

**TOWN GRAY**  
**PLANNING BOARD**  
**AGENDA • NOVEMBER 12, 2020**

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**Planning Board  
Regular Meeting**

**Henry Pennell Municipal Complex**  
**24 Main Street**  
**Gray, ME 04039**

**8:00 PM**

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**I. MEETING COMMENCES**

Roll Call

**II. MINUTES APPROVAL**

Planning Board - Regular Meeting - October 8, 2020 7:00 PM

**III. INFORMATION EXCHANGE**

**IV. PUBLIC HEARING - IF&W Amendment to Site Plan**

a.

A request by Maine Department of Inland Fisheries and Wildlife for an Amendment to a previously approved (9-8-2016) Site Plan by the construction of a new ticket booth/gift shop building at the Maine Wildlife Park located off Shaker Road at 56 Game Farm Road as shown on Tax Map 9, Lot 16-2 in both Rural Residential & Agricultural and Stream Protection (Shoreland) Zoning Districts.

**V. ADJOURNMENT**

*\* The Town of Gray is an equal opportunity employer and complies with all applicable equal access to public accommodations law. If you are planning to attend a Town Council or Town committee or board meeting and need assistance with a physical disability, please contact the Town Manager's office at least 48 hours in advance of the meeting to have the Town assist you. 657-3339. TTY 657-3931.*

**MAINE DEPARTMENT OF INLAND FISH AND  
WILDLIFE**

**TOWN OF GRAY, MAINE  
SITE PLAN AMENDMENT APPLICATION**

**PREPARED FOR:  
MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE  
15 GAME FARM ROAD  
GRAY, MAINE 04333**

**PREPARED BY:  
ATLANTIC RESOURCE CONSULTANTS  
541 US ROUTE ONE, SUITE 21  
FREEPORT, MAINE 04032  
207.869.9050**

**October 2020**





**PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION  
TOWN OF GRAY MAINE**

PROPERTY TO BE DEVELOPED			
Property Location/Address	15 Game Farm Road	Property Map/Lot	009 .016 .002 .000
Zoning District	Rural Residential and Agricultural	Lot Acreage	193.91
Owner Name	Maine Department of Inland Fish and Wildlife	Tax Sheet	
Owner Address	41 State House Station, Augusta, ME 04333	Owner Phone	207-592-2207

APPLICANT			
Name (IF different than owner)		Contact Phone Number	
Mailing Address		Alternate Phone Number	
Mailing City/State/Zip		Fax Number	
Email Address			

AGENT/CONSULTANT			
Name	Charlie Burnham	Contact Phone Number	207 712 6990
Mailing Address	541 US Route One, Suite 21	Alternate Phone Number	
Mailing City/State/Zip	Freeport, Maine, 04032	Fax Number	
Email Address	charlie@arc-maine.com		

**PROJECT**

The undersigned requests that the Town of Gray Planning Board consider the following application for:

- |   |   |
|---|---|
| <input type="checkbox"/> <b>Subdivision</b><br>Sketch Plan Review<br>Preliminary Plan Review (Major)<br>Final Plan Review (Major)<br>Minor<br><br><input type="checkbox"/> <b>Site Plan Review</b><br>Pre-Application Conference<br>Minor<br>Major<br><br><input type="checkbox"/> <b>Shoreland Zoning Permit</b> | <input type="checkbox"/> <b>Other (specify)</b><br>Conditional Use<br><input checked="" type="checkbox"/> Amendment<br>Extension<br>Workshop<br>Contract Zone Request |
|---|---|

**Project Description / Comments:**

The project consists of a new gift shop and ticketing booth and associated site improvements.

The new structure is approximately 3100 sf and will be located bit behind the current ticketing area (set back into a park a bit). The project will also involve relocating one of the picnic area structures.

Applicant Signature 	Date 6/26/2020
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# SITE PLAN REVIEW CHECKLIST TOWN OF GRAY MAINE

For Office Use Only  
Date Received: KT  
Received by: 10/26/2020

## APPLICANT/PROJECT

Name	Maine Department of Inland Fish and Wildlife	Date	10/26/2020
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This checklist has been prepared to assist applicants in developing their applications. It should be used as a guide in assembling the information necessary for a complete application. The checklist, however, does not substitute for the requirements of Article 10 of the Zoning Ordinance. The Planning Board will also use the checklist to ensure your application is complete. Indicate if the information has been submitted or if a waiver is requested. If you feel that information is not applicable to your project, please indicate in the second column. The perimeter survey, subdivision plan and engineering plans may be contained on the same drawing. Detailed engineering drawings such as road profiles, drainage swales and erosion/sedimentation plans, however, may best be presented on a separate sheet or sheets. **This checklist does not address the standards that the site plan must meet.**

## SITE PLAN REVIEW SUBMISSION REQUIREMENTS

	Submitted by Applicant	Not Applicable	Applicant Request to be Waived	Reviewed by Planner/Engineer	Waived by Planning Board
<b>402.10.10.A SITE INVENTORY PLAN</b>					
A.1 Owner name(s), address(es), phone number(s)	✓				
A.2 Consultant name(s) & address(es)	✓				
A.3 Evidence of right, title, or interest in property	✓				
A.4 Fourteen (14) copies of accurate scale inventory plan showing:	✓				
a. The name of the development, north arrow, date and scale.	✓				
b. The boundaries of the parcel and existing zoning.	✓				
c. The relationship of the site to the surrounding area .	✓				
d. The topography of the site at an appropriate contour interval depending on the nature of the use and character of the site.	✓				
e. The major natural features of the site and within five hundred (500) feet of the site, including wetlands, streams, ponds, floodplains, groundwater aquifers, significant wildlife habitats and fisheries or other important natural features (if none, so state).	✓				
f. Existing buildings, structures, or other improvements on the site (if none, so state).	✓				
g. Existing restrictions or easements on the site (if none, so state).	✓				
h. The location and size of existing utilities or improvements servicing the site (if none, so state).		✓			
i. Mapping of all wetlands and/or potential vernal pools on site regardless of size.	✓				
j. A Class B high intensity soil survey if any portion of the site is located in a resource protection district or has wetlands covering more than ten (10%) percent of the site.		✓			
k. A Class D medium intensity soil survey if vernal pools and/or significant wetlands are not present.		✓			

<b>402.10.10.B SITE ANALYSIS PLAN</b>				
<b>B.1</b> Fourteen (14) copies of a site analysis plan identifying:	✓			
a. Portions of the site that are unsuitable for development or use;		✓		
b. Portions of the site that are unsuitable for on- site sewage disposal;		✓		
c. Areas of the site that have environmental limitations that must be addressed in the development plan;		✓		
d. Areas that may be subject to off-site conflicts or concerns; and which areas are well suited to the proposed use.		✓		
<b>B.2</b> Fourteen (14) copies of site description narrative	✓			
<b>B.3</b> Submission requirement waiver requests, if any		✓		
<b>402.10.10.C APPLICATION SUBMISSION REQUIREMENTS</b>				
<b>C.1</b> Signed/Executed Application	✓			
<b>C.2</b> Evidence of payment of the application fee and technical review escrow.	✓			
<b>C.3</b> Fourteen (14) copies of written materials and maps/drawings	✓			
<b>C.4</b> Report/Maps/Drawings: General Information	✓			
a. Owner contact information	✓			
b. Setback, yard, and buffer locations		✓		
c. Abutter contact information	✓			
d. Map: general site location	✓			
e. Contiguous property boundaries	✓			
f. Map/Lot Number	✓			
g. Deed/proof of ownership/interest in property	✓			
h. Plan preparer name, registration #, seal	✓			
i. Evidence of technical & financial means	✓			
<b>C.5</b> Reports/Maps/Drawings: Existing Conditions				
a. Zoning Classification	✓			
b. Property lines bearings & length		✓		
c. Location of utilities (water, sewer, electric, etc.)	✓			
d. Street name(s), location(s), width(s)	✓			
e. Building location(s), dimensions, and photo(s)	✓			
f. Driveway location(s), dimensions	✓			
g. Location of intersecting roads/driveways	✓			
h. Location of important or unique natural site features	✓			
i. Direction of surface water drainage	✓			
j. Sign location(s), front view(s), dimensions		✓		
k. Easement location, dimensions, documents		✓		

I. Fire hydrant or fire protection water supply location		✓			
<b>C.6 Reports/Maps/Drawings: Proposed Development</b>					
a. Water/Sewage estimated demands/provisions		✓			
b. Direction of proposed surface water drainage	✓				
c. Solid waste disposal provisions	✓				
d. Driveway/parking plans/provisions	✓				
e. Proposed landscaping & buffering	✓				
f. Proposed building/building expansion plans	✓				
g. Proposed sign plans		✓			
h. Proposed exterior lighting	✓				
i. Location of utilities & fire protection systems	✓				
j. General description of proposed use/activity	✓				
k. Traffic estimates		✓			
l. Stormwater, erosion & sedimentation control, and water quality management provisions	✓				
<b>C.7 Reports/Maps/Drawings: Site Plan</b>	✓				
<b>402.10.10.D ADDITIONAL REQUIREMENTS FOR MAJOR DEVELOPMENTS</b>					
<b>D.1</b> Proposed development narrative	✓				
<b>D.2</b> Grading plan	✓				
<b>D.3</b> Stormwater drainage & erosion control program	✓				
<b>D.4</b> Groundwater impact analysis		✓			
<b>D.5</b> Plan preparer name/registration number/seal	✓				
<b>D.6</b> Utility plan	✓				
<b>D.7</b> Planting schedule	✓				
<b>D.8</b> Traffic impact analysis		✓			
<b>D.9</b> Gray Water District statement of supply adequacy		✓			
<b>D.10</b> Estimated cost of development/proof of financial capacity	✓				
<b>402.10.10.E WAIVER OF SUBMISSION REQUIREMENTS [WRITE IN WAIVER REQUESTS]</b>					

## DEVELOPMENT DESCRIPTION

### Project Summary

Maine Department of Inland Fisheries and Wildlife is proposing minor amendments to the previously approved development plan for the Maine Wildlife Park in Gray, Maine. The changes to the previously approved plan include:

- Reconfiguration/ relocation of the Ticket Booth and Gift Shop

### Existing Conditions and Site History

The Maine Department of Inland Fisheries and Wildlife (Applicant) received approval of an "After the Fact" Site Location of Development Permit (ATF SLODA) in September 2016 under Department Order # L-27044-26-A-N.

The previously approved application included the implementation of strategically located stormwater best management practice devices in order to satisfactorily address the treatment requirements for historical and current development across the entire project site. The proposal was shown to meet the standards required by State of Maine Chapter 500 Stormwater Law.

After receipt of the permit from the Department and the required local approvals, construction was started on the improvements, and much of the work has been completed.

### Proposed Project

The proposed project includes the construction of a new ticket/gift shop building. The project will have no impact on the traffic generation, water use, or wastewater generation of the property.

## Site Plan Review Requirements

**Water/Sewage Estimated:** The project will not increase the water overall water demand for the site. The building is a replacement of an existing building with similar facilities. Water will be provided from an existing on site well. The sewage will be sent to a new septic tank and leach field (HHE 200 sheet is attached).

**Solid Waste Disposal Provisions:** There are no proposed changes to the solid waste disposal, or generation of solid waste.

**Traffic Analysis:** The proposed project will not generate any additional trips and will therefore not impact off site traffic.

**Cost Estimate and Financial Capacity:** The construction costs are approximately \$700,000. A financial capacity letter will be prepared as part of the final application.

**Stormwater:** The proposed site improvements are in areas that are mostly developed or lightly wooded. Infiltration drip filters are proposed on the edge of the new buildings and proposed parking. The onsite soils are highly conductive (Type A). The drip filters have been sized to exfiltrate the runoff leaving the new impervious areas.

## Attachments

Attachment 1 – Site Location Figure

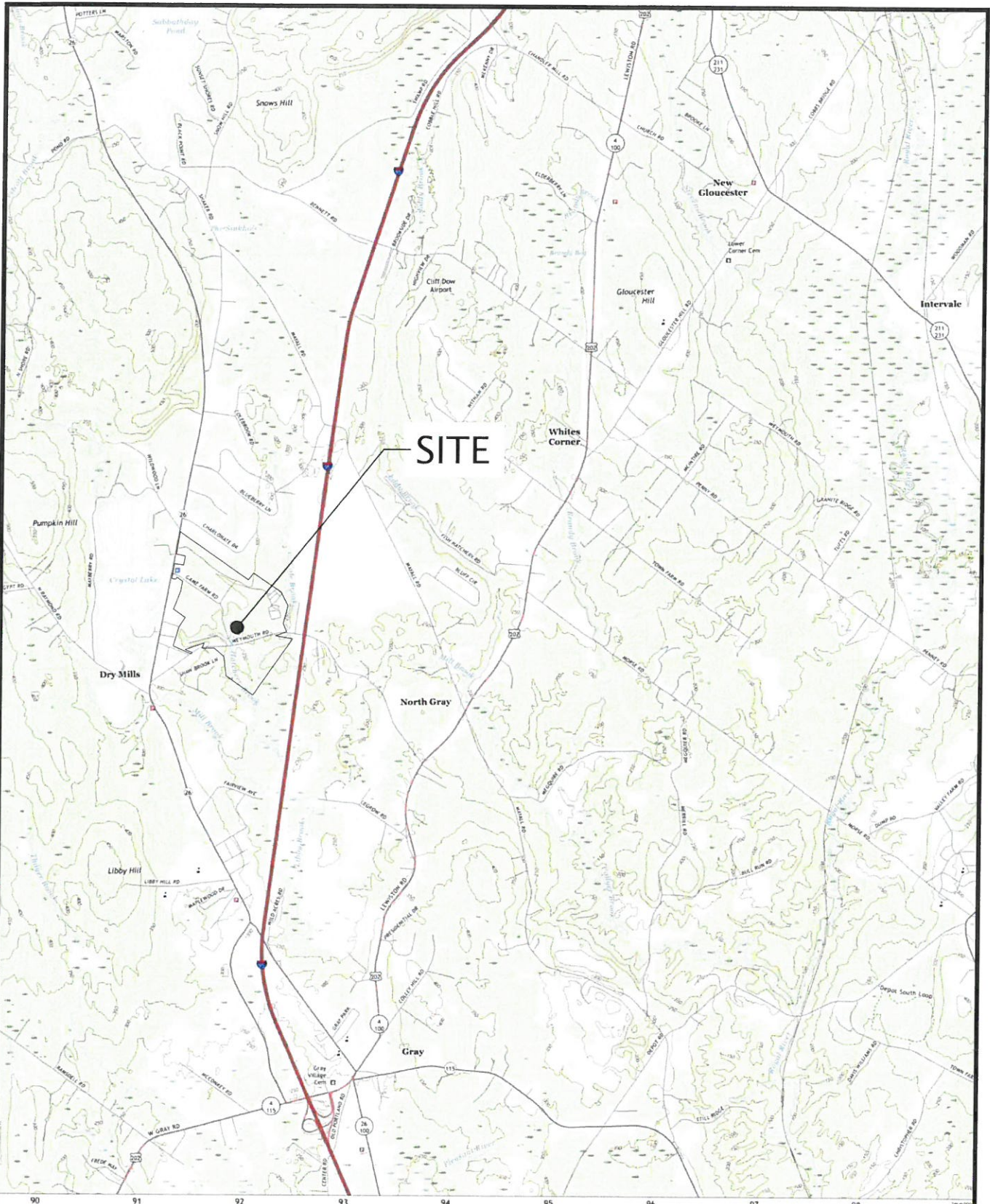
Attachment 2 – Deed

Attachment 3 – Stormwater Management Report

Attachment 4 – .....

ATTACHMENT 1

S:\20-025 Maine Wildlife Park SSA\Drawings\20-025 USGS.dwg grange engineering 8/24/2020 11:24 AM



MAINE DEPARTMENT OF INLAND  
FISH & WILDLIFE  
GRAY, MAINE 04333

SITE LOCATION MAP  
TAX MAP: 9 LOT 16-2



DRAWN: CB	DATE: AUGUST 2020
DESIGNED: CB	SCALE: N/A
CHECKED:	JOB NO. 20-025
FILE NAME: 20-025 USGS	

FIGURE  
**1**

ATTACHMENT 2

# Know all Men by these Presents, That

The Canal National Bank of Portland, a national banking corporation organized and existing under the laws of the United States of America and having an established place of business in Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration paid by the State of Maine, a body corporate and politic,

the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said State of Maine, its successors heirs and assigns forever, a certain lot or parcel of land situated in Gray, in the County of Cumberland and State of Maine, being the northeasterly half of Lot numbered five (5) in the fourth division of lots in said Gray, containing fifty-three and one-half (53½) acres, more or less, and being the former homestead farm of the late Joseph Frank and being the same property conveyed to the late Charles O. Ray by Henry Pennell by his deed dated July 31, 1880, and recorded in Cumberland County Registry of Deeds in Book 471, Page 40, excepting and reserving, however, such portions of the same as have been heretofore sold by the late Charles E. Ray, son and sole heir-at-law of the late Charles O. Ray by two certain deeds, the one, a certain deed from Charles E. Ray to James L. Gibson dated May 23, 1923, and recorded in said Cumberland County Registry of Deeds in Book 1143, Page 340, the other, a certain deed from said Charles E. Ray et al to Dwinal Verrill dated October 29, 1912, and recorded in said Cumberland County Registry of Deeds in Book 913, Page 64.

The title of The Canal National Bank of Portland to the above described premises was acquired by virtue of the foreclosure of a certain mortgage given by the said late Charles E. Ray to The Canal National Bank of Portland dated April 17, 1933, and recorded in Cumberland County Registry of Deeds in Book 1396, Page 191, which mortgage was foreclosed by Notice of Foreclosure dated June 4, 1937, and recorded in said Cumberland County Registry of Deeds in Book 1532, Page 68.

--- To have and in hold the same, together with all the privileges and appurtenances thereunto belonging, to the said State of Maine, its successors ~~heirs~~ and assigns forever.

And it does covenant with the said grantee, its successors heirs and assigns, that it will warrant and forever defend the premises to it the said grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons claiming by, through or under it.

In Witness Whereof, the said The Canal National Bank of Portland has caused its corporate name to be signed and its corporate seal to be hereto affixed by Philip I. Milliken, its Cashier thereunto duly authorized,

have hereunto set hand and seal this nineteenth day of October in the year of our Lord one thousand nine hundred and thirty-eight.

Signed, Sealed and Delivered in presence of

Shirley R. Emery

THE CANAL NATIONAL BANK OF PORTLAND  
CORPORATE SEAL  
By Philip I. Milliken, its Cashier.

State of Maine, Cumberland, ss. October 19, 1938.

Personally appeared the above named Philip I. Milliken, Cashier of said The Canal National Bank of Portland as aforesaid and acknowledged the above instrument to be his free act and deed in his said capacity and the free act and deed of said The Canal National Bank of Portland.

Approved as to Form  
October 25, 1938  
Sanford L. Fogg, Deputy Attorney General  
BEFORE ME, P. E. Mitchell, Notary Public,  
Notarial Seal.

RECEIVED October 28, 1938, at 9 o'clock - m. A. M., and recorded according to the original.

# Know all Men by these Presents, That

I, Roland H. Cobb, Commissioner, Department of Inland Fisheries and Game,  
By authority contained in Council Order #21, Dated January 19, 1955,

in consideration of One Dollar and other valuable considerations paid by State of Maine,  
Forestry Department

the receipt whereof I do hereby acknowledge, do hereby remise, release, bargain, sell and convey, and forever  
quit-claim unto the said State of Maine, Forestry Department, its successors and Assigns

forever, the following described land in the Town of Gray, Cumberland County, State  
of Maine:

Starting at a white oak tree, 18" diameter, South of the Maine Forest Service  
storehouse, and standing in the East line of the right-of-way of Route 26, in the  
Town of Gray; thence SE 300 feet to a cedar post; thence NE 300 feet to a cedar post;  
thence NW 300 feet to a cedar post in the east line of Route 26; thence SW 305 feet  
along the east line of Route 26 to the point of beginning.

Meaning and intending to convey a portion of the fish hatchery property maintained  
by the Department of Inland Fisheries and Game.

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to it  
the said State of Maine, Forestry Department, its successors and Assigns forever.

~~And~~ ~~covenant with the said~~  
~~heirs and assigns, that~~ ~~will warrant and~~ ~~defend the premises to~~ ~~the said~~  
~~heirs and assigns forever, against the lawful claims and demands of all persons claiming by, through or under~~

In Witness Whereof, I the said Roland H. Cobb, Commissioner, Department of Inland  
Fisheries and Game relinquishing and conveying rights in the above described  
premises

have hereunto set my hand and seal this 8th day of July in the  
year of our Lord one thousand nine hundred and fifty-five.

Signed, Sealed and Delivered in presence of

Louise M. Lynch

Roland H. Cobb Seal  
Commissioner, Department of Inland Fisheries  
and Game

Kennebec) SS.

State of Maine, Cumberland) SS. -- July 8, 1955.  
the above named Roland H. Cobb, Commissioner, Department of Inland Fisheries and Game, Personally appeared

and acknowledged the above instrument to be his free act and deed in accordance  
with Council Order #21, Dated January 19, 1955. Before me, James G. Frost  
Justice of the Peace August 12, 1955, at 9 o'clock - m. A. M., and recorded according to the original.

ATTACHMENT 3

## **STORMWATER MANAGEMENT REPORT**

**MDIFW**  
**Gray, MAINE**  
**October 2020**

### **INTRODUCTION**

The proposed project is the expansion/redevelopment of the Maine Wildlife Park in Gray, Maine. There will be a new 3,300 square foot building to replace the existing Visitor Center and Ticket Area.

The project will create an additional 4,000 square feet of impervious area, including the new buildings paths and additional employee parking. Most of the proposed improvements are in areas that are currently developed.

Stormwater was designed to mitigate any increase to peak flows as a result of the additional impervious area.

### **EXISTING SITE CONDITIONS**

The existing site is a combination of woodlands, gravel, parking, and buildings. The entire area drains down to swale leaving the site to the south.

The Medium Intensity Soil Survey (see Attachment B), as provided by the NRCS has the site consisting of Hinckley Loamy Sands (Hydrologic Soils Type A).

Site drainage boundaries and limits were derived from survey contour data as well as LIDAR topography. Contour data and existing conditions have been field verified by the design engineer.

### **PROPOSED SITE CONDITIONS**

Proposed site alterations include a new visitor center with a ticket booth attached. This building is going to be built as part of Phase 1. An additional building has been proposed as part of Phase 2 that will serve as office space for the MDIFW. All the new impervious areas are accounted for as part of this application.

### **WATER QUANTITY**

Stormwater Quantity consideration has been provided by the implementation of several roofline drip filters. The drip filters will provide for the infiltration of runoff for the 25-year rain event. The soils in the are highly conductive. A summary of pre and post development flows has been provided in the table below:

Analysis Point	Pre	Post	Pre	Post	Pre	Post
	2 Year (cfs)	2 Year (cfs)	10 Year (cfs)	10 Year (cfs)	25 Year (cfs)	25 Year (cfs)
AP-1	0.90	0.92	3.90	3.90	7.16	7.15

All construction will be in accordance with the most current Maine Erosion and Sedimentation Control Best Management Practices. These measures include temporary and permanent seeding, sediment barriers, and stabilized construction entrance. These measures are described on the enclosed Drawing C-300, "Erosion & Sedimentation Control Notes & Details."

**CONCLUSIONS**

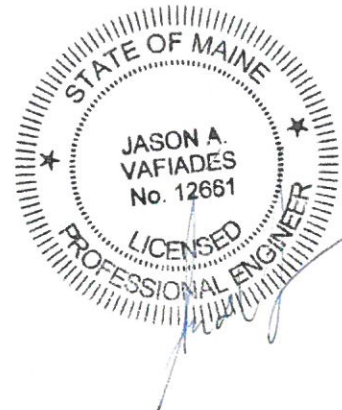
This project will use long-term and short-term erosion control measures that will mitigate environmental impacts from stormwater, including addressing the Town of Standish Subdivision Ordinances. This project will not have any adverse impacts on downstream properties because of stormwater.

**ATTACHMENTS**

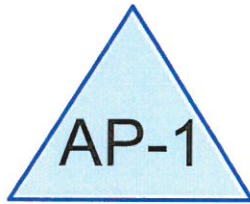
- Attachment A – Hydrologic Modeling
- Attachment B – NRCS Medium Intensity Soil Survey
- Attachment C – Pre and Post Development Drainage Plans

**ATLANTIC RESOURCE CONSULTANTS**

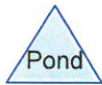
Jason A. Vafiades, PE LEED AP



ATTACHMENT A



Wetland



**Routing Diagram for Pre Developed**  
Prepared by Full Version, Printed 10/26/2020  
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**Pre Developed**

Prepared by Full Version

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Page 2

**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
2.640	96	Gravel surface, HSG A (SC-10)
0.551	98	Impervious (SC-10)
4.075	30	Woods, Good, HSG A (SC-10)
<b>7.265</b>	<b>59</b>	<b>TOTAL AREA</b>

**Pre Developed**

Prepared by Full Version

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Page 3

**Ground Covers (all nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
2.640	0.000	0.000	0.000	0.000	2.640	Gravel surface	SC-10
0.000	0.000	0.000	0.000	0.551	0.551	Impervious	SC-10
4.075	0.000	0.000	0.000	0.000	4.075	Woods, Good	SC-10
<b>6.714</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.551</b>	<b>7.265</b>	<b>TOTAL AREA</b>	

**Pre Developed**

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Type III 24-hr 2-Year Rainfall=3.10"

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Page 4

**Summary for Subcatchment SC-10:**

Runoff = 0.90 cfs @ 12.67 hrs, Volume= 0.204 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
177,488	30	Woods, Good, HSG A
114,989	96	Gravel surface, HSG A
* 24,003	98	Impervious
316,480	59	Weighted Average
292,477		92.42% Pervious Area
24,003		7.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.5	555	0.0810	1.42		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
34.4	655	Total			

**Summary for Pond AP-1: Wetland**

Inflow Area = 7.265 ac, 7.58% Impervious, Inflow Depth = 0.34" for 2-Year event  
Inflow = 0.90 cfs @ 12.67 hrs, Volume= 0.204 af  
Primary = 0.90 cfs @ 12.67 hrs, Volume= 0.204 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

**Pre Developed**

Type III 24-hr 10-Year Rainfall=4.60"

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Page 5

**Summary for Subcatchment SC-10:**

Runoff = 3.90 cfs @ 12.56 hrs, Volume= 0.614 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
177,488	30	Woods, Good, HSG A
114,989	96	Gravel surface, HSG A
* 24,003	98	Impervious
316,480	59	Weighted Average
292,477		92.42% Pervious Area
24,003		7.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.5	555	0.0810	1.42		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
34.4	655	Total			

**Summary for Pond AP-1: Wetland**

Inflow Area = 7.265 ac, 7.58% Impervious, Inflow Depth = 1.01" for 10-Year event  
Inflow = 3.90 cfs @ 12.56 hrs, Volume= 0.614 af  
Primary = 3.90 cfs @ 12.56 hrs, Volume= 0.614 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

**Pre Developed**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 6

**Summary for Subcatchment SC-10:**

Runoff = 7.16 cfs @ 12.53 hrs, Volume= 1.037 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
177,488	30	Woods, Good, HSG A
114,989	96	Gravel surface, HSG A
* 24,003	98	Impervious
316,480	59	Weighted Average
292,477		92.42% Pervious Area
24,003		7.58% Impervious Area

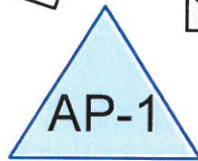
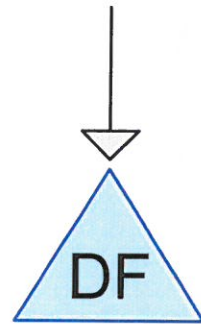
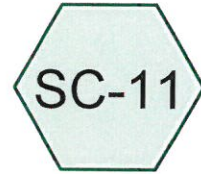
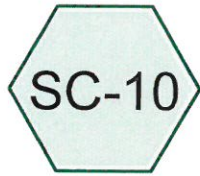
  

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.5	555	0.0810	1.42		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
34.4	655	Total			

**Summary for Pond AP-1: Wetland**

Inflow Area = 7.265 ac, 7.58% Impervious, Inflow Depth = 1.71" for 25-Year event  
Inflow = 7.16 cfs @ 12.53 hrs, Volume= 1.037 af  
Primary = 7.16 cfs @ 12.53 hrs, Volume= 1.037 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs



Wetland

Dripline Filters



**Routing Diagram for Developed**  
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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
2.565	96	Gravel surface, HSG A (SC-10)
0.551	98	Impervious (SC-10)
0.115	98	New Buildings and Parking (SC-11)
4.035	30	Woods, Good, HSG A (SC-10)
<b>7.265</b>	<b>60</b>	<b>TOTAL AREA</b>

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**Ground Covers (all nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
2.565	0.000	0.000	0.000	0.000	2.565	Gravel surface	SC-10
0.000	0.000	0.000	0.000	0.551	0.551	Impervious	SC-10
0.000	0.000	0.000	0.000	0.115	0.115	New Buildings and Parking	SC-11
4.035	0.000	0.000	0.000	0.000	4.035	Woods, Good	SC-10
<b>6.600</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.666</b>	<b>7.265</b>	<b>TOTAL AREA</b>	

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Type III 24-hr 2-Year Rainfall=3.10"

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**Summary for Subcatchment SC-10:**

Runoff = 0.88 cfs @ 12.67 hrs, Volume= 0.201 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
175,768	30	Woods, Good, HSG A
111,721	96	Gravel surface, HSG A
* 23,983	98	Impervious
311,472	59	Weighted Average
287,489		92.30% Pervious Area
23,983		7.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.5	555	0.0800	1.41		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
34.4	655	Total			

**Summary for Subcatchment SC-11:**

Runoff = 0.36 cfs @ 12.07 hrs, Volume= 0.027 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 5,008	98	New Buildings and Parking
5,008		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

**Summary for Pond AP-1: Wetland**

Inflow Area = 7.265 ac, 9.16% Impervious, Inflow Depth = 0.37" for 2-Year event  
 Inflow = 0.92 cfs @ 12.66 hrs, Volume= 0.226 af  
 Primary = 0.92 cfs @ 12.66 hrs, Volume= 0.226 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

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Type III 24-hr 2-Year Rainfall=3.10"

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**Summary for Pond DF: Dripline Filters**

Inflow Area = 0.115 ac, 100.00% Impervious, Inflow Depth = 2.87" for 2-Year event  
 Inflow = 0.36 cfs @ 12.07 hrs, Volume= 0.027 af  
 Outflow = 0.36 cfs @ 12.07 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.03 cfs @ 12.07 hrs, Volume= 0.003 af  
 Primary = 0.32 cfs @ 12.07 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
 Peak Elev= 305.00' @ 12.07 hrs Surf.Area= 1,040 sf Storage= 2 cf

Plug-Flow detention time= 0.1 min calculated for 0.027 af (100% of inflow)  
 Center-of-Mass det. time= 0.1 min ( 756.2 - 756.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	305.00'	1,872 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 3,120 cf Overall x 60.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
305.00	1,040	0	0
308.00	1,040	3,120	3,120

Device	Routing	Invert	Outlet Devices
#1	Discarded	305.00'	<b>14.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 100.00'
#2	Primary	305.00'	<b>260.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.34 cfs @ 12.07 hrs HW=305.00' (Free Discharge)  
 ↑1=Exfiltration ( Controls 0.34 cfs)

**Primary OutFlow** Max=0.10 cfs @ 12.07 hrs HW=305.00' (Free Discharge)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.10 cfs @ 0.13 fps)

**Developed**

Type III 24-hr 10-Year Rainfall=4.60"

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**Summary for Subcatchment SC-10:**

Runoff = 3.84 cfs @ 12.56 hrs, Volume= 0.604 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
175,768	30	Woods, Good, HSG A
111,721	96	Gravel surface, HSG A
* 23,983	98	Impervious
311,472	59	Weighted Average
287,489		92.30% Pervious Area
23,983		7.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.5	555	0.0800	1.41		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
34.4	655	Total			

**Summary for Subcatchment SC-11:**

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 5,008	98	New Buildings and Parking
5,008		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

**Summary for Pond AP-1: Wetland**

Inflow Area = 7.265 ac, 9.16% Impervious, Inflow Depth = 1.06" for 10-Year event  
 Inflow = 3.90 cfs @ 12.55 hrs, Volume= 0.642 af  
 Primary = 3.90 cfs @ 12.55 hrs, Volume= 0.642 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

**Developed**

Type III 24-hr 10-Year Rainfall=4.60"

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**Summary for Pond DF: Dripline Filters**

Inflow Area = 0.115 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event  
 Inflow = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af  
 Outflow = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.05 cfs @ 12.07 hrs, Volume= 0.004 af  
 Primary = 0.48 cfs @ 12.07 hrs, Volume= 0.038 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
 Peak Elev= 305.00' @ 12.07 hrs Surf.Area= 1,040 sf Storage= 3 cf

Plug-Flow detention time= 0.1 min calculated for 0.042 af (100% of inflow)  
 Center-of-Mass det. time= 0.1 min ( 748.6 - 748.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	305.00'	1,872 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 3,120 cf Overall x 60.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
305.00	1,040	0	0
308.00	1,040	3,120	3,120

Device	Routing	Invert	Outlet Devices
#1	Discarded	305.00'	<b>14.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 100.00'
#2	Primary	305.00'	<b>260.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.34 cfs @ 12.07 hrs HW=305.00' (Free Discharge)  
 ↑ **1=Exfiltration** ( Controls 0.34 cfs)

**Primary OutFlow** Max=0.19 cfs @ 12.07 hrs HW=305.00' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.19 cfs @ 0.16 fps)

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Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment SC-10:**

Runoff = 7.05 cfs @ 12.53 hrs, Volume= 1.020 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
175,768	30	Woods, Good, HSG A
111,721	96	Gravel surface, HSG A
* 23,983	98	Impervious
311,472	59	Weighted Average
287,489		92.30% Pervious Area
23,983		7.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.5	555	0.0800	1.41		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
34.4	655	Total			

**Summary for Subcatchment SC-11:**

Runoff = 0.67 cfs @ 12.07 hrs, Volume= 0.053 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 5,008	98	New Buildings and Parking
5,008		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

**Summary for Pond AP-1: Wetland**

Inflow Area = 7.265 ac, 9.16% Impervious, Inflow Depth = 1.76" for 25-Year event  
 Inflow = 7.15 cfs @ 12.51 hrs, Volume= 1.068 af  
 Primary = 7.15 cfs @ 12.51 hrs, Volume= 1.068 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

**Developed**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Pond DF: Dripline Filters**

Inflow Area = 0.115 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event  
 Inflow = 0.67 cfs @ 12.07 hrs, Volume= 0.053 af  
 Outflow = 0.67 cfs @ 12.07 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.06 cfs @ 12.07 hrs, Volume= 0.005 af  
 Primary = 0.61 cfs @ 12.07 hrs, Volume= 0.048 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
 Peak Elev= 305.01' @ 12.07 hrs Surf.Area= 1,040 sf Storage= 4 cf

Plug-Flow detention time= 0.1 min calculated for 0.053 af (100% of inflow)  
 Center-of-Mass det. time= 0.1 min ( 744.8 - 744.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	305.00'	1,872 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 3,120 cf Overall x 60.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
305.00	1,040	0	0
308.00	1,040	3,120	3,120

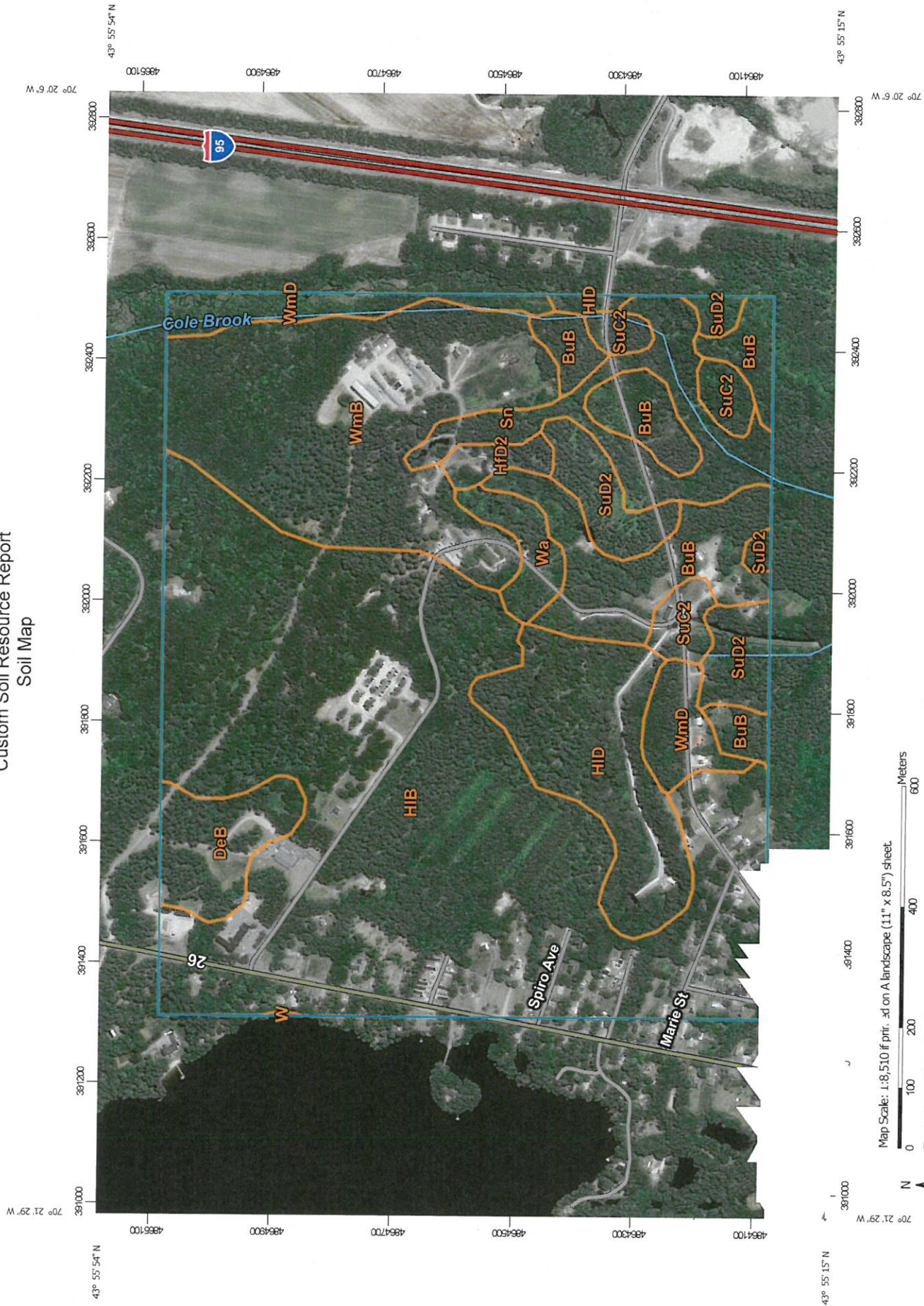
Device	Routing	Invert	Outlet Devices
#1	Discarded	305.00'	<b>14.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 100.00'
#2	Primary	305.00'	<b>260.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.34 cfs @ 12.07 hrs HW=305.01' (Free Discharge)  
 ↑ **1=Exfiltration** ( Controls 0.34 cfs)

**Primary OutFlow** Max=0.26 cfs @ 12.07 hrs HW=305.01' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.26 cfs @ 0.18 fps)

ATTACHMENT B

Custom Soil Resource Report  
Soil Map



Map Scale: 1:8,510 if print on A landscape (11" x 8.5") sheet  
 Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

### MAP LEGEND

- Area of Interest (AOI)**
  - Area of Interest (AOI)
- Soils**
  - Soil Map Unit Polygons
  - Soil Map Unit Lines
  - Soil Map Unit Points
- Special Point Features**
  - Blowout
  - Borrow Pit
  - Clay Spot
  - Closed Depression
  - Gravel Pit
  - Gravelly Spot
  - Landfill
  - Lava Flow
  - Marsh or swamp
  - Mine or Quarry
  - Miscellaneous Water
  - Perennial Water
  - Rock Outcrop
  - Saline Spot
  - Sandy Spot
  - Severely Eroded Spot
  - Sinkhole
  - Slide or Slip
  - Sodic Spot
- Water Features**
  - Streams and Canals
- Transportation**
  - Rails
  - Interstate Highways
  - US Routes
  - Major Roads
  - Local Roads
- Background**
  - Aerial Photography
- Spill Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine  
 Survey Area Data: Version 17, Jun 5, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 7, 2019—Jul 2, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BuB	Lamoine silt loam, 3 to 8 percent slopes	27.3	9.1%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	9.3	3.1%
HfD2	Hartland very fine sandy loam, 15 to 25 percent slopes, eroded	2.5	0.8%
HIB	Hinckley loamy sand, 3 to 8 percent slopes	138.3	46.2%
HID	Hinckley loamy sand, 15 to 25 percent slopes	23.9	8.0%
Sn	Scantic silt loam, 0 to 3 percent slopes	14.8	5.0%
SuC2	Suffield silt loam, 8 to 15 percent slopes, eroded	6.6	2.2%
SuD2	Suffield silt loam, 15 to 25 percent slopes, eroded	12.2	4.1%
W	Water	0.1	0.0%
Wa	Walpole fine sandy loam	4.6	1.5%
WmB	Windsor loamy sand, 0 to 8 percent slopes	48.3	16.1%
WmD	Windsor loamy sand, 15 to 35 percent slopes	11.4	3.8%
<b>Totals for Area of Interest</b>		<b>299.3</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

## Custom Soil Resource Report

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion

## Custom Soil Resource Report

of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* B

*Hydric soil rating:* No

### Minor Components

#### Melrose

*Percent of map unit:* 7 percent

*Landform:* Lakebeds

*Landform position (two-dimensional):* Foothlope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Buxton

*Percent of map unit:* 5 percent

*Landform:* Lakebeds

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Riser

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Hartland, slopes <15%

*Percent of map unit:* 2 percent

*Landform:* Lakebeds

*Landform position (two-dimensional):* Foothlope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Hartland, slopes >25%

*Percent of map unit:* 1 percent

*Landform:* Lakebeds

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Riser

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

## HIB—Hinckley loamy sand, 3 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 2svm8

*Elevation:* 0 to 1,430 feet

*Mean annual precipitation:* 36 to 53 inches

## Custom Soil Resource Report

*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 250 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Hinckley and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Hinckley

#### Setting

*Landform:* Outwash terraces, outwash deltas, outwash plains, eskers, moraines, kame terraces, kames  
*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope  
*Landform position (three-dimensional):* Nose slope, side slope, base slope, crest, riser, tread  
*Down-slope shape:* Linear, convex, concave  
*Across-slope shape:* Convex, linear, concave  
*Parent material:* Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

#### Typical profile

*Oe - 0 to 1 inches:* moderately decomposed plant material  
*A - 1 to 8 inches:* loamy sand  
*Bw1 - 8 to 11 inches:* gravelly loamy sand  
*Bw2 - 11 to 16 inches:* gravelly loamy sand  
*BC - 16 to 19 inches:* very gravelly loamy sand  
*C - 19 to 65 inches:* very gravelly sand

#### Properties and qualities

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Excessively drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (1.42 to 99.90 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Available water capacity:* Very low (about 3.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3s  
*Hydrologic Soil Group:* A  
*Ecological site:* F144AY022MA - Dry Outwash  
*Hydric soil rating:* No

### Minor Components

#### Windsor

*Percent of map unit:* 8 percent  
*Landform:* Moraines, outwash terraces, outwash deltas, kame terraces, outwash plains, kames, eskers  
*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope

## Custom Soil Resource Report

*Landform position (three-dimensional):* Nose slope, side slope, base slope, crest, riser, tread

*Down-slope shape:* Linear, convex, concave

*Across-slope shape:* Convex, linear, concave

*Hydric soil rating:* No

### **Sudbury**

*Percent of map unit:* 5 percent

*Landform:* Outwash terraces, outwash deltas, kame terraces, outwash plains, moraines

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Side slope, base slope, head slope, tread

*Down-slope shape:* Concave, linear

*Across-slope shape:* Linear, concave

*Hydric soil rating:* No

### **Agawam**

*Percent of map unit:* 2 percent

*Landform:* Moraines, outwash terraces, outwash deltas, kame terraces, outwash plains, kames, eskers

*Landform position (two-dimensional):* Summit, shoulder, backslope, footslope

*Landform position (three-dimensional):* Nose slope, side slope, base slope, crest, riser, tread

*Down-slope shape:* Linear, convex, concave

*Across-slope shape:* Convex, linear, concave

*Hydric soil rating:* No

## **HID—Hinckley loamy sand, 15 to 25 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2svmc

*Elevation:* 0 to 1,460 feet

*Mean annual precipitation:* 36 to 71 inches

*Mean annual air temperature:* 39 to 55 degrees F

*Frost-free period:* 140 to 240 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Hinckley and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Hinckley**

#### **Setting**

*Landform:* Outwash terraces, outwash deltas, kame terraces, kames, outwash plains, eskers, moraines

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Nose slope, side slope, crest, head slope, riser

ATTACHMENT C (See Plan Set)

ATTACHMENT 4



Phase 1 Aerial View in Campus



Phase 1 Entry Elevation Upon Entry



**Future Phases Courtyard Aerial**



**Future Phases Aerial View of Campus**