
PUBLIC COMMENTS RECEIVED FOR:

PROPOSED REZONING ASSOCIATED WITH THE EXPIRATION OF A CONCEPT
PLAN FOR THE LANDS OF LOWELL & CO. TIMBER ASSOCIATES IN ATTEAN
TOWNSHIP AND DENNISTOWN PLANTATION (P-RP 007)

**Maine Land Use Planning Commission
Maine Department of Agriculture, Conservation and Forestry**

This document includes compiled written comments regarding the staff-initiated proposed rezoning resulting from the expiration of A Concept Plan for the Lands of Lowell & Co. Timber Associates in Attean Township and Dennistown Plantation. These comments were submitted during the public comment period that ended April 14, 2023.

The comments in this document were posted on the [project page](#) of the Commission's website on Tuesday, April 18, 2023.

MEMORANDUM

Maine Natural Areas Program

Department of Agriculture, Conservation and Forestry
State House Station #177, Augusta, Maine 04333

Date: February 28, 2023

To: Stacy Benjamin, LUPC

From: Kristen Puryear, Ecologist

Re: Rare and exemplary botanical features, LUPC staff-initiated rezoning in a 17,000+ acre P-RP (Resource Protection) zone primarily in Attean Twp and with small acreage in Dennistown Plt, Maine.

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files for rare or unique botanical features in the vicinity of the proposed site in response to your request received February 6, 2023 for our agency's comments on the project.

MNAP understands that the Concept Plan for the Lands of Lowell & Co Timber Associates in Attean Township and Dennistown Plantation (ZP 532/PRP-007) is expiring July 1, 2023 and that the LUPC has been in the process of identifying replacement zoning for the existing development and resources within the Concept Plan area.

According to our current information, there are several botanical features within and adjacent to the current P-RP zone in Attean Twp. Please see the table and attached maps below for this information. Per LUPC Land Use Districts and Standards, Chapter 10, section N Wetland Protection Subdistrict (P-WL), several areas qualify as P-WL1: Wetlands of Special Significance because they are peatlands. MNAP strongly recommends that the NWI wetlands shown as P-WL2 and P-WL3 that are concurrent with MNAP mapped rare or exemplary peatlands be zoned as P-WL1 within Attean Twp. We recognize that the request is for rezoning within the current P-RP, but since LUPC is producing a new zoning map for Attean Twp as a whole, we recommend that these areas should be consistent throughout. We further suggest that wetland areas that are part of these same peatland systems over the township line within T5 R7 BKP WKR and Bradstreet Twp also be given consideration as P-WL1 zones versus their current status as P-WL2 or P-WL3.

Feature	State Status	State Rank	Global Rank	Occurrence Rank	Notes
Unpatterned Fen Ecosystem (PEATLAND)	--	S5	GNR	A Excellent	Moose River – Holeb Falls to Attean Falls
Patterned Fen Ecosystem (PEATLAND)	--	S3	GNR	A Excellent	Number 5 Bog
Open Cedar Fen (PEATLAND)	--	S4	GNR	A Excellent	Number 5 Bog
Black Spruce Barren	--	S2	G5	C Fair	Number 5 Bog
Black Spruce Bog (PEATLAND)	--	S4	G3G5	H Historical (formerly B-	Moose River (last obs/survey 1995)

				Good)	
Red and White Pine Forest	--	S3	G3G4	B Good	Moose River
Red and White Pine Forest	--	S3	G3G4	B Good	Attean Pond at Moose River
Pygmy Water-Lily	Threatened	S1S2	G5	H Historical	Attean Pond, Coves West of Moose River Inlet (last obs/survey 1999)

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys

Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features within the entire P-RP zone in Attean Twp and Dennistown Plt.

The Maine Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We welcome the contribution of any information collected if a site survey is performed.

Thank you for using the Maine Natural Areas Program in the environmental review process. Please do not hesitate to contact our office if you have further questions about the Maine Natural Areas Program or about rare or unique botanical features at this site.

Benjamin, Stacy

From: Rob Davis <Rob@daviscorner.com>
Sent: Monday, March 20, 2023 9:22 AM
To: Benjamin, Stacy
Subject: ZP-532-F Response
Attachments: Rezoning Questions.pdf

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Stacy,

Trust this finds you well.

My name is Rob Davis and I am the managing partner of Coburn Island Group, a partnership of Coburn heirs that owns Birch Island and other properties in Attean township. I am also a private property owner on Birch Island. I am representing the concerns from Coburn Island Group partners and several private landholders / leases in the Attean area.

First, thank you for your efforts in continuing to protect the Attean Township and other former Coburn lands in the spirit of the Coburn transfer of such properties to the Forest Society of Maine and the State.

I have several questions related to the zoning petition ZP 532-F triggered by the non-renewal of the Lands of Lowell Concept Plan. I'm not sure of the proper procedure here, so forgive me for such a lengthy introduction and I welcome your guidance on how to best proceed. Some of these may require simple clarification, while others may be more involved. My desire is to proceed in the most efficient and appropriate manner and welcome your advice.

My questions/concerns are as follows (please see attached for clarity of location):

Gull and Turkey Islands – Attean

Gull Island has an existing camp and Turkey is a buildable island privately owned by a Coburn heir and partner in Coburn Island Group. Does the proposed zoning of P-GP affect existing or future use of these properties? Should these be designated D-RS?

Rock Island – Attean

This island is owned by the Coburn Island Group and currently has a cabin on the island under a land lease. Same as above, does the proposed zoning of P-GP affect the current or future use of this island? Should this be designated D-RS?

Hodgeman's Beach and Attean Landing – Attean

Coburn Island Group (CIG) owns an approximately 1 acre lot on the shoreline of Attean on the southside of Hodgeman's beach. While we have no current plans to build on this lot, but, we would like to maintain the right to do so in the future. We would like to have this lot designated D-RS.

Additionally, CIG owns a 1/16 acre piece of property by the Attean Landing. Since this is privately owned, should we look to zone it P-AL at a minimum?

Please note that the current Attean township zoning map has the Attean Landing misplaced on the North shore above Birch Island. The landing is actually located on the Northeast shore right by the Moose River exiting the lake toward Wood Pond. I noted this in the attached image. This location is currently where the Bow-Trip launches and is maintained by the Attean Lake Lodge. This area should probably have a P-AL zoning designation, but I welcome your input on how to best handle this.

Attean Shore Line and Islands

General concern for proposed zoning of P-GP, and numerous P-AL designations, is the allowance for camping and other activities under Ch 10.23.E (and A) of the Subdistrict Definitions. Specific concerns include:

1. Camping in non-designated camp sites. We have had several instances of people camping in non-designated camp sites that have started camp fires and several times where such activity started island and shoreline fires that we had to put out. How do we prevent camping on shoreline and islands in non-designated camp sites?
2. Are the P-AL zoning designations on Attean meant to indicate a camping site? Most of the P-AL designations are not current camping sites or a place where general lake access should be attempted / allowed. Keeping this designation could also allow for road and other such access to the lake that would again be contrary to the restrictions on the shoreline. I would like to understand the reasoning for these zoning areas.
3. Shoreline docks and access. The P-GP and P-AL designation, along with camping, allows for docks without a permit. We want to ensure that any future rezoning of the land adjacent to Attean Pond would not be allowed to have access to the lake shoreline for lake access or camp docks. This would be directly contrary to the spirit of the deeded restrictions placed on the shoreline property.

We are not in any way wanting to prevent the use of existing campsites or general, appropriately controlled, access to Attean Pond. We do however want to ensure the shoreline is maintained 'as is' and not "developed" via additional access, and campsites are not created or potentially created with the proposed zoning.

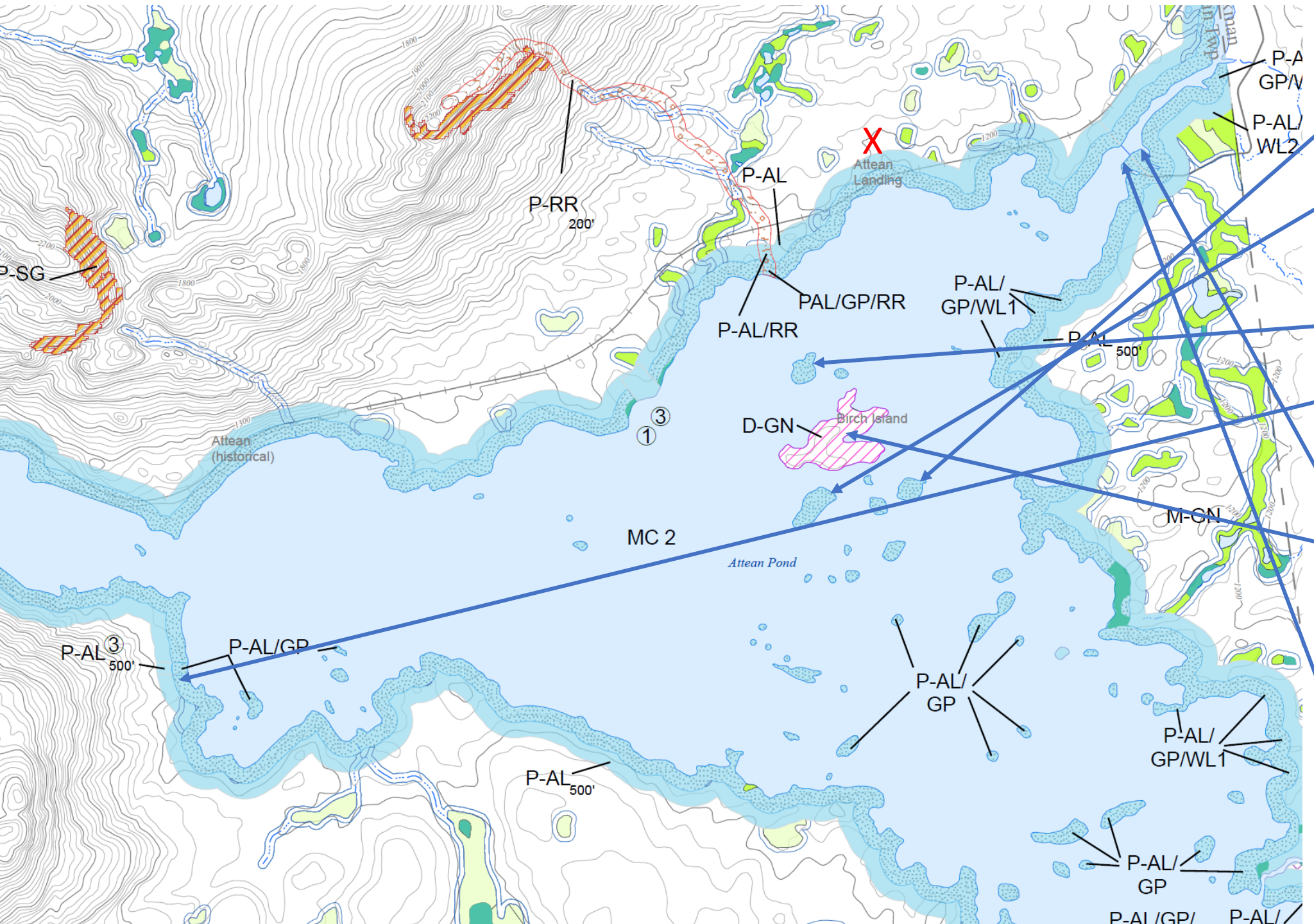
Again, I apologize for the lengthy letter, but thought if I can get the concerns down on paper you can advise on the best next steps. I'd be happy to correspond electronically or set up a time for a phone call.

Looking forward to working with you to sort out the above concerns and ensure we continue to protect the Attean area for all to enjoy.

Rob Davis

Managing Partner
Coburn Island Group

972-670-3294



Private Property

- ① Gull Island
- ② Turkey Island

Coburn Island Property

- ③ Rabbit Island
- ④ Hodgeman's Beach
- ⑤ Attean Landing
- ⑥ Birch Island

Other

- ⑦ Attean Landing

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April 7, 2023

Via E-Mail

Stacy Benjamin
Acting Chief Planner
Maine Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Re: Draft Zoning Map for the Areas Included in A Concept Plan for the Lands of
Lowell & Co. Timber Associates in Attean Township and Dennistown Plantation

Dear Stacy:

On behalf of the Phillips and Arent families, we appreciate the opportunity to submit comments on the proposed rezoning of lands included in the Concept Plan for the Land of Lowell & Co. Timber Associates in Attean Township and Dennistown Plantation (the “Concept Plan”) in particular, the provisions that relate to Hog Island.

A. Background

Hog Island is an approximately 115-acre island located on Wood Pond in Attean Township. The Phillips and Arent families have vacationed on Hog Island since the 1930’s, when their grandparents purchased the camp cabins that are still in use there. Since the 1930’s, five generations of the family have used the camp and have spent time on the island virtually every year. In 2001, family members established Hog Island, LLC and purchased the island from Lowell & Company Timber Associates (“Lowell and Company”), with the expectation that the land use, development rights and limitations spelled out in the Concept Plan would continue.

The Concept Plan was the first concept plan approved by what was then the Land Use Regulation Commission in 1993. It established a long-range plan for responsible conservation and development of more than 17,000 acres owned by Lowell and Company, including Hog Island. The Concept Plan identified six locations totaling 12.8 acres on Hog Island as appropriate for future residential development. Concept Plan Table II-1. Under the Concept Plan, development of these sites for residential use was “approved-in-concept.” Concept Plan, Summary at p.6; Part III-12. Pursuant to a subdivision permit associated with the Concept Plan (SP 3244), Hog Island was identified as a single residential subdivision lot (HI). SP 3244 states

that each building site was conditionally approved pending submission and acceptance of the Form HHE-200. SP 3244, Condition 2.

The general location of the six development areas on Hog Island was reflected on Map II-A of the Concept Plan. However, because this map has limited resolution, the exact location of the six development areas was not precisely identified in the Concept Plan. Nonetheless, it is by and large consistent with the areas proposed by Commission staff to be rezoned to D-RS in the zoning map included as part of the staff-initiated zoning petition.

B. Proposed Adjustments to Areas to be Rezoned to D-RS

For the reasons discussed below, we request some limited adjustment to the location of the D-RS zoned areas proposed by Commission staff to better reflect site conditions while still being consistent with Map II-A of the Concept Plan. The proposed adjustments reflect the families' long history and use of the island, and their knowledge of the topography and conditions there. Consistent with the Concept Plan, the total area to be rezoned to D-RS would remain 12.8 acres.

The attached Map provided by the Commission staff shows the areas proposed to be rezoned and has been annotated to reflect our proposed adjustments to the D-RS zoning. The reasons for the adjustments are discussed below.

- Relocate one development area from the western side of the island to the south side immediately adjacent to the existing camp. The location proposed by the Commission staff is very near an eagle's nest and has limited views as it sits behind a peninsula, while the suggested relocation limits any intrusion on the nesting eagles and is an elevated area suitable to expand the existing camp. This change is noted on the attached Map as "change A".
- Relocate a second development area on the western side of the island a short distance south to equally elevated land with potentially suitable soils, better views and better water access. See the attached 2005 High Intensity Soil Survey by S.W. Cole Engineering for soils testing results. This change in development area is noted on the attached Map as "change B".
- Relocate a third development area at the northern end of the island to the north-western tip of the island, moving it from a relatively low and seasonally wet area to a more elevated area with potentially suitable soils. The attached soils survey includes results for this area. This change is noted on the attached Map as "change C".
- Relocate a fourth development area at the south-eastern tip of the island a short distance north. The location proposed by Commission staff has limited if any effective water access given the very shallow rocky waters off that end of the island and is highly visible from town and many areas of the lake, while the suggested relocation has better water access with less visual disturbance. This change is noted on that attached Map as "change D".

Absent a survey it is difficult to provide exact acreage for each of the D-RS areas. On average, each of the six areas is just over two acres in size. The areas identified on the annotated Map as Areas 3 and 6 allow for slightly larger development areas, whereas Area 1 is slightly smaller due to its location between Area 2 and the existing camps. Similarly, Areas 4 and 5 are somewhat constrained by terrain and therefore may be slightly smaller than the other development areas. In total, the areas rezoned to D-RS will not exceed 12.8 acres, but flexibility is needed to more precisely define those boundaries.

C. Future Regulatory Requirements

Expiration of the Concept Plan and the proposed rezoning presents unique challenges, and we are very appreciative of the time staff has spent in working with us to sort through these issues. We understand that the areas rezoned to D-RS will remain subject to SP 3244 and, as such, any subsequent conveyance of those areas (e.g., creation of a lot) will require that SP 3244 be amended. These areas will remain a permitted albeit non-conforming subdivision and any future amendments to SP 3244 will need to comply with applicable provisions of Chapter 10.25, Q(3) and 10.25, Q(4)(a)(1-2). Because the Concept Plan specifically contemplated the ability of the landowner to create separate lots within the island, we hope that the Commission will interpret future efforts to do so in light of and consistent with that regulatory history and context.

We also understand that the areas to be rezoned M-GN and P-GP will **not** be subject to SP 3244. The significance of this determination is that areas zoned M-GN and P-GP could be conveyed or leased as long as doing so did not create a subdivision (e.g., the owners could convey one such lot every five years). There is no plan to develop those areas in the future.

Finally, we also understand that consistent with the proposed rezoning and SP 3244, a residential dwelling may be constructed on any of the six D-RS areas. Construction of a house without creating a lot, e.g., the area remains owned by Hog Island, LLC, would not require an amendment to SP 3244, but would require a building permit. Because the Concept Plan expressly envisioned and conditionally approved development of these lots on Hog Island for residential use, we hope that the Commission will interpret future efforts to do so in light of and consistent with that regulatory history and context.

April 7, 2023
Page 4

If you have any questions or would like to discuss these comments, please don't hesitate to reach out to me or Bruce Phillips. Thank you again for your patience and work in sorting through these issues. We greatly appreciate it.

Very truly yours,

A handwritten signature in blue ink that reads "Juliet B." with a long horizontal flourish extending to the right.

Juliet T. Browne

JTB/mtt
Enclosures
cc: Bruce Phillips (w/encls.)

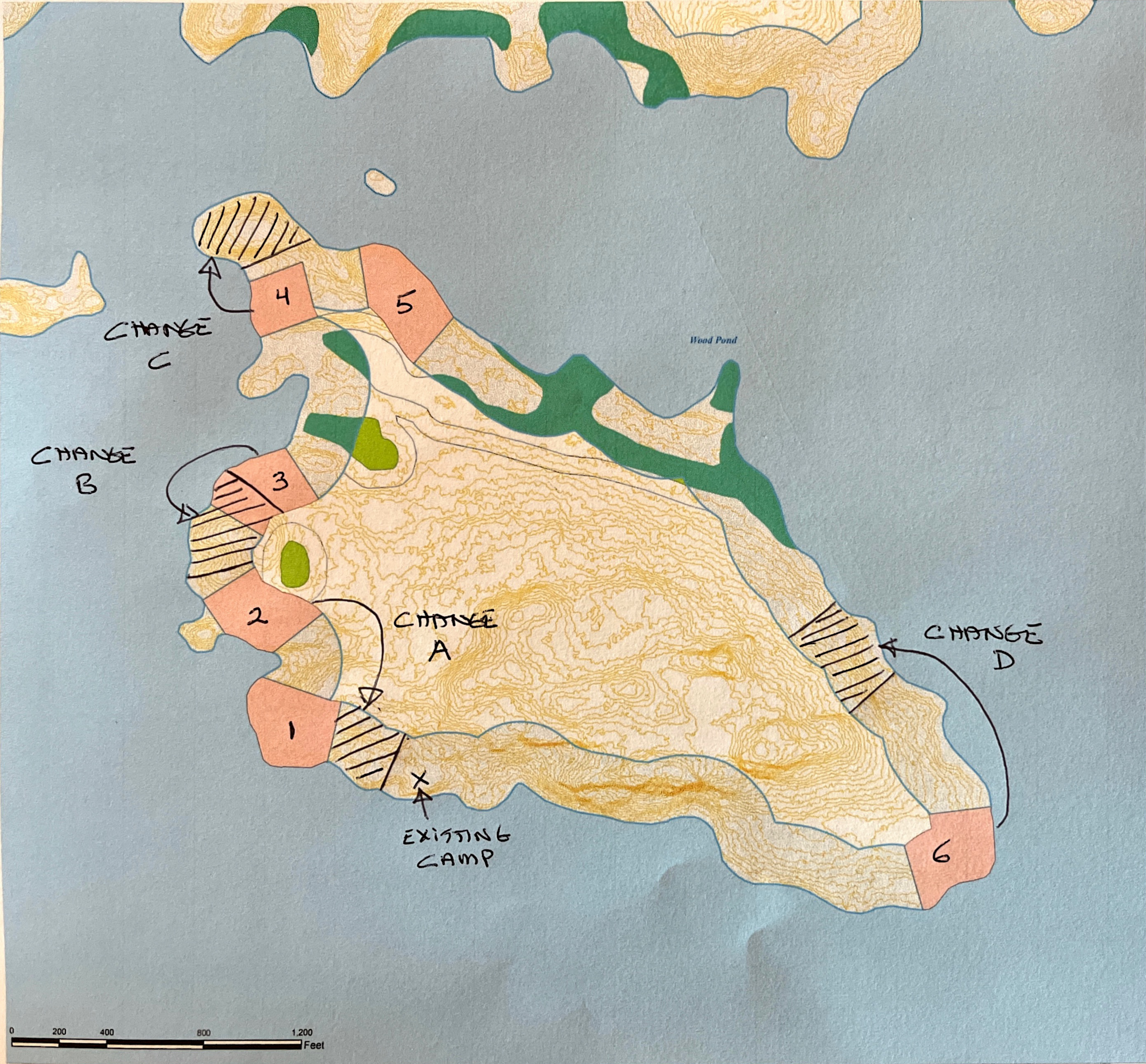


Hog Island Attean Twp

Zones Symbology

- ZONE**
- D-RS: Residential Development
 - M-GN: General Management
 - P-GP: Great Pond Protection
 - P-SL2: Shoreland - 75' Protection
 - P-WL1: Wetlands of Special Significance Protection
 - P-WL2: Scrub-shrub Wetlands Protection
 - 2-Foot Contours-LIDAR (white lines)

DRAFT - 2/27/2023





● *Geotechnical Engineering* ● *Field & Laboratory Testing* ● *Scientific & Environmental Consulting*

CLASS B - HIGH INTENSITY SOIL SURVEY
HOG ISLAND
ATTEAN TWP, MAINE

05-0807 D

SEPTEMBER 30, 2005

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APPENDIX D - Soil Conditions Summary Table/Soil Description & Classification Logs

APPENDIX E - Glossary

APPENDIX F - Methodology

05-0807 D

September 30, 2005

Mr. Bruce Phillips
11 Cedar Street
Newton, MA 02459

Subject: Class B - High Intensity Soil Survey
Hog Island
Attean TWP, Maine

1.0 INTRODUCTION

We are pleased to submit this Class B - High Intensity Soil Survey for four proposed camp lots on Hog Island on Wood Pond in Attean TWP, Maine.

1.1 Purpose

The purpose of our investigation was to identify and describe the soils within the approximately 8-acre site consisting of four approximately 2-acre lots, and to identify potential limitations of the soil with respect to the proposed development on the lots. Specifically, our investigations were conducted at a Class B - High Intensity level of soils mapping on the proposed development areas, except the base map does not have 5-foot contours.

We understand that our findings may be used to supplement other information that may be required to obtain permits from the Maine Land Use Regulation Commission.

1.2 Appendices

This report is subject to the limitations attached in Appendix A. Appendix B contains a Class B - High Intensity Soil Survey Map. The Survey Map illustrates the location, type, and extent of the soils we observed at the site. Appendix C contains Mapping Unit Descriptions for each of the soil types we identified in the survey. Appendix D contains a Soil Profile Description and Classification Logs for each test pit. Appendix E contains a Glossary. Appendix F contains a Methodology, which also describes the minimum standards established by the Maine Association of Professional Soil Scientists for this level of soil investigation.

2.0 SITE LOCATION

The four approximately 2-acre lots are shown on the Soil Survey Map attached in Appendix B as Sheet B-1.

3.0 EXPLORATION AND TESTING

We conducted our field investigation on August 04, 2005 when we explored 17 test pits using a hand spade and auger. Our test pits and some map unit delineation boundaries were located onto the base map by orienting to known site features and control points and by location with a Trimble GPS Receiver.

4.0 GENERAL SITE AND SUBSURFACE CONDITIONS

The project area is a series of small bedrock controlled ridges. It is composed mainly of gently sloping to strongly sloping shallow and well drained loamy glacial till.

5.0 SOIL MAPPING UNIT DESCRIPTIONS

The mapping unit descriptions attached in Appendix C outline the major soil types identified during our investigations. Please refer to the Soil Legend to identify soil mapping unit symbols shown on the Soil Survey Map in Appendix B.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our observations of the site, information obtained at our explorations, and our knowledge of the proposed use of the site, the soils in the subdivision area appear to be generally suitable for the proposed use for building sites, and accessory structures associated with seasonal or year round camps or residences.

The shallow and moderately deep well drained loamy glacial till soils are generally suitable for the proposed use. Limitations due to shallow depths to bedrock can be mitigated by removal of bedrock, addition of granular fill, or building on top of ledge.

The strongly sloping areas have a higher susceptibility to accelerated erosion which can be mitigated by minimizing soil disturbance, proper layout of site improvements and appropriate erosion control measures.



05-0807 D
September 30, 2005


Specific information concerning suitability for subsurface wastewater disposal is included in Exhibit I of the Subdivision Application under separate cover, and Appendix D of this report.

7.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. If you have any further questions, or if we may be of further assistance, please do not hesitate to contact us.

Very truly yours,

S. W. COLE ENGINEERING, INC.


Stephen H. Howell, C.S.S.

SHH:slh

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APPENDIX A

APPENDIX A Limitations

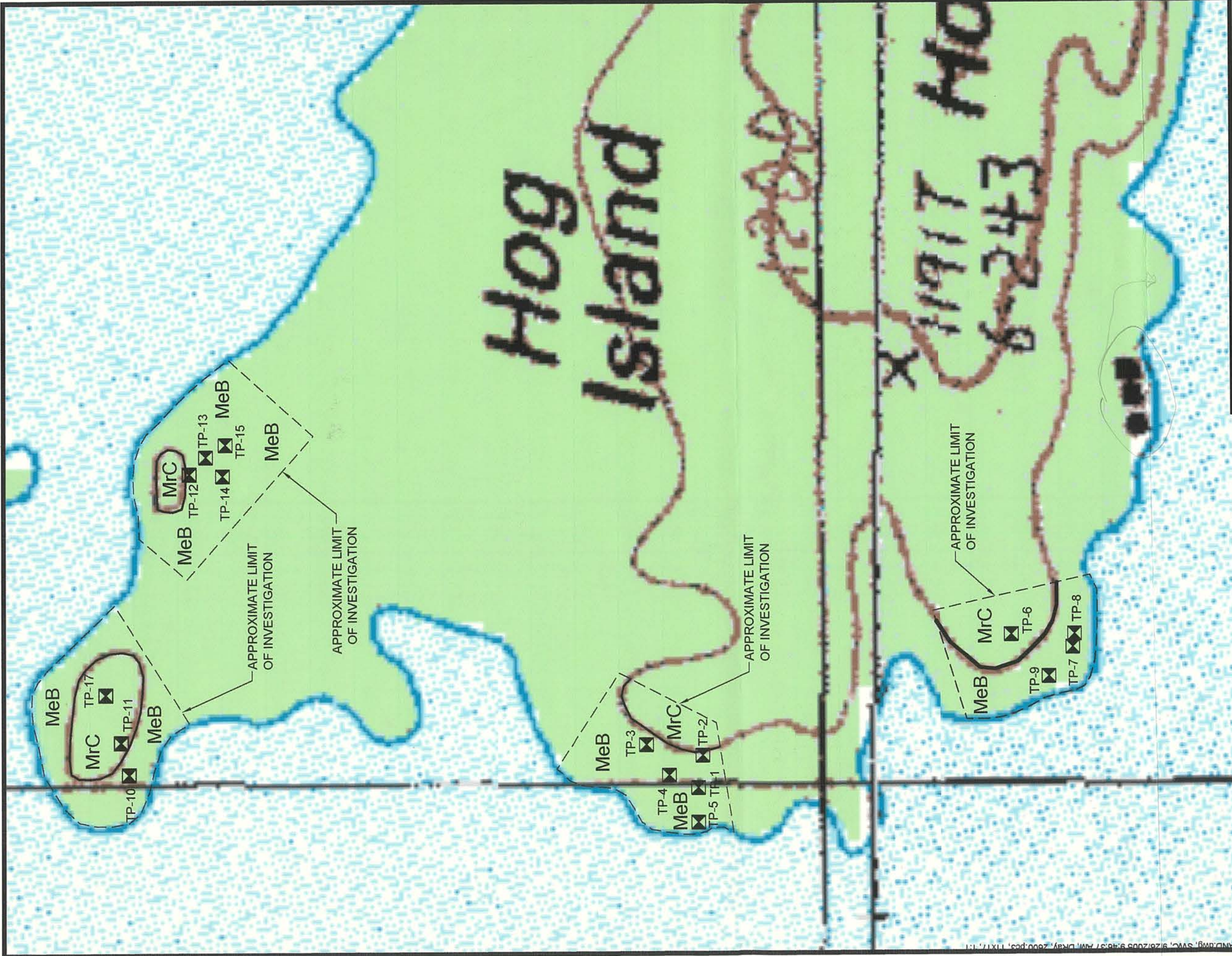
This report has been prepared for the exclusive use of Bruce Phillips for specific application to the Maine Land Use Regulation Commission Permit Applications in Attean TWP, Maine. S. W. COLE ENGINEERING, INC. has conducted the work in accordance with generally accepted soil science practices. No other warranty, expressed or implied, is made.

This investigation was conducted, compiled and reported in general accordance with guidelines described in the Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping (2004) for a Class B - High Intensity Soil Survey and Version 2 of the Field Indicators for Identifying Hydric Soils in New England (2004). The conclusions and recommendations presented in this report are based upon the data obtained from the areas explored.

It should be noted that soil map unit design is at least in part influenced by the intended use of the soil survey and information provided may not always be adequate for uses other than that for which the soil survey was originally developed. Soils which are considered non-limiting for one use may be considered limiting for another use.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site, and published information from the USDA Natural Resources Conservation Service. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

APPENDIX B



LEGEND

- ☒ Approximate Test Pit Location

NOTES :

- 1.) Soil survey is incomplete without narrative report.
- 2.) Base map was enlarged from a plan from MaineOffice of GIS.
- 3.) This plan meets all Maine Association of Professional Soils Scientists Standards for a Class B High Intensity Soil Survey, except base map does not have 5-foot contours..



BRUCE PHILLIPS

CLASS B HIGH INTENSITY SOIL SURVEY

Proposed Hog Island Lots
Attean Township, Maine

Job No. 05-0807
Date : 09/26/05

Scale 1" = 200'
Sheet 1 of 1

APPENDIX C

Soil Mapping Legend
Bruce Phillips
Hog Island, Attean TWP, Maine

Symbol

Series and Phase

MeB Monson extremely bouldery fine sandy loam, 1 to 8 percent slopes

MrC Monson-Ricker complex, 1 to 15 percent slopes

(MeB) Monson extremely bouldery fine sandy loam, 1 to 8 percent slopes

Depth to Bedrock: Shallow; depth to bedrock is 10 and 20 inches below the top of the mineral soil.

Drainage: Somewhat excessively drained; no seasonal water table over bedrock.

SETTING

Parent Material: Loamy glacial till

Landform: Sideslopes

Landscape Position: Level to gently sloping sideslopes

INCLUSIONS

Similar: Elliottsville very bouldery very fine sandy loam, 8 to 15 percent slopes
Elliottsville stony fine sandy loam, 1 to 8 percent slopes
Monson stony fine sandy loam, 0 to 8 percent slopes
Monson very bouldery fine sandy loam, 0 to 8 percent slopes

Dissimilar: Chesuncook very bouldery fine sandy loam, 1 to 8 percent slopes
Telos very bouldery fine sandy loam, 1 to 8 percent slopes
Monarda very bouldery loam, 0 to 8 percent slopes
Rock Outcrop

TYPICAL PROFILE DESCRIPTION

A typical pedon was described for this soil at TP-3. Typically, the surface layer is covered with 2 inches of partially decomposed organic matter. The surface mineral layer is 2 inches of gray extremely bouldery fine sandy loam. The subsoil is 4 inches of yellowish brown extremely bouldery fine sandy loam over 12 inches of light olive brown gravelly very fine sandy loam over bedrock. Bedrock occurs at 18 inches below the top of the mineral soil.

WATER RELATED INFORMATION

Permeability: Moderate (0.6-2.0 in/hr) through the entire soil profile

Surface Runoff: Low to medium

Hydrologic Group: C/D

K-Factor: 0.24

Flooding Potential: None

USE AND MANAGEMENT

Building Site Development: Limitations for building development are "severe" on Monson soils due to depth to bedrock. Potential frost action is "moderate." The potential frost action and depth to bedrock can cause "moderate" to "severe" limitations for road construction and landscaping. Limitations can be overcome by conventional construction techniques such as removal of ledge, addition of granular fill, or building on top of the ledge.

(MrC) Monson-Ricker complex, 1 to 12 percent slopes

Soils in this complex consist of 50 percent Monson bouldery very fine sandy loam, 1 to 12 percent slopes; 25 percent Ricker peat, 1 to 12 percent slopes; and 25 percent other soils, listed as inclusions below.

INCLUSIONS

Similar: Monson extremely bouldery loam, 12 to 40 percent slopes
Monson extremely bouldery loam, 1 to 12 percent slopes

Dissimilar: Chesuncook bouldery loam, 8 to 40 percent slopes
Elliottsville very bouldery loam, 1 to 8 percent slopes
Monarda very bouldery loam, 0 to 8 percent slopes
Rock Outcrop

Monson bouldery very fine sandy loam, 1 to 12 percent slopes

Depth to Bedrock: Shallow (depth to bedrock between 10 and 20 inches).

Drainage: Somewhat excessively drained. No seasonal groundwater over bedrock.

SETTING

Parent Material: Glacial till

Landform: Bedrock controlled ridges and sideslopes

Landscape Position: Level to strongly sloping

TYPICAL PROFILE DESCRIPTION

A typical pedon was described for this soil at TP-11. Typically, there is about 2 inches of partially decomposed organic matter over 2 inches of gray bouldery very fine sandy loam. The subsoil is 14 inches of yellowish brown and light olive brown gravelly very fine sandy loam. Bedrock occurs at 16 inches below the mineral soil surface.

WATER RELATED INFORMATION

Permeability: Moderate

Surface Runoff: Low to medium

Hydrologic Group: C/D

K-Factor: 0.24 in stony surface layer, 0.28 below surface layer

Flooding Potential: None

(MrC) Monson-Ricker complex, 1 to 12 percent slopes - Cont'd.

Ricker peat, 1 to 12 percent slopes

Depth to Bedrock: Very shallow (depth to bedrock 10 inches or less).
Drainage: Excessively drained; no seasonal groundwater above bedrock.

SETTING

Parent Material: Well to excessively drained organic soils over glacial till
Landform: Bedrock controlled ridges and sideslopes
Landscape Position: Nearly level to gently sloping

TYPICAL PROFILE DESCRIPTION

A typical pedon was not described for this soil. However, typically there is about 5 inches of partially decomposed organic matter over 1 inch of black bouldery loam. Bedrock occurs at 1 inch below the mineral soil surface.

WATER RELATED INFORMATION

Permeability: Slow to rapid depending on slope and bedrock exposure; internal drainage is rapid.
Surface Runoff: Low to medium
Hydrologic Group: A
K-Factor: 0.32 in the mineral layer
Flooding Potential: None

USE AND MANAGEMENT

Building Site Development: Limitations for building development on Ricker and Monson soils are "severe" due to shallow depth to bedrock of less than 20 inches. Limitations are "severe" in areas that will be used for lawns and landscaping due to droughtiness, depth to bedrock, and slope. Potential frost action is "low" on Ricker soils and "moderate" on Monson soils. Limitations can be overcome by removal of bedrock, additions of granular fill, and/or building on top of ledge, and with proper site layout and erosion control. Increased susceptibility to accelerated erosion where slopes exceed 8 percent can be mitigated by minimizing soil disturbance, proper layout of site improvements and appropriate use of erosion control measures.

APPENDIX D

Exhibit I - Soils Information

Job Name: Bruce Phillips, Hog Island
 Job Number: 05-0807 D
 Date: September 30, 2005

Lot No.	Test Pit	Soil Name	Plumbing Code Soil Profile & Condition	Depth of Pit (in)	Depth to Seasonal Water (in)	Depth to Impervious Layer (in)	Depth to Bedrock (in)	Area of Suitable Soils*	Area Required for System Installation (ft ²)	Type of System Anticipated
---	TP1	Elliottsville	1A	22	N.O.	N.O.	22	1000	600	12 Plastic Chambers
---	TP2	Elliottsville	1A	24	N.O.	N.O.	24	1000	600	12 Plastic Chambers
---	TP3	Monson	1A	18	N.O.	N.O.	18	1000	600	12 Plastic Chambers
---	TP4	Monson	1A	18	N.O.	N.O.	18	1000	600	12 Plastic Chambers
---	TP5	Monson	1A	18	N.O.	N.O.	18		None - Too Close to Water	12 Plastic Chambers
---	TP6	Elliottsville	1A	24	N.O.	N.O.	24	1000	600	12 Plastic Chambers
---	TP7	Elliottsville	1A	22	N.O.	N.O.	22		None - Too Close to Water	12 Plastic Chambers
---	TP8	Monson	1A	18	N.O.	N.O.	18		None - Too Close to Water	12 Plastic Chambers
---	TP9	Monson	1A	17	N.O.	N.O.	17		None - Too Close to Water	12 Plastic Chambers
---	TP10	Monson	1A	13	N.O.	N.O.	13		None - Too Close to Water	12 Plastic Chambers
---	TP11	Monson	1A	16	N.O.	N.O.	16	1000	600	12 Plastic Chambers
---	TP12	Monson	1A	16	N.O.	N.O.	16	1000	600	12 Plastic Chambers
---	TP13	Monson	1A	17	N.O.	N.O.	17	1000	600	12 Plastic Chambers
---	TP14	Monson	1A	17	N.O.	N.O.	17	1000	600	12 Plastic Chambers
---	TP15	Monson	1A	19	N.O.	N.O.	19	1000	600	12 Plastic Chambers
---	TP16									Off-Site
---	TP17	Monson	1A	16	N.O.	N.O.	16	1000	600	12 Plastic Chambers

* For a 2 Bedroom Camp
 N.O. = None Observed

Signature: 
 License Number: #213

SOIL PROFILE / CLASSIFICATION INFORMATION **DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name: Hog Island Applicant Name: Bruce Phillips Project Location (municipality): Attuan Twp.

Exploration Symbol: TP1 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	extremely bouldery		gray	
6		friable	yellowish brown	none observed or expected
12	gravelly very fine sandy loam		light olive brown	
18				
24	R @ 22"			
30				
36				
42				
48				

soil data by S.E. L A Slope 3-6 Limiting Factor 22 Groundwater Restrictive Layer Bedrock
 Soil series/phase name: ELLIOTTSVILLE Hydric Non-hydric B Hydrologic Soil Group

Exploration Symbol: TP2 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	extremely bouldery		gray	
6		friable	yellowish brown	none observed or expected
12	gravelly very fine sandy loam		light olive brown	
18				
24	R @ 24"			
30				
36				
42				
48				

soil data by S.E. L A Slope 3-6 Limiting Factor 24 Groundwater Restrictive Layer Bedrock
 Soil series/phase name: ELLIOTTSVILLE Hydric Non-hydric B Hydrologic Soil Group

Exploration Symbol: TP3 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	extremely bouldery		gray	
6		friable	yellowish brown	none observed or expected
12	gravelly very fine sandy loam		light olive brown	
18				
24	R @ 18"			
30				
36				
42				
48				

soil data by S.E. L A Slope 8-10 Limiting Factor 18 Groundwater Restrictive Layer Bedrock
 Soil series/phase name: Manson Hydric Non-hydric CB Hydrologic Soil Group

Exploration Symbol: TP4 Test Pit Boring
 _____ " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	extremely bouldery		gray	
6		friable	yellowish brown	none observed or expected
12	gravelly very fine sandy loam		light olive brown	
18				
24	R @ 18"			
30				
36				
42				
48				

soil data by S.E. L A Slope 6-8 Limiting Factor 18 Groundwater Restrictive Layer Bedrock
 Soil series/phase name: Manson Hydric Non-hydric CB Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [Signature] Date: 9/22/05
 Name Printed/typed: STEPHEN H. HOWELL Certificate Reg. # SS # 187
 Title: Licensed Site Evaluator Certified Soil Scientist
 Certified Geologist Other:



SOIL PROFILE / CLASSIFICATION INFORMATION **DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name: Hog Island Applicant Name: Bruce Phillips Project Location (municipality): ATTEN TWP.

Exploration Symbol: TP5 Test Pit Boring
3 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	<u>Rubbery fine sandy loam</u>		<u>olive brown</u>	
6		<u>friable</u>	<u>2.5Y 4/4</u>	<u>none observed or expected</u>
12				
18				
24		<u>R @ 18"</u>		
30	<u>* TP is in shoreland zone</u>			
36				
42				
48				

soil data by S.E. → Soil Profile: 1 Classification: A Slope: 6-8 Percent Limiting Factor: 1B Depth Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: Manson Hydric Non-hydric Hydrologic Soil Group: SP

Exploration Symbol: TP6 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	<u>gravelly clay loam</u>		<u>gray</u>	
6			<u>yellowish brown</u>	
12		<u>friable</u>	<u>10YR 5/6</u>	<u>none observed or expected</u>
18			<u>light olive brown</u>	
24				
30		<u>R @ 24"</u>		
36				
42				
48				

soil data by S.E. → Soil Profile: 1 Classification: A Slope: 3-6 Percent Limiting Factor: 24 Depth Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: Elliotsville Hydric Non-hydric Hydrologic Soil Group: B

Exploration Symbol: TP7 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	<u>extremely bouldery silty</u>		<u>gray</u>	
6			<u>yellowish brown</u>	
12	<u>gravelly very fine sandy loam</u>	<u>friable</u>	<u>olive brown</u>	<u>none observed or expected</u>
18				
24		<u>R @ 22"</u>		
30				
36				
42				
48				

soil data by S.E. → Soil Profile: 1 Classification: A Slope: 3-6 Percent Limiting Factor: 22 Depth Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: Elliotsville Hydric Non-hydric Hydrologic Soil Group: B

Exploration Symbol: TP8 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	<u>extremely bouldery silty</u>		<u>gray</u>	
6			<u>yellowish brown</u>	
12	<u>gravelly very fine sandy loam</u>	<u>friable</u>	<u>light olive brown</u>	<u>none observed or expected</u>
18				
24		<u>R @ 18"</u>		
30				
36				
42				
48				

soil data by S.E. → Soil Profile: 1 Classification: A Slope: 3-6 Percent Limiting Factor: 1B Depth Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: Manson Hydric Non-hydric Hydrologic Soil Group: SP

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: _____ Date: 9/22/05

Name Printed/typed: STEPHEN H. HOWELL Cert/Lic/Reg.# 557 187

Title: Licensed Site Evaluator Certified Soil Scientist
 Certified Geologist Other:



SOIL PROFILE / CLASSIFICATION INFORMATION **DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name: Hog Island Applicant Name: Bruce Phillips Project Location (municipality): Attain Twp.

Exploration Symbol: TP9 Test Pit Boring
1 " Organic horizon thickness Ground surface elev. _____

Texture	Consistency	Color	Mottling
extremely loose		gray yel. brn.	
loose	friable	olive brown	none observed or expected
R @ 17"			

soil data by S.E. → Soil Profile: A Classification: A Slope: 6-8 Limiting Factor: 17 Depth: _____
 Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: Monson Hydric Non-hydric Hydrologic Soil Group: C/D

Exploration Symbol: TP10 Test Pit Boring
 _____ " Organic horizon thickness Ground surface elev. _____

Texture	Consistency	Color	Mottling
loose		gray yel. brn.	
loose	friable	light olive brown	none observed or expected
R @ 13"			

soil data by S.E. → Soil Profile: A Classification: A Slope: 3-6 Limiting Factor: 13 Depth: _____
 Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: Monson Hydric Non-hydric Hydrologic Soil Group: C/D

Exploration Symbol: TP11 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Texture	Consistency	Color	Mottling
loose		gray	
loose	friable	yellowish brown	none observed or expected
R @ 16"			

soil data by S.E. → Soil Profile: A Classification: A Slope: 3-6 Limiting Factor: 16 Depth: _____
 Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: Monson Hydric Non-hydric Hydrologic Soil Group: C/D

Exploration Symbol: TP12 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Texture	Consistency	Color	Mottling
extremely loose		gray yellowish brown	
loose	friable		none observed or expected
R @ 16"			

soil data by S.E. → Soil Profile: A Classification: A Slope: 3-6 Limiting Factor: 16 Depth: _____
 Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: Monson Hydric Non-hydric Hydrologic Soil Group: C/D

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: _____ Date: 9/22/05

Name Printed/typed: STEPHEN H. HOWELL Cert. Lic/Reg. # SS # 187

Title: Licensed Site Evaluator Certified Soil Scientist
 Certified Geologist Other:



SOIL PROFILE / CLASSIFICATION INFORMATION **DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name: Hog Island Applicant Name: Bruce Phillips Project Location (municipality): Attuan Twp.

Exploration Symbol: TP13 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Texture	Consistency	Color	Mottling
0			
0-1		gray yellowish brown	
1-6	friable	olive brown	none observed or expected
6-12		olive brown	
12-18		olive brown	
18-24			
24-30			
30-36			
36-42			
42-48			

soil data by S.E. → Soil Profile L Classification A Slope 3-6 Percent Limiting Factor 17 Depth 17 Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: MANSON Hydric Non-hydric Hydrologic Soil Group C/D

Exploration Symbol: TP14 Test Pit Boring
3 " Organic horizon thickness Ground surface elev. _____

Texture	Consistency	Color	Mottling
0			
0-6		gray	
6-12	friable	olive brown	none observed or expected
12-18		olive brown	
18-24			
24-30			
30-36			
36-42			
42-48			

soil data by S.E. → Soil Profile L Classification A Slope 3-6 Percent Limiting Factor 17 Depth 17 Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: MANSON Hydric Non-hydric Hydrologic Soil Group C/D

Exploration Symbol: TP15 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Texture	Consistency	Color	Mottling
0			
0-1		gray yellowish brown	
1-6	friable	olive brown	none observed or expected
6-12		olive brown	
12-18			
18-24			
24-30			
30-36			
36-42			
42-48			

soil data by S.E. → Soil Profile L Classification A Slope 3-6 Percent Limiting Factor 19 Depth 19 Groundwater Restrictive Layer Bedrock

soil data by S.S. → Soil series/phase name: MANSON Hydric Non-hydric Hydrologic Soil Group C/D

Exploration Symbol: TP16 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Texture	Consistency	Color	Mottling
0			
0-6		gray yellowish brown	
6-12	friable	olive brown	none observed or expected
12-18			
18-24			
24-30			
30-36			
36-42			
42-48			

soil data by S.E. → Soil Profile L Classification A Slope 3-6 Percent Limiting Factor 14 Depth 14 Groundwater Restrictive Layer Bedrock

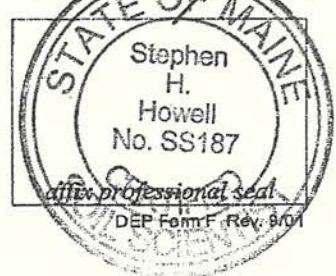
soil data by S.S. → Soil series/phase name: MANSON Hydric Non-hydric Hydrologic Soil Group C/D

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: _____ Date: 9/22/05

Name Printed/typed: STEPHEN H. HOWELL Cert./Lic./Reg.# 187

Title: Licensed Site Evaluator Certified Soil Scientist
 Certified Geologist Other:



SOIL PROFILE / CLASSIFICATION INFORMATION **DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name: Hog Island Applicant Name: Bruce Phillips Project Location (municipality): Attuan Twp.

Exploration Symbol: TP17 Test Pit Boring
2 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	<u>extremely stony</u>		<u>gray yellowish brown</u>	
6	<u>gravelly sst</u>	<u>friable</u>	<u>olive brown</u>	<u>none observed or expected</u>
12				
18				
24				
30				
36				
42				
48				

soil data by S.E. >> Soil Profile: 1 Classification: A Slope: 0-3 Limiting Factor: 16 Groundwater Restrictive Layer Bedrock

soil data by S.S. >> Soil series/phase name: Mowson Hydric Non-hydric Hydrologic Soil Group: Upl

Exploration Symbol: _____ Test Pit Boring
 _____ " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

soil data by S.E. >> Soil Profile: _____ Classification: _____ Slope: _____ Limiting Factor: _____ Groundwater Restrictive Layer Bedrock

soil data by S.S. >> Soil series/phase name: _____ Hydric Non-hydric Hydrologic Soil Group: _____

Exploration Symbol: _____ Test Pit Boring
 _____ " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

soil data by S.E. >> Soil Profile: _____ Classification: _____ Slope: _____ Limiting Factor: _____ Groundwater Restrictive Layer Bedrock

soil data by S.S. >> Soil series/phase name: _____ Hydric Non-hydric Hydrologic Soil Group: _____

Exploration Symbol: _____ Test Pit Boring
 _____ " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

soil data by S.E. >> Soil Profile: _____ Classification: _____ Slope: _____ Limiting Factor: _____ Groundwater Restrictive Layer Bedrock

soil data by S.S. >> Soil series/phase name: _____ Hydric Non-hydric Hydrologic Soil Group: _____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [Signature] Date: 9/22/05

Name Printed/typed: STEPHEN H. HOWELL Cert/Lic/Reg. #: 187

Title: Licensed Site Evaluator Certified Soil Scientist Certified Geologist Other:



APPENDIX E

APPENDIX E

Glossary

SOIL ERODIBILITY FACTOR (K)

The soil erodibility factor (K) is a measure of the susceptibility of a soil to particle detachment and transport by rainfall. It is a quantitative value, experimentally determined. Values of K range from 0.02 to 0.69. The higher the value the more susceptible the soil to sheet and rill erosion by water. In the table below, K factors are assigned to each surface textural phase of all soil series in the survey area. The major subhorizons that would be exposed by cutting or scalping are listed below the existing surface phase for each series.

Soil properties that influence rainfall erosion are: (1) those that affect infiltration rate, movement of water through the soil, and the water storage capacity; and (2) those that affect dispersion, detachability, abrasion, and mobility of soil particles by rainfall and runoff. Some of the most important properties are texture and organic matter content of the exposed soil layer, size and stability of structural aggregates in the exposed permeability of the subsoil, and depth to slowly permeable layers. Antecedent soil moisture and presence of frozen soil also influence rainfall erosion.

SOIL CONSISTENCE

Soil consistence refers to "attributes of soil material as expressed in degree of cohesion and adhesion or in resistance to deformation or rupture" (USDA). Consistence includes resistance of soil material to rupture, resistance to penetration, plasticity, toughness, and stickiness of puddled soil material, and the manner in which the soil material behaves when subject to compression (USDA).

HYDROLOGIC SOIL GROUPS

A hydrologic soil group is a class of soils having the same runoff potential under similar storm and vegetative cover conditions. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to seasonally high water table, intake rate, permeability after prolonged wetting, and depth to a very slowly permeable layer. The influence of ground cover is treated independently (not in hydrologic soil groups). The soils in the U.S. are placed into four groups: A, B, C, and D. In the following definitions of the groups, infiltration rate is the rate at which water enters into the soil at the surface and is controlled by surface conditions. Transmission

rate is the rate at which water moves within the soil and is controlled by the inherent properties of each horizon.

A. (Low runoff potential) Soils in this class have high infiltration rates even when thoroughly wetted and consist chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.

B. (Moderately low runoff potential) Soils in this group have moderate infiltration rates when thoroughly wetted. They consist primarily of moderately deep to deep, moderately well drained to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

C. (Moderately low runoff potential) Soils in this class have slow infiltration rates when thoroughly wetted. They consist mainly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine textures. These soils have a slow rate of water transmission.

D. (High runoff potential) Soils in this class have very slow infiltration rates when thoroughly wetted. They consist primarily of clays oils with a high shrink/swell potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

USDA TEXTURE

USDA texture refers to the U.S. Department of Agriculture's soil texture classification. Soil texture is the relative proportions by weight, of the several soil particle size classes finer than 2 mm in equivalent diameter. The material finer than 2 mm is called the fine earth fraction. Material larger than 2 mm is called the rock fragments.

Soil texture influences both engineering works and plant growth. Soil texture has a strong influence on soil mechanics and the behavior of soil when it is used as a construction or foundations material. It influences such properties as bearing strength, compressibility, permeability, shrink/sell potential, and compaction. Rock fragments also affect construction applications.

Soil texture influences plant growth by its influence on aeration, water intake rate, available water capacity, cation exchange capacity, permeability and workability.

Soil Texture Modifiers

The texture classes may be modified by the addition of suitable adjectives when rock fragments exceed about 15 percent by volume (for example, gravelly loam). The terms "very" and "extremely" are used when rock fragments exceed about 35 and 60 percent by volume respectively. "Mucky" and "peaty" are terms used to modify soils when the organic matter content is more than 40 percent (for example, mucky loam).

Terms Used in Lieu of Textures

Organic materials, materials coarser than 2 mm, or materials that limit root penetration are used in a way similar to texture terms. Examples are fibric material, sand and gravel, and unweathered bedrock.

DEPTH TO CLASSES	
Very Shallow	Less than 10 inches
Shallow	10 to 20 inches
Moderately Deep	20 to 40 inches
Deep	40 to 60 inches
Very Deep	Greater than 60 inches

DRAINAGE CLASSES

Drainage Class refers to the frequency and duration of periods of saturation or particle saturation. Seven classes of soil drainage are recognized:

Excessively drained - Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some have steep slopes. All are free of mottling related to wetness.

Somewhat excessively drained - Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of mottling related to wetness.

Well drained - Water is removed from the soil readily, but not rapidly. It is not available to plants throughout most of the growing season. Wetness does not

inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained - Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive.

Somewhat poorly drained - Water is removed slowly enough that the soil is wet for significant periods during the growing season. Somewhat poorly drained soils commonly have slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained - Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. The soil is not continuously saturated in layers below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained - Water is removed from these soils so slowly that free water remains at or on the surface during most of the growing season. They are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate of high slope gradients.

PERMEABILITY

Permeability is the quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.20 to 0.60 inch
Moderately	0.6 to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

SURFACE RUNOFF

Surface runoff is the water that flows away from the soil over the surface without infiltrating. The water may come from precipitation or run-on from adjacent areas. The rate and amount of runoff are determined by internal and external characteristics of the soil and by climate and plant cover. Runoff can be significantly different on a soil under natural cover, under cultivation, and under different kinds of management. Differences in runoff can also be caused by difference in topography and rainfall density. Soils usually have a high rate of runoff when frozen.

Six classes of runoff rates are recognized:

Ponded - Little or none of the precipitation and run-on escapes as runoff. Free water stands on the surface for significant periods of time. The amount of water that must be removed from ponded areas by percolation into and through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs on level to nearly level soils in depressions or concave positions of the microrelief. Water depth may fluctuate greatly.

Very slow - Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. These soils are commonly level to nearly level or are very open and porous.

Slow - Surface water flows away slowly enough that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils are nearly level to gently sloping, or they are steeper and absorb precipitation very rapidly.

Medium - Surface water flows away fast enough that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils are nearly level to gently sloping and absorb precipitation at a moderate rate, or they are steeper and absorb water rapidly.

Rapidly - Surface water flows away fast enough that the period of concentration is brief and free water does not stand on the surface. Only small portion of the

water enters the soil. The soils are mainly moderately steep or steep and have moderate to slow rates of absorption.

Very rapidly - Surface water flows away so fast that the period of concentration is brief and free water does not stand on the surface. Only a small portion of the water enters the soil. The soils are mainly steep or very steep and absorb precipitation slowly.

ADDITIONAL TERMS

Complex - A map unit that consists of areas of two or more kinds of soils that are in a consistently repeating pattern so intricate that the two components cannot be delineated separately at the scale of mapping selected.

Flooding - Flooding is the temporary covering of soil surface by flowing water from any source, such as streams overflowing their banks, runoff from adjacent or surrounding slopes, inflow from high tides, or any combination of sources. Shallow water, standing or flowing during or shortly after rain or snowmelt is excluded from the definition of flooding. Standing water (see ponding) or water that forms a permanent cover is excluded from the definition.

Flooding hazard is expressed by frequency classes, duration classes, and time of year flooding occurs. Also important are velocity and depth of floodwater.

Map Unit - A collection of soil areas delineated during mapping. It is generally an aggregate of several different bodies of a soil type and named for the principal components.

Ponding - Ponding is standing water in a closed depression. The water is removed only by percolation, transpiration, or evaporation.

Soil Slope - The slope of the soil surface has several distinct properties: gradient, complexity, configuration, length, and aspect. In soil science, slope is considered a property of the soil, not a landform like a ridge or a valley side.

Stoniness - See table of surface phase names and stoniness class attached.

SURFACE PHASE CLASSIFICATION OF SOILS HAVING STONES AND BOULDERS		
Stoniness Class	Phase Name	Surface Covered (%)
0	Nonstony	Less than 0.01
1	Stony or bouldery 1/	0.01-0.1
2	Very stony or very bouldery 1/	0.1-3.0
3	Extremely stony or extremely bouldery 1/	3.0-15
4	Rubbly 1/	15-75
5	Rubble land 2/	More than 75

1/ The term "bouldery" is used if boulders dominate stones as a limiting factor for use even though stones may occupy a greater proportion of the surface

2/ Areas that stony are treated as the kind of miscellaneous area, "rubble land."

F:\Personnel\SHH\glossary & methodology.doc

APPENDIX F

APPENDIX F

Methodology

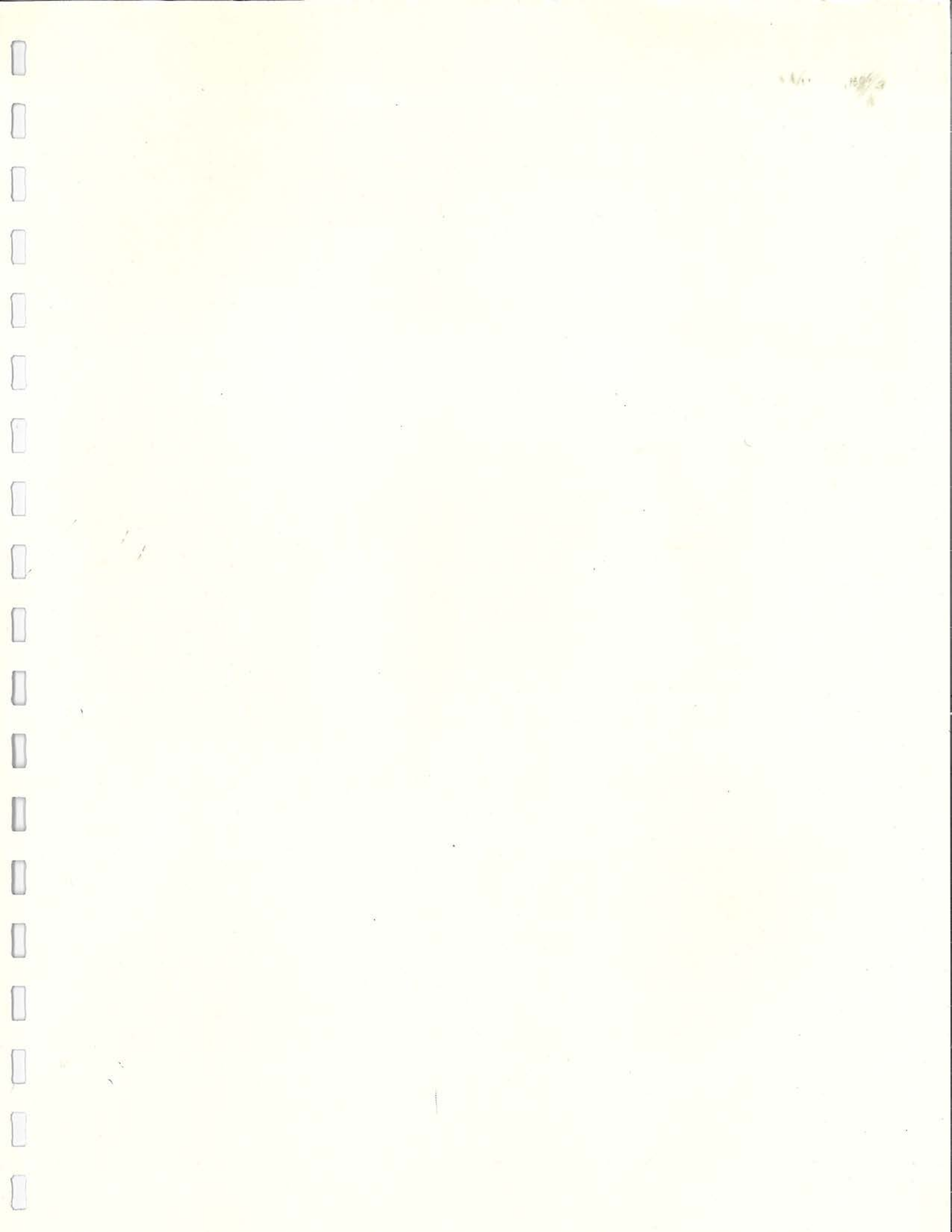
F.1 - A description of the guidelines and methods that we utilized during this project follows below.

F.1.1 Guidelines For Conducting Soil Surveys - Our investigation was performed generally following the Maine Association Of Professional Soil Scientists (MAPSS) publication entitled Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping (February 2004). We used criteria for documenting very poorly drained and poorly drained soils (hydric soils) that were described in the New England Interstate Water Pollution Control Commission publication entitled Field Indicators for Identifying Hydric Soils in New England, Version 3 (2004). We examined exposed soil profiles for horizon development, color, depth of redoximorphic features (mottling), texture, coarse fragment content, root abundance, consistence, structure, depth of saturation, and other pertinent soil characteristics as observed. We examined surficial features such as rock outcrop, stoniness, and groundwater seepage when observed. Soil interpretations for the proposed use under the Use and Management section of each mapping unit description are based on the Maine Department of Environmental Protection Rules for Land Application of Sludges and Residuals, Chapter 567. This document was published by the Bureau of Hazardous Materials and Solid Waste Control, State House Station #17, Augusta, Maine on January 4, 1994.

F.1.2 Class B - High Intensity Soil Survey - The scale for Class B - High Intensity soil survey must be 1" = 200' or larger. Inclusions in a Class B - High Intensity Survey, as defined by MAPSS "...will not contain dissimilar limiting inclusions larger than 1 acre " [per mapping unit, but] "may total more than 1 acre per map unit delineation, in the aggregate, if not contiguous." Our mapping delineated dissimilar soils at a ½ acre minimum delineation size. This means that each mapping unit, as illustrated on the accompanying soils map, may include soils other than those for which the mapping unit was named.

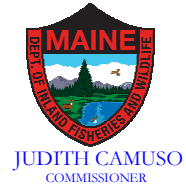
F.1.3 Explanation for Map Unit Symbols - Each map unit symbol consists of three letters (Ex: LeB). The first two letters represents the soil that exists within the area delineated on the map (e.g., Le = Lamoine silt loam). The third letter in the map unit

symbol represents a phase, which is usually the surface slope of the soil (e.g., B = 1-5 percent slopes). Phases are also based on texture, stoniness, drainage, depth to bedrock, or similar characteristics that may affect the use and management of that soil. Each map unit having the same symbol essentially delineates the same soil type and phase. The soils within an area enclosed by a map unit boundary will have a minimum of 75 percent of the named soil(s), or similar soil, for that map unit.





STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041



April 10, 2023

Ms. Stacy Benjamin
Maine Department of Agriculture, Conservation & Forestry
Land Use Planning Commission
22 State House Station
Augusta, Maine 04333

RE: Attean Twp and Dennistown Plt Concept Plan, Resource Protection Subdistrict Replacement Zoning

Dear Stacy,

At the request of the Maine LUPC, received on March 9, 2023, MDIFW has reviewed the proposal for replacement zoning following expiration of the Attean Twp and Dennistown Plt Concept Plan and Resource Protection Subdistrict (ZP 532-F / P-RP 007). It is our understanding that the expiration of the Attean Twp and Dennistown Plt Plan, which covers approximately 17,060 acres, will not affect permanent conservation measures or uses that currently exist. With elimination of the concept plan, LUPC proposes to establish / reestablish zoning for Residential Development (D-RS); General Management (M-GN); and Protection subdistricts for Great Pond Protection (P-GP), Accessible Lake Protection (P-AL), Recreation Protection (P-RR), Soils and Geology Protection (P-SG), Shoreland Protection (P-SL2), and Wetland Protection (P-WL 1,2,3).

MDIFW encourages practices that avoid, minimize, and mitigate adverse impacts to fisheries, wildlife, and critical habitat resources to the greatest extent practicable. Accordingly, MDIFW provides recommendations specific to known species and habitat occurrences, as well as general measures designed to provide appropriate protections for natural resources. For this review, we have consulted current MDIFW data sources and maps for known locations of State Endangered, Threatened, and Special Concern (Rare) species and habitats; designated Essential and Significant Wildlife Habitats; critical fisheries and aquatic resources; and other Protected Natural Resources concerns, within the vicinity of the proposed action.

1. Endangered, Threatened, and Special Concern (ETSC) Species and Habitats.

The Maine Endangered Species Act (MESA; 12 M.R.S, §12801 et. seq.) identifies all inland fish and wildlife species that are listed as Endangered or Threatened in Maine and provides the Commissioner of MDIFW with the authority to implement MESA. Pursuant to MESA, listed species are afforded protection against activities that may cause “take” (kill or cause death), “harassment” (create injury or significantly disrupt normal behavior patterns), and other adverse actions. Further, the No Adverse Environmental Effect Standard of the Site Location Law (06-096, CMR 375) provides for the preservation of “*unusually important wildlife habitats, particularly those of rare or endangered species*”, as well as protection of “*wildlife and fisheries by maintaining suitable and sufficient habitat*” and avoiding adverse effects on “*wildlife and fisheries lifecycles*”. Rare or “Special Concern” species are defined by MDIFW as species that do not meet the criteria as Endangered or Threatened, but are particularly vulnerable and could easily become Endangered, Threatened, or Extirpated due to restricted distribution, low or declining numbers, specialized habitat needs or limits, or other factors.

Bats – Of the eight species of bats that occur in Maine, the three *Myotis* species are protected under MESA. The three *Myotis* species include little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are listed as Special Concern - Rare: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat. Tri-colored bats are currently proposed for listing as State Threatened. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence, it is likely that several of these species occur within the project area during the fall/spring migration, the summer breeding season, and/or for overwintering. However, our agency does not anticipate significant impacts to any of the bat species as a result of this rezoning proposal itself.

For future project proposals following this rezoning effort, we recommend contacting MDIFW, as well as the U.S. Fish and Wildlife Service--Maine Fish and Wildlife Complex (Wende Mahaney, Wende_Mahaney@fws.gov, 207-902-1569) for further guidance on their perspective, as the northern long-eared bat is also listed as a Threatened Species under the Federal Endangered Species Act. Proposed changes in the federal listing statuses for the Northern long-eared bat, tri-colored bat, and little brown bat are currently being reviewed.

Talus Slopes/Rocky Features – In addition to traditional hibernacula like caves and old mines, recent findings indicate that *Myotis* and big brown bats may also overwinter in exposed rocky features, between rocks, cracks, and crevices in talus slopes, rocky outcrops, and cliff faces. Some species of bat, like the eastern small-footed bat, use rocky features year-round. To date, Maine talus and rocky outcrop studies have focused on relatively exposed slopes with minimal canopy cover, although ongoing research has shown that bats use rocky areas under the forest canopy. The attached map shows known cliff and talus areas however, this does not represent a complete inventory of such features and there is no specific value assumed for the features that are shown. Features that are determined to provide valuable habitat for bats should be appropriately buffered commensurate with the size and layout of the project.

Wood Turtles - Our review indicates six documented occurrences of wood turtles (Special Concern - Rare) within the area covered by this proposal. Wood turtles use both aquatic and terrestrial habitats throughout the year, centered around a stream or river, including riparian meadows, shrub thickets, farmland, deciduous and mixed forests, forested wetlands, and floodplain vernal pools. Generally, this species appears to prefer edge-associated terrestrial habitats, as riparian areas, forest gaps and edges often have dense shrubbery or ground cover for protection, food, and open areas for basking. When this species is documented in the vicinity of a proposed project, and high-quality examples of these habitats are present in the project area, MDIFW may recommend that a detailed assessment of potential habitat for wood turtles be conducted on and in close proximity to the project parcel. In most cases, MDIFW recommends that streams with documented use by wood turtles be left undisturbed and buffered by at least 300 feet of natural vegetation. In cases where forest clearing or forest management is anticipated as part of the project proposal, please refer to Forest Management Recommendations for the Wood Turtle (*Glyptemys insculpta*).

Dragonflies - Our review indicates two documented occurrences of the Quebec emerald dragonfly (Special Concern - Rare) within the area covered by this proposal. The Quebec emerald's primary habitat consists of large peatlands/patterned fens with areas of saturated sphagnum moss, sedges, and scattered, shallow pools. Intensive disturbance in the shoreland zone has the potential to affect peatland hydrology and riparian habitat for this species. In most cases, MDIFW recommends that peatlands hosting documented populations be left undisturbed and buffered by at least 250-feet of natural vegetation. For forest management activities, MDIFW recommends a 250-foot wide management zone with no disturbance within the first 100 feet of the upland / peatland ecosystem boundary and minimal activity from 100 feet to 250 feet in order to maintain a 60-70% canopy cover in an evenly distributed stand. MDIFW recommends that existing impacted riparian areas be reestablished to the above noted conditions.

2. Essential Habitats.

Essential Habitats are designated as such based on physical or biological features deemed essential to the conservation of Endangered or Threatened species. MDIFW has not mapped any Essential Habitats (12 M.R.S., §12804.2) that would be directly affected by the proposed project. Essential Habitats are currently only designated for three Endangered coastal breeding bird species.

3. Significant Wildlife Habitats.

Significant Wildlife Habitats (SWHs) are defined and protected pursuant to the Natural Resources Protection Act (38 M.R.S., §480-B.10) and SWH Rules (06-096 CMR 335; 09-137 CMR 10). Subject to the requirements of the Rules, SWHs include habitats for state and federal endangered and threatened animal species; high and moderate value deer wintering areas and travel corridors; seabird nesting islands; critical Atlantic salmon spawning and nursery areas; significant vernal pool habitat; high and moderate value waterfowl and wading bird habitat; and shorebird nesting, feeding, and staging areas.

Deer wintering areas (DWAs) - Our review indicates three mapped DWAs (1 DWA, 2 P-FW DWAs) on parcels immediately bordering the area covered by this proposal. Their positions suggest that additional unmapped habitats may be present in the vicinity. DWAs contain habitat cover components that provide conditions for protection from deep snow and cold wind, which is important for overwinter survival of white-tailed deer. DWA Travel Corridors contain similar habitat qualities and provide the means for DWA ingress and egress. MDIFW generally recommends that development projects be designed to avoid impacts to the continued availability of coniferous winter shelter within important DWAs and Travel Corridors. Any removal of vegetation should be conducted in such a way that improves the quality and vigor of the coniferous species providing this winter shelter. Areas of conforming softwood cover are important to deer as critical wintering habitat.

Inland Waterfowl Wading Bird Habitat (IWWH) – Our review indicates thirteen mapped IWWHs within the area covered by this proposal. Four additional IWWHs are indicated however, further examination is necessary before they should be considered. IWWHs provide important breeding, feeding, migration, staging, and wintering habitat for waterfowl and wading bird species. IWWHs include both the wetland complex and a 250-foot upland zone. MDIFW generally recommends that these resources be avoided entirely, including no clearing within the 250-foot upland zone extending from the wetland edge. As with other resources, we recommend that impacts be avoided and minimized to the extent practicable and that remaining impacts be appropriately mitigated.

Significant Vernal Pools (SVPs) - SVPs are not included on MDIFW maps until project areas have been surveyed using approved methods and the survey results confirmed. Thus, their absence from resource maps are not necessarily indicative of an absence on the ground. Vernal pools are shallow depressions that usually contain water for only part of the year and typically dry out by mid to late summer. Despite their relatively short hydroperiod, vernal pools serve as unique breeding habitat for certain species of wildlife, including specialized amphibians and invertebrates. The regulatory “significance” of vernal pools and their associated buffers (Critical Terrestrial Habitats or CTHs) is dependent upon several factors, including the use by state ETSC Species or the presence and productivity of certain pool-breeding amphibians. MDIFW typically recommends Best Management Practices for forestry (available from MDIFW or the Maine Forest Service) and minimum development impacts within the 250-foot wide Critical Terrestrial Habitat bordering an SVP, where possible. It should be noted, a comprehensive statewide inventory for SVPs has not been conducted. And, since vernal pools dry out on a seasonal basis, they can be missed during dry conditions. Therefore, for future proposed activities, we recommend that surveys for vernal pools be conducted by qualified wetland scientists prior to final project design to determine whether there are SVPs present in the project area.

4. Protected Natural Resources.

Protected Natural Resources (PNRs) are defined and protected by the Natural Resources Protection Act (38 M.R.S., §480-B.8). PNRs include coastal sand dune systems; coastal wetlands; significant wildlife habitats; fragile mountain areas; freshwater wetlands; great ponds; rivers, streams, and brooks. Some of these resources are specifically managed by MDIFW based on the presence of, and unique habitat value for, certain species of fish or wildlife.

Aquatic and Riparian Habitat - Our review indicates two Maine Heritage Fish Waters (brook trout) within the area covered by this proposal and one Wild Lake Trout Habitat (Little Big Wood Pond) on the periphery. MDIFW notes that these are non-regulatory designations and that additional aquatic resources are present within the area covered by this proposal. MDIFW generally recommends maintaining 100-foot undisturbed vegetated buffers from the upland edge of all intermittent and perennial streams and any contiguous wetlands. Maintaining and enhancing buffers along these resources is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support fish and other aquatic species. Riparian buffers also provide critical habitat and important travel corridors for a variety of wildlife species. Project related alterations within the recommended buffer are considered as impacts to be avoided or minimized to the extent practicable and, if reasonable, appropriately mitigated. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide for full aquatic passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis. Undersized crossings may inhibit these functions and become a frequent maintenance problem that causes reoccurring damage to the resource. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e., natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in providing habitat connectivity for fish and other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils can travel significant distances as well as transport other pollutants resulting in direct impacts to fish, other aquatic life, and their habitats. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

Freshwater Wetlands - Freshwater wetlands are valuable natural resources that serve important functions to help preserve, protect, and enhance adjacent aquatic and terrestrial habitats, as well as provide important habitats themselves for a high diversity of fish and wildlife species. Pursuant to the Natural Resource Protection Act's Wetlands and Waterbodies Protection Rules (06-096 CMR Ch. 310), certain wetlands are designated as Wetlands of Special Significance in part or entirety, and afforded additional protections based on their characteristics. MDIFW recommends that wetland impacts be avoided or minimized to the maximum extent practicable, and remaining reasonable impacts be appropriately mitigated.

It should be noted that there is no comprehensive statewide inventory that includes all species and habitats of concern, particularly related to ETSC species and SVPs. Though many important resources are included on data layers and resource maps, the completeness of such varies by habitat type, location, and previous survey efforts. Thus, such tools should be considered preliminary information until otherwise noted by the appropriate resource agency. Resource surveys, project siting, facility design/layout, and operational practices are all important aspects in this process. MDIFW provides recommendations based on known, reported, and potential resource information but, it is the applicant's ultimate responsibility to ensure that its activities do not result in detrimental impacts to resources.

Upon review of the information provided and the known and mapped resources in the vicinity, it appears that the zoning proposed to be established / reestablished along with related regulatory processes for any future development activities are likely to provide for adequate and appropriate protections for these resources.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area, nor should it be considered as adequate review for any specific development proposal. Prior to the start of any future site disturbance, we recommend additional consultation with state resource agencies including MDIFW and the Maine Natural Areas Program, as well as state environmental regulatory authorities, in order to avoid unintended impacts to important resources. This review provided a general analysis of known, mapped resources in the area as well as information on select common habitats for consideration in the effort to establish / reestablish appropriate zoning in Attean Twp and Dennistown Plt. In the future, if development activities are proposed in the vicinity, we recommend that more in-depth resource reviews be conducted. At which time, species and habitat-specific recommendations may be provided.

If you have any questions or concerns related to any of this information, including requests for guidance or recommended survey protocols for resources described, please feel free to contact me at robert.d.stratton@maine.gov or (207) 287-5659. Thank you very much.

Sincerely,

A handwritten signature in black ink that reads "Bob Stratton" with a small "IFW" written below the name.

Robert D. Stratton
Environmental Program Manager
Maine Department of Inland Fisheries & Wildlife

cc: Doug Kane, Scott McLellan, Tim Obrey, Jeff Bagley, John Perry (MDIFW)

encl: MDIFW Habitat Resource Map



JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
LAND USE PLANNING COMMISSION
22 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0022

AMANDA E. BEAL
COMMISSIONER

STACIE R. BEYER
EXECUTIVE DIRECTOR

RECEIVED

APR 11 2023

LUPC - AUGUSTA

Memorandum

To: LUPC Commissioners
From: LUPC Staff
Date: April 10, 2023
Re: Comments on ZP 532-F regarding designation of a P-SL1 subdistrict on the Moose River

Background Information

On March 8, 2023, the Land Use Planning Commission (LUPC or the Commission) voted to post the staff-initiated petition to rezone the lands included in the expiring Concept Plan for Lands of Lowell & Company Timber Associates in Attean Township and Dennistown Plantation to a 30-day public comment period. Staff developed draft zoning maps for the posting based on existing conditions, conversations with landowners and other State agencies, and current Commission rules. Original zoning maps were also used in identifying pre-Concept Plan zoning designations. The draft maps are dated 3/2/2023.

Proposed Change

During the 30-day written comment period, staff identified that the Moose River corridor in the southwestern corner of the Concept Plan area was erroneously designated on the draft map dated 3/2/2023 as Shoreland Protection Subdistrict 2 (P-SL2). This segment of the river meets the requirements for a Shoreland Protection Subdistrict 1 (P-SL1). P-SL1 subdistricts include areas within 250 feet of the normal high-water mark of flowing waters downstream from the point where such waters drain 50 square miles or more.

The staff recommend that the P-SL Subdistrict designation be corrected on the draft map considered by the Commission for adoption at its May meeting.