various parts of eastern Maine but the majority of this forestland is in the Baskahegan watershed. Similar to other large private forest landowners in Maine they allow public access to their lands for a variety of outdoor recreation activities including among others hunting, fishing, boating, canoeing, camping, hiking, and wildlife viewing. At present there is no fee associated with public use and management of recreation is minimal by the Baskahegan Company. The Baskahegan Company relies on entities such as the Inland Fisheries and Wildlife and Maine Forest Service to assist with regulating uses such as with fishing and hunting, and issuing fire permits. Snowmobile trails are located by permission of the Baskahegan Company and built and maintained by volunteers of organized snowmobile clubs. Roads built by the Baskahegan Company are maintained primarily for forest operations but this provides a means for the public to access areas of the forest for purposes of outdoor recreation. However, a few road segments are primarily maintained to allow public access such as the road to the boat landing on Baskahegan Lake. The campsites located on the lakes and streams rely on the public to regulate themselves such as adopting a carry-in and carry-out ethic. In some instances the Maine Forest Service assists with the cleanup of the campsites.

Need for the Research

No previous studies were found that examined aspects of the recreation use occurring in the Baskahegan watershed area. However, steadily growing research on recreation use and user characteristics in Maine and elsewhere in the nation suggests this information is critical for sound management of recreation resources and providing quality recreation experiences. For example, research has shown that the physical condition of a campsite can affect the quality of the visitor experience (Lee 1975; Shelby, Vaske, and Harris 1988; Roggenbuck, Williams, and Watson 1993; Daigle 2005; Ednie and Daigle 2007). Also, in areas managed for remote backcountry type experiences, recreation activity on campsites can be the activity that most severely alters the natural conditions. Impacts that affect visitor enjoyment, particularly those that impair the functionality or desirability of sites are a particular concern (Hammitt and Cole 1998). Existing campsite conditions must be measured and documented before management can monitor changes over time (Cole 1989). By understanding present recreational use and the users, the Baskahegan watershed can be managed in a sustainable fashion based on sound knowledge.

RECREATIONAL USE MONITORING

The study encompassed several approaches to monitoring visitor use of the watershed. The overall purpose of monitoring was to help resource managers, planners, and granting agencies understand the quantity of use, the use patterns, and the general experiences of visitors to the watershed in order to further develop recreation management strategies. Recreational use was monitored using four methods:

- A visitor survey
- Observations of groups on Baskahegan Lake
- Vehicle counts at the Brookton and Danforth Boat Launches
- Interviews with long-term and frequent visitors

Sampling Protocol

The student researchers monitored recreational use two days per week between May 30th and September 5th, 2010. The sampling goal was to monitor use two days per week over a fourteen week period during the main visitation season. At least half of each day was spent monitoring use at Baskahegan Lake. The remainder of their time was spent traveling once per day to the Crooked Brook Flowage to check for evidence of use and working on other study components (campsite assessments, office work, etc.). The monitoring schedule was designed to provide a rotation representative of weekdays and weekend days, and to minimize travel by monitoring two consecutive days per week. The following list shows the monitoring schedule and days monitored (a total of 24 monitoring days were completed; the 3 scheduled days in bold were missed due to uncontrollable circumstances):

- Sun/Mon – May 30 & 31
- Fri/Sat – Jun 11 & 12
- Tues/Wed – Jun 15 & 16
- Sun/Mon – Jun 20 & 21
- Sun/Mon – Jul 4 & 5
- Tues/Wed – Jul 6 & 7
- Sun/Mon – **Jul 11 & 12**
- Fri/Sat – Jul 23 & 24
- Tues/Wed – Jul 27 & 28
- Sun/Mon – **Aug 1 & 2**
- Fri/Sat – Aug 13 & 14
- Tues/Wed – Aug 17 & 18
- Sun/Mon – Aug 22 & 23
- Sun – Sept 5

Visitor Survey

A visitor survey was completed in order to analyze current visitation patterns of the watershed. The survey was designed to elicit information from participants regarding their travel patterns, their use history, and their observations of other groups on the watershed (see appendix A). To prepare for the survey procedures, the student researchers completed a training session and were observed by the principal investigators for the first three days of interviews. Throughout the survey process, only one person per group was approached, and returning groups were only asked to participate once over the season. Participants were greeted at the Brookton Launch, the

Danforth Public Landing, and the Crooked Brook Launch, were provided a brief description of the purpose of the study, and were asked to participate. Every visitor who was asked to participate in the study agreed. The student researchers reported that the vast majority of visitors were easily approachable, and seemed happy to provide information. A total of 48 surveys were completed over the season. The survey responses were coded and the data were entered into an excel spreadsheet. Frequency distributions were obtained and statistical analyses completed using PASW Statistics 18 (2009).

Survey Results

Several visitor use characteristics were analyzed, including access point to the watershed, group size and type, length of stay, and previous experience on the watershed. The vast majority (90%) of participants accessed the watershed at the Brookton Launch. This majority occurred in part because of the sampling scheme, and also in part because the Brookton Launch is clearly the most popular and easily accessible entrance to the watershed. Eight percent of participants were surveyed at the Danforth Public Landing, and the remaining 2% were met at the Crooked Brook Launch. Table 1 shows participant group sizes, which ranged from 1 (alone) to 8 people. The most popular group size was two people, and the majority of participants traveled in small groups (81% in groups of four or less people). The majority of groups (57%) were of adults without youth under 16, however, 40% of the groups included between 1-3 youth (table 2). The groups were mostly (84%) of family, friends, or a combination of the two, the most popular being family groups (figure 1). Only three percent of the study participants were in guided groups; this likely because the guided trips are quick to launch (difficult to catch for a survey) and spend their day out in locations favored for fishing (which we were disinclined to interrupt). The majority (67%) of survey participants were visiting the watershed for day use (figure 2). The 33% of participants who were camping stayed for 1-6 nights, the most popular length of stay being two nights (50%) and the vast majority (88%) stayed for 3 or less nights (figure 3). Three-quarters (75%) of participants were from Maine. The remaining quarter came from other New England states (MA, NY, NJ, VT) as well as Delaware and Pennsylvania (figure 4).

Table 1. Group size, N=47.

Group Size	Frequency Percentage (# Participants)
1	11% (5)
2	36% (17)
3	21% (10)
4	13% (6)
5	9% (4)
6	2% (1)
7	6% (3)
8	2% (1)
Total	100% (47)
Mean	3.15
Mode	2

Table 2. Groups with youth under 16, N=47.

# Youth Under Age 16	Frequency Percentage (# Participants)
0	57% (27)
1	24% (11)
2	11% (5)
3	6% (3)
4	0
5	0
6	2% (1)
Total	100% (47)
Mean	0.77
Mode	0

Figure 1. Group type, N=48.

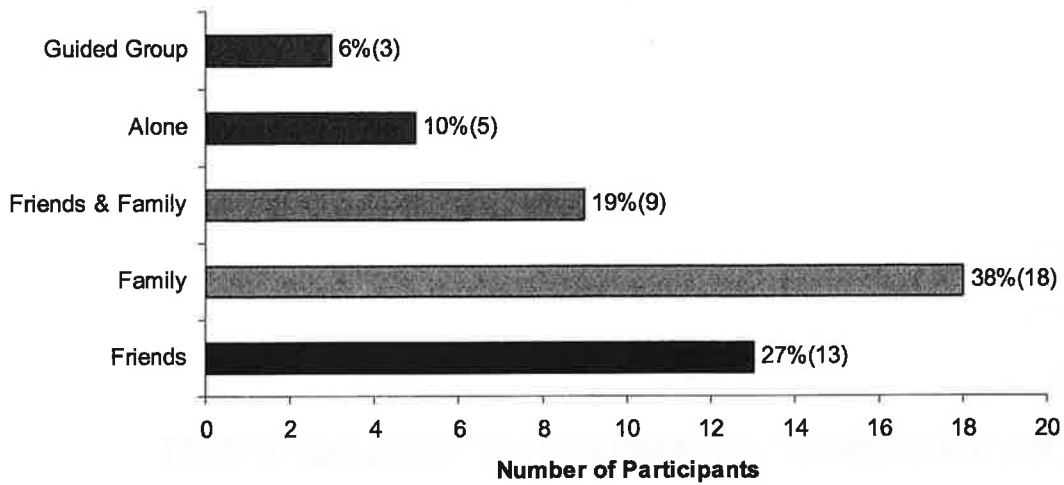


Figure 2. Proportion of day use versus camping groups, N=48.

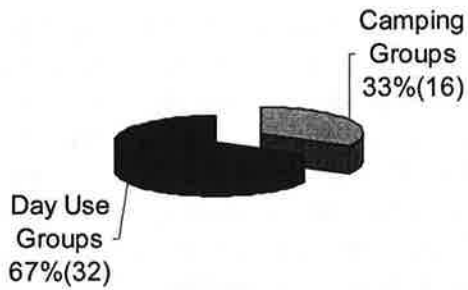


Figure 3. Number of nights camped, N=16.

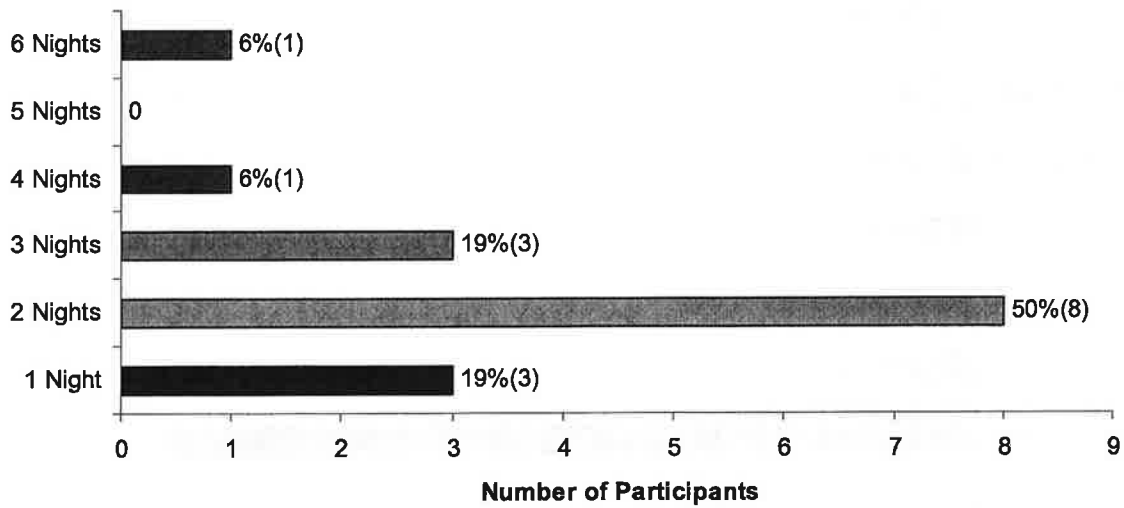
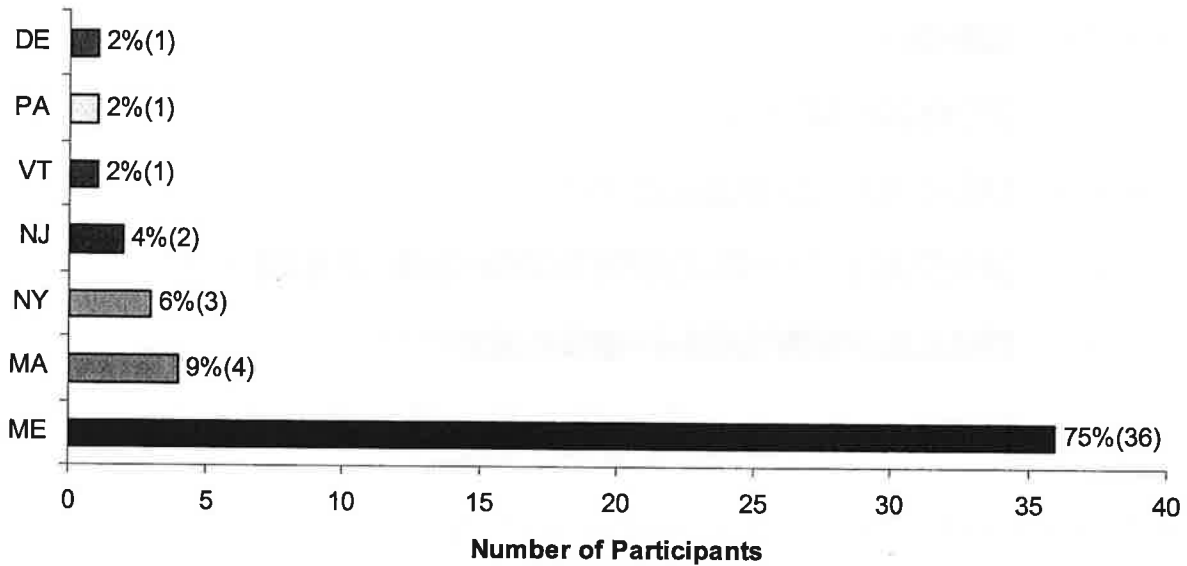


Figure 4. Home state of participants, N=48.



While powerboats were by far the most popular mode of travel on the lakes (67%), some participants traveled by kayak or canoe, or a combination of two (figure 5). Seventeen percent of participants did not travel on the lake, and came to fish, swim, or simply relax at the Baskahegan Lake launch site. Nearly all (94%) participants have visited the watershed before (figure 6), and nearly half (45%) have been visiting for more than 11 years (table 3). The study participants were also asked to recollect how many other groups they saw while they were out on the water. Nearly one-third (31%) of participants reported seeing between 1-5 groups on the water, and an additional 19% saw six or more groups (table 4). It should be noted that while half of participants saw no other groups, some of these respondents had not yet launched or were not traveling far on the lake themselves.

Figure 5. Mode of travel, N=48.

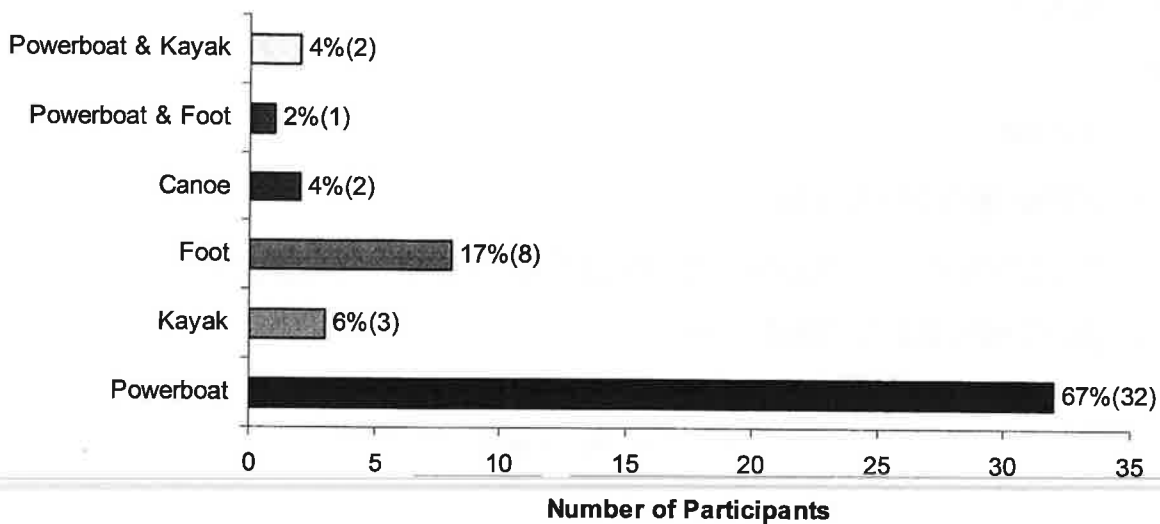


Figure 6. Proportion of participants who have previous experience on the watershed, N=48.

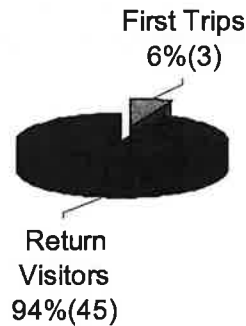


Table 3. Number of years visiting, N=47.

# Years Visiting	Frequency Percentage (# Participants)
First Trip	6% (3)
1-5yrs	25% (12)
6-10yrs	24% (11)
11-20yrs	15% (7)
21-30yrs	6% (3)
31-40yrs	11% (5)
41+yrs	13% (6)
Total	100% (47)
Mean	19.34yrs
Median	10yrs
Range	0-72yrs

Table 4. Number of groups observed, N=48.

# Groups	Frequency Percentage (# Participants)
0	50% (24)
1-5	31% (15)
6-10	9% (4)
11-15	4% (2)
16-20	6% (3)
Total	100% (48)
Mean	3.2 groups
Mode	0 groups

Observations of groups on Baskahegan Lake

The Baskahegan Land Company provided a small boat for the student researchers to use over the survey season. When the students traveled by water, they monitored the number, type, and location of boats they observed on the water, and the group sizes when possible. To record boat traffic, a map was created that separated Baskahegan Lake into four zones (figure 7).

The expansiveness of the lake provides a sense of solitude on the water. Most often while traveling on the water there were no boats in sight. The groups that were observed on the water tended to be small (2-3 people) groups fishing from modest powerboats. Baskahegan Lake is prone to choppy water conditions even in modest wind, and the students were asked not to travel when the conditions were dangerous. Over the 16 days the students traveled on the water, 56 boats were observed. The greatest number of boats observed in one day was 9 (on August 14th). The majority (88%) of observed boats were powerboats, 7% were kayaks, and 5% were canoes. The mean number of people per boat on the water was 2.41, where groups ranged from 1-6 people and the most common number of people per boat was 3.

The majority (51%) of boats were observed in Zone D, the Southeast portion of the lake. The remaining boats were spread relatively equally throughout the other three zones (figure 8). Groups who were fishing on the water were most commonly seen along the South border of zones C and D, while groups who had landed for a picnic were most often seen in zones A and B, or in the Northern portion of zone D.

Figure 7. Lake zones.

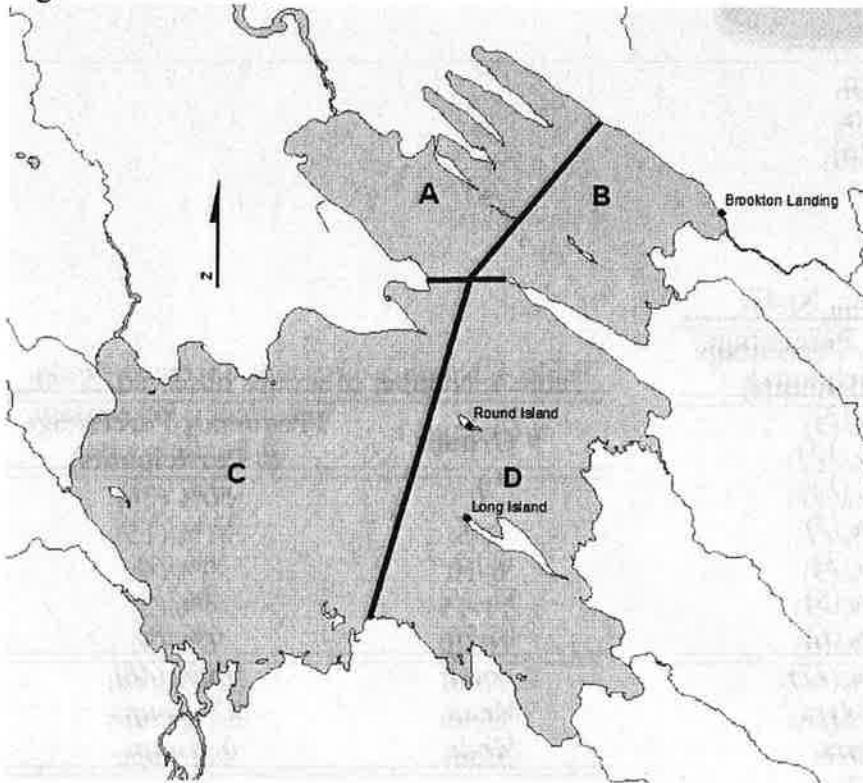
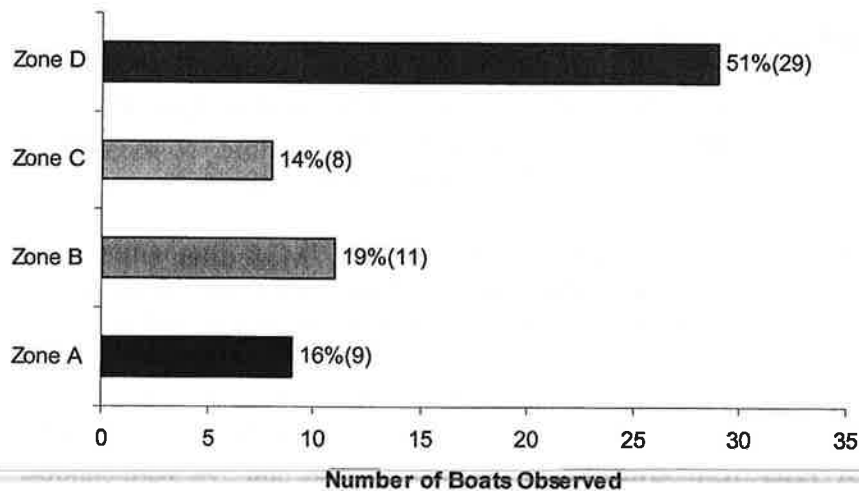


Figure 8. Boat observations per lake zone, N=57.



Vehicle counts at the Brookton and Danforth Boat Launches

The quantity of parked vehicles at the Brookton and Danforth boat launches were monitored as an additional indication of recreational use on the watershed (see Appendix B). On their monitoring days, the student researchers recorded the total number of vehicles (noting in- and out-of-state license plates) as well as the number of new vehicles as regularly as possible at the Brookton launch (hourly or as often as they could around their other responsibilities). They traveled to the Danforth launch to check for vehicles at least once per monitoring day.

Vehicle Monitoring at the Brookton Boat Launch

Vehicles were counted an average of 4 times per day (ranging from 2-9 times per day) at the Brookton Boat Launch. At this location, observations were as follows:

- Number of vehicles at any monitoring count:
 - Range: 0-27 (busiest day was May 30th)
 - Mean number of vehicles: 6.13
- Total number of vehicles per day:
 - Range: 0-34
 - Mean number of vehicles per day: 9.29
- Total number of out-of-state vehicles per day:
 - Range: 0-3
 - Mean number of out-of-state vehicles per day: 0.63

The student researchers also noted the number of groups camped at the Brookton Boat Launch on monitoring days. They counted campers at the Brookton Launch 5 of the 24 monitoring mornings, and each time the campers were in one group.

Vehicle Monitoring at the Danforth Boat Launch

The students observed much less traffic at the Danforth Boat Launch. The average number of vehicles per day at the Danforth launch was 1.06, the most common number of vehicles at any count was 0, and the greatest number of vehicles observed at any point in time was 5. Three out-of-state vehicles were observed throughout the monitoring season.

Interviews with Long-Term & Frequent Visitors

Interviews were conducted with frequent and long-term visitors to the watershed in order to learn more about typical use patterns on the lakes and streams, how use and conditions have changed over time, and about their suggestions for management actions and facility development. A list of twelve potential interview participants was obtained from the Forest Society of Maine and other partners. Six interviews were completed over the summer and fall of 2010. Reasons for not reaching the other six individuals on the list ranged from interview refusals (because they had not visited the watershed in a long period or time, or because of physical limitations which made an interview undesirable), to candidates being unreachable despite several attempts, or deceased. However, we are comfortable with the number of interviews conducted because there was a significant level of consensus among interviewees – many of the suggestions and comments were similar between individuals.

A series of multiple-component interview questions was developed (see appendix C). Interviewees were contacted by phone or at the Brookton landing. The purpose of the interviews was described to them, and they were asked for a few minutes of their time to complete an

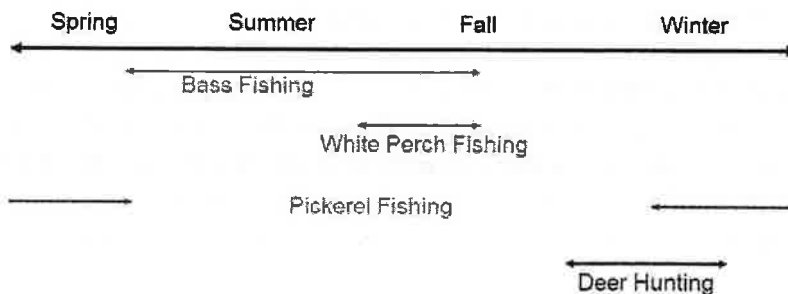
interview. The interviews were scheduled for a convenient time within the next couple of days, and a location was selected (usually their home or place of work). Two of the interviews were conducted over the phone at the request of the participants. The interviews were digitally recorded by the student researcher and were later transcribed by major point and selected quotations. The interviews ranged in length from 10-50 minutes.

Overall, the interviewees provided valuable insight regarding the use trends of the watershed and many helpful suggestions. All of the interviewees were eager to provide insight about the recreational use of the watershed and clearly appreciated and felt connected with the resource. Although it was not a specific interview question, the interviewees diverged in perspective over the use tolerance of the watershed. For example, one interviewee commented, “the lake already has quite a bit of pressure from use. I’m not sure if it’s too much, but we might not want to make access so easy that use increases dramatically,” while another stated, “it’s a beautiful lake. I recommend that lots of people come to play on it.” Some were concerned over the recreational carrying capacity of popular places within the watershed, while others felt the resource could withstand increasing use and the priority was to provide opportunity for fishing and recreation, and to support local businesses by increasing visitation in the local area. Interestingly, given these differences in perspective, many of the actual suggestions and observations provided throughout the interviews were similar among the group of interviewees. The following subsections outline the interview findings by content category.

Observations of seasonal use trends

The interview participants had been visiting the watershed for at least 10 years and some more than 60 years. They all primarily used the lakes and streams for fishing, and two were guides. They described that summer and early fall fishing for bass and white perch are by far the current most prevalent uses of the watershed. Bass fishing generally begins in late May and white perch fishing is more dependent on warmer water. The interviewees discussed how off-season use is minimal around the watershed. Deer hunting is not overly productive (locals know of more optimal areas to hunt) and winter fishing is limited mostly to pickerel. Some locals occasionally take winter trips on the lakes for fishing and a cookout, but not often. Figure 9 outlines typical recreational activities on the watershed by season.

Figure 9. Recreational activities by season.



Qualities of the Baskahegan Lakes and Streams

The interview participants were asked to describe the best qualities of the Baskahegan lakes and streams, and to discuss what brings people to the watershed for recreation. Their responses were all similar as outlined in table 5. The bass and white perch fishing was described as the major

reason people come to the watershed. The bass fishing is so fruitful that it is an ideal location for children and people who are inexperienced at fishing, because anyone can catch a (or multiple) fish. The bass fishing tends to be the major attraction for people from away, and the white perch tends to be the main focus of local regulars and avid fishers from within the region.

The majority of the interviewees mentioned the scenic quality as an important draw to the watershed. The beauty of the area is an important reason why people return year after year. Related to the simple beauty is the appearance of “wildness” or remoteness on the lakes and streams, as well as the opportunity to view wildlife. Several interviewees commented on the lack of development along the shoreline of the lakes as an important component of the scenery. They mentioned personally wishing they could lease a cabin but knowing that the development of more cabins would diminish the aesthetic quality of the resource. Quietness was also an important quality on the watershed. Several interviewees mentioned that the rockiness of the lake, although difficult to maneuver, maintains the opportunity for solitude on the lake. The rocks make the lake inappropriate for large power boats, jet-skis, and other speed-boating activities such as waterskiing. While some participants mentioned their desire for higher water to ease travel, others reflected on the benefits of rocks as obstacles for keeping an onslaught of diverse users away (and thus maintaining the special opportunity for fishing).

The opportunity to camp was also an important quality of the lakes. Interview participants mentioned the benefits of campsites for various reasons including contributing to the local economy and allowing visitors from away to thoroughly experience fishing on the lakes. Although several concerns about camping arose in the interviews (as discussed in subsequent sections), most participants mentioned that the opportunity to camp is an important component of the Baskahegan recreational experience.

Table 5. Major recreation qualities of the Baskahegan Watershed.

Fishing	Scenic Quality	Quietness	Opportunity for Camping
Excellent fishing for bass and perch	Beautiful scenery	Rockiness – keeps crowds away	Along shore & on islands
Great fishing for kids	“Wildness” and wildlife viewing	Expansive lakes disperse use	

Users of the Lakes and/or Streams

The interview participants described that a combination of locals, people from within the region, and people from Southern Maine and out-of-state form the users of the lakes and streams. The consensus was that a small number of locals tend to fish mostly for white perch, and that people come from all over to fish for bass. Nearby, people travel regularly from Houlton and Caribou because they do not have similar access to bass fishing locally. People from more afar come because they have either heard of the fishing through word-of-mouth or because they have come once with a guide and decided to return on their own. June tends to be the busiest month on the lake with guided groups (fishing for bass), and the majority of fishers tend to be day users, in groups ranging from 2-6 people.

Changes in Use and Condition of the Lakes and/or Streams over Time

The interviewees all described changes in patterns of resource use over time, however, they provided diverse perspectives over whether or not use of the lakes and streams has increased over time. Some participants felt the lake is being fished harder now, while others felt it has always been fished to the current extent. One person felt the fishing itself has recently slowed (in terms of quantity of catch), while another felt the fishing is as fruitful or even more so than ever – particularly abundant was the summer of 2009. Two participants thought there are currently more recreational boaters, while two other participants thought the quantity of recreational boating has not changed over the past 35 years.

Quantity aside, the interview participants provided valuable insight on the how the nature of use has changed over time on the lakes and streams. Five distinct changes in use were described (table 6). First, two interview participants described how one guide service who leased camps on the lake used to be the major user of the lake. At one point, this service had 14 customers on the water nearly every day. Now, a greater variety of guide services use the lake, however, Baskahegan tends to be one out of several lakes they use depending on customer goals and preferences. Second, the Loring Air Force Base at one time leased the lot behind the main launch area. At this time, large groups of people from the base would come and spend several days at a time at the lake. They had established a shelter and comfortable camp space, and were avid fishers of the lake. Now, a greater variety of people come to fish and stay for shorter periods at the launch area. Third, for years it was common to see several tents and campers parked at the launch area for several days or weeks at a time, or sometimes the whole season. Now, the lot is most often vacant and is occasionally used by a small number of tents who only stay for one or a few nights. Since the Baskahegan Land Company has posted signs and strategically placed large rocks at the launch area, visits are shorter and camping is limited to tents. Fourth, the participants described that use tended in the past to be spread evenly throughout the week (likely because many users were there for prolonged periods), and use now tends to be highest on weekends or holidays. Finally, in earlier part of the 20th century, deer hunting was the major attraction within the watershed. In 1939, bass from Big Lake were introduced to Baskahegan and soon replaced deer as the focal attraction.

Comments on changes in resource conditions also varied. Half of the participants felt that the condition of the islands and launch site has not really changed over time, while others felt that two islands in particular (Round Island and Long Island) have deteriorated in condition over recent years.

Table 6. Changes in recreational use over time.

Past Use	Current Use
One guide service was the primary user of the lake	A variety of guide services use the lake, but not every day
Loring Air Force Base was a major user	A greater variety of users
Many tents and campers at launch area for prolonged periods of time	A small number of tents at launch area (not regular)
Use was spread evenly throughout the week	Tends to be busier on weekends
Deer hunting was at one point the major attraction	Bass and white perch fishing are the main attractions

Problems Related to Recreational Use on the Lakes and/or Streams

Participants were asked to describe any problems associated with recreational use they have observed at the Baskahegan lakes and/or streams. While two out of the six interviewees responded that there were no problems, the other four provided valuable feedback. Once they had described the problems, the participants were asked to discuss potential solutions. Table 7 outlines the problems identified with the range of solutions mentioned by the interviewees.

Many of the comments pertained to the presence of human waste and trash at the launch area, as well as the lack of facilities at this site. The participants felt outhouses at the launch area would help along with other developments, so long as they are monitored and managed. They suggested that Baskahegan Land Company could hire someone local to manage the new facilities.

Participants also voiced concern over the condition of Round and Long islands. One participant suggested implementing a registration system, however, most participants discussed the balance between implementing direct management and preserving visitor freedom. Other suggestions, such as signage that attempts to distribute use away from the current concentration on those islands, and signage with use regulations and/or minimal impact recommendations were mentioned. Several participants mentioned that rowdy groups, usually teenagers, partying at the launch sometimes cause problems when they vandalize and leave a mess. No specific solutions were mentioned other than for the Baskahegan Land Company and/or other partners to continue to clean afterwards.

The interviewees also discussed the current challenges with loading and landing at the launch – the site is so shallow that loading a boat onto a trailer can be difficult to impossible depending on size. Several suggestions were mentioned including a cement ramp and more frequent intervention using a front loader. One participant mentioned that the capacity of the parking lot could be increased as it becomes full on holidays, but others felt it best to keep capacity low to maintain the quiet character of the lake. Another participant discussed how the water level of the lake was at one time maintained by a roll dam at the lake outlet and wondered if it would be possible to re-implement the dam to ease lake navigation (around rocks). Finally, one of the interviewees discussed how he felt the streams could be better utilized by the general public and guided groups if take-out locations were better developed and campsites established. He

discussed the special character and opportunities on the streams for wildlife viewing and hunting, and felt that many people would travel the streams if their navigation were less difficult.

Table 7. Problems associated with recreational use and potential solutions.

Recreational Use Problems	Potential Solutions
Human waste at launch	<ul style="list-style-type: none"> • Build outhouses at launch area
Launch area has limited facilities	<ul style="list-style-type: none"> • Provide picnic tables • Build a playground • Provide a source of drinking water • Fix the road into the launch
Island campsites are in poor condition	<ul style="list-style-type: none"> • Implement a registration system • Increase awareness of alternate campsites • Post a list of camping regulations
Rowdy groups at launch leave a mess	
Launching and landing is difficult	<ul style="list-style-type: none"> • Provide a dugout cement ramp in the water • Build a dock for day use • Use a front loader to increase slope of bottom
Parking is restricted	<ul style="list-style-type: none"> • Develop a larger parking lot
Water level is too low	<ul style="list-style-type: none"> • Re-implement the roll dam to raise water
Streams are underutilized	<ul style="list-style-type: none"> • Provide more information about paddling the streams • Improve launch location to facilitate half-day stream trips • Develop an easier take-out point at the Flowage • Develop campsites along the streams

Section Summary & Conclusions

Recreational use was monitored on the Baskahegan Lake over 24 days between May 30th and September 5th during the summer of 2010. Four methods were implemented to develop an understanding of use patterns on and around the lake: a visitor survey; observations of groups on Baskahegan Lake; vehicles counts at the Brookton and Danforth boat launches; and interviews with long-term and frequent visitors.

Visitor Survey Summary:

The survey provided an indication of visitor travel patterns and use history. From the survey, we learned that lake visitors tended to be return visitors (94%) who traveled in small groups (2-3 people) of family or family and friends. Many (43%) of the groups included youth under age 16 and most (67%) visitors used the lake for day use. Most (67%) of the 33% of the respondents who camped stayed for 1 or 2 nights. Respondents were mostly (75%) from Maine, and they traveled the lake mostly (67%) by powerboat. Visitors found the lake to be fairly quiet, where 50% reported seeing no other groups on the water, and 31% saw only 1-5 other groups.

Observations of groups on Baskahegan Lake Summary:

The observations of boats provided a sense of the recreational experience on the lake in terms of quietness and travel preferences. The expansiveness of the lake provides a sense of solitude on the water. Most often while traveling on the water there were no boats in sight. The groups that were observed on the water tended to be small (2-3 people) groups fishing from modest powerboats. The greatest number of boats observed in one day was 9 (on August 14th). The majority (88%) of observed boats were powerboats, 7% were kayaks, and 5% were canoes. The mean number of people per boat on the water was 2.41, where groups ranged from 1-6 people and the most common number of people per boat was 3.

Vehicle counts at the Brookton and Danforth Boat Launches Summary:

Observing patterns of vehicles parked at the launch areas provided another perspective on use patterns on the lake and helped to identify visitor management challenges at the launch.

At the Brookton boat launch:

- Vehicle observations found:
 - Up to 34 vehicles per day, with a mean per day of 9.3.
 - Up to 27 vehicles at a time, with a mean of 6.13 at a time.
 - Up to 3 out-of-state vehicles per day, with a mean of 0.63 out-of-state vehicles per day.

At the Danforth boat launch:

- Fewer vehicle observations were conducted since the Brookton launch is the core use area within the watershed. Use patterns were low and did not present notable management problems. The vehicle counts found:
 - Up to 5 vehicles at a time, with a mean of 1.06 at a time.
 - The most common number of vehicles was 0.

Interviews with Long-Term & Frequent Visitors Summary

The interviews provided another indication of use patterns on the lakes and streams, and information about how recreational use and resource conditions have changed in the watershed over time, as well as suggestions of recreation related problems and for management and facility development in the future. The interviews found:

- The majority of recreation use is summer fishing for bass and white perch. Bass fishing is a family activity that attracts people from near and far, and white perch fishing is more specialized and attractive to long term visitors from Maine. There is little recreational activity in the watershed during winter and spring. Other than fishing, the major qualities visitors associate with the lakes and streams are the scenery, quietness, and the opportunity for camping.
- Recreational use of the watershed has changed over time in several ways. The major user groups have changed from one major guiding company and the Loring Air Force base, to a greater variety of visitors. Length of stay has decreased particularly at the Brookton boat launch and is now limited to tents. Use is now greater on weekends whereas it used to be more spread out throughout the week.

- The following suggestions for management actions and facility developments emerged from the interviewees' discussions over recreation-related problems at the watershed and their solutions:
 - Build outhouses at the launch and on some of the islands.
 - Build picnic tables at the launch.
 - Maintain the road into the launch.
 - Increase management presence for the island campsites – possibly integrating a registration system, campsite regulations, presence of staff, and impact monitoring.
 - Improve the ramp at the Brookton launch site
 - Reimplement roll dam to raise the water level of Baskahegan Lake
 - Increase access to and develop information about stream travel. Consider developing campsites along the streams.

Section Conclusions:

The following conclusions emerged from our recreational use monitoring:

- The lakes and streams provide a special place to fish attracting family groups for bass and white perch, as well as to enjoy the scenery, for the quietness, and for the opportunity to camp. Many current qualities of the resource are important to visitors and should be protected, such as the undeveloped shorelines, recreational access, and “wild” character of the resource.
- The most significant problem at the launch area is management of human waste. Outhouse facilities are needed to accommodate the quantity and combination of visitors (day use of the launch for swimming, boaters launching and landing, and camping groups) and to resolve the current sanitation and litter problem.
 - Several of the island and shoreline campsites also need systems for human waste management.
- The capacity of the parking lot is sufficient for nearly all days (except fair weather holidays). Expansion should not be a priority so long as increasing visitation to the lake is not an absolute goal.
- The parking lot design is functional with its loop. The main concern in terms of visitor access is the launch itself. On busier days it can be difficult for arriving parties to launch their boats if other groups are using the launch area for swimming, fishing, and sun-bathing (particularly when the groups spending time at the launch park their cars directly adjacent to the launch). It might be beneficial for land managers to direct parking away from the launch area and to consider posting a sign about launch etiquette.
- As it is, the boat launch area can be difficult for new visitors or people with larger boats given its gradual slope and shallow water. A possible improvement would be to excavate the shoreline to make launching and loading more conducive for a variety of users. However, this would likely require an environmental assessment.
- A decision will need to be made about the use of the open area west of the launch (currently leased to groups with trailers). If the area will not be leased to another group in the future, managers might consider making it a day-use park for beach goers and swimmers. This would leave the main launch area for people with boats (and alleviate launch congestion issues). Such a change would require a management presence to prevent unwanted uses and activities.

- While the islands are much appreciated for the camping opportunities they provide, they present some management issues. Lack of development and a sense of “wildness” is a major attraction of the area, but the recreational use of the islands over years without targeted management has led to compromised conditions. A more hands-on management presence is needed to preserve the undeveloped character. Approaches, based on our interview findings, might include more signage of camping regulations or minimum impact travel recommendations, the regular presence of managers (paid staff or volunteers), and a registration system for the islands requiring visitors to contact the Baskahegan Land Company and agree to terms before camping.
- The interviewees suggested user groups would take greater advantage of the streams if access and trip information were more available. This might also help to disperse use away from the Brookton boat launch and nearby islands. The streams are wild in character and exceptional for fishing and wildlife viewing. However, trips are difficult to plan because of long distances and wind vulnerabilities between access points and lack of campsites and convenient pullouts along the way. Managers might consider improving stream information on current maps such as the DeLorme Gazetteer, improving access roads to the existing launch sites on the flowage, and developing new launch sites and campsites along the streams.

RECREATION RESOURCES

The focal recreation resources for this project were the Baskahegan Lake and Crooked Brook Flowage campsites, and the launch sites and recreation developments along the North and South Streams. This section of the report details our assessment of these resources and provides a discussion of our major conclusions.

Baskahegan Lake and Crooked Brook Flowage Campsites

Nine current campsites were identified within the Baskahegan Stream Watershed. One of the campsites is composed of three camping cells and a second contains two cells, for a total of 12 tenting sites within the watershed. Seven of the campsites are located on Baskahegan Lake (figure 10), and two at the Crooked Brook Flowage (figure 11).

Figure 10. Location of campsites on Baskahegan Lake.

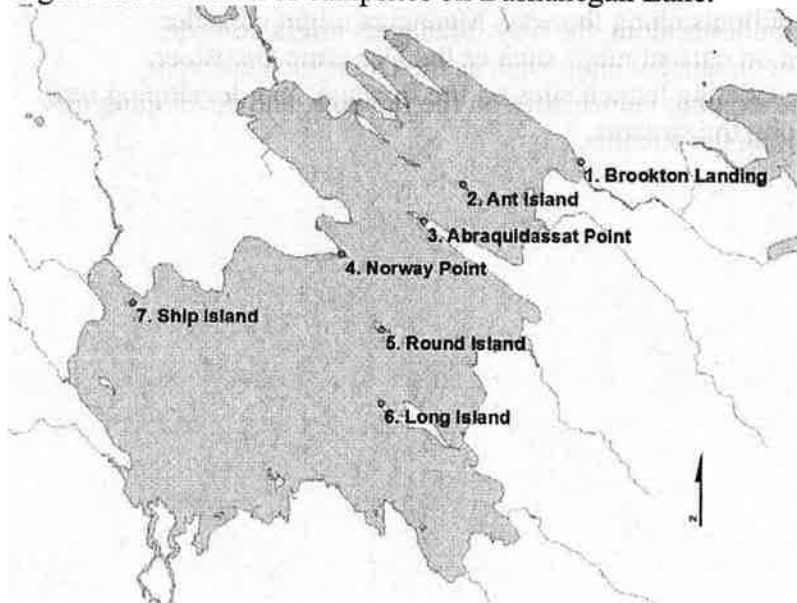
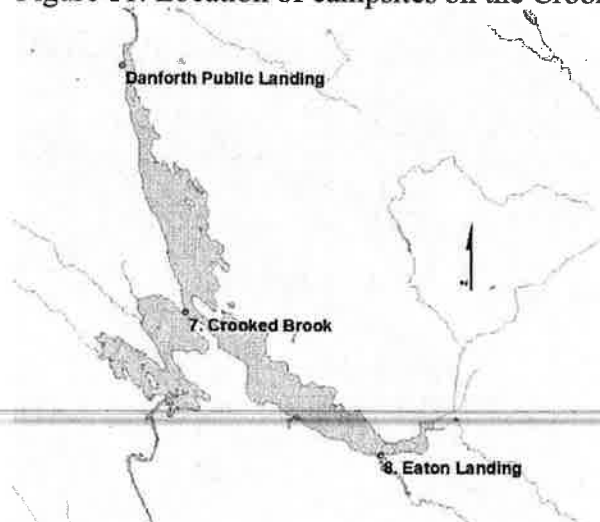


Figure 11. Location of campsites on the Crooked Brook Flowage.









Campsite Assessments

A monitoring tool originally adapted for the Maine Coastal Islands was used to assess the condition of campsites. The goals of the monitoring tool are to identify the current size and condition of the site, to photo document the site for future comparison, and to note important characteristics and concerns associated with the sites. A combination of GPS and physical measurements were used to measure the tent sites, and a series of maps were created using ArcGIS 9.3.1 and Google Sketch-Up.

The following sections contain: general descriptions of each campsite (including tent sites and expanded use areas), maps showing site shape, size, and major characteristics; a selection of site photos; lists of site qualities and concerns; and suggestions for management actions. The more detailed monitoring sheets for each site are provided in appendix D. Appendix E provides the full compilation of campsite photos.

For each site, an overview is provided showing the site cells, prominent features, and use areas. GPS data were used to create these overview maps, which were developed using ArcGIS 9.3.1. An additional map is provided for each cell showing the cell transects (identifying campsite size) and entrance points. Physical measurements and Google Sketch-Up were used to create these maps because the accuracy of GPS data was less useful given the small cell sizes and at times thick tree cover. All entrances to campsites are color coded according to the condition class outlined in table 8.

Table 8. Condition class system for campsite entrances.

Condition Class	Color Code	Description
0		Trail barely distinguishable; no or minimal disturbance of vegetation or organic litter.
1		Trail distinguishable; slight loss of vegetative cover and/or minimal disturbance of organic litter.
2		Trail obvious; vegetative cover lost or disturbed.
3		Vegetative cover and organic litter lost in nearly all places, but little or no erosion.
4		Soil erosion or compaction in tread is beginning in some places.
5		Soil erosion or compaction is common: tread is obviously below ground surface.

Campsite 1: Brookton Landing

The Brookton Landing campsite is located directly adjacent to the parking lot and consists of two cells within a larger use area (figure 12 shows a site overview). Although the site does not experience overly frequent use (groups were observed 5 of the 24 monitoring days), the camping cells and side use areas show significant wear. These sites are among the most popular on the watershed due to their ease of access, which sometimes makes them a party destination for local groups. The campsite also tends to be used as a bathroom area for day-users since there are no facilities at the launch site.

Figure 12. Overview showing Brookton Landing campsite, the parking lot, docks and water's edge.

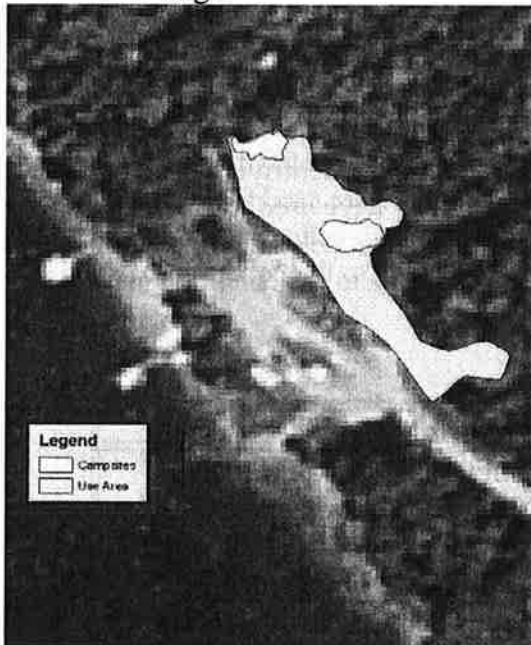


Figure 13. North cell transects with fire pit as center point.

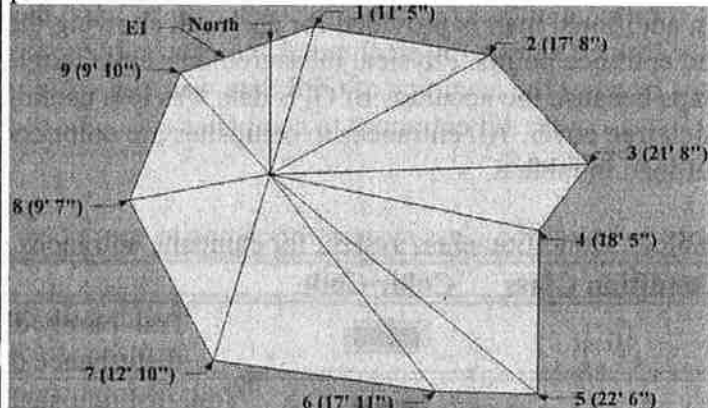


Figure 14. South cell transects with fire pit as center point.

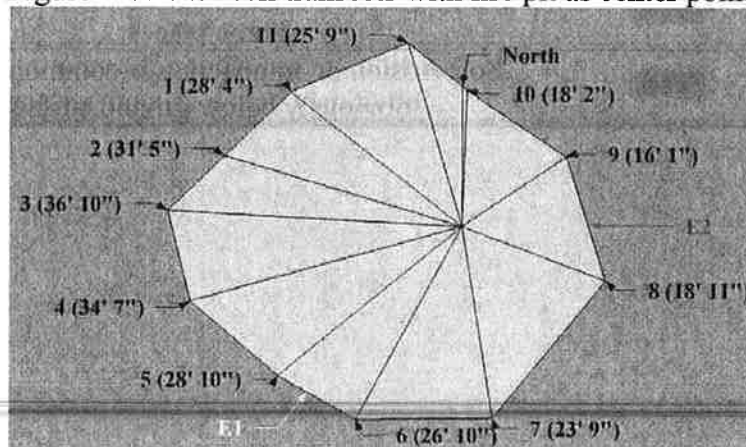






Table 9. Brookton Landing site qualities, concerns, and management recommendations.

Site Features	Concerns
<ul style="list-style-type: none"> • Proximate to boat launch 	<ul style="list-style-type: none"> • Frequent fire site despite posted fire restrictions
<ul style="list-style-type: none"> • Easy access for camping and day use 	<ul style="list-style-type: none"> • Significant presence of human waste and toilet paper within the use area and surrounding areas
<ul style="list-style-type: none"> • Accessible in windy conditions (does not require water travel) 	<ul style="list-style-type: none"> • Frequent presence of trash
<ul style="list-style-type: none"> • Multiple sites for large groups 	<ul style="list-style-type: none"> • The ground vegetation cover on the South site is sparse and showing signs of erosion
<ul style="list-style-type: none"> • Camping use tends to be limited to 1-3 nights 	
Management Recommendations	
<ul style="list-style-type: none"> • Develop outhouse facilities at the launch to reduce presence of human waste and associated litter. 	
<ul style="list-style-type: none"> • Increase management presence (by volunteers or increased presence of Baskahegan staff) at the launch as this is the main access point to the watershed. The purpose of management presence would be to maintain the site and to encourage visitors into more environmentally responsible behavior. 	
<ul style="list-style-type: none"> • Update signage about fires requiring permits and outlining minimal impact practices. 	
<ul style="list-style-type: none"> • Re-build fire rings to be more permanent and safe (and to discourage visitor-built additional rings). 	
<ul style="list-style-type: none"> • Create natural barriers to limit use of side areas once outhouse facilities are in place. This will help clarify campsite boundaries and allow surrounding areas to recover. 	

Campsite 2: Ant Island

The Ant Island campsite is located close to the Brookton Launch in the Northeast portion of Baskahegan Lake. The island is easily accessible by boat and landing by the campsite is simple along the stone shore. The campsite is in a natural depression on the island, giving campers some additional shelter from the wind and a sense of privacy. Island visitors would experience a sense of remoteness even though this is the closest campsite to the Brookton Launch. The campsite is expanding to the North but the expansion areas are somewhat screened from the main tenting site by shrubs. There is an old, overgrown campsite with a fire ring on the North end of the island. There is significant damage to trees (ropes, nails, limbing) within and surrounding the campsite, and several large, dead trees have been cut down to use as firewood. The island contains large piles of trash (carpets, tents, furniture, etc.) concentrated toward the Southern tip.

Figure 15. Overview of Ant Island campsite. Figure 16. Ant Island campsite transects with fire ring as center point.

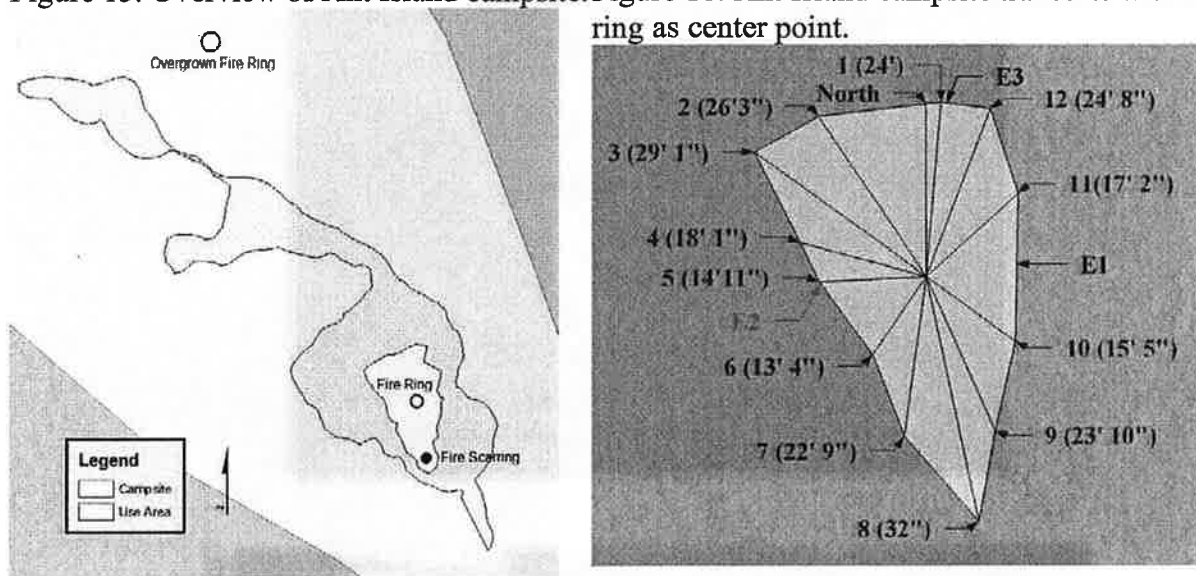




Photo taken from transect #8 showing fire scarring.

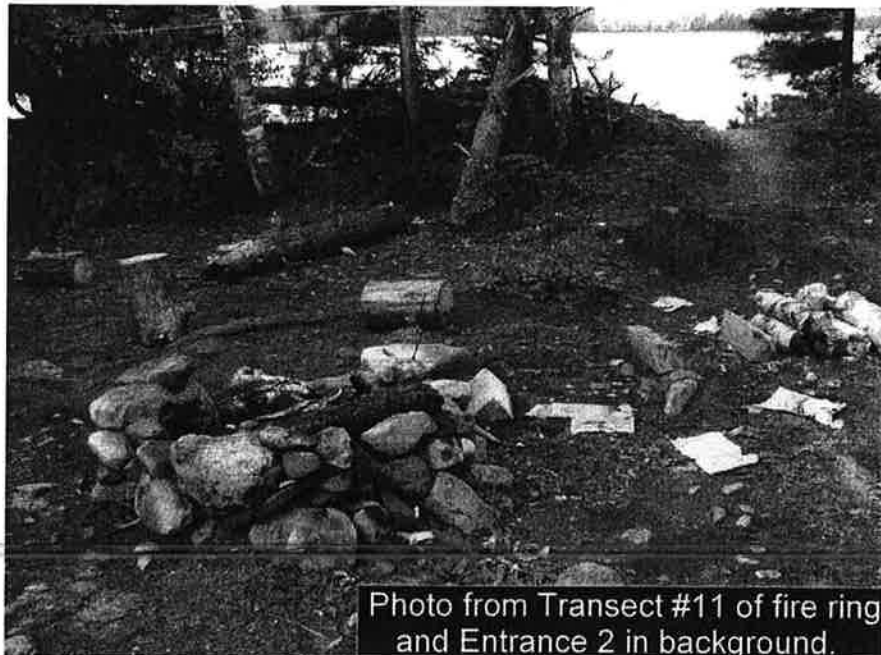


Photo from Transect #11 of fire ring and Entrance 2 in background.



Photo taken from Entrance 1 facing shore

Table 10. Ant Island campsite qualities, concerns, and management recommendations.

Site Features	Concerns
<ul style="list-style-type: none"> • Closest Island campsite to Brookton Launch. 	<ul style="list-style-type: none"> • Evidence of fires in campsite outside of fire ring.
<ul style="list-style-type: none"> • Located in sheltered portion of the lake, less vulnerable to the wind. 	<ul style="list-style-type: none"> • Significant presence of human waste and toilet paper within the use area and surrounding areas.
<ul style="list-style-type: none"> • Capacity for 2 to 3 tents. 	<ul style="list-style-type: none"> • Frequent presence of trash inside and large trash piles outside of campsite.
	<ul style="list-style-type: none"> • Large trees cut for firewood. Expansion to the North of the campsite, site screened by shrubs.
	<ul style="list-style-type: none"> • Overgrown campsite with old fire ring on the north end of the island
Management Recommendations	
<ul style="list-style-type: none"> • Develop outhouse facilities to reduce presence of human waste and associated litter. 	
<ul style="list-style-type: none"> • Devise a plan for managing the outhouse facility and cleaning the island including the fire ring (this could be a group of volunteers or hired staff). 	
<ul style="list-style-type: none"> • Update signage about fires requiring permits and outlining minimal impact practices. 	
<ul style="list-style-type: none"> • Re-build fire ring to be more permanent and safe (and to discourage visitor-built additional rings). 	

Campsite 3: Abraquidassat Point

The campsite at Abraquidassat Point is small and private, and it is located at the end of a narrow peninsula in the Northeast quadrant of Baskahegan Lake. Although the site has been developed by campers with a table, tarp, and two fire rings, it feels more rugged and less impacted than other more popular campsites. Abraquidassat Point campsite is also very small in comparison to most other campsites, and it is tightly surrounded by healthy vegetation along the portion of its circumference that does not directly access the water. The campsite has direct water access to the North and via a very short trail to the South, both of which offer special places for swimming and facilitate launching and landing in various wind conditions. The extended use area in figure 17 depicts the area with heavy tree damage (from cutting for fire wood) which is somewhat wet and does not elicit heavy trampling damage or evidence of alternate tent sites.

Figure 17. Overview of Abraquidassat Point campsite.

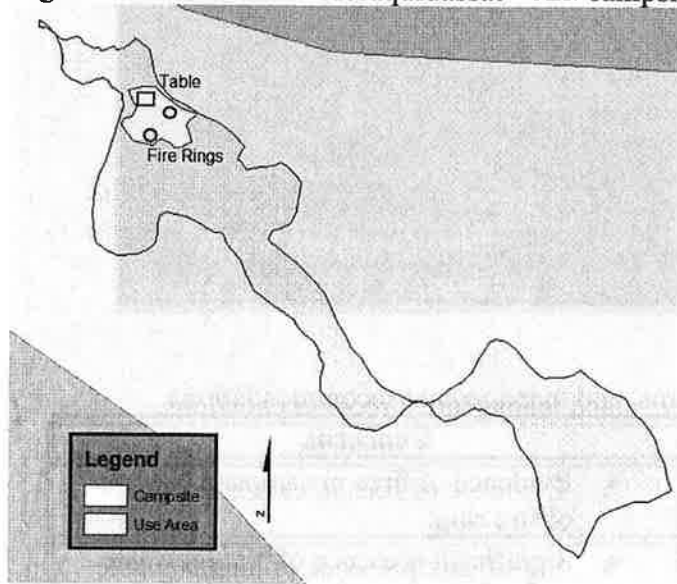
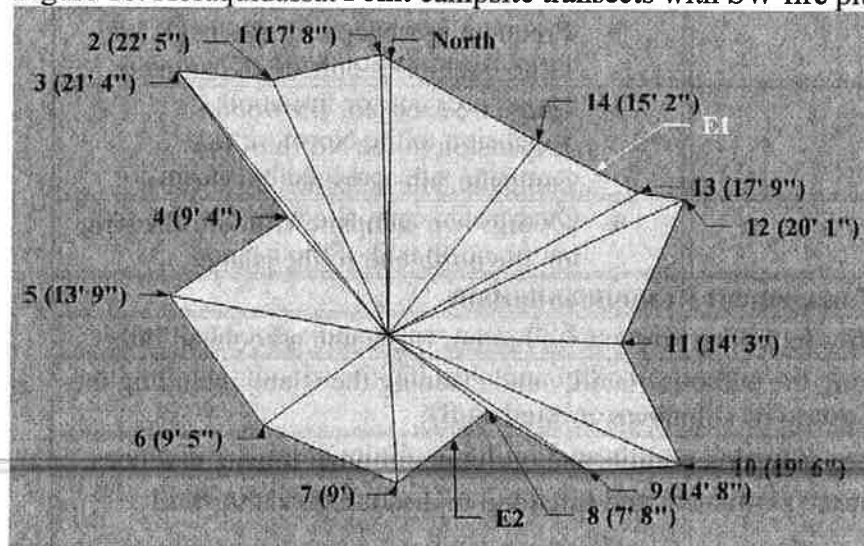


Figure 18. Abraquidassat Point campsite transects with SW fire pit as center point.



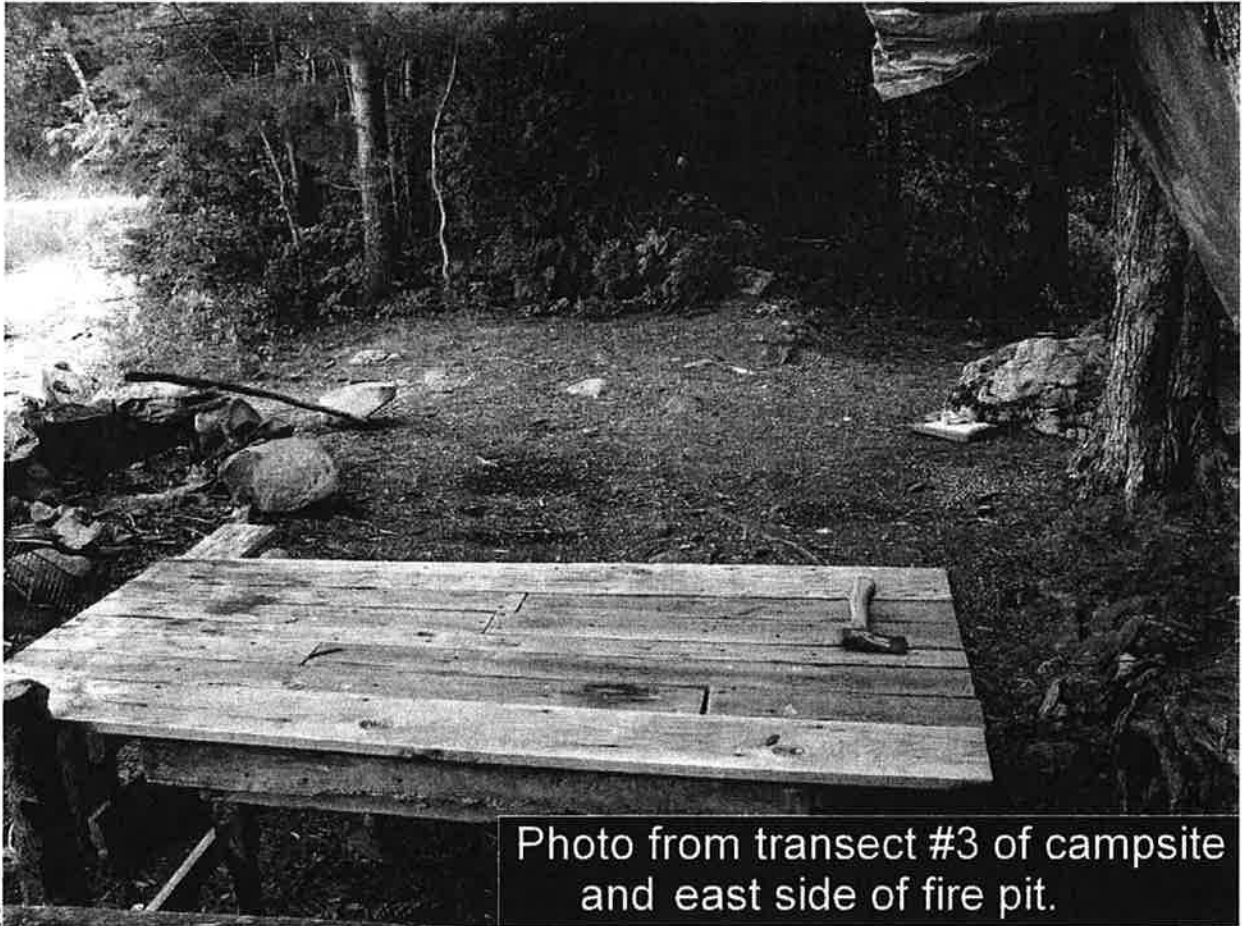




Table 11. Abraquidassat Point campsite qualities, concerns, and management recommendations.

Site Features	Concerns
<ul style="list-style-type: none"> • Small, private site. 	<ul style="list-style-type: none"> • Campsite has two large fire pits (one on each side of the small site).
<ul style="list-style-type: none"> • Easily reachable by boat – access is sheltered from wind by the long, narrow peninsula. 	<ul style="list-style-type: none"> • Significant presence of human waste and toilet paper within the use area.
<ul style="list-style-type: none"> • Site is a popular stopover for lunch and other day uses. 	<ul style="list-style-type: none"> • Large table takes up a lot of space in the small site but may also be preventing expansion to the North.
	<ul style="list-style-type: none"> • Significant tree damage with trees recently cut to expand the site to the North and South.
Management Recommendations	
<ul style="list-style-type: none"> • Develop outhouse facilities to reduce presence of human waste and associated litter in the use area to the South. 	
<ul style="list-style-type: none"> • Devise a plan for managing the outhouse facility and cleaning the island including the fire rings (this could be a group of volunteers or hired staff). 	
<ul style="list-style-type: none"> • Update signage about fires requiring permits and outlining minimal impact practices. 	
<ul style="list-style-type: none"> • Remove one fire ring and re-build the other fire ring to be more permanent and safe. Clean out fire rings periodically to limit their size and discourage additional visitor built fire rings. 	
<ul style="list-style-type: none"> • Create natural barriers to limit use of side areas once outhouse facilities are in place. This will help clarify campsite boundaries and allow surrounding areas to recover. 	

Campsite 4: Norway Point

The Norway Point campsite is located opposite Abraquidassat Point along the Northwest shore of Baskahegan Lake. The campsite has a small capacity (1 or 2 tents) because much of its flat area is covered by the fire ring and tables, and much of the remaining area is uneven or covered by trees and/or roots. The campsite sits adjacent to a sandy beach (to its North) which is ideal for landing and enjoying. The main use of the campsite appears to be for lunches and dinners. It is an attractive site except for the fire ring which has become very large and is expanding toward the middle of the site. The campsite floor has been reduced to mineral soil around the fire ring and tables, but is covered by a layer of forest duff and moss in other areas.

Figure 19. Overview of Norway Point campsite.

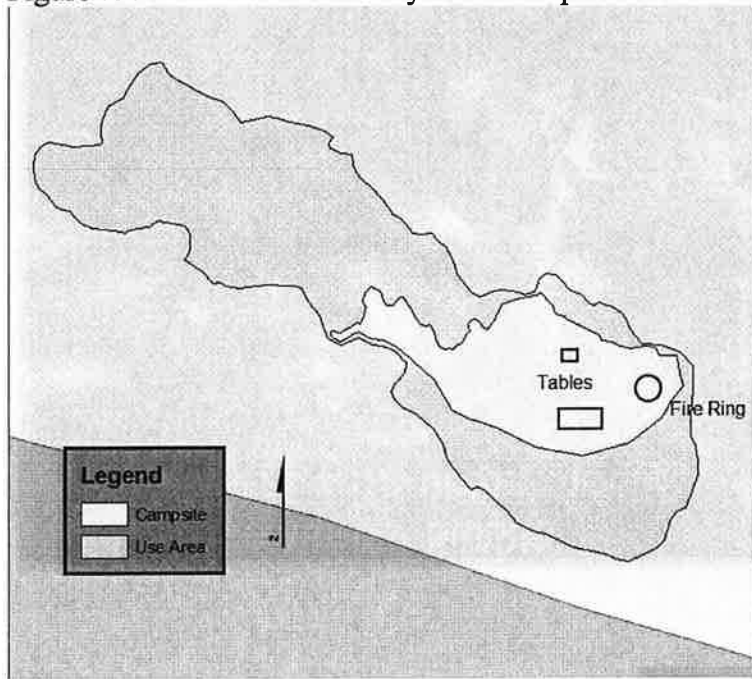


Figure 20. Norway Point campsite transects with fire ring as center point.

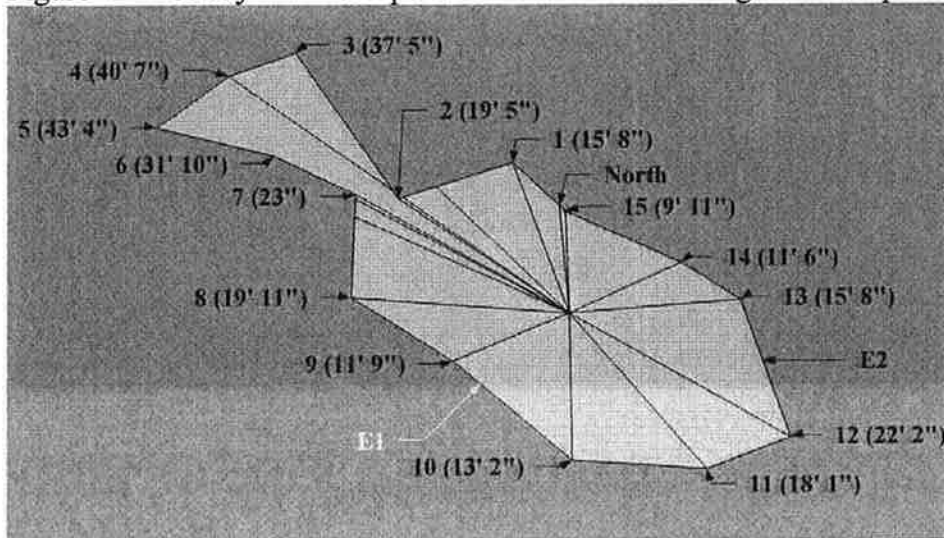




Photo taken from Transect #11 facing northwest.



Photo facing southeast from Transect #5 showing tent area.



Photo taken from Entrance 1 showing early sign of erosion.



Photo taken from transect #2 facing southeast.

Table 12. Norway Point campsite qualities, concerns, and management recommendations.

Site Features	Concerns
<ul style="list-style-type: none"> • Central location on Baskahegan Lake with easy access for camping and day use. 	<ul style="list-style-type: none"> • Large, expanding fire ring. Fire scarring and coals spreading over large area of campsite.
<ul style="list-style-type: none"> • Popular location for campsite cooking and shore meals. 	<ul style="list-style-type: none"> • Significant presence of human waste and toilet paper within the use area and surrounding areas.
<ul style="list-style-type: none"> • Space for one tent back from and partially screened from main front area. 	<ul style="list-style-type: none"> • Frequent presence of trash.
<ul style="list-style-type: none"> • Large beach at main entrance. 	<ul style="list-style-type: none"> • Trail over steep bank to the SW is eroding.
	<ul style="list-style-type: none"> • Significant amount of old tree damage.
Management Recommendations	
<ul style="list-style-type: none"> • Develop outhouse facilities to reduce presence of human waste and associated litter. 	
<ul style="list-style-type: none"> • Devise a plan for managing the outhouse facility and cleaning the island including the fire ring (this could be a group of volunteers or hired staff). 	
<ul style="list-style-type: none"> • Update signage about fires requiring permits and outlining minimal impact practices. 	
<ul style="list-style-type: none"> • Re-build the fire ring to be more permanent, smaller, and more safe (and to discourage visitor-built additional rings). 	
<ul style="list-style-type: none"> • Consider building steps on the SW trail. The trail is in a location where people will walk regardless of management intervention (to get to the back beach) so screening and re-directing is not a good option. 	

Campsite 5: Round Island

The campsite on Round Island consists of three tenting cells. This is the most popular of all island campsites on the lake likely due to its convenient location (in the Northern portion of zone D, a short distance by boat from the launch). The impact on the campsite seems to be more a result of occasional use by large groups with heavy footprints than from frequent use. The island and surrounding area are aesthetically beautiful, however, the impact from camping on this island is at a severity that has damaged the health of the island forest and that will appear unappealing to new visitors. Of the three tenting cells, the South and Center cells are most used and impacted, and the North cell is more separated and in slightly better condition.

Figure 21. Overview of the north tenting cell on Round Island.

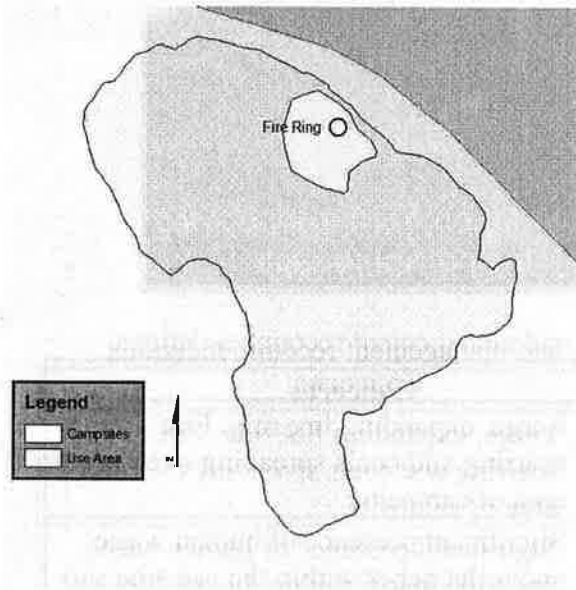


Figure 22. North cell transects with fire pit as center point.

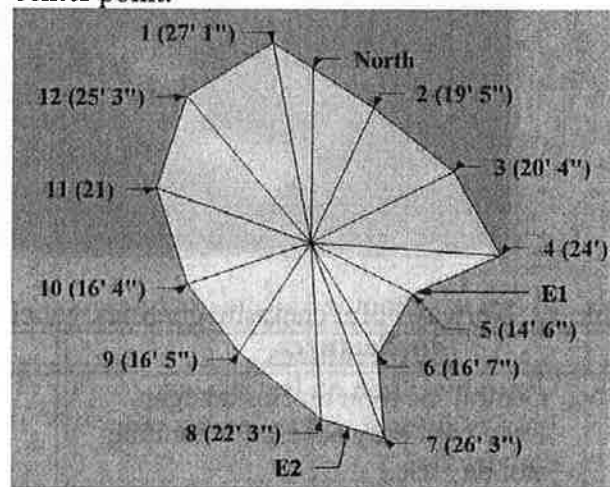


Figure 23. Overview of the center and south tenting cells on Round Island.

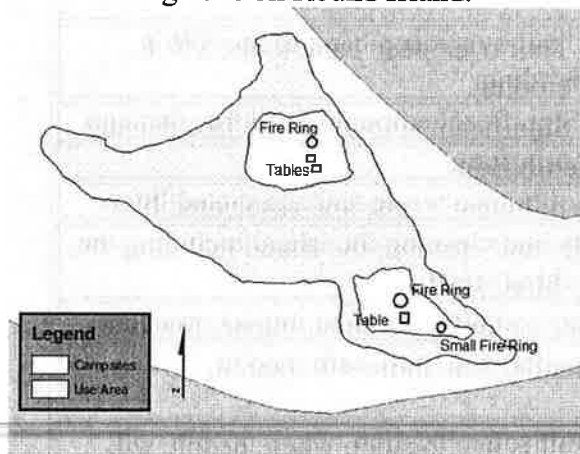


Figure 24. Center cell transects with fire pit as center point.

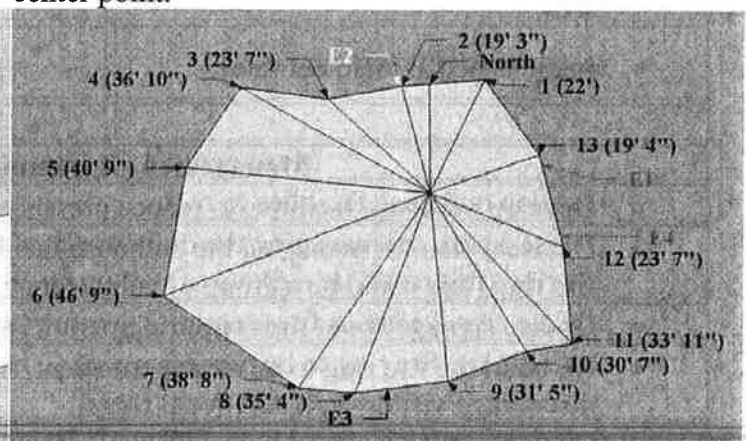
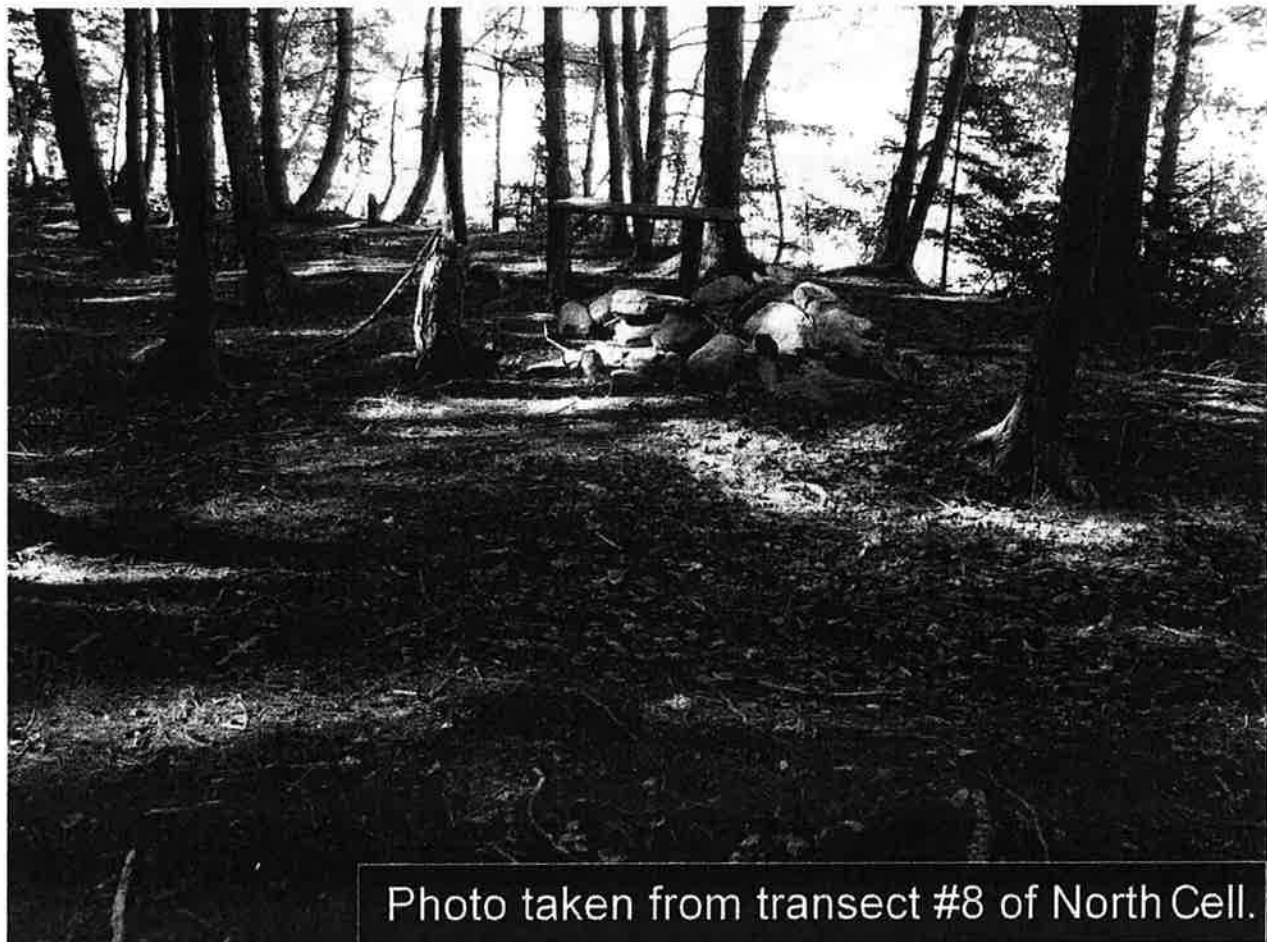
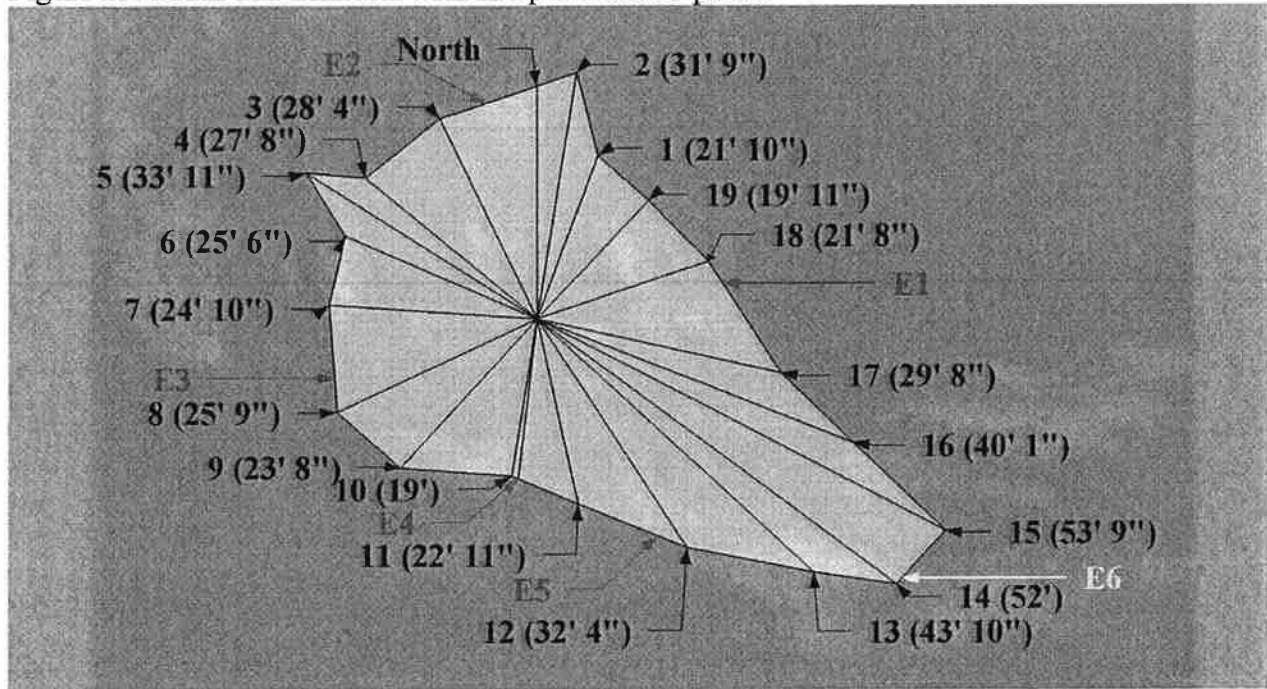


Figure 25. South cell transects with fire pit as center point.



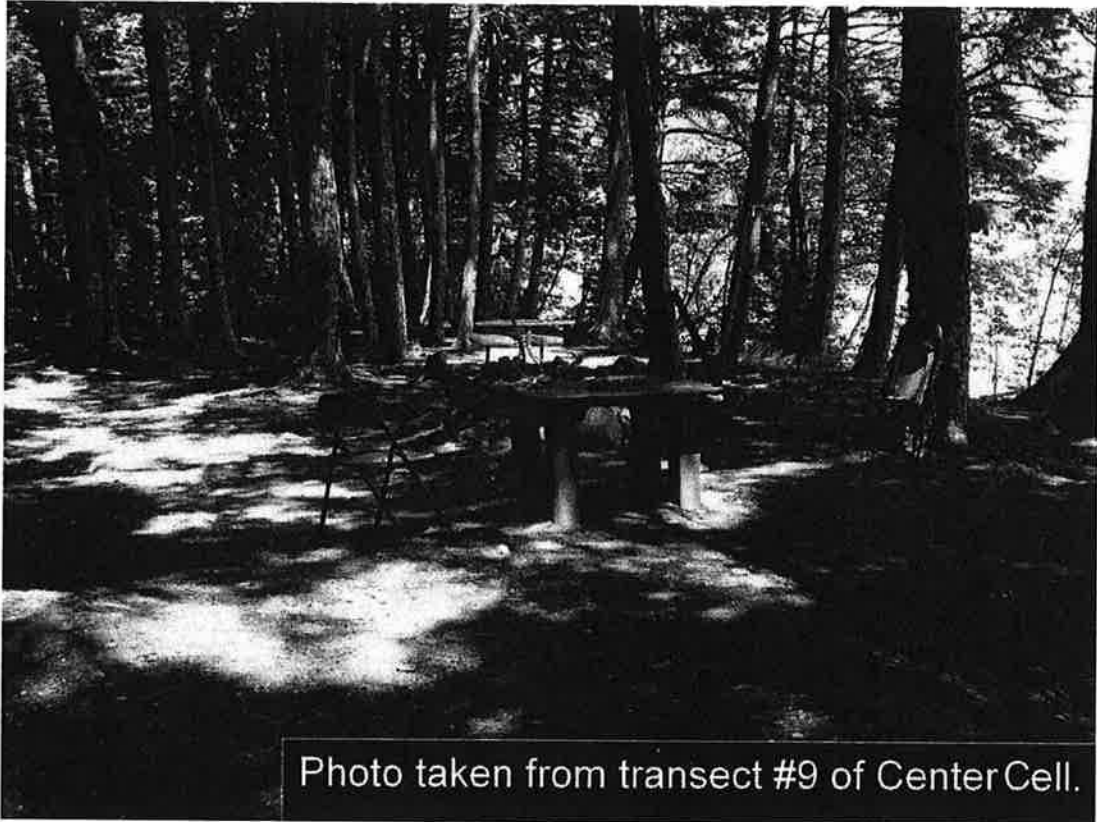


Photo taken from transect #9 of Center Cell.

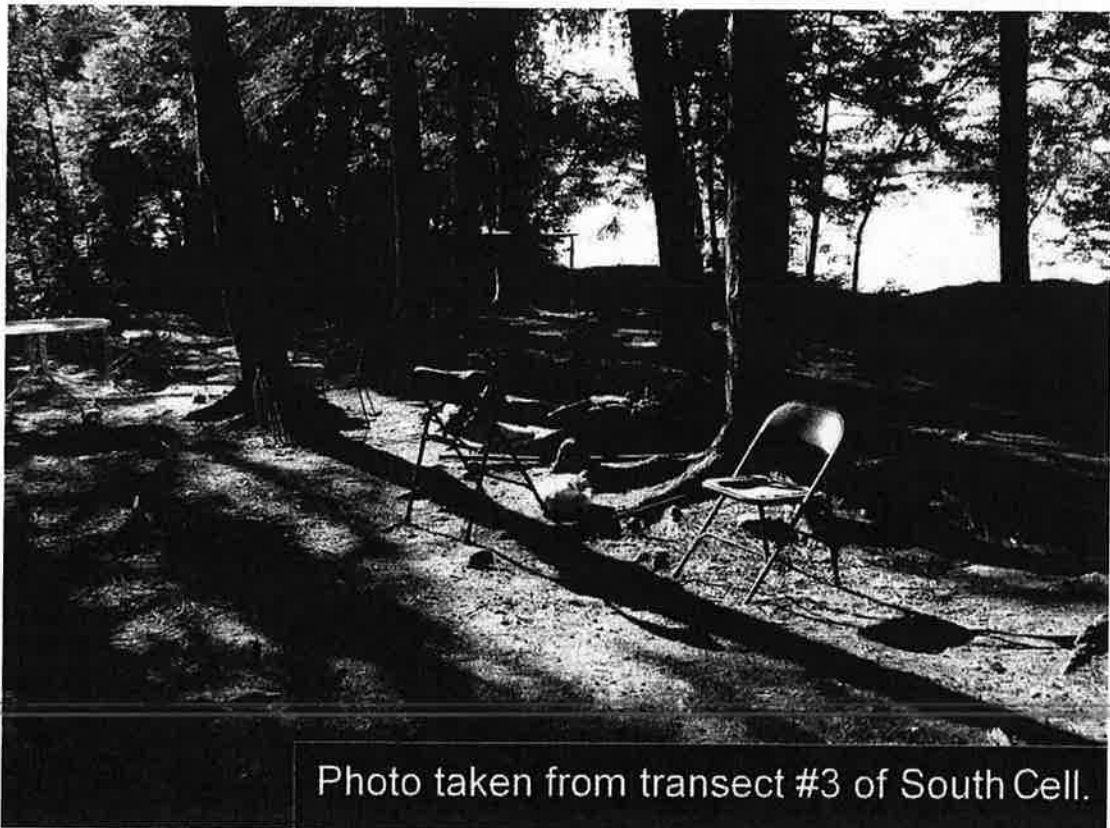
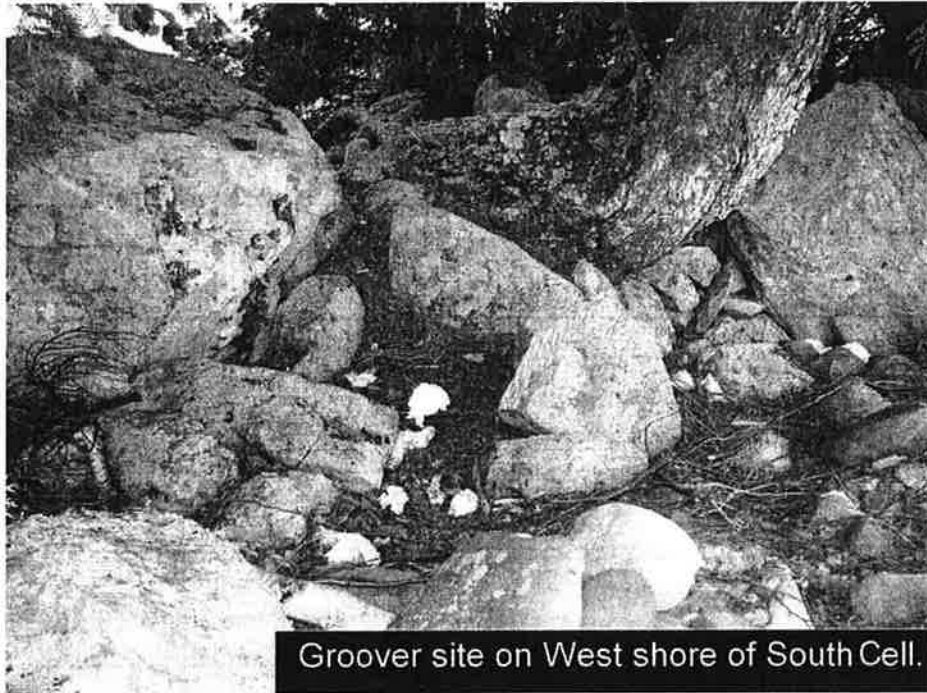


Photo taken from transect #3 of South Cell.



Groover site on West shore of South Cell.



Photo taken from Entrance 3 of Center Cell facing toward the South Cell.

Table 13. Round Island campsite qualities, concerns, and management recommendations.

Site Features	Concerns
<ul style="list-style-type: none"> Multiple sites and capacity for large groups. 	<ul style="list-style-type: none"> Level of recreation impact is severe enough to dissuade new visitors from camping on the island.
<ul style="list-style-type: none"> Accessible, central location on the lake – short boat ride from the Brookton Launch. 	<ul style="list-style-type: none"> Multiple fire rings in on the island, and two fire rings in the South cell.
<ul style="list-style-type: none"> Aesthetically pleasing island that offers feeling of remoteness without needing to travel far to reach. 	<ul style="list-style-type: none"> Management of human waste is a problem – 4 abandoned thunder boxes and extensive evidence of dispersed human waste on the island.
<ul style="list-style-type: none"> Good beach for shore meals and landing boats. 	<ul style="list-style-type: none"> Extensive damage to trees and other vegetation.
<ul style="list-style-type: none"> Important opportunity for groups that return year after year. 	<ul style="list-style-type: none"> Heavy presence of trash and abandoned camping equipment (grates, furniture, cookware, etc.)
Management Recommendations	
<ul style="list-style-type: none"> Develop an outhouse facility on the island to reduce presence of human waste and associated litter. 	
<ul style="list-style-type: none"> Devise a plan for managing the outhouse facility and cleaning the island including the fire rings (this could be a group of volunteers or hired staff). 	
<ul style="list-style-type: none"> Update signage about fires requiring permits and outlining minimal impact practices. 	
<ul style="list-style-type: none"> Re-build fire rings to be more modest in size and permanent. Limit fire rings to one per tenting cell at maximum. 	
<ul style="list-style-type: none"> Post signage describing the importance of letting spruce and fir saplings grow to help screen the tenting cells. 	
<ul style="list-style-type: none"> Consider building stone steps into the center tenting cell to converge walking traffic and prevent further bank erosion. 	

Campsite 6: Long Island

Long Island is located in the Southeast quadrant of Baskahegan Lake. The campsite occupies much of the Western arm of the island and has the capacity for large groups. The use area is expanding toward the South as more trees are cut and de-limbed for use as fire wood. There is a relatively thick layer of pine needles and forest litter for ground cover within the campsite, but soil is exposed in areas around the fire pit and tables. The campsite contains a range of visitor-made developments, such as a large table and cooking platform, and one large and multiple smaller fire rings. There is also abundant camping equipment such as chairs, clotheslines, and cooking equipment. The presence of human waste is a major problem on this island, as it is spread throughout the use area.

Figure 26. Overview of Long Island campsite.

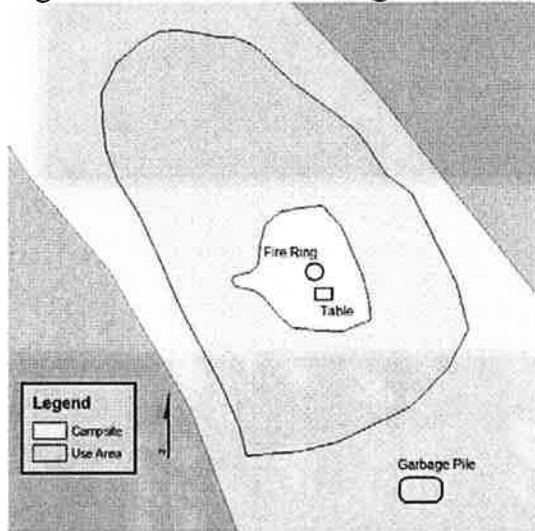


Figure 27. Long Island campsite transects with fire ring as center point.

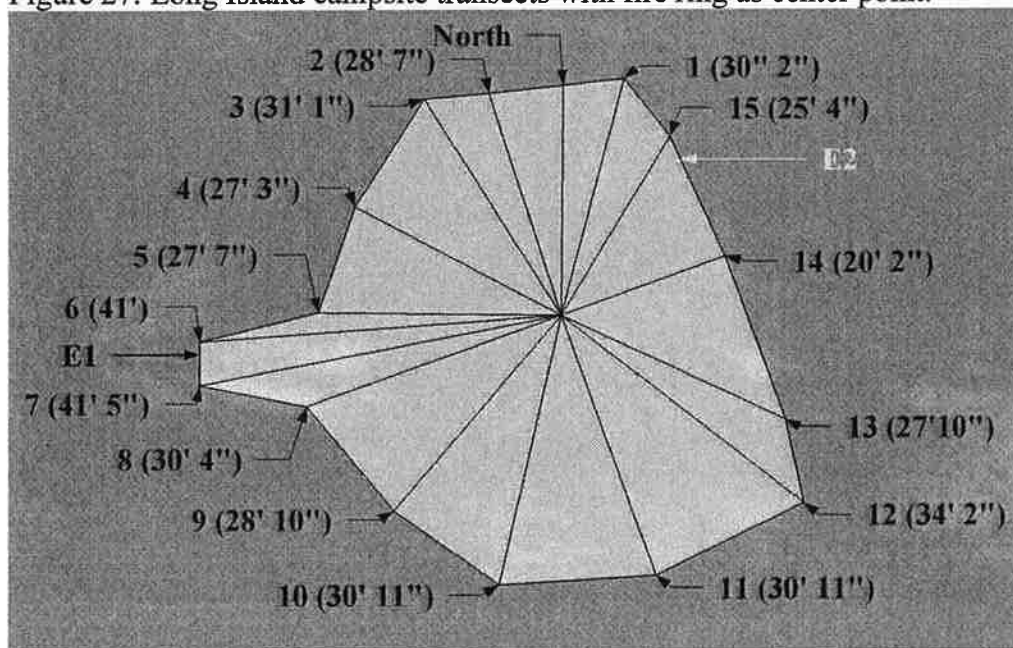




Photo showing steps from shore into campsite via Entrance 1.



Photo taken from transect #5 facing east.



Photo taken from transect #15 facing southwest.



Table 14. Long Island campsite qualities, concerns, and management recommendations.

Site Features	Concerns
<ul style="list-style-type: none"> • Remote, private location. 	<ul style="list-style-type: none"> • Multiple fire rings. Main fire ring is oversized and spreading.
<ul style="list-style-type: none"> • Able to accommodate large groups. 	<ul style="list-style-type: none"> • Significant presence of human waste and toilet paper within the use area and surrounding areas.
<ul style="list-style-type: none"> • Sheltered landing area. 	<ul style="list-style-type: none"> • Large amount of trash both within and outside of the use area.
	<ul style="list-style-type: none"> • Significant tree damage (ropes, scars, nails, de-limbing, cutting).
	<ul style="list-style-type: none"> • Site expanding to the south.
Management Recommendations	
<ul style="list-style-type: none"> • Develop outhouse facilities at the launch to reduce presence of human waste and associated litter. 	
<ul style="list-style-type: none"> • Devise a plan for managing the outhouse facility and cleaning the island including the fire ring (this could be a group of volunteers or hired staff). Visitors to this island need to understand that heavy-impact behavior will change the character of the island. 	
<ul style="list-style-type: none"> • Update signage about fires requiring permits and outlining minimal impact practices. 	
<ul style="list-style-type: none"> • Re-build the main fire ring to be smaller, more permanent, and safe (and to discourage visitor-built additional rings). 	
<ul style="list-style-type: none"> • Post signage restricting the cutting of trees. Consider posting signage at the Brookton Launch restricting the use of chainsaws on the islands. 	

Campsite 7: Ship Island

The campsite on Ship Island is located in the Southwest portion of Baskahegan Lake. Ship Island is very small in itself, and the campsite is a small flat area on the North end of the island surrounded by large boulders that line the shore. There are no major entrances to the campsite because of these boulders, and there is little risk of site expansion for the same reason. The island is difficult to reach by boat because it is surrounded by shallow water containing many granite boulders. The rocks also make landing difficult – the campsite is only accessible for small boats. The Ship Island campsite is marked in the Maine Gazetteer, yet it receives very little use compared to the campsites located closer and more accessible to the Brookton Launch. A relatively healthy layer of moss and forest duff cover the campsite floor, the surrounding trees have seen little damage, and there is no evidence of human waste or associated trash.

Figure 28. Overview of Ship Island campsite.

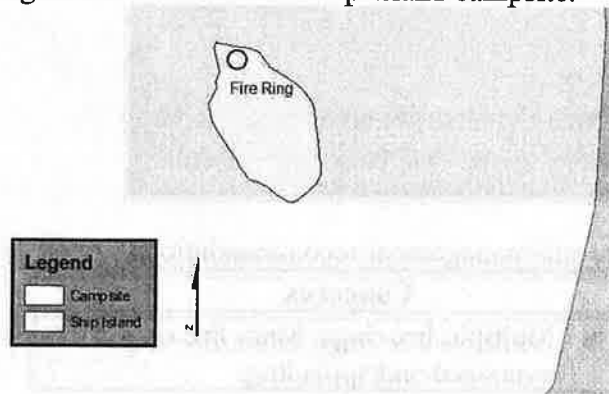


Figure 29. Ship Island campsite transects with W tip of large boulder as center point.

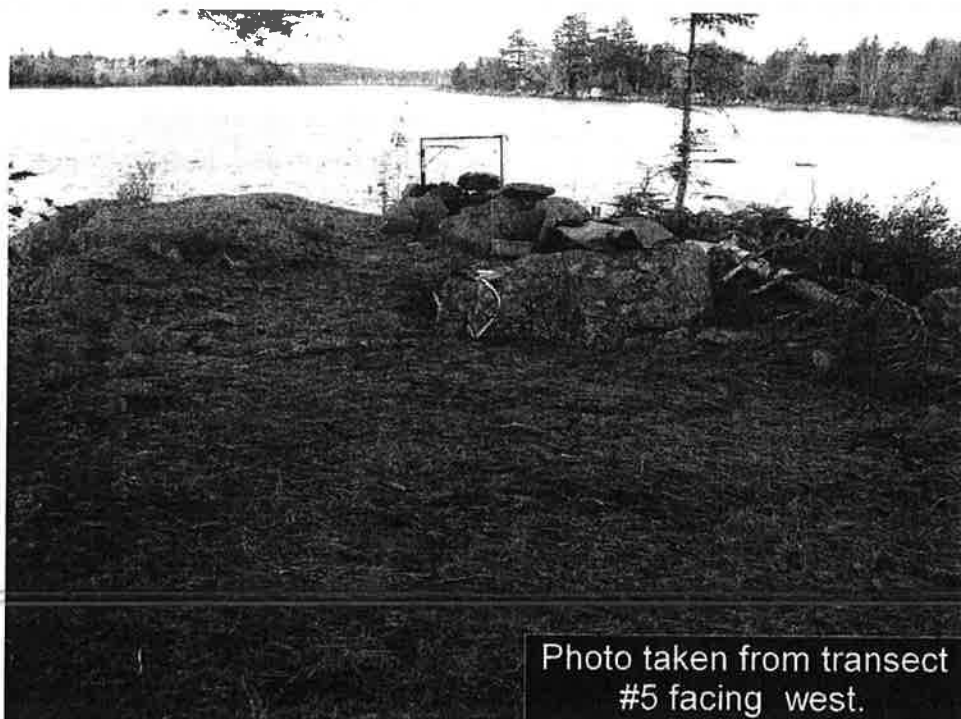
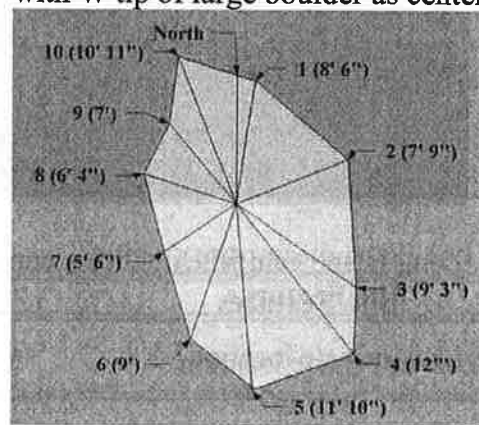


Photo taken from transect #5 facing west.



Table 15. Ship Island campsite qualities, concerns, and management recommendations.

Site Features	Concerns
<ul style="list-style-type: none"> • Small, private site. 	<ul style="list-style-type: none"> • There is no place on the island to build an outhouse, and rocks prevent the opportunity to dig a cat-hole.
<ul style="list-style-type: none"> • Difficult to reach by boat (rocky for motor boats and wind-exposed for paddlers). 	
<ul style="list-style-type: none"> • Site is attractive and in healthy condition. 	
<ul style="list-style-type: none"> • Located near productive fishing areas on the lake. 	
Management Recommendations	
<ul style="list-style-type: none"> • Update signage about fires requiring permits and outlining minimal impact practices. 	
<ul style="list-style-type: none"> • Re-build the fire ring into a more permanent, low-impact development. 	

Campsite 8: Crooked Brook

The Crooked Brook campsite is located along the Western shore of the Crooked Brook flowage. The campsite is in a good location to be a take-out point for groups who have paddled the Baskahegan stream South of the lake because it allows paddlers to avoid long crossings to the Eaton or Danforth take-out points. The Crooked Brook site is reachable by 4X4, but the road in to the campsite is at times barely passable and potentially dangerous as it includes two steep climbs. Currently, the majority of use at the campsite tends to be day use by locals or as an overnight party spot for local groups. The site is also a lunch stop for people who launched in Danforth or Eaton and are paddling the flowage for the day. The campsite itself is open from tree cover, fairly large, and relatively resilient to use by large groups with its grassy ground cover. The entire East side of the campsite is directly accessed by road or shore. The campsite is located at the edge of a grassy area, being open to the East and sheltered by trees to the North and West. The two entrances in Figure 31 show trails from the wooded side, while the entire East side is used to access the beach and road.

Figure 30. Overview of Crooked Brook campsite.

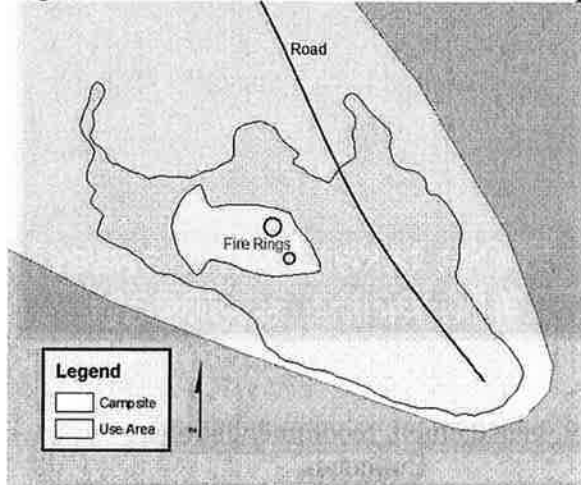
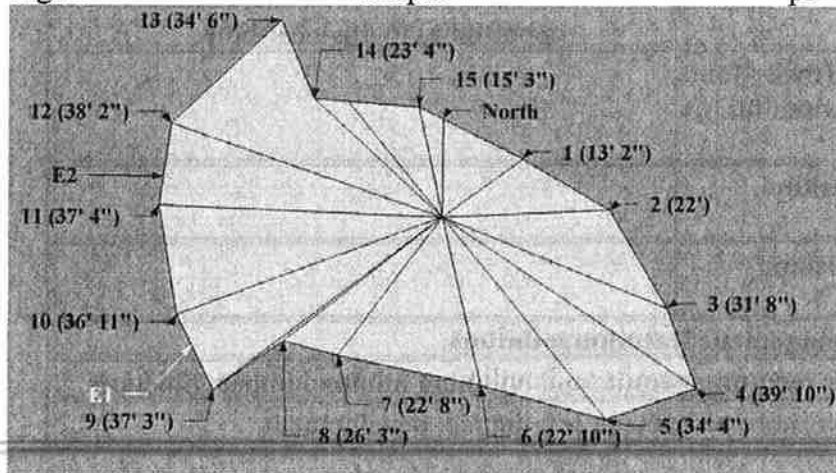


Figure 31. Crooked Brook campsite transects with north fire pit as center point.



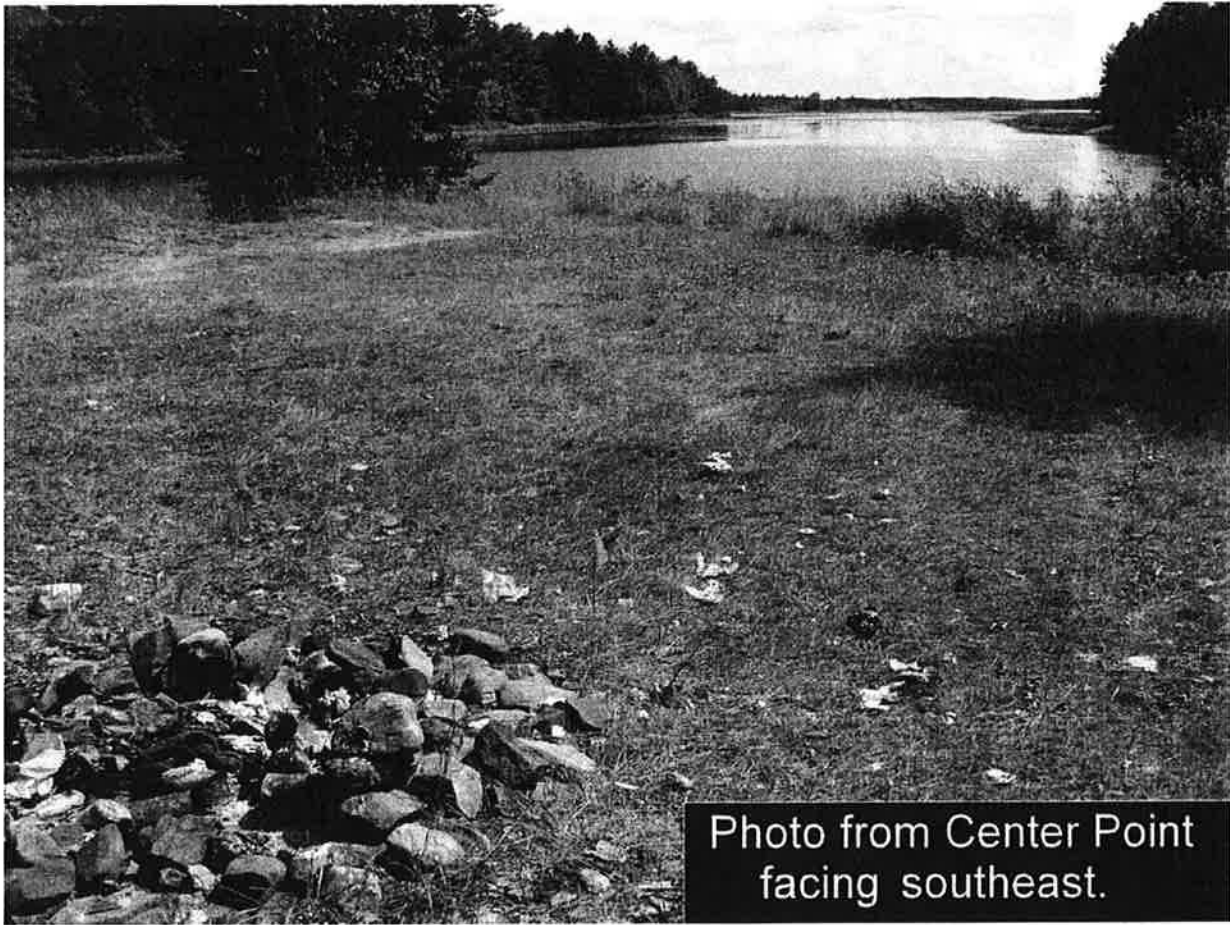


Photo from Center Point facing southeast.



Photo from transect #6 facing north showing second fire ring.



Photo taken from Entrance 2 showing trail to expansion area / groover site.

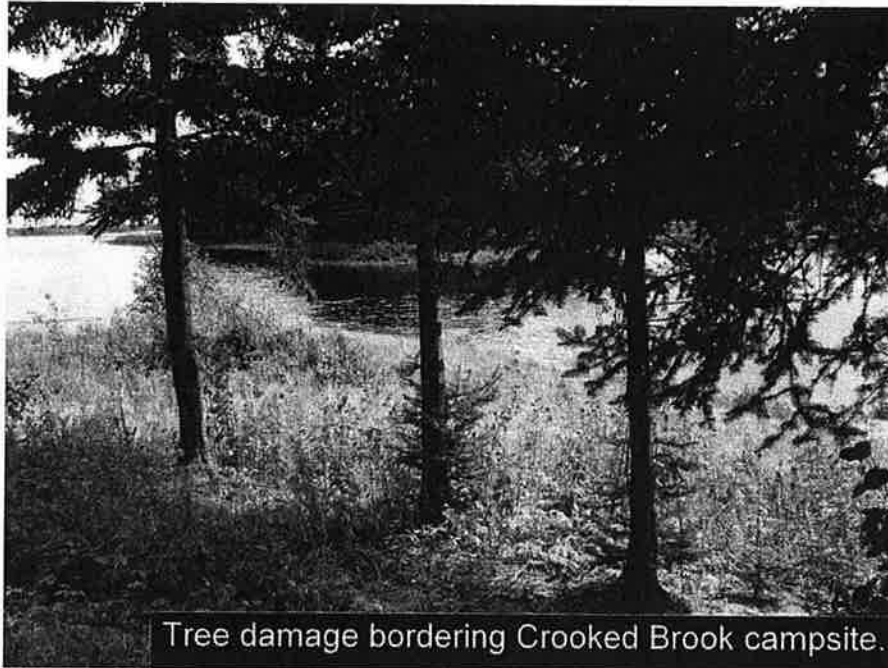


Table 16. Crooked Brook campsite qualities, concerns, and management recommendations.

Site Features	Concerns
<ul style="list-style-type: none"> • Large beach area. 	<ul style="list-style-type: none"> • Vehicle accessibility makes it a party spot.
<ul style="list-style-type: none"> • Early pull out after a stream canoe trip. Saves paddling against prevailing winds. 	<ul style="list-style-type: none"> • Significant presence of human waste and toilet paper within the use area and surrounding areas.
<ul style="list-style-type: none"> • Could accommodate a large group. 	<ul style="list-style-type: none"> • Frequent presence of trash.
<ul style="list-style-type: none"> • Good lunch / break location for people paddling on the Flowage. 	<ul style="list-style-type: none"> • Condition of the road into the site makes it only barely passable with a 4x4.
<ul style="list-style-type: none"> • Accessible by vehicle (4x4). 	<ul style="list-style-type: none"> • Trail over the bank on the south side of the campsite is likely to erode.
Management Recommendations	
<ul style="list-style-type: none"> • Develop outhouse facilities to reduce presence of human waste and associated litter. 	
<ul style="list-style-type: none"> • Devise a plan for managing the outhouse facility and cleaning the campsite including the fire ring (this could be a group of volunteers or hired staff). 	
<ul style="list-style-type: none"> • Update signage about fires requiring a permit and outlining minimal impact practices. 	
<ul style="list-style-type: none"> • Remove one fire ring and re-build the other fire ring to be more permanent and safe. Clean out fire ring periodically to limit their size and discourage additional visitor built fire rings. 	
<ul style="list-style-type: none"> • Create natural barriers to limit use of side areas once outhouse facilities are in place. This will help clarify campsite boundaries and allow surrounding areas to recover. 	
<ul style="list-style-type: none"> • Consider building stone steps on the trail at the South side of site to prevent further bank erosion. Alternatively, use natural screening to hide the South trail to encourage beach access via the East side of the campsite. 	

Campsite 9: Eaton Landing

The Eaton Landing campsite is located along the South shore of the Crooked Brook flowage. The campsite is at the end of a very narrow and rutty road, making it accessible by any vehicle with good clearance. The campsite is a fairly secluded, sheltered site that could accommodate several tents. The site appears to have been created within the last few years and shows signs of recent expansion. It does not appear to experience frequent use as multiple saplings are growing throughout, however, the use that does occur tends to be of high impact. The site is on a point with one side open to the road, and the other sits above the water with a short trail over the SW side. The shore adjacent to the campsite is steep and grassy, but there is an open grassy area on the point with a fire ring which has access to a larger beach more suitable for landing and recreation.

Figure 32. Overview of Eaton Landing campsite.

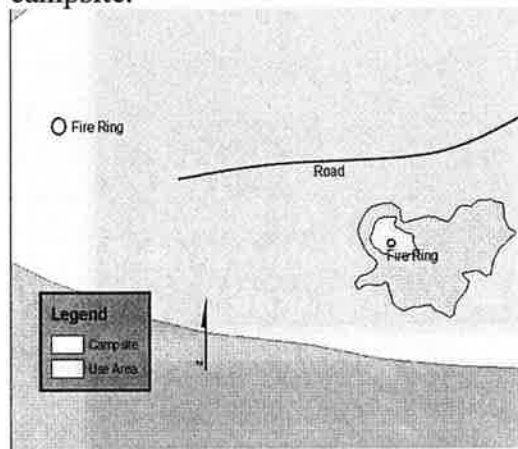


Figure 33. Eaton Landing campsite transects with fire ring as center point.

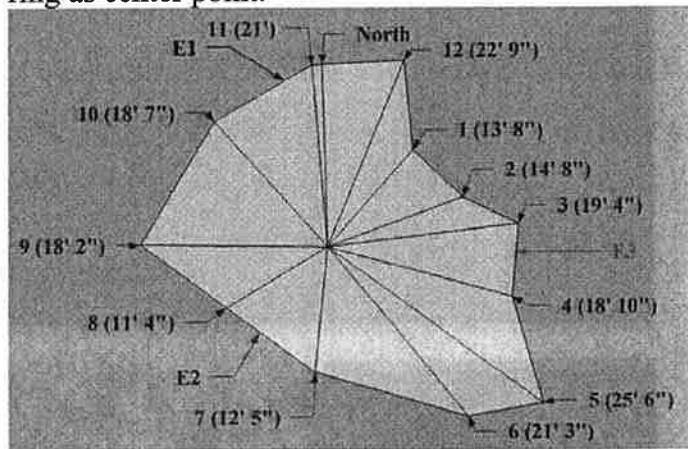




Photo taken from transect #5 facing north



Photo of Entrance 1 facing road.



Entrance 3 showing trail to groover site.

Table 17. Eaton Landing campsite qualities, concerns, and management recommendations.

Site Features	Concerns
<ul style="list-style-type: none"> • Quiet, secluded location. 	<ul style="list-style-type: none"> • Road is deeply rutted and often has deep water near the campsite. Not trailer accessible
<ul style="list-style-type: none"> • Relatively recently developed campsite. 	<ul style="list-style-type: none"> • Significant presence of human waste and toilet paper within the use area and surrounding areas.
<ul style="list-style-type: none"> • Alternate access to the Flowage for windy conditions. 	<ul style="list-style-type: none"> • Recent expansion to the East and West of campsite.
<ul style="list-style-type: none"> • Accessible by vehicle. 	<ul style="list-style-type: none"> • Trail to the shore from the Southwest of the campsite is steep and is beginning to erode.
<ul style="list-style-type: none"> • Grassy area at point could accommodate additional visitors 	<ul style="list-style-type: none"> • Large fire ring in the grassy area on the point West of the campsite.
Management Recommendations	
<ul style="list-style-type: none"> • Develop outhouse facilities at the launch to reduce presence of human waste and associated litter. 	
<ul style="list-style-type: none"> • Devise a plan for managing the outhouse facility and cleaning the campsite including the fire ring (this could be a group of volunteers or hired staff). 	
<ul style="list-style-type: none"> • Update signage about fires requiring permits and outlining minimal impact practices. 	
<ul style="list-style-type: none"> • Re-build fire ring to be more permanent and safe (and to discourage visitor-built additional rings). 	
<ul style="list-style-type: none"> • Create natural barriers to limit use of recently created expansion areas and other side areas once outhouse facilities are in place. This will help clarify campsite boundaries and allow surrounding areas to recover. 	
<ul style="list-style-type: none"> • Consider building stone steps on the Entrance 2 trail to the shore to prevent bank erosion. 	

North and South Streams

Our surveys of the streams found relatively few recreational developments. Our assessment of the North Stream was completed by paddling the stream and searching for campsites, trails, and other recreational developments or signs of use. Unfortunately, we were unable to travel the complete South Stream due to time constraints and the water level. As a result, we focused on finding commonly used access points to the stream and we traveled by foot in either direction from those access points to search for trails or campsites.

North Stream

The North Stream is accessed from the north end of Baskahegan Lake, 3.5 miles west of the Brookton Landing by water. The stream travels north for 6.5 miles where it reaches the southeast end of the Crooked Brook Flowage. The closest take-out point on the flowage is the Crooked Brook Landing (same location as the Crooked Brook campsite), which is 1 mile north of the stream's inlet. However, road access to the Crooked Brook Landing is limited to 4X4 vehicles and difficult to impossible with a trailer due to rutty conditions and steep inclines with tight turns. The alternative take-out points on the flowage are the Danforth Town Landing, which is 3 miles north by water from the inlet, or the Eaton Landing, which is 3 miles east by water and requires high vehicle clearance.

Figure 34 shows the North Stream with its access points and recreation-related developments. From a recreation experience perspective, the stream offers a pleasant paddling trip with excellent fishing, abundant opportunity for wildlife viewing, and beautiful scenery. It is generally navigable throughout most of the summer season except in significantly dry conditions.

Figure 34. Recreation access and developments along the North Stream.



The stream is used recreationally for special events (such as the East Grand Adventure Race) and by a small number of guides and outfitters. However, our discussions with guides found that they

would paddle the stream more if greater access facilitated shorter trips and if campsites were developed along the stream to allow for multi-day stream trips. In its current condition, one bridge crosses the stream and is used as an access point. From land, the bridge landing is a 10 minute drive on Chuck's Road (a Baskahegan Land Company road). There is an obvious path beside the bridge (on the east side) where people launch and land, however, this path would be vulnerable to erosion if use were to increase. There is the opportunity to build a better trail to the water by moving the path further east to make its incline more gradual over the bank. There is an area adjacent to the path that would be a suitable campsite, but there is currently no evidence that groups have used it for camping in any numbers or in the near past. There is also an old trail to the water near the bridge (on the west side) that has been blocked-off to vehicle traffic. The only other developments observed along the stream were an abandoned (no longer standing) shelter located close to the Baskahegan Lake outlet, beaver dens, osprey nests, and game trails.

South Stream

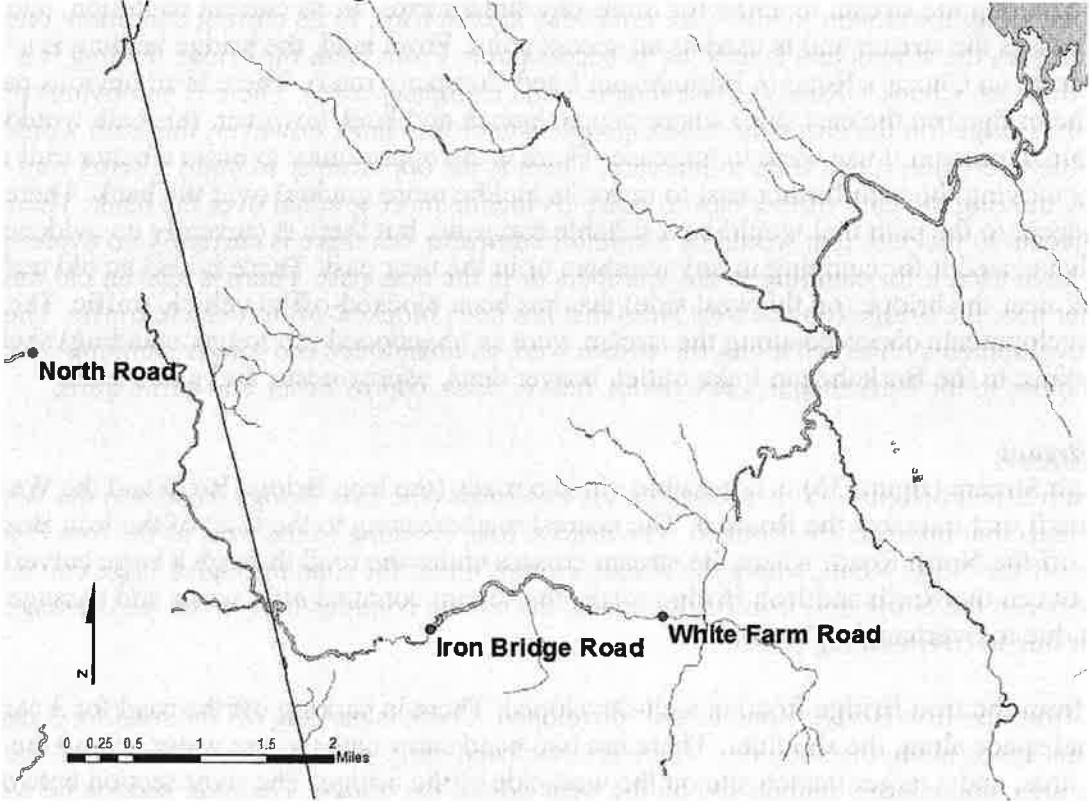
The South Stream (figure 35) is accessible via two roads (the Iron Bridge Road and the White Farm Road) that intersect the Route 6. The nearest road crossing to the west of the Iron Bridge Road is off the North Road, where the stream crosses under the road through a large culvert. In areas between the North and Iron Bridge roads, the stream contains little water and passage is difficult due to overhanging brush.

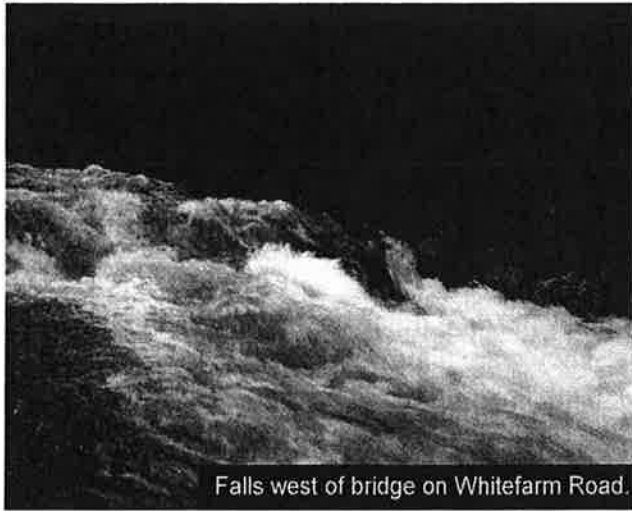
Access from the Iron Bridge Road is well-developed. There is parking off the road for 3 cars and additional space along the shoulder. There are two hand carry paths to the water behind the parking area, and a larger launch site on the west side of the bridge. The river section between the Iron Bridge and White Farm roads begins with a dead-water section and then drops into a series of rapids and a set of falls (which people paddle in the Spring) just west of the White Farm road.

At the White Farm Road, paddlers launch or land from either side of the bridge. There is parking space off the road for two cars on the north side of the bridge. The access on the north side is relatively steep and prone to erosion. The access on the south side is less defined but has the potential to be the better option both for visitor safety and trail stability. There is also an area adjacent to the south side of the bridge that could be developed into a campsite. The stream between White Farm Road and its inlet on Baskahegan Lake is gentle for paddling.

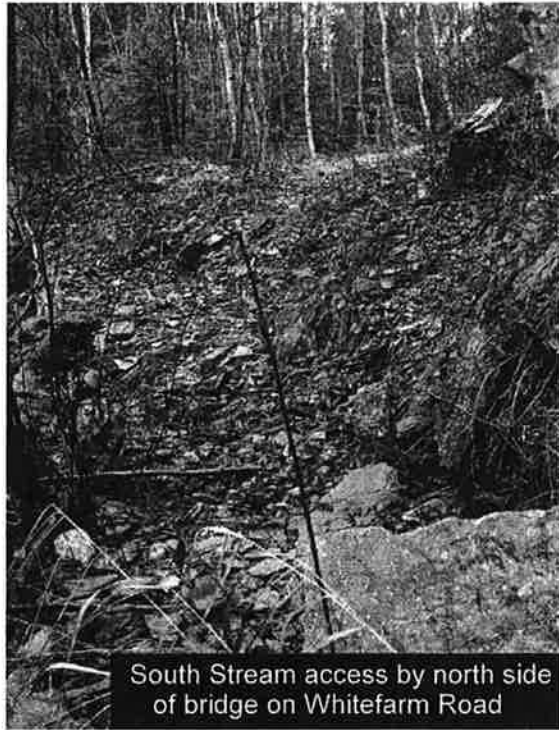
The distance between the access point on Iron Bridge Road and the inlet on Baskahegan Lake is approximately 6 miles. Once on the lake, there is a 5 mile (wind-prone) crossing to the Brookton Landing (the only take-out point). The trip (from Iron Bridge Road to the Brookton Landing) is discussed online on paddling forums (ex. the Northeast Paddlers Message-board at www.npmb.com) as a two- to three-day trip including one night of camping on a lake island (and possibly one along the stream).

Figure 35. Recreation access along the South Stream.

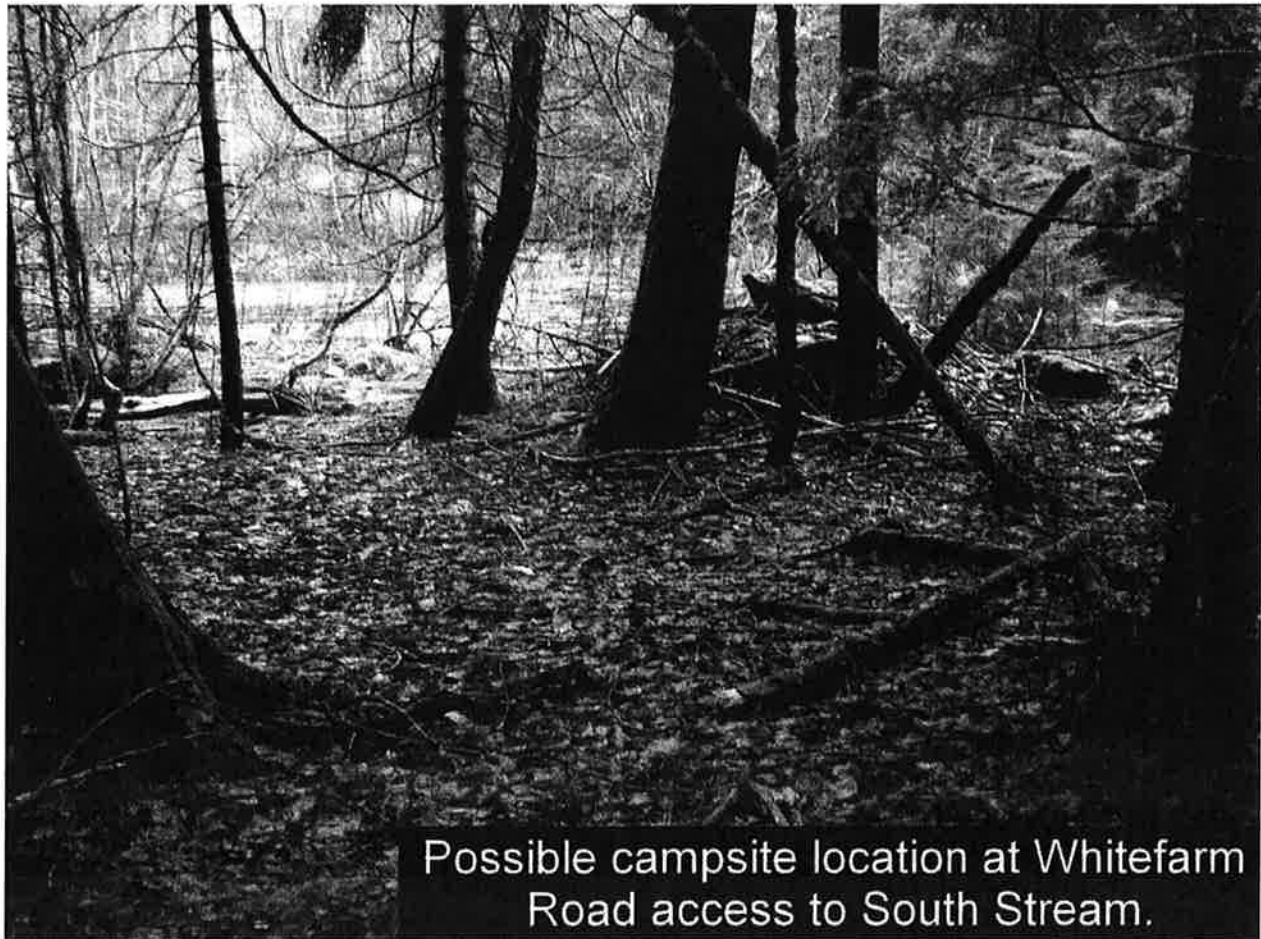




Falls west of bridge on Whitefarm Road.



South Stream access by north side of bridge on Whitefarm Road



Possible campsite location at Whitefarm Road access to South Stream.

Section Summary and Conclusions

Recreational resources were inventoried through campsite assessments, and by mapping launch sites and recreation developments along the North and South Streams. The data throughout this *Recreation Resources* portion of the report represents an overview of key findings and suggestions for each area of focus. Complete campsite assessments and photo documentation collections can be accessed on the accompanying CD.

Campsite Assessments Summary:

Nine campsites were identified and inventoried in the watershed. Each campsite was measured using a combination of physical and GPS methods. They were photo-documented and assessed in terms of ground cover, entrance trail conditions, bank erosion, tree damage, presence and scarring of roots, and groover site conditions. For the report, tables were created that summarized notable features, concerns, and suggestions for management. Although there existed a wide range in campsite conditions, many of the sites contained similar features and management needs:

- Common campsite features:
 - Most campsites had capacity for large groups.
 - Most campsites were easily accessible from a launch area and/or road.
 - Many had access to a good beach for landing and recreating.
 - Many sites had visitor created developments (tables, chairs, camping equipment, etc.).
- Common campsite concerns:
 - Presence of human waste within and surrounding their use areas was a problem for most campsites.
 - Damage (cutting, de-limbing, nails, ropes) to trees was widespread in many campsites.
 - Shoreline bank erosion was either evident or threatening to develop at several campsites.
 - Presence of multiple fire rings, overly large fire rings, and sprawling fire rings were common among many of the campsites.
 - Presence of trash was a problem for some of the campsites.
 - Campsite and use area expansion (due most often to firewood collection) was evident for many campsites.
- Common management recommendations:
 - Develop outhouse/toilet facilities to contain human waste and associated litter.
 - Increase the management presence (staff, volunteers, signage, etc.) at the Brookton Landing and on some of the more highly-used islands.
 - Dismantle and/or replace fire rings to limit each site to one well-constructed, small, safe, and more permanent ring.
 - Update signage about fire restrictions, permits, and related minimum impact strategies.
 - Consider using natural barriers to dissuade campsite expansion (particularly once outhouses/toilet facilities are in place).
 - Build steps in places where shoreline banks are being eroded or have high potential of erosion.

Stream Assessments Summary:

The North and South streams provide the unique opportunity for recreational experiences in a pristine and undeveloped setting. The streams are known for their high quality fishing, for the excellent opportunities they provide to view wildlife, and for a range of paddling experiences (from falls on the South Stream to beginner-appropriate navigation for most of the North Stream). Current use levels on the streams appear to be minimal, with no clearly evident campsites and limited vegetation impact at the access points. The current access points provide some opportunity for half-day trips, but most river travel options require at least a full day on the water. Discussions with local paddlers and internet searches suggest that use would increase if a wider variety of trip options existed as a result of better stream access. Our prediction is the increase would be evident, but not substantial or heavy enough to threaten the pristine quality of the resource.

Section Conclusions:

The following conclusions emerged from our recreation resource assessments:

- Managers should consider the recommendations listed in the site-by-site tables to address the specific concerns for each individual campsite.
- Large and accessible sites are clearly desirable for a subsection of recreation user groups. We suggest creating and protecting smaller, potentially more remote sites (similar to the Ship Island campsite) to divert some of the use (and impact) from the more popular sites and to offer a broader range of recreational experiences.
- Although some visitors appreciate developments (tables, tarps, chairs, camping equipment), others prefer a more undeveloped and “wild” experience. We recommend discouraging user-built improvements and suggest that management consider providing picnic tables at some of the more heavily used sites.
- Managers will need to decide whether increased use of the streams is desirable. Increased access to the streams would provide a greater range of recreation opportunities and it might disperse some use from popular areas on the lake. Based on current trends, we expect the quantity of use will remain low enough to have limited impact. If it is desirable, we suggest the following developments:
 - Improving the launch site on Chuck’s road to facilitate half-day trips on the North Stream.
 - Consider adding a campsite along the North Stream at or just beyond Chuck’s Road to open the possibilities for multi-day stream trips.
 - Improving the road to the Crooked Brook Landing to allow safer and easier use as an alternative pull-out.
 - Develop better trails for water access at the bridge on White Farm Road. Consider adding space for cars to park near the bridge.
 - Consider developing a campsite between White Farm Road and the south end of Baskahegan Lake to facilitate multi-day trips and to avoid requiring paddlers to cross the lake on windy days.

SUGGESTIONS FOR FACILITY DEVELOPMENTS

Based on the recreation use and resource inventories, five main priorities have emerged for facility developments. Early in the process of this project, the possibility of a better designed parking lot at Brookton Landing was discussed, but our findings suggest priority should be given to smaller yet demonstrable improvements rather than a larger parking lot project at this point. Four out of the five priorities (all except for improving the boat ramp) we have identified reflect a direct need based on recreation management issues. However, in relation to the parking lot, a decision will need to be made in the near future as to what should be done with the currently leased (for trailers) space behind the main launch area. As mentioned in the *Recreation Use Monitoring* section of the report, that area might be suitable as a day-use park, but this would require a greater management presence and commitment for visitor management.

This section is focused on five facility development projects because they were identified as priorities for visitor management on the lakes and streams:

- Sanitary facilities (outhouses and pit toilets)
- Fire rings
- Ramp improvement
- Erosion control
- Signage

Outhouses & Pit Toilets

We suggest building a composting or vault toilet at the Brookton Launch. With the current exception of Ship Island, the other island and shoreline campsites should be developed with pit toilets. Ship Island is an exception in our assessment because it does not demonstrate evidence of sufficient use to warrant the development, nor is there an ideal space on the island for a pit toilet facility. In the case of Ship Island and any similarly remote and/or small island campsites developed in the future, we recommend signage outlining minimum impact methods of disposing human waste (ie. digging a proper cathole).

It is important to have clear signage posted in effective locations to direct visitors to the toilets. Ideally, their design will cause them to blend well with the natural surroundings while still being easily visible.

Suggestions for the composting or vault toilet

Either a vault toilet or a composting toilet would be appropriate for Brookton Landing.

- Composting toilets use biological processes to break down waste material. Regular maintenance of a composting toilet involves cleaning and adding and mixing of organic material such as wood chips or peat moss. These materials could be added by managers on a weekly basis. Managers would also need to rake the waste material on a weekly basis.
- Vault toilets sit on top of a storage tanks that need to be pumped periodically. Regular maintenance involves cleaning and pumping depending on the storage tank capacity. Pumping is usually best somewhat frequently to minimize odor problems.

The following table published by the U.S. Forest Service's Technology & Development Program (2001) provides a detailed comparison between the two options:

Vault Toilets	Composting Toilets
<i>Employee Health and Safety</i>	<i>Employee Health and Safety</i>
<ul style="list-style-type: none"> • Contact with feces is limited or nonexistent • Confined space is not an issue 	<ul style="list-style-type: none"> • Close contact with raw feces is required • Confined space and safety are issues because of basement location
Maintenance Requirements	Maintenance Requirements
Periodic pumping based on intensity of use	Weekly raking and material addition
Climatic Conditions	Climatic Conditions
Impervious, except to extreme cold	Biodegradation processes are very sensitive; easily upset by climatic variation
Patron Satisfaction	Patron Satisfaction
Can be impaired by odor	Very good, if functioning properly
Installation Costs	Installation Costs
Generally less than composters	Generally more than vault because of basement construction and cost of digester
Residuals Disposal	Residuals Disposal
Generally not difficult but can be problematic because of local regulations	Generally not problematic, subject to local regulations
Capacity	Capacity
Restricted by frequency of pumper truck visits	Restricted because of limitation on biological process of degradation
Use Limitations	Use Limitations
Limited to locations accessible by pumper truck or boat	Can serve all locations if construction is accessible and weekly maintenance is provided

A complete guide created for the U.S. Forest Service for building vault toilets including plans and maintenance information as well as a list of manufacturers is available online (http://www.nps.gov/public_health/info/rms/rm83b2.pdf).

Suggestions for pit toilets

The remoteness of campsites other than the Brookton Landing sites will likely require developing pit toilets rather than a system that requires periodic pumping. Pit toilets are a primitive style of outhouse that are primarily a box or riser over a dug pit. Pit toilets can be designed with walls to maximize privacy or be in the open. Privacy screens or small low walls

can be constructed that would maintain privacy without having a large visual impact. Walled-in toilets may be preferred for larger sites that can host several and/or large groups such as Ant and Round Islands.

Fire Rings

Many fire rings need to be reconstructed, relocated, or removed. An ongoing management presence is needed to ensure proper fire practices are being followed and to perform periodic maintenance such as cleaning out the fire rings. In many sites, fire rings are spreading in size or multiple have been built where there should only be one. A more permanent and safe design using material such as a concrete pad or blocks or a metal fire ring could be constructed to replace the current user built dry stack stone rings.

The Washington State Department of Natural Resources has published an online brochure with fire ring guidelines (www.dnr.wa.gov/Publications/rp_fire_campfirebrochure.pdf). According to their guidelines, fire rings should be no more than thirty six inches in diameter with sides not exceeding 18 inches. The ground beneath the ring should be dug out exposing mineral soil and filled with concrete a minimum of four inches thick. Surround the fire pit with gravel or sand extending an additional eighteen inches. The area surrounding the fire ring should be clear of combustibles for a radius of ten feet and to a height of ten feet. Fire rings should be cleaned out regularly to prevent ash and coals from spreading throughout the site.

Ramp Improvement

Shallow water and a rough ramp area can make launching and loading boats difficult, especially for visitors with large boats. A concrete or other similarly surfaced boat ramp would provide easier access and could reduce the impact of vehicle traffic on the shoreline. Excavating the shoreline could increase the water depth along the ramp. The ramp should be constructed to provide a minimum of three feet of water.

A ramp twelve to sixteen feet wide would be large enough to accommodate the boats using Baskahegan Lake. A single lane for launching and loading would be adequate to accommodate the current volume of traffic. Having a single dedicated launch area would protect the surrounding shoreline from damage from vehicle traffic.

Concrete ramps can either be poured on site or built with precast concrete units. Pouring on site would require either the building of coffer dams around the ramp area during construction or the use of special concrete that will cure underwater. Precast ramp components can minimize construction time and the environmental impact of the project. Manufactured boat ramp components are widely available from many companies such as Precast Concrete Products of Maine Inc. and American Concrete Industries Inc.

The Maine Bureau of Parks and Lands administers the Boating Facilities Program which provides assistance through grants and technical advice for the creation of public boating facilities. Also, the Virginia Department of Game and Inland Fisheries provides detailed design considerations and ramp construction methods on their website (<http://www.dgif.virginia.gov/boating/building-boat-ramps.asp>).

Erosion Control

Trails into and out of campsites that were flagged in our assessments as affected by erosion could benefit from stair construction. This would help to direct traffic and prevent trail expansion or the development of multiple trails. It would also protect the banks from further erosion. Construction using locally sourced stone or logs is labor intensive but would have a minimal visual impact.

On steep sections, the intended route should be excavated and steps should be built from the bottom to the top of the slope. Boulders for stone steps should be set in place, backfilled with gravel and compacted before placing subsequent steps. Log steps can be held in place with rebar driven in to the ground and backfilled. Tread depths are at least 12 inches or more.

Short, low sloped entrances may not need steps but can be reinforced with stone rip rap to prevent erosion and to converge foot traffic to a single entrance. Under the right guidance, volunteer groups can be helpful in building stone steps and hardening site entrances such as school or college groups, or the Maine Conservation Corps.

Signage

Signage should be uniform throughout the watershed and should focus on the basic information needs such as campsite use recommendations, the location of toilet facilities, and regulations related to fire building. While a small quantity of clear and concise signs can be very effective, posting too many can have the opposite effect. Also, the signs should be designed to be noticeable yet they should not be overly distracting to visitor experiences. Many organizations who manage recreation resources can provide design examples for uniform signs (the BPL for State Parks, NPS, USFS, etc.). Some signs are very simple and center around a picture, such as this one from Acadia National Park:



Other organizations such as the Maine Island Trail Association post more comprehensive minimal impact travel guidelines at each site (see example on next page).

HELL'S HALF ACRE ISLAND

Welcome to this public island!

Hell's Half Acre Island is yours to protect and enjoy. It is state-owned and managed by the Maine Island Trail Association for low impact recreation. By following the guidelines listed below you will help to protect the natural integrity of the island and preserve a high quality experience for others.

Length of Stay: 2 nights maximum
Island Capacity: 14 overnight campers maximum

Organized Groups: Maine state law requires that individuals leading trips for compensation hold the appropriate license from the Maine Department of Inland Fisheries and Wildlife (207-287-8000).

Note: If conditions make it unsafe to follow these guidelines, please do not place yourself or others at risk to adhere to them. Also, please respect the rights of private landowners and access only the islands for which you have been given permission.

LEAVE NO TRACE GUIDELINES FOR LOW IMPACT USE

Travel & camp on durable surfaces

Walking: Travel on sand, stone, resilient grass and established trails. Avoid vegetation, dirt banks, boggy areas, mosses and lichens.

Cooking: Cook on rugged surfaces such as sand, gravel, or ledges below the high tide line.

Camping: Tent only in designated campsites; **please do not expand existing campsites or establish new ones.** In an emergency, try to squeeze in or bivouac on durable surfaces.

Dispose of waste properly

Human waste: Please carry off all solid human waste and toilet paper and dispose of it properly on the mainland. Do not bury waste or leave it in the woods or intertidal zone.

Trash: Pack out all personal trash and remove flotsam from the island when you can.

Respect wildlife

Keep wildlife wild: Store food securely, observe wildlife from a distance, and leave pets at home. If you bring a pet ashore, keep it on a leash and carry off all solid waste. Never feed wildlife!

Be considerate of others

Island Etiquette: Preserve the peace and quiet of the island and be respectful of those who live and work in the local area. Set up camp on the day of your overnight, not in advance. Break camp in the morning of your departure day.

Minimize campfire impacts

Fire hazard! Always carry a stove; it is often better than a campfire due to weather, safety considerations and fuel supply.

Safe campfires: MITA recommends no fires. If you do plan to kindle a fire, you must first obtain a permit from the Maine Forest Service (1-800-750-9777). A safe, low impact fire is built below the high tide line in a fire pan or on sand or gravel. Use only driftwood gathered from below the high tide line or wood you brought, and burn all wood to a fine ash and douse with sea water. Please do not cut tree limbs or collect downed wood from the island. Please do not create new fire rings. *In an emergency use VHF channel 16 or call 1-888-900-FIRE.*

Leave what you find

Allow others a sense of discovery: Please leave all rocks, plants, archaeological artifacts, and other natural objects where you found them.

Plan ahead & prepare

For your next trip: Familiarize yourself with the regulations, guidelines, potential hazards, and use levels of the islands you intend to visit. Plan for safety and alternative destinations.

Thank you for cooperating with these user-developed, voluntary guidelines. For more information on Leave No Trace, please call 1-800-332-4100 or visit www.LNT.org.

ME Bureau of Parks & Lands
22 State House Station
Augusta, ME 04333
www.state.me.us/doc/parks
(207) 287-3821



Maine Island Trail Association
58 Fore St, Bldg 30, 3rd Floor
Portland, ME 04101
www.mita.org
(207) 761-8225

The goal of the Maine Island Trail Association is to establish a model of thoughtful use and volunteer stewardship for the Maine islands that will assure their conservation in a natural state while providing an exceptional recreational asset that is maintained and cared for by the people who use it.

An information kiosk at the Brookton Landing would give first time visitors an overview of the area and could be a central outlet for distributing maps, communicating rules and regulations, as well as outlining minimum impact camping and recreation practices. The kiosk could be as simple as a protected backboard with a brochure box attached, or it could be more complex such as a three-walled structure with a roof. Specific design and pricing options can be obtained from the Bureau of Parks and Lands or the U.S. Fish & Wildlife Service.

OVERALL RECOMMENDATIONS

This project used a combination of methods to gain a baseline understanding of recreational use and resource conditions within the Baskahegan Stream Watershed. We have learned about many unique experiences that the lakes and streams offer visitors from near and far. Our Recreational Use Monitoring and Recreation Resources section outlined very specific suggestions for management, and our facilities development section offered our considerations with regard to site improvements. This section outlines more general and broad suggestions for management and future research that we feel could benefit the recreation community and the resource.

Management Recommendations

- *Increase the management presence at the lakes and streams.*

In our assessment, the benefits of providing recreational opportunities on the lakes and streams clearly outweigh the current environmental cost. Recreation resource impacts tend to be on a small scale compared to the overall health of the forest landscape. However, current use patterns are causing impacts that can not only effect visitor experiences but that can create unnecessary harm. In order to change the current use culture and patterns, a greater management presence is needed to set the tone. Several of the interview participants suggested hiring a local resident as staff – which we agree would work given the right person. As an alternative (or in combination), we suggest developing a network of community volunteers and building a stewardship group for the resource. This model has been used in many other settings, and tends to motivate a sense of concern and ownership for the resource that is contagious.

- *Maintain regular communication with local guides and outfitters.*

Our interviewees described how use has evolved on the watershed over time. However, the presence of guides and outfitters has been a constant – even if their specific patterns have changed. In many ways, regular guides have the capacity to be significant stewards of the resource. Maintaining open communication lines with the guides and outfitters will allow land owners to align recreation developments with their needs, while also gaining regular reports of the conditions of the lake, current recreational conflicts and challenges, and an understanding of any changes in general use patterns.

- *Use community events to build management / visitor relationships.*

Hosting an annual community event could be an effective way to better connect with regular recreational resource users. It could provide a forum for managers to inform the community about use recommendations, restrictions and concerns, while simultaneously making visitors feel they are being heard and appreciated. A simple event, such as an annual summer barbeque at the Brookton Landing or a fire works night (as was suggested by an interviewee) might develop a community connection that would benefit the health of the resource.

- *Make any implemented visitor restrictions uniform throughout the resource.*

Visitor use policies, such as those for fire building and rules of the launch sites, would be most effective if they were uniform throughout the watershed. This is particularly important in a setting such as the Baskahegan lakes and streams where return visitation is the norm and many visitors become accustomed to their regular habits and use patterns. Signage could be

standardized for all sites. This would allow visitors to recognize the signs at a glance without requiring time and thought to follow.

Research Recommendations

- *Complete the campsite assessments again within 5 years.*

The campsite descriptions and data we have collected should serve as a baseline record. To fully understand the impact of recreational use on these sites, change in condition needs to be monitored. This would also allow managers to track the effectiveness of any new developments or initiatives to reduce the recreational footprint on the resource (such as outhouses, improving fire rings).

- *Conduct a more comprehensive visitor survey to detail experience quality and recreation preferences.*

The visitor survey conducted in our research served only to provide a baseline understanding of use patterns on the lakes. We suggest that a more detailed survey could inform managers about how the specific site attributes are shared among users, and about their preferences for resource conditions and facilities. There is a well-documented connection between user preferences and behavioral choices. Managers would benefit from understanding preferences as they could implement strategies that lead to better compliance with use recommendations and regulations.

- *Closely monitor the effect of outhouse / pit toilet facilities.*

The presence of human waste at launch sites and campsites is arguably the greatest current challenge. A study implemented to monitor the effect of new outhouse / pit toilet developments could serve to guide decisions about additional developments. It could also serve as an important outreach tool – documenting and making public the positive effect of the facilities could motivate future visitors into adhering to use recommendations.

REFERENCES

- Cole, D. N. (1989). *Wilderness Campsite Monitoring Methods: A Sourcebook*. USDA Forest Service General Technical Report INT-259.
- Daigle, J. J. (2005). *Allagash Wilderness Waterway Visitor Survey – 2003*. (Miscellaneous Report 436). Orono, ME: Maine Agricultural and Forest Experiment Station.
- Davis, R. B. and D. S. Anderson. (1991). *The eccentric bogs of Maine: a rare wetland type in the United States*. Department of Plant Biology and Pathology, Institute for Quaternary Studies. Orono, ME: University of Maine.
- Ednie, A. J., & Daigle, J. J. (2007). *Maine coastal islands visitor survey 2006, Deer Isle / Stonington region* (Miscellaneous Report 443). Orono, ME: Maine Agriculture and Forest Experiment.
- Hamele, B. (2001). *Choices: installing a composting or vault toilet*. In: *Engineering Field Notes*, Vol. 33. U.S.D.A Forest Service Engineering Staff, Washington, DC.
- Hammit, W. E., and D. N. Cole. (1998). *Wildland Recreation: Ecology and Management*. 2nd Edition. New York: John Wiley and Sons.
- Lee, R. G. (1975). *The Management of Human Components in the Yosemite National Park Ecosystem*. Yosemite National Park, CA: Yosemite Institute.
- McMahon, J. (1990). *The biophysical regions of Maine: Patterns in the landscape and vegetation*. M.S. Thesis. Orono, ME: University of Maine.
- Roggenbuck, J. W., D. R. Williams, and A. E. Watson. (1993). *Defining Acceptable Conditions in Wilderness*. *Environmental Management* 17(2):187-197.
- Scott, R. and M. Wilson. (2000). *What's in a Name: Exploring the stories of the Baskahegan Landscape*. A publication of The Northern Forest Center. 44p.
- Shelby, B., J. J. Vaske, and R. Harris. (1988). *User Standards for Ecological Impacts at Wilderness Campsites*. *Journal of Leisure Research* 20(3):245-256.

Appendix A: Visitor Survey Instrument

Interviewer Name:

Date:

Time:

Location:

1. What was your access point to the water?

2. Are you staying overnight on this trip? ___ Y ___ N
If so, for how many nights? _____

3. How many people are here with you today? _____
How many in your group are under age 16? _____

4. What state or province do you live in? _____

5. What kind of group are you with?

___ Friends ___ Family & friends

___ Family ___ Guided group

___ Alone ___ Other: _____

6. What is your mode of travel?

___ Powerboat ___ Sailboat ___ Canoe

___ Kayak ___ Foot

___ Other: _____

7. Is this your first trip to the Baskahegan Stream watershed? ___ Yes ___ No

If not, for how many years have you been visiting? _____

8. How many other groups have you seen while you've been out here? _____

What were their approximate sizes and do you remember where you saw them? (record location from map key and size of group).

Thank You!

Baskahegan Stream Watershed Visitor Survey, 2010

Your participation in this survey is voluntary. Since each interviewed person will represent many others who will not be surveyed, your cooperation is extremely important. The answers you provide will be confidential. We will not ask you for your name or for contact information. We do not anticipate any risks to you from participating in the study. Although we believe the information collected for this study will ultimately help maintain the quality of recreation opportunities in the watershed, we cannot assure you of any direct benefits from participation in the study.

Thank you for your help!

Appendix B: Vehicle Observations in Parking Lots

Brookton Boat Launch					
Date	Time	# Vehicles	Total Vehicles/Day	Total OOS Vehicles/Day	Camping Groups
May 30, 2010	9:00 AM	23	34	0	1
	10:30	27			1
	12:00	12			1
	2:00	17			1
	4:00	8			1
	6:00	6			1
	May-31	7:00 AM			5
	9:00	8			1
	11:00	6			1
	1:30	5			1
Jun-11	9:00 AM	5	7	0	
	10:30	5			
	12:00	7			1
Jun-12	10:00 AM	8	13	0	
	11:00	9			
	1:30	11			
	3:00	8			
	4:00	5			
	5:00	2			
	Jun-15	11:00 AM			0
	1:00	0			
	3:00	0			
	5:00	0			
	7:00	1			
Jun-16	7:00 AM	0	7	1	
	9:00	6			
	11:00	5			
	1:30	6			
Jun-20	9:30 AM	7	10	0	
	10:00	7			
	11:00	8			
	12:00	8			
	12:30	9			
	1:30	8			
	2:00	7			
	3:00	7			
	4:00	8			
	Jun-21	9:00 AM			6

	10:00	9			
	11:00	6			
	12:30	6			
	4:00	4			
	4:30	2			
4-Jul	9:30	5	12	1	
	10:30	9			
	11:30	9			
	12:30	9			
	1:30	7			
5-Jul	7:00	3	8	0	1
	9:00	3			1
	11:00	6			
	1:00	6			
6-Jul	10:00	5	11	2	
	12:00	4			
	2:00	3			
	4:00	8			
7-Jul	7:00	4	5	1	
	9:00	5			
	11:00	5			
	3:00	4			
12-Jul	9:00	2	3	1	
	11:00	3			
	1:00	1			
23-Jul	10:30	4	5	0	
	12:30	4			
	4:30	4			
24-Jul	7:00	7	15	0	1
	10:00	13			
	12:30	12			
	3:00	12			
27-Jul	10:00	0	0	0	
	11:00	0			
	12:00	0			
	2:00	0			
	3:00	0			
28-Jul	10:30	8	13	2	
	11:30	7			
	3:00	12			
13-Aug	11:00	8	21	1	

	12:00	8			
	1:00	10			
	2:00	8			
	5:00	10			
	7:00	12			
14-Aug	6:30	7	16	1	
	7:30	11			
	9:30	12			
	10:45	15			
	12:30	12			
17-Aug	11:00	6	7	0	
	12:00	6			
	2:00	5			
	3:00	5			
	4:30	3			
	6:00	0			
18-Aug	6:00	1	6	1	
	9:30	4			
	11:00	5			
	12:00	5			
22-Aug	11:00	6	8	1	
	2:30	6			
	3:30	4			
23-Aug	10:00	1	1	0	
	11:00	1			
	12:00	0			
5-Sep	10:00	2	2	0	
	11:30	2			

Danforth Boat Launch					
Date	Time	# Vehicles	Total Vehicles/Day	Total OOS Vehicles/Day	Camping Groups
May-30	9:30 AM	2	5	1	
	2:30	2		1	
	4:30	1			
May-31	11:30	0	0		
Jun-11	9:45 AM	1	1		
Jun-15	2:30	1	1	1	
Jun-16	10:00 AM	0	0		
Jun-20	1:30 PM	1	1		

	3:30	0			
4-Jul	2:30	2	2		
5-Jul	1:30	2	2		
6-Jul	12:30	1	1		
	2:30	1			
12-Jul	9:30	1	2		
	1:30	1			
23-Jul	5:30	2	2		
24-Jul	10:30	0	0		
28-Jul	2:30	0	0		
13-Aug	6:30	1	1		
14-Aug	9:00	0	0		
17-Aug	12:00	1	1	1	
	5:30	0			
22-Aug	11:00	0	0		
	2:00	0			
5-Sep	11:00	0	0		

Appendix C: Interview Questions

**Baskahegan Stream Watershed
Managing for Recreational Use
Interview Questions**

Date:

Location:

Length of Interview:

1. How do you use the Baskahegan lakes and/or streams?
 - a. How long have you been going to the lakes/streams?
 - b. How often do you go?
 - c. Are there seasonal activities that you do at different times of the year?
 - i. How often / how much are you on the lakes in other seasons?
2. What are the best qualities of the Baskahegan lakes and streams? (fishing late in summer, number of other users, scenery, close to home, etc...)
3. From your perspective, who uses the lakes and/or streams?
 - a. How do they use them? (length of trip, group size, etc.)
 - b. What about at different times of the year?
4. Do you think use of the lakes and/or streams has changed over time?
 - a. If so... how? (what about fishing, camping, etc.)
5. From your perspective, are there problems at the lakes and/or streams related to recreational use?
6. How would you like to see recreation opportunities developed and/or managed in the lakes/streams?
 - a. Do you have specific thoughts about the Brookton launch?
7. Anything else you would like to share or comment on related to recreation use?

Appendix D: Campsite Assessment Form

**Baskahegan Stream Watershed Campsite Evaluations
Summer 2010**

General information about campsite:

Date	
Island name	
Campsite name	
Direction site is facing	
Site cover type	
Number of visible campsites	
Maximum recommended party size	
Distance to closest site on same island	
Recent weather conditions	
Coded by	
Concerns	
Observations about wildlife	
Notable campsite attributes	

Campsite Center Point: (use center of use area, eg. center of an obvious kitchen space)

Center point GPS coordinates: Latitude: _____ Longitude: _____

Photo describing where center point is: Photo #: _____

Written description of where center is:

Campsite measurements:

Flag #	Bearing	Distance	Photo#(s)	Comments (describe notable attributes in a photo or explain if multiple photos per flag).
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				

Campsite Entrances:

Flag #	Bearing	Distance	Photo#(s)	Comments (describe notable attributes in a photo or explain if multiple photos per flag).
E1				
E2				
E3				
E4				
E5				

Classification of entrances (from campsite boundary to 3m out) using this condition class measure:

- Condition class 0: Trail barely distinguishable; no or minimal disturbance of vegetation or organic litter.
- Condition Class 1: Trail distinguishable; slight loss of vegetative cover and/or minimal disturbance of organic litter. Includes shrubby overgrown trails with obvious tread of bare soil that can no longer be seen because the shrub cover has overgrown the trail.
- Condition Class 2: Trail obvious; vegetative cover lost or disturbed.
- Condition Class 3: Vegetative cover and organic litter lost in nearly all places, but little or no erosion.
- Condition Class 4: Soil erosion or compaction in tread is beginning in some places.
- Condition Class 5: Soil erosion or compaction is common: tread is obviously below ground surface.

Entrance #1 (E1)

Use:

Condition Class:

Comments:

Entrance #2 (E2)

Use:

Condition Class:

Comments:

Entrance #3 (E3)

Use:

Condition Class:

Comments:

Entrance #4 (E4)

Use:

Condition Class:

Comments:

Entrance #5 (E5)

Use:

Condition Class:

Comments:

Entrance #6 (E6)

Use:

Condition Class:

Comments:

Please record use, condition class & comments for any additional entrances on separate sheet.

Hand-sketch of the campsite: All entrances marked with entrance number (E1, E2...), areas at risk of expansion marked (EXP), groover sites marked (G), and nearby areas outside of the campsite showing impacts of recreational use marked (S.U.)

Narrative/description of campsite, including:

- General description of campsite attributes
- Descriptions of areas at risk of expansion and outside areas showing signs of use
- Description of anything unique that was not captured in the hand-sketch
- Description of impact distribution (ex. NW corner appears to be kitchen area and has the majority of exposed mineral soil and roots).

Vegetation Cover:

A) Describe the ground cover. This includes grass, moss, sand, shell, forest duff... anything covering the ground in the campsite:

B) Percentage-Class (amount) Vegetation Cover over complete site. Includes all live vegetation forming the surface of the ground. (circle one)

1 = 95-100% 2 = 75-94% 3 = 50-74% 4 = 25-49% 5 = 0-24%

C) Type of live vegetation cover at campsite (grass, moss, shrubs, etc. – subset into percent categories):

(Example: 50% grass, 10% moss, 20% more diverse plants)

D) Type of vegetation (estimated) on an adjacent or non-campsite comparable area

E) Comments about the live vegetation:

F) If campsite contains forest duff, please comment on its area and thickness:

Soil Exposure: (Bare Ground not including entrance areas)

A) Percentage-Class of soil exposure over complete site: (circle one)

1 = 0-5% 2 = 6-25% 3 = 26-50% 4 = 51-75% 5 = 76-100%

B) Type of soil and/or comments about the soil:

Root Exposure: Percent of square meters in each of the three categories (L, M, S):

L = Limited / minimum to no root exposure with little effect on most use of the campsite
M = A moderate amount of root exposure where it is beginning to effect use of the campsite
S = Severe root exposure where campsite uses are significantly effected

L	M	S
—%	—%	—%

Sum of percent in categories M and S: _____





Photosimulation 2 from the boat landing on Baskahegan Lake in Brookton. The closest turbine will be 8.9 miles away.

**STETSON WIND
PROJECT**
Evergreen Wind V, LLC

tjd&a
Terrence J. DeWitt & Associates
Landscape Architects & Planners
1000 Highway 107, Suite 200, Brookton, NY 13027
www.tjdand.com

Figure 3b

1. PLEASANT LAKE

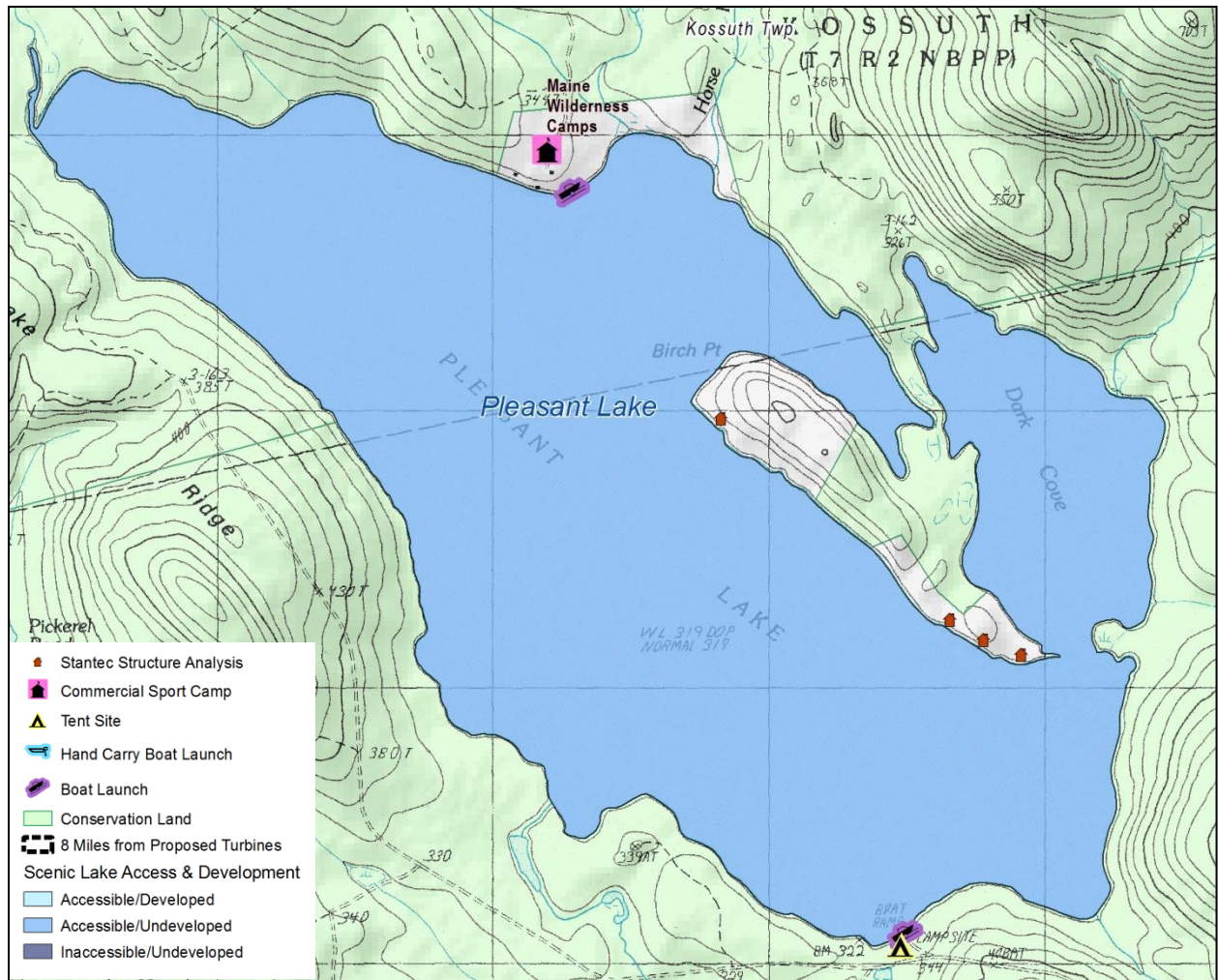


Figure 1-1 – Pleasant Lake Existing Conditions



Figure 1-2a - Panorama view of hills to the east on Pleasant Lake.



Figure 1-2b - Panorama view looking northwest towards Project site from the boat launch on southern shore of Pleasant Lake.

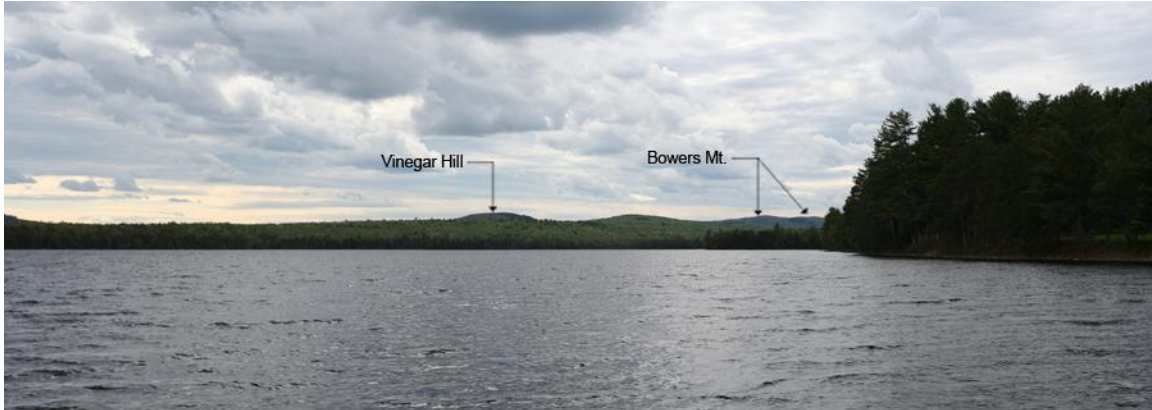


Figure 1-2c - Panorama view looking northwest from the northern end of Pleasant Lake, with Maine Wilderness Camp at right of photo.



Figure 1-2d - View of Maine Wilderness Camps, a private camp ground with cabins, camping and RV sites and boat launch on northern shore of Pleasant Lake.



Figure 1-2e - Campground at public boat launch on southern shore of Pleasant Lake.

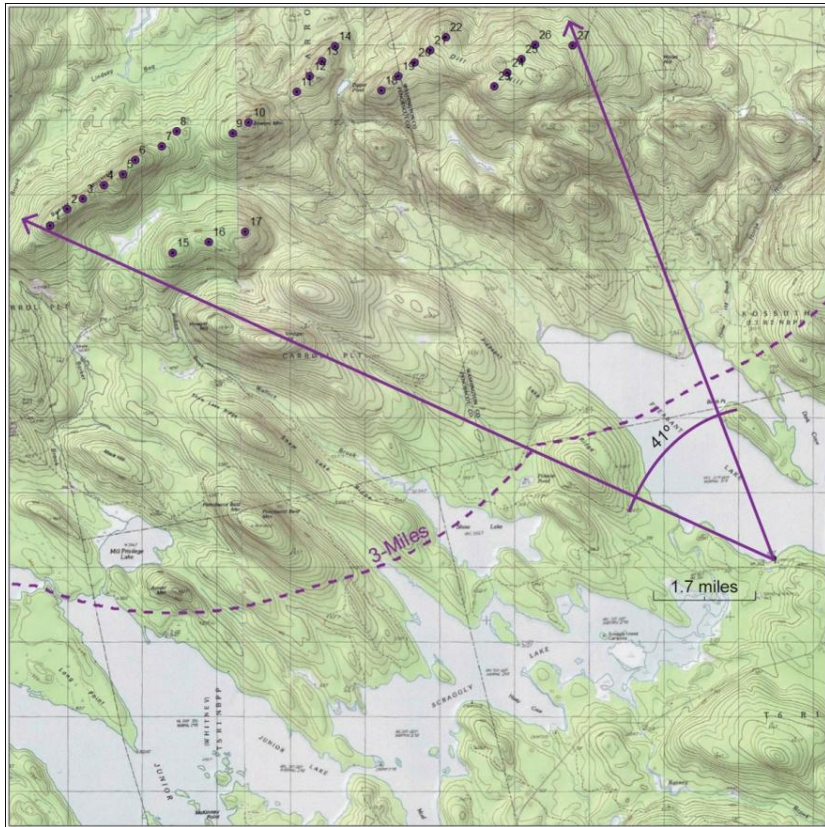


Figure 1-3a – Pleasant Lake Angle of View from Boat Launch

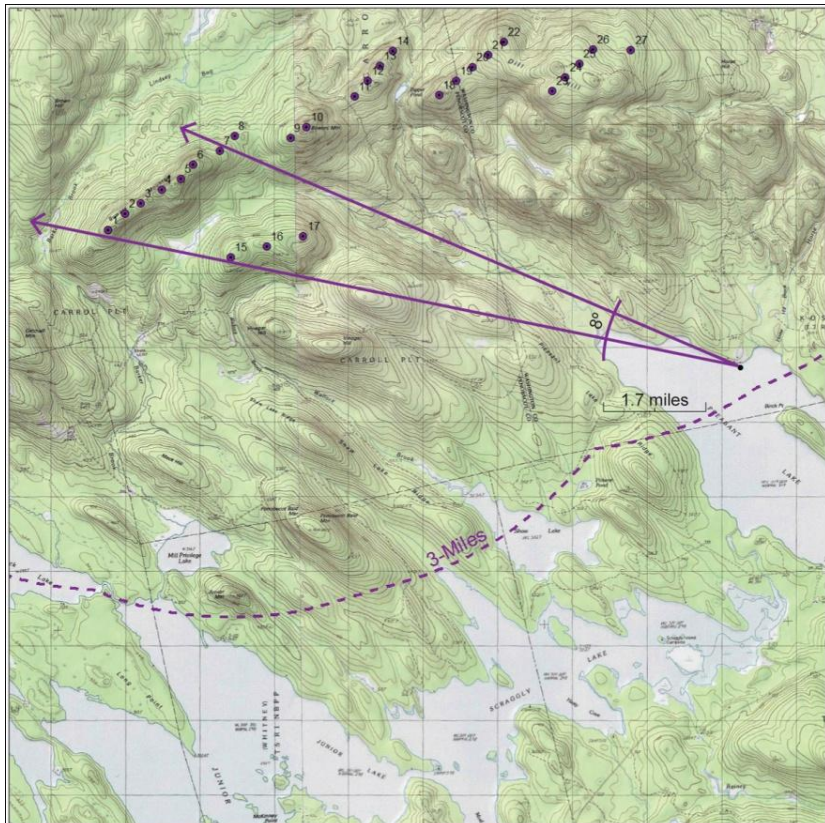


Figure 1-3b – Pleasant Lake Angle of View from near Maine Wilderness Camps

Exhibit 10: Visual Simulation from Pleasant Lake Boat Launch, T6 R1 NBPP

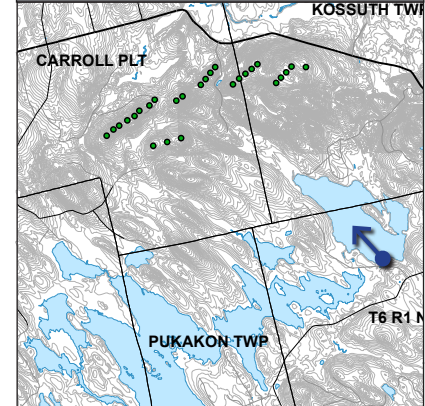
Bowers Wind Project



Existing Conditions Photograph



View Location Map



Simulation Information

Turbine Information	Model: Siemens SWT-2.3-101
	Hub height: 262'-6" (80 m)
	Rotor diameter: 331'-4" (101 m)
Photograph Information	Date and time: 5/5/10; 3:20 pm
	Location: Pleasant Lake Boat Launch, T6 R1 NBPP; 45.340° N, -67.908° W
	Camera elevation above sea level: 324.5' (98.9 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 11" (27.9 cm)
Technical Information	Distance to nearest visible turbine: 4.6 miles (7.4 km)
	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 7; Adobe Photoshop CS5
	Digital elevation data source: http://www.megis.maine.gov/catalog

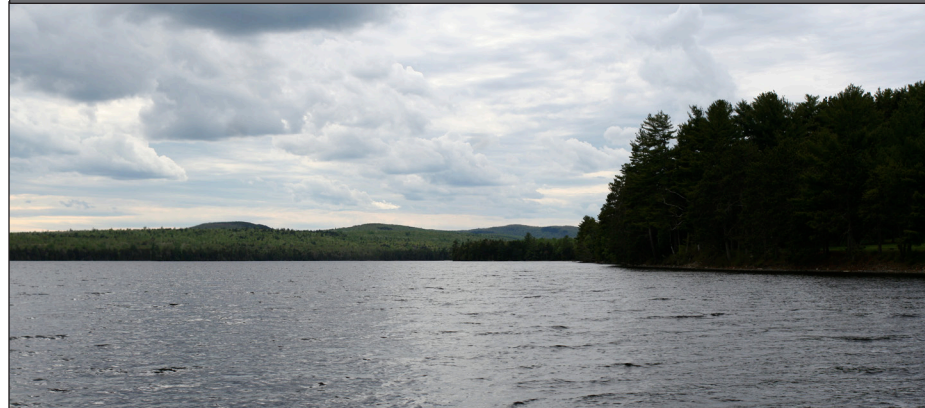
- NOTES:
1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.
 2. This simulation depicts visible impacts from associated facilities (e.g. access roads, collector line corridor, etc.) and clearing required to accommodate those facilities.

Exhibit 11: Visual Simulation from Pleasant Lake, Near Northern Shore, T6 R1 NBPP

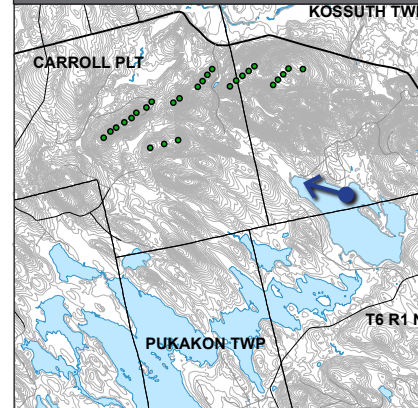
Bowers Wind Project



Existing Conditions Photograph



View Location Map



Simulation Information

Turbine Information	Model: Siemens SWT-2.3-101
	Hub height: 262'-6" (80 m)
	Rotor diameter: 331'-4" (101 m)
Photograph Information	Date and time: 5/5/10; 3:50 pm
	Location: Pleasant Lake, less than 300' from shore of Maine Wilderness Camps; 45.364° N, -67.923° W
	Camera elevation above sea level: 324.5' (98.9 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 11" (27.9 cm)
Technical Information	Distance to nearest visible turbine: 3.9 miles (6.3 km)
	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 7; Adobe Photoshop CS5
	Digital elevation data source: http://www.megis.maine.gov/catalog

NOTES:
 1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. SHAW LAKE

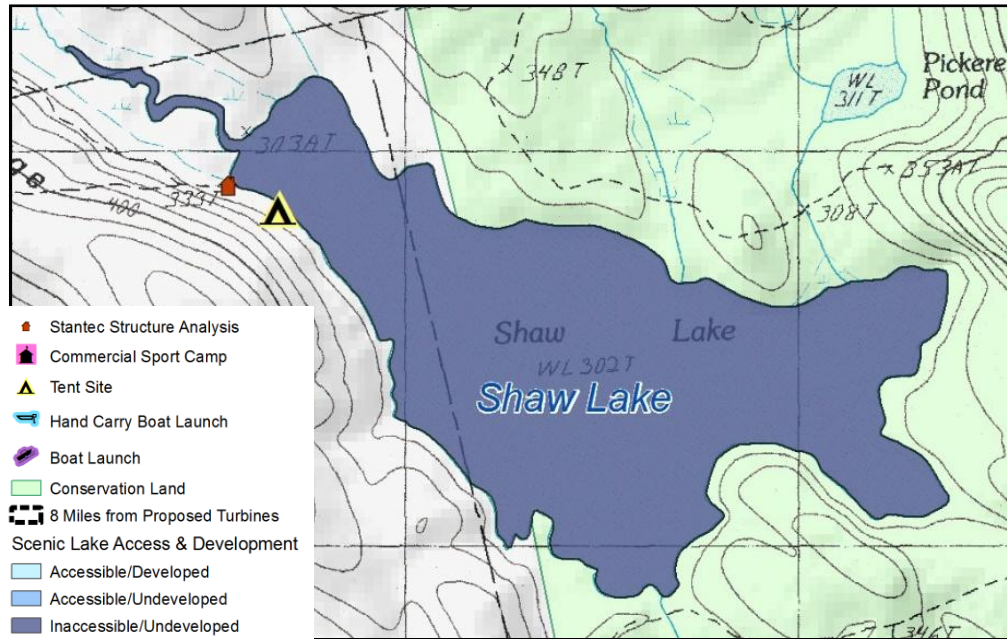


Figure 2-1 – Shaw Lake Existing Conditions



Figure 2-2a - View looking north towards Project site from south shore of Shaw Lake.



Figure 2-2b - View of stream crossing logging road along southern shore of Shaw Lake (road impassable to most vehicles due to obstacles/wet areas).



Figure 2-2c -View of Shaw Lake from Logging road along southern shore.

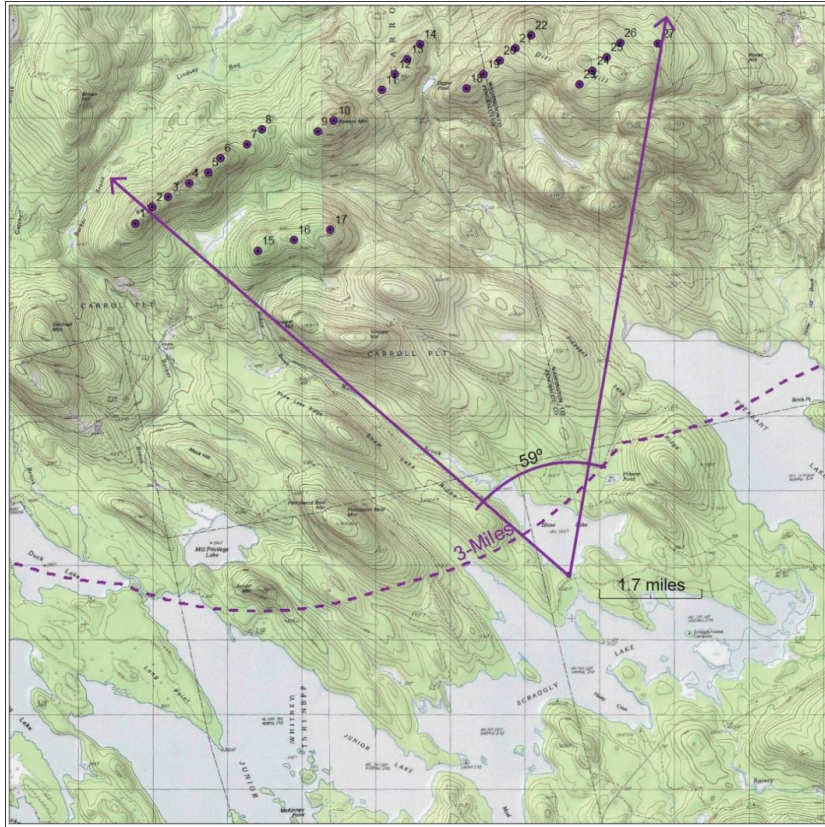


Figure 2-3 – Shaw Lake Angle of View

Exhibit 13: Visual Simulation from Shaw Lake, T6 R1 NBPP

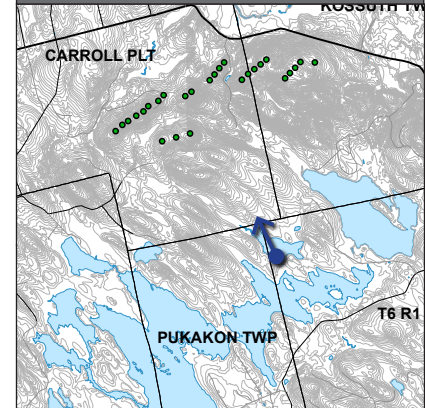
Bowers Wind Project



Existing Conditions Photograph



View Location Map



Simulation Information

Turbine Information	Model: Siemens SWT-2.3-101
	Hub height: 262'-6" (80 m)
	Rotor diameter: 331'-4" (101 m)
Photograph Information	Date and time: 6/17/10; 5:27 pm
	Location: Shaw Lake (southern shore), T6 R1 NBPP; 45.339° N, -67.958° W
	Camera elevation above sea level: 307' (93.6 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 11" (27.9 cm)
	Distance to nearest visible turbine: 3.5 miles (5.6 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 7; Adobe Photoshop CS5
	Digital elevation data source: http://www.megis.maine.gov/catalog

NOTES:
 1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

3. DUCK LAKE

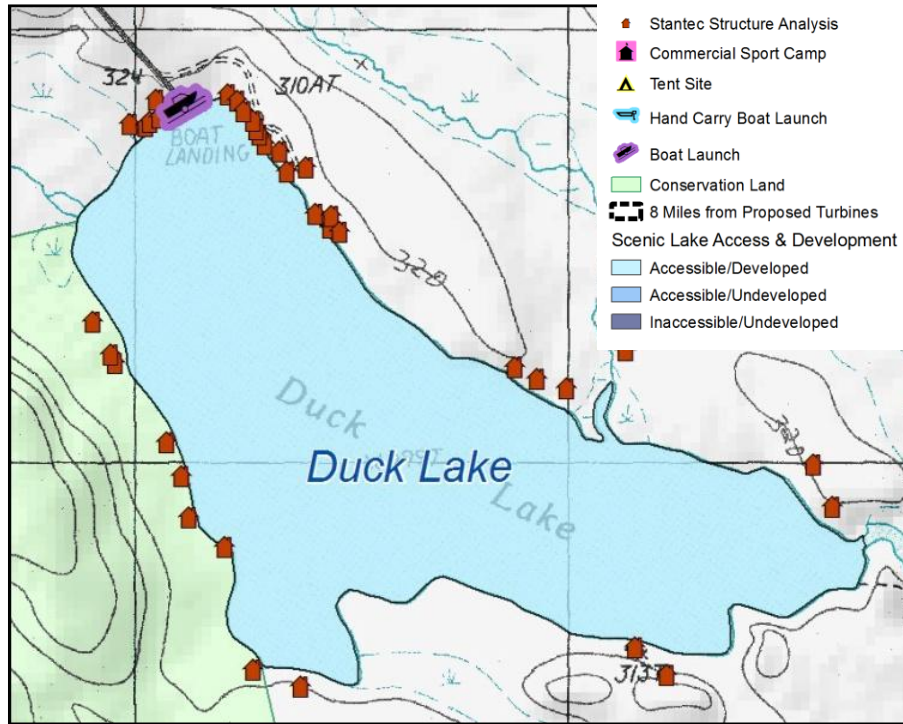


Figure 3-1 – Duck Lake Existing Conditions



Figure 3-2a - Panorama view from southern shore of Duck Lake looking north.

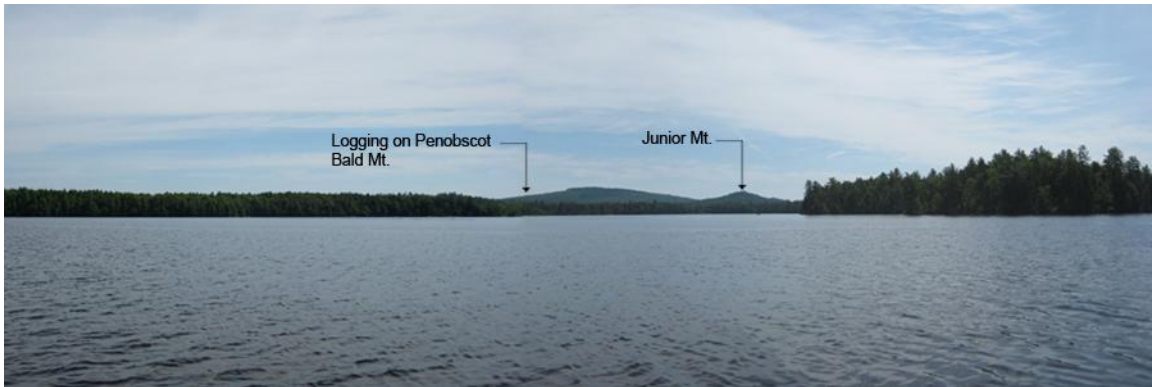


Figure 3-2b - Continuation of panorama view from southern shore of Duck Lake looking northeast.



Figure 3-2c - Camp development along southern shore of Duck Lake.

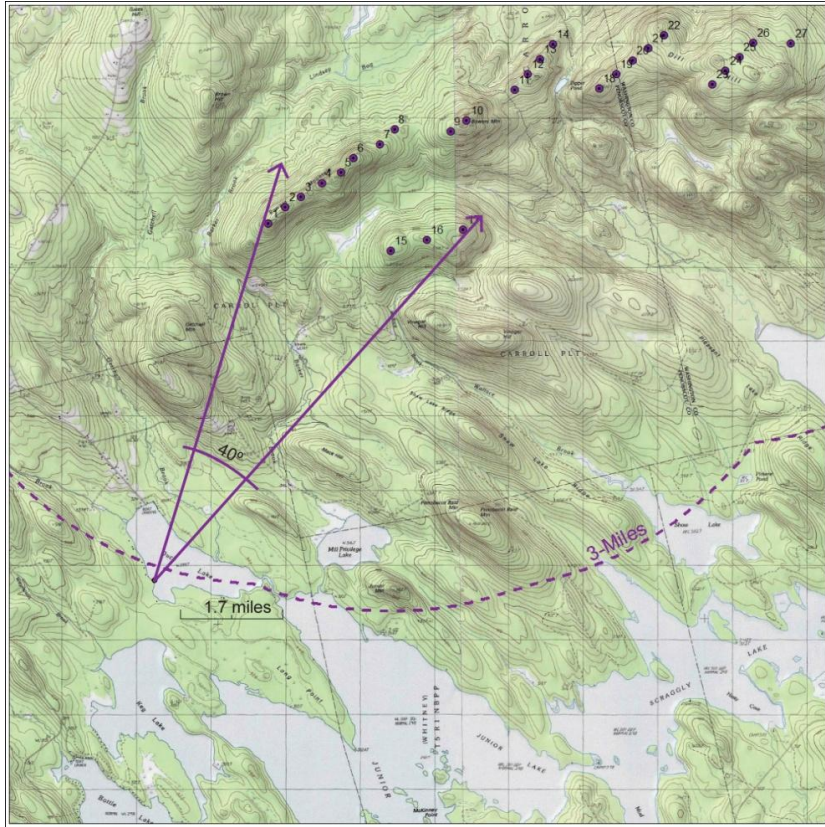


Figure 3-3 – Duck Lake Angle of View

Exhibit 7: Visual Simulation from Duck Lake, Lakeville

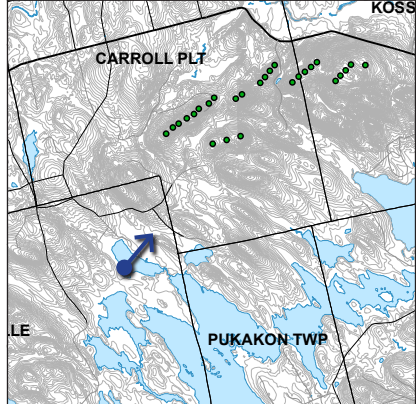
Bowers Wind Project



Existing Conditions Photograph



View Location Map



Simulation Information

Turbine Information	Model: Siemens SWT-2.3-101
	Hub height: 262'-6" (80 m)
	Rotor diameter: 331'-4" (101 m)
Photograph Information	Date and time: 6/16/10; 10:20 am
	Location: Duck Lake (just off southwestern shore), Lakeville; 45.339° N, -68.052° W
	Camera elevation above sea level: 302.5' (92.2 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 11" (27.9 cm)
	Distance to nearest visible turbine: 3.1 miles (5.0 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 7; Adobe Photoshop CS5
	Digital elevation data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

2. This simulation depicts visible impacts from associated facilities (e.g. access roads, collector line corridor, etc.) and clearing required to accommodate those facilities.

4. JUNIOR LAKE

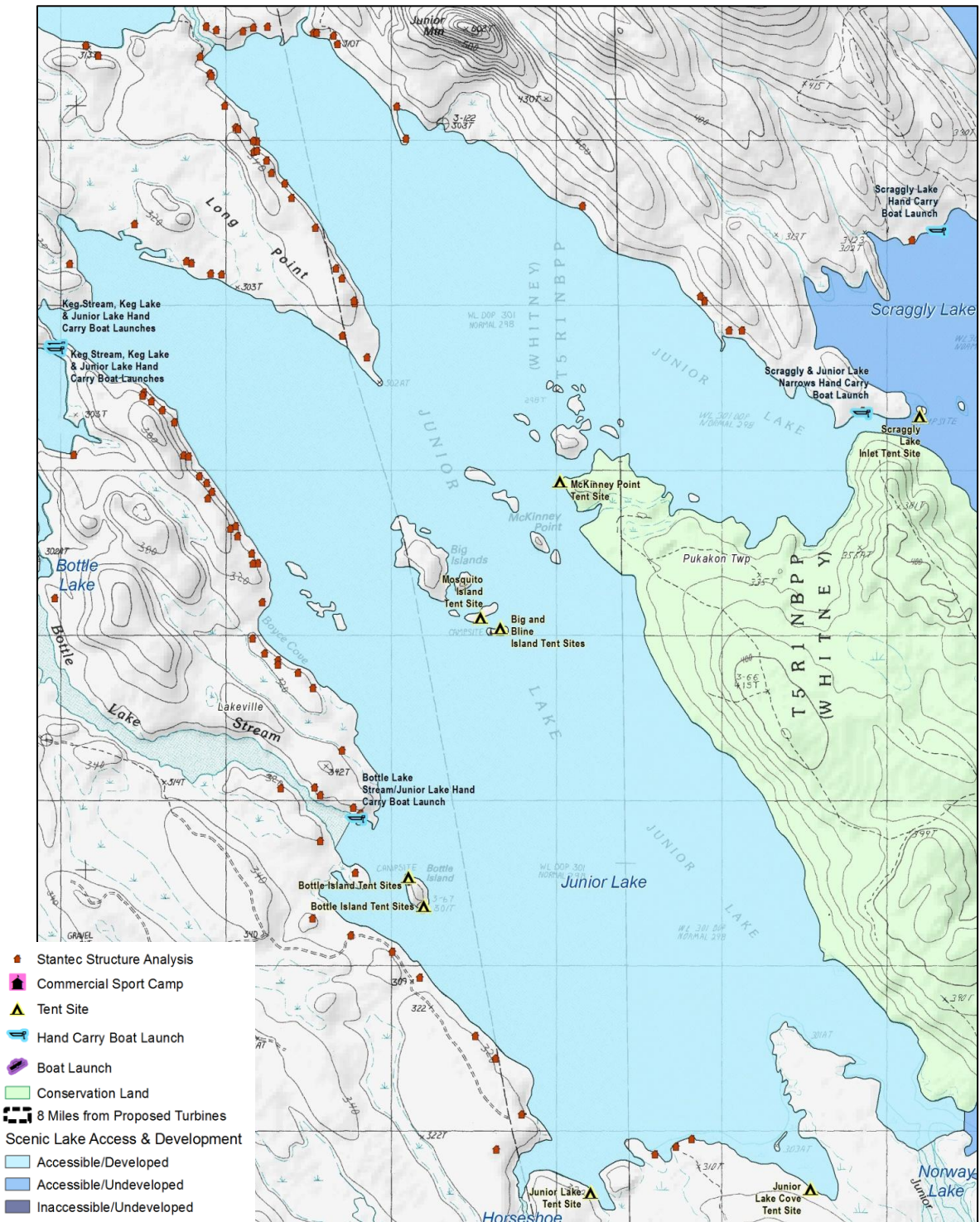


Figure 4-1 – Junior Lake Existing Conditions



Figure 4-2a - Panorama view looking north toward the Project site from the northwest end of Junior Lake.



Figure 4-2b - Panorama view looking toward Almanac Mt. from a public camp site on Junior Lake, centrally located on the lake east of the Big Islands.



Figure 4-2c - Representative lake house and dock development along the western shoreline of Junior Lake.

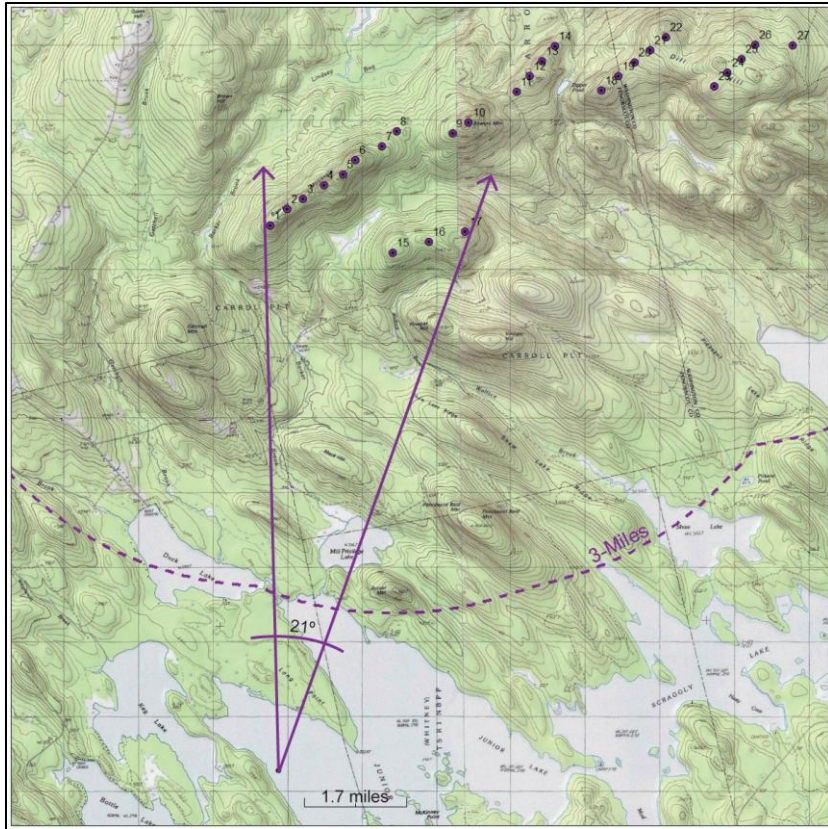


Figure 4-3– Junior Lake Angle of View

Exhibit 8: Visual Simulation from Junior Lake, Lakeville

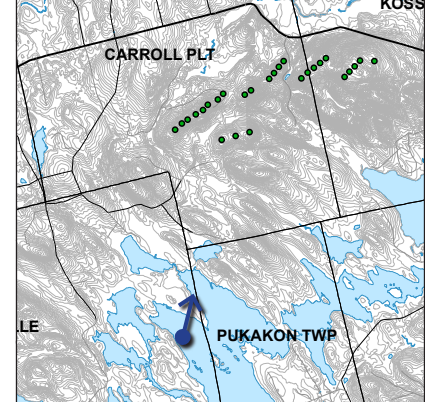
Bowers Wind Project



Existing Conditions Photograph



View Location Map



Simulation Information

Turbine Information	Model: Siemens SWT-2.3-101
	Hub height: 262'-6" (80 m)
	Rotor diameter: 331'-4" (101 m)
Photograph Information	Date and time: 5/5/10; 12:22 pm
	Location: Junior Lake (northwest portion, approx. 550' off western shore), Lakeville; 45.316° N, -68.031° W
	Camera elevation above sea level: 306' (93.3 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 11" (27.9 cm)
	Distance to nearest visible turbine: 4.4 miles (7.1 km)
Technical Information	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 7; Adobe Photoshop CS5
	Digital elevation data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.
2. This simulation depicts visible impacts from associated facilities (e.g. access roads, collector line corridor, etc.) and clearing required to accommodate those facilities.

5. SCRAGGLY LAKE

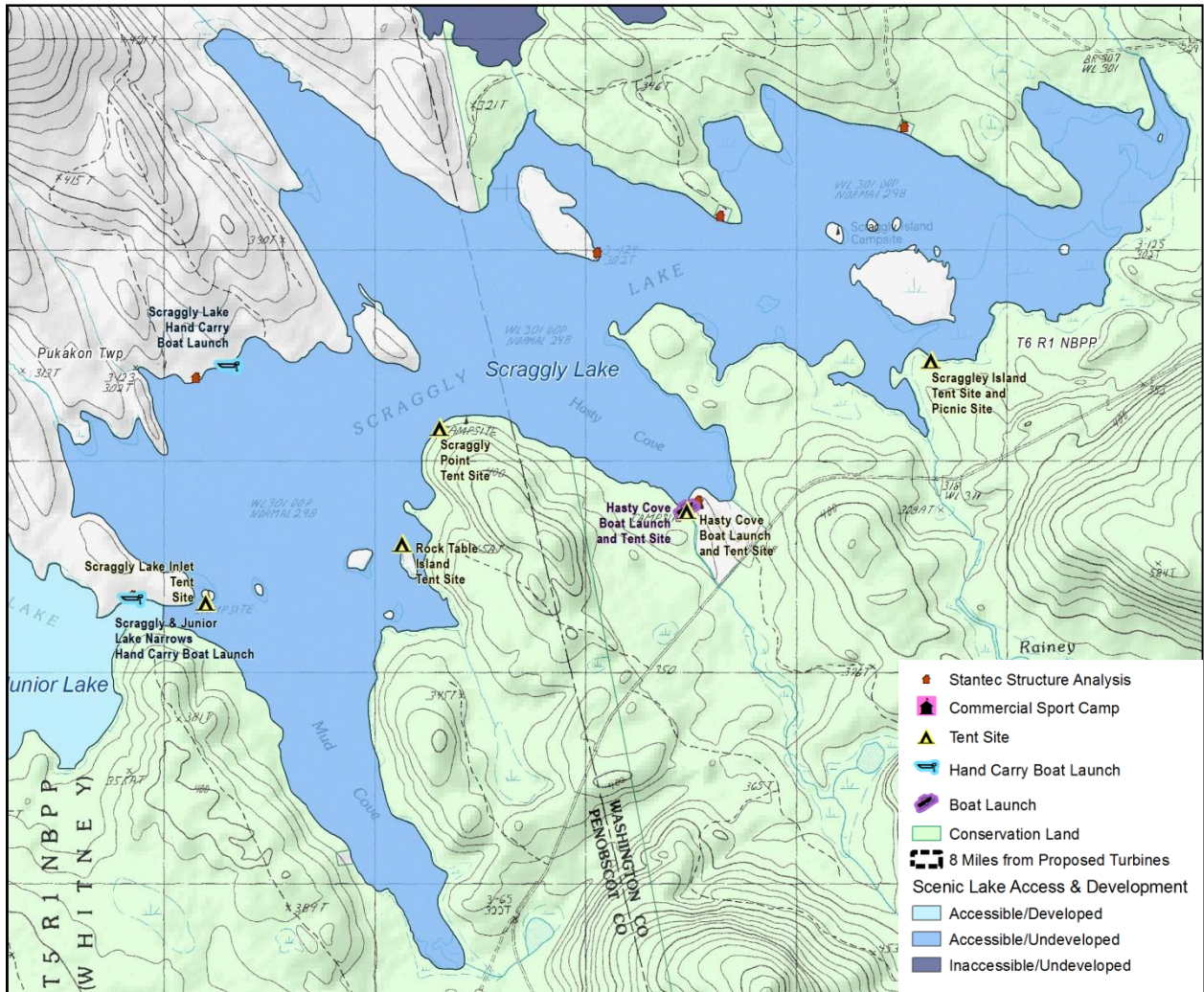


Figure 5-1 – Scraggly Lake Existing Conditions

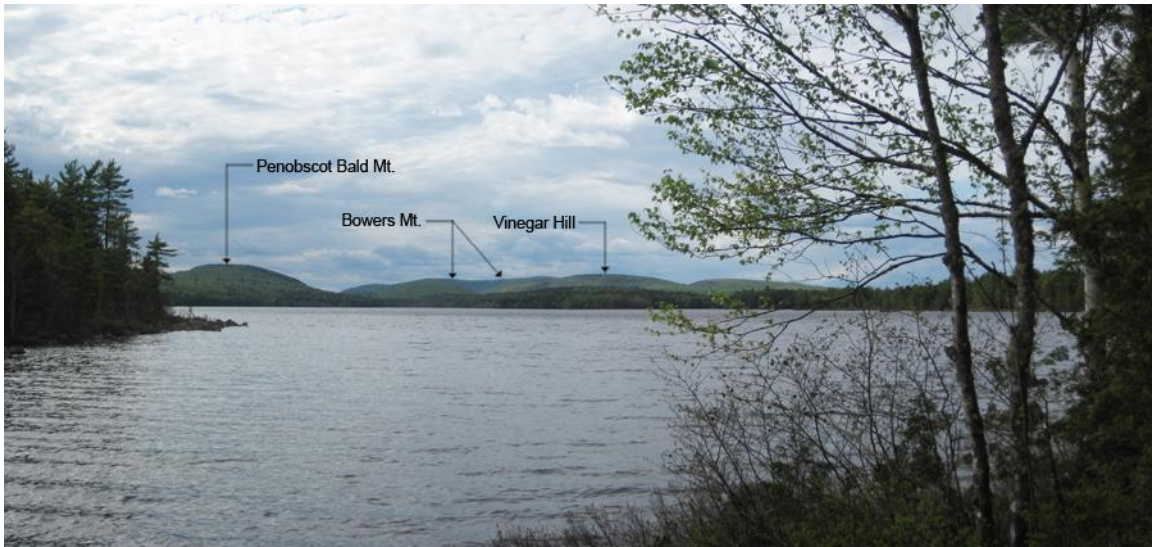


Figure 5-2a - Panorama view looking northwest toward Project site from canoe/small boat launch at Scraggly Lake.

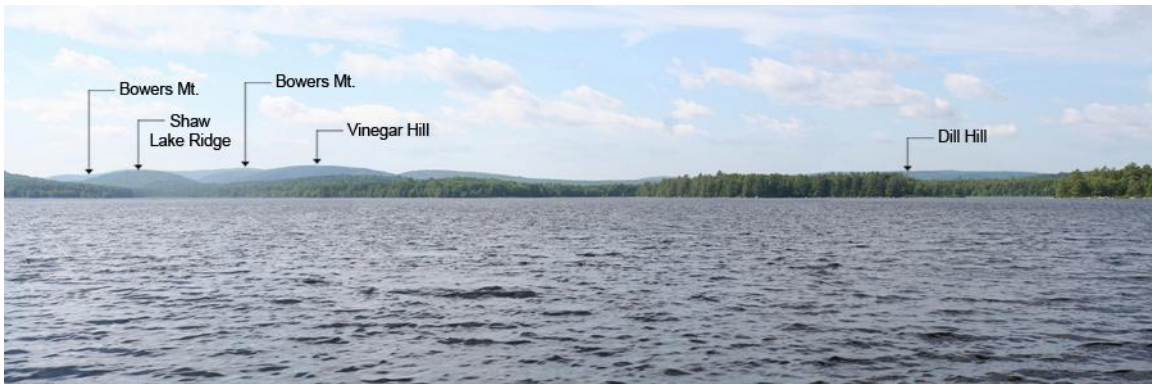


Figure 5-2b - Panorama view looking northwest on Scraggly Lake toward Project site from Hasty Cove.



Figure 5-2c - View to southwest from cove on Scraggly Lake close to connection to Shaw.



Figure 5-2d - View on Scraggly Lake toward boat launch at Hasty Cove.

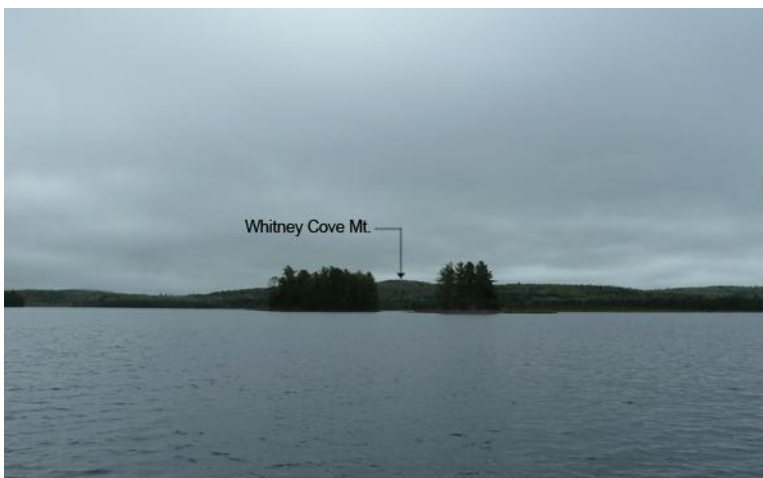


Figure 5-2e - View from western edge of Scraggly Lake looking southeast, away from Project site.

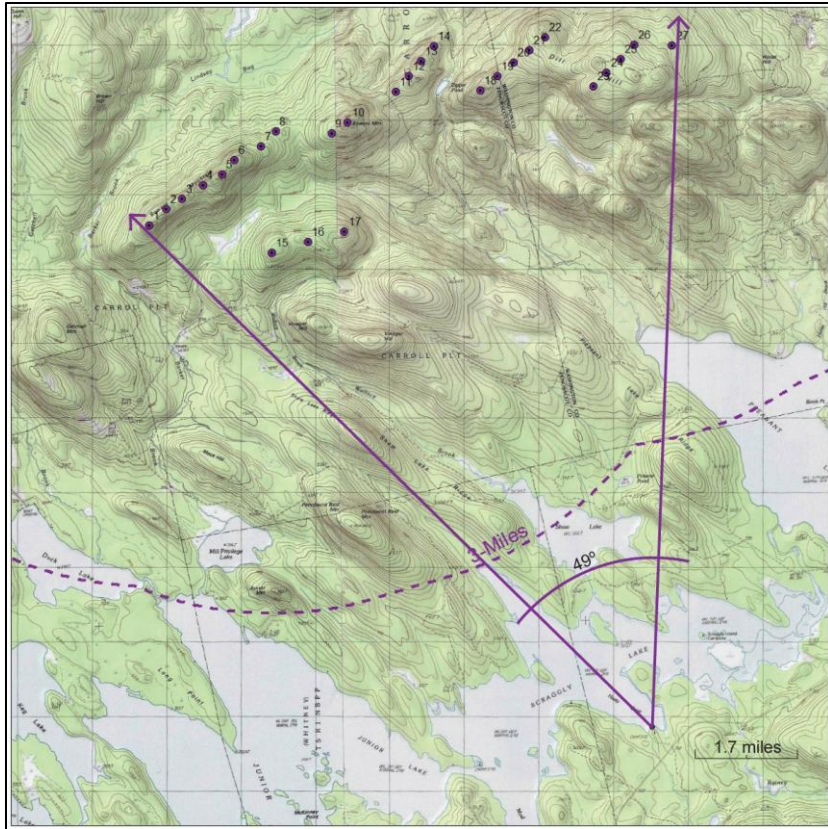


Figure 5-3 – Scraggly Lake Angle of View

Exhibit 12: Visual Simulation from Scraggly Lake, Pukakon Twp

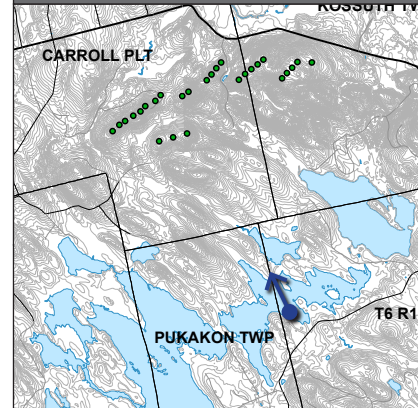
Bowers Wind Project



Existing Conditions Photograph



View Location Map



Simulation Information

Turbine Information	Model: Siemens SWT-2.3-101
	Hub height: 262'-6" (80 m)
	Rotor diameter: 331'-4" (101 m)
Photograph Information	Date and time: 6/17/10; 4:26 pm
	Location: Scraggly Lake (southwestern shore of Hasty Cove), T6 R1 NBPP; 45.322° N, -67.953° W
	Camera elevation above sea level: 304' (92.7 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 11" (27.9 cm)
Technical Information	Distance to nearest visible turbine: 4.6 miles (7.4 km)
	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 7; Adobe Photoshop CS5
	Digital elevation data source: http://www.megis.maine.gov/catalog

NOTES:

1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

6. KEG LAKE

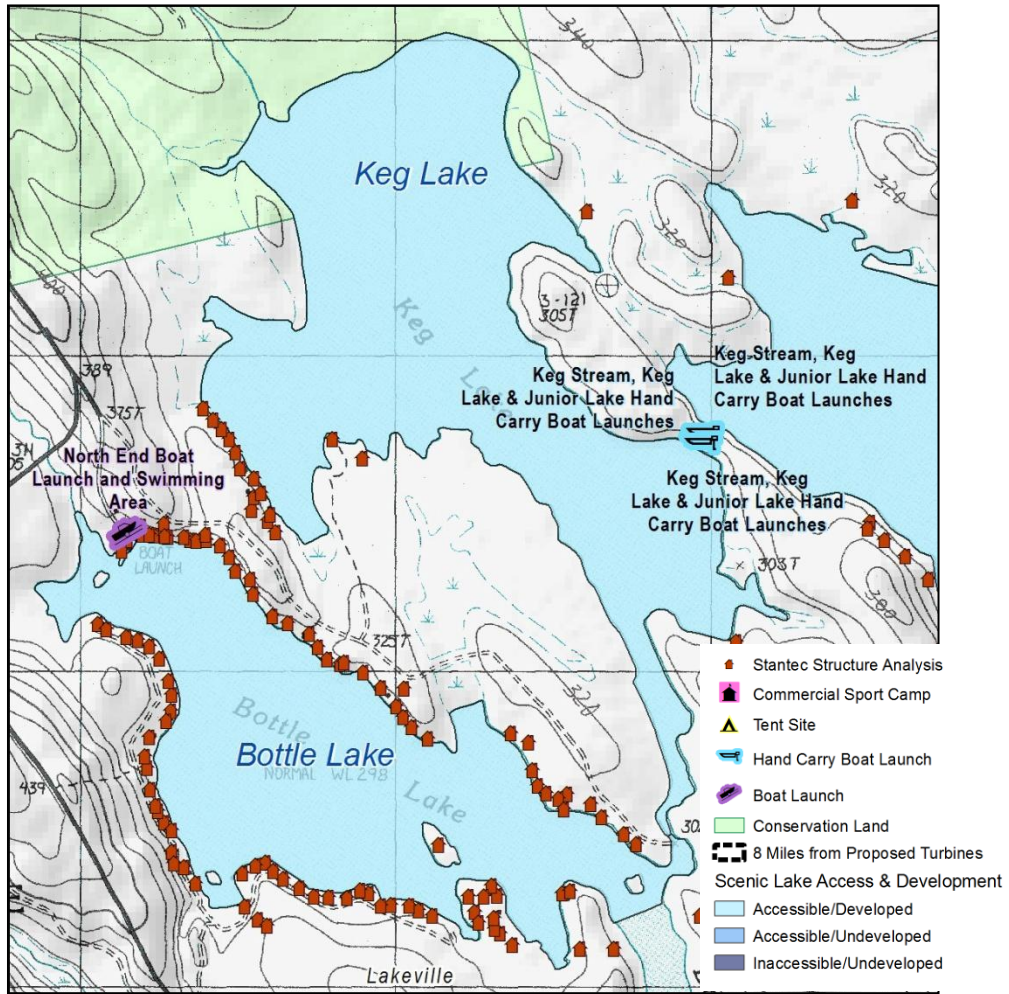


Figure 6-1 – Keg Lake Existing Conditions

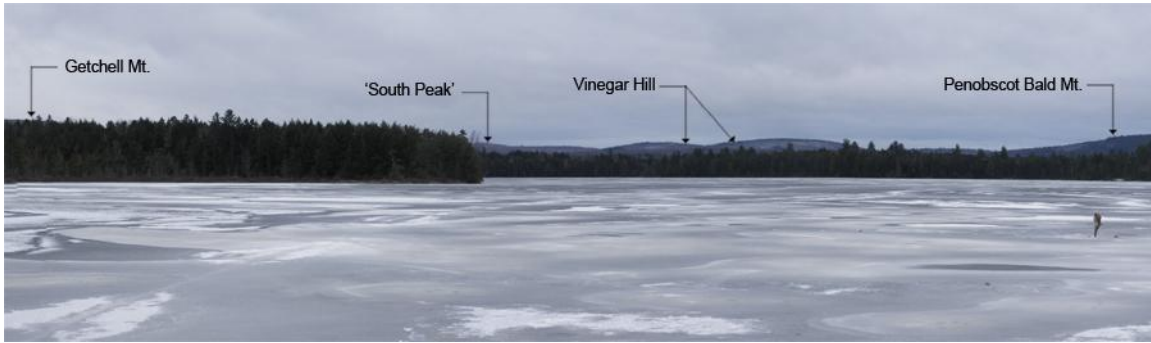


Figure 6-2a - Panorama view from western shore of Keg Lake, near western cove looking northeast, towards Project site.

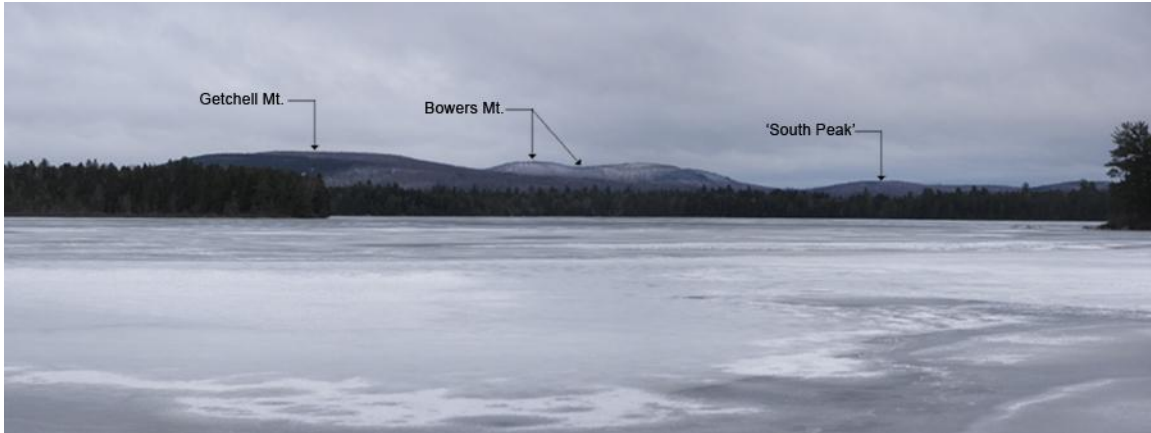


Figure 6-2b - Panorama view from southern shore of Keg Lake, near western cove looking northeast, towards Project site.

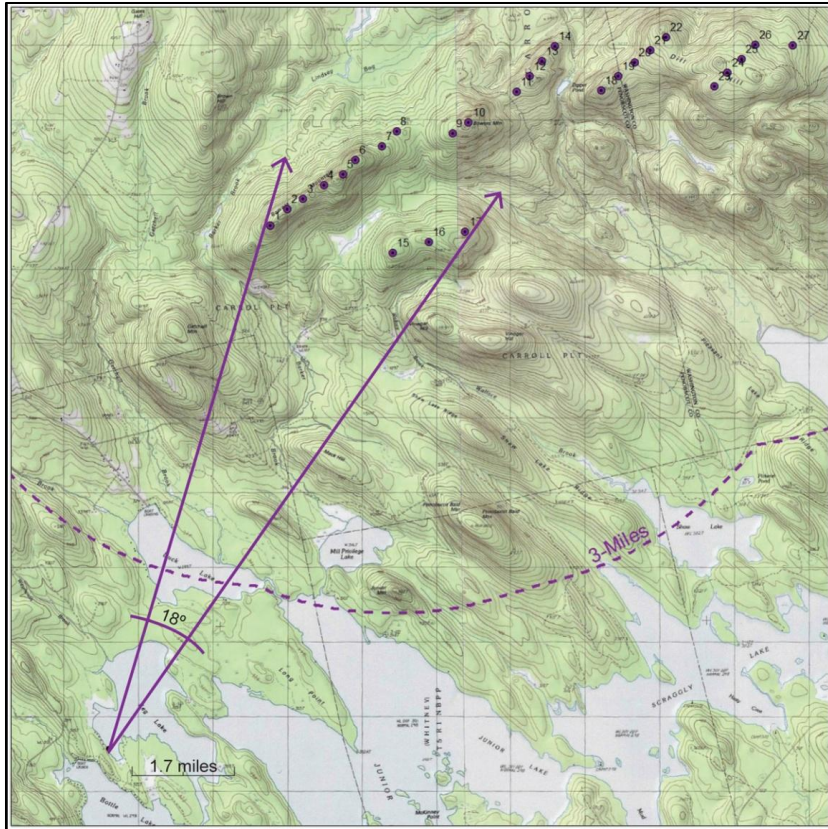


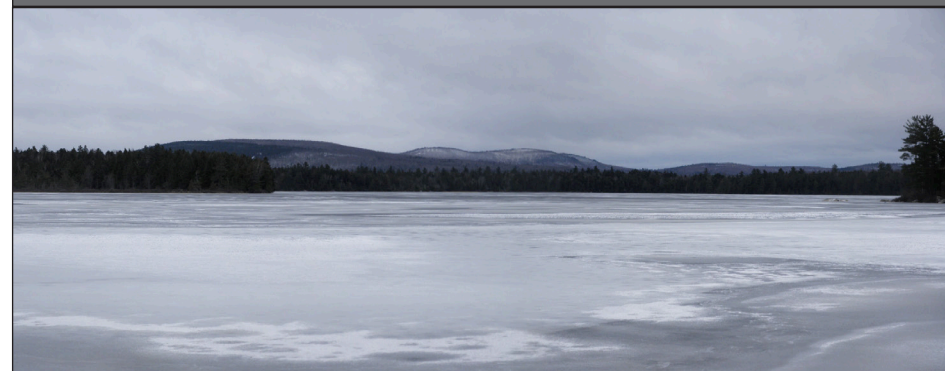
Figure 6-3 – Keg Lake Angle of View

Exhibit 9: Visual Simulation from Keg Lake, Lakeville

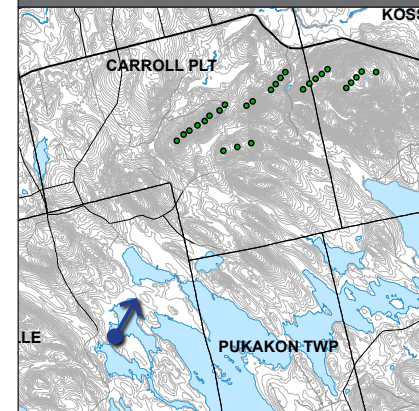
Bowers Wind Project



Existing Conditions Photograph



View Location Map



Simulation Information

Turbine Information	Model: Siemens SWT-2.3-101
	Hub height: 262'-6" (80 m)
	Rotor diameter: 331'-4" (101 m)
Photograph Information	Date and time: 12/22/10; 10:30 am
	Location: Keg Lake (western cove), Lakeville; 45.318° N, -68.060° W
	Camera elevation above sea level: 304' (92.7 m)
	Focal length (35mm equivalent): Unknown
	Simulation viewing distance: Approximately 11" (27.9 cm)
Technical Information	Distance to nearest visible turbine: 4.6 miles (7.4 km)
	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 7; Adobe Photoshop CS5
	Digital elevation data source: http://www.megis.maine.gov/catalog

NOTES:

1. The photographs and field data used for this simulation were taken by Stantec, and a compact digital camera was utilized. As such, the scale and visibility of the turbines depicted is potentially less accurate and should be considered 'approximate'.
2. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

7. BOTTLE LAKE

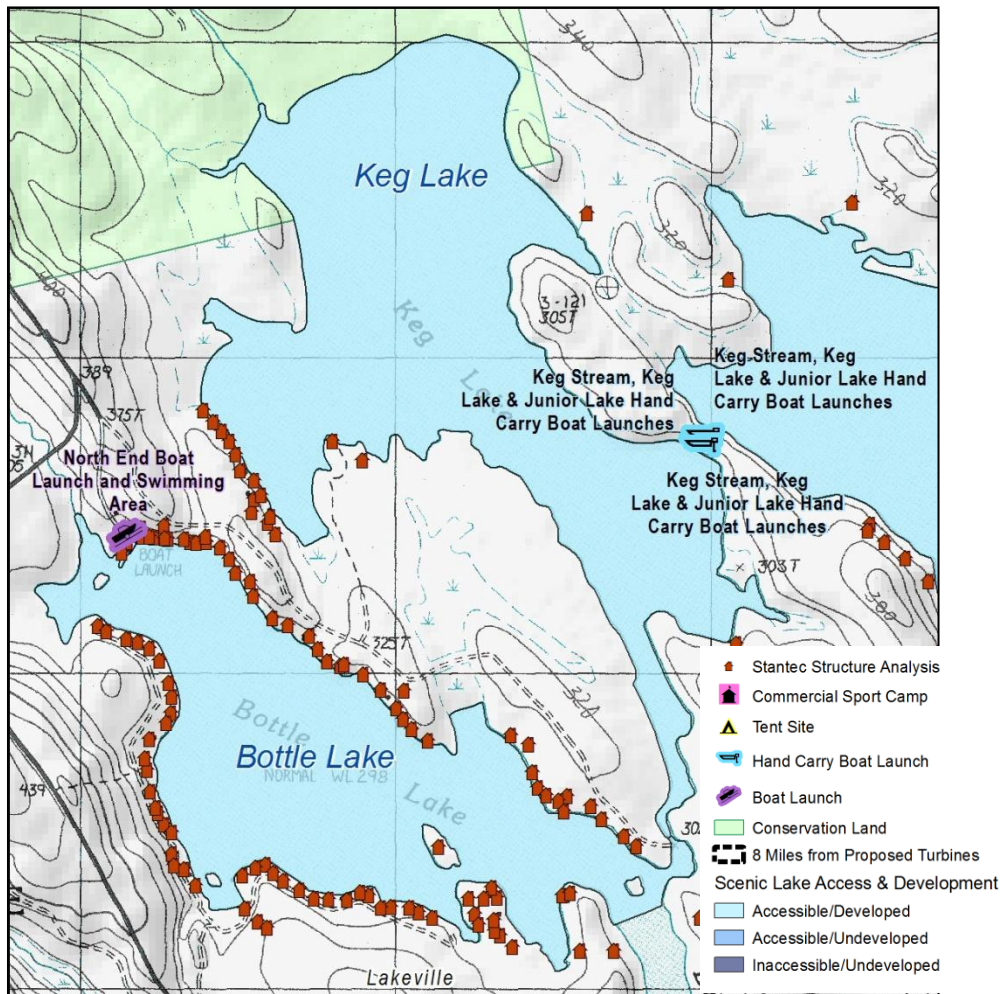


Figure 7-1 – Bottle Lake Existing Conditions



Figure 7-2a - Panorama view looking north toward Project site from the southwest portion of Bottle Lake.



Figure 7-2b - View of the Bottle Lake boat launch.



Figure 7-2c - Panorama view looking to the northwest towards Almanac Mt., away from Project site, with additional ridgelines surrounding the Bottle Lake.

Exhibit 6: Visual Simulation from Bottle Lake, Lakeville

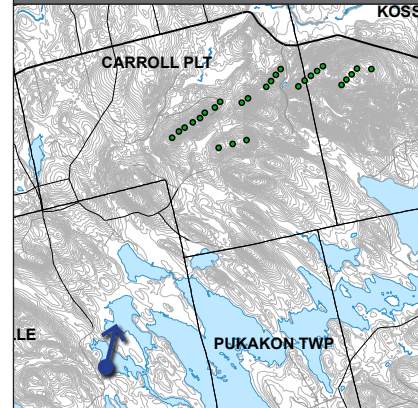
Bowers Wind Project



Existing Conditions Photograph



View Location Map



Simulation Information

Turbine Information	Model: Siemens SWT-2.3-101
	Hub height: 262'-6" (80 m)
	Rotor diameter: 331'-4" (101 m)
Photograph Information	Date and time: 5/5/10; 9:30 am
	Location: Bottle Lake (island in southwest cove of lake), Lakeville; 45.308° N, -68.063° W
	Camera elevation above sea level: 304' (92.7 m)
	Focal length (35mm equivalent): 56mm
	Simulation viewing distance: 11" (27.9 cm)
Technical Information	Distance to nearest visible turbine: 5.3 miles (8.5 km)
	Software: ArcGIS 3D Analyst; Nemetschek VectorWorks 2008; SketchUp Pro 7; Adobe Photoshop CS5
	Digital elevation data source: http://www.megis.maine.gov/catalog

NOTES:
 1. This visual simulation is based on GIS data available at the time from MEGIS and First Wind. Data is only as accurate as the original source and is not guaranteed by LandWorks.

8. SYSLADOBSIS LAKE

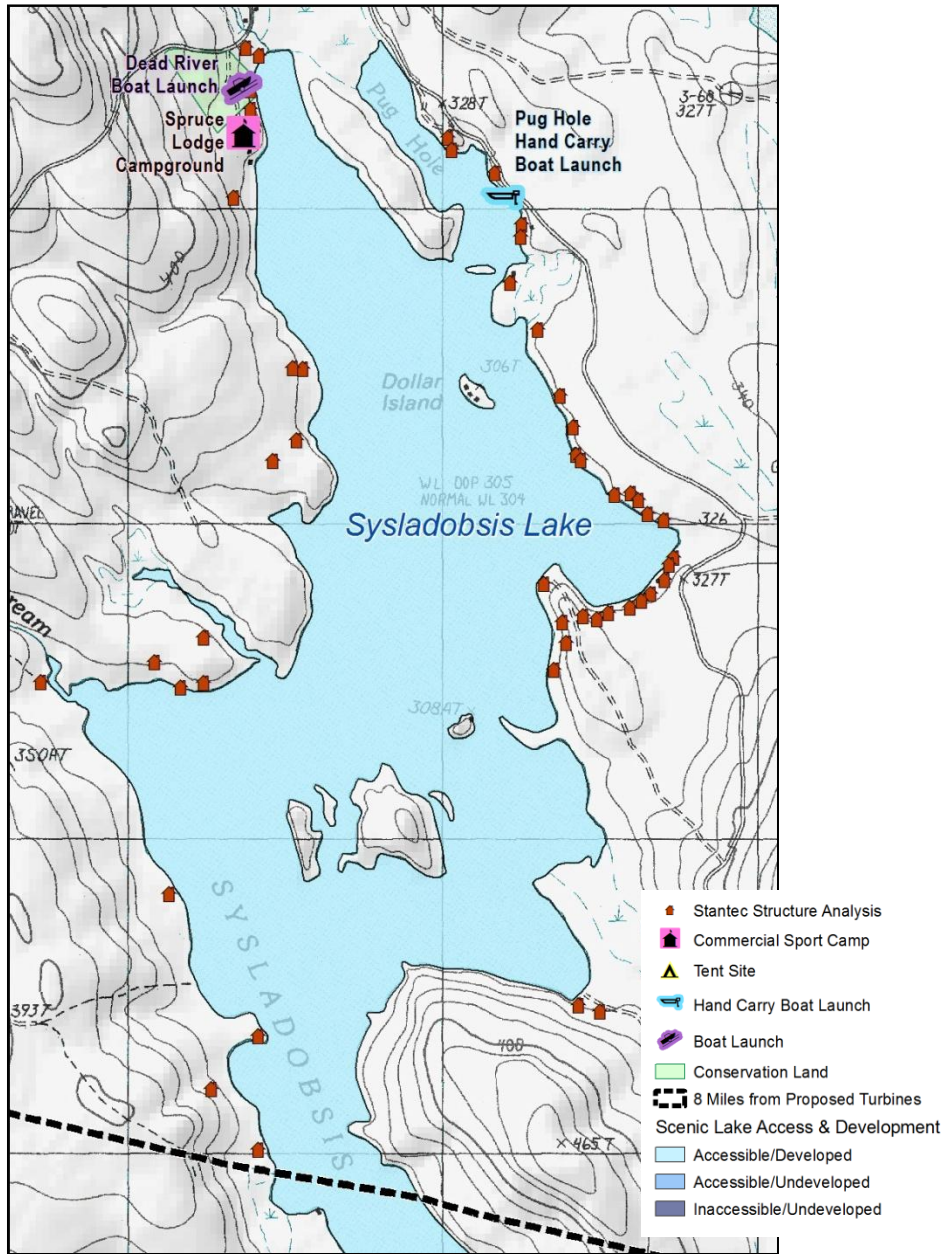


Figure 8-1 – Sysladobsis Lake Existing Conditions



Figure 8-2a –Panorama view of Sysladobsis Lake from northeast cove (off Forest Harbor drive) looking northwest, away from Project site.



Figure 8-2b - View of private boathouse from public boat launch at Sysladobsis Lake, looking away from Project site.



Figure 8-3 – Systadobsis Lake Angle of View