Application Packet for SammCo Holdings LLC

SammCo Condos
Pond Road
Bowdoinham, Me

Prepared by:
Steve Roberge
SJR Engineering Inc.
16 Thurston Drive
Monmouth, Maine 04259
Tel/Fax: 1-207-242-6248

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June 6, 2024

Yvette Meunier
Director of Planning and Development
Bowdoinham Planning Board
13 School Street,
Bowdoinham, Maine 04008

SJR ENGINEERING, INC.
STEVE@SJRENG.COM. 16 THURSTON DRIVE, MONMOUTH, ME. TEL: (207) 242-6248

Re: Site Plan for SammCo Holdings LLC

Dear Yvette and Board Members,

On behalf of SammCo Holdings, LLC, we are pleased to submit this site plan application to you for Planning Board review and approval. SammCo Holdings LLC is proposing to construct 14 residential units in two buildings with associated parking facilities along the intersection of Routes 138/125 in Bowdoinham. We believe this application package conforms to the provisions of the Land Use ordinance and other ordinances and regulations of the Town of Bowdoinham. It is our hope this project and accompanying application materials comply with the Towns Comprehensive plan, Waterfront plan, and Transportation Vision statement.

The parcel is located on Tax Map U07, Lot 005 and has 7.24 acres of land. The land has been previously surveyed and updated by William Coombs PLS on February 26, 2020 A copy of the recorded survey is included in this application that depicts the bearings and distances for the parcel. The parcel lies within the Village Two District Zone.

A Fall 2024 operation startup date is planned once approvals for the project have been obtained. The project needs approvals from the Town of Bowdoinham, and a Stormwater Permit from the State of Maine.

The proposed driveway entrance has adequate sight distance in both directions along Route 125 and provides a solid foundation for vehicular traffic movement.

We have attached building elevations and floor plans for the two proposed buildings. Each of the 14 units will be constructed generally identical with one another. The units will have living space on the ground floor and bedrooms in the upper level.

The existing site is undeveloped with a mixture of conifer and deciduous trees. The new buildings will utilize underground electricity, cable communications, telephone, and public water from the public road. The sewer connection from will flow to a common pump station and be pumped to two septic disposal systems in the woods. Mark Censi Associates site evaluator has determined the location of the new disposal areas and provided HHE 200 forms included with this submittal. The buildings will utilize heat pumps for heating/cooling each unit. A common dumpster will be utilized for trash and be contracted to Riverside Disposal. The material will be taken to a licensed disposal facility currently under contract with Riverside Disposal.

The proposed paved access allows for easy access to each building and provides for safe off-road access for emergency services/fire equipment. An existing fire hydrant is located at the corner of the lot. A divider strip of land between the entrance access and parking area for Building 1 has been created for the purposes of providing landscaping to shield views from the road It is possible to site a common mailbox area for the entire project in this location.

While significant earthwork improvements will be necessary for the construction of the project, the Owner is considering constructing the project in Phases. All disturbed areas not covered with pavement, landscaping, or buildings are to be loamed and seeded with a vegetative grass, and mulched. As construction progresses, different forms of erosion control may be necessary, and should be employed by the Contractor according to DEP's latest edition of "Best Management Practices".

A wetlands delineation of the parcel has been performed by Jones Associates in April of 2020. The wetland delineation has been depicted on the attached plans. No vernal pools have been found on the parcel.

We have attached an extensive stormwater narrative and analysis of the development parcel with this application. In summary, existing stormwater flows

from this parcel flow into a 24" concrete culvert under Route 125. In the proposed condition, stormwater flows in the developed area are redirected into 2 soil filter/detention ponds. When these flows combine with upslope undisturbed flows, the peak flow rate at the 24" culvert crossing is reduced.

We have attached an erosion control narrative that is to be utilized by the Contractor and eventually by the Owner once the project is constructed. Appropriate erosion control devices are shown on the topographic site plan.

New lighting will be utilized to provide visual security in the parking area and provide a safe access to/from the building. Lighting installed would be attached to the building and be full cutoff design (ie downcast) to prevent offsite glare to abutting properties. Parking lot lighting will be similar downcast lighting. It is the intent of the Owner that the illumination would be of low intensity that does not draw attention to the building, provides security, yet allows for safe access to/from the building to parked vehicles.

From a visual impact point of view, we have shown a new landscaping area along the frontage of the parcel to enhance the aesthetics of the project and soften the view of the buildings and parking lot area from abutters. Most of the site will utilize existing wooded areas for development buffers and screening. Landscaping plants (providing year round screening) will be chosen by the Owner at the time of construction. The intent is to create a landscaping buffer separating this parcel from the view of Route 125 traffic.

One of the aesthetic features of the project includes a walking path in the undeveloped portion of the site that loops back onto itself. The path is wholly on the parcel and is 1800' long. It will be constructed 4' wide and utilize bark mulch media for its surface.

Noise levels will be minimal as the project is a residential complex. Most noise will be generated by construction equipment during the construction of the units.

There is one proposed sign at the entrance driveway location that will be the identifier of the SammCo Holdings project.

We are not aware of any historical or archaeological significance to the parcel. We are not aware of any mapped habitat (see "Beginning with Habitat" printouts) for 1) endangered or threatened species; 2) high and moderate value waterfowl habitat including nesting and feeding areas; and 3) high or moderate value deer wintering area. We do not believe the parcel falls within an area identified by the Maine Natural Areas Program.

The residential construction for the project does not fall within the Hazardous, Special & Radioactive materials standards. Bulk storage of flammable or explosive liquids, solids, or gases will not be stored at this site.

We do not expect any undue odors will impact abutting neighbors or the public with this project. Similarly, the Owner does not anticipate any water quality issues associated with the facility.

The Owner expects minimal traffic to be generated at this location. Based on this information, peak hour and daily traffic will be minimal (10 trips/unit daily).

We have prepared an estimated cost of $3,000,000 for the proposed improvements to the parcel. The attached letter from the Norway Bank indicates SammCo Holdings LLC has adequate capital to cover the proposed improvement costs.

SammCo Holdings, LLC has retained SJR Engineering to assist with the permitting and technical aspects of the project. They have over 30 years in the development of various site projects.

As part of the General Performance Standards, we request appropriate Town Official comments pertaining to the development as it applies with municipal services. These include road system, fire department, solid waste, schools, open spaces, recreational programs and other municipal facilities. It would be our opinion, this proposed development has no impact on any municipal service.

We have attached other pertinent information with the application, including the site development topographic plans per the submission requirements for the application.

We look forward to presenting this project to the Planning Board and answering

any questions you may have concerning the design of the project.

Please call me if you have any questions.

Sincerely yours,

Stephen Roberge

Stephen Roberge, PE
for SJR Engineering Inc.

Attachments: SammCo Holdings, LLC site plan set, Completed application

AGENT OF PROCESS DESIGNATION AND AUTHORIZATION

I, Josh Sammon, (President of SammCo Holdings LLC located in Yarmouth, Maine 04096) hereby designate Steve Roberge, PE of SJR Engineering Inc, 16 Thurston Drive, Monmouth, Maine 04259 to serve as our agent of process in connection with Department of Environmental Protection and Town of Bowdoinham application materials to be prepared for the SammCo Holdings LLC property (Tax Map U-7, Lot 5) in Bowdoinham, Maine. Mr. Roberge is authorized to take all actions on our behalf necessary for the processing and securing of the requested permitting approvals, including, but not limited to, the execution and delivery of all documents, forms, and the like.

Name:_____ Date:_____

Josh Sammon, SammCo Holdings LLC

Site Plan Review
Application Checklist

TOWN OF BOWDOINHAM

SUBDIVISION SUBMISSION CHECKLIST

Please Reference 30-A M.R.S.A. §4404 and Article 9 of the Land Use Ordinance

INSTRUCTIONS: All materials must be submitted at least twenty-one (21) days prior to the meeting at which it is to be considered. Thoroughly complete all applicable sections of this checklist and review the Land Use Ordinance. Materials can be submitted as physical documents or digitally; printing fees may apply. If an application type is not applicable, please check "NO" and write "N/A" in the application type section. The Approval Criteria Narrative is required for all Application Tiers/Types.

WAIVERS: If you would like to request a waiver for a particular standard, please check "NO" and write "WAIVE" in the waiver section. The Board may require information, in writing and as an attached document, as to why a waiver request was made, and how the applicant may otherwise meet the standards. Application forms and evidence of right, title, and interest may not be waived. The recording plan, to be recorded at the Registry of Deeds upon final approval, shall indicate in writing the specific waivers granted and the date on which they were granted by the Board.

QUESTIONS: Please refer to 30-A M.R.S.A. §4404, Article 9 and Appendix 4 of the Land Use Ordinance, or contact us at:

ceo@bowdoinham.com • planning@bowdoinham.com • www.bowdoinham.com
Tel: (207)666-5531 • Fax: (207)666-5532 • 13 School Street, Bowdoinham, ME 04008

APPLICANTS NAME:	
APPLICANTS MAILING ADDRESS:	
PHONE NUMBER:	
EMAIL:	
LOCATION OF PROPOSAL:	
TAX MAP:	
PROJECT DESCRIPTION:	
DATE SUBMITTED:	**(STAFF) DATE RECEIVED:**

CHECKLIST OVERVIEW:

SITE INVENTORY AND ANALYSIS

- Site Locus Map
- Site Inventory Plan (Map)
- Site Analysis Map
- Site Analysis Narrative

SUBDIVISION APPLICATION

- Approved Site Inventory and Analysis
- Complete Application Form
- Evidence of Right, Title, and Interest
- Evidence of Payment
- Location Map
- Subdivision Plan
- Street and Environmental Plans
- Approval Criteria Narrative

SUBDIVISION PLAN

- Site Location Map
- Site Inventory Plan (Map)
- Site Analysis Narrative
- Notes and Conditions of Approval

SUPPORTING DOCUMENTS

- Deeds for all Subdivided Properties
- Public Water Supply Approval
- Septic and Well Plans
- Hydrogeologic Assessment
- High Intensity Soil Survey
- Stormwater Management Plan
- Erosion and Sedimentation Control Plan
- Street Maps and Traffic Plans
- Owners Association Documents
- Open Space Plan and Documents
- Performance Guarantees
- Municipal Approval
- **Major Subdivisions Only:** Municipal Construction, Maintenance, and Financing Estimates

FINAL APPROVAL AND FILING

- Signed Approval Documents
- Recording Plat (Final Subdivision Plan)

Filing the Plan: The applicant shall be responsible for recording the signed final plan in the Registry of Deeds. Any subdivision plan not recorded in the Registry of Deeds within ninety (90) days of the date upon which the plan is approved and signed by the Board shall become null and void. Once the final plan is recorded at the Registry of Deeds the applicant shall submit a paper copy of the recorded plan to the Town for the Town's permanent records.

MINIMUM APPLICATION FEES:

APPLICATION TYPE	MINOR AND MAJOR SUBDIVISIONS
Site Inventory and Analysis	$100.00
Subdivision Plan	$300.00 / Lot or Dwelling
Technical Review (Escrow)	$200.00 / Lot or Dwelling
Performance Guarantees	Determined by Municipality
Amendment (No New Lots or Dwellings)	$150.00
Amendment (New Lots or Dwellings)	$150.00 / Lot or Dwelling
MINIMUM FEE	**$1600.00 (3 Lot Subdivision)**

NOTE: Additional fees may apply. Performance Guarantees will be determined as part of the municipal review process. Mailing and noticing fees will be billed to the applicant. Please see Page 3 of the Planning Board Application Permit form for more billing options.

SITE INVENTORY AND ANALYSIS *(MAJOR AND MINOR)*:				
YES	**NO**	**APPLICATION TYPE:**	**N/A:**	**STAFF:**
		(9.D.1.) Site Inventory and Analysis.	X	
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
NOTE: Minor Subdivisions may waive this section with Board Approval				
		(9.D.1.b.i-iv.) Eleven (11) copies of a Site Locus Map drawn at a size adequate to show the relationship of the proposed subdivision to the adjacent properties, and to allow the Board to locate the subdivision within the municipality. The location map shall show:		
		Existing subdivisions in the proximity of the proposed subdivision;		
		Locations and names of existing streets;		
		An outline of the proposed subdivision and any remaining portion of the owner's property if the formal application will cover only a portion of the owner's entire contiguous holding;		
		The Tax Map and Lot number of the parcel proposed to be subdivided.		
		(9.D.1.c.i-xiii.) Eleven (11) copies of an accurate scale Site Inventory Plan of the parcel at a scale of not more than fifty (50) feet to the inch showing the existing conditions of the area proposed to be subdivided based upon published sources and showing the following:		
		The proposed name of the development, north arrow (True Meridian), date, and scale;		
		The boundaries of the parcel based upon a standard boundary survey prepared by a registered land surveyor and giving the bearings and distances of all property lines;		
		Existing restrictions or easements on the site (if none, so state);		
		The general topography of the site including an indication of those areas where the slope is likely to be greater than 20%;		
		The major natural features of the site and within five hundred (500) feet of the site, including wetlands, vernal pools, streams, ponds, floodplains, groundwater aquifers, significant wildlife habitats, scenic views or areas, significant geological features, or other important natural features;		
		A medium intensity soil survey superimposed on the subdivision plan. The Planning Board may require the submission of a high intensity soils survey with the preliminary plan if it determines that a high intensity survey is needed to evaluate the appropriate use of the property;		
		Vegetative cover conditions on the property as depicted on a current aerial photo of the site;		
		The general drainage pattern of the site and adjacent areas within five hundred (500) feet of the site;		
		Existing buildings, structures, or other improvements on the site including streets, driveways, stone walls, fences, trails, and cemeteries (if none, so state);		
		Locations of all culturally, historically or archaeologically significant buildings, features, or sites;		
		The location and size of existing utilities or improvements servicing the site (if none, so state);		

SITE INVENTORY AND ANALYSIS *(MAJOR AND MINOR – CONTINUED)*:				
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		Any potential sources of fire protection water supply within one half mile of the site including public water mains, existing fire ponds, or possible sources of water supply;		
		The visual character of the site including existing conditions along existing streets, property lines, and water bodies, and the location and nature of scenic views of the parcel and/or from the parcel that should be considered in the design of the subdivision.		
		(9.D.1.d.i-v.) Eleven (11) copies of a Site Analysis Map at the same scale as the inventory plans (see B above) highlighting the opportunities and constraints of the site in a bubble diagram or annotated format. This map should enable the Planning Board to determine:		
		Which portions of the site are unsuitable for development or use (Primary Conservation Areas);		
		Which areas of the site have potential conservation or open space value (Secondary Conservation Areas) that should be addressed in the subdivision plan;		
		Which portions of the site are unsuitable for on-site sewage disposal;		
		Which areas of the site may be subject to off-site conflicts or concerns (noise, lighting, traffic, etc.);		
		Which areas are well suited for the proposed use.		
		(9.D.1.e.) Eleven (11) copies of a Site Analysis Narrative describing the existing conditions of the site, the constraints and opportunities created by the site, the open space conservation potential of the site, and the proposed development. This submission should include any preliminary studies done relative to the site including wetland delineations, traffic studies, market studies, or other information that will help the Board understand the project.		

SUBDIVISION PLAN *(MAJOR AND MINOR)*:				
YES	**NO**	**APPLICATION TYPE:**	**N/A:**	**STAFF:**
		(9.D.2.) Subdivision Plan.	X	
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		(9.D.2.a.) The application for preliminary plan approval shall include eleven (11) copies of the required information.		
		(9.D.2.b.i-ii.) Completed application form.		
		(9.D.2.c.) Location map drawn at a scale of not more than 500 feet to the inch showing the relationship of the proposed subdivision to the adjacent properties, to allow the Board to locate the subdivision within the Town, and:		
		Existing subdivisions within 1000 feet of the proposed subdivision;		
		Locations and names of existing and proposed streets within 1000 feet;		

SUBDIVISION PLAN *(MAJOR AND MINOR – CONTINUED)*:				
YES	**NO**	**APPLICATION TYPE:**	**WAIVER:**	**STAFF:**
		Boundaries and designations of land use districts within 1000 feet;		
		An outline of the proposed subdivision and any remaining portion of the owner's property if the preliminary plan submitted covers only a portion of the owner's entire contiguous holding.		
		(9.D.2.d.i-xvi.) Subdivision plan submitted in full-sized copies of one or more maps or drawings or more if requested by the Board, which may be printed or reproduced on paper, with all dimensions shown in feet or decimals of a foot. The preliminary plan shall be drawn to scale of not more than one hundred feet to the inch and should show the following:		
		A boundary survey of the parcel, giving complete descriptive data by bearings and distances, made and certified by a registered land surveyor. The corners of the parcel on the Right of Way shall be located on the ground and marked by monuments. The plan shall indicate the type of monument found or to be set at each lot corner;		
		The date the plan was prepared, north point, and graphic map scale;		
		The names and addresses of the record owner, applicant, and individual or company who prepared the plan, and adjoining property owners;		
		A high intensity soil survey, if required by the Board;		
		All wetland areas regardless of size shall be identified on the survey by a soil scientist or other recognized professional as determined by the Board;		
		The number of acres within the proposed subdivision, location of property lines, existing buildings, vegetative cover type, and other essential existing physical features. The location of any trees larger than 24 inches in diameter at breast height shall be noted on the plan. Any contiguous forested area with more than five trees greater than 24 inches in diameter at breast height shall be depicted as a group on the plan. On wooded sites, the plan shall indicate the area where clearing for lawns and structures shall be permitted and/or any restrictions to be placed on clearing existing vegetation;		
		The area on each lot where existing forest cover will be permitted to be converted to lawn, structures or other cover and any proposed restrictions to be placed on clearing existing vegetation.		
		The location of all rivers, streams, brooks, wetlands and vernal pools within or adjacent to the proposed subdivision;		
		Contour lines at one or two foot intervals, specified by the Board, showing elevations in relation to mean sea level;		
		The location and size of existing and proposed sewers, water mains, culverts, and drainage ways on or adjacent to the property to be subdivided;		

SUBDIVISION PLAN *(MAJOR AND MINOR – CONTINUED)*:				
YES	**NO**	**APPLICATION TYPE:**	**WAIVER:**	**STAFF:**
		The location, names, and present widths of existing streets and highways within 300 feet of any proposed intersection, and existing and proposed easements, building lines, parks and other open spaces on or adjacent to the subdivision. The plan shall contain sufficient data to allow the location, bearing and length of every street line, lot line, and boundary line to be readily determined and be reproduced upon the ground. These lines shall be tied to reference points previously established. In order to facilitate the addition of the subdivision into the municipal property records, this information shall also be made available in a format compatible with the assessor's records;		
		The width and location of any streets, public improvements or open space shown upon the official map and the comprehensive plan, if any, within the subdivision;		
		The location of any open space to be preserved;		
		All parcels of land proposed to be dedicated to public use and the conditions of such dedication;		
		If any portion of the subdivision is in a flood-prone area, the boundaries of any flood hazard areas and the 100-year flood elevation, as depicted on the municipality's Flood Insurance Rate Map, shall be delineated on the plan;		
		Areas within or adjacent to the proposed subdivision which have been identified as high or moderate value wildlife habitat by the Maine Department of Inland Fisheries and Wildlife or within the comprehensive plan;		
		Areas within or adjacent to the proposed subdivision which have been designated to have a critical natural area by the Maine Natural Areas Program or within the comprehensive plan;		
		The location of all test pits dug on the site;		
		The land use district, if any, in which the proposed subdivision is located and the location of any land use boundaries affecting the subdivision;		
		The proposed subdivision lot lines and lot areas as well as building envelopes and setback requirements;		
		Any area designated as a site of historic, prehistoric, or archeological importance by the Comprehensive Plan or the Maine Historic Preservation Commission together with information about the significance of the site;		
		Additional information, where the Board finds it necessary in order to determine whether the criteria of Title 30-A M.R.S.A., §4404 are met;		
		The location of disposal for land clearing and construction debris;		

SUBDIVISION PLAN *(MAJOR AND MINOR – CONTINUED)*:				
YES	**NO**	**APPLICATION TYPE:**	**WAIVER:**	**STAFF:**
		(9.D.2.d.xxiv.A-C.1-8.) Street plans showing a plan view, profile, and typical cross-section of the proposed streets. The plan view shall be at a scale of one-inch equals no more than fifty feet, with the vertical scale of the profile at a scale of one-inch equals no more than five feet, and shall include the following:		
		Date, scale, and north point, indicating magnetic or true;		
		Intersections of the proposed street with existing streets;		
		Roadway and right-of-way limits including edge of pavement, edge of shoulder, sidewalks, and curbs;		
		Kind, size, location, material, profile and cross-section of all existing and proposed drainage structures and their location with respect to the existing natural waterways and proposed drainage ways;		
		Complete curve data shall be indicated for all horizontal and vertical curves;		
		Turning radii at all intersections;		
		Centerline gradients;		
		Size, type and locations of all existing and proposed overhead and underground utilities, to include but not be limited to water, sewer, electricity, telephone, lighting, and cable television.		
		(9.D.2.d.xxv.A-C.) The following notes as appropriate shall appear on the recorded plan:		
		"The developer of the subdivision does not intend to offer the street(s) shown on this plan for acceptance by the Town Meeting as a public street(s)."		
		"The Town of Bowdoinham shall not be responsible for the maintenance, repair, plowing, or similar services for the private road(s) shown on this plan."		
		"Any private road shown on this plan shall not be accepted as a public street by the Town of Bowdoinham unless approved at a duly called Town Meeting."		
		(9.D.2.d.xxvi.A-E.) Conditions of Approval. The following notes shall appear on the recording plat of every plan, unless otherwise determined by the Planning Board:		
		"The property shown on this plan may be developed and used only as depicted on this approved plan. All elements and features of the plan and all representations made by the applicant concerning the development and use of the property which appear in the record of the Planning Board approval are conditions of approval. No change from the conditions of approval is permitted unless an amended plan is submitted and approved under the provisions of this Ordinance governing revisions to approved plans."		
		"No changes, erasures, modifications, or revisions shall be made in this final plan after approval has been given by the Board and endorsed in writing on the plan, unless the revised final plan is first submitted and the Board approves any modifications."		

SUBDIVISION PLAN *(MAJOR AND MINOR – CONTINUED)*:				
YES	**NO**	**APPLICATION TYPE:**	**WAIVER:**	**STAFF:**
		"Failure to complete a substantial start of construction of this subdivision within five years of the date of approval and signing of the plan shall render this plan null and void."		
		"The applicant/developer must provide the Town with a signed and sealed letter from a professional engineer, which states that the subdivision road has been constructed to the Town's Street Design Standards and Street Construction Standards. The Code Enforcement Officer shall not issue a building permit for a lot within the subdivision until this requirement is met."		
		"The applicant/developer must adhere to the following Articles of the Land Use Ordinance: Article 9.E – Final Approval & Filing, Article 9.H – General Provisions, and Article 9.J.1 – Inspections."		
		(9.D.2.e.i-viii.) Supporting Documents:		
		Verification of right, title, or interest in the property;		
		A copy of the most recently recorded deed for the parcel. A copy of all deed restrictions, easements, rights-of-way, or other encumbrances currently affecting the property;		
		When water is to be supplied by public water supply, a written statement from the servicing water district shall be submitted indicating that there is adequate supply and pressure for the subdivision and that the district approves the plans for extensions where necessary. Where the district's supply line is to be extended, a written statement from the fire chief, stating approval of the location of fire hydrants, if any, and a written statement from the district approving the design of the extension shall be submitted;		
		When water is to be supplied by private wells, evidence of adequate ground water supply and quality shall be submitted by a well driller or a hydrogeologist familiar with the area;		
		A description of the proposed ownership, improvement and management of all facilities and improvements that will be privately owned and maintained including streets, open space, drainage facilities, and recreational areas or facilities including common docks together with drafts of community association documents if an association will be responsible for the ownership or management of any land or facilities, and a declaration of covenants, conditions, and restrictions meeting the requirements of Appendix 1;		
		Written offers to convey title to the municipality of all public open spaces shown on the plan, and copies of agreements or other documents showing the manner in which open spaces to be retained by the applicant or lot owners are to be maintained shall be submitted. If open space or other land is to be offered to the Town, subject to Town Meeting approval, written evidence that the municipal officers are satisfied with the legal conditions and documentation shall be provided;		
		The method of disposal for land clearing and construction debris;		

SUBDIVISION PLAN *(MAJOR AND MINOR – CONTINUED)*:				
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		(9.D.2.e.viii.A-C.) A hydrogeologic assessment prepared by a certified geologist or registered professional engineer, experienced in hydrogeology, when:		
		Any part of the subdivision is located over a sand and gravel aquifer, as shown on a map entitled "Hydrogeologic Data for Significant Sand and Gravel Aquifers," by the Maine Geological Survey, 1998, File No. 98-138, 144 and 147; or		
		The subdivision has an average density of more than one dwelling unit per 100,000 square feet, or		
		The Board may require a hydrogeologic assessment in other cases where site considerations or development design indicate greater potential of adverse impacts on groundwater quality. These cases include extensive areas of shallow to bedrock soils; or cluster developments in which the average density is less than one dwelling unit per 100,000 square feet but the density of the developed portion is in excess of one dwelling unit per 80,000 square feet; and/or proposed use of shared or common subsurface wastewater disposal systems.		
		(9.D.2.e.ix-xviii.) Supporting Documents:		
		A storm water management plan, prepared by a licensed professional engineer in accordance with the Stormwater Management for Maine: Best Management Practices, published by the Maine Department of Environmental Protection (1995) or current edition. The Board may waive submission of the storm water management plan when the proposed subdivision will not involve grading which changes drainage patterns and the addition of impervious surfaces such as roofs and driveways is less than 5% of the area of the subdivision;		
		An erosion and sedimentation control plan, prepared in accordance with the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices, dated March 2003;		
		If any portion of the subdivision is located within an area identified as high or moderate value wildlife habitat by the Maine Department of Inland Fisheries and Wildlife the plan shall indicate appropriate measures for the preservation of the values which qualify the site for such designation;		
		Subsurface wastewater disposal systems test pit analyses, prepared by a Licensed Site Evaluator shall be provided;		
		An estimate of the amount and type of vehicular traffic to be generated on a daily basis and at peak hours. Trip generation rates used shall be taken from Trip Generation Manual, 1991 edition or current edition, published by the Institute of Transportation Engineers. Trip generation rates from other sources may be used if the applicant demonstrates that these sources better reflect local conditions. Planning Board may require a Traffic Impact Study if the proposed subdivision will generate over 100 trips per day;		

SUBDIVISION PLAN *(MAJOR AND MINOR – CONTINUED)*:				
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		A list of infrastructure improvements with cost estimates prior to the sale of lots, that will be completed by a professional experienced in preparing such information, and evidence that the applicant has financial commitments or resources to cover these costs;		
		The applicant shall notify the Road Commissioner, the Fire Chief in writing of the proposed subdivision, the number of dwelling units proposed, the length of roadways, and the size and construction characteristics of any multi-family, commercial or industrial buildings. The applicant must submit copies of these written notifications to the Board. The Board shall request that the Fire Chief and Road Commissioner comment upon their ability to service the proposed subdivision and list any concerns they may have;		
		The Board may require additional information to be submitted, where it finds necessary in order to determine whether the criteria of Title 30-A M.R.S.A., §4404 are met;		
		Proposed Homeowner and Association documents.		
		(9.D.2.f.i-ix.) Performance Guarantees. The conditions and amount of the performance guarantee shall be determined by the Planning Board with the advice of the Consulting Engineer, Town Manager, Municipal Officers, and/or Town Attorney.		

MAJOR SUBDIVISIONS:				
YES	**NO**	**APPLICATION TYPE:**	**N/A:**	**STAFF:**
		(9.D.3.) Additional Requirements for Major Subdivisions – Plan.		
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		(9.D.3.a.i.A-G) A list of construction and maintenance items, with both capital and annual operating cost estimates, prepared by a professional experienced in preparing such information, that must be financed by the municipality, or quasi-municipal districts, including but not limited to:		
		Schools, including busing;		
		Street maintenance and snow removal;		
		Police and fire protection;		
		Solid waste disposal;		
		Recreation facilities;		
		Storm water drainage;		
		Water supply.		

SUBDIVISION AMENDMENTS:				
YES	**NO**	**APPLICATION TYPE:**	**N/A:**	**STAFF:**
		(9.D.2.4.) Subdivision Amendment.		
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		(9.D.2.4.a.i-iii.) The applicant shall submit ten (10) copies of the following:		
		The approved plan;		
		The proposed revised plan, which shall indicate that it is the revision of a previously approved and recorded plan and shall show the title of the subdivision and the book and page or cabinet and sheet on which the original plan is recorded at the Registry of Deeds;		
		Supporting information to allow the Board to make a determination that the proposed revisions meet the standards of this ordinance and the criteria of the statute.		

APPROVAL CRITERIA NARRATIVE:				
YES	**NO**	**APPLICATION TYPE:**	**N/A:**	**STAFF:**
		(9.F.) Approval Criteria.	X	
YES	**NO**	**APPLICATION TYPE:**	**N/A:**	**STAFF:**
		(9.G.) Performance and Design Standards for Approval Criteria.	X	
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
NOTE: For partial waivers, please specify the article number (i.e., "WAIVE #9.F.").				
		(9.F.1., 9.G.1.a-d.) Vehicular Access – The proposed road design will provide for safe access to and egress from public and private roads.		
		(9.F.2., 9.G.2.a.) Traffic – The proposed subdivision will not cause unreasonable highway or public road congestion or unsafe conditions with respect to the use of the highways or public roads existing or proposed and, if the proposed subdivision requires driveways or entrances onto a state or state aid highway located outside the urban compact area of a urban compact municipality as defined by Title 23, Section 754, the Department of Transportation has provided documentation indicating that the driveways or entrances conform to Title 23, Section 704 and any rules adopted under that section.		
		(9.F.3., 9.G.3.a-b.) Visual Impact – The proposed development will not have an adverse effect on the scenic or natural beauty of the area, including water views and scenic views.		
		(9.F.4., 9.G.4.a-b.) Utilities – The proposed development will not impose an unreasonable burden on existing utilities.		
		(9.F.5., 9.G.5.a-c.) Water Supply – The proposed subdivision has sufficient water available for the reasonably foreseeable needs of the subdivision.		
		(9.F.6., 9.G.6.a-e.) Sewage Disposal – The proposed development will be provided with adequate sewage waste disposal.		
		(9.F.7., 9.G.7.a-c.) Fire Protection – The proposed development will have adequate fire protection.		

APPROVAL CRITERIA NARRATIVE *(CONTINUED)*:				
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
NOTE: For partial waivers, please specify the article number (i.e., "WAIVE #9.F.").				
		(9.F.8.a-c, 9.G.8-9.) Capacity of Applicant – The applicant meets the following criteria: The applicant has the right, title and interest in the property; The applicant has the financial capacity to complete the proposed development; The applicant has the technical ability to carry out the proposed development.		
		(9.F.9.a-g., 9.G.10-16.) Special Resources – The proposed subdivision will not adversely affect the quality of the water body or unreasonably affect the shoreline of the water body and is in compliance with the Shoreland Zoning provisions of this Ordinance; The proposed subdivision is in compliance with the Floodplain Management provisions of this Ordinance; The proposed subdivision will not have an undue adverse impact on wetlands and/or waterbodies, to the extent that is practicable; The proposed subdivision will not have an undue adverse effect on historic and/or archaeological sites; The proposed subdivision will not adversely affect the quality or quantity of groundwater; The proposed subdivision will not have an undue adverse effect on wildlife habitat; The proposed subdivision will not have an undue adverse effect on rare and irreplaceable natural areas.		
		(9.G.17.a-f., Appendix 4.) Open Space – A major or minor subdivision shall reserve a portion of the parcel, per the requirements of the district, as common open space...		
		(9.F.10., 9.G.18.a-c.) Environmental Impact – The landscape will be preserved in its natural state to the extent that is practical by minimizing tree removal, disturbance of soil and retaining existing vegetation.		
		(9.F.11., 9.G.19.a-d.) Solid Waste Management – The proposed development will provide for adequate disposal of solid wastes.		
		(9.F.12.) Hazardous, Special and radioactive Materials – The proposed development will handle, store, and use all materials identified as hazardous, special or radioactive in accordance with the standards of Federal and State agencies.		
		(9.F.13., 9.G.20.) Air Quality – The proposed development will not result in undue air pollution or odors.		
		(9.F.14., 9.G.21.a-d.) Water Quality – The proposed development will not result in water pollution.		
		(9.F.15., 9.G.22.a-b.) Stormwater – The proposed subdivision will provide for adequate stormwater management.		
		(9.F.16., 9.G.23.a-d.) Sedimentation and Erosion Control – The proposed subdivision will take adequate measures to prevent soil erosion and the sedimentation of watercourses and waterbodies.		
		(9.F.17., 9.G.24.a-b) Compliance with Ordinances – The proposed subdivision conforms with the provisions of this Land Use Ordinance and other ordinances and regulations of the Town of Bowdoinham.		

APPROVAL CRITERIA NARRATIVE *(CONTINUED)*:				
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
NOTE: For partial waivers, please specify the article number (i.e., "WAIVE #9.F.").				
		(9.F.18.) Town Plans and Vision Statements – The proposed subdivision is consistent with the intent of the Town's Plans, including but not limited to the Comprehensive Plan, Waterfront Plan, and Transportation Vision Statement.		
		(9.F.19.) Municipal Services – The development will not have an unreasonable adverse impact on municipal services, including municipal road systems, fire department, solid waste program, schools, open spaces, recreational programs and facilities, and other municipal services and facilities.		
		(9.F.20., 9.G.25.) Impact of Adjoining Municipality – For any proposed subdivision that crosses municipal boundaries, the proposed subdivision will not cause unreasonable traffic congestion or unsafe conditions with respect to the use of existing public ways in an adjoining municipality in which part of the subdivision is located.		
		(9.F.21., 9.G.26.) Spaghetti-Lots – Any lots in the proposed subdivision which have shore frontage on a river, stream, brook or coastal wetland shall have a lot depth to shore frontage ratio less than or equal to 5 to 1.		
		(9.F.22., 9.G.27.a-f.)Liquidation Harvesting – Timber on the parcel being subdivided has not been harvested in violation of rules adopted pursuant to Title 12, Section 8869, subsection 14.		

GENERAL PROVISIONS:				
YES	**NO**	**APPLICATION TYPE:**	**N/A:**	**STAFF:**
		(9.H.) General provisions.	X	
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		(9.H.1.) Prior to the sale of any lot, the subdivider shall provide the Board with a letter from a Registered Land Surveyor, stating that all monumentation shown on the plan has been installed.		
		(9.H.2.) Upon completion of street construction and prior to a vote by the municipal officers to submit a proposed public way to a town meeting, a written certification signed by a professional engineer shall be submitted to the municipal officers at the expense of the applicant, certifying that the proposed public way meets or exceeds the design and construction requirements of this ordinance. If there are any underground utilities, the servicing utility shall certify in writing that they have been installed in a manner acceptable to the utility. "As built" plans shall be submitted to the municipal officers and to the utility.		

GENRAL PROVISIONS *(CONTINUED)*:				
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		(9.H.3.a.) The subdivider shall be required to maintain all improvements and provide for snow removal on streets and sidewalks until or control is placed with a lot owners' association or until accepted by the Town:		
		The subdivider must submit an inspection report from a licensed engineer that confirms that the infrastructure has been constructed to the approved standard before control is placed with a lot owners' association or before it is offer to the Town.		
		(9.H.4.a-b.) The subdivider may not sell a lot or dwelling unit within the subdivision until:		
		The infrastructure serving that dwelling has been constructed as approved. The subdivider must provide an inspection report that confirms the infrastructure has been constructed as approved. Infrastructure shall include but is not be limited to: roadway, power, cable, telephone, stormwater, fire protection;		
		Any applicable conditions of approval have been met		

FINAL APPROVAL AND FILING:				
YES	**NO**	**APPLICATION TYPE:**	**N/A:**	**STAFF:**
		(9.E.) Final approval and filing.	X	
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		(9.E.1.) Upon findings of fact and determination that all standards in Title 30-A M.R.S.A., §4404, and this ordinance have been met, and upon voting to approve the subdivision, the Board shall sign the final plan. The Board shall specify in writing its findings of facts and reasons for any conditions or denial.		
		(9.E.2.) Recording plat. The Board shall sign one mylar and two paper originals of the final plan. One of the signed paper originals shall be retained by the Board as part of its permanent records. The applicant shall be responsible for recording the signed final plan in the Registry of Deeds. Any subdivision plan not recorded in the Registry of Deeds within ninety days of the date upon which the plan is approved and signed by the Board shall become null and void. Once the final plan is recorded at the Registry of Deeds the applicant shall submit a paper copy of the recorded plan to the Town for the Town's permanent records.		

FINAL APPROVAL AND FILING *(CONTINUED)*:				
YES	**NO**	**THE PROPOSAL MUST INCLUDE THE FOLLOWING:**	**WAIVER:**	**STAFF:**
		(9.E.3.) At the time the Board grants final plan approval, it may permit the plan to be divided into two or more sections subject to any conditions the Board deems necessary in order to ensure the orderly development of the plan. If any municipal, quasi-municipal department head, or superintendent of schools notified of the proposed subdivision informs the Board that their department or district does not have adequate capital facilities to service the subdivision, the Board shall require the plan to be divided into two or more sections subject to any conditions the Board deems necessary in order to allow the orderly planning, financing and provision of public services to the subdivision. If the expansion, addition or purchase of the needed facilities is included in the Town's capital improvements program, the time period of the phasing shall be no longer than the time period contained in the capital improvements program for the expansion, addition or purchase.		
		(9.E.4.) No changes, erasures, modifications, or revisions shall be made in any final plan after approval has been given by the Board and endorsed in writing on the plan, unless the revised final plan is first submitted and the Board approves any modifications, except in accordance with Article 9.H. The Board shall make findings that the revised plan meets the criteria of Title 30-A M.R.S.A., §4404, and the standards of these regulations and this ordinance. In the event that a plan is recorded without complying with this requirement, it shall be considered null and void, and the Board shall institute proceedings to have the plan stricken from the records of the Registry of Deeds.		
		(9.E.5.) The approval by the Board of a subdivision plan shall not be deemed to constitute or be evidence of any acceptance by the Town of any street, easement, or other open space shown on such plan. When a park, playground, or other recreation area shall have been shown on the plan to be dedicated to the Town, approval of the plan shall not constitute an acceptance by the Town of such areas. The Board shall require the plan to contain appropriate notes to this effect. The Board may also require the filing of a written agreement between the applicant and the municipal officers covering future deed and title dedication, and provision for the cost of grading, development, equipment, and maintenance of any such dedicated area		
		(9.E.6.) Failure to accomplish a substantial start of the subdivision within five years of the date of approval and signing of the plan shall render the plan null and void. Upon determining that a subdivision's approval has expired under this paragraph, the Board shall have a notice placed in the Registry of Deeds to that effect.		

General Performance Standards

General Performance Standards

1) Vehicular Access –	
a) Adequacy of Road System - Vehicular access to the site must be on roads which have adequate capacity to accommodate the additional traffic generated by the development. A Traffic Impact Study may be required by the Planning Board if deemed necessary by the Director of Public Works or the Road Commissioner.	Pond Road and Route 138 have adequate capacity to accommodate the residential development.
b) Access into the Site - Vehicular access to and from the development must be safe and convenient.	Access driveway provided
(i) Any driveway or proposed street must be designed so as to provide the minimum sight distance according to the Maine Department of Transportation standards.	Driveway has adequate sight distances
(ii) Points of access and egress must be located to avoid hazardous conflicts with existing turning movements and traffic flows.	The new driveway is located 250' from the intersection with Rte 138
(iii)The grade of any proposed drive or street must be not more than 3% for a minimum of forty (40) feet, from the intersection. The Planning Board may require a greater distance if deemed necessary by the Public Works Director.	Driveway has 3% or less slope 40' from paved road
(iv) Where it is necessary to safeguard against hazards to traffic and pedestrians and/or to avoid traffic congestion, the applicant shall be responsible for providing turning lanes, traffic directional islands, and traffic controls within public streets.	Not Necessary
c) Accessway Location and Spacing -	
(i) Private entrances/exits must be located at least fifty (50) feet from the closest unsignalized intersection and one hundred fifty (150) feet from the closest signalized intersection, as measured from the point of tangency for the corner to the point of tangency for the accessway. This requirement may be reduced if the shape of the site does not allow conformance with this standard.	Closest intersection is Pond Road and Rte 138. The driveway is 250' from the intersection
(ii) Private accessways in or out of a development must be separated by a minimum of seventy-five (75) feet where possible.	One driveway only
2) Internal Vehicular Circulation –	
a) All roadways must be designed to harmonize with the topographic and natural features of the site insofar as practical by minimizing filling, grading, excavation, or other similar activities which result in unstable soil conditions and soil erosion, by fitting the development to the natural contour of the land and avoiding substantial areas of excessive grading and tree removal, and by retaining existing vegetation during	We have designed the entrance parking areas, driveway areas and housing to be harmonious with the development grades. Approximately one half of the site

<table>
<tr><td>construction. The road network must provide for vehicular, pedestrian, and cyclist safety, all season emergency access, snow storage, and delivery and collection services.</td><td>remains undeveloped. Vehicular, pedestrian, cyclist safety, all season emergency access, snow storage, and delivery and collection services are designed into the project</td></tr>
<tr><td>b) Proposed developments that will be served by delivery vehicles must provide a clear route for such vehicles with appropriate geometric design to allow turning and backing for the largest expected vehicles.</td><td>Turnarounds provided</td></tr>
<tr><td>c) Clear routes of access must be provided and maintained for emergency vehicles to and around buildings and must be posted with appropriate signage (fire lane - no parking).</td><td>Units will be numbered as will the parking stalls</td></tr>
<tr><td>d) The layout and design of parking areas must provide for safe and convenient circulation of vehicles throughout the parking lot.</td><td>Adequate parking provided</td></tr>
<tr><td>e) Off-street parking must conform to the following standards:</td><td></td></tr>
<tr><td>(i) Parking areas with more than two (2) parking spaces must be arranged so that it is not necessary for vehicles to back into the street.</td><td>Parking has been designed to accommodate 2 stalls per unit with 2 additional stalls per parking lot.</td></tr>
<tr><td>(ii) All parking spaces, access drives, and impervious surfaces must be located at least ten (10) feet from any side or rear lot line, except where standards for buffers require a greater distance. This requirement may be reduced if the shape of the site does not allow conformance with this standard.</td><td>This standard is met.</td></tr>
<tr><td>(iii)No parking spaces or asphalt type surface may be located within five (5) feet of the front property line; standards for buffers may require a greater distance.</td><td>This standard is met.</td></tr>
<tr><td>(iv)Parking lots on adjoining lots may be connected by accessways not to exceed twenty-four (24) feet in width.</td><td>NA</td></tr>
<tr><td>(v) Parking stalls must conform to the following standards:</td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td><table>
<tr><th>Parking Angle</th><th>Stall Width</th><th>Skew Width</th><th>Stall Depth</th><th>Aisle Width</th></tr>
<tr><td>90°</td><td>9’-0”</td><td>-</td><td>18’-0”</td><td>24’-0” – 2-way</td></tr>
<tr><td>60°</td><td>8’-6”</td><td>10’-6”</td><td>18’-0”</td><td>16’-0” – 1-way</td></tr>
<tr><td>45°</td><td>8’-6”</td><td>12’-9”</td><td>17’-6”</td><td>12’-0” – 1-way</td></tr>
<tr><td>30°</td><td>8’-6”</td><td>17’-0”</td><td>17’-0”</td><td>12’-0” – 1-way</td></tr>
</table></td><td>Parking conforms with the parking requirements</td></tr>
<tr><td>(vi)In lots utilizing diagonal parking, the direction of proper traffic flow must be indicated by signs, pavement markings or other permanent indications and maintained as necessary.</td><td>Add directional paint marks to pavement</td></tr>
</table>

(vii) Parking areas for nonresidential uses must be designed to permit each motor vehicle to proceed to and from the parking space provided for it without requiring the moving of any other motor vehicles. Double stack parking may be permitted for resident parking in conjunction with residential uses if both spaces in the stack are assigned to the occupants of the same dwelling unit.	Parking has been designed to accommodate 2 stalls per unit with 2 additional stalls per parking lot.
(viii) Provisions must be made to restrict the "overhang" of parked vehicles when it might restrict traffic flow on adjacent through roads, restrict pedestrian or bicycle movement on adjacent walkways, or damage landscape materials.	This has been designed into the project.
(ix) Parking areas must be designed and landscaped to create a pedestrian-friendly environment. A landscaped border must be created around parking lots. There must be at least one (1) island for every twenty (20) spaces. Landscaping must screen the parking area from adjacent residential uses and from the street.	An island has been designed into the 6 unit parking lot. Existing woods provides buffering.
(x) Parking lots should be located to the side or rear of the building. Parking should not be located between the building and the street.	Parking lots are placed between the buildings and driveways. Adequate buffering shields the parking from view.
(xi) Whenever the area between the street and the front of the building is used for parking or vehicle movement, a vegetated buffer strip must be established along the edge of the road right-of-way. This buffer strip must soften the appearance of the site from the road and must create defined points of access to and egress from the site.	Buffering with existing woods has been provided in the design of the project layout
(xii) Any establishment which caters to and/or offers its goods, facilities or services to the general public shall maintain at least one of its required parking spaces as an accessible space for handicapped persons.	NA
(xiii) At least one parking space shall be provided for each employee per shift.	NA
3) Pedestrian Circulation –	
a) The site plan must provide for a system of pedestrian ways within the development appropriate to the type and scale of development.	Sidewalks have been proposed in front of each building.
b) This system must connect the major building entrances/exits with parking areas and with existing sidewalks, if they exist or are planned in the vicinity of the project.	A 6' wide trail is to be developed along the remaining land.
c) Where an existing or planned public sidewalk is interrupted by a proposed project driveway, the sidewalk material must continue to be maintained across the driveway, or the driveway must be	No sidewalk proposed

painted to distinguish it as a sidewalk.	
d) The pedestrian network may be located either in the street right-of-way or outside of the right-of-way in open space or recreation areas.	A 6' wide trail is to be developed along the remaining land
e) The system must be designed to link the project with residential, recreational, and commercial facilities, schools, bus stops, and existing sidewalks in the neighborhood or, when appropriate, to connect with amenities such as parks or open space on or adjacent to the site.	No links to other residential, recreational, or commercial facilities are proposed. There are no existing sidewalks in the neighborhood..
f) The system shall be safely separated from vehicular traffic through landscape buffers and curbing.	The trail is to be located in the existing woods.
4) Municipal Services –	
A letter shall be requested from the appropriate Town Officials to address that the development will not have an unreasonable adverse impact on municipal services, including municipal road systems, fire department, solid waste program, schools, open spaces, recreational programs and facilities, and other municipal services and facilities.	No concerns have been brought forward
5) Visual Impact –	
a) When a proposed development is located on a hillside that is visible from a public street, road, water body, or facility, the development must be designed so that it fits harmoniously into the visual environment when viewed by the public from public areas. In predominantly natural environments, site clearing must be minimized and vegetation must be retained or provided to minimize the visual intrusion of the development. In developed environments, the appearance of the new development, when viewed by the public from public areas, must be compatible with the existing visual character in terms of scale, massing, and height to the maximum extent reasonable.	The proposed development is not on a hillside. Site clearing has been minimized. The development fits with the land in terms of scale, massing, and height.
b) When a proposed development is located within the viewshed of an identified view from a public street or facility, the development must be designed to minimize the encroachment of all buildings, structures, landscaping, and other site features on the identified view.	The project is designed to minimize views from the public street through the use of existing woods buffering.
6) Lighting – All exterior lighting will be designed to avoid undue glare, adverse impact on neighboring properties and rights-of-ways, and the unnecessary lighting of the night sky.	Lighting is proposed along the building entrances and parking lots for security purposes. It will be dark sky type of lighting meaning light will be downcast only.

a) Building facades may be illuminated with soft lighting of low intensity that does not draw inordinate attention to the building. The light source for the building facade illumination must be concealed.	NA
b) Building entrances may be illuminated using recessed lighting in overhangs and soffits, or by use of spotlighting focused on the building entrances with the light source concealed (e.g., in landscaped areas). Direct lighting of limited exterior building areas is permitted when necessary for security purposes.	Lighting is proposed along the building entrances and parking lots for security purposes. It will be dark sky type of lighting meaning light will be downcast only.
c) The proposed development must have adequate exterior lighting to provide for its safe use during nighttime hours, if such use is contemplated.	Lighting is proposed along the building entrances and parking lots for security purposes. It will be dark sky type of lighting meaning light will be downcast only.
d) Lighting may be used which serves security, safety and operational needs but which does not directly or indirectly produce deleterious effects on abutting properties or which would impair the vision of a vehicle operator on adjacent roadways. Lighting fixtures must be shielded or hooded so that the lighting elements are not exposed to normal view by motorists, pedestrians, or from adjacent dwellings and so that they do not unnecessarily light the night sky. Direct or indirect illumination must not exceed 0.5 footcandles at the lot line or upon abutting residential properties.	Lighting is proposed along the building entrances and parking lots for security purposes. It will be dark sky type of lighting meaning light will be downcast only.
e) All exterior lighting, except security lighting, must be turned off between 11 P.M. and 6 A.M. unless located on the site of a commercial or industrial use which is open for business during that period.	Lighting is proposed along the building entrances and parking lots for security purposes. It will be dark sky type of lighting meaning light will be downcast only.
f) Wiring to light poles must be underground.	Underground conduit is provided for light poles.
7) Signage – The proposed signage will not detract from the design of the proposed development and the surrounding properties and will not constitute hazards to vehicles and pedestrians.	Signage for the development will be along Pond Road.
a) Signs should be placed at right angles to the street so as to be viewed from both directions. Simple, geometrically shaped signs set low to the ground must be used.	Any directional signs will be placed at 90 degrees to the driveway.
b) Signs may be illuminated only by shielded, non-flashing lights. Any sign illumination must be turned off from 10 p.m. to 6 a.m.,	None are proposed at this time.

except if the business is open then the sign illumination may remain on during the hours of operation. No internal or flashing lights shall be permitted.	
c) Business/Institutional name signs shall be permitted, provided such signs shall not exceed two (2) signs per property, except for a property which contains more then one business.	NA
d) Properties which contain one business or institutional use.	Signage for the development will be along Pond Road.
(i) No name sign shall be greater than fifteen (15) square feet.	Signage for the development will be 15 sf
(ii) The total area of name signs on the property shall not exceed twenty-five (25) square feet.	NA
e) Properties containing more than one business or institutional use.	NA
(i) May have a directory sign, which contains a name sign for the complex, as well as name signs for the individual businesses or institutional uses. The name sign for the complex shall not exceed fifteen (15) square feet and the name signs for the individual businesses or institutional uses shall not exceed six (6) square feet. The total square footage for the directory sign shall not exceed sixty (60) feet.	NA
(ii) Each individual business or institutional use may have a name sign not to exceed fifteen (15) square feet.	NA
f) No free standing sign shall extend higher than twenty (20) feet above the ground.	No signs shall be taller than 20' in height.
g) The business/institutional name sign must be located on the same property as the business.	The business sign will be located on the property
8) Buildings – The proposed structures will relate harmoniously to the terrain and to existing buildings in the vicinity, so as to have a minimally adverse effect on the environmental and aesthetic qualities of the neighboring areas.	The proposed project including proposed structures has been designed to fit harmoniously with the terrain and have minimal adverse effect on the environmental and aesthetic qualities of the neighboring properties.
a) New buildings should be compatible with the neighborhood such that they reflect the overall building bulk, square footage, dimensions, placement of the building on the lot, and rhythm of buildings and spaces along the street edge and minimize the visual impact on the neighborhood. The visual impact of a building shall be measured by its relationship to other buildings on the lot, design of the front of the building, and the rhythm of buildings and open spaces along the street. The Planning Board	We have provided a topographic site plan showing how the building fit with the terrain and environmental resources at the site. The visual impact of the buildings will be shielded from view

may require additional buffering to the road or abutting properties if the proposed building is not compatible with the neighborhood.	by the existing woods.
b) The architectural design of the building shall be consistent with the New England vernacular and shall include such features as pitched roofs, vertical rectangle windows, and the appearance of brick, stone, log, clapboard or shingle .	We have attached front side and rear elevations of the two proposed buildings meeting this intent.
(i) The proposed development could be exempt from this standard if the development will be screened so that it is not visible from the road and abutting properties; or	We are leaving a substantial wooded buffer shielding the development from neighboring properties.
(ii) Depending on the tier of the application, either the Planning Board or the Code Enforcement Officer may require additional landscaping and/or screening to the road and abutting properties.	
c) Where there is a reasonably uniform relationship between the front walls of buildings and the street, new buildings must be placed on a lot in conformance with the established relationship. For buildings on corner lots, the setback relationship of both streets should be maintained.	The proposed buildings are setback substantial distances from the intersection of Pond and Rte 138 Roads
d) The main entrance to the building should be oriented to the street unless the parking layout or the grouping of the buildings justifies another approach, and should be clearly identified as such through building and site design, landscaping, and/or signage.	The entrances into each building is shown on the architectural plans.
e) In rural, uncongested areas buildings should be set back from the road so as to conform with the rural character of the area. If the parking is in front, a generous, landscaped buffer between road and parking lot is to be provided. Unused areas should be kept natural, as field, forest, wetland, etc.	This statement is the design philosophy of the project.
f) The site design should avoid creating a building surrounded by a parking lot.	Each building has a parking lot that will be identified with numbers assigned for each tenants use
g) The building height shall not exceed 40 feet.	The building plan depicts a height less than 40'.
9) Landscaping – The proposed development will provide adequate landscaping in order to define, soften, and/or screen the appearance of parking and developed areas as well as to enhance the physical design of the buildings and the overall development.	Landscaping has been provided between the parking areas and front of building

a) Landscaping must be provided as part of site design. The landscape plan for the entire site must use landscape materials to integrate the various elements on site, preserve and enhance the particular identity of the site, and create a pleasing site character.	Landscaping has been provided between the parking areas and front of building
b) The landscaping should define street edges, break up parking areas, soften the appearance of the development, and protect abutting properties.	Existing wooded buffers separate the building and parking lot elements from the street view. Neighbors have the remaining woods to buffer from the project
10) Buffering – The proposed development will provide for the buffering of adjacent uses where there is a transition from one type of use to another use and for the screening of mechanical equipment and service and storage areas.	Existing remaining woods will buffer adjacent properties.
a) Buffering must be designed to provide a year-round visual screen in order to minimize adverse impacts. It may consist of fencing, evergreens, berms, rocks, boulders, mounds, or a combination thereof.	Existing remaining woods will buffer adjacent properties
b) Exposed nonresidential storage areas, exposed machinery, and areas used for the storage or collection of discarded automobiles, auto parts, metals or other articles of salvage or refuse must have sufficient setbacks and screening to provide a visual buffer sufficient to minimize their impact on abutting residential uses and users of public streets.	NA
c) All dumpsters or similar large collection receptacles for trash or other wastes must be screened by fencing or landscaping.	Designed into project
d) The Planning Board may require buffering from impervious areas located adjacent to residential uses.	NA
11) Utilities –The development must be provided with electrical, telephone, and telecommunication service adequate to meet the anticipated use of the project. New utility lines and facilities must be screened from view to the extent feasible. If the service in the street or on adjoining lots is underground, the new service must be placed underground.	Utility services will be underground.
12) Water Supply –	
a) If the project is to be served by a public water supply, the applicant must secure and submit a written statement from the supplier that the proposed water supply system conforms with its design and construction standards, will not result in an undue burden on the source or distribution system, and will be installed in a manner adequate to provide needed domestic and fire protection flows.	
b) The proposed development shall connect to public water, unless	Public water is proposed

the applicant can show that it is economically unfeasible.	
13) Sewage Disposal –	
a) The development must be provided with a method of disposing of sewage which is in compliance with the State Plumbing Code and the Subsurface Wastewater Disposal Rules.	HHE 200 Form attached
b) When two (2) or more lots or buildings in different ownership share the use of a common subsurface disposal system, the system must be owned and maintained in common by an owners' association. Covenants in the deeds for each lot must require mandatory membership in the association and provide for adequate funding of the association to assure proper maintenance of the system.	SammCo Holdings will be responsible for the two subsurface disposal systems.
14) Fire Protection – The proposed development will have adequate fire protection as determined by the Fire Chief and State Fire Marshal's Office.	The project will require Fire Marshall approvals prior to building construction
15) Capacity of Applicant – The applicant meets the following criteria:	
a) Right, Title and Interest in Property – The applicant must demonstrate that they have the right, title and interest in the property.	Deed attached
b) Financial Capacity – The applicant must demonstrate that they have the capacity to carry out the project in accordance with this ordinance and the approved plan.	Letter from bank attached
c) Technical Ability – The applicant must demonstrate that they have the technical capacity to carry out the project in accordance with this ordinance and the approved plan.	Technical ability: hired SJR Engineering
16) Special Resources –	
a) Shoreland – The proposed development will be in compliance with the Shoreland Zoning provisions of Article 5 and 7 of this ordinance if located within the Shoreland Zone.	NA
b) Floodplain – If any portion of the site is located within a special flood hazard area as identified by the Federal Emergency Management Agency, all use and development of that portion of the site must be consistent with the Floodplain Management provisions of Article 8 of this ordinance.	NA
c) Wetlands & Waterbodies – The proposed development will not have an adverse impact on wetlands and/or waterbodies, to the extent that is practicable.	Wetland study performed and attached with application
(i) The development must not adversely affect the water quality or shoreline of any adjacent water body, to the extent practicable. The development plan must provide for access to abutting navigable water bodies for the use of the occupants	NA

of the development as appropriate.	
(ii) When a proposed development is immediately visible from a great pond, river, or stream, the development must be designed so that it fits harmoniously into the visual environment when viewed from the water body. In predominantly natural environments, site clearing must be minimized, natural vegetation must be maintained adjacent to the shoreline to soften the appearance of the development, and vegetation must be retained or provided to minimize the visual intrusion of the development. In developed shoreland environments, the appearance of the new development when viewed from the water must be compatible with the existing visual character in terms of scale, massing, and height to the maximum extent possible. Storage and service areas must be screened or landscaped to minimize their visual impact.	Site clearing is minimized to keep as much of the natural vegetation intact.
(iii)Activities within 250 feet of vernal pools shall meet requirements set by Maine Department of Environmental Protection's Natural Resources Protection Act.	NA
17) Historic & Archaeological –	
a) If any portion of the site has been identified as containing historic or archaeological resources, the development must include appropriate measures for protecting these resources, including but not limited to, modification of the proposed design of the site, timing of construction, and limiting the extent of excavation.	NA that we are aware.
b) Proposed developments which include or are adjacent to buildings or sites on the National Register of Historic Places, Maine Historic Preservation Commission or when the Comprehensive Plan has identified as being of historical significance, shall be designed in such a manner as to minimize the impacts on the historic features. When the historic features to be protected include buildings, the placement and the architectural design of new structures shall be similar to the historic structures. The Board may require the applicant to seek the advice of the Maine Historic Preservation Commission.	The site is undeveloped.
18) Groundwater –	
Projects that involve on-site water supply or sewage disposal systems with a capacity of two thousand (2,000) gallons per day or greater must demonstrate that the groundwater at the property line will comply, following development, with the standards for safe drinking water as established by the State of Maine.	NA
19) Wildlife Habitat –	

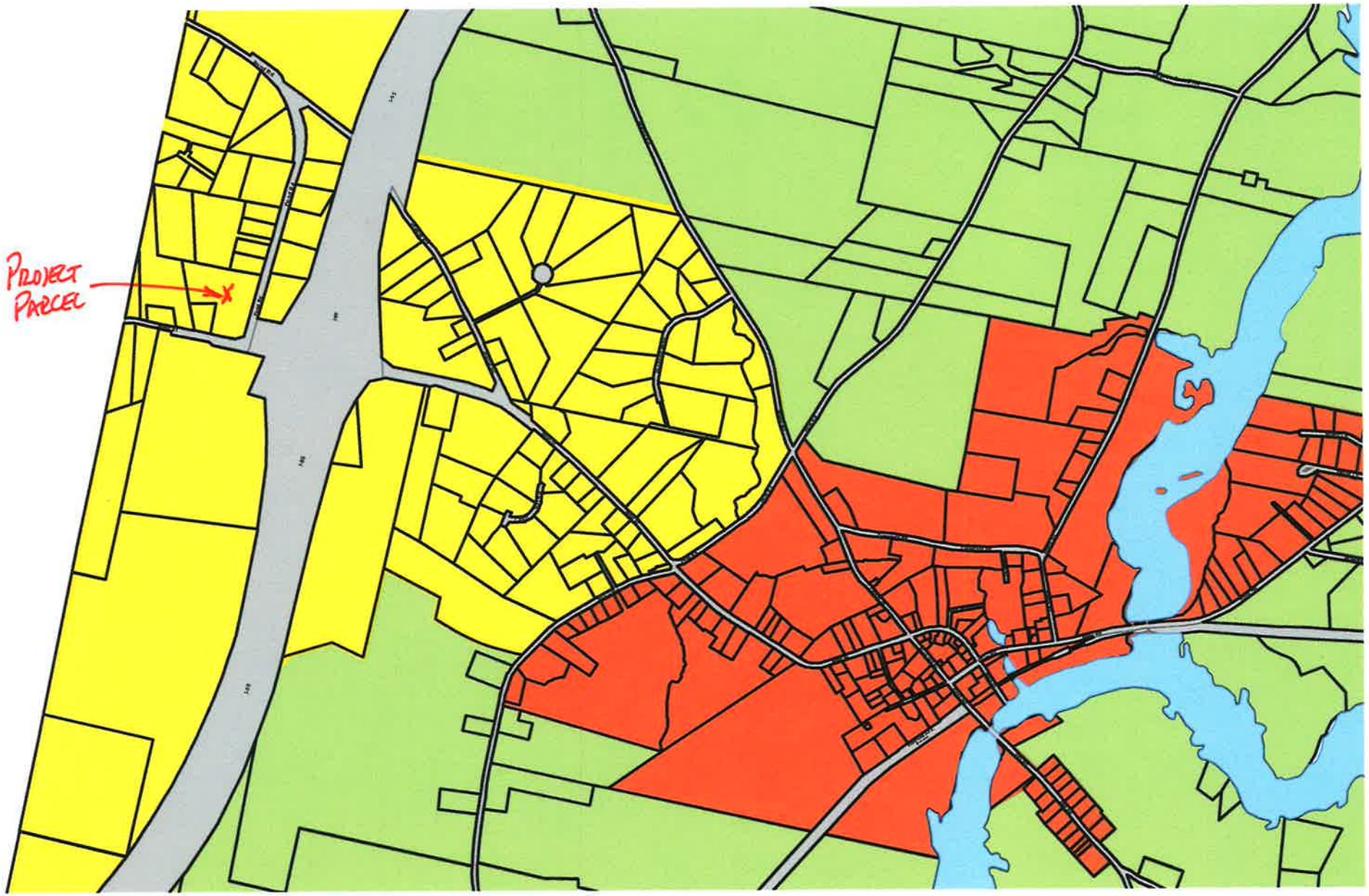
a) If any portion of a property lies within areas identified and mapped by the Department of Inland Fisheries and Wildlife, the applicant shall demonstrate that there shall be minimal impacts on the habitat and species it supports. The plan shall provide for protection of the identified resource in a manner acceptable to the Maine Department of Inland Fisheries and Wildlife or in accordance with the recommendations of a wildlife biologist with demonstrated experience with the wildlife resource being impacted and approved by the Board. In the latter situation, the report prepared by the wildlife biologist shall assess the potential impact of the development on the significant habitat and adjacent areas that are important to the maintenance of the affected species and shall describe appropriate mitigation measures to ensure that the development will have minimal impacts on the habitat and the species it supports. These areas include:	No IF+W areas noted
(i) Habitat for species appearing on the official state or federal lists of endangered or threatened species;	None known
(ii) High and moderate value waterfowl habitats, including nesting and feeding areas; or	None known
(iii)A high or moderate value deer wintering area.	None known
20) Natural Areas –	
a) If any portion of the property is located within an area designated as a unique natural area by the Comprehensive Plan or the Maine Natural Areas Program, the plan shall indicate appropriate measures for the preservation of the values which qualify the site for such designation, including but not limited to, modification of the proposed design of the site, timing of construction, and limiting the extent of excavation. The Board may require the applicant to seek the advice of the Maine Natural Areas Program.	None noted
b) The Planning Board may require a survey from a qualified professional of the area in question if it has not been previously surveyed.	NA
21) Environmental Impact –	
a) The landscape will be preserved in its natural state to the extent that is practical by minimizing tree removal, disturbance of soil and retaining existing vegetation.	The project has been designed to minimize disturbed areas
b) Extensive grading and filling must be avoided as far as possible.	The project has been designed to minimize disturbed areas
c) The proposed development will not cause a reduction in the land's capacity to hold water so that a dangerous or unhealthy condition results.	Two soil filter ponds have been designed to control stormwater onsite.
22) Solid Waste Management – The proposed development will provide for adequate disposal of solid wastes. All solid waste must be disposed of at a licensed disposal facility having adequate capacity	

to accept the project's wastes.	
23) Hazardous, Special & Radioactive Materials –	NA
a) Hazardous, Special and Radioactive Materials - The handling, storage, and use of all materials identified by the standards of a federal or state agency as hazardous, special or radioactive must be done in accordance with the standards of these agencies.	NA
b) No flammable or explosive liquids, solids or gases shall be stored in bulk above ground unless they are located at least seventy-five (75) feet from any lot line, or forty (40) feet in the case of underground storage. For the purposes of this section, bulk storage shall be considered one thousand (1,000) gallons or greater. All materials must be stored in a manner and location which is in compliance with appropriate rules and regulations of the Maine Department of Public Safety and other appropriate federal, state, and local regulations.	NA
24) Air Quality –	NA
The proposed development will met the Maine Department of Environmental Protection and U.S. Environmental Protection Agency standards.	Yes
25) Water Quality –	
a) No proposed development shall locate, store, discharge, or permit the discharge of any treated, untreated, or inadequately treated liquid, gaseous, or solid materials of such nature, quantity, obnoxiousness, toxicity, or temperature that may run off, seep, percolate, or wash into surface or groundwater so as to contaminate, pollute, or harm such waters or cause nuisances, such as objectionable shore deposits, floating or submerged debris, oil or scum, color, odor, taste, or unsightliness or be harmful to human, animal, plant, or aquatic life.	The project has been designed to minimize the amount of disturbed areas. It has also proposed 2 water quality soil filter ponds to treat stormwater.
b) All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials, must meet the standards of the Maine Department of Environmental Protection and the State Fire Marshall's Office.	NA (Residential units)
c) If the project is located within the direct watershed of a 'body of water most at risk from development' or 'a sensitive or threatened region or watershed' as identified by the Maine Department of Environmental Protection (DEP), and is of such magnitude as to require a stormwater permit from the DEP, the project must comply with the standards of the DEP with respect to the export of total suspended solids and/or phosphorous. If the project does not require a stormwater permit from the DEP, it must be designed to minimize the export of phosphorous from	The project is designed with two soil filter /detention ponds to limit peak flow rates to existing conditions and to provide water quality enhancement to stormwater runoff.

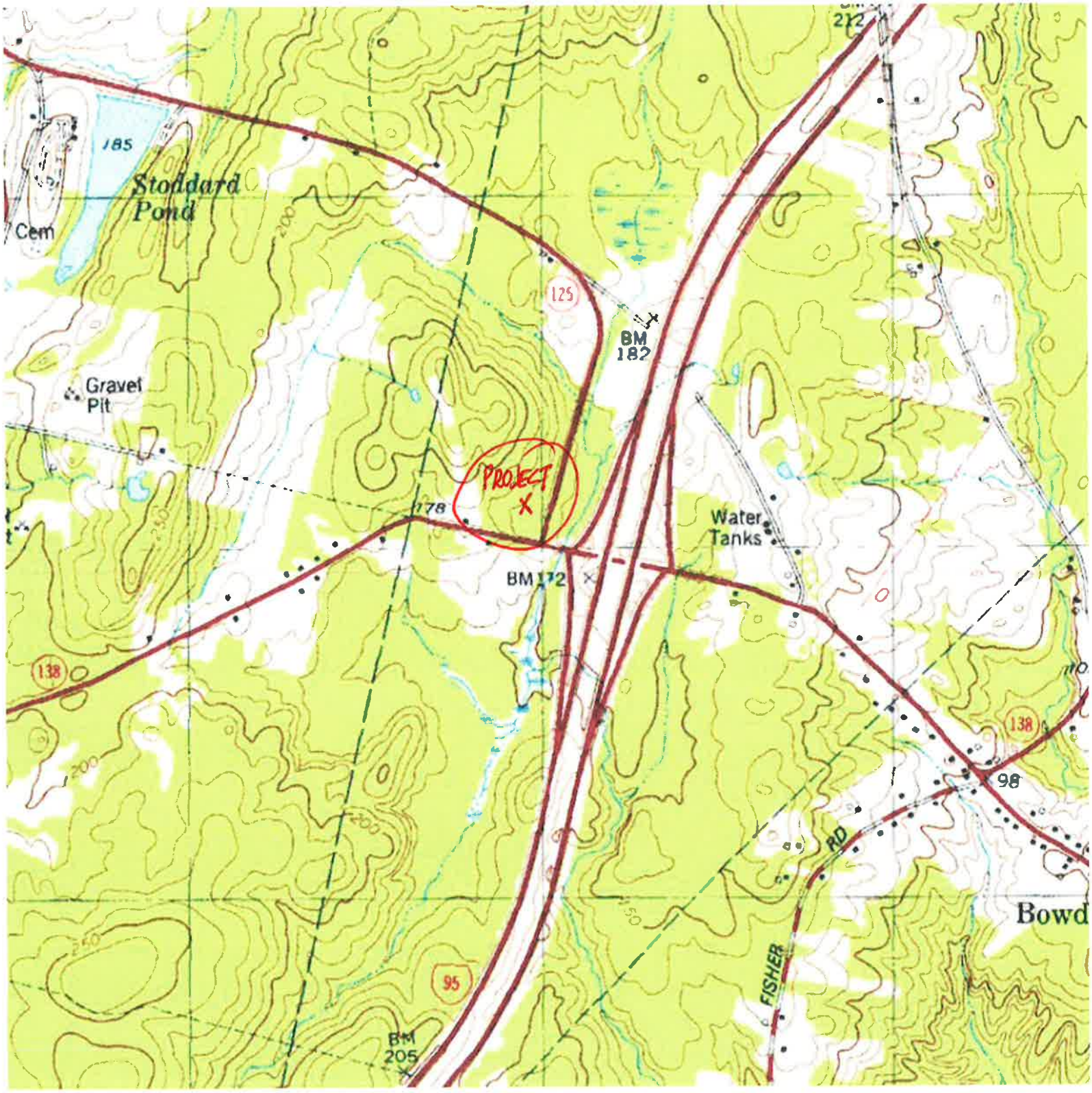
the site to the extent reasonable with the proposed use and the characteristics of the site.	
26) Stormwater – Adequate provisions must be made for the collection and disposal of all stormwater that runs off proposed streets, parking areas, roofs, and other surfaces, through a stormwater drainage system and maintenance plan, which must not have adverse impacts on abutting or downstream properties.	The project is designed with two soil filter /detention ponds to limit peak flow rates to existing conditions and to provide water quality enhancement to stormwater runoff.
a) To the extent possible, the plan must retain stormwater on the site using the natural features of the site.	Roof water from the two building will be falling into drip strips to help infiltrate the water into the ground.
b) Unless the discharge is directly to the ocean or major river segment, stormwater runoff systems must detain or retain water such that the rate of flow from the site after development does not exceed the predevelopment rate.	The project is designed with two soil filter /detention ponds to limit peak flow rates to existing conditions and to provide water quality enhancement to stormwater runoff.
c) The applicant must demonstrate that on- and off-site downstream channel or system capacity is sufficient to carry the flow without adverse effects, including but not limited to, flooding and erosion of shoreland areas, or that he/she will be responsible for whatever improvements are needed to provide the required increase in capacity and/or mitigation.	The project is designed with two soil filter /detention ponds to limit peak flow rates to existing conditions and to provide water quality enhancement to stormwater runoff.
d) All natural drainage ways must be preserved at their natural gradients and must not be filled or converted to a closed system unless approved as part of the site plan review.	Natural drainage ways (wetland areas) remain "as is".
e) The design of the stormwater drainage system must provide for the disposal of stormwater without damage to streets, adjacent properties, downstream properties, soils, and vegetation.	The project is designed with two soil filter /detention ponds to limit peak flow rates to existing conditions and to provide water quality enhancement to stormwater runoff.
f) The design of the storm drainage systems must be fully cognizant of upstream runoff which must pass over or through the site to be developed and provide for this movement.	The stormwater system does not impede upslope runoff which flows through the parcel

g) The biological and chemical properties of the receiving waters must not be degraded by the stormwater runoff from the development site. The use of oil and grease traps in manholes, the use of on-site vegetated waterways, and vegetated buffer strips along waterways and drainage swales, and the reduction in use of deicing salts and fertilizers may be required, especially where the development stormwater discharges into a gravel aquifer area or other water supply source, or a great pond.	The project is designed with two soil filter /detention ponds to limit peak flow rates to existing conditions and to provide water quality enhancement to stormwater runoff.
27) Sedimentation & Erosion Control –	
a) All building, site, and roadway designs and layouts must harmonize with existing topography and conserve desirable natural surroundings to the fullest extent possible, such that filling, excavation and earth moving activity must be kept to a minimum. Parking lots on sloped sites must be terraced to avoid undue cut and fill, and/or the need for retaining walls. Natural vegetation must be preserved and protected wherever possible.	The project has been designed to blend in harmoniously with the surrounding landscape.
b) Soil erosion and sedimentation of watercourses and water bodies must be minimized by an active program meeting the requirements of the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices, dated March 2003.	An erosion control plan for the project has been prepared and is included with the application materials.
28) Noise –	
a) Noise levels on a site abutting any residential use shall be kept to a minimum between the hours of 9 p.m. and 6 a.m.	The project is a residential use. No significant noise is anticipated.
b) The Planning Board may specify an activity or business's hours of operation to address the level of noise, if necessary.	NA

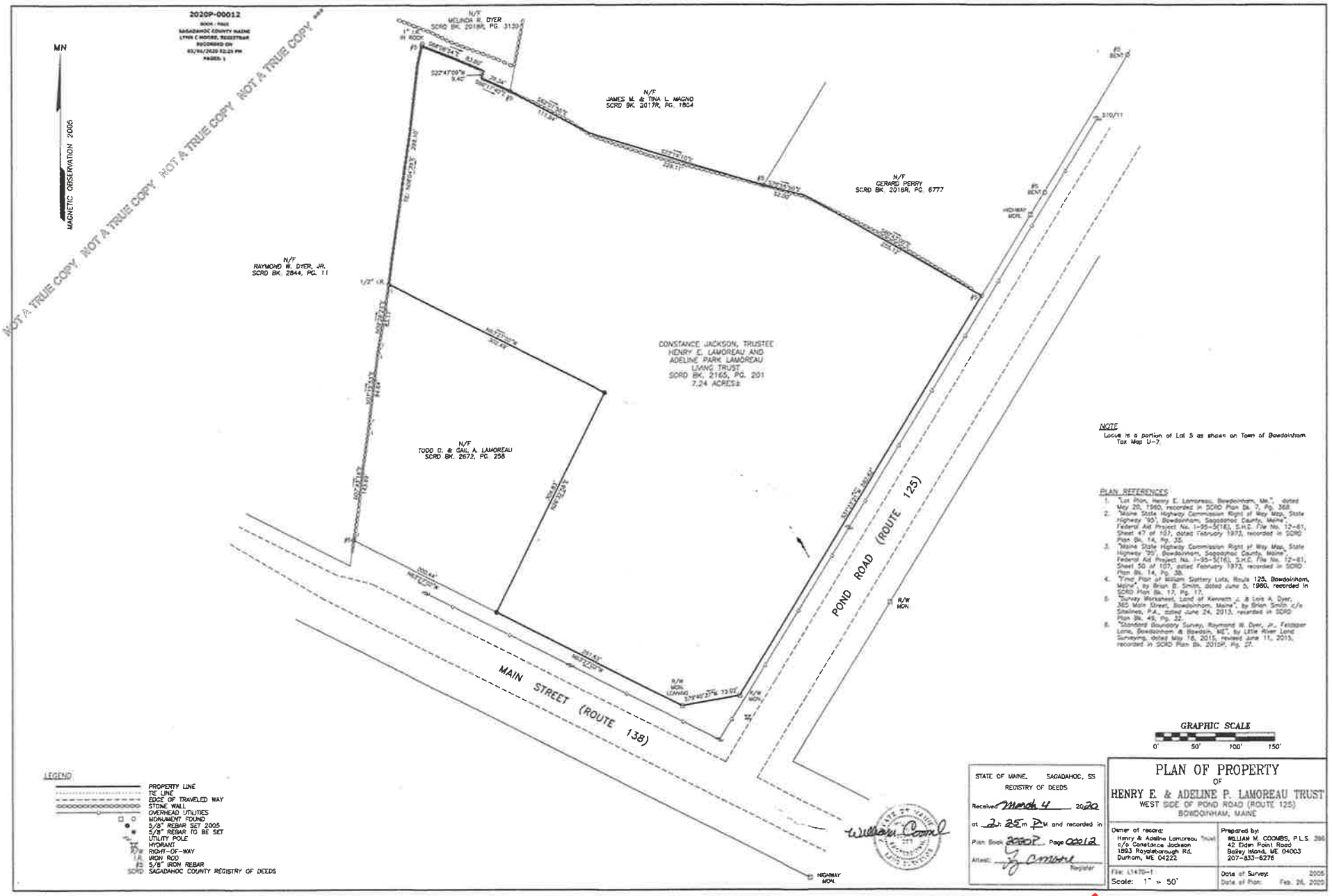
Location Map



ZONING: VILLAGE 2
TOWN OF BOWDOINHAM



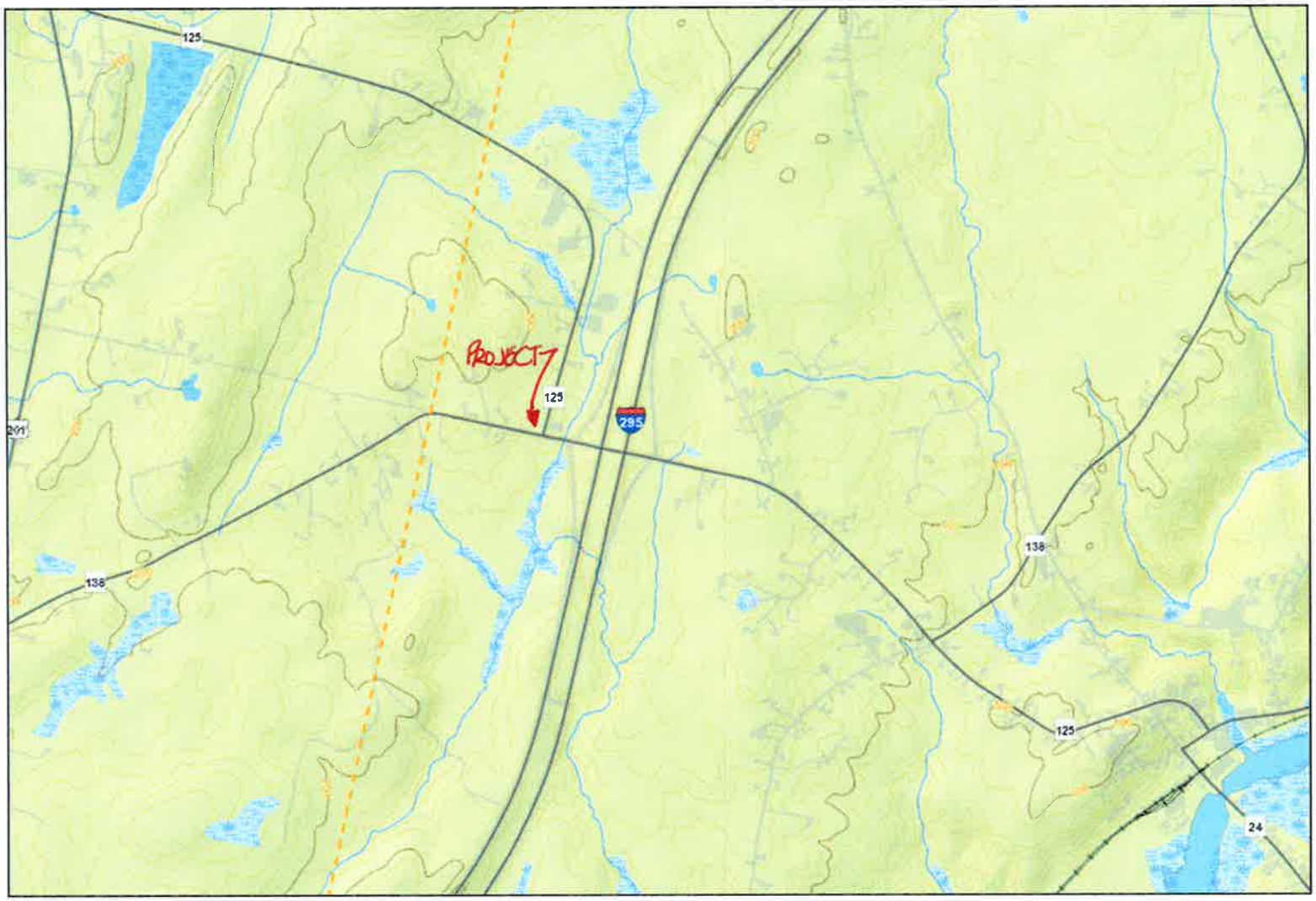
USGS TOPO MAP



PARCEL PROPERTY SURVEY


SammCo Holdings Parcel
Routes 125/138 intersection
Legend
SammCo Holdings LLC
138
Main St
295
N
600 ft
Google Earth
© 2021 Google

Beginning with Habitat Maps



BEGINNING WITH HABITAT

Legend

0 0.225 0.45 0.9 1.35 mi

N W E S

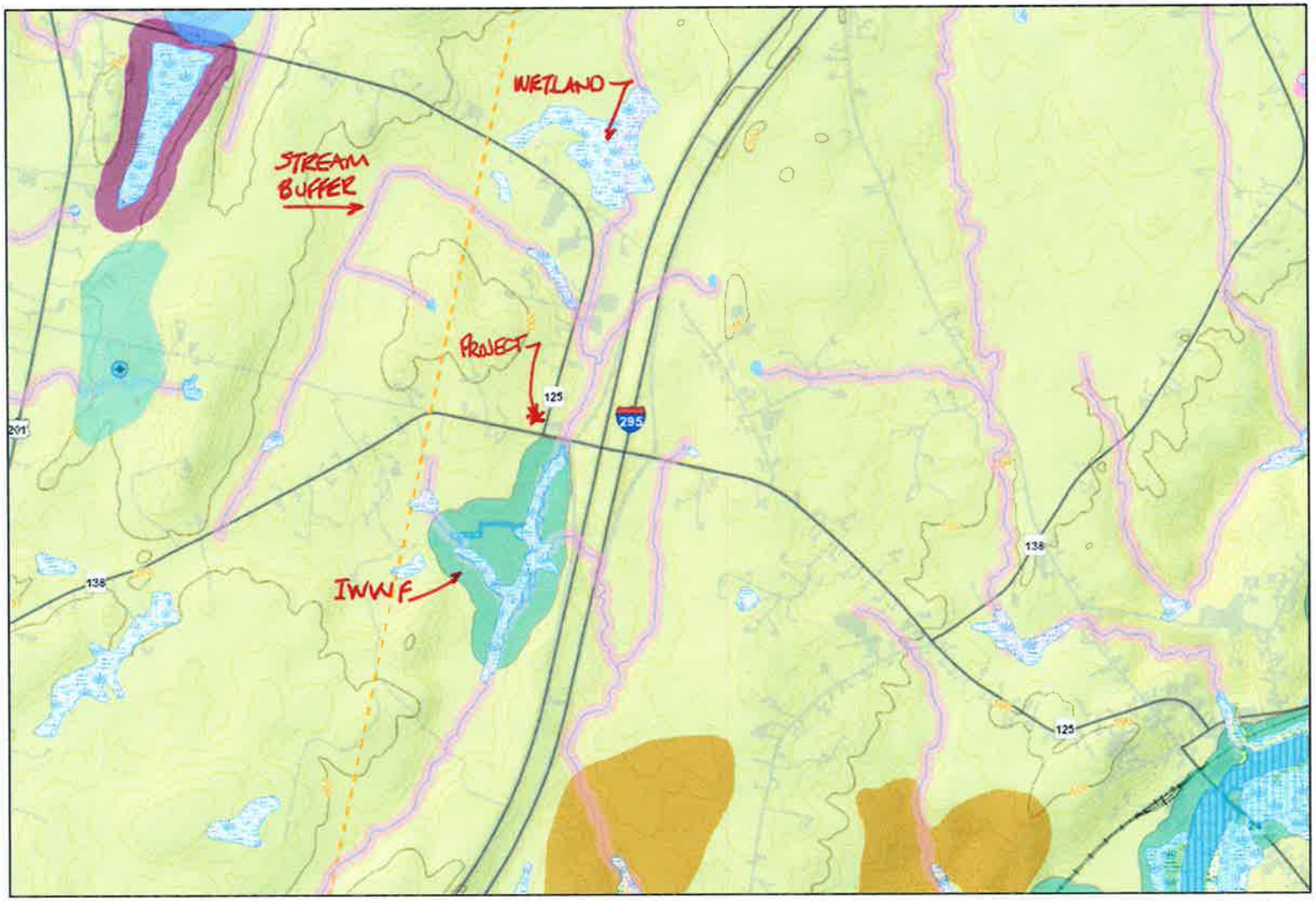
Supported in part by Maine Outdoor Heritage Fund lottery ticket sales

Map Prepared by Maine Department of Inland Fisheries & Wildlife
July 2021

Supported in part by Loon Conservation Plate funds

LEGEND


City/Township
1
2
Watershed Divide (HUC 12)
Watershed Divide (HUC 10)
Watershed Divide (HUC 8)
Watershed Divide (HUC 6)
Wetlands
Great Ponds
Stream_Buffers_75ft
Shellfish Beds
Public Water Supply Wells
Source Protection
Aquifers
ETSC Animal Habitat Buffers
Rare Plants and Natural Communities
Natural Communities
Wild Brook Trout Habitat
Atlantic Salmon Rearing Habitat
Atlantic Salmon Spawning Habitat
Roseate Tern, Piping Plover or Least Tern Nesting Areas
Deer Wintering
Inland Wading Bird and Waterfowl Habitat
Wildlife Wetlands
Seabird Nesting Island
Shorebird Habitat
Tidal Wading Bird and Waterfowl Habitat
Significant Vernal Pools
Municipal
Water Dist., etc.
Private
State
Conserved Lands Easements
Focus
(IWWF)
Less than 2000 Vehicles/Day



BEGINNING WITH HABITAT

Legend

0 0.225 0.45 0.9 1.35 mi

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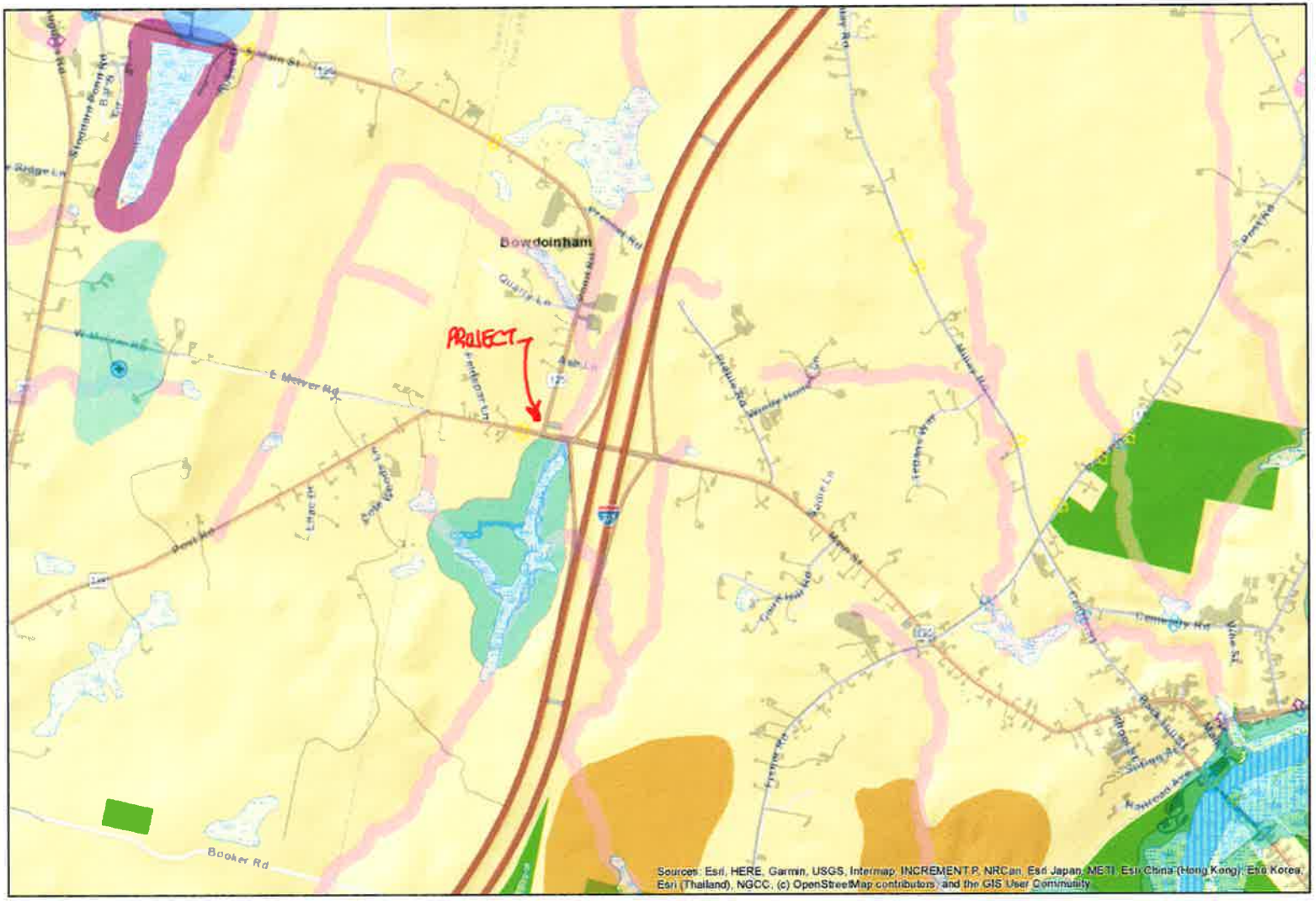


BEGINNING WITH HABITAT

Legend

0 0.225 0.45 0.9 1.35 mi

N W E S

Supported in part by Maine Outdoor Heritage Fund lottery ticket sales

Map Prepared by Maine Department of Inland Fisheries & Wildlife
July 2021

Supported in part by Land Conservation Plate funds

Deed

2021R-06330
TRANSFER TAX PAID
BOOK - PAGE
SAGADAHOC COUNTY MAINE
LYNN C MOORE, REGISTRAR
E-RECORDED ON
07/27/2021 12:03 PM
PAGES: 3

DLN: 1002140154628

TRUSTEE'S DEED

(Maine Statutory Short Form)

KNOW ALL PERSONS BY THESE PRESENTS, that **CONSTANCE L. JACKSON**, SOLE SUCCESSOR TRUSTEE OF THE **HENRY E. LAMOREAU AND ADELINE PARK LAMOREAU LIVING TRUST,** under a Trust Declaration dated April 8, 2003, by the power conferred by law, and every other power, for consideration paid, grants to **SAMMCO HOLDINGS CONIFER RIDGE LLC, a Maine limited liability company** with a mailing address of 165 Applecrest Drive, Yarmouth, Maine 04096, the real property described as follows:

See Attached Exhibit A attached hereto and incorporated herein.

Meaning and intending to convey and hereby conveying the a portion of the premises conveyed to David Lamoreau, Trustee of the Henry E. Lamoreau and Adeline Park Lamoreau Living Trust under trust declaration dated April 8, 2003, by virtue of a deed from Henry E. Lamoreau and Adeline Park Lamoreau, dated April 8, 2003 and recorded in the Sagadahoc County Registry of Deeds in Book 2165, Page 201.

WITNESS my hand and seal this 27th day of July, 2021

WITNESS:

HENRY E. LAMOREAU AND ADELINE PARK LAMOREAU LIVING TRUST

By: Constance L. Jackson
Constance L. Jackson, Sole Successor Trustee

STATE OF MAINE
COUNTY OF CUMBERLAND, ss. July 27, 2021

Then personally appeared the above named, Constance L. Jackson, Sole Successor Trustee of Henry E. Lamoreau and Adeline Park Lamoreau Living Trust, and acknowledged the foregoing instrument to be her free act and deed in said capacity

Before me,

~~Notary Public~~/Attorney at Law
Printed name: Katherine C. Bailey
ME Bar # 4861

EXHIBIT A

A certain lot or parcel of land situated on the westerly side of Pond Road, also known as State Route 125, and on the northerly side of Main Street, also known as State Route 138, in the Town of Bowdoinham, County of Sagadahoc and State of Maine, and being more particularly described as follows:

Beginning at a point on the northerly line of said Main Street at the southeasterly corner of land now or formerly of Todd D. Lamoreau and Gail A. Lamoreau, said point marked by a 5/8" iron rebar capped "P.L.S. 396";

THENCE N26°32'58"E by land of said Todd Lamoreau a distance of 304.83' to a 5/8" iron rebar capped "P.L.S. 396";

THENCE N63°27'02"W by land of said Lamoreau a distance of 302.49' to a 1/2" iron rod;

THENCE N08°04'39"E by land now or formerly of Raymond W. Dyer, Jr., being by a stone wall, a distance of 299.10' to a 5/8" iron rebar at a corner in said wall;

THENCE S68°06'54"E by land now or formerly of Melinda R. Dyer, being by said wall, a distance of 83.80' to a corner in said wall;

THENCE S22°47'09"W by land of said Dyer, being by said wall, a distance of 9.40' to a corner in said wall;

THENCE S66°17'40"E by land of said Dyer, being by said wall, a distance of 39.34' to a 5/8" iron rebar;

THENCE S62°01'50"E by land now or formerly of James M. Magno and Tina L. Magno, being by said wall, a distance of 111.94';

THENCE S73°19'10"E by land of said Magno, being by said wall, a distance of 229.11' to a 5/8" iron rebar;

THENCE S76°55'50"E by land now or formerly of Gerard Perry, being by said wall, a distance of 52.00';

THENCE S60°43'00"E by land of said Perry, being by said wall, a distance of 255.12' to a 5/8" iron rebar at the westerly line of Pond Road;

THENCE S31°23'21"W by said Pond Road a distance of 582.62' to a highway right-of-way monument;

THENCE S79°40'37"W by said Pond Road a distance of 73.02' to a highway right-of-way monument at the northerly line of Main Street;

THENCE N63°27'02"W by said Main Street a distance of 261.63' to the point of beginning.

Containing 7.24 acres, more or less. Bearings are magnetic observed 2005.

Reference is made to a plan titled, "Plan of Property of Henry E. & Adeline P. Lamoreau Trust, West Side of Pond Road (Route 125), Bowdoinham, Maine", by William M. Coombs, dated February 26, 2020, recorded in the Sagadahoc County Registry of Deeds in Plan Book 2020P, Page 12.

Bk 2165 Pg201 #3708
04-10-2003 @ 11:53a

WARRANTY DEED
Maine Statutory Short Form

KNOW ALL MEN BY THESE PRESENTS, That **HENRY E. LAMOREAU** and **ADELINE PARK LAMOREAU**, both of Bowdoinham, Maine, for consideration paid, grants to DAVID LAMOREAU, Trustee of the Henry E. Lamoreau and Adeline Park Lamoreau Living Trust under trust declaration dated April 8, 2003, having a mailing address of 23 Bushey Circle Lewiston Maine with ***WARRANTY COVENANTS***, the land in Bowdoinham, in the County of Sagadahoc and State of Maine, described as follows:

All real estate owned by the within Grantors or either of them, situated in Bowdoinham, Sagadahoc County, Maine, however acquired.

WITNESS our hands this 8th day of April, 2003.

SIGNED, SEALED AND DELIVERED
IN PRESENCE OF:

Henry E. Lamoreau

Adeline Park Lamoreau

STATE OF MAINE
SAGADAHOC, ss.

April 8, 2003

Personally appeared the above named Henry E. Lamoreau and Adeline Park Lamoreau and acknowledged the foregoing instrument to be their free act and deed.

Before me,

~~Notary Public~~/Attorney-At-Law
Print Name: Richard A. Hall

After recording return to:
David Lamoreau, Trustee
23 Bushey Circle
Lewiston, ME 04240

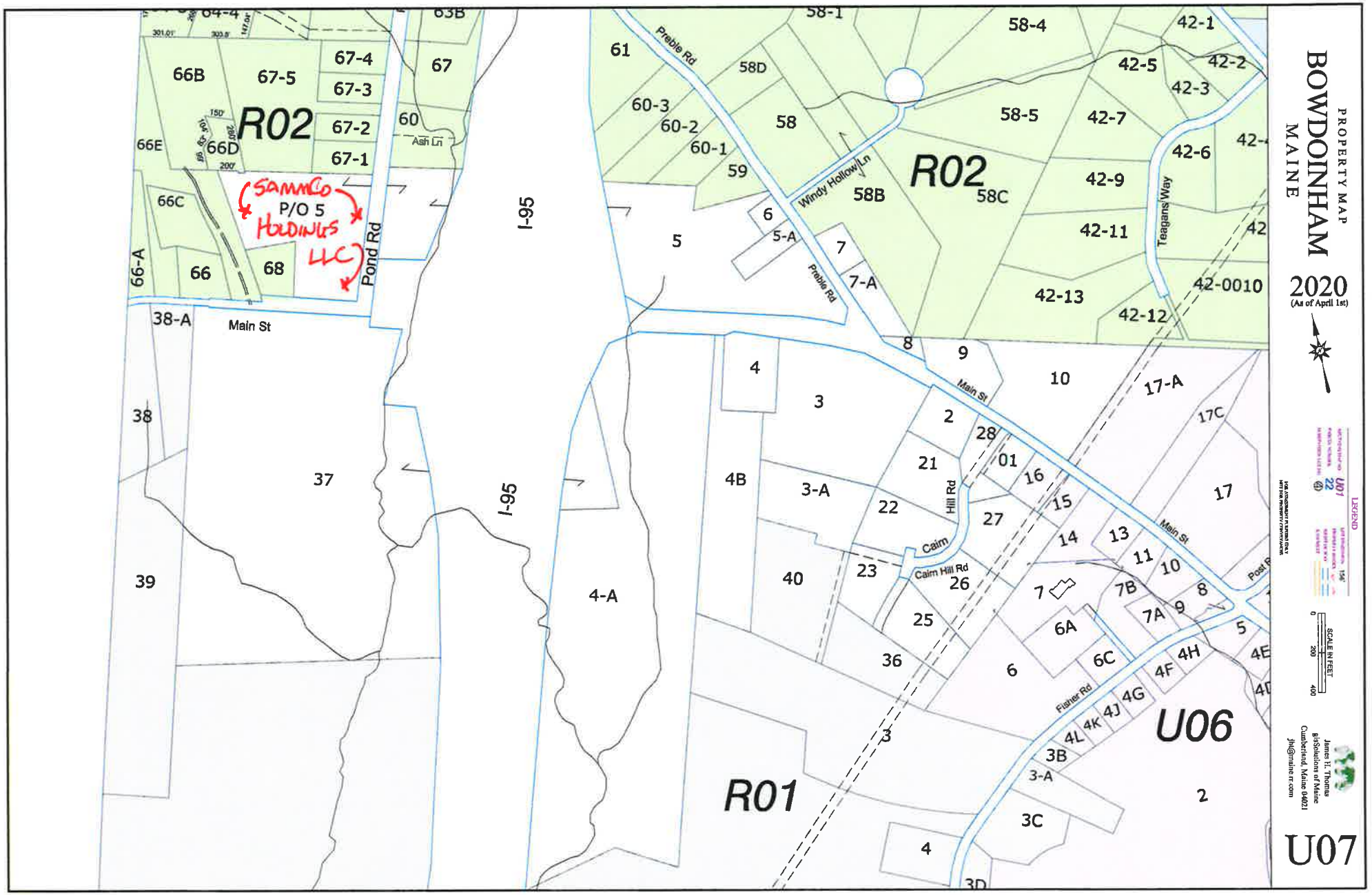
z~drive/3104-001/deed/sbr

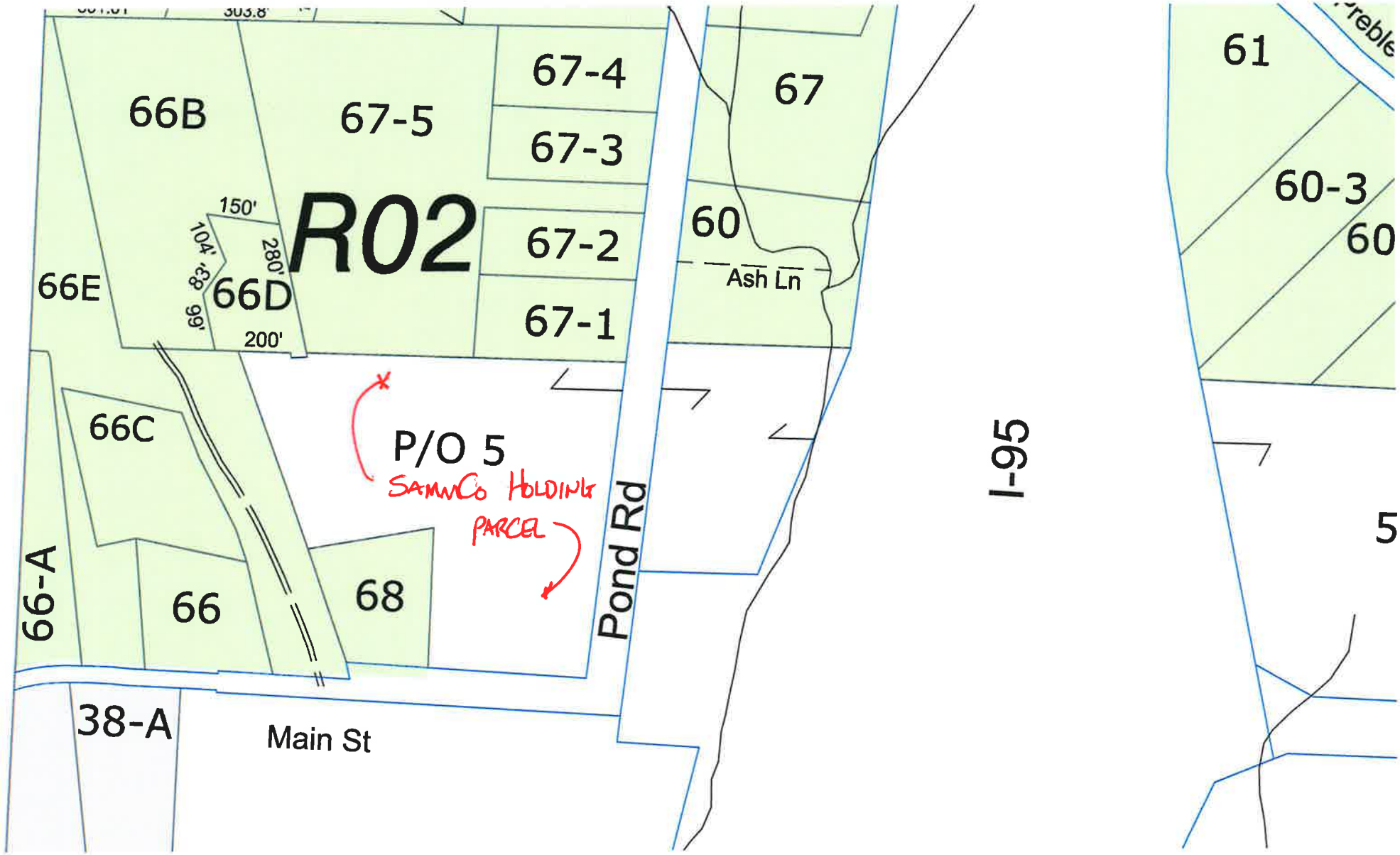
SAGADAHOC COUNTY
Barbara J. Trott
Register of Deeds

Tax Map
Abutters within 200'

List of Abutters
SammCo Holdings, LLC

Map/Lot	Owner	Address
R02/060	Christopher Bartlett	1480 Main Street, Bowdoin, Maine 04008
R02/066	Nathaniel/Laurie Mullet	371 Main St., Bowdoinham, Maine 04008
R02/066B	Kenneth/Lois Dyer	365 Main St, Bowdoinham, Maine 04008
R02/066C	Maniatakos Dimitrios	6 Feldspar Lane, Bowdoinham, Maine 04008
R02/066D	Melinda Dyer	9 Feldspar Lane, Bowdoinham, Maine 04008
R02/066E	Raymond Dyer	407 River Road, Topsham, Maine 04086
R02/067-1	Gerard Perry	28 Pond Road, Bowdoinham, Maine 04008
R02/067-2	Robin Persson (Enright)	38 Pond Road, Bowdoinham, Maine 04008
R02/067-5	James/Tina Magno	42 Pond Road, Bowdoinham, Maine 04008
R02/068	Todd/Gail Lamoreau	347 Main St., Bowdoinham, Maine 04008


PROPERTY MAP
BOWDOINHAM
MAINE
2020
(As of April 1st)
U07
R02
R01
U06
I-95
Pond Rd
Preble Rd
Windy Hollow Ln
Teagans Way
Ash Ln
Main St
Hill Rd
Cairn
Cairn Hill Rd
Fisher Rd
SAMMCO
P/O 5
HOLDINGS
LLC
James H. Thomas
gisSolutions of Maine
Cumberland, Maine 04021
jht@maine.rr.com
SCALE IN FEET
0
200
400



BLOW-UP OF TAX MAP U-7

Account	Name & Address	Land	Building	Exemption	Assessment	Tax
182	ZORN, DEBORA E (TRUSTEE) DEBORA ZORN REVOCABLE TRUST 46 PREBLE RD BOWDOINHAM ME 04008 46 PREBLE RD R02-059 B2732P225 05/18/2006	50,900 Acres 1.01 B2732P225 M2462P222	162,500	31,000 14 Post WW2 Vet NonRes 01 Homestead Exempt	182,400	3,077.09 1,538.55 (1) 1,538.54 (2)
183	BARTLETT, CHRISTOPHER R 1480 MAIN STREET BOWDOIN ME 04287 1 ASH LANE R02-060 B2019RP02466 05/02/2019	67,000 Acres 2.00 B0818P171/3 1457P338 O/C	24,400	0	91,400	1,541.92 770.96 (1) 770.96 (2)
65	BROWN, MICHAEL C PERRY, CAROL B 52 PREBLE ROAD BOWDOINHAM ME 04008 52 PREBLE RD R02-060-001 B2019RP07064 10/15/2019 B3212P228 08/10/2011 B2474P92 10/15/2004	52,400 Acres 1.30 B2474P092 DIVORCE B 3212 P228	50,100	0	102,500	1,729.18 864.59 (1) 864.59 (2)
66	ICANGELO, MARK S 60 PREBLE ROAD BOWDOINHAM ME 04008 60 PREBLE RD R02-060-002 B2035P329	56,500 Acres 2.10 B2035P329	28,600	25,000 01 Homestead Exempt	60,100	1,013.89 506.95 (1) 506.94 (2)
67	AHEARN, TIMOTHY 103 RIVER ROAD PLYMOUTH ME 03264 68 PREBLE RD R02-060-003 B2018RP03648 05/25/2018 B2770P40 08/31/2006	57,600 Acres 2.50 B2770P040	20,500	0	78,100	1,317.55 658.78 (1) 658.77 (2)
1433	CLEARBAUGH, RANDALL 2 ASH LANE BOWDOINHAM ME 04008 2 ASH LANE R02-060-ON	0 1986 14X66 OAKBROOK LIBERTY S/N 14703B2FBCD2B	18,700	0	18,700	315.47 157.74 (1) 157.73 (2)

	Land	Building	Exempt	Total	Tax
Page Totals:	284,400	304,800	56,000	533,200	8,995.10
Subtotals:	20,478,400	31,466,500	3,791,000	48,153,900	812,356.40

Account	Name & Address	Land	Building	Exemption	Assessment	Tax
192	MULLET, NATHANIEL W	52,800	205,700	0	258,500	4,360.89
	MULLET, LAURIE	Acres 1.37				
	371 MAIN STREET					2,180.45 (1)
						2,180.44 (2)
	BOWDOINHAM ME 04008					
		B 3488 P38 BK. 2016R-08580				
	371 MAIN ST	JOINT TENANTS				
	R02-066					
	B2019RP07004 10/10/2019 B2018RP07140 10/02/2018					
	B2016RP08580 10/19/2016 B3488P38 03/11/2103					
	B2236P133					
193	MORGAN, RICHARD D	1,500	0	0	1,500	25.31
	MORGAN, SUSAN M JT	Acres 1.00				
	160 EAST MCIVER RD					12.66 (1)
						12.65 (2)
	BOWDOIN ME 04287					
		B1222P137 B1730P042				
	MAIN ST	SEE BK. 2015R-04593 LINE AGREEMENT				
	R02-066-A					
	B2015RP02787 04/14/2015 B1730P42					
194	DYER, KENNETH J	52,800	74,900	25,000	102,700	1,732.55
	DYER, LOIS A	Acres 4.95		01 Homestead Exempt		
	365 MAIN STREET					866.28 (1)
						866.27 (2)
	BOWDOINHAM ME 04008					
		B0722P058				
	11 FELDSPAR LANE					
	R02-066-B					
	B722P58					
195	DIMITRIOS, MANIATAKOS	52,000	40,300	0	92,300	1,557.10
	6 FELDSPAR LANE	Acres 2.14				
						778.55 (1)
	BOWDOINHAM ME 04008					778.55 (2)
		B2844P011 BK. 2015R-03262				
	6 FELDSPAR LANE	SEE BK. 2015R-04592 LINE AGREEMENT				
	R02-066-C					
	B2844P11 03/19/2007 B2015P3262 05/18/2015					
61	DYER, MELINDA R	51,200	137,000	25,000	163,200	2,753.18
		Acres 1.08		01 Homestead Exempt		
	BOWDOINHAM ME 04008					1,376.59 (1)
	9 FELDSPAR LANE					1,376.59 (2)
		B3539 P.198				
	9 FELDSPAR LANE					
	R02-066-D					
	B3539P198 09/06/2013 B2018RP3139 05/07/2018					
608	DYER, RAYMOND W JR	44,900	0	0	44,900	757.46
	407 RIVER ROAD	Acres 6.72				
						378.73 (1)
	TOPSHAM ME 04086					378.73 (2)
		bk. 2444 pg/ 11				
	MAIN STREET ROUTE # 138					
	R02-066-E					
	B2444P11 03/19/2007					

	Land	Building	Exempt	Total	Tax
Page Totals:	255,200	457,900	50,000	663,100	11,186.49
Subtotals:	21,621,900	33,991,400	3,991,000	51,622,300	870,868.31

Account	Name & Address	Land	Building	Exemption	Assessment	Tax
196	WELSHER,LAWRENCE E & MARSHA K TRUSTEES/WELCHER REVOCABLE TRUST 22 PARK ST PO BOX 81 SOUTH FREEPORT ME 04078 0081 49 POND RD R02-067 B1482P29	59,400 Acres 3.19 B1482P029 M1468P009 M1980P183	317,900	0	377,300	6,365.05 3,182.53 (1) 3,182.52 (2)
197	PERRY, GERARD 28 POND ROAD BOWDOINHAM ME 04008 28 POND RD R02-067-001 B2018RP06777 09/18/2018 B699P146	51,900 Acres 1.20 B0699P0146 M1674P299 M1793P021 M2030P090	75,800	0	127,700	2,154.30 1,077.15 (1) 1,077.15 (2)
198	PERSSON, ROBIN M (ENRIGHT) 38 POND RD BOWDOINHAM ME 04008 38 POND RD R02-067-002 B1785P223	50,900 Acres 1.01 B1785P223 M1785P224	73,200	25,000 01 Homestead Exempt	99,100	1,671.82 835.91 (1) 835.91 (2)
199	ANDERSON, SUSAN R 44 POND RD BOWDOINHAM ME 04008 44 POND RD R02-067-003 B1626P216	51,100 Acres 1.06 B1605P211 B1626P216 M1605P212	90,800	0	141,900	2,393.85 1,196.93 (1) 1,196.92 (2)
200	DRISCOLL, IVY P.O. BOX 225 Bowdoinham Maine 04008 48 POND RD R02-067-004 B675P68	52,400 Acres 1.29 B0675P068 M1346P042 M2552P200 M2637P090	82,900	25,000 01 Homestead Exempt	110,300	1,860.76 930.38 (1) 930.38 (2)
201	MAGNO, JAMES M MAGNO, TINA L 42 POND ROAD BOWDOINHAM ME 04008 42 POND RD R02-067-005 B2017RP01804 03/17/2017 B553P187	36,500 Acres 7.14 B0553P187 BK. 2017R-01804	330,200	25,000 01 Homestead Exempt	341,700	5,764.48 2,882.24 (1) 2,882.24 (2)

	Land	Building	Exempt	Total	Tax
Page Totals:	302,200	970,800	75,000	1,198,000	20,210.26
Subtotals:	21,924,100	34,962,200	4,066,000	52,820,300	891,078.57

Account	Name & Address	Land	Building	Exemption	Assessment	Tax
1364	LAMOREAU, TODD D LAMOREAU, GAIL A JT 347 MAIN STREET BOWDOINHAM ME 04008 347 MAIN ST R02-068 B2672P258 01/09/2006	55,000 Acres 1.77 B2672P258 WAS IN TREE GROWTH -P/O U07-005 ACCT 1201	171,600	0	226,600	3,822.74 1,911.37 (1) 1,911.37 (2)
1633	HOLT, RONALD HOLT, MELISSA 421 MILLAY ROAD BOWDOINHAM ME 04008 421 MILLAY RD R02-070 B2147P43	59,200 Acres 3.11 B2147P043 M2147P046 M1633P208	231,400	25,000 01 Homestead Exempt	265,600	4,480.67 2,240.34 (1) 2,240.33 (2)
217	KANEWSKE, ROBERT H JT KANEWSKE, EMY C 474 RIDGE RD BOWDOINHAM ME 04008 474 RIDGE RD R03-001 B2015RP06982 09/14/2015 B2854P144 04/16/2007	65,400 Acres 30.00 B2854P144 2015R-06982	237,500	37,000 01 Homestead Exempt 17 Vietnam 2/64 5/75 Non-Res 14 Post WW2 Vet NonRes	265,900	4,485.73 2,242.87 (1) 2,242.86 (2)
213	LOPEZ, CHARLES A LOPEZ, LAUREL R JT 486 RIDGE ROAD BOWDOINHAM ME 04008 486 RIDGE RD R03-001-A B2302P115 10/24/2003	65,700 Acres 6.80 B2302P115 M2302P117	96,600	25,000 01 Homestead Exempt	137,300	2,316.25 1,158.13 (1) 1,158.12 (2)
218	CURRAN, CYNTHIA MARIE 481 RIDGE RD BOWDOINHAM ME 04008 9719 481 RIDGE RD R03-002-A B1068P14	106,500 Acres 57.69 B1002P219 B1068P014	125,900	25,000 01 Homestead Exempt	207,400	3,498.84 1,749.42 (1) 1,749.42 (2)
1663	DEVISEES OF CURRAN,ROBERT J. 481 RIDGE RD BOWDOINHAM ME 04008 9719 RIDGE RD R03-002-A-ON	0 BUILDING ON LAND OF CURRAN,CYNTHIA MARIE	25,400	0	25,400	428.50 214.25 (1) 214.25 (2)

	Land	Building	Exempt	Total	Tax
Page Totals:	351,800	888,400	112,000	1,128,200	19,032.73
Subtotals:	22,275,900	35,850,600	4,178,000	53,948,500	910,111.30

Account	Name & Address	Land	Building	Exemption	Assessment	Tax
1201	HEIRS OF HENRY & ADELINE LAMOREAU C/O/ CONSTANCE JACKSON, TRUSTEE 1893 ROYALSBOROUGH ROAD DURHAM ME 04222 10 PREBLE RD U07-005 B2165P201 04/08/2003	58,300 Acres 25.00 SEE ANDROSCOGGIN PROBATE 2016) TREE GROWTH-2001	0	0	58,300	983.52 491.76 (1) 491.76 (2)
1202	TUCK,JUDITH L LIVING TRUST C/O JUDITH L. TUCK 28 PREBLE RD BOWDOINHAM ME 04008 9641 28 PREBLE RD U07-005-A B2022P19	50,800 Acres 1.00 B2022P019	219,400	31,000 22 Post WW2 Widow Res 01 Homestead Exempt	239,200	4,035.30 2,017.65 (1) 2,017.65 (2)
1205	SHIN, YOUNGOK SPROUL, RICHARD L 78 ANDERSON AVENUE YARMOUTH ME 04096 21 PREBLE RD U07-007 B2020RP02140 03/24/2020 B2964P51 03/07/2008	46,800 Acres 0.81 B2964P051	0	0	46,800	789.52 394.76 (1) 394.76 (2)
1206	GUSTAFSON, PAUL E GUSTAFSON, KIM P 13 PREBLE ROAD BOWDOINHAM ME 04008 13 PREBLE RD U07-007-A B397P784	52,700 Acres 1.36 B0397P0784	97,600	31,000 01 Homestead Exempt 16 Vietnam 2/64 5/75 Res	119,300	2,012.59 1,006.30 (1) 1,006.29 (2)
1207	MONTMINY, ASHLEIGH A FEENEY,LOGAN J, PO BOX 1214 BONNER MT 59823 237 MAIN ST U07-008 B3238P124 10/29/2010 B2264P94 08/26/2003	33,400 Acres 0.32 B2264P094 BK3238 P124	144,000	0	177,400	2,992.74 1,496.37 (1) 1,496.37 (2)
1208	SMITH, BRIAN B 213 MAIN ST BOWDOINHAM ME 04008 3 SADIE LANE U07-009 B2461P231 09/20/2004	49,800 Acres 2.05 B2461P231	70,000	0	119,800	2,021.03 1,010.52 (1) 1,010.51 (2)

	Land	Building	Exempt	Total	Tax
Page Totals:	291,800	531,000	62,000	760,800	12,834.70
Subtotals:	144,150,200	170,390,600	21,127,900	293,412,900	4,949,876.25

Financial and Technical Ability

Norway Savings Bank

June 3, 2024

Town of Bowdoinham
13 School Street
Bowdoinham, Maine 04008

RE: Conifer Ridge Project – Samm Co Holdings LLC

Dear Town of Bowdoinham:

I am pleased to inform you that Samm Co Holdings LLC primarily owned by Jesse and Joshua Sammon, enjoys a great reputation in the Greater Brunswick, Topsham and Lewiston Auburn Areas. The two brothers have more than 25 years' experience in both residential and commercial real estate development and construction. Not only do they have the expertise and knowledge base, they also have the financial capacity to complete the proposed development project at Conifer Ridge in Bowdoinham. It is understood that the proposed project cost is approximately $3,000,000.

This letter is not a commitment to lend funds, however, we strongly believe that Samm Co Holdings LLC has the experience and financial capacity to successfully develop the site.

I am more than happy to provide more validation and specifics on other projects they have completed recently and others over their years in real estate development.

Feel free to reach me at 207-393-3663 or by email at ipullen@norwaysavingsbank.com.

Sincerely,

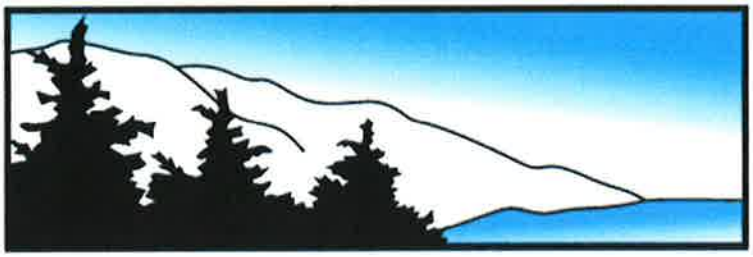
Ian T. Pullen
VP, Commercial Lending

SammCo Holdings Conifer Ridge LLC, Bowdoinham

		Qty	Unit	Unit price		Cost
General Conditions						
1	Trash	1	Allowance	3000	$	3,000.00
1	Temp Utilities, Heat & Electric	6	month	6000	$	36,000.00
1	site security	1	Allowance	1800	$	1,800.00
1	Permits/ Design Fees	1	Allowance	42000	$	42,000.00
1	contingencies	1	Allowance	60000	$	60,000.00
	General Conditions Subtotal				***$***	***142,800.00***
Sitework						
2	Excavation Site prep, Paving, Septic	1	Lump	455500	$	455,500.00
2		1	Lump		$	-
	sitework				***$***	***455,500.00***
Concrete Foundation						
8	footings, frost walls, sog	1	lump	71900	$	71,900.00
8		1			$	-
	Concrete				***$***	***71,900.00***
Modular Units						
9	Modular units including delivery and set	1	lump	2065000	$	2,065,000.00
9		1			$	-
	Finishes Subtotal				***$***	***2,065,000.00***
Finishes						
11	on-site unit finishes	1	lump	72000	$	72,000.00
	Finishes Subtotal				***$***	***72,000.00***
Plumbing						
22	modular hook ups and site tie in	1	Lump	28000	$	28,000.00
22		1			$	-
22		1			$	-
22		1			$	-
22		1			$	-
	Plumbing Subtotal				***$***	***28,000.00***
HVAC						
23	repairs/ upgrades	1	Allowance	62000	$	62,000.00
					$	-
	HVAC Subtotal				***$***	***62,000.00***
Electrical						
26	Service and Exterior Fixtures	1	Lump	76000	$	76,000.00
26		1			$	-
	Electrical Subtotal				***$***	***76,000.00***
Exterior Improvements						
32	Landscaping	1	Allowance	22000	$	22,000.00
32		1			$	-
	Exterior Improvements Subtotal				***$***	***22,000.00***
	Total Project Cost				***$***	***2,995,200.00***

Wetland Delineation Narrative with map

JONES
ASSOCIATES
Foresters, Surveyors and
Environmental Consultants



WETLAND REPORT

ROUTE 138

TAX MAP U-7, LOT 5

BOWDOINHAM, MAINE 04008

Prepared for:	Prepared by:
Aldin Tome 312 River Road Bowdoinham, Maine 04008	Jones Associates, Inc. 280 Poland Spring Road Auburn, Maine 04210

JA Job #20-035BO
April 2020

TABLE OF CONTENTS

INTRODUCTION

Jones Associates, Inc. was contracted to provide wetland delineation services for Aldin Tome on a lot adjacent to the Bowdoinham Park and Ride that is located in Bowdoinham, Maine 04008 (Tax Map U7, Lot 5).The delineation encompassed the entire +/- 8 acres of the property. The following report summarizes site conditions observed during a site visit in late April of 2020.

Wetland/upland boundaries were identified and delineated according to *U.S. Army Corps of Engineers (ACOE) Wetlands Delineation Manual (Environmental Laboratory 1987)* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, January 2012*. Wetlands were identified based on the presence of hydric soil (inundated or saturated soil conditions resulting from permanent or periodic inundation by ground water or surface water), hydrology (movement and distribution of water), and predominance of hydrophytic species (Hydrophytes: vegetation typically adapted for life in saturated soil conditions).

Wetland delineations consist of transecting the property, examining periodic soil samples, observing any evidence of hydrology and assessing each stratum of vegetation for its percentage of hydrophytic species. If all three factors were evident, the study plot was considered wetland habitat. Transitions between upland and wetland were clearly marked with blue sub-zero flagging every 30-40 feet, and labeled with alphanumeric codes to identify individual systems (A1, A2, A3….).

EXISTING CONDITIONS

The eastern boundary of this property is bound by Pond Road while the southern boundary is bound by Route 138. The western and northern boundary of this property are privately-owned properties. This parcel is located just west of the Bowdoinham Park and Ride. Evidence of past logging activities is present throughout the site. Currently, there is no development on the property.

The overall hydrological flow on this property occurs from west to east/southeast. For this reason, it was unsurprising culverts were observed along the southernmost and easternmost boundaries as this allows for the wetlands to drain off the property under the roads.

WETLAND CHARACTERISTICS

The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

--Corps of Engineers Wetlands Delineation Manual (U.S. Army Corps of Engineers 1987)

The area of investigation consists of one wetland, Wetland A, which is shown on the attached Wetland Sketch Plan.

Wetland A is a large wetland that runs throughout the center of the property towards the eastern boundary of the parcel. It can be described as palustrine (P) forested (FO) wetland with broad-leaved deciduous vegetation (1) and is seasonally flooded/saturated (E) or (PFO1E). Hydrological indicators in this wetland consist of surface water, a high water table, saturation, water-stained leaves, drainage patterns, and microtopographic relief. This wetland is largely influenced by drainage patterns that begin in western portion of the property. Vegetation in this wetland includes quaking aspen (*Populus tremuloides*), green ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), speckled alder (*Alnus incana*), winterberry (*Ilex verticillata*), morrow's honeysuckle (*Lonicera morrowii*), swamp dewberry (*Rubus hispidus*), sensitive fern (*Onoclea sensibilis*), lady fern (*Athyrium angustum*), and Spahgnum spp., indicating the presence of hydrophytic vegetation. Soil color in this wetland consists of 10YR 5/1 from 0-16 inches with redox features with a color of 10YR 4/4, enabling this soil to be classified with a hydric soil indicator of loamy mucky mineral.

SOILS

According to U.S. Department of Agriculture, Natural Resources Conservation Service, the soil series typed within the property area are Lamoine-Buxton complex, Lyman-Tunbridge complex, and Scantic silt loam. Characteristics of each series are described in the soil report according to: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, Official Soil Series Descriptions, https://soilseries.sc.egov.usda.gov/osdname.aspx.

LAMOINE SERIES

The Lamoine series consists of very deep, somewhat poorly drained soils formed in glaciolacustrine or glaciomarine deposits on coastal lowlands and river valleys. Slope ranges from 0 to 15 percent. Permeability is moderate or moderately slow in the surface horizon, moderately slow or slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil and in the substratum. Mean annual temperature is about 7 degrees C, and mean annual precipitation is about 1118 mm at the type location.

TYPICAL PEDON: Lamoine silt loam, on a 3 percent slope in an abandoned hayfield. (Colors are for moist soil unless otherwise noted.)

GEOGRAPHIC SETTING: Lamoine soils are on coastal lowlands and river valleys. Slope ranges from 0 to 15 percent. The soils formed in medium, moderately fine and fine textured glaciolacustrine or glaciomarine sediments. The climate is humid and cool temperate. The mean annual precipitation ranges from 864 to 1219 mm, and mean annual temperature ranges from 6 to 8 degrees C. The frost-free season ranges from 90 to 160 days. Elevation ranges from 2 to 274 meters above mean sea level.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Somewhat poorly drained. Surface runoff is medium. Saturated hydraulic conductivity is moderately high in the surface horizon, moderately low to moderately high throughout the remainder of the solum, and low to moderately low in the substratum.

USE AND VEGETATION: Cleared areas are used mainly for hay or pasture. The remaining areas are forested. Common tree species include eastern white pine, balsam fir, red spruce, white spruce, eastern hemlock, red maple, yellow birch, gray birch, paper birch, sugar maple, alders and aspen.

BUXTON SERIES

The Buxton series consists of very deep, moderately well drained soils that formed in glaciolacustrine or glaciomarine deposits on coastal lowlands and river valleys. Slope ranges from 3 to 50 percent. Permeability is moderate or moderately slow in the surface horizon, moderately slow or slow in the upper part of the subsoil, and slow or very slow in the lower part

of the subsoil and in the substratum. Mean annual temperature is about 7 degrees C, and mean annual precipitation is about 1118 mm at the type location.

TYPICAL PEDON: Buxton silt loam, on a 13 percent slope in an abandoned hayfield. (Colors are for moist soil unless otherwise noted.)

GEOGRAPHIC SETTING: Buxton soils are on coastal lowlands and river valleys. Slope ranges from 3 to 50 percent. The soils formed in medium, moderately fine, and fine textured glaciolacustrine or glaciomarine deposits. The climate is humid and cool temperate. Mean annual precipitation ranges from 860 to 1220 mm, and mean annual temperature ranges from 6 to 8 degrees C. The frost-free season ranges from 90 to 160 days. Elevation ranges from 2 to 274 meters above mean sea level.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Moderately well drained. Surface runoff is medium or rapid depending on slope. Saturated Hydraulic Conductivity is moderately high in the surface horizon and the upper part of the subsoil, and low to moderately low in the lower part of the subsoil and in the substratum.

USE AND VEGETATION: Cleared areas are used mainly for hay, forage crops, or pasture. Some areas are used for silage corn or vegetables. The remaining areas are forested. Common tree species include eastern white pine, balsam fir, paper birch, white spruce, eastern hemlock, and northern red oak.

LYMAN SERIES

The Lyman series consists of shallow, somewhat excessively drained soils on glaciated uplands. They formed in loamy supraglacial till. Estimated saturated hydraulic conductivity is moderately high or high throughout the mineral soil. Slope ranges from 0 to 80 percent. Mean annual precipitation is about 1175 mm, and mean annual temperature is about 5 degrees C.

TYPICAL PEDON: Lyman loam, on a northwest facing, 55 percent slope in a very rocky forested area. (Colors are for moist soil.)

GEOGRAPHIC SETTING: Lyman soils are on nearly level to very steep glaciated uplands. They are on the tops and sides of hills and mountains. Slope ranges from 0 to 80 percent. The soils formed in loamy supraglacial till of Wisconsin age derived mainly from micaceous schist, gneiss, phyllite, and granite. The mean annual precipitation is 790 to 2420 mm, and the mean annual temperature is -3 to 9 degrees C. The frost-free period is from 60 to 160 days. Elevation ranges from about 2 to 800 meters above mean sea level.

DRAINAGE AND PERMEABILITY: Somewhat excessively drained. Potential runoff is very high. Estimated saturated hydraulic conductivity is moderately high or high in the mineral soil.

USE AND VEGETATION: Most areas are wooded. The common trees are American beech, white ash, yellow birch, paper birch, northern red oak, sugar maple, eastern white pine, eastern hemlock, red spruce, white spruce, and balsam fir. Some areas have been cleared and are primarily used for hay and pasture. A few cleared areas are used for cultivated crops.

TUMBRIDGE SERIES

The Tunbridge series consists of moderately deep, well drained soils on glaciated uplands. They formed in loamy supraglacial till. Saturated hydraulic conductivity is moderately high or high throughout the mineral soil. Slope ranges from 0 to 80 percent. Mean annual precipitation is about 1180 mm, and mean annual temperature is about 6 degrees C.

TYPICAL PEDON: Tunbridge fine sandy loam, on a west-facing, 58 percent slope under mixed northern hardwoods. (Colors are for moist soil.)

GEOGRAPHIC SETTING: Tunbridge soils are on nearly level to very steep glaciated uplands. They are on the tops and sides of hills and mountains. Slope ranges from 0 to 80 percent. The soils formed in loamy supraglacial till of Wisconsin age derived mainly from micaceous schist, gneiss, phyllite, granite, and meta-anorthosite. The mean annual precipitation is 790 to 2420 mm, and the mean annual temperature is -3 to 7 degrees C. The frost-free period is from 60 to 160 days. Elevation ranges from about 2 to 800 meters above mean sea level.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained. Saturated hydraulic conductivity is moderately high or high throughout the mineral soil.

USE AND VEGETATION: Most areas are wooded. The common trees are American beech, white ash, yellow birch, paper birch, northern red oak, sugar maple, eastern white pine, eastern hemlock, red spruce, white spruce, and balsam fir. Some areas have been cleared and are primarily used for hay and pasture. A few cleared areas are used for cultivated crops.

SCANTIC SERIES

The Scantic series consists of very deep, poorly drained soils formed in glaciomarine or glaciolacustrine deposits on coastal lowlands and river valleys. Slope ranges from 0 to 8 percent. Saturated hydraulic conductivity of the surface and subsurface horizons is moderately high or high and low or moderately slow in the subsoil and substratum. Mean annual temperature is about 7 degrees C, and mean annual precipitation is about 1168 mm inches at the type location.

TYPICAL PEDON: Scantic silt loam, on a 1 percent slope in an idle field. (Colors are for moist soil unless otherwise noted.)

GEOGRAPHIC SETTING: Scantic soils are on coastal lowlands and river valleys. Slope ranges from 0 to 8 percent. The soils formed in medium, moderately fine and fine textured glaciomarine or glaciolacustrine deposits. The climate is humid and cool temperate. Mean annual temperature ranges from about 6 to almost 8 degrees C , and mean annual precipitation ranges from 863 to 1219 mm. The frost-free season ranges from 90 to 160 days. Elevation ranges from about 2 to 275 m above mean sea level.

DRAINAGE AND PERMEABILITY: Poorly drained. Surface runoff is slow. Saturated hydraulic conductivity of the surface and subsurface horizons is moderately high or high and low or moderately slow in the subsoil and substratum.

USE AND VEGETATION: Mostly idle or woodland, some areas are used for growing hay and pasture. Common tree species include red maple, elm, gray birch, white ash, balsam fir, red and white spruce, tamarack, and some eastern white pine.

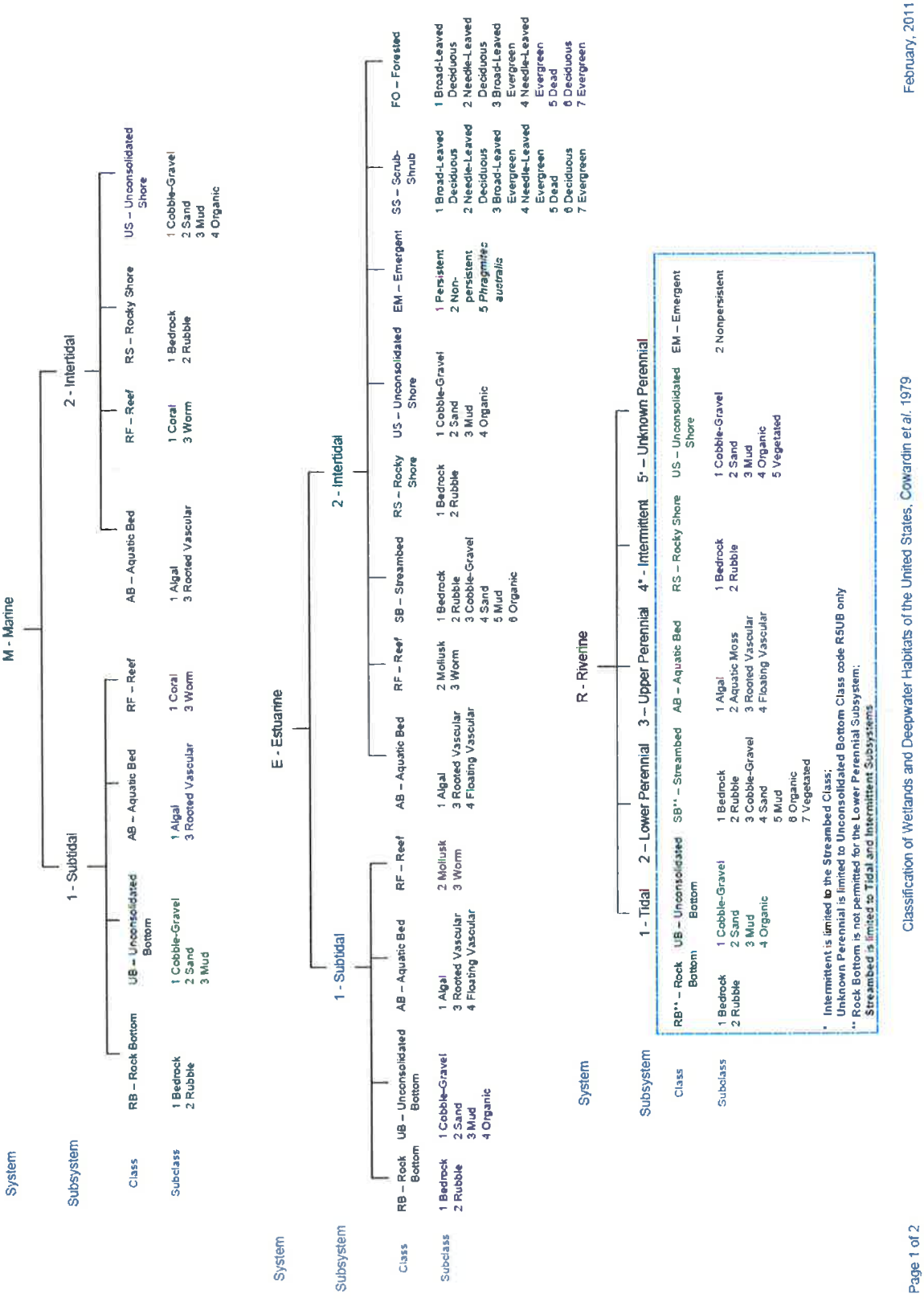
RARE OR UNUSUAL FEATURES AND VERNAL POOLS

Jones Associates Inc. did not observe any potential vernal pools during investigations. Additionally, no unusual plant or animal species were observed within the area of interest. The wetlands on this property were dominated by plant communities typical of this region of Maine.

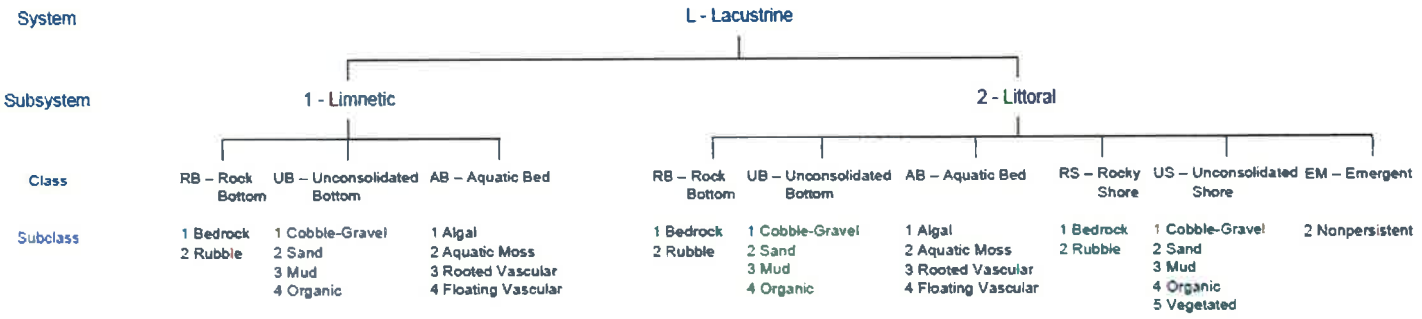
NORTHERN LONG-EARED BAT

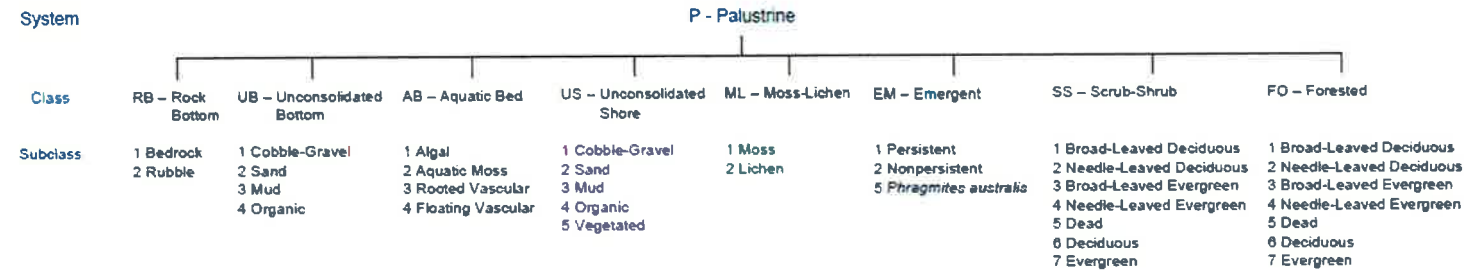
The United States Fish and Wildlife Service listed the Northern Long-Eared Bat (NLEB) (*Myotis septentrionalis*) as threatened with Interim 4(d) Rule. This listing affects development occurring within the range of the NLEB (www.fws.gov/midwest/endangered/mammals/nleb/nlebRangeMap.html) and within the White Nose Syndrome Buffer Zone (http://www.fws.gov/midwest/nleb/WNSBuffer.pdf) that could cause purposeful or incidental take (harm, kill or otherwise harass). This includes the clearing of trees where NLEB could be living. If your project requires such action a permit may be necessary.

US Fish and Wildlife Service, http://www.fws.gov/wetlands/Documents/Wetlands-and-Deepwater-Habitats-Classification-chart.pdf



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION





MODIFIERS

In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Coastal Halinity**	**Inland Salinity**	**pH Modifiers for all Fresh Water**	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	i Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

WETLAND RULES AND INFORMATION

WETLANDS OF SPECIAL SIGNIFICANCE

All coastal wetlands and great ponds are considered wetlands of special significance. In addition, certain freshwater wetlands are considered wetlands of special significance.

A. Freshwater Wetlands of Special Significance. A freshwater wetland of special significance has one or more of the following characteristics.

(1) Critically imperiled or imperiled community. The freshwater wetland contains a natural community that is critically imperiled (S1) or imperiled (S2) as defined by the Natural Areas Program.

(2) Significant wildlife habitat. The freshwater wetland contains significant wildlife habitat as defined by 38 M.R.S.A. § 480-B (10).

(3) Location near coastal wetland. The freshwater wetland area is located within 250 feet of a coastal wetland.

(4) Location near GPA great pond. The freshwater wetland area is located within 250 feet of the normal high water line, and within the same watershed, of any lake or pond classified as GPA under 38 M.R.S.A. § 465-A.

(5) Aquatic vegetation, emergent marsh vegetation or open water. The freshwater wetland contains, under normal circumstances, at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water, unless the 20,000 or more square foot area is the result of an artificial pond or impoundment.

(6) Wetlands subject to flooding. The freshwater wetland area is inundated with floodwater during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Management Agency or other site-specific information.

(7) Peatlands. The freshwater wetland is or contains peatlands, except that the department may determine that a previously mined peatland, or portion thereof, is not a wetland of special significance.

(8) River, stream or brook. The freshwater wetland area is located within 25 feet of a river, stream or brook.

B. Permit Process. Alterations of wetlands of special significance usually require an individual permit. However, some alterations of freshwater wetlands of special significance may be eligible for Tier 1 or 2 review if the department determines, at the applicant's request, that the activity will not negatively affect the freshwater wetlands or other protected natural resources present. In making this determination, the department considers such factors as the size of the alteration, functions of the impacted area, existing development or character of the area in and around the alteration site, elevation differences and hydrological connection to surface water or other protected natural resources, among other things.

C. Seasonal Factors. When determining the significance of a resource or impact from an activity, seasonal factors and events that temporarily reduce the numbers or visibility of plants or animals, or obscure the topography and characteristics of a wetland such as a period of high water, snow and ice cover, erosion event, or drought, are taken into account. Determinations may be deferred for an amount of time necessary to allow an assessment of the resource without such seasonal factors.

STREAM CHANNELS

According to Maine's Natural Resource Protection Act, Title 38, Article 5-A, Protection of Natural Resources, §480-B Definitions:

"River, stream or brook" means a channel between defined banks. A channel is created by the action of surface water and has two or more of the following characteristics:

(1) It is depicted as a solid or broken blue line on the most recent edition of the U.S. Geological Survey 7.5-minute series topographic map or, if that is not available, a 15-minute series topographic map.

(2) It contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years.

(3) The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water.

(4) The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed.

(5) The channel contains aquatic vegetation and is essentially devoid of upland vegetation.

"River, stream or brook" does not mean a ditch or other drainage way constructed, or constructed and maintained, solely for the purpose of draining storm water or a grassy swale.

VERNAL POOLS

As defined by Maine's Department of Environmental Protection (MDEP): A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus spp.*), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.

As of September 1, 2007, "Significant Vernal Pools" are defined by MDEP as "Significant Wildlife Habitat." As read in MDEP's Chapter 335 -- Significant Wildlife Habitat Rules, "Whether a vernal pool is a significant vernal pool is determined by the number and type of pool-breeding amphibian egg masses in a pool, or the presence of fairy shrimp, or use by threatened or endangered species as specified in Section 9(B). Significant vernal pool habitat consists of a vernal pool depression and a portion of the critical terrestrial habitat within a 250 foot radius of the spring or fall high water mark of the depression. An activity that takes place in, on, over, or adjacent to a significant vernal pool habitat must meet the standards of this chapter."

Species and abundance criteria required for Significant Vernal Pools.

Species	Abundance Criteria
Fairy shrimp	Presence in any life stage.
Blue spotted salamanders	Presence of 10 or more egg masses.
Spotted salamanders	Presence of 20 or more egg masses.
Wood frogs	Presence of 40 or more egg masses.

MDEP habitat management standards for significant vernal pools: To the greatest extent practicable, the following management practices must be followed within significant vernal pool habitat.

(1) No disturbance within the vernal pool depression;

(2) Maintain a minimum of 75% of the critical terrestrial habitat as unfragmented forest with at least a partly-closed canopy of overstory trees to provide shade, deep litter and woody debris.

(3) Maintain or restore forest corridors connecting wetlands and significant vernal pools;

(4) Minimize forest floor disturbance; and

(5) Maintain native understory vegetation and downed woody debris.

If more than 25% of the critical terrestrial habitat has been previously developed, restoring a portion of that area through supplemental planting or regrowth of native forest species may be considered toward meeting these standards, or towards standards for avoidance, minimization, or compensation. For purposes of Chapter 355, developed area includes disturbed areas excluding

areas that are returned to a condition with the same drainage patterns and the same or improved cover type that existed prior to the disturbance;

Currently, Army Corps of Engineers (ACOE) regulate vernal pools but do not have specific characteristics that define a vernal pool, or a definition of which vernal pools require protection or buffering. They review each site on a case by case basis. ACOE's jurisdiction does not begin until the waters of the United States are impacted.

NATURAL RESOURCES PROTECTION ACT

Jones Associates, Inc. has many years of experience working with and interpreting Maine's environmental laws; however MDEP has several unwritten policies that may change without public notice, therefore, certain project specific questions may need review by MDEP staff.

The Natural Resources Protection Act (NRPA) became effective on August 4, 1988. The law is focused on "protected natural resources". A permit is required when an "activity" will be:

(1) Located in, on or over any protected natural resource, or

(2) Located adjacent to (A) a coastal wetland, great pond, river, stream or brook or significant wildlife habitat contained within a freshwater wetland, or (B) certain freshwater wetlands.

An "activity" is (A) dredging, bulldozing, removing or displacing soil, sand, vegetation or other materials; (B) draining or otherwise dewatering; (C) filling, including adding sand or other material to a sand dune; or (D) any construction, repair or alteration of any permanent structure.

The Maine Department of Environmental Protection (MDEP) does not have to be contacted for projects involving minor wetland impacts. Single, complete activities that impact less than 4,300 square feet of freshwater wetland and do NOT occur within: another type of protected natural resource; 25 feet of another protected natural resource and erosion controls are used; a municipal shoreland zone; a wetland normally containing at least 20,000 sq. ft. of open water, aquatic or emergent marsh vegetation; or a peatland are exempt under the Natural Resources Protection Act, 38 M.R.S.A. Section 480-Q(17).

NRPA - PERMIT BY RULE

A "permit by rule" or "PBR", when approved by MDEP, is an approval for an activity that requires a permit under the Natural Resources Protection Act (NRPA). Only those activities described in Chapter 305 may proceed under the PBR process. A PBR activity will not significantly affect the environment if carried out in accordance with this chapter, and generally has less of an impact on the environment than an activity requiring an individual permit. A PBR satisfies the NRPA permit requirement and Water Quality Certification requirement. The following projects may be eligible as PBR activities:

Section (2) Activity Adjacent to Protected Natural Resource

> (An activity adjacent to (any land area within 75 feet, measured horizontally, of the normal high water line), but not in: a coastal wetland, great pond, river, stream or brook or significant wildlife habitat contained within a freshwater wetland; or freshwater wetlands consisting of or containing: under normal circumstances, at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water, except for artificial ponds or impoundments; or peatlands dominated by shrubs, sedges and sphagnum moss.

Section (3) Placement of permanent intake pipes and water monitoring devices (including drilled wells)

Section (4) Replacement of Structures

Section (6) Movement of Rocks or Vegetation

Section (7) Placement of outfall pipes (including ditches and drain tiles)

Section (8) Shoreline stabilization using vegetation or riprap

Section (9) Construction of crossings (utility lines, pipes and cables)

Section (10) Construction of stream crossings (bridges, culverts and fords)

Section (11) State Transportation Facilities

Section (12) Restoration of natural areas (i.e., "undoing" human alteration)

Section (13) Fisheries & wildlife habitat creation or enhancement and water quality improvement projects

Section (15) Public Boat Ramps

Section (16) Selected activities in coastal sand dunes

Section (17) Transfers and Permit Extensions

Section (18) One-time renewals of maintenance dredging permits

Section (19) Activities in/on/over significant vernal pool habitat

Section (20) Activities located in/on/over high or moderate value inland waterfowl & wading bird habitat or shorebird nesting, feeding & roosting areas

NRPA - TIER REVIEW PROCESS

NRPA's Tier Review process constitutes a joint application to both the Maine Department of Environmental Protection (MDEP) and the U.S. Army Corps of Engineers (USACOE) for a proposed alteration to a freshwater wetland that qualifies for Tier 1, 2 or 3 review. The square footage of impact is based on the alteration or impact of the whole activity in the wetland. If any part of the overall activity requires a higher tier review, then the whole activity will be reviewed under that higher tier.

The Tier Review process is required for impacts larger than 4,300 square feet, and for requesting a permit for activities in, on, or over a protected natural resource. It is also used for activities adjacent to certain protected natural resources (38 MRSA 480-C(1)). The Tier Review process is required when the activity is not eligible for a PBR.

According to 38 M.R.S.A. Section 480-X(2), an application for a permit to undertake activities altering freshwater wetlands must be reviewed in accordance with the following:

(1) A Tier 1 review process applies to any activity that involves a freshwater wetland alteration up to 15,000 square feet and does not involve the alteration of freshwater wetlands listed in 38 M.R.S.A. Section 480-X(4);

(2) A Tier 2 review process applies to any activity that involves a freshwater wetland alteration of 15,000 square feet up to one acre and does not involve the alteration of freshwater wetlands listed in 38 M.R.S.A. Section 480-X (4 or 5);

(3) A Tier 3 review process applies to any activity that does involve a freshwater wetland alteration greater than one acre, or an alteration of a freshwater wetland listed in 38 M.R.S.A. Section 480-X (4 or 5).

According to 38 M.R.S.A. Section 480-X(4), the following activities are not eligible for Tier 1 or Tier 2 review unless MDEP determines that the activity will not negatively affect the freshwater wetlands and other protected natural resources present.

(1) Activities located within 250 feet of a coastal wetland;

(2) Activities located within 250 feet of the normal high-water line, and within the same watershed, of any lake or pond classified as GPA under section 465-A;

(3) Activities occurring in freshwater wetlands, other than artificial ponds or impoundments, containing under normal circumstances at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water;

(4) Activities occurring in freshwater wetlands that are inundated with floodwater during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Management Agency or other site-specific information;

(5) Activities occurring in freshwater wetlands containing significant wildlife habitat that has been mapped, identified or defined, as required pursuant to section 480-B(10), at the time of the filing by the applicant;

(6) Activities occurring in peatlands dominated by shrubs, sedges and sphagnum moss, except that applications proposing work in previously mined peatlands may be considered by the department for Tier 1 or Tier 2 review, as applicable;

(7) Activities occurring within 25 feet of a river, stream or brook.

According to 38 M.R.S.A. Section 480-X(5), an activity in freshwater wetlands containing a natural community that is imperiled (S2) or critically imperiled (S1), as defined by the Natural Areas Program pursuant to Title 12, Section 544 is not eligible for Tier 2 review unless the department determines that the activity will not negatively affect the freshwater wetlands and other protected natural resources present.

NRPA General Requirements for both the Tier 1 and Tier 2 review process require that the proposed freshwater wetland alteration must be avoided, if feasible, after considering cost, logistics, technology and the overall purpose of the project. However, if unavoidable, the alteration must be limited to the minimum amount necessary to complete the project. The project must utilize both temporary and permanent erosion control measures to prevent sedimentation of any protected natural resource. In addition, the alteration site must maintain an undisturbed 25 foot buffer strip between the activity and any river, stream or brook and must not violate any state water quality law, including those governing the classification of the State's waters.

JONES ASSOCIATES
Foresters And Environmental Consultants

WETLAND DELINEATION CHECKLIST

Job #:	20-035BO		
Client:	ALDIN TOME		
Site Address:	ROUTE 138 (TAX MAP U-7, LOT 5)		

Wetland Scientist:	J GRIFFIN, J TOME
Date of Office Review:	04/2020
Date(s) of Field Delineation:	04/2020

Wetlands of Special Significance

Yes	No	
	X	Does the on-site or immediately adjacent wetland contain a mapped and numbered DWA?
X		Does the on-site or immediately adjacent wetland contain an Inland Waterfowl Wading Bird Habitat?
	X	Does the on-site or immediately adjacent wetland contain a potential significant vernal pool?
	X	Does the recent aerial photos of the on-site or immediately adjacent wetland show? Or are there any open water or emergent wetlands with areas greater than 20,000 sq. ft.?
	X	Does the on-site or immediately adjacent wetland contain a 100 year flood plain?
	X	Does the on-site or immediately adjacent wetland contain a S1 or S2 community?
X		Does the on-site or immediately adjacent wetland contain a significant wildlife habitat?
	X	Is the on-site wetland within 250' of a coastal wetland?
	X	Is the on-site wetland within 250' of a great pond?
	X	Does the site contain peatlands?

Stormwater Qualifications

	X	Is the site in the watershed of a Great Pond or Impaired stream?
	X	Is the site in a lake watershed?
	X	Is the site in a watershed most at risk?

Additional Comments:
FEMA flood zone FIRM:
Bowdoinham 230230093F, Effective July 16, 2015

Watershed:

HUC_8: 01040002	Lower Androscoggin
HUC_10: 0104000210	Cathance River – Androscoggin River
HUC_12: 010400021007	Cathance River

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Websites:

Maine Department of Environmental Protection: www.maine.gov/dep/land/nrpa/index.html

United States Fish and Wildlife Service, National Wetlands inventory: www.fws.gov/wetlands/

United States Army Corps of Engineers, New England District: www.nae.usace.army.mil/Missions/Regulatory.aspx

United States Natural Resources Conservation Service, United States Department of Agriculture, Official Soil Series Descriptions: soils.usda.gov/technical/classification/osd/index.html.

ATTACHMENTS:

- **NRCS CUSTOM SOIL RESOURCE REPORT**
- **WETLAND DATA SHEETS**
- **WETLAND SKETCH PLAN**

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 20-035BO - TOME WETLAND DELINEATION City/County: BOWDOINHAM / SAGADAHOC Sampling Date: 4/22/2020

Applicant/Owner: ALDIN TOME State: ME Sampling Point: 2

Investigator(s): JT Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44°01'07.48" N Long: 69°55'22.65" W Datum: WGS 84

Soil Map Unit Name: ANDROSCOGGIN AND SAGADAHOC COUNTIES NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**		
Hydric Soil Present?	Yes X	No	**within a Wetland?**	Yes X	No
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No	Depth (inches):	0.5
Water Table Present?	Yes X	No	Depth (inches):	0.5
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches):	16

Wetland Hydrology Present? Yes X No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 2

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	5	No	FACU
2. *Fraxinus pennsylvanica*	10	Yes	FACW
3. *Acer rubrum*	5	No	FAC
4. *Alnus incana*	25	Yes	FACW
5.			
6.			
7.			
	45	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ilex verticillata*	15	Yes	FACW
2. *Lonicera morrowii*	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Athyrium angustum*	5	No	FAC
2. *Rubus hispidus*	5	No	FACW
3. *Onoclea sensibilis*	20	Yes	FACW
4. *Sphagnum spp.*	10	Yes	
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *N/A*			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	95 (A)		220 (B)

Prevalence Index = B/A = 2.32

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 5/1		10YR 4/4				Mucky Loam/Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ High Chroma Sands (S11) **(LRR K, L)**
- X Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR K, L)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (Inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 20-035BO - TOME WETLAND DELINEATION City/County: BOWDOINHAM / SAGADAHOC Sampling Date: 4/22/2020

Applicant/Owner: ALDIN TOME State: ME Sampling Point: 1

Investigator(s): JG Section, Township, Range:

Landform (hillside, terrace, etc.): HILLSIDE Local relief (concave, convex, none): CONVEX Slope (%): 4

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44°01'08.67" N Long: 69°55'19.90" W Datum: WGS 84

Soil Map Unit Name: ANDROSCOGGIN AND SAGADHOC COUNTIES NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area**		
Hydric Soil Present?	Yes	No X	**within a Wetland?**	Yes	No X
Wetland Hydrology Present?	Yes	No X	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):	
Water Table Present?	Yes	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches):	

Wetland Hydrology Present? Yes No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea glauca*	5	No	FACU
2. *Tsuga canadensis*	10	Yes	FACU
3. *Pinus strobus*	20	Yes	FACU
4. *Fagus grandifolia*	10	Yes	FACU
5.			
6.			
7.			
	45	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Fagus grandifolia*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *N/A*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *N/A*			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	55 (A)		220 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/4						Sandy	
4-16	10YR 5/8						Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ High Chroma Sands (S11) **(LRR K, L)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR K, L)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

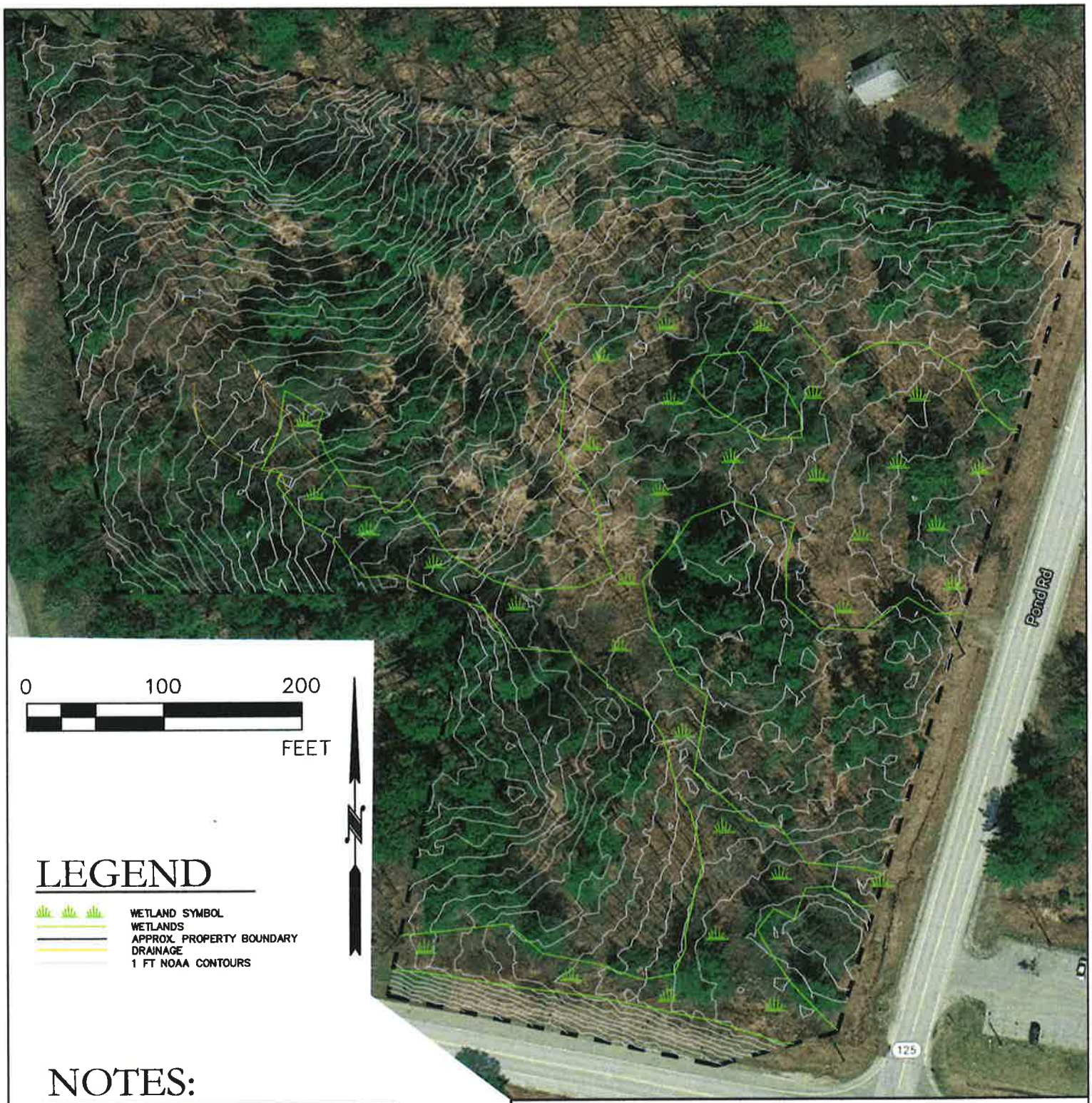
Restrictive Layer (If observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:



0 100 200

FEET

LEGEND

- WETLAND SYMBOL
- WETLANDS
- APPROX. PROPERTY BOUNDARY
- DRAINAGE
- 1 FT NOAA CONTOURS

NOTES:

1. EXTERIOR BOUNDARY BASED ON PARCEL INFORMATION OBTAINED FROM STATE OF MAINE PARCEL LAYER. AERIAL IMAGERY OBTAINED FROM GOOGLE EARTH.
2. WETLANDS WERE IDENTIFIED AND DELINEATED BY JONES ASSOCIATES INC. IN APRIL 2020 ACCORDING TO U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (1987) AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION.
3. WETLAND FLAGS WERE LOCATED USING TRIMBLE GLOBAL POSITIONING SYSTEM (GPS) TECHNOLOGY WITH EXPECTED AVERAGE ACCURACY OF SUB-METER. THIS METHOD IS RECOGNIZED BY BOTH STATE AND FEDERAL AGENCIES. HOWEVER, JONES ASSOCIATES INC RECOMMENDS THAT THE WETLAND BOUNDARY BE SURVEYED USING A MORE PRECISE METHOD IF ANY FILL OR REGULATED ACTIVITIES ARE TO BE PERFORMED WITHIN 20 FEET OF THE GPS LOCATED WETLAND.
4. 1FT CONTOURS OBTAINED FROM NOAA DATA ACCESS VIEWER.

WETLAND SKETCH PLAN

TAX MAP U-7, LOT 5

ROUTE 138

BOWDOINHAM, MAINE

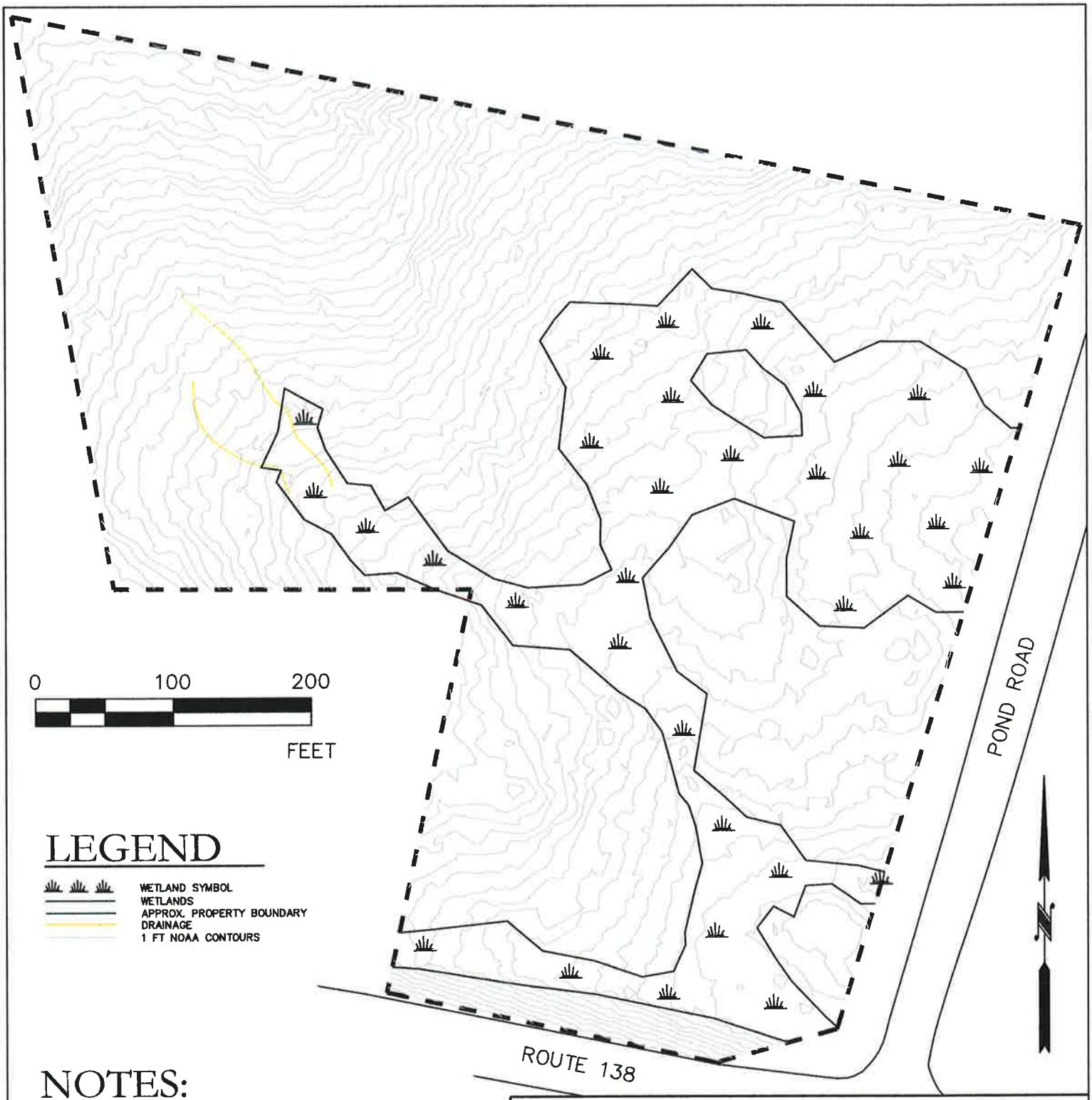
PREPARED BY:
JONES ASSOCIATES INC.
Foresters, Surveyors And Environmental Consultants
280 POLAND SPRING ROAD, AUBURN, MAINE 04210
(207) 241-0235

PLAN DATE: APRIL 2020

FIELD WORK DATE: APRIL 2020

SCALE: 1"=100'

PROJ. #: 20-035BO



LEGEND

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Medium Intensity Soils Map

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Androscoggin and Sagadahoc Counties, Maine

April 23, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

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
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 20, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Oct 13, 2016

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
BuB2	Lamoine-Buxton complex, 0 to 8 percent slopes	1.1	13.7%
HrB	Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky	0.0	0.0%
HrC	Lyman-Tunbridge complex, 8 to 15 percent slopes, rocky	3.9	48.2%
ScA	Scantic silt loam, 0 to 3 percent slopes	3.1	38.1%
Totals for Area of Interest		**8.1**	**100.0%**

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.

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 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.

Androscoggin and Sagadahoc Counties, Maine

BuB2—Lamoine-Buxton complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2x1bv
Elevation: 10 to 490 feet
Mean annual precipitation: 33 to 60 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Lamoine and similar soils: 60 percent
Buxton and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lamoine

Setting

Landform: Marine terraces, river valleys
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: silt loam
Bw - 7 to 13 inches: silt loam
Bg - 13 to 24 inches: silty clay loam
Cg - 24 to 65 inches: silty clay

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 17 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Description of Buxton

Setting

Landform: Marine terraces, river valleys

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Fine glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: silt loam
Bw1 - 7 to 18 inches: silt loam
Bw2 - 18 to 23 inches: silty clay loam
BC - 23 to 35 inches: silty clay loam
C - 35 to 65 inches: silty clay

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 17 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Scantic

Percent of map unit: 10 percent
Landform: Marine terraces, river valleys
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Buxton, > 8% slopes

Percent of map unit: 3 percent
Landform: Marine terraces, river valleys
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Ragmuff

Percent of map unit: 1 percent
Landform: River valleys, marine terraces
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

Biddeford

Percent of map unit: 1 percent
Landform: Marine terraces, river valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: Marine Terrace Depression (F144BY002ME)
Hydric soil rating: Yes

HrB—Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2x1cx
Elevation: 0 to 520 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lyman and similar soils: 50 percent
Tunbridge and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loam
E - 3 to 5 inches: fine sandy loam
Bhs - 5 to 7 inches: loam
Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 79 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 1.5 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Tunbridge

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
Oa - 3 to 5 inches: highly decomposed plant material
E - 5 to 8 inches: fine sandy loam
Bhs - 8 to 11 inches: fine sandy loam
Bs - 11 to 26 inches: fine sandy loam
BC - 26 to 28 inches: fine sandy loam
R - 28 to 79 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 1.5 percent
Depth to restrictive feature: 21 to 41 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Ragmuff

Percent of map unit: 10 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Abram

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Nose slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Peru

Percent of map unit: 4 percent
Landform: Hills, ridges
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Hills, ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Nose slope, crest, free face
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

HrC—Lyman-Tunbridge complex, 8 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2x1cy
Elevation: 0 to 520 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lyman and similar soils: 45 percent
Tunbridge and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loam
E - 3 to 5 inches: fine sandy loam
Bhs - 5 to 7 inches: loam
Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 79 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.5 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Tunbridge

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
Oa - 3 to 5 inches: highly decomposed plant material
E - 5 to 8 inches: fine sandy loam
Bhs - 8 to 11 inches: fine sandy loam
Bs - 11 to 26 inches: fine sandy loam
BC - 26 to 28 inches: fine sandy loam
R - 28 to 79 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.5 percent
Depth to restrictive feature: 21 to 41 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Ragmuff

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Abram

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Nose slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Peru

Percent of map unit: 4 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Ridges, hills
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Nose slope, crest, free face
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

ScA—Scantic silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2slv3
Elevation: 10 to 900 feet
Mean annual precipitation: 33 to 60 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Scantic

Setting

Landform: Marine terraces, river valleys
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glaciomarine deposits

Typical profile

Ap - 0 to 9 inches: silt loam
Bg1 - 9 to 16 inches: silty clay loam
Bg2 - 16 to 29 inches: silty clay
Cg - 29 to 65 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Lamoine

Percent of map unit: 8 percent
Landform: River valleys, marine terraces
Landform position (three-dimensional): Riser, rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Biddeford

Percent of map unit: 3 percent
Landform: Marine terraces, river valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Ecological site: Marine Terrace Depression (F144BY002ME)
Hydric soil rating: Yes

Roundabout

Percent of map unit: 2 percent
Landform: River valleys, marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Buxton

Percent of map unit: 2 percent
Landform: Marine terraces, river valleys
Landform position (three-dimensional): Riser, rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

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Stormwater Quantity Analysis and Narrative

June 25, 2021

Josh Sammon
SammCo Holdings LLC
164 Applecrest Drive
Yarmouth, Maine 04096

Re: 14 Units along Route 125, Bowdoinham, Me.
Stormwater Quantity Narrative

Dear Josh,

SammCo Holdings LLC owns a parcel of land at the intersection of Route 138 and Route 125 in Bowdoinham, Maine. You are proposing to construct two new buildings (total of 14 units) with associated access roads and parking facilities. The building will utilize underground electricity, telephone/communications, private septic sewer, and public water supply. It is anticipated that this projects site infrastructure will be started in 2021.

The site is identified as Tax Map U-7 Lot 005 of the Town's Tax Map. The parcel is approximately 7.24 acres in size and lies within the "Village Two" Zoning District.

Existing Site Conditions

The existing site consists of undeveloped woods area throughout the parcel. The property has been previously surveyed by William Coombs and recorded in the registry on March 4, 2020.. The topography of the existing site is shown at a two foot contour interval as depicted by the Maine GIS website showing Lidar data. The slope of the property varies from 5% along the flatter areas to 25% along the banks of the steeper slopes of the property. Wetland areas have been delineated by Jones Associates and shown on the plan.

SJR ENGINEERING, INC.
STEVE@SJRENG.COM. 16 THURSTON DRIVE, MONMOUTH, ME. TEL: (207) 242-6248

Soils

Soils delineation was taken from the medium intensity soils maps of the Sagadahoc County Soil Survey. I have overlaid the proposed developed site onto this map. Soils are identified as being Buxton silt loam (hydro group "C", K= 0.32-0.49), Lamoine-Buxton Complex (hydro group "C/D", K= 0.32 - 0.49), Lyman-Tunbridge Complex (hydro group "C/D", K= 0.20 - 0.24) and Scantic Silt Loam (hydro group "D", K= 0.32 - 0.49)

Summary Overview

Site drainage enters a 30" diameter culvert that crosses Route 125 and discharges to an undeveloped woods area. All runoff flows will eventually end up in Cathance River in Bowdoinham.

We have designed two soil filter/detention ponds to provide water quantity/quality enhancement. The ponds will function as detention ponds to limit flows to pre-construction flow rates. Proposed soil filter/detention ponds are necessary to control flows to pre-existing conditions and to treat the stormwater quality within the wet pond.

Stormwater flows will be attenuated by diverting and capturing stormwater flows from the new construction into the new soil filter/detention ponds with stormwater control outlets being utilized to control runoff water discharges to pre-exiting conditions as well as providing stormwater quality treatment for the developed runoff water. In summary, the proposed stormwater flows will be less than the existing condition. No downstream impacts from stormwater flows are expected with this proposal.

Approximately 29,537 sf of new impervious surface (building and pavement surfaces) will be created during proposed construction improvements. Of this total, 29,237 sf will be treated through the use of roof drip edges and 2 soil filter ponds located on the downslopes side of the developed property.

Similarly, the total parcel developed area (impervious and vegetated area) includes 199,201 sf of disturbed area. Of this total, 164,538 sf will be treated by roof drip edges and two proposed soil filter ponds.

Stormwater Quantity

We have prepared the plans and details in order to properly evaluate existing and proposed stormwater impacts from the development. Topography of the existing site is shown at two foot contour interval. The slope of the property varies from 1% along the flatter areas to 25% along the proposed slopes in the rear of the developed site.

Soils mapping was taken from Natural Resources Conservation Service "Web Soil Survey" medium intensity mapping. Jones Associates has performed soil testing and confirms the general types of soils are present at the site. These soils have been overlaid onto the proposed site development plan.

Soils have been identified as:

- Scantic Silt Loam (hydro group "D" soil)
- Lyman-Tunbridge Complex (hydro group "C/D" soil)
- Lamoine-Buxton Complex (hydro group "C/D" soil)
- Buxton Silt Loam (hydro group "C" soil)

The hydrological group rating is a rating system of the relative permeability of the soil with Group "A" being extremely permeable such as a beach sand, to Group "D" being slow draining such as a wetland area.

I have reviewed the drainage characteristics of the watershed area which includes impervious areas, lawn areas, and woods, as well upslope watershed areas. The analysis requires post construction stormwater flow rates to be approximately equal to or less than the existing stormwater rates.

I have used the SCS TR-20 (HydroCad 10.0 computer model) method of computing stormwater runoff peak flow rates. This method accounts for soil types, existing land uses, topography, vegetative cover, and proposed land use for the parcel to be developed. The proposed conditions were analyzed using data for Cumberland County NW type III, 24 hour storm distribution (Northeast Regional Climate Center June 2014) with a design frequency of occurrence of 2/10/25 years. One day precipitation values of 3.2"/4.6"/5.7" have been used for each respective event. All supporting calculations and data are submitted with this report.

The existing and proposed site conditions were analyzed using information taken from existing/proposed topographic plan of the parcel to be developed. Impervious areas, lawns, meadows, and woods areas for each hydrological soil condition were measured within AutoCad in order to calculate a weighted curve number that typifies the drainage condition of the site.

Watershed calculations (pre and post construction)

Please see the attached stormwater plans for both the existing and proposed conditions to help determine location of each watershed and drainage flow path.

The project has one watershed areas within the parcel. We have designated the design point of interest on the plan as being the culvert entrance crossing Route 125.

Design Point A – Culvert at Route 125

The stormwater existing/proposed design point A is located at the pipe entrance to an existing culvert crossing under Route 125. We have calculated the existing flows with the proper land surface cover and soils hydrological group in order to compare these flows with the proposed flows. Existing flows at this location have been calculated to be 2.02/4.09/5.86 cfs for the 2/10/25 year storm events.

In the proposed development condition, the watershed has significant increases in impervious and developed areas. The increased flows are captured in two combined soil filter/detention ponds (Soil Filter Pond 1 and Soil Filter Pond 2) downslope from the developed area. Runoff water within the soil filter ponds will be detained and treated in the two ponds. Discharges from the pond will then be directed to the existing pipe entrance under Route 125.

Soil Filter Ponds 1 and 2:

The two soil filter Ponds 1 and 2 have been sized to accommodate and store flows for stormwater quantity and quality functions and to control flows to pre-development runoff conditions. We have calculated significant increases in flow rates in the developed portion of the project for the 2/10/25 year storm events. Watershed 1 is directed to soil filter Pond 1, while Watershed

2 is directed to soil filter Pond 2. By constructing the soil filter/detention pond and sizing the inlets to a stormwater control structure, stormwater flows are captured and contained. These increased flows are then stored (detained and treatment provided) within the pond area for short periods of time allowing existing peak flow rates to be maintained (or decreased).

Pond 1: Our analysis indicates that the incoming flow rates to Pond 1 are 1.14/1.80/2.31 cfs and are reduced to 0.41/1.40/2.04 cfs for the 2/10/25 year storm events at the outlet from soil pond 1 control structure. The soil filter ground elevation is set at elevation 166.5. The water elevation within the pond is expected to peak at elevations 167.91/168.11/168.21 for the 2/10/25 year storm events.

Pond 2: Our analysis indicates that the incoming flow rates to Pond 2 are 0.70/1.13/1.46 cfs and are reduced to 0.36/1.01/1.39 cfs for the 2/10/25 year storm events at the outlet from soil pond 2 control structure. The soil filter ground elevation is set at elevation 169.0. The water elevation within the pond is expected to peak at elevations 170.39/170.54/170.61 for the 2/10/25 year storm events.

When these flows are hydraulically added together (with respect to time) with the uncontrolled watershed area 3, the flows are reduced from the existing condition at the inlet to the existing culvert under Route 125 (Design Point A).

Stormwater Summary at Design Point A Route 125 culvert entrance)

	2 year storm (cfs)	10 year storm (cfs)	25 year storm (cfs)
Existing flows	2.02	4.09	5.86
Proposed flows	1.19	3.33	5.05

Pond construction Control structures

Pond 1: The soil filter pond will need to be configured with a control manhole structure that has a 12" diameter outlet pipe at invert 164.25. The manhole needs a 24" wide by 6" tall orifice cut into the structure on the pond side at

elevation 167.75. The control structure needs a steel panel installed along the center of the structure with a 5/8"" orifice cut at elevation 164.25 and a 24" wide by 6" tall rectangular orifice at invert elevation 167.75. No water will flow from the pond (except filtered water within the filter media underdrain) until the water elevation reaches 167.75. The top of the panel is elevation 168.75. A 15' wide emergency spillway is to be constructed at elevation 168.75. The top of the berm is to be constructed to elevation 170.0. We have checked the spillway design with the control structure plugged (ie all flows through the spillway) and have calculated flows reach elevation 168.89. The top of berm is at least 12" higher than this water surface.

Pond 2: The soil filter pond will need to be configured with a control manhole structure that has a 12" diameter outlet pipe at invert 166.5. The manhole needs a 24" wide by 6" tall orifice cut into the structure on the pond side at elevation 170.25. The control structure needs a steel panel installed along the center of the structure with a 1/2" orifice cut at elevation 166.5 and a 24" wide by 6" tall rectangular orifice at invert elevation 170.25. No water will flow from the pond (except filtered water within the filter media underdrain) until the water elevation reaches 170.25. The top of the panel is elevation 171.00. A 15' wide emergency spillway is to be constructed at elevation 171.00. The top of the berm is to be constructed to elevation 172.5. We have checked the spillway design with the control structure plugged (ie all flows through the spillway) and have calculated flows reach elevation 171.12. The top of berm is at least 12" higher than this water surface.

Summary

The proposed development of the parcel can be constructed utilizing soil filter ponds as designed to the berm height and control structures in each of the two ponds as noted above.

Please feel free to contact me if you have any questions concerning the calculations of stormwater from this project. It is important to note that proper erosion control and revegetation of disturbed areas are essential for the proper operation of the stormwater facilities. Maintenance of the yard impervious areas, careful attention to the pavement/seeded interface, and continued maintenance to the pond system must be a top priority in order for

the system to function properly. Thank you for involving this firm on your project.

Sincerely yours,

Stephen Roberge, PE
for SJR Engineering Inc.

SammCo Holdings, Bowdoinham Parcel
Stormwater Project Summary

06-25-2021

Stormwater Flows at Design Point Existing 30" culvert (Watershed 1)

	2 year	10 year	25 year
Existing Conditions at Design Point	2.02 cfs	4.09 cfs	5.86 cfs
Proposed Conditions at Design Point	1.19 cfs	3.33 cfs	5.05 cfs

Stormwater Flows at Soil Filter Pond 1

(Construct Soil Filter/Detention Pond 1)

	2 year	10 year	25 year
Soil filter Pond inflow/outflow	1.14/0.41 cfs	1.80/1.40 cfs	2.31/2.04 cfs
Elevation height of detained water in soil filter pond	167.91	168.11	168.21

The soil filter pond is expected to operate as a sediment pond during construction for water quality purposes. Stormwater flows enter a pretreatment forebay area prior to entering the soil filter media pond. Flows entering into the pond must immediately pass through a level spreader to insure the full surface area of the pond is utilized for treatment. No water will flow from the pond (except filtered water) until the water elevation reaches elevation 167.75, which is the inlet elevation of a 24" wide by 6" high orifice in the stormwater control manhole. The stormwater control structure has a 12" diameter outlet that discharges to a level spreader/plunge pool. A separate 15' wide emergency spillway has been designed at elevation 168.75. The soil filter surface is at elevation 166.5. The top of berm elevation is 170.0

Water quality is enhanced by passing stormwater flows through the soil filter media, collection of the treated water by underdrain pipes, and underground cooling of the detained water by holding the required volume of water for 24 to 48 hours. The control for this is a 5/8" orifice at invert 164.25 located through the steel plate inside the control manhole. The retention time for this structure is 26.2 hours.

Stormwater Flows at Soil Filter Pond 2

(Construct Soil Filter Detention Pond 2)

	2 year	10 year	25 year
Soil filter Pond inflow/outflow	0.70/0.36 cfs	1.13/1.01 cfs	1.46/1.39 cfs
Elevation height of detained water in soil filter pond	170.39	170.54	170.61

The soil filter pond is expected to operate as a sediment pond during construction for water quality purposes. Stormwater flows enter a pretreatment forebay area prior to entering the soil filter media pond. Flows entering into the pond must immediately pass through a level spreader to insure the full surface area of the pond is utilized for treatment. No water will flow from the pond (except filtered water) until the water elevation reaches elevation 170.25, which is the inlet elevation of a 24" wide by 6" high orifice in the stormwater control manhole. The stormwater control structure has a 12" diameter outlet that discharges to a level spreader/plunge pool. A separate 15' wide emergency spillway has been designed at elevation 171.0. The soil filter surface is at elevation 169. The top of berm elevation is 172.5.

Water quality is enhanced by passing stormwater flows through the soil filter media, collection of the treated water by underdrain pipes, and underground cooling of the detained water by holding the required volume of water for 24 to 48 hours. The control for this is a 0.5" orifice at invert 166.50 located through the steel plate inside the control manhole. The retention time for this structure is 37.2 hours.

Stormwater Existing Condition

Watershed 1 to 30" culvert Route 135

Subcat Reach Pond Link

Routing Diagram for Existing Condition
Prepared by SJR Engineering Inc., Printed 6/26/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.625	70	Woods, Good, HSG C (1S)
1.650	77	Woods, Good, HSG D (1S)
2.276	**75**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.625	HSG C	1S
1.650	HSG D	1S
0.000	Other	
2.276		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.625	1.650	0.000	2.276	Woods, Good	1S
0.000	**0.000**	**0.625**	**1.650**	**0.000**	**2.276**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Watershed 1 to 30" culvert Route 135 Runoff Area=99,127 sf 0.00% Impervious Runoff Depth>1.00"
Flow Length=420' Tc=16.4 min CN=75 Runoff=2.02 cfs 0.189 af

Total Runoff Area = 2.276 ac Runoff Volume = 0.189 af Average Runoff Depth = 1.00"
100.00% Pervious = 2.276 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Watershed 1 to 30" culvert Route 135

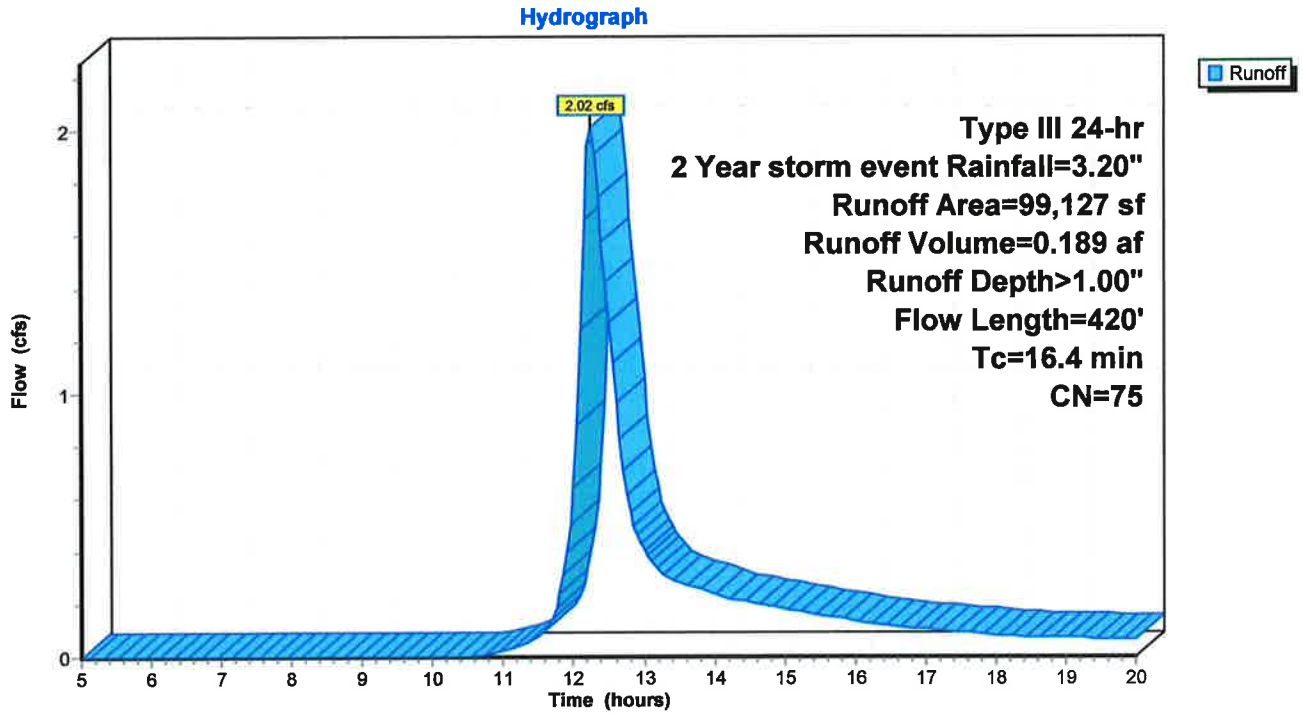
Runoff = 2.02 cfs @ 12.25 hrs, Volume= 0.189 af, Depth> 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year storm event Rainfall=3.20"

Area (sf)	CN	Description
27,236	70	Woods, Good, HSG C
71,891	77	Woods, Good, HSG D
99,127	75	Weighted Average
99,127		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	70	0.0710	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
6.7	350	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.4	420	Total			

Subcatchment 1S: Watershed 1 to 30" culvert Route 135



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Watershed 1 to 30" culvert Route 135 Runoff Area=99,127 sf 0.00% Impervious Runoff Depth>1.96"
Flow Length=420' Tc=16.4 min CN=75 Runoff=4.09 cfs 0.372 af

Total Runoff Area = 2.276 ac Runoff Volume = 0.372 af Average Runoff Depth = 1.96"
100.00% Pervious = 2.276 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Watershed 1 to 30" culvert Route 135

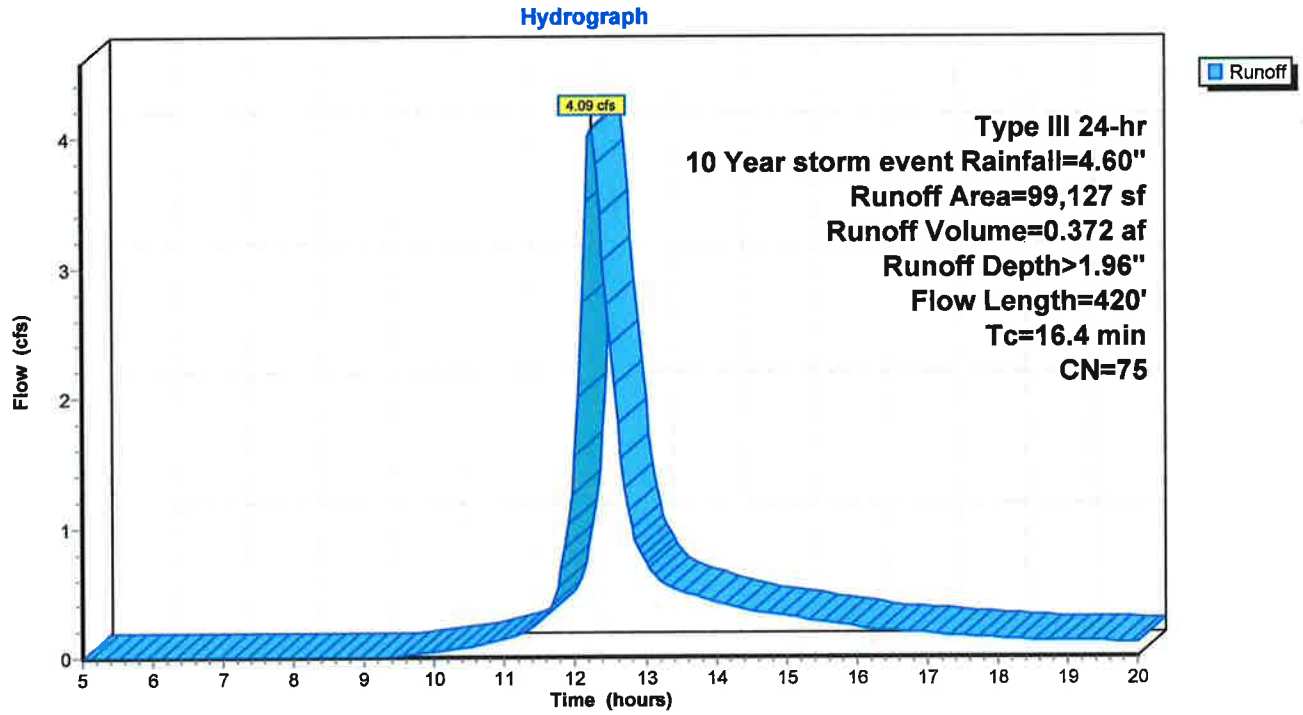
Runoff = 4.09 cfs @ 12.23 hrs, Volume= 0.372 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year storm event Rainfall=4.60"

Area (sf)	CN	Description
27,236	70	Woods, Good, HSG C
71,891	77	Woods, Good, HSG D
99,127	75	Weighted Average
99,127		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	70	0.0710	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
6.7	350	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.4	420	Total			

Subcatchment 1S: Watershed 1 to 30" culvert Route 135



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Watershed 1 to 30" culvert Route 135 Runoff Area=99,127 sf 0.00% Impervious Runoff Depth>2.81"
Flow Length=420' Tc=16.4 min CN=75 Runoff=5.86 cfs 0.533 af

Total Runoff Area = 2.276 ac Runoff Volume = 0.533 af Average Runoff Depth = 2.81"
100.00% Pervious = 2.276 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Watershed 1 to 30" culvert Route 135

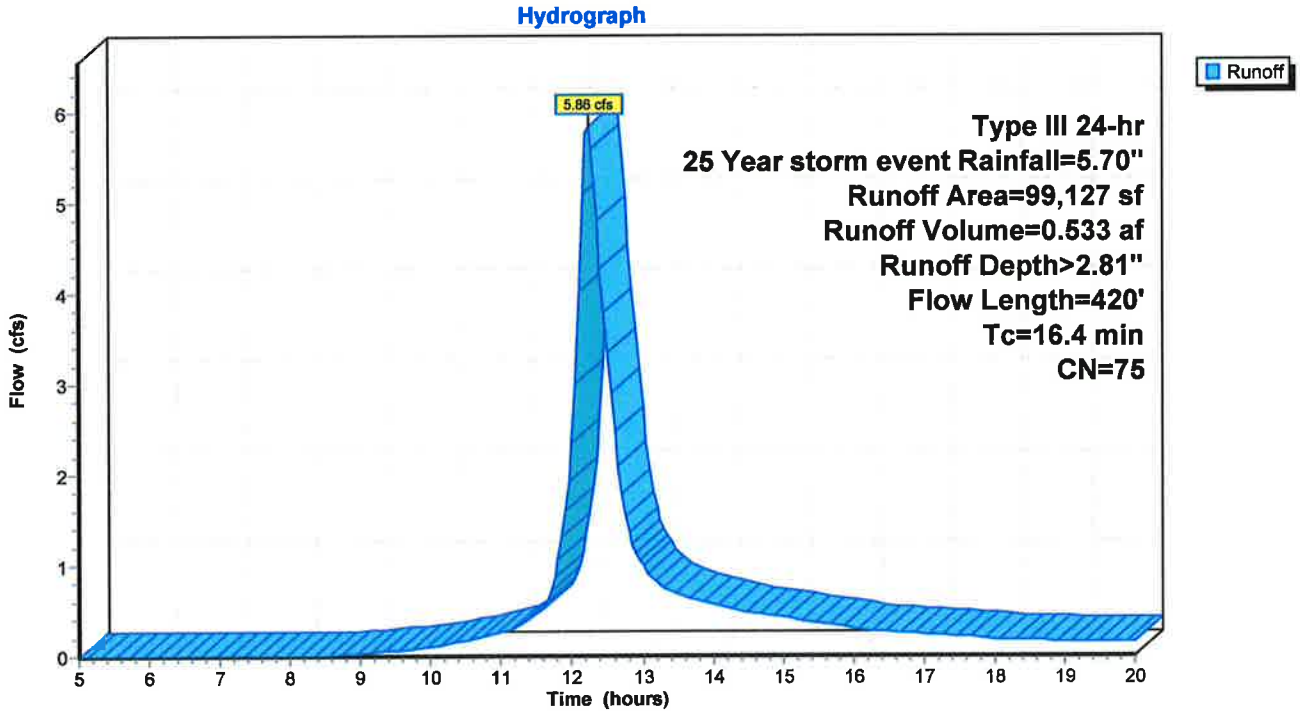
Runoff = 5.86 cfs @ 12.23 hrs, Volume= 0.533 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year storm event Rainfall=5.70"

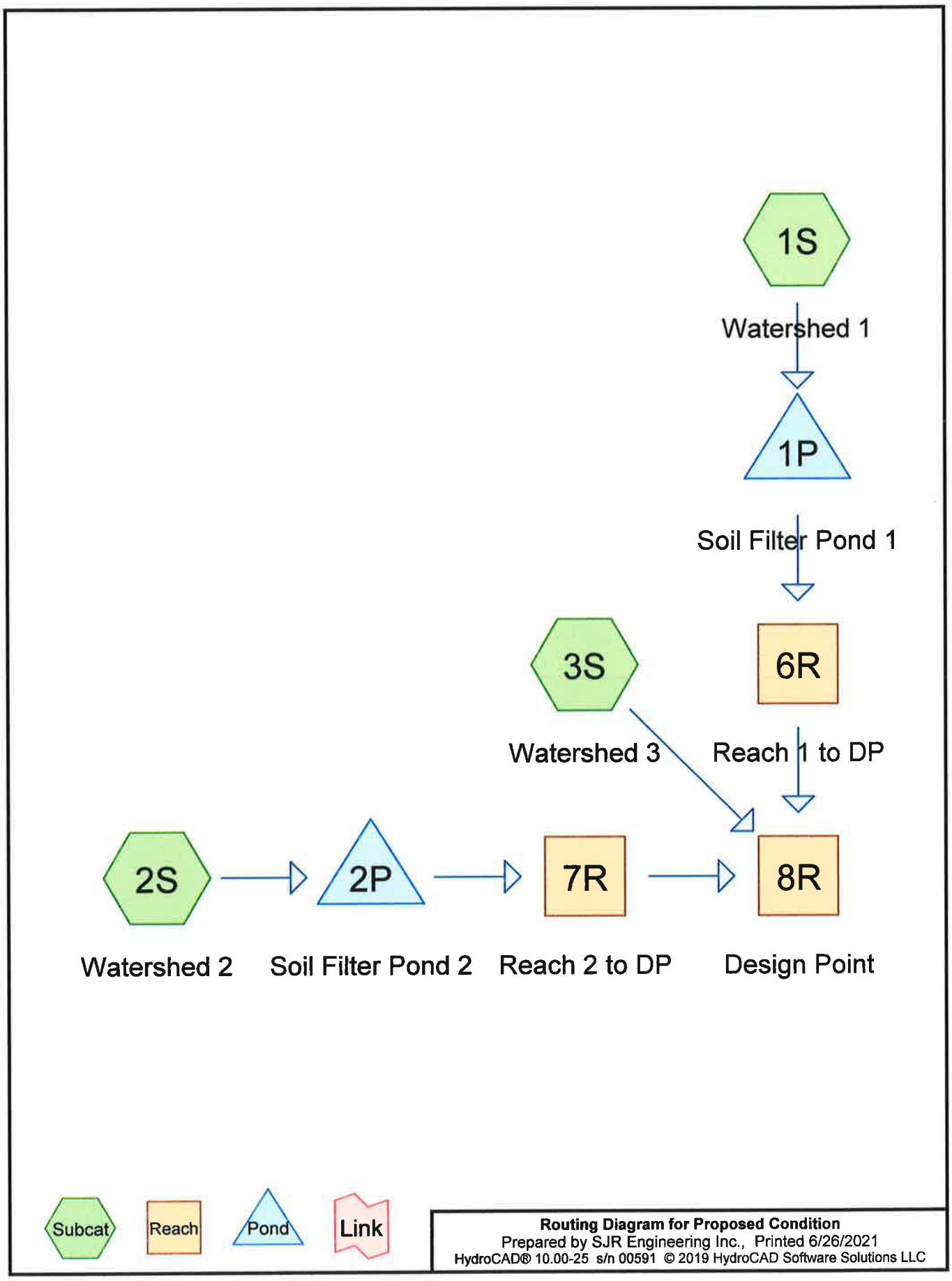
Area (sf)	CN	Description
27,236	70	Woods, Good, HSG C
71,891	77	Woods, Good, HSG D
99,127	75	Weighted Average
99,127		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	70	0.0710	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
6.7	350	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.4	420	Total			

Subcatchment 1S: Watershed 1 to 30" culvert Route 135



Stormwater Proposed Condition



Routing Diagram for Proposed Condition
Prepared by SJR Engineering Inc., Printed 6/26/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.253	74	>75% Grass cover, Good, HSG C (2S, 3S)
0.675	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S)
0.590	98	Paved parking, HSG C (1S, 2S)
0.037	70	Woods, Good, HSG C (3S)
0.647	77	Woods, Good, HSG D (3S)
2.202	**83**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.880	HSG C	1S, 2S, 3S
1.322	HSG D	1S, 2S, 3S
0.000	Other	
2.202		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.253	0.675	0.000	0.928	>75% Grass cover, Good	1S, 2S, 3S
0.000	0.000	0.590	0.000	0.000	0.590	Paved parking	1S, 2S
0.000	0.000	0.037	0.647	0.000	0.684	Woods, Good	3S
0.000	**0.000**	**0.880**	**1.322**	**0.000**	**2.202**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1S	0.00	0.00	70.0	0.0100	0.012	12.0	0.0	0.0
2	3S	0.00	0.00	50.0	0.0100	0.013	36.0	0.0	0.0
3	1P	164.25	164.00	25.0	0.0100	0.013	12.0	0.0	0.0
4	2P	166.50	166.25	24.0	0.0104	0.013	12.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Watershed 1 Runoff Area=25,519 sf 57.25% Impervious Runoff Depth>2.03"
Flow Length=385' Tc=14.1 min CN=90 Runoff=1.14 cfs 0.099 af

Subcatchment 2S: Watershed 2 Runoff Area=20,410 sf 54.42% Impervious Runoff Depth>1.94"
Flow Length=290' Tc=24.5 min CN=89 Runoff=0.70 cfs 0.076 af

Subcatchment 3S: Watershed 3 Runoff Area=49,997 sf 0.00% Impervious Runoff Depth>1.11"
Flow Length=420' Tc=15.5 min CN=77 Runoff=1.17 cfs 0.106 af

Reach 6R: Reach 1 to DP Avg. Flow Depth=0.36' Max Vel=0.28 fps Inflow=0.41 cfs 0.056 af
n=0.410 L=30.0' S=0.0333 '/' Capacity=2.96 cfs Outflow=0.41 cfs 0.055 af

Reach 7R: Reach 2 to DP Avg. Flow Depth=0.14' Max Vel=0.09 fps Inflow=0.36 cfs 0.045 af
n=0.400 L=340.0' S=0.0103 '/' Capacity=5.74 cfs Outflow=0.14 cfs 0.039 af

Reach 8R: Design Point Inflow=1.19 cfs 0.200 af
Outflow=1.19 cfs 0.200 af

Pond 1P: Soil Filter Pond 1 Peak Elev=167.91' Storage=2,153 cf Inflow=1.14 cfs 0.099 af
Outflow=0.41 cfs 0.056 af

Pond 2P: Soil Filter Pond 2 Peak Elev=170.39' Storage=1,527 cf Inflow=0.70 cfs 0.076 af
Outflow=0.36 cfs 0.045 af

Total Runoff Area = 2.202 ac Runoff Volume = 0.281 af Average Runoff Depth = 1.53"
73.19% Pervious = 1.612 ac 26.81% Impervious = 0.590 ac

Summary for Subcatchment 1S: Watershed 1

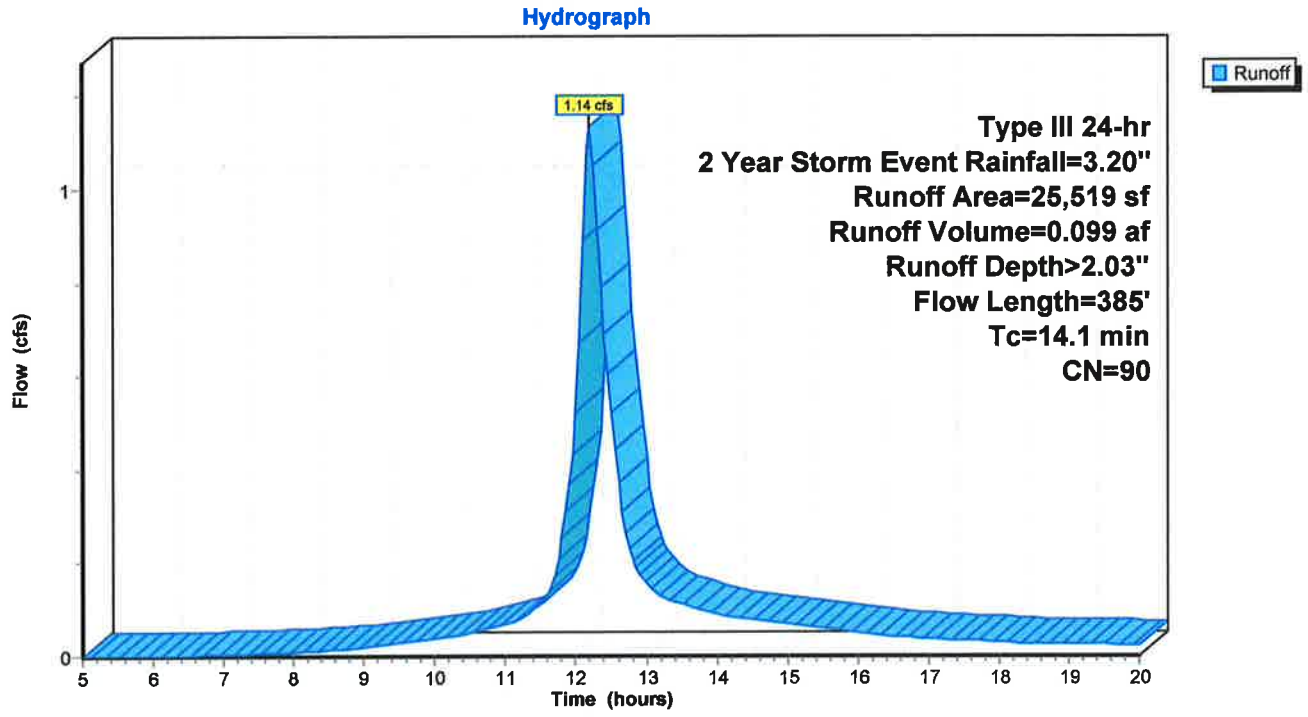
Runoff = 1.14 cfs @ 12.19 hrs, Volume= 0.099 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Storm Event Rainfall=3.20"

Area (sf)	CN	Description
14,610	98	Paved parking, HSG C
10,909	80	>75% Grass cover, Good, HSG D
25,519	90	Weighted Average
10,909		42.75% Pervious Area
14,610		57.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	15	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.7	240	0.0250	2.37		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	70	0.0100	4.91	3.86	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
10.1	60	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.20"
14.1	385	Total			

Subcatchment 1S: Watershed 1



Summary for Subcatchment 2S: Watershed 2

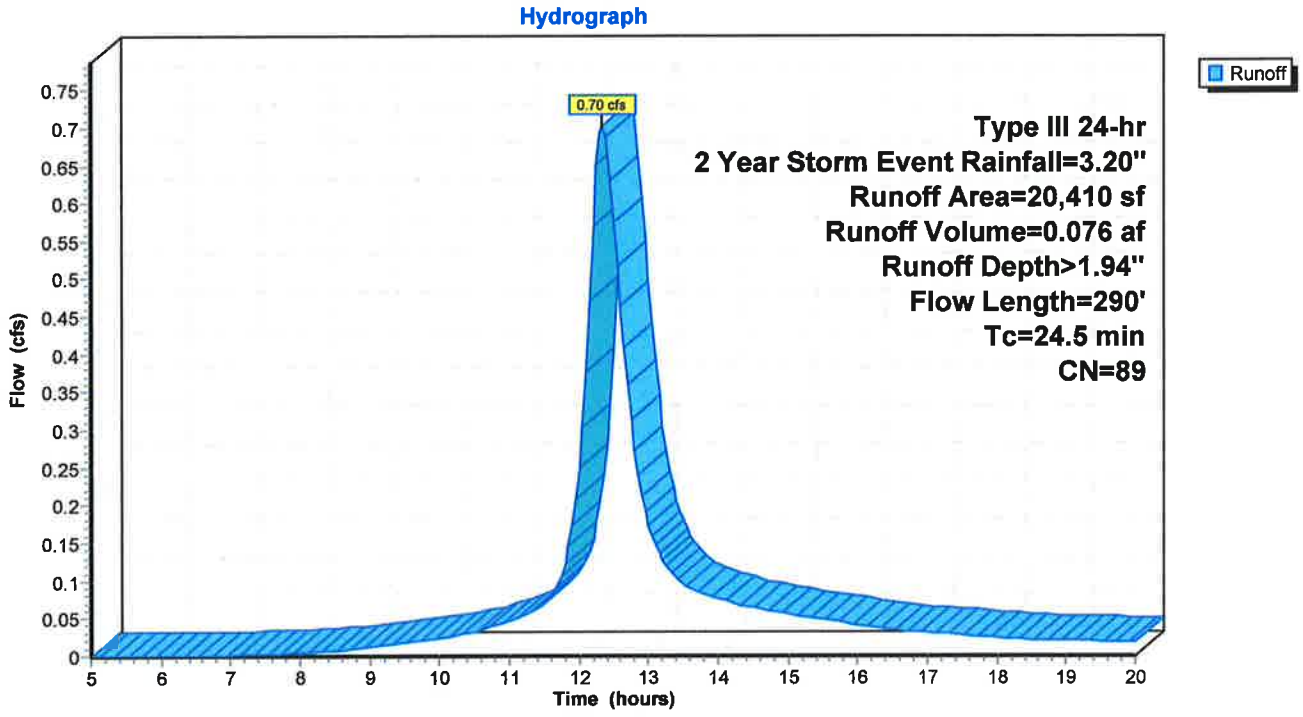
Runoff = 0.70 cfs @ 12.33 hrs, Volume= 0.076 af, Depth> 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Storm Event Rainfall=3.20"

Area (sf)	CN	Description
11,107	98	Paved parking, HSG C
4,368	74	>75% Grass cover, Good, HSG C
4,935	80	>75% Grass cover, Good, HSG D
20,410	89	Weighted Average
9,303		45.58% Pervious Area
11,107		54.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	40	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.6	45	0.0200	1.17		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.6	95	0.0300	2.60		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.4	110	0.0050	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.20"
24.5	290	Total			

Subcatchment 2S: Watershed 2



Summary for Subcatchment 3S: Watershed 3

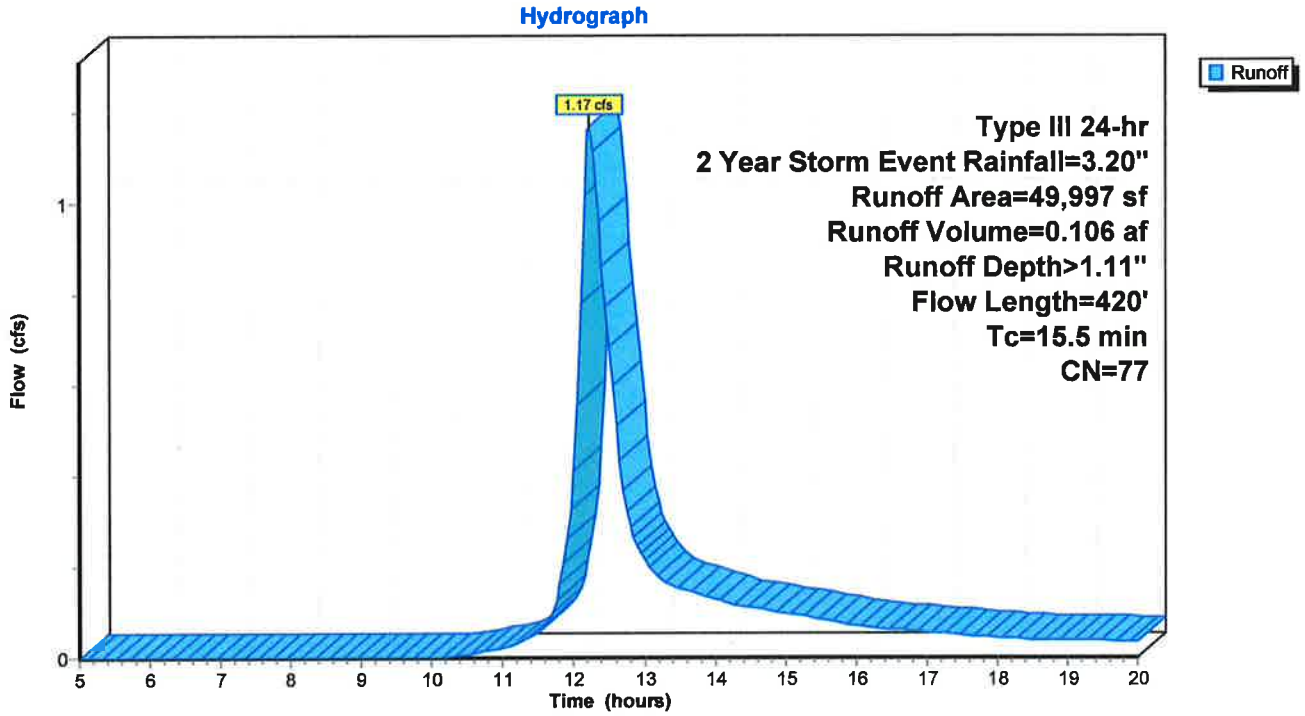
Runoff = 1.17 cfs @ 12.23 hrs, Volume= 0.106 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Storm Event Rainfall=3.20"

Area (sf)	CN	Description
1,600	70	Woods, Good, HSG C
28,197	77	Woods, Good, HSG D
6,660	74	>75% Grass cover, Good, HSG C
13,540	80	>75% Grass cover, Good, HSG D
49,997	77	Weighted Average
49,997		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	70	0.0710	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
2.1	105	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	50	0.0100	9.44	66.70	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013
3.6	195	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.5	420	Total			

Subcatchment 3S: Watershed 3



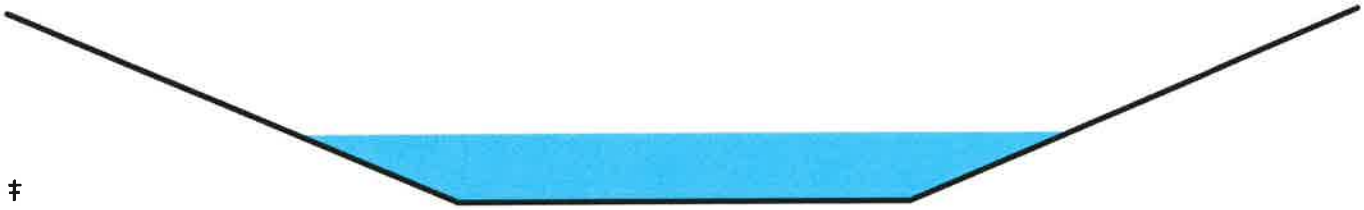
Summary for Reach 6R: Reach 1 to DP

Inflow Area = 0.586 ac, 57.25% Impervious, Inflow Depth > 1.14" for 2 Year Storm Event event
Inflow = 0.41 cfs @ 12.57 hrs, Volume= 0.056 af
Outflow = 0.41 cfs @ 12.63 hrs, Volume= 0.055 af, Atten= 2%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.28 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 4.3 min

Peak Storage= 44 cf @ 12.60 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 2.96 cfs

3.00' x 1.00' deep channel, n= 0.410 Sheet flow over Bermuda Grass
Side Slope Z-value= 3.0 '/' Top Width= 9.00'
Length= 30.0' Slope= 0.0333 '/'
Inlet Invert= 164.00', Outlet Invert= 163.00'



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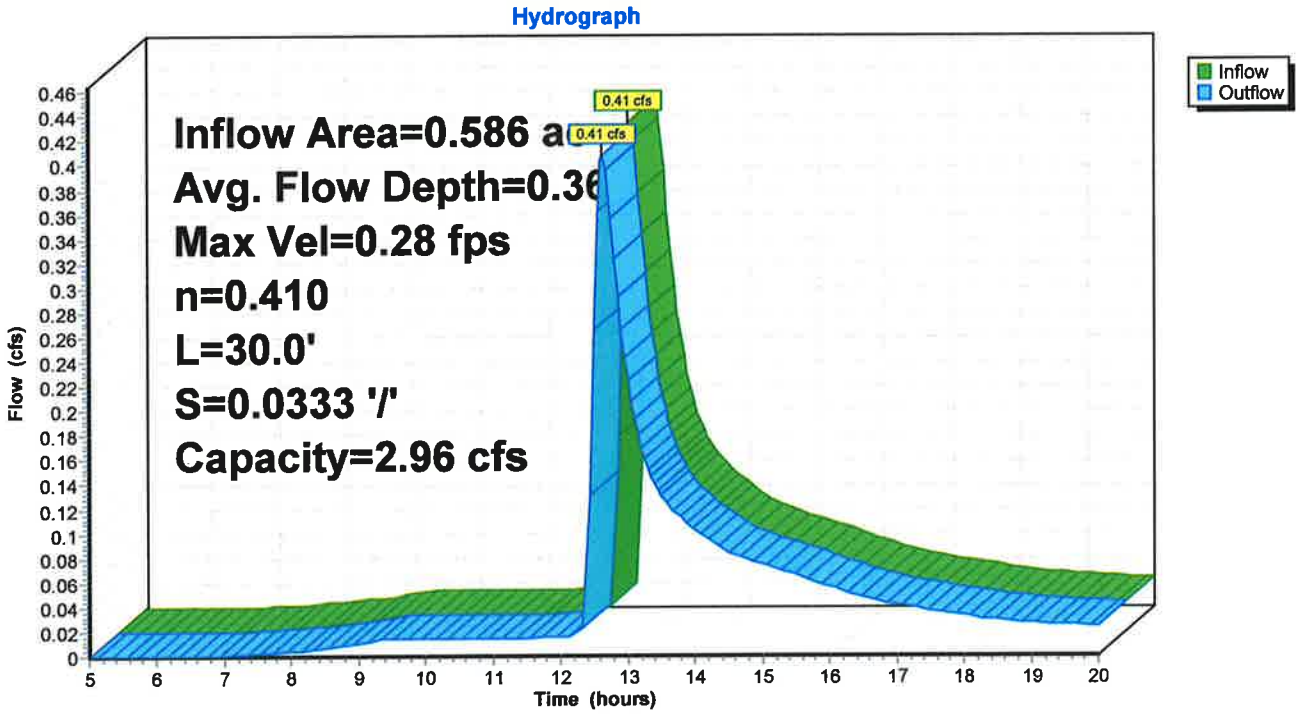
Reach 6R: Reach 1 to DP



Summary for Reach 7R: Reach 2 to DP

Inflow Area = 0.469 ac, 54.42% Impervious, Inflow Depth > 1.15" for 2 Year Storm Event event
Inflow = 0.36 cfs @ 12.70 hrs, Volume= 0.045 af
Outflow = 0.14 cfs @ 14.30 hrs, Volume= 0.039 af, Atten= 61%, Lag= 95.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.09 fps, Min. Travel Time= 61.2 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 119.2 min

Peak Storage= 527 cf @ 13.27 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 5.74 cfs

10.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 340.0' Slope= 0.0103 '/'
Inlet Invert= 166.50', Outlet Invert= 163.00'

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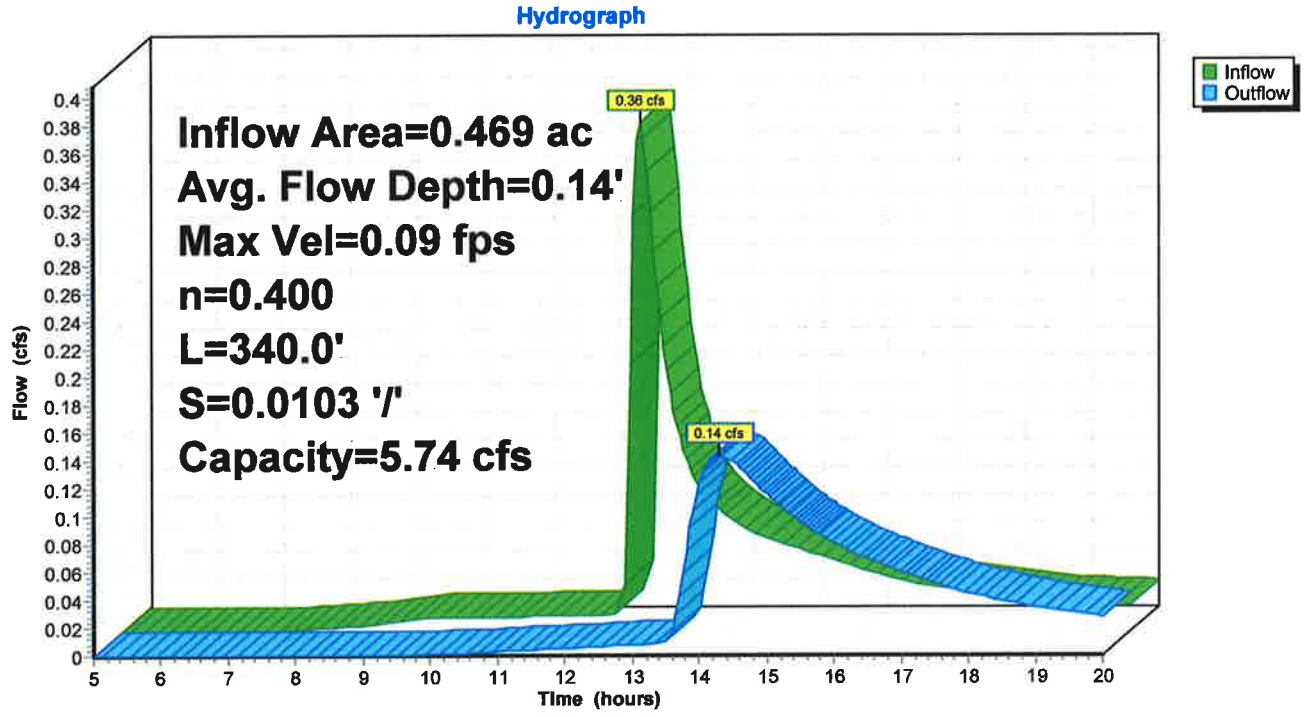
Reach 7R: Reach 2 to DP

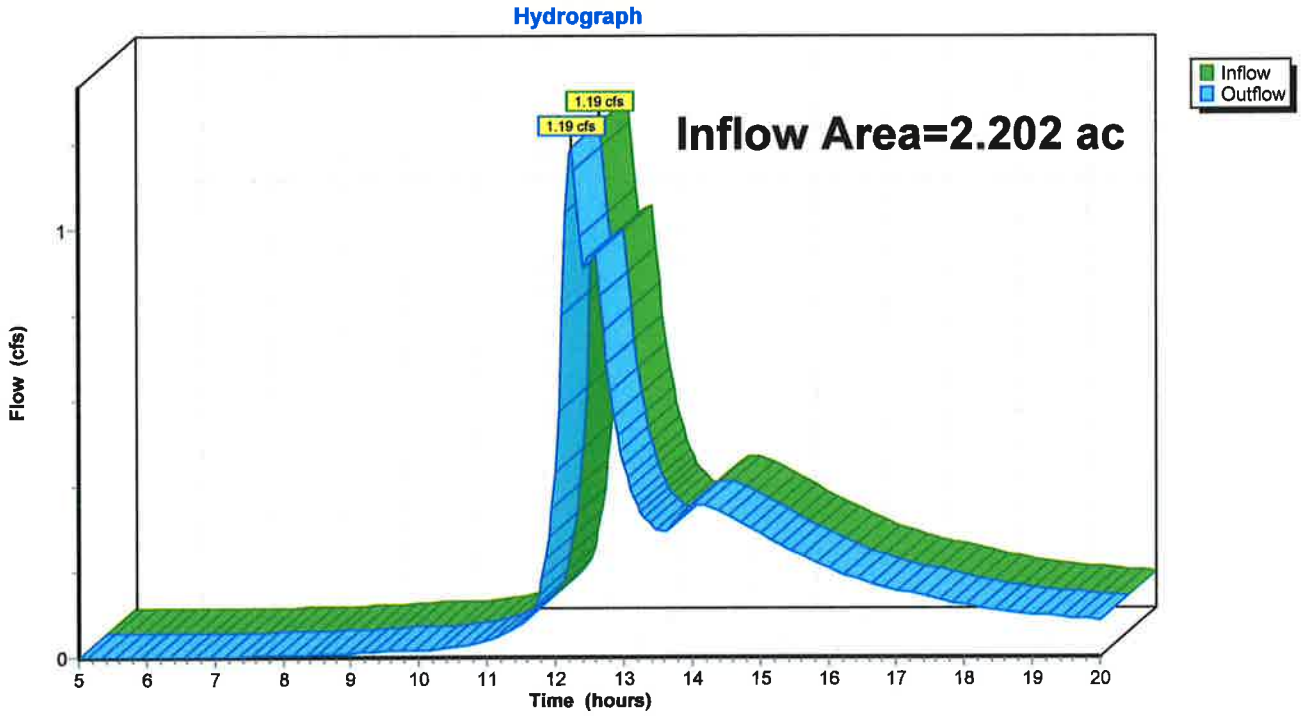


Summary for Reach 8R: Design Point

Inflow Area = 2.202 ac, 26.81% Impervious, Inflow Depth > 1.09" for 2 Year Storm Event event
Inflow = 1.19 cfs @ 12.23 hrs, Volume= 0.200 af
Outflow = 1.19 cfs @ 12.23 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 8R: Design Point



Summary for Pond 1P: Soil Filter Pond 1

Inflow Area = 0.586 ac, 57.25% Impervious, Inflow Depth > 2.03" for 2 Year Storm Event event
Inflow = 1.14 cfs @ 12.19 hrs, Volume= 0.099 af
Outflow = 0.41 cfs @ 12.57 hrs, Volume= 0.056 af, Atten= 64%, Lag= 22.9 min
Primary = 0.41 cfs @ 12.57 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 167.91' @ 12.57 hrs Surf.Area= 1,742 sf Storage= 2,153 cf

Plug-Flow detention time= 144.0 min calculated for 0.055 af (56% of inflow)
Center-of-Mass det. time= 67.6 min (848.6 - 781.1)

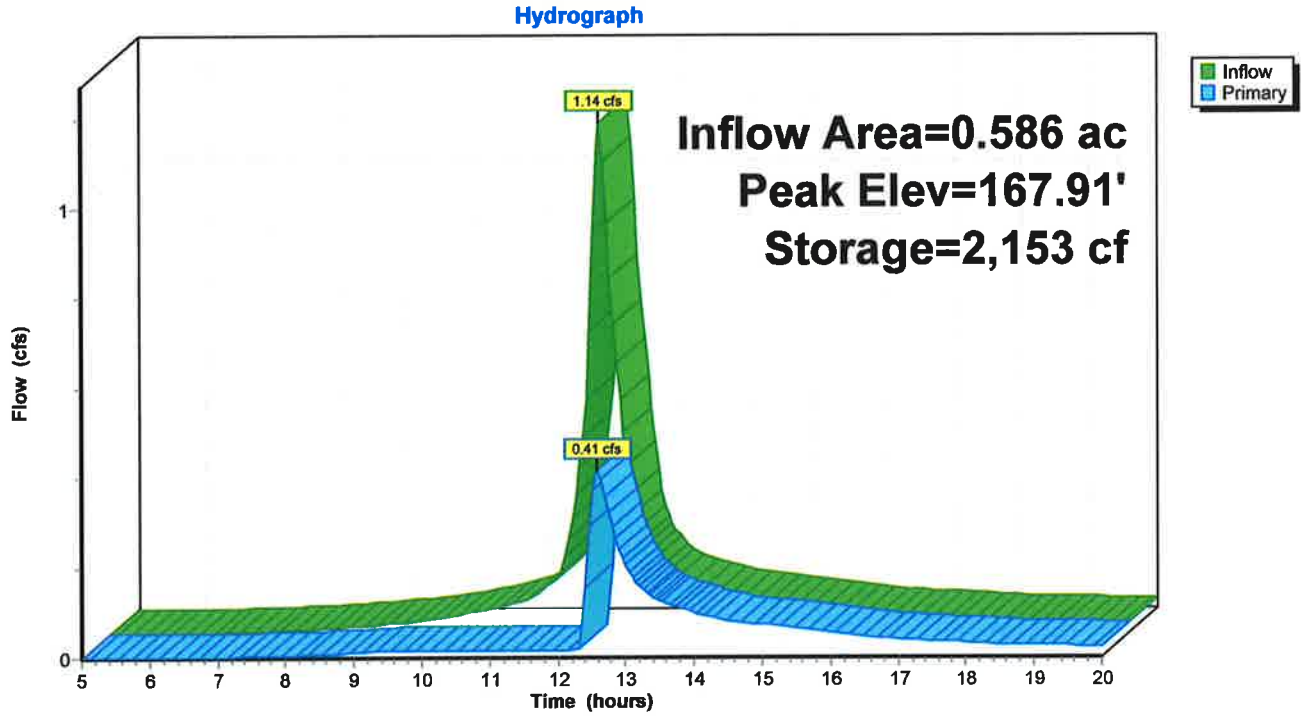
Volume	Invert	Avail.Storage	Storage Description
#1	166.50'	6,601 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.50	1,320	0	0
168.00	1,770	2,318	2,318
170.00	2,513	4,283	6,601

Device	Routing	Invert	Outlet Devices
#1	Primary	164.25'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.25' / 164.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	164.25'	**0.6" Vert. Orifice/Grate** C= 0.600
#3	Device 1	167.75'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	168.75'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.41 cfs @ 12.57 hrs HW=167.90' (Free Discharge)
- 1=**Culvert** (Passes 0.41 cfs of 6.72 cfs potential flow)
  - 2=**Orifice/Grate** (Orifice Controls 0.02 cfs @ 9.17 fps)
  - 3=**Orifice/Grate** (Orifice Controls 0.39 cfs @ 1.26 fps)
- 4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Soil Filter Pond 1



Summary for Pond 2P: Soil Filter Pond 2

Inflow Area = 0.469 ac, 54.42% Impervious, Inflow Depth > 1.94" for 2 Year Storm Event event
Inflow = 0.70 cfs @ 12.33 hrs, Volume= 0.076 af
Outflow = 0.36 cfs @ 12.70 hrs, Volume= 0.045 af, Atten= 48%, Lag= 22.0 min
Primary = 0.36 cfs @ 12.70 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 170.39' @ 12.70 hrs Surf.Area= 1,316 sf Storage= 1,527 cf

Plug-Flow detention time= 135.5 min calculated for 0.045 af (59% of inflow)
Center-of-Mass det. time= 61.1 min (854.0 - 792.9)

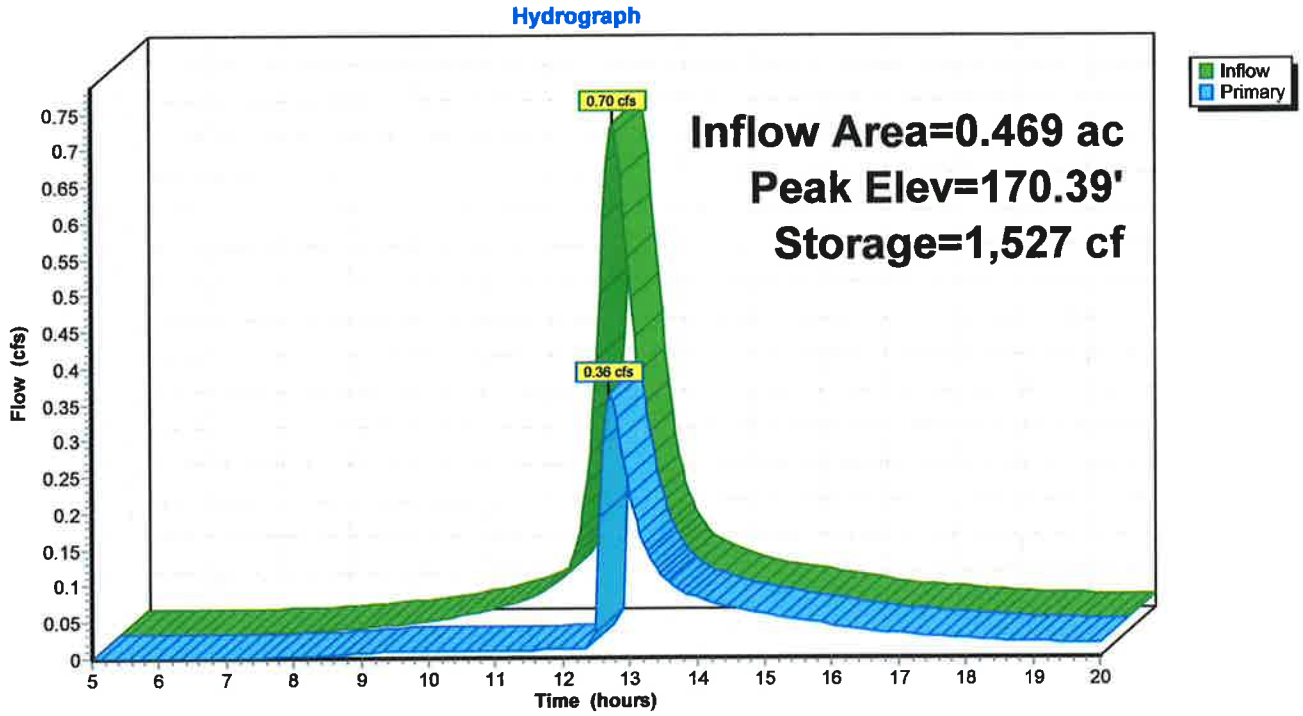
Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	5,111 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	900	0	0
170.00	1,173	1,037	1,037
172.00	1,901	3,074	4,111
172.50	2,099	1,000	5,111

Device	Routing	Invert	Outlet Devices
#1	Primary	166.50'	**12.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.50' / 166.25' S= 0.0104 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	166.50'	**0.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	170.25'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	171.00'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.36 cfs @ 12.70 hrs HW=170.39' (Free Discharge)
- 1=**Culvert** (Passes 0.36 cfs of 6.97 cfs potential flow)
  - 2=**Orifice/Grate** (Orifice Controls 0.01 cfs @ 9.48 fps)
  - 3=**Orifice/Grate** (Orifice Controls 0.35 cfs @ 1.22 fps)
- 4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Soil Filter Pond 2



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Watershed 1 Runoff Area=25,519 sf 57.25% Impervious Runoff Depth>3.29"
Flow Length=385' Tc=14.1 min CN=90 Runoff=1.80 cfs 0.161 af

Subcatchment 2S: Watershed 2 Runoff Area=20,410 sf 54.42% Impervious Runoff Depth>3.18"
Flow Length=290' Tc=24.5 min CN=89 Runoff=1.13 cfs 0.124 af

Subcatchment 3S: Watershed 3 Runoff Area=49,997 sf 0.00% Impervious Runoff Depth>2.12"
Flow Length=420' Tc=15.5 min CN=77 Runoff=2.29 cfs 0.203 af

Reach 6R: Reach 1 to DP Avg. Flow Depth=0.68' Max Vel=0.40 fps Inflow=1.40 cfs 0.117 af
n=0.410 L=30.0' S=0.0333 '/' Capacity=2.96 cfs Outflow=1.38 cfs 0.116 af

Reach 7R: Reach 2 to DP Avg. Flow Depth=0.27' Max Vel=0.14 fps Inflow=1.01 cfs 0.093 af
n=0.400 L=340.0' S=0.0103 '/' Capacity=5.74 cfs Outflow=0.48 cfs 0.086 af

Reach 8R: Design Point Inflow=3.33 cfs 0.405 af
Outflow=3.33 cfs 0.405 af

Pond 1P: Soil Filter Pond 1 Peak Elev=168.11' Storage=2,512 cf Inflow=1.80 cfs 0.161 af
Outflow=1.40 cfs 0.117 af

Pond 2P: Soil Filter Pond 2 Peak Elev=170.54' Storage=1,722 cf Inflow=1.13 cfs 0.124 af
Outflow=1.01 cfs 0.093 af

Total Runoff Area = 2.202 ac Runoff Volume = 0.488 af Average Runoff Depth = 2.66"
73.19% Pervious = 1.612 ac 26.81% Impervious = 0.590 ac

Summary for Subcatchment 1S: Watershed 1

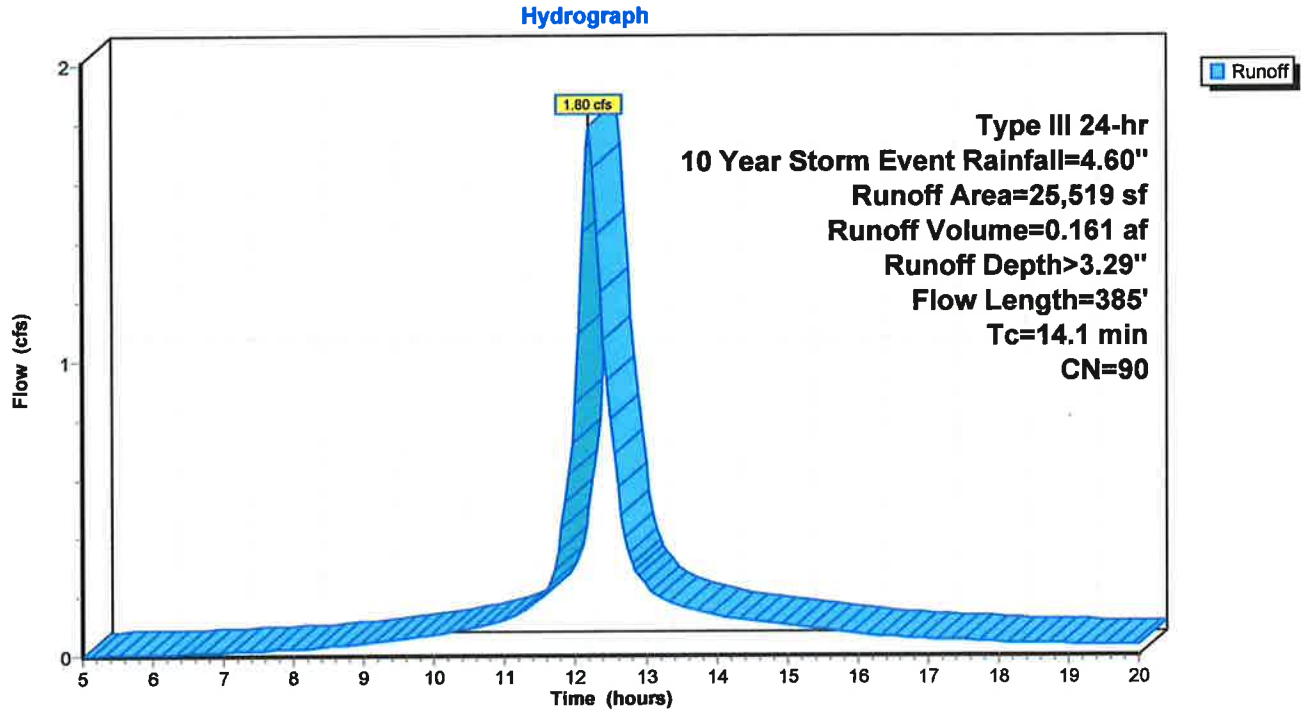
Runoff = 1.80 cfs @ 12.19 hrs, Volume= 0.161 af, Depth> 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Event Rainfall=4.60"

Area (sf)	CN	Description
14,610	98	Paved parking, HSG C
10,909	80	>75% Grass cover, Good, HSG D
25,519	90	Weighted Average
10,909		42.75% Pervious Area
14,610		57.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	15	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.7	240	0.0250	2.37		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	70	0.0100	4.91	3.86	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
10.1	60	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.20"
14.1	385	Total			

Subcatchment 1S: Watershed 1



Summary for Subcatchment 2S: Watershed 2

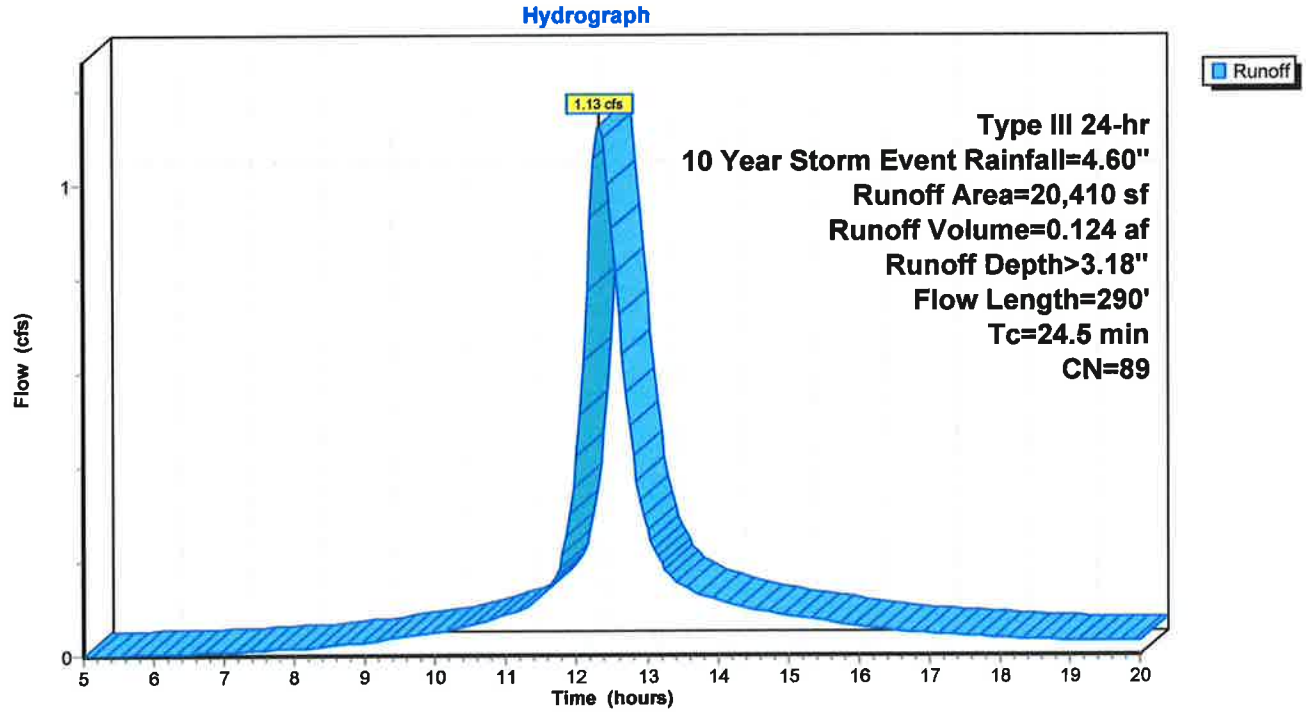
Runoff = 1.13 cfs @ 12.33 hrs, Volume= 0.124 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Event Rainfall=4.60"

Area (sf)	CN	Description
11,107	98	Paved parking, HSG C
4,368	74	>75% Grass cover, Good, HSG C
4,935	80	>75% Grass cover, Good, HSG D
20,410	89	Weighted Average
9,303		45.58% Pervious Area
11,107		54.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	40	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.6	45	0.0200	1.17		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.6	95	0.0300	2.60		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.4	110	0.0050	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.20"
24.5	290	Total			

Subcatchment 2S: Watershed 2



Summary for Subcatchment 3S: Watershed 3

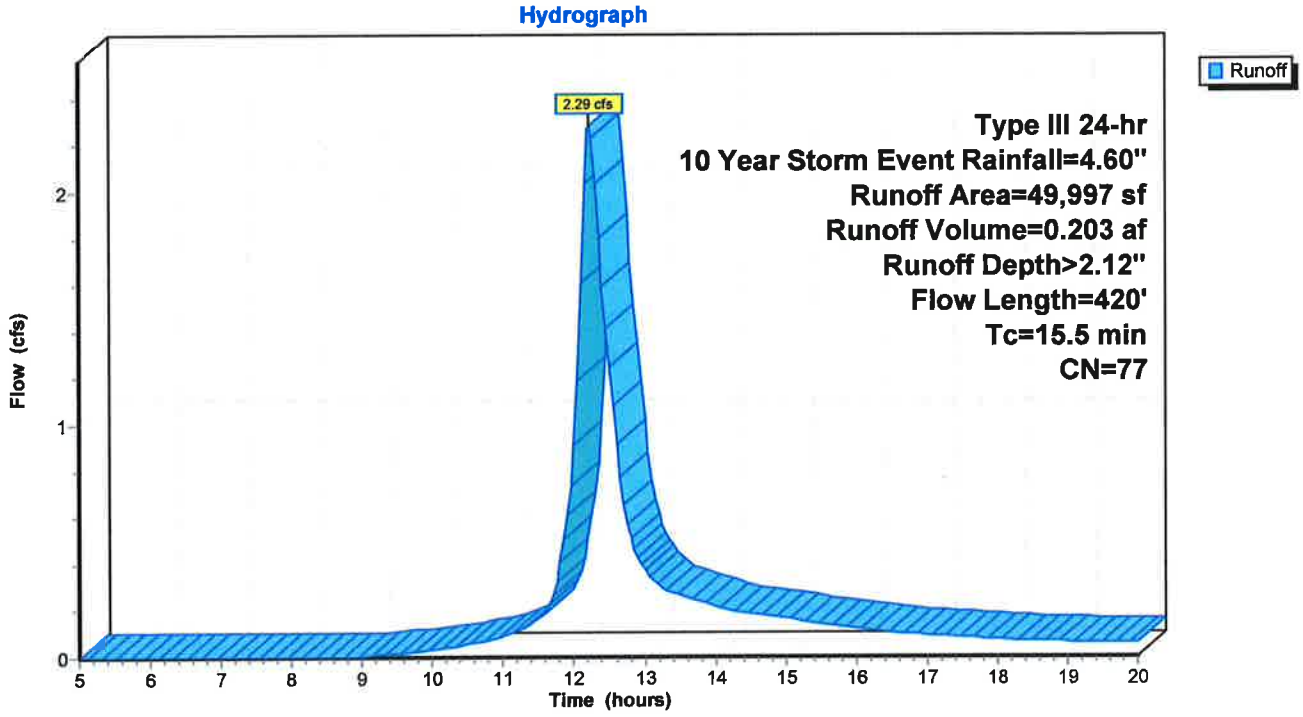
Runoff = 2.29 cfs @ 12.22 hrs, Volume= 0.203 af, Depth> 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Event Rainfall=4.60"

Area (sf)	CN	Description
1,600	70	Woods, Good, HSG C
28,197	77	Woods, Good, HSG D
6,660	74	>75% Grass cover, Good, HSG C
13,540	80	>75% Grass cover, Good, HSG D
49,997	77	Weighted Average
49,997		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	70	0.0710	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
2.1	105	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	50	0.0100	9.44	66.70	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013
3.6	195	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.5	420	Total			

Subcatchment 3S: Watershed 3



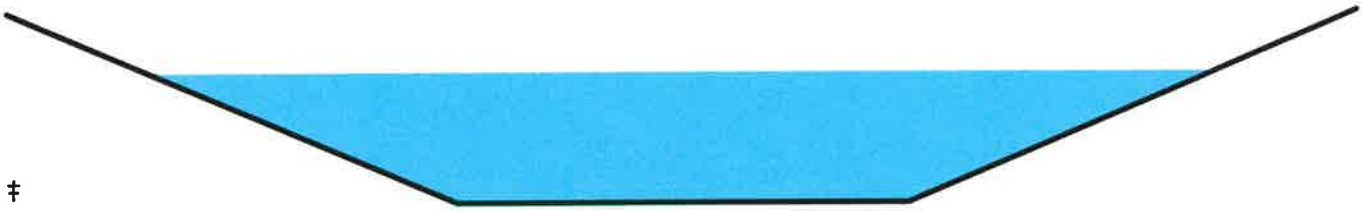
Summary for Reach 6R: Reach 1 to DP

Inflow Area = 0.586 ac, 57.25% Impervious, Inflow Depth > 2.39" for 10 Year Storm Event event
Inflow = 1.40 cfs @ 12.32 hrs, Volume= 0.117 af
Outflow = 1.38 cfs @ 12.36 hrs, Volume= 0.116 af, Atten= 2%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.40 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 3.8 min

Peak Storage= 104 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 2.96 cfs

3.00' x 1.00' deep channel, n= 0.410 Sheet flow over Bermuda Grass
Side Slope Z-value= 3.0 '/' Top Width= 9.00'
Length= 30.0' Slope= 0.0333 '/'
Inlet Invert= 164.00', Outlet Invert= 163.00'



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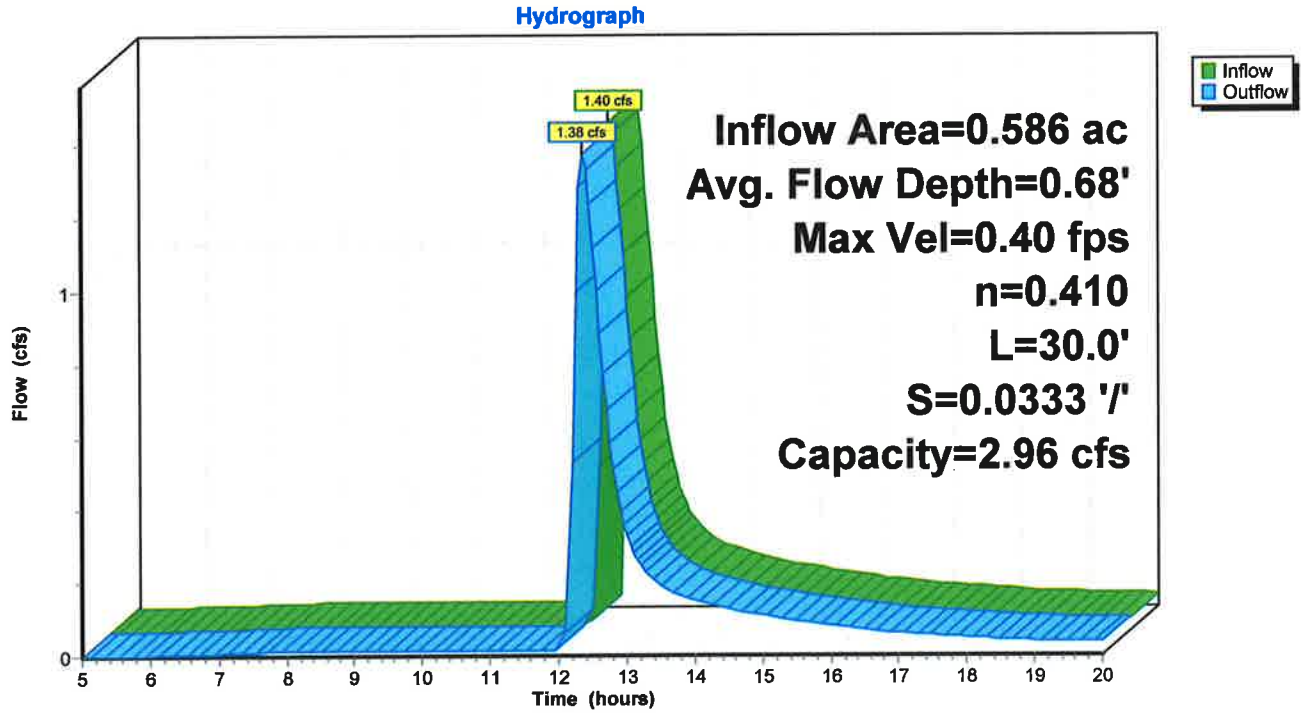
Reach 6R: Reach 1 to DP



Summary for Reach 7R: Reach 2 to DP

Inflow Area = 0.469 ac, 54.42% Impervious, Inflow Depth > 2.38" for 10 Year Storm Event event
Inflow = 1.01 cfs @ 12.45 hrs, Volume= 0.093 af
Outflow = 0.48 cfs @ 13.53 hrs, Volume= 0.086 af, Atten= 52%, Lag= 64.9 min

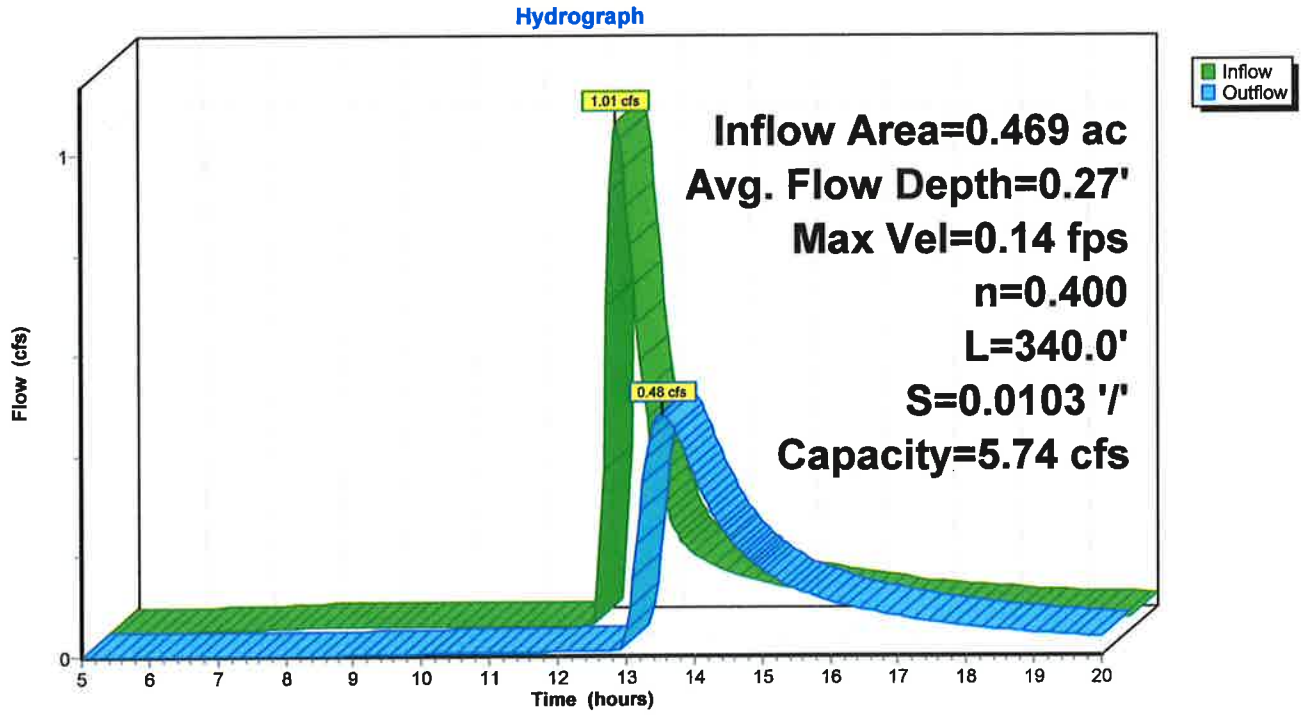
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.14 fps, Min. Travel Time= 40.7 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 102.5 min

Peak Storage= 1,182 cf @ 12.85 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 5.74 cfs

10.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 340.0' Slope= 0.0103 '/'
Inlet Invert= 166.50', Outlet Invert= 163.00'

‡

Reach 7R: Reach 2 to DP

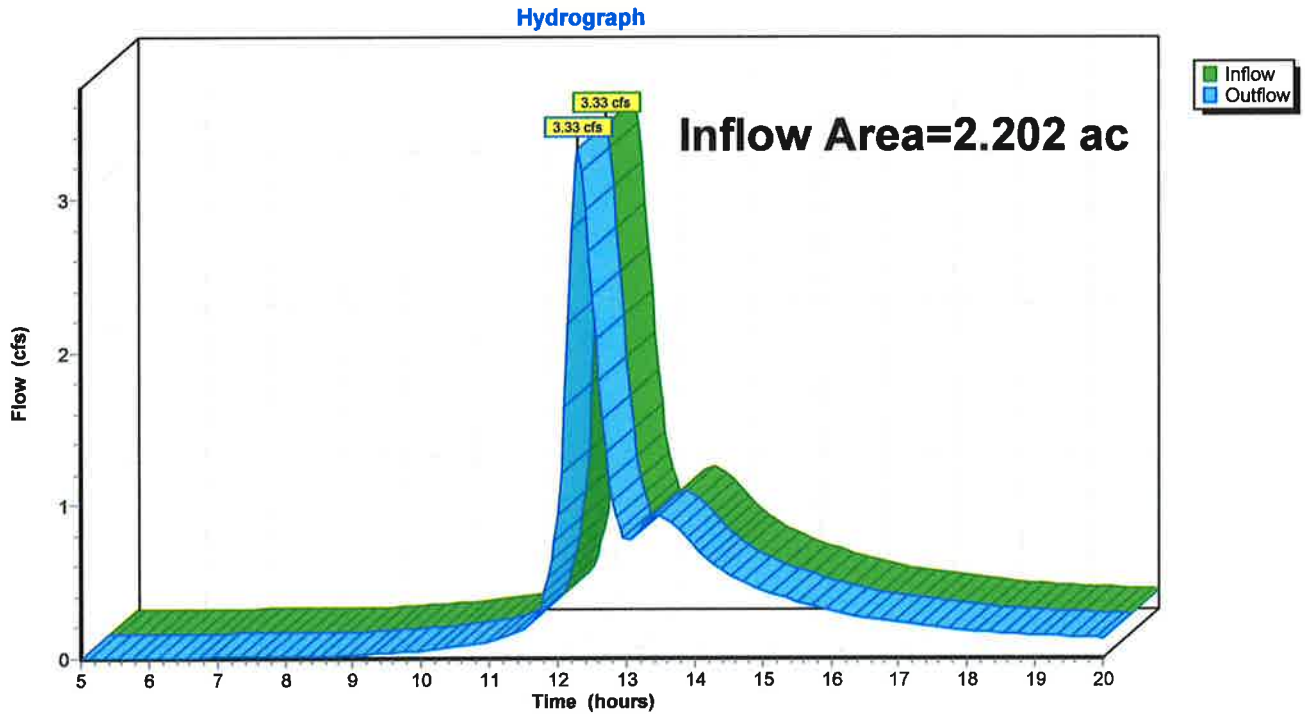


Summary for Reach 8R: Design Point

Inflow Area = 2.202 ac, 26.81% Impervious, Inflow Depth > 2.21" for 10 Year Storm Event event
Inflow = 3.33 cfs @ 12.29 hrs, Volume= 0.405 af
Outflow = 3.33 cfs @ 12.29 hrs, Volume= 0.405 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 8R: Design Point



Summary for Pond 1P: Soil Filter Pond 1

Inflow Area = 0.586 ac, 57.25% Impervious, Inflow Depth > 3.29" for 10 Year Storm Event event
Inflow = 1.80 cfs @ 12.19 hrs, Volume= 0.161 af
Outflow = 1.40 cfs @ 12.32 hrs, Volume= 0.117 af, Atten= 22%, Lag= 7.5 min
Primary = 1.40 cfs @ 12.32 hrs, Volume= 0.117 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 168.11' @ 12.32 hrs Surf.Area= 1,810 sf Storage= 2,512 cf

Plug-Flow detention time= 108.3 min calculated for 0.117 af (73% of inflow)
Center-of-Mass det. time= 45.6 min (815.2 - 769.6)

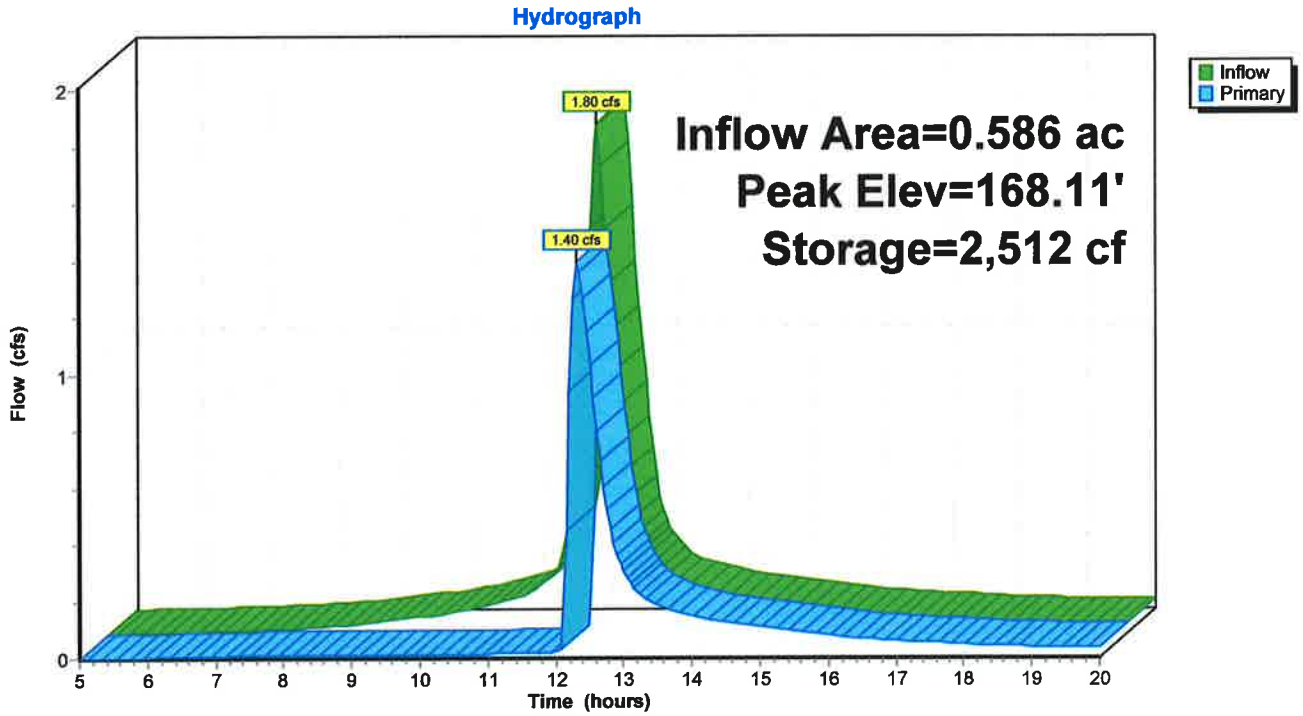
Volume	Invert	Avail.Storage	Storage Description
#1	166.50'	6,601 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.50	1,320	0	0
168.00	1,770	2,318	2,318
170.00	2,513	4,283	6,601

Device	Routing	Invert	Outlet Devices
#1	Primary	164.25'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.25' / 164.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	164.25'	**0.6" Vert. Orifice/Grate** C= 0.600
#3	Device 1	167.75'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	168.75'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.38 cfs @ 12.32 hrs HW=168.11' (Free Discharge)
- 1=**Culvert** (Passes 1.38 cfs of 6.93 cfs potential flow)
  - 2=**Orifice/Grate** (Orifice Controls 0.02 cfs @ 9.42 fps)
  - 3=**Orifice/Grate** (Orifice Controls 1.36 cfs @ 1.91 fps)
- 4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Soil Filter Pond 1



Summary for Pond 2P: Soil Filter Pond 2

Inflow Area = 0.469 ac, 54.42% Impervious, Inflow Depth > 3.18" for 10 Year Storm Event event
Inflow = 1.13 cfs @ 12.33 hrs, Volume= 0.124 af
Outflow = 1.01 cfs @ 12.45 hrs, Volume= 0.093 af, Atten= 10%, Lag= 7.2 min
Primary = 1.01 cfs @ 12.45 hrs, Volume= 0.093 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 170.54' @ 12.45 hrs Surf.Area= 1,369 sf Storage= 1,722 cf

Plug-Flow detention time= 99.4 min calculated for 0.093 af (75% of inflow)
Center-of-Mass det. time= 41.3 min (822.5 - 781.2)

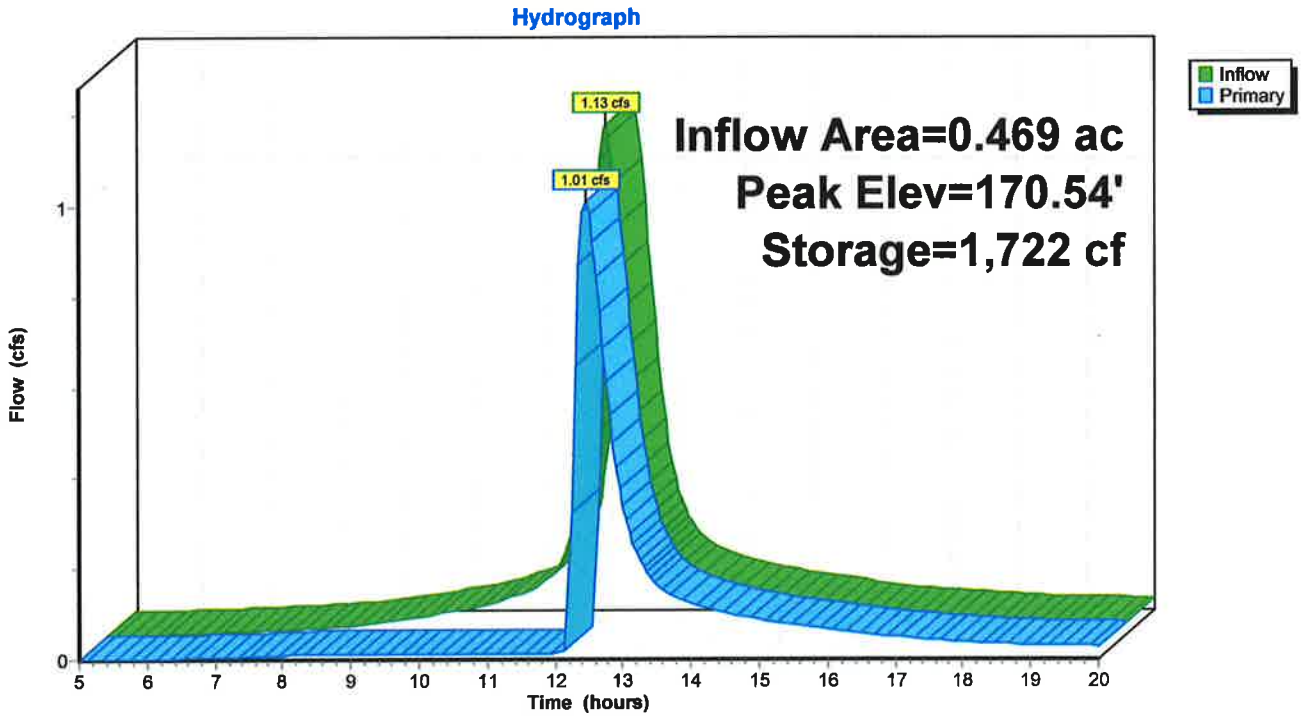
Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	5,111 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	900	0	0
170.00	1,173	1,037	1,037
172.00	1,901	3,074	4,111
172.50	2,099	1,000	5,111

Device	Routing	Invert	Outlet Devices
#1	Primary	166.50'	**12.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.50' / 166.25' S= 0.0104 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	166.50'	**0.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	170.25'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	171.00'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.01 cfs @ 12.45 hrs HW=170.54' (Free Discharge)
- 1=**Culvert** (Passes 1.01 cfs of 7.11 cfs potential flow)
  - 2=**Orifice/Grate** (Orifice Controls 0.01 cfs @ 9.65 fps)
  - 3=**Orifice/Grate** (Orifice Controls 1.00 cfs @ 1.73 fps)
- 4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Soil Filter Pond 2



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Watershed 1 Runoff Area=25,519 sf 57.25% Impervious Runoff Depth>4.30"
Flow Length=385' Tc=14.1 min CN=90 Runoff=2.31 cfs 0.210 af

Subcatchment 2S: Watershed 2 Runoff Area=20,410 sf 54.42% Impervious Runoff Depth>4.18"
Flow Length=290' Tc=24.5 min CN=89 Runoff=1.46 cfs 0.163 af

Subcatchment 3S: Watershed 3 Runoff Area=49,997 sf 0.00% Impervious Runoff Depth>2.99"
Flow Length=420' Tc=15.5 min CN=77 Runoff=3.23 cfs 0.286 af

Reach 6R: Reach 1 to DP Avg. Flow Depth=0.83' Max Vel=0.45 fps Inflow=2.04 cfs 0.166 af
n=0.410 L=30.0' S=0.0333 '/' Capacity=2.96 cfs Outflow=2.01 cfs 0.165 af

Reach 7R: Reach 2 to DP Avg. Flow Depth=0.36' Max Vel=0.16 fps Inflow=1.39 cfs 0.132 af
n=0.400 L=340.0' S=0.0103 '/' Capacity=5.74 cfs Outflow=0.79 cfs 0.124 af

Reach 8R: Design Point Inflow=5.05 cfs 0.576 af
Outflow=5.05 cfs 0.576 af

Pond 1P: Soil Filter Pond 1 Peak Elev=168.21' Storage=2,703 cf Inflow=2.31 cfs 0.210 af
Outflow=2.04 cfs 0.166 af

Pond 2P: Soil Filter Pond 2 Peak Elev=170.61' Storage=1,818 cf Inflow=1.46 cfs 0.163 af
Outflow=1.39 cfs 0.132 af

Total Runoff Area = 2.202 ac Runoff Volume = 0.659 af Average Runoff Depth = 3.59"
73.19% Pervious = 1.612 ac 26.81% Impervious = 0.590 ac

Summary for Subcatchment 1S: Watershed 1

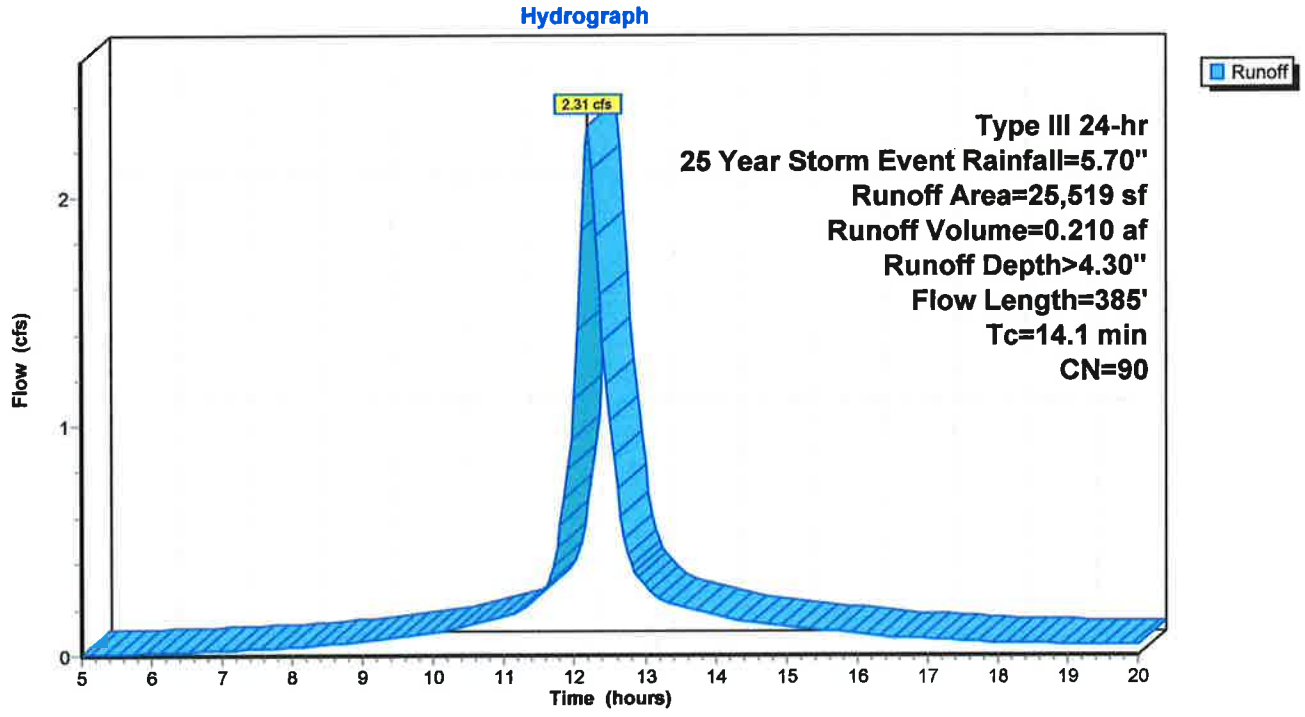
Runoff = 2.31 cfs @ 12.19 hrs, Volume= 0.210 af, Depth> 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Storm Event Rainfall=5.70"

Area (sf)	CN	Description
14,610	98	Paved parking, HSG C
10,909	80	>75% Grass cover, Good, HSG D
25,519	90	Weighted Average
10,909		42.75% Pervious Area
14,610		57.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	15	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.7	240	0.0250	2.37		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	70	0.0100	4.91	3.86	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
10.1	60	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.20"
14.1	385	Total			

Subcatchment 1S: Watershed 1



Summary for Subcatchment 2S: Watershed 2

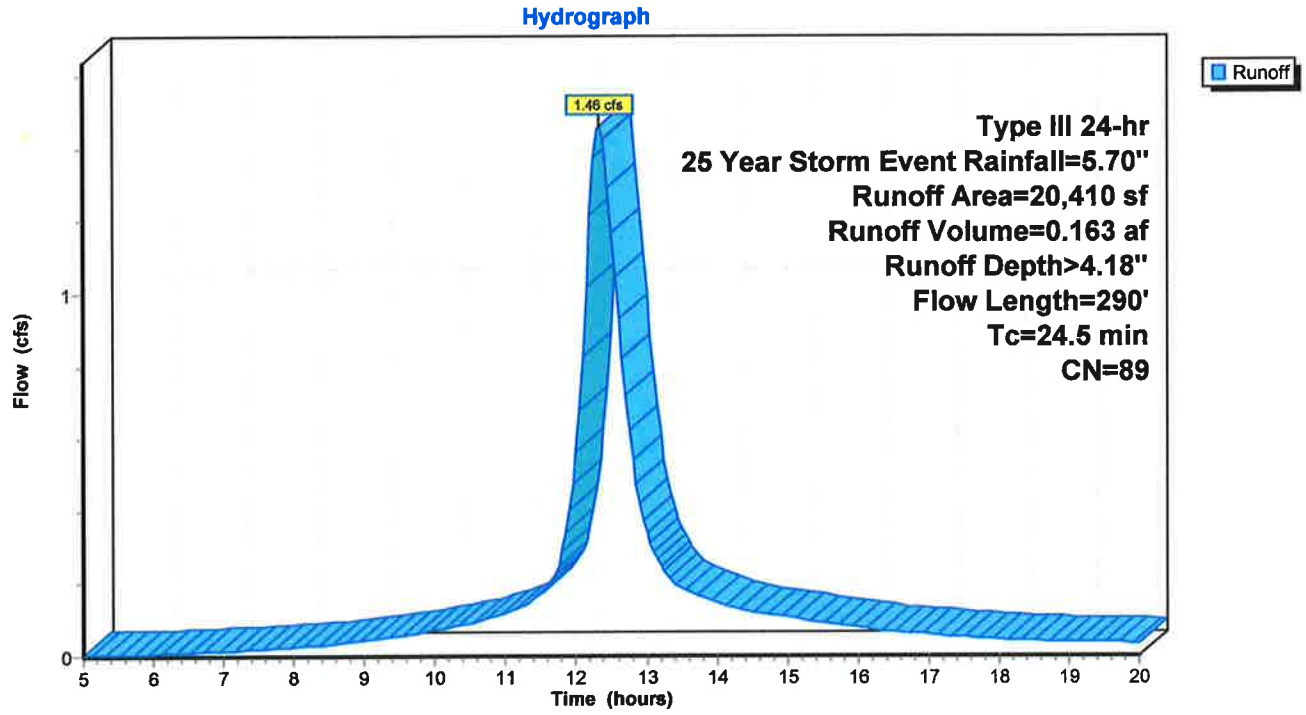
Runoff = 1.46 cfs @ 12.33 hrs, Volume= 0.163 af, Depth> 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Storm Event Rainfall=5.70"

Area (sf)	CN	Description
11,107	98	Paved parking, HSG C
4,368	74	>75% Grass cover, Good, HSG C
4,935	80	>75% Grass cover, Good, HSG D
20,410	89	Weighted Average
9,303		45.58% Pervious Area
11,107		54.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	40	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.6	45	0.0200	1.17		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
0.6	95	0.0300	2.60		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.4	110	0.0050	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.20"
24.5	290	Total			

Subcatchment 2S: Watershed 2



Summary for Subcatchment 3S: Watershed 3

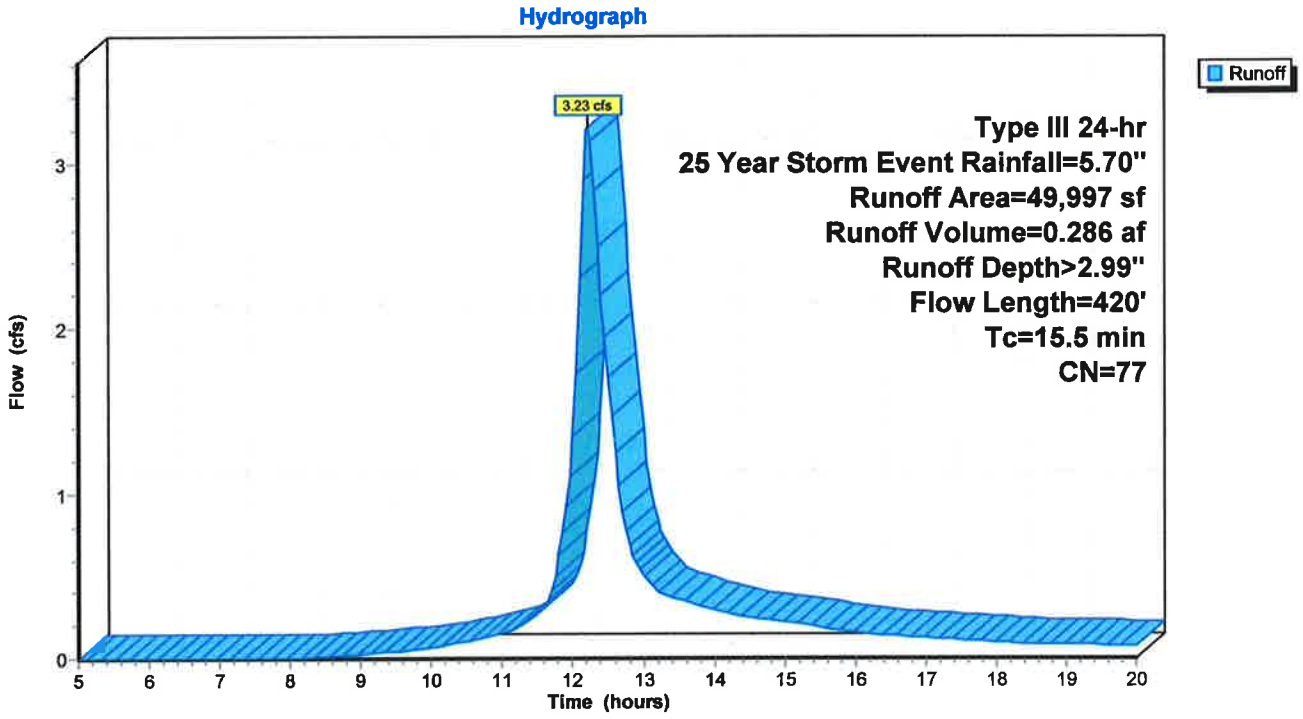
Runoff = 3.23 cfs @ 12.22 hrs, Volume= 0.286 af, Depth> 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Storm Event Rainfall=5.70"

Area (sf)	CN	Description
1,600	70	Woods, Good, HSG C
28,197	77	Woods, Good, HSG D
6,660	74	>75% Grass cover, Good, HSG C
13,540	80	>75% Grass cover, Good, HSG D
49,997	77	Weighted Average
49,997		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	70	0.0710	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
2.1	105	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	50	0.0100	9.44	66.70	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013
3.6	195	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.5	420	Total			

Subcatchment 3S: Watershed 3



Summary for Reach 6R: Reach 1 to DP

Inflow Area = 0.586 ac, 57.25% Impervious, Inflow Depth > 3.39" for 25 Year Storm Event event
Inflow = 2.04 cfs @ 12.27 hrs, Volume= 0.166 af
Outflow = 2.01 cfs @ 12.31 hrs, Volume= 0.165 af, Atten= 1%, Lag= 2.3 min

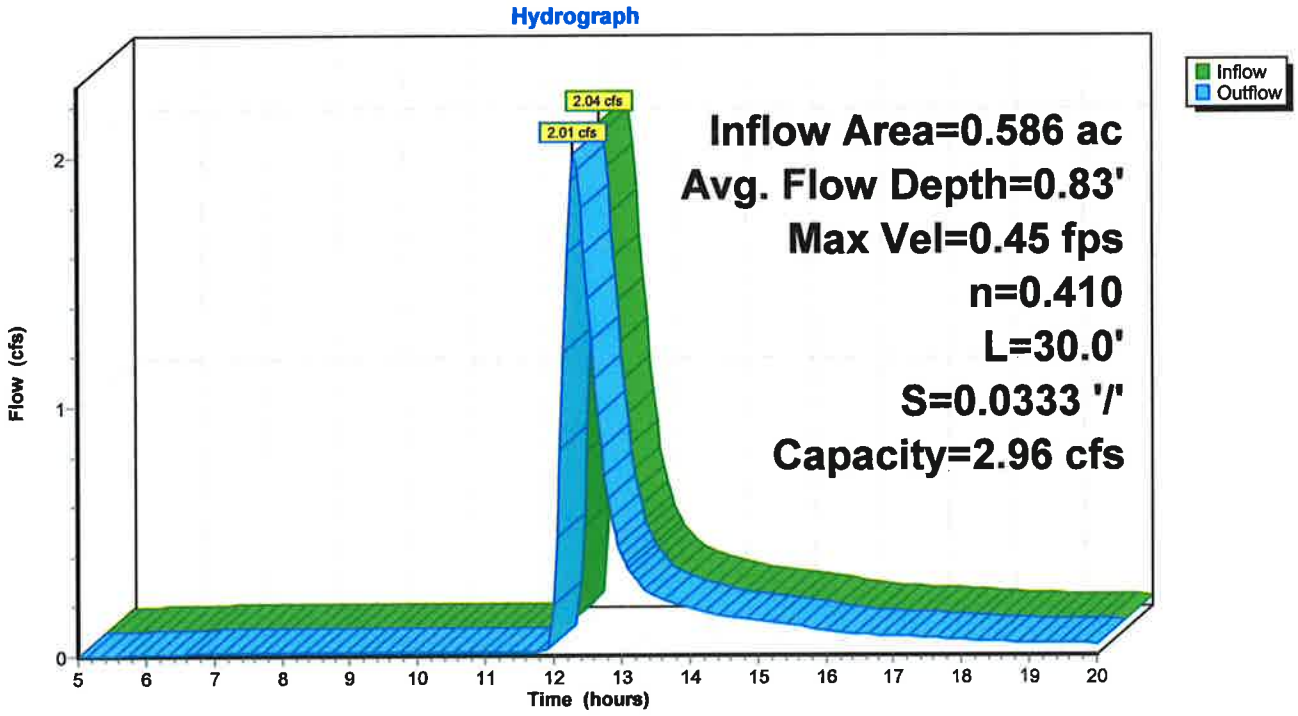
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.45 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 3.4 min

Peak Storage= 137 cf @ 12.28 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 2.96 cfs

3.00' x 1.00' deep channel, n= 0.410 Sheet flow over Bermuda Grass
Side Slope Z-value= 3.0 '/' Top Width= 9.00'
Length= 30.0' Slope= 0.0333 '/'
Inlet Invert= 164.00', Outlet Invert= 163.00'

‡

Reach 6R: Reach 1 to DP



Summary for Reach 7R: Reach 2 to DP

Inflow Area = 0.469 ac, 54.42% Impervious, Inflow Depth > 3.38" for 25 Year Storm Event event
Inflow = 1.39 cfs @ 12.40 hrs, Volume= 0.132 af
Outflow = 0.79 cfs @ 13.33 hrs, Volume= 0.124 af, Atten= 44%, Lag= 55.7 min

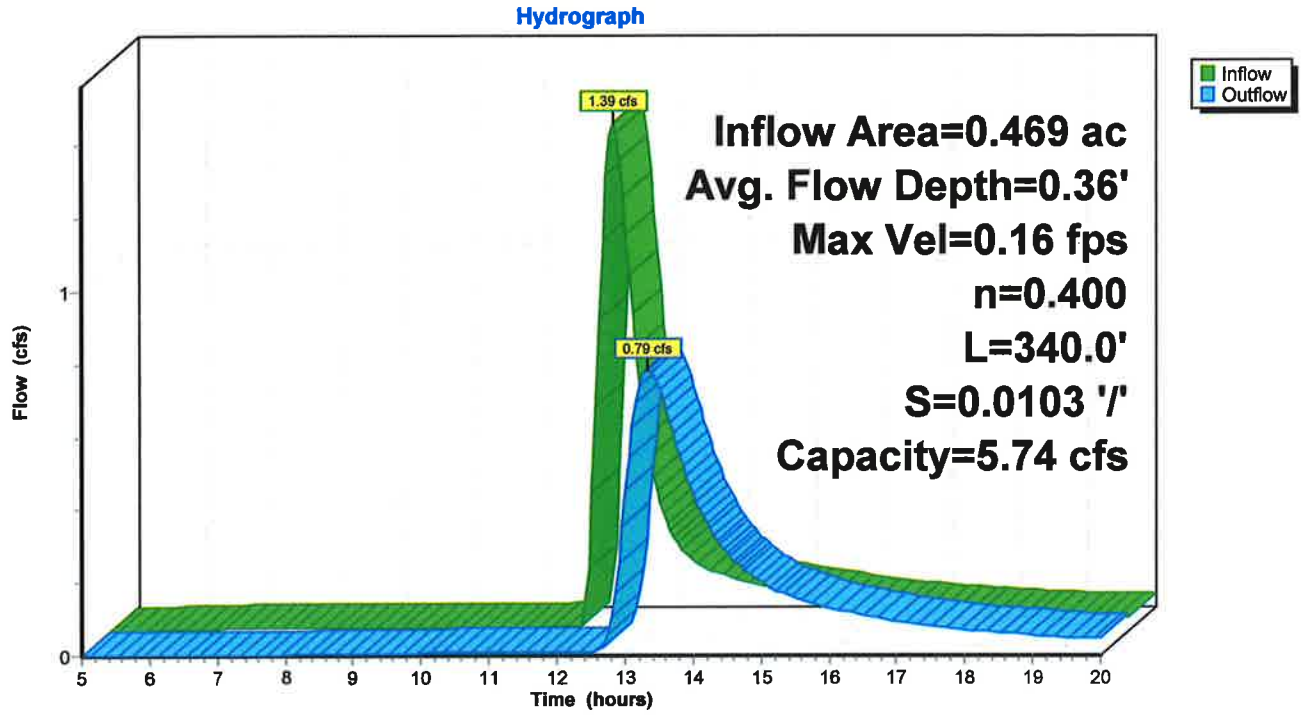
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.16 fps, Min. Travel Time= 34.9 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 93.3 min

Peak Storage= 1,649 cf @ 12.75 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 5.74 cfs

10.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 340.0' Slope= 0.0103 '/'
Inlet Invert= 166.50', Outlet Invert= 163.00'

‡

Reach 7R: Reach 2 to DP

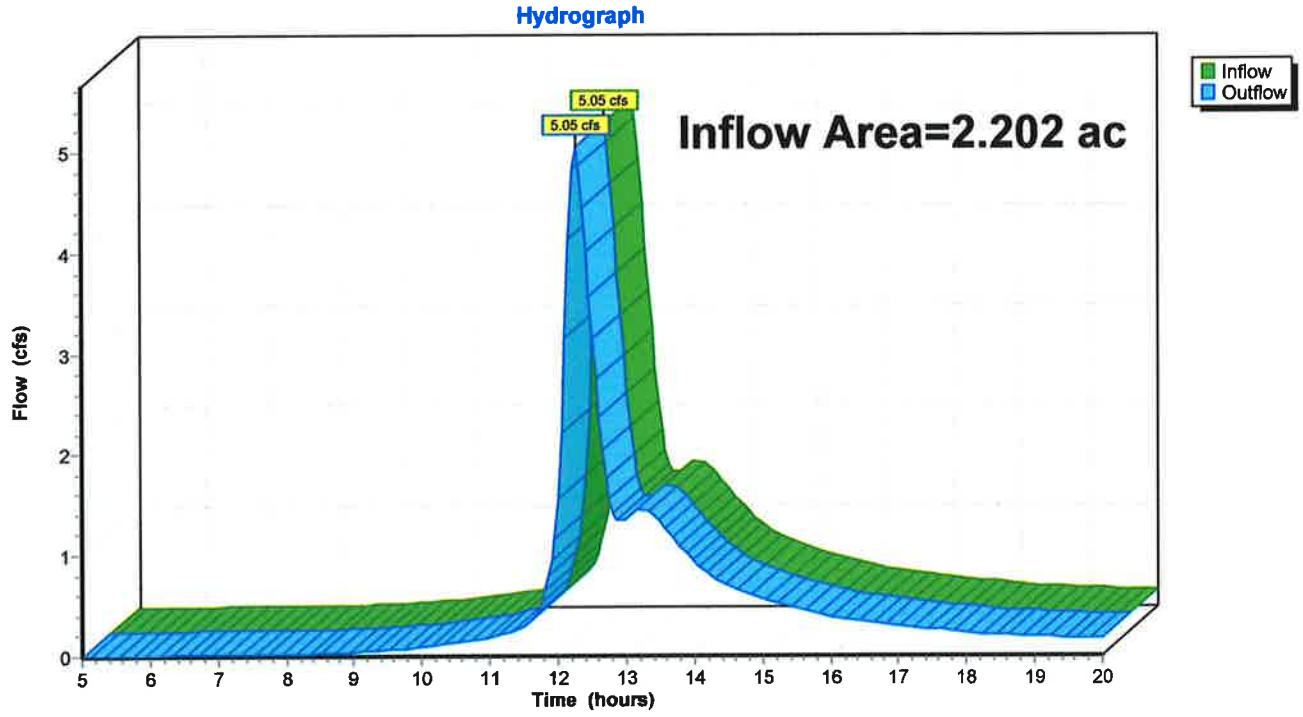


Summary for Reach 8R: Design Point

Inflow Area = 2.202 ac, 26.81% Impervious, Inflow Depth > 3.14" for 25 Year Storm Event event
Inflow = 5.05 cfs @ 12.25 hrs, Volume= 0.576 af
Outflow = 5.05 cfs @ 12.25 hrs, Volume= 0.576 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 8R: Design Point



Summary for Pond 1P: Soil Filter Pond 1

Inflow Area = 0.586 ac, 57.25% Impervious, Inflow Depth > 4.30" for 25 Year Storm Event event
Inflow = 2.31 cfs @ 12.19 hrs, Volume= 0.210 af
Outflow = 2.04 cfs @ 12.27 hrs, Volume= 0.166 af, Atten= 12%, Lag= 4.7 min
Primary = 2.04 cfs @ 12.27 hrs, Volume= 0.166 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 168.21' @ 12.27 hrs Surf.Area= 1,849 sf Storage= 2,703 cf

Plug-Flow detention time= 95.5 min calculated for 0.166 af (79% of inflow)
Center-of-Mass det. time= 41.0 min (804.8 - 763.8)

Volume	Invert	Avail.Storage	Storage Description
#1	166.50'	6,601 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

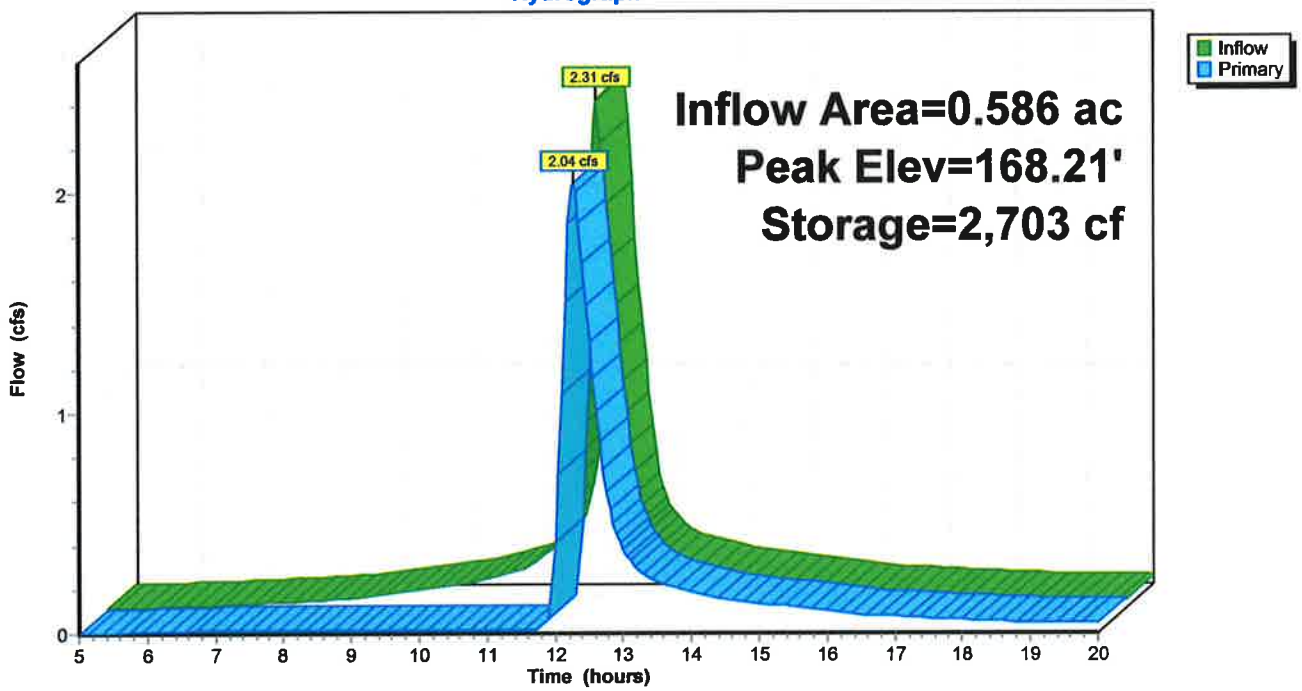
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.50	1,320	0	0
168.00	1,770	2,318	2,318
170.00	2,513	4,283	6,601

Device	Routing	Invert	Outlet Devices
#1	Primary	164.25'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.25' / 164.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	164.25'	**0.6" Vert. Orifice/Grate** C= 0.600
#3	Device 1	167.75'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	168.75'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=2.02 cfs @ 12.27 hrs HW=168.21' (Free Discharge)
- 1=**Culvert** (Passes 2.02 cfs of 7.03 cfs potential flow)
  - 2=**Orifice/Grate** (Orifice Controls 0.02 cfs @ 9.55 fps)
  - 3=**Orifice/Grate** (Orifice Controls 2.00 cfs @ 2.18 fps)
- 4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Soil Filter Pond 1

Hydrograph



Summary for Pond 2P: Soil Filter Pond 2

Inflow Area = 0.469 ac, 54.42% Impervious, Inflow Depth > 4.18" for 25 Year Storm Event event
Inflow = 1.46 cfs @ 12.33 hrs, Volume= 0.163 af
Outflow = 1.39 cfs @ 12.40 hrs, Volume= 0.132 af, Atten= 5%, Lag= 4.6 min
Primary = 1.39 cfs @ 12.40 hrs, Volume= 0.132 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 170.61' @ 12.40 hrs Surf.Area= 1,395 sf Storage= 1,818 cf

Plug-Flow detention time= 87.7 min calculated for 0.132 af (81% of inflow)
Center-of-Mass det. time= 37.0 min (811.9 - 774.9)

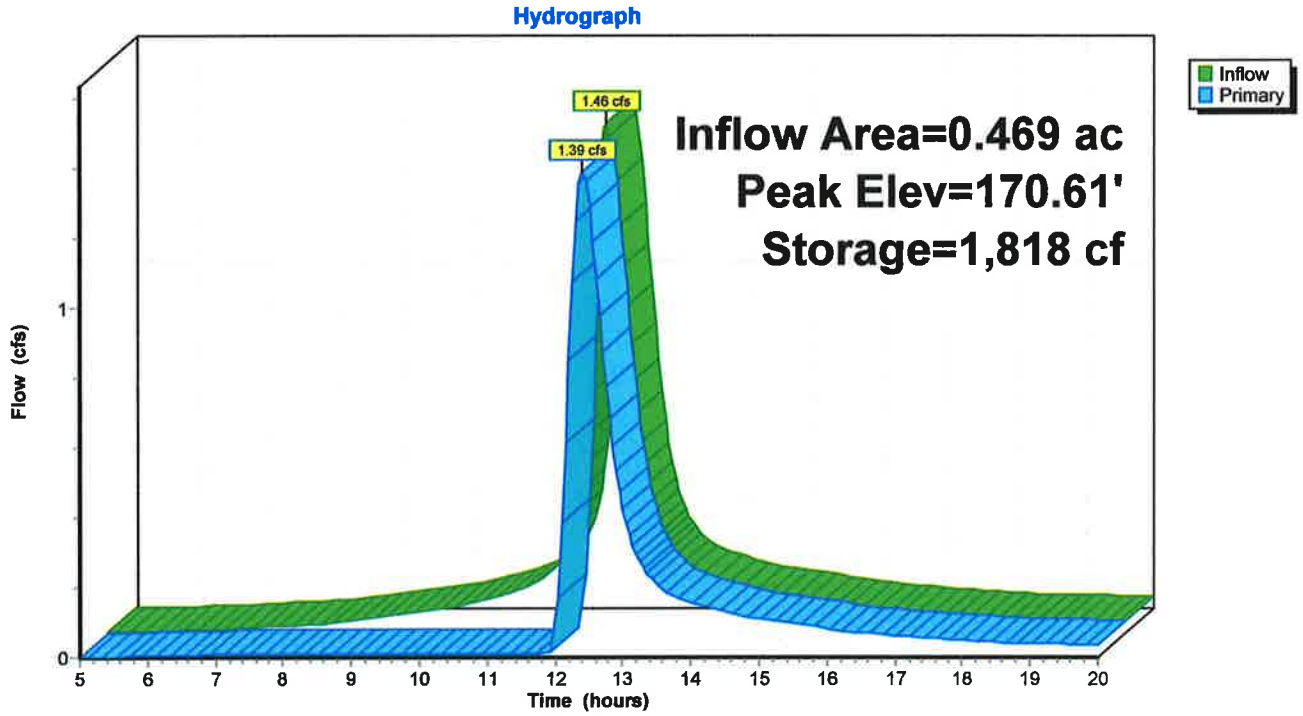
Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	5,111 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	900	0	0
170.00	1,173	1,037	1,037
172.00	1,901	3,074	4,111
172.50	2,099	1,000	5,111

Device	Routing	Invert	Outlet Devices
#1	Primary	166.50'	**12.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.50' / 166.25' S= 0.0104 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	166.50'	**0.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	170.25'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	171.00'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.39 cfs @ 12.40 hrs HW=170.61' (Free Discharge)
- 1=**Culvert** (Passes 1.39 cfs of 7.18 cfs potential flow)
  - 2=**Orifice/Grate** (Orifice Controls 0.01 cfs @ 9.74 fps)
  - 3=**Orifice/Grate** (Orifice Controls 1.38 cfs @ 1.92 fps)
- 4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Soil Filter Pond 2



Stormwater 25 and 100 Year Emergency Spillway check

Summary for Pond 1P: Soil Filter Pond 1

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.586 ac, 57.25% Impervious, Inflow Depth > 4.30" for 25 year storm event event
Inflow = 2.31 cfs @ 12.19 hrs, Volume= 0.210 af
Outflow = 1.97 cfs @ 12.29 hrs, Volume= 0.123 af, Atten= 15%, Lag= 6.3 min
Primary = 1.97 cfs @ 12.29 hrs, Volume= 0.123 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 168.89' @ 12.29 hrs Surf.Area= 2,102 sf Storage= 4,050 cf

Plug-Flow detention time= 148.7 min calculated for 0.123 af (59% of inflow)
Center-of-Mass det. time= 72.5 min (836.3 - 763.8)

Volume	Invert	Avail.Storage	Storage Description
#1	166.50'	6,601 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.50	1,320	0	0
168.00	1,770	2,318	2,318
170.00	2,513	4,283	6,601

Device	Routing	Invert	Outlet Devices
#1	Primary	168.75'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.94 cfs @ 12.29 hrs HW=168.89' (Free Discharge)
↑—1=**Broad-Crested Rectangular Weir** (Weir Controls 1.94 cfs @ 0.90 fps)

FLOW THROUGH EMERGENCY SPILLWAY ONLY
(I.E. CONTROL STRUCTURE BLOCKED)

POND RISES TO ELEV 168.89
+ 1.00 FREEBOARD
169.89 TOP OF BERM / OR HIGHER

170.00 IS PROPOSED TOP OF BERM

Summary for Pond 2P: Soil Filter Pond 2

[82] Warning: Early inflow requires earlier time span
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.469 ac, 54.42% Impervious, Inflow Depth > 4.18" for 25 year storm event event
Inflow = 1.46 cfs @ 12.33 hrs, Volume= 0.163 af
Outflow = 1.48 cfs @ 12.37 hrs, Volume= 0.108 af, Atten= 0%, Lag= 2.5 min
Primary = 1.48 cfs @ 12.37 hrs, Volume= 0.108 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 171.12' @ 12.37 hrs Surf.Area= 1,580 sf Storage= 2,578 cf

Plug-Flow detention time= 126.9 min calculated for 0.108 af (66% of inflow)
Center-of-Mass det. time= 59.0 min (833.9 - 774.9)

Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	5,111 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	900	0	0
170.00	1,173	1,037	1,037
172.00	1,901	3,074	4,111
→ 172.50	2,099	1,000	5,111

Device	Routing	Invert	Outlet Devices
#1	Primary	171.00'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.43 cfs @ 12.37 hrs HW=171.12' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.43 cfs @ 0.81 fps)

FLOW THROUGH EMERGENCY SPILLWAY ONLY
(I.E. CONTROL STRUCTURE BLOCKED)

POND RISES TO ELEV 171.12
+ 1.00 FREEBOARD
172.12 TOP OF BERM 2 OR HIGHER
172.5 IS PROPOSED TOP OF BERM

Summary for Pond 1P: Soil Filter Pond 1

[82] Warning: Early inflow requires earlier time span
[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 0.586 ac, 57.25% Impervious, Inflow Depth > 6.23" for 100 Year Storm Event event
Inflow = 3.29 cfs @ 12.19 hrs, Volume= 0.304 af
Outflow = 2.88 cfs @ 12.27 hrs, Volume= 0.260 af, Atten= 13%, Lag= 4.8 min
Primary = 2.88 cfs @ 12.27 hrs, Volume= 0.260 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 168.37' @ 12.27 hrs Surf.Area= 1,906 sf Storage= 2,993 cf

Plug-Flow detention time= 80.4 min calculated for 0.259 af (85% of inflow)
Center-of-Mass det. time= 37.5 min (794.1 - 756.6)

Volume	Invert	Avail.Storage	Storage Description
#1	166.50'	6,601 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.50	1,320	0	0
168.00	1,770	2,318	2,318
170.00	2,513	4,283	6,601

Device	Routing	Invert	Outlet Devices
#1	Primary	164.25'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.25' / 164.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	164.25'	**0.6" Vert. Orifice/Grate** C= 0.600
#3	Device 1	167.75'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	168.75'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

EMERGENCY SPILLWAY INVERT

Primary OutFlow Max=2.86 cfs @ 12.27 hrs HW=168.36' (Free Discharge)
- 1=**Culvert** (Passes 2.86 cfs of 7.19 cfs potential flow)
  - 2=**Orifice/Grate** (Orifice Controls 0.02 cfs @ 9.74 fps)
  - 3=**Orifice/Grate** (Orifice Controls 2.84 cfs @ 2.84 fps)
- 4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

100 YR STORM EVENT DOES NOT ENTER EMERGENCY SPILLWAY

Summary for Pond 2P: Soil Filter Pond 2

[82] Warning: Early inflow requires earlier time span
[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 0.469 ac, 54.42% Impervious, Inflow Depth > 6.11" for 100 Year Storm Event event
Inflow = 2.10 cfs @ 12.32 hrs, Volume= 0.239 af
Outflow = 2.02 cfs @ 12.39 hrs, Volume= 0.207 af, Atten= 4%, Lag= 4.0 min
Primary = 2.02 cfs @ 12.39 hrs, Volume= 0.207 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 170.71' @ 12.39 hrs Surf.Area= 1,432 sf Storage= 1,962 cf

Plug-Flow detention time= 73.1 min calculated for 0.206 af (86% of inflow)
Center-of-Mass det. time= 33.8 min (800.9 - 767.1)

Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	5,111 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	900	0	0
170.00	1,173	1,037	1,037
172.00	1,901	3,074	4,111
172.50	2,099	1,000	5,111

Device	Routing	Invert	Outlet Devices
#1	Primary	166.50'	**12.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.50' / 166.25' S= 0.0104 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	166.50'	**0.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	170.25'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	171.00'	**15.0' long x 6.0' breadth Broad-Crested Rectangular Weir** 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

EMERGENCY SPILLWAY INVERT

Primary OutFlow Max=2.01 cfs @ 12.39 hrs HW=170.71' (Free Discharge)
- 1=**Culvert** (Passes 2.01 cfs of 7.28 cfs potential flow)
  - 2=**Orifice/Grate** (Orifice Controls 0.01 cfs @ 9.85 fps)
  - 3=**Orifice/Grate** (Orifice Controls 2.00 cfs @ 2.18 fps)
- 4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

100 YR STORM EVENT DOES NOT ENTER EMERGENCY SPILLWAY

Stormwater Quality Analysis and Narrative

June 6, 2024

Josh Sammon
SammCo Holdings LLC
164 Applecrest Drive
Yarmouth, Maine 04096

Re: 14 Units along Route 125, Bowdoinham, Me.
Stormwater Quality Narrative

Dear Josh,

SammCo Holdings LLC owns a parcel of land at the intersection of Route 138 and Route 125 in Bowdoinham, Maine. You are proposing to construct two new buildings (total of 14 units) with associated access roads and parking facilities. The building will utilize underground electricity, telephone/communications, private septic sewer, and public water supply. It is anticipated that this projects site infrastructure will be started in 2021.

The site is identified as Tax Map U-7 Lot 005 of the Town's Tax Map. The parcel is approximately 7.24 acres in size and lies within the "Village Two" Zoning District.

The existing site consists of undeveloped woods area throughout the parcel. The property has been previously surveyed by William Coombs and recorded in the registry on March 4, 2020. The topography of the existing site is shown at a two foot contour interval as depicted by the Maine GIS website showing Lidar data. The slope of the property varies from 5% along the flatter areas to 25% along the banks of the steeper slopes of the property. Wetland areas have been delineated by Jones Associates and shown on the plan.

We have prepared a stormwater quantity analysis, under separate cover, in order to properly evaluate existing and proposed stormwater quantity impacts from the development. The Maine DEP Chapter 500

SJR ENGINEERING, INC.
STEVE@SJRENG.COM. 16 THURSTON DRIVE, MONMOUTH, ME. TEL: (207) 242-6248

rules of the Maine DEP stormwater rules requires a 95% impervious surface stormwater treatment and an 80% disturbed area stormwater treatment. We have designed this project to meet and exceed these standards by use of two combined soil filter pond/detention ponds to be constructed with the project infrastructure. Roof drip edges have also been designed into the project that will also treat stormwater runoff from the two building roof surfaces.

Water quality - Soil Filter Pond

Soil Filter Pond 1: We have designed the project to redirect impervious and lawn areas runoff into a soil filter pond downslope from the driveway entrance and Route 125. We have identified watershed 1 that will be captured and diverted to this pond. The total area draining to this pond is 25,519 sf. We have calculated 14,610 sf of the new impervious area (parking lot, sidewalks, and building roof) and 10,909 sf of the landscaped area of the project would be treated through the proposed soil filter pond.

The soil filter/detention pond is designed to act such that initial and ending runoff flows are captured and infiltrated through the soil filter media within the pond. The higher flows will be bypassed through the pond control structure and emergency riprap spillway.

Soil filter pond 1 is to be constructed that has a ground elevation at 166.5 (top of ground surface for filtering system). The pond is to be sized such that the surface area meets (or exceeds) 5% of the impervious area plus 2% of the landscape area that drains to the pond. We have calculated 14,610 sf of impervious area runoff and 10,909 sf of landscape area runoff will enter the pond. Therefore, we are required to have a minimum of 949 sf of surface filter area. We have provided 1320 sf of available area within contour 166.5.

In addition, a minimum treatment volume must be contained such that the required volume contained is less than 18" deep over the surface filter area. The channel protection volume is based on 1" of impervious surface area and .4" of vegetative area entering the pond. Using the same impervious and landscape areas noted above, we are required to have 1,581 cf of pond storage above the soil filter surface area. Our design has provided 1,884 cf of storage area at elevation 167.75 (13" deep).

Pond 1 is controlled by a stormwater control manhole that has a steel plate (or concrete panel) with specific holes cut into the control panel to limit flows leaving the ponds and provide adequate holding time to be treated by the filter media. Water quality enhancement flows are detained within the soil filter pond for approximately 26.2 hours by restricting the discharge flow through a small 5/8" orifice control that is located within the stormwater control structure (elevation 164.25).

Soil Filter Pond 2: Similarly, we have designed the project to redirect impervious and lawn areas runoff into a soil filter pond 2. The total watershed 1 draining from this area of the project is 20,410 sf. We have calculated 11,107 sf of the new impervious area (parking lot, building, sidewalks, and driveways) and 9,303 sf of the landscaped area of the project would be treated through the proposed soil filter pond 2.

The soil filter/detention pond is designed to act such that initial and ending runoff flows are captured and infiltrated through the soil filter media within the pond. The higher flows will be bypassed through the pond control structure and emergency spillway.

Soil filter pond 2 is to be constructed with a ground elevation of 169.0 (top of ground surface for filtering system). The pond is to be sized such that the surface area meets (or exceeds) 5% of the impervious area plus 2% of the landscape area that drains to the pond. We have calculated 11,107 sf of impervious area runoff and 9,303 sf of landscape area runoff will enter the ponds. Therefore, we are required to have a minimum of 741 sf of surface filter area. We have provided 900 sf of available area within contour 169.0 for pond 2.

In addition, a minimum treatment volume must be contained such that the required volume contained is less than 18" deep over the surface filter area. The channel protection volume is based on 1" of impervious surface area and .4" of vegetative area entering the pond. Using the same impervious and landscape areas noted above, we are required to have 1,235 cf of pond storage above the soil filter surface area. Our design has provided 1,341 cf of storage area up to elevation 170.25 (15").

Pond 2 is controlled by a stormwater control manhole that has a steel plate (or concrete panel) with specific holes cut into the control panel to limit flows

leaving the ponds and provide adequate holding time to be treated by the filter media. Water quality enhancement flows are detained within the soil filter pond for approximately 37.2 hours by restricting the discharge flow through a small 1/2" orifice control that is located within the stormwater control structure (elevation 166.5).

We have also calculated storage/treatment of the backside of the buildings roof area will flow into a 3' wide drip edge that consists of 12" of ¾" stone, 12" of soil filter media, and the remainder of soil material to the underdrain to be MDOT underdrain sand.

Project water quality treatment overview

95% Impervious treatment: We have calculated 29,237 sf of project impervious area will be directed into the two soil filter ponds and roof drip edge. The total impervious area of the project has been calculated to be 29,537 sf. Dividing these two numbers results in a 99.0% impervious area treatment. The project complies with the 95% requirements.

80% total site treatment: We have calculated 50,361 sf proposed impervious and landscape area will be treated in the two soil filter ponds and roof drip edges. The project total developed area (proposed impervious and landscape area) has been calculated to be 63,222 sf. Dividing the two numbers results in a project treatment ratio of 80%, which also meets the standard.

Please feel free to contact me if you have any questions concerning the calculations of stormwater from this project.

Sincerely yours,

Stephen Roberge

Stephen Roberge, PE
for SJR Engineering Inc.

Project: _____ Date: _____ Sheet: ____ of ____

ENGINEERING BACKUP SHEET

SJR ENGINEERING

Subject: SAMMCO

Job #: 20

POND 1 SOIL FILTER DESIGN

SUBCATCHMENT 1 →

TOTAL TREATED = 25519 SF
IMPERVIOUS = 14610 SF
GRASS = 10909 SF

① REQUIRED SIZING SURFACE

14610(.05) + 10909(.02) = 949 SF REQUIRED (OK)
1320 SF AVAILABLE @ 166.5 ELEV

② REQUIRED TREATMENT VOLUME (18" STORAGE AREA MAX FROM ELEV 166.50)

14610 (1/12) + 10909 (.4/12) = 1581 CF REQUIRED (OK)
1884 CF AVAILABLE @ 167.75
13" STORAGE : OK

③ DETENTION TIME

TRY 5/8" ORIFICE 1884/.02 (60)(60) = 26.2 HRS (OK)

POND 2 SOIL FILTER DESIGN

TOTAL TREATED = 20,410 SF
IMPERVIOUS = 11,107 SF
GRASS = 9,303 SF

① REQUIRED SIZING SURFACE

11,107(.05) + 9303(.02) = 741 SF REQUIRED (OK)
900 SF AVAILABLE @ ELEV 169.0

② REQUIRED TREATMENT VOLUME (18" MAX STORAGE AREA FROM ELEV 169.0)

11107 (1/12) + 9303(.4/12) = 1235 CF REQUIRED
1341 CF AVAILABLE @ EL 170.25
15" STORAGE (OK)

③ DETENTION TIME

TRY 1/2" ORIFICE 1341/(.01)(60)(60) = 37.2 HRS (OK)

Stage-Area-Storage for Pond 1P: Soil Filter Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
166.50	1,320	0
166.55	1,335	66
166.60	1,350	133
166.65	1,365	201
166.70	1,380	270
166.75	1,395	339
166.80	1,410	410
166.85	1,425	480
166.90	1,440	552
166.95	1,455	624
167.00	1,470	698
167.05	1,485	771
167.10	1,500	846
167.15	1,515	921
167.20	1,530	997
167.25	1,545	1,074
167.30	1,560	1,152
167.35	1,575	1,230
167.40	1,590	1,310
167.45	1,605	1,389
167.50	1,620	1,470
167.55	1,635	1,551
167.60	1,650	1,633
167.65	1,665	1,716
167.70	1,680	1,800
167.75	1,695	1,884
167.80	1,710	1,970
167.85	1,725	2,055
167.90	1,740	2,142
167.95	1,755	2,229
168.00	1,770	2,318
168.05	1,789	2,406
168.10	1,807	2,496
168.15	1,826	2,587
168.20	1,844	2,679
168.25	1,863	2,772
168.30	1,881	2,865
168.35	1,900	2,960
168.40	1,919	3,055
168.45	1,937	3,152
168.50	1,956	3,249
168.55	1,974	3,347
168.60	1,993	3,446
168.65	2,011	3,546
168.70	2,030	3,648
168.75	2,049	3,749
168.80	2,067	3,852
168.85	2,086	3,956
168.90	2,104	4,061
168.95	2,123	4,167
169.00	2,142	4,273
169.05	2,160	4,381
169.10	2,179	4,489
169.15	2,197	4,599
169.20	2,216	4,709
169.25	2,234	4,820
169.30	2,253	4,932
169.35	2,272	5,046
169.40	2,290	5,160
169.45	2,309	5,275
169.50	2,327	5,390
169.55	2,346	5,507
169.60	2,364	5,625
169.65	2,383	5,744
169.70	2,402	5,863
169.75	2,420	5,984
169.80	2,439	6,105
169.85	2,457	6,228
169.90	2,476	6,351
169.95	2,494	6,475
170.00	2,513	6,601

← POND TREATMENT STORAGE

Stage-Area-Storage for Pond 2P: Soil Filter Pond 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
169.00	900	0
169.05	914	45
169.10	927	91
169.15	941	138
169.20	955	185
169.25	968	234
169.30	982	282
169.35	996	332
169.40	1,009	382
169.45	1,023	433
169.50	1,037	484
169.55	1,050	536
169.60	1,064	589
169.65	1,077	643
169.70	1,091	697
169.75	1,105	752
169.80	1,118	807
169.85	1,132	864
169.90	1,146	921
169.95	1,159	978
170.00	1,173	1,037
170.05	1,191	1,096
170.10	1,209	1,156
170.15	1,228	1,217
170.20	1,246	1,278
170.25	1,264	1,341
170.30	1,282	1,405
170.35	1,300	1,469
170.40	1,319	1,535
170.45	1,337	1,601
170.50	1,355	1,669
170.55	1,373	1,737
170.60	1,391	1,806
170.65	1,410	1,876
170.70	1,428	1,947
170.75	1,446	2,019
170.80	1,464	2,091
170.85	1,482	2,165
170.90	1,501	2,240
170.95	1,519	2,315
171.00	1,537	2,392
171.05	1,555	2,469
171.10	1,573	2,547
171.15	1,592	2,626
171.20	1,610	2,706
171.25	1,628	2,787
171.30	1,646	2,869
171.35	1,664	2,952
171.40	1,683	3,035
171.45	1,701	3,120
171.50	1,719	3,206
171.55	1,737	3,292
171.60	1,755	3,379
171.65	1,774	3,467
171.70	1,792	3,557
171.75	1,810	3,647
171.80	1,828	3,738
171.85	1,846	3,829
171.90	1,865	3,922
171.95	1,883	4,016
172.00	1,901	4,111
172.05	1,921	4,206
172.10	1,941	4,303
172.15	1,960	4,400
172.20	1,980	4,499
172.25	2,000	4,598
172.30	2,020	4,699
172.35	2,040	4,800
172.40	2,059	4,903
172.45	2,079	5,006
172.50	2,099	5,111

← POND TREATMENT STORAGE

Dripline Filter Calculation Check

Project: SammCo Holdings Condos
ATS:
Date:
Version: Initial Stormwater Review
Engineer: Steve Roberge

TREATMENT

Area	Treated Impervious Area (sf)	Required WQV (cf)	Width (ft)	Length (ft)	Reservoir Stone Thickness (ft)	Provided WQV in Stone @ 40% porosity (cf)	Soil Filter Media Thickness (ft)	Provided WQV in Soil Filter Media @ 30% porosity (cf)	Sand Layer Thickness (ft)	Provided WQV in Sand @ 20% porosity (cf)	Total WQV Provided	% Provided
Building 1: Units 1-6	1,920	160.0	3.0	96.0	1	115.2	1	86.4	0	0.0	201.6	126%
Building 2: Units 1-8	2,560	213.3	3.0	128.0	1	153.6	1	115.2	0	0.0	268.8	126%
	4,480											

Erosion Control Plan

June 25, 2021

Josh Sammon
SammCo Holdings LLC
164 Applecrest Drive
Yarmouth, Maine 04096

Re: 14 Units along Route 125, Bowdoinham, Me.
Erosion Control Narrative

SJR ENGINEERING, INC.
16 THURSTON DRIVE, MONMOUTH, ME. TEL: (207) 242-6248
STEVE@SJRENG.COM

Dear Josh,

SammCo Holdings LLC owns a parcel of land at the intersection of Route 138 and Route 125 in Bowdoinham, Maine. You are proposing to construct two new buildings (total of 14 units) with associated access roads and parking facilities. The building will utilize underground electricity, telephone/communications, private septic sewer, and public water supply. It is anticipated that this projects site infrastructure will be started in 2021.

The site is identified as Tax Map U-7 Lot 005 of the Town's Tax Map. The parcel is approximately 7.24 acres in size and lies within the "Village Two" Zoning District.

Existing Site Conditions

The existing site consists of undeveloped woods area throughout the parcel. The property has been previously surveyed by William Coombs and recorded in the registry on March 4, 2020.. The topography of the existing site is shown at a two foot contour interval as depicted by the Maine GIS website showing Lidar data. The slope of the property varies from 5% along the flatter areas to 25% along the banks of the steeper slopes of the property. Wetland areas have been delineated by Jones Associates and shown on the plan.

Adjacent Areas

Adjacent areas and land uses are similar in nature to that being proposed (residential housing). Runoff from the property enters into a 30" culvert that flows under Route 125.

We have prepared stormwater quantity/quality narratives and calculations under separate cover. This narrative is to address erosion and sediment control during (and after) the construction of the project.

Soils

Soils delineation was taken from the medium intensity soils maps of the Sagadahoc County Soil Survey. I have overlaid the proposed developed site onto this map. Soils are identified as being Buxton silt loam (hydro group "C", K= 0.32-0.49), Lamoine-Buxton Complex (hydro group "C/D", K= 0.32 - 0.49), Lyman-Tunbridge Complex (hydro group "C/D", K= 0.20 - 0.24) and Scantic Silt Loam (hydro group "D", K= 0.32 - 0.49)

The K number is an erodibility index number which is a value assigned to the soil based on a no erosion potential of .10 to a high erosion potential of .64. An index number greater than .32 indicates a high level of erosion control measures must be taken in order to control erosion of this soil. The hydrological group rating is a rating system of the relative permeability of the soil with Group "A" being extremely permeable such as a beach sand, to Group "D" being slow draining such as a wetland area.

Erosion and Sediment Control Practices

This plan has been developed to provide a strategy for dealing with soil erosion during and after the construction of the project. This plan is based on the standards and specifications for erosion prevention as contained in the "2016 Best Management Practices Manual for Designers and Engineers" by the Soil and Water Conservation District and Maine DEP.

The Contractor shall limit construction disturbance to (ie disturbed unstable ground surface) to no more than 10 acres at any one time. An area considered "opened" includes any area not stabilized with pavement, vegetation, mulch, mats, riprap, or gravel base on road/pavement locations. Open areas must have temporary erosion control installed within 14 days of disturbance (and prior to a ½" or more rain event). Areas opened within 100' of an environmental resource must have temporary erosion controls installed within 7 days. While the erosion control plan is comprehensive, additional measures may be necessary to control erosion from the site.

It shall be the Contractors responsibility to be aware of weather conditions at any time during the construction of the project, and to make appropriate erosion control decisions regarding the current condition of the site for the anticipated rainfall event. The site erosion controls must be able to prevent significant erosion during the expected event.

A pre-construction meeting with the Town, Owner, and Contractor shall be required to specifically discuss how the erosion control plan will be

constructed and monitored.

Construction is expected to begin following obtaining permits for approval. It is expected that construction activities will be started in the Summer of 2021. Special attention should be given to the sections pertaining to Fall and Winter seeding, as the project will overlap into the winter construction season.

The principal erosion control devices will be silt fences (or erosion control mulch berms), hay mulch, stabilized construction entrance, and seed to protect existing trees, buildings, and drainage paths from the regions undergoing construction. Features such as grassed waterways and landscaping will be constructed as permanent erosion controls.

Prior to construction, the Contractor will install the stabilized construction entrance to minimize potential tracking of soils from the project construction onto paved public roads.

Structural Measures

1. Silt fencing/erosion control mix berm shall be installed along the contour and perpendicular to the predominant slope of the land just beyond the downslope limits of clearing and grubbing and/or just above any adjacent property line and streams where indicated on the plan to protect against construction related erosion. Installation shall be as shown on the plans or approved equal. Both silt fence and ECM berm must be placed along the downslope perimeter of disturbed areas within 100' of environmental resource.

2. Riprap materials shall be placed in all inlets/outlets of pipe culverts. These aprons will prevent scour at stormwater outlets and minimize the potential for downstream erosion by reducing the velocity of concentrated stormwater flows. Average design size stone, D50, shall be as called out in the detail on the plans. Largest size of stone in the riprap is to be 1.5 times the D50 size.

3. Protective erosion control mats on steep slopes will aid in controlling erosion on critical areas during the establishment period of vegetation.

4. Naturally vegetated buffers and grass filter strips remove sediment and other pollutants from runoff by infiltration, deposition, absorption and decomposition. Filters are effective only if used to remove sediment from sheet (overland) flow.

5. Stabilized construction entrance is to be placed during construction, where traffic is entering or leaving construction site. This will reduce or eliminate the tracking or flowing of sediment onto public rights of way. An 8" thick layer of 1.5"-3" crushed stone 50' in length has been designed and shown on the plan. If soil tracking does occur, the Contractor shall vacuum sweep the paved surface of the roadway by the close of business that day.

6. Temporary storm drain inlet protection (crushed stone, silt sack in the catch basin, waddles, etc.) will prevent sediment from entering the storm drain system during construction and also stop erosion at its' source. The idea is to provide a filtering device at the entrance to the storm drain system such that sediments become trapped.

7. A stone check dam is a filtering and energy dissipation device that limits the erosion process. These dams are 1.5"-3" crushed stone, 24" in height and are placed in drainage ditches as a temporary erosion control measure. The dams are to be removed prior to final acceptance of the project.

8. Soil stockpiles shall be hay mulched within 24 hours of stockpiling. The downslope side of the stockpile shall have a ring of erosion control barrier placed (silt fence, erosion control berm mix, waddles). Stockpiles are not to be located within 100' of environmental resources where possible.

9. Trench dewatering shall be pumped to filter bags prior to discharge from the site. They shall be located in upland areas greater than 100' from environmental

resources.

10. Dust control will be addressed through the use of water trucks spraying the ground with water and/or applying calcium chloride to the surface to minimize dust creation.

Vegetative Measures

1. Topsoil on site shall be stockpiled at a stable location on site and covered with anchored mulch for temporary erosion control.

2. If any disturbed area of soil will be left bare for more than two weeks, or if construction is to be completed in phases over an extended duration, temporary seeding and mulching shall commence immediately following initial fine grading of site. **In sensitive areas (within 100' of wetlands) temporary mulch must applied within 7 days or prior to any storm event on all disturbed surfaces.** It shall be maintained and reseeded as necessary to insure good vegetative cover for the entire duration of construction. Seed will be selected from the following table, according to the time of the year.

Temporary Seed Mixture

Seed Type	lbs acre	lbs 1000 sf	Seeding Depth	Recommended Seeding Date
Winter Rye	112	2.6	1"-1.5"	8/15 - 10/1
Oats	80	1.8	1"-1.5"	4/1 - 7/1
or				and
Annual Ryegrass	40	0.9	.25"	8/15 - 9/15
Sudangrass	40	0.9	.5"-1"	5/15 - 8/15
Perennial Ryegrass	40	0.9	.25"	8/15 - 9/15
Temp Mulch with or without dormant seed				10/1 - 4/1

Mulch will be applied with seeding according to mulch table. If it is not possible to seed 45 days or more prior to frost, than dormant seeding and anchored mulch shall be applied. The application of mulch shall be such that the bare ground is barely visible.

3. Permanent seedings of grass cover shall be applied to all disturbed areas. All surface water control measures and final land grading in the vicinity should be completed. Ground preparation shall include tilling to a minimum 3" depth of fine but friable soil free of clods or stones. Permanent seed shall be selected according to its final destination. (See permanent seed mixture table)

4. All seeding will require mulch. Mulch provides several benefits: conserves moisture, prevents surface compaction, improves water quality, reduces runoff and erosion, controls weeds, and helps establish plant cover. Mulch shall be applied according to the following tables:

Permanent Seed Mix	Application Rate	
	Parks & Lawns lbs/1000 sf	Roadside Areas ditches, basins lbs/1000 sf
Kentucky Bluegrass	.46	
Creeping Red Fescue	.46	.46
Perennial Ryegrass	.11	
Redtop		.05
Tall Fescue		.46
Total Seed Rate	1.03	0.97

Note:

1. The contractor may wish to final seed from 10/1 to 11/1 with the same soil preparations, seeding mixes (doubling the seed rate) and mulching, but it may result in winter kill. Vegetation must be inspected and reseeded as necessary in the following spring to assure good vegetative cover.

2. No seeding shall be permitted on the snow.

3. Mulch shall be applied after all seed applications (see mulch) and in enough quantity to cover all bare spots such that bare ground is not visible. Any site grading performed in winter conditions shall be covered with mulch on a daily basis. Mulch rate shall be twice the normal rate.

5. Permanent seedings should be made 45 days or more prior to the first killing frost (Seed by September 15th) or as a temporary and dormant seeding after the first killing frost.

Maintenance

During the period of construction and/or until long term vegetation is established:

1. Seeded areas will be fertilized and reseeded as necessary to insure 90% vegetative establishment.

2. At a minimum, the hay bale/silt fence barriers shall be inspected and repaired once a week and immediately following all significant rainfall or snow melt. Sediment trapped behind these barriers shall be excavated when it reaches a depth of 6 six inches and regraded onto the site.

3. Diversion ditches and swales will be checked weekly and repaired when necessary until adequate vegetation is established.

4. The Owner and contractor shall be responsible for the construction and maintenance of all proposed temporary and permanent erosion control measures including vegetation. The contractor must install or construct all required improvements

shown on the plans. The contractor must incorporate all other site improvements, restrictions, construction limits, drainage improvements, natural vegetated buffers, proposed landscaping, etc. The contractor must obtain a complete set of plans, reports, permit approvals, and documents pertaining to the project before beginning construction.

5. The contractor shall remove all temporary erosion control devices from the site after construction is complete and the site is permanently stabilized.

WINTER CONSTRUCTION (as applicable)

The winter construction period is from November 1 through April 15. If the construction site is not stabilized with pavement, a road gravel base, 75 % mature vegetation cover or riprap by November 15, then the site needs to be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mats, riprap or gravel base on a road. Winter excavation and earthwork shall be completed such that no more than 1 acres of the site is without stabilization at any one time. Limit the exposed area to those areas in which work is expected to be undertaken during the proceeding 15 days and that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the subbase gravel is installed in roadway areas or the areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch rate shall be a minimum of 150 lbs./1,000 s.f. (3 tons/acre) and shall be properly anchored.

The contractor must install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions.

Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

SOIL STOCKPILES

Stockpiles of soil or subsoil will be mulched for over winter protection with hay or straw at twice the normal rate or at 150 lbs/1,000 s.f. (3 tons per acre) or with a four-inch (4") layer of erosion control mix. This will be done within 24 hours of stocking and re-established prior to any rainfall

or snowfall. Any soil stockpile will not be placed (even covered with hay or straw) within 100 feet from any natural resources.

NATURAL RESOURCES PROTECTION

Any areas within 100 feet from any natural resources, if not stabilized with a minimum of 75 % mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected with erosion control mats.

During winter construction, a double line of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) will be placed between any natural resource and the disturbed area.

Projects crossing a natural resource shall be protected a minimum distance of 100 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

SEDIMENT BARRIERS

During frozen conditions, sediment barriers shall consist of erosion control filter berms as frozen soil prevents the proper installation of hay bales and sediment silt fences.

MULCHING

All area shall be considered to be denuded until areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1.000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored.

Mulch shall not be spread on top of snow. The snow will be removed down to a one-inch depth or less prior to application.

After each day of final grading, the area will be properly stabilized with anchored hay or straw or erosion control matting.

An area shall be considered to have been stabilized when exposed surfaces have been either mulched with straw or hay at a rate of 150 lb. per 1.000 square feet (3 tons/acre) and adequately anchored so that the ground surface is not visible through the mulch.

Between the dates of November 1 and April 15, all mulch shall be anchored by either peg line, mulch netting, asphalt emulsion chemical, tracking into the surface or wood cellulose fiber. The mulch cover is sufficient when the ground surface is not visible. After November 1, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

MULCHING ON SLOPES AND DITCHES

Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230 lbs/1,000 sf on all slopes greater than 8%.

Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater than 3 % for slopes exposed to direct winds and for all other slopes greater that 8%.

Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes 8% or greater. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

SEEDING

Between the dates of October 15 and April 1, loam or seed will not be required. During periods of above freezing temperatures, finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1 and the exposed area has been loamed and final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched.

Dormant seeding may be selected to be placed prior to the placement of mulch and fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5lbs/1000 s.f. All areas seeded during the winter will be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75 % catch) shall be revegetated by removing the mulch and reseeding and remulching.

If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION

Water from construction trench dewatering or temporary stream diversion will pass first through a filter bag or secondary containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 100 feet of a protected natural resource.

INSPECTION AND MONITORING

Maintenance measures shall be applied as needed during the entire construction season. After each rainfall, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Following the temporary and/or final seeding and mulching, the contractor shall inspect and repair any damages and unvegetated spots. Established vegetative cover means a minimum of 85 to 90 % of areas vegetated with vigorous growth.

STANDARDS FOR TIMELY STABILIZATION OF CONSTRUCTION SITES DURING WINTER

1.Standard for the timely stabilization of ditches and channels: The contractor will construct and stabilize all stone-lined ditches and channels on the site by November 15. The contractor will construct and stabilize all grass-lined ditches and channels on the site by September 15. If the contractor fails to stabilize a ditch or channel to be grass-lined by September 15, then the contractor will take one of the following actions to stabilize the ditch for late fall and winter.

Install a sod lining in the ditch: The contractor will line the ditch with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Install a stone lining in the ditch: The contractor will line the ditch with stone riprap by November 15. The contractor will hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities

and flow depths within the ditch. If necessary, the contractor will regrade the ditch prior to placing the stone lining so to prevent the stone lining, from reducing the ditch's cross-sectional area.

2. Standard for the timely stabilization of disturbed slopes: The contractor will construct and stabilize stone-covered slopes by November 15. The contractor will seed and mulch all slopes to be vegetated by September 15. The department will consider any area having a grade greater than 15% to be a slope. If the contractor fails to stabilize any slope to be vegetated by September 15, then the contractor will take one of the following actions to stabilize the slope for late fall and winter.

Stabilize the soil with temporary vegetation and erosion control mats: By October 1, the contractor will seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1000 square feet and apply erosion control mats (or mulch with jute netting) over the mulched slope. The contractor will monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed slope by November 1, then the contractor will cover the slope with an additional layer of winter mulch application, stone riprap, or erosion control mix as described below.

Stabilize the slope with sod: The contractor will stabilize the disturbed slope with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor will not use late-season sod installation to stabilize slopes having a grade greater than 33%.

Stabilize the slope with erosion control mix: The contractor will place a six-inch layer of erosion control mix on the slope by November 15. Prior to placing the erosion control mix, the contractor will remove any snow accumulation on the disturbed slope. The contractor will not use erosion control mix to stabilize slopes having grades greater than 50% or having groundwater seeps on the slope face.

Stabilize the slope with stone riprap: The contractor will place a layer of stone riprap on the slope by November 15. The contractor will hire a registered professional engineer to determine the stone

size needed for stability and to design a filter layer for underneath the riprap.

3. **Standard for the timely stabilization of disturbed soils:** By September 15 the contractor will seed and mulch all disturbed soils on areas having a slope less than 15%. If the contractor fails to stabilize these soils by this date, then the contractor will take one of the following actions to stabilize the soil for late fall and winter:

Stabilize the soil with temporary vegetation: By October 1, the contractor will seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic or jute netting. The contractor will monitor growth of the rye over the next 30 days. If the rye fails grow at least three inches or cover at least 75% of the disturbed soil before November 15, then the contractor will mulch the area for over-winter protection as described in one of the items below of this standard.

Stabilize the soil with sod: The contractor will stabilize the disturbed soil with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Stabilize the soil with mulch: By November 15, the contractor will mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the contractor will remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the contractor will anchor the mulch with plastic or jute netting to prevent wind from moving the mulch off the disturbed soil.

Please feel free to contact me if you have any questions concerning the use of these measures. We feel that these measures if properly constructed and maintained will be sufficient to control erosion on your project without any adverse impact to the area. Thank you for involving this firm on your project.

Sincerely yours,

Stephen Roberge, PE
for SJR Engineering Inc.

Typical Construction Schedule

1. Survey parcel and mark boundaries.
2. Locate environmental resources with flagging and provide signage as necessary to identify important resources (ie no fueling within 100' of stream)
3. Attend pre-construction site meeting to identify strategies for construction and disseminate updated information about the project. Contacts for correspondence shall be established.
4. Perform an environmental training session particular to this project with all crew including subcontractors at the start of their work effort on the project.
5. Cut/clear trees for project. Locate an upland area onsite for a laydown yard for processing the trees.
6. Install perimeter erosion control devices.
7. Install erosion control devices on existing structures.
8. Demolish and remove any structures that are not to remain onsite.
9. Construct areas for onsite employee parking off the public ROW.
10. Check the weather forecast daily.
11. Grub the site using a 10 acre maximum open area. Stockpile materials that are suitable for use on the project. Remove unsuitable material offsite.
12. Begin cut/fill earthwork operations.
13. Begin building footing/foundation work. Commence to completion.
14. Install temporary erosion control devices where pertinent particularly along areas of drainage and near environmental resources.
15. Install storm drainage systems to completion
16. Install utility systems to completion
17. Install road subbase gravels.
18. Once earthwork operations in areas have achieved finish grade, install appropriate erosion control cover.
19. Install base pavement.
20. Loam and seed appropriate areas of the project disturbed areas.
21. Install landscaping around project locations.
22. Develop punch list for outstanding items needing construction.
23. Complete heavy equipment needs touching up site improvements.
24. Remove sediments, and clean out storm drain piping.
25. Install surface pavement and striping.
26. Monitor site for 90% vegetative growth. Remove all temporary erosion controls.
27. Turn site over to Owner.

Observation and Maintenance Plan

SammCo Holdings Apartments - Bowdoinham

Inspection and Maintenance Plan

The Earthwork Contractor will be responsible for inspection, maintenance, and operations of the stormwater system during construction. Upon approval of the final construction by the Owner, the Owner will be responsible for the inspection, maintenance, and operation of the stormwater system. We have attached the "Maine ESC BMPs (10/2016)" at the end of the narrative that more fully identifies the Party's E+S responsibilities.

INSPECTIONS - Contractor During Construction

Areas of proposed construction that will require inspections/maintenance of the stormwater system include the following:

- **Detention/Retention/Infiltration Facilities**
  - Soil filter pond media inspection and maintenance
  - Outlet Control Structure inspection and maintenance
  - Sediment removal and disposal
- **Ditches, Swales, or other open stormwater channels**
  - Embankment inspection and maintenance
  - Channel inspection
  - Sediment removal and disposal
- **Culverts, catch basins, stormwater control structures**
  - Structure inspection and maintenance
  - Inlet and Outlet inspection
  - Debris removal and disposal
- **Buffers/Landscaping**
  - Landscaping inspection and maintenance
  - Landscaping turf inspection and maintenance
  - Debris removal and disposal

- **General Site Erosion Controls**

  Sediment barriers (silt fence, erosion control berm material)

  Stabilized Construction Exit

  Riprap slopes

  Level Lip Spreaders

  Erosion Control Blankets

  Temporary/Permanent Seed and Mulch

  Hay mulch

There may be other areas of inspection/maintenance specific to the project during construction that may not be identified above. The Contractor is directed to utilize the 2014 Revision to the Maine Erosion and Sediment Control Field Guide for Contractors.

The Contractors representative will inspect the general erosion control items identified above including the drainage system, swales, channels, and stormwater structures to determine if a soil blockage or impaired capacity to pass flow exists. During construction, the inspection will be done prior to and within 24 hours after a storm event greater than $\frac{1}{2}$" in 24 hours. A record of inspections and maintenance or corrective measures shall be kept by the Contractor.

MAINTENANCE AND CLEANING

The earthwork contractor will regularly inspect for sediment accumulation, obstructions, debris, and other potential causes for operational difficulty in the conveyance of stormwater including the detention system. Immediate action shall be taken to remedy detrimental obstructions.

The Contractor will regularly inspect the infiltration rate of the soil filter ponds after every major storm event (1/2" rain event in 24 hours) in the first few months to ensure proper function. Sediment shall be removed from the sediment forebay when sediment is greater than 12" from the forebay bottom. The removed sediment shall be hauled off site and disposed in an approved location. Ongoing maintenance will be required as necessary.

All sand, salt, etc. accumulated when sweeping the paved parking, access road, and snow stockpile areas, shall be trucked off-site for disposal.

RECORD KEEPING

The Contractor will maintain inspection records, with recordings of condition of items identified above and annotation of substantial precipitation events or mitigating circumstances in the intervening time for trends to develop for anticipated future preventive maintenance schedule.

INSPECTIONS – Owner Post-Construction

Areas of the completed construction that will require ongoing inspections and maintenance of the stormwater system include the following:

- **Detention/Retention/Infiltration Facilities**
  - Soil Filter media inspection and maintenance
  - Outlet Control Structure inspection and maintenance
  - Sediment removal and disposal
- **Ditches, Swales, or other open stormwater channels**
  - Embankment inspection and maintenance
  - Channel inspection
  - Sediment removal and disposal
- **Culverts, catch basins, stormwater control structures**
  - Structure inspection and maintenance
  - Inlet and Outlet inspection
  - Debris removal and disposal
- **Buffers/Landscaping**
  - Landscaping inspection and maintenance
  - Landscaping turf inspection and maintenance
  - Debris removal and disposal

- **General Site Erosion Controls**

  Riprap slopes

  Level Lip Spreaders

  Permanent Seed and Mulch

There may be other areas of inspection/maintenance specific to the project identified after construction that may not be identified above. The Owner is directed to utilize the 2014 Revision to the Maine Erosion and Sediment Control Field Guide for Contractors for these situations.

The Owners representative will inspect the general erosion control items identified above including the drainage system, swales, channels, and stormwater structures to determine if a soil blockage or impaired capacity to pass flow exists. Post construction, the inspection will be done within 24 hours after a storm event greater than ½" in 24 hours. General post-construction inspections will be performed on a monthly basis from March to November, and quarterly during the remainder of the year. A record of inspections and maintenance or corrective measures shall be kept by the owner.

MAINTENANCE AND CLEANING

The Owner will regularly inspect for sediment accumulation, obstructions, debris, and other potential causes for operational difficulty in the conveyance and detention system. Immediate action shall be taken to remedy detrimental obstructions.

The Owner will regularly inspect the infiltration rate of the soil filter ponds after every major storm event (1/2" rain event in 24 hours) in the first few months to ensure proper function. Thereafter, the soil filter basin should be inspected bi-annually to ensure that they draining within 24-48 hours. Sediment shall be removed from the sediment forebay when sediment is greater than 12" within the forebay. The removed sediment shall be hauled off site and disposed in an approved location.

A mandatory scheduled maintenance will be performed every four weeks for a period of one hundred and twenty (120) days and will begin after satisfactory completion and acceptance of project construction. Ongoing maintenance may be required as necessary.

All sand, salt, etc. accumulated when vacuuming the paved parking, access road, and snow stockpile areas, shall be trucked off-site for disposal.

RECORD KEEPING

The Owner will maintain inspection records, with recordings of condition of items identified above and annotation of substantial precipitation events or mitigating circumstances in the intervening time for trends to develop the future preventive maintenance schedule.

RE-CERTIFICATION

The Owner shall submit a certification to the Maine DEP within three months of the expiration of each five year interval from the date of issuance of the permit. The owner shall submit the maintenance log which identifies inspections completed, erosion problems found, when corrective action was taken, and who completed the work. The certification will include a statement indicating that the stormwater system is working and is being maintained in working condition in accordance with the permit requirements. Specific requirements for the recertification can be found on the Maine DEP website:

https://www.maine.gov/dep/land/stormwater/stormwaterbmps/five-year-recertification.html

Maintenance Log Sheet

Inspector Name	Date	Maintenance Task Completed
Soil Filter Ponds 1 - 2		
Pond Embankment 1		
Pond Embankment 2		
Pond Vegetation 1		
Pond Vegetation 2		
Pond Inlet 1		
Pond Inlet 2		
Pond Outlet 1		
Pond Outlet 2		
Outlet Control Structure 1		
Outlet Control Structure 2		
Emergency Spillway 1		
Emergency Spillway 2		
Pond Volume 1		
Pond Volume 2		
Soil Filter Media 1		
Soil Filter Media 2		
Other		

Building Cleanouts		
Roof Drip Strip		
Ditches		
Pavement/Grass interface		
Pavement debris/sand		
Stabilized Construction Exit		
Landscaping Buffers		
Level Spreaders		
Stone Check Dams		
ESC devices installed/removed		
Winter Construction ESC		
Mulch		
90% Vegetation		
Plunge Pools		
Snowplow sand/ground surface		

Housekeeping

These performance standards apply to all projects.

1. Spill prevention. Controls must be used to prevent pollutants from being discharged from materials on site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

2. Groundwater protection. During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

NOTE: Lack of appropriate pollutant removal best management practices (BMPs) may result in violations of the groundwater quality standard established by 38 M.R.S.A. §465-C(1).

3. Fugitive sediment and dust. Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

NOTE: An example of the use of BMPs to control fugitive sediment and dust is as follows: Operations during wet months that experience tracking of mud off the site onto public roads should provide for sweeping of road areas at least once a week and prior to significant storm events. Where chronic mud tracking occurs, a stabilized construction entrance should be provided. Operations during dry months, that experience fugitive dust problems, should wet down the access roads once a week or more frequently as needed.

NOTE: Dewatering a stream without a permit from the department violates state water quality standards and the Natural Resources Protection Act.

4. Debris and other materials. Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

NOTE: To prevent these materials from becoming a source of pollutants, construction and post-construction activities related to a project may be required to comply with applicable provision of rules related to solid, universal, and hazardous waste, including, but not limited to, the Maine solid waste and hazardous waste management rules; Maine hazardous waste management rules; Maine oil conveyance and storage rules; and Maine pesticide requirements.

5. Trench or foundation de-watering. Trench de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin (or pumping water through a sediment dirtbag). Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the department.

NOTE: For guidance on de-watering controls, consult the latest edition of the Maine Erosion and Sediment Control BMPs", Maine Department of Environmental Protection."

6. Non-stormwater discharges. Identify and prevent contamination by non-stormwater discharges.

7. Additional requirements. Additional requirements may be applied on a site-specific basis.

Site Inspection & Maintenance During Construction: Weekly inspections, as well as routine inspections following rainfalls, shall be conducted by the General Site Contractor of all temporary and permanent erosion control devices until final acceptance of the project (90% grass catch) by the Owner. Necessary repairs shall be made to correct undermining or deterioration. Final acceptance shall include a site inspection to verify the stability of all disturbed areas and slopes. Until final inspection, all erosion and sedimentation control measures shall immediately be cleaned, and repaired by the General Contractor as required. Disposal of all temporary erosion control devices shall be the responsibility of the General Contractor.

It is recommended that the Owner hire the services of the design engineer, or other qualified individual, to provide compliance inspections (during active construction) relative to implementation of the Stormwater and Erosion Control Plans. Such inspections should be limited to once a week or as necessary based on weather patterns, and be reportable to the Owner for record keeping purposes.

Maintenance Agreement: Short-term sedimentation maintenance shall be the responsibility of the Contractor to clean out all swales, structures, and soil filter basins prior to turning project over to the Owners. After project turnover, the Owner shall be the responsible party for inspecting and maintaining proper functioning of all stormwater conveyance practices and measures. The Owner may assign an environmental manager to carry out specific tasks identified below.

Structures and Other Measures

Stabilized Construction Entrance: A stabilized construction entrance is required at all locations that utilize vehicle access points from the project onto public or private paved roadways during construction operations. Tracked sediment onto public road systems shall be vacuum swept prior to the next significant rain event (1/2" rain/24 hours). Sweeping of sediment into ditches, storm drains or waterways is not acceptable

Winter Sanding/Sweeping: Post construction, paved parking lots, streets, and access driveways shall be vacuum swept a minimum of twice per year. The first shall take place in the Fall. The second vacuum sweeping shall take place after winter sanding operations terminate, prior to May 1.

Ditches/Swales: Open swales and ditches need to be inspected on a monthly basis and after a major rainfall event to assure that debris or sediments do not reduce the

effectiveness of the system. Debris needs to be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth to vegetation for the stability of the structure and proper functioning.

Vegetated Ditches: Vegetative should be mowed at least monthly during the growing season to a height of not less than 3 inches. Larger brush or trees must not be allowed to become established in the channel. Unless finely mulched, clippings should be removed to minimize the amount of organic material accumulating in the swales. Any areas where the vegetation fails will be subject to erosion and should be repaired and revegetated. Sediment should be removed when the ditch cross section is 33% full of sediment.

Stone Lined Channels: Where stone is displaced from constructed riprap areas, it should be replaced and chinked to assure stability. With time, riprap may need to be added. Vegetation growing through riprap should be removed on a yearly schedule.

Stone Check Dams: Observe the center of the check dam to make sure it is lower that the edges. Sediment trapped behind the dams should be removed once it reaches half the height of the dam. Check to insure erosion around the sides of the dam has not occurred.

Level Lip Spreaders: Sediment/debris buildup should be removed when the pool volume is reduced by 33%. Observation of the front side of the level spreader is neessary to determine erosion along the existing vegetation/spreader interface.

Culverts: If sediment in culverts or piped drainage systems exceeds 20% of the diameter of the pipe, it should be removed. This may be accomplished by mechanical means or hydraulic flushing. Care should be taken to prevent the release of the sediments into the downstream receiving areas. All. pipes should be inspected on an annual basis.

Trench Dewatering: Water is to be pumped to a soil filter bag prior to discharge from the area. Placement of the filter bag is to be greater than 100' from an environmental resource. Careful monitoring of the discharge water must be taken to insure sediment laden water does not enter downslope resources.

Catch Basin/Field Inlets: All catch basins, and any other field inlets throughout the collection system, need to be inspected on a monthly basis to assure that the inlet entry point is clear of debris and will allow the intended water entry. In many cases, a silt sack has been installed within the rim of the CB and should be emptied/replaced after each storm event in a disturbed soil area as necessary. On a yearly basis, or when sediment reaches two thirds of the total sump volume, catch basins will be vacuumed and cleaned of all accumulated sediment. Work must be done by a vacuum truck. The removed material must be disposed of in accordance with State of Maine Solid Waste Disposal Rules.

Soil Filter, Infiltration, and Wet Ponds

Clearing Inlets and Outlets of Ponds (where applicable): The inlet and outlet of a pond shall be checked periodically to ensure that flow structures are not blocked by debris. All ditches and pipes connecting ponds in series shall be checked for debris that may obstruct flow. Inspections shall be conducted monthly during wet weather conditions from March to November.

Basin Inspections: Ponds shall be inspected on an annual basis for erosion, destabilization of side slopes, embankment settling, and other signs of structural failure. Brief inspections shall be conducted following major storms. Corrective action shall be taken immediately upon identification of problem area. Records shall be kept of all maintenance operations at jobsite to help plan future work and identify problem areas.

Maintenance Dredging: Wet ponds typically lose 1% of their volume annually due to sediment accumulation. Dredging is required when accumulated volume loss reaches 15% or approximately every 15-20 years.

Drainage Area Inspections: The owners' environmental manager shall inspect the basin's drainage area semi-annually for eroding soil and other sediment sources. Repair eroding areas using appropriate erosion control BMP's immediately. Control sediment sources, such as stockpiles of winter sand, by removing them from the basin's drainage area or surrounding them with sediment control BMP's.

Mowing: A basin with a turf lining shall have its side-slopes and top of berm mowed at least twice a year to prevent woody growth. Clippings shall be removed to minimize the amount of organic material accumulating in the basin.

Sediment Removal: Remove accumulated debris and sediments from the sediment forebays, inlet plunge pools, and pre-treatment BMP's at least annually.

Snow Storage: The ponds are not to be used for snow storage. Snow storage shall be sited so that snowmelt flows to a pre-treatment BMP before reaching the infiltration basin.

Pedestrian Access: Limit access to ponds to passive recreational use.

Vehicle Access: Prohibit vehicle access to all ponds, except that authorized for maintenance.

Condo Association Documents

Miscellaneous Material

HK170D3

Halo Style Direct Burial LED Pole Kit with 150 Watt LED and 3 Inch Diameter Round Pole

PRODUCT SPECIFICATIONS

Description

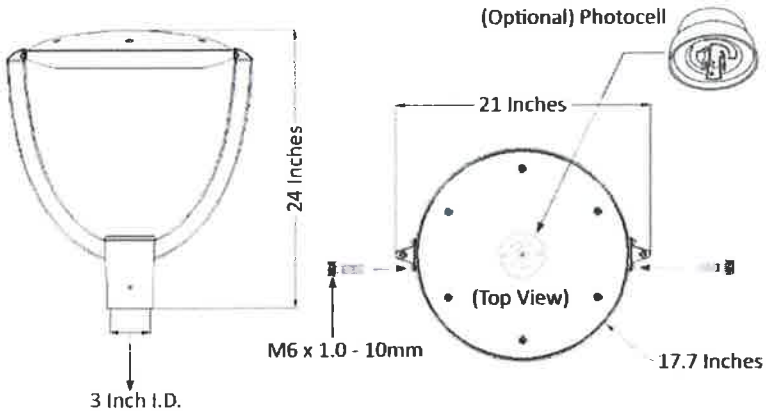
Halo style anchor base LED pole kit includes:

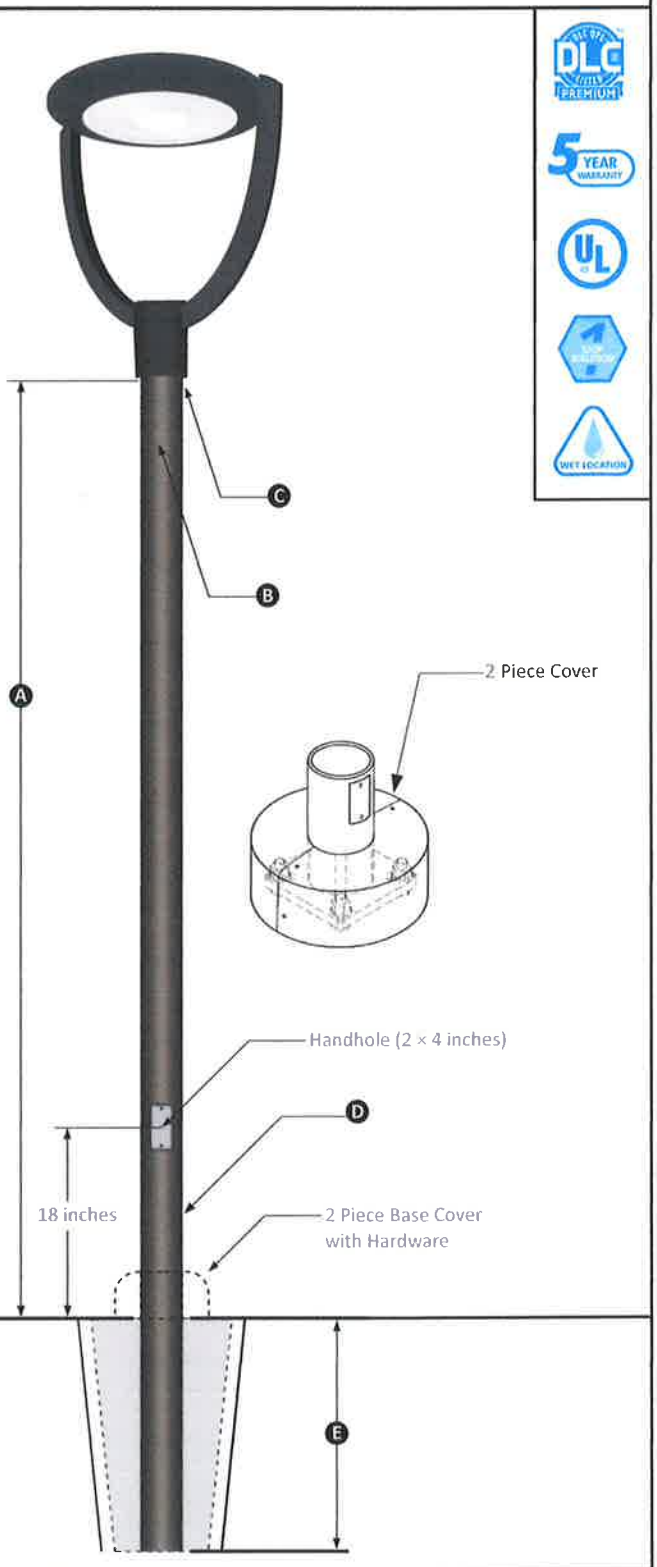
- Architectural style 150 watt LED light
- 3 inch diameter round aluminum commercial-grade light pole
- 2 piece decorative base cover

Features

- Pole Shaft: Direct burial round straight aluminum light pole with 3 inch diameter and 0.125 inch wall thickness (typical embedment depth is 3 feet)
- Fixture is easy to install and operate
- IP65 rated for wet locations
- Handhole: 2 x 4 Inches
- Fixture Dimensions: 24 H x 21 Diameter (inches)
- Fixture EPA: 1.2
- Light Distribution: Type V
- Color: Chip and fade resistant black powder coat finish
- Includes: 2 piece round base cover with hardware
- Dimmable: No
- Power: 150 Watts
- Lumens: 18,300
- Lumens Per Watt: 122
- Input Voltage: 120-277V
- Amps: 1.25-120V / 0.54-277V
- Rated Life: 50,000 hours
- Color Temperature: 5000K
- CRI: >80
- Minimum Temperature: -40° F /-40° C
- HID Equivalent: 400 Watts

Specification Table		
Mounting Height Options (ft.)	A	8, 10, 12, 15 (standard)
Wall Thickness (in.)	B	0.125
Top Diameter (in.)	C	3
Butt Diameter (in.)	D	3
Embedment Length (ft.)	E	3





Other Permit Application Materials

Conceptual Building Construction Plans

Site Construction Plans

(Reduced)

SCALE : 1" = 40'

0 20 40 80 120 160

N/F MELINDA DYER TM R-2, LOT 66-D 2018R/3139

N/F JAMES MAGNO TM R-2, LOT 67-5 2011R/1804

N/F GERARD PERRY TM R-2, LOT 67-1 2018R/6711

N/F RAYMOND DYER TM R-2, LOT 66-E 2844/11

N/F TODD & GAIL LAMOREAU TM R-2, LOT 68 2672/258

HOUSE

GRAVEL DRIVE

WOODED AREA

WETLAND AREA

WALKING TRAIL

¾" IRON ROD

84'±

39'±

112'±

229'±

52'±

255'±

288'±

302'±

305'±

262'±

593'±

75'±

WETLAND ALTERATION 2483 sf

WETLAND ALTERATION 1935 sf

WETLAND ALTERATION 750 sf

WETLAND ALTERATION 1251 sf

PROPOSED BUILDING 14 UNITS 2 STORY 8,960 sf

PAVED SIDEWALK

34 SPACES

PAVED PARKING AREA

MAIL BOXES

SECURITY LIGHT

PROJECT SIGN

10' x 24' ENCLOSED CONCRETE DUMPSTER PAD

TURN AROUND

NEW WOOD GUARD RAIL

STORM DRAINAGE FILTER BASIN #1

STORM DRAINAGE FILTER BASIN #2

24" CONC. CULV.

POND ROAD (AKA ROUTE 125)

TO ROUTE 201 (NORTH)

MAIN STREET (AKA ROUTE 138)

TO INTERSTATE 295 (EXIT 37)

N

NORTH

BOUDOINHAM

POND ROAD (ROUTE 125)

ROUTE 201

INTERSTATE 295

EXIT 37

MAIN STREET (ROUTE 138)

SITE

LOCATION MAP

LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- BOUNDARY LINE (OTHER)
- N/F — NOW OR FORMERLY
- 2356/89 — BOOK AND PAGE NUMBER
- EXISTING TREE LINE
- PROPOSED TREE LINE
- TREELINE TO BE REMOVED
- IRON PIPE OR ROD FOUND
- RIGHT OF WAY MONUMENT
- UTILITY POLE WITH OVERHEAD WIRES
- NEW WOOD GUARD RAIL
- EXISTING HYDRANT
- PROPOSED SECURITY LIGHT
- PROPOSED BUILDING
- PROPOSED PAVEMENT
- EXISTING PAVEMENT
- EXISTING GRAVEL DRIVE
- EXISTING WETLAND (SEE NOTE 8)
- WETLAND ALTERATION AREA

NOTES

1) ALL BOOK AND PAGE NUMBERS REFER TO THE SAGADAHOC COUNTY REGISTRY OF DEEDS.

2) EXISTING CONDITIONS ARE BASED ON THE FOLLOWING:
   - "PLAN OF PROPERTY OF HENRY E. & ADELINE P. LAMOREAU TRUST", DATED FEBRUARY 26, 2020, PREPARED BY WILLIAM COOMBS, PLS, RECORDED AT SAID REGISTRY IN PLAN BOOK 267DP, PAGE 12.
   - 2' LIDAR TOPOGRAPHIC CONTOURS OBTAINED FROM THE MAINE OFFICE OF G.I.S. WEBSITE.
   - SOME FEATURES (ROADS, DRIVEWAYS, BUILDINGS, ETC) ARE SHOWN BASED UPON AERIAL IMAGES OBTAINED FROM THE MAINE OFFICE OF G.I.S. AND GOOGLE EARTH.

3) OWNER OF RECORD - HENRY E. & ADELINE P. LAMOREAU TRUST
   DEED REFERENCE - BOOK 2165, PAGE 201
   TAX MAP U-7, PART OF LOT 5

4) PARCEL AREA = 7.24 ACRES

5) PARCEL IS LOCATED IN THE "VILLAGE TWO" LAND USE DISTRICT.
   MINIMUM LOT SIZE = 30,000 sf (NO SEWER), 10,000 sf (COMMUNITY SEWER)
   MAXIMUM DENSITY - 20,000 sf
   MINIMUM ROAD FRONTAGE = 100'
   BUILDING SETBACKS - FRONT = 30', SIDE & REAR = 10'
   MAXIMUM BUILDING HEIGHT = 35'

6) THE LOCATION, DEPTH, SIZE & EXISTENCE OF ALL UNDERGROUND UTILITY LINES, TANKS AND/OR STRUCTURES WAS NOT DETERMINED. CONTRACTOR SHALL CONTACT DIGSAFE/ON-TARGET PRIOR TO EXCAVATION TO CONFIRM THE LOCATION OF ALL PUBLIC & PRIVATE UTILITIES WITHIN THE PROJECT AREA.

7) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE F.E.M.A. FLOOD INSURANCE RATE MAP COMMUNITY PANEL #23023C 0093F, DATED JULY 16, 2015.

8) WETLAND ARE SHOWN BASED UPON A WETLANDS REPORT DATED APRIL 2020, BY JONES ASSOCIATES (JOB #20-035BO).

SITE TABULATIONS

TOTAL PARCEL AREA = 7.24 ACRES / 315,374 sf

EXISTING CONDITIONS -
WOODED / GREEN SPACE = 7.24 ACRES (100%)

PROPOSED CONDITIONS -
BUILDINGS = 8,960 sf
PAVEMENT, PORCHES & CONCRETE = 20,387 sf
IMPERVIOUS AREA = 29,347 sf (9.4%)
LAWN, FILTER BASINS & WOODED AREAS = 288,827 sf (90.6%)

NUMBER OF UNITS = 14
NUMBER OF PARKING SPACES = 34

WETLAND ALTERATION = 3,410 sf

TOTAL DISTURBED AREA = 68,000 sf / 1.56± ACRES

APPROVAL

APPROVED BY THE TOWN OF BOUDOINHAM PLANNING BOARD

CHAIRMAN — DATE

REV.	BY:	DATE:	CHANGES:

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SJR ENGINEERING, INC.

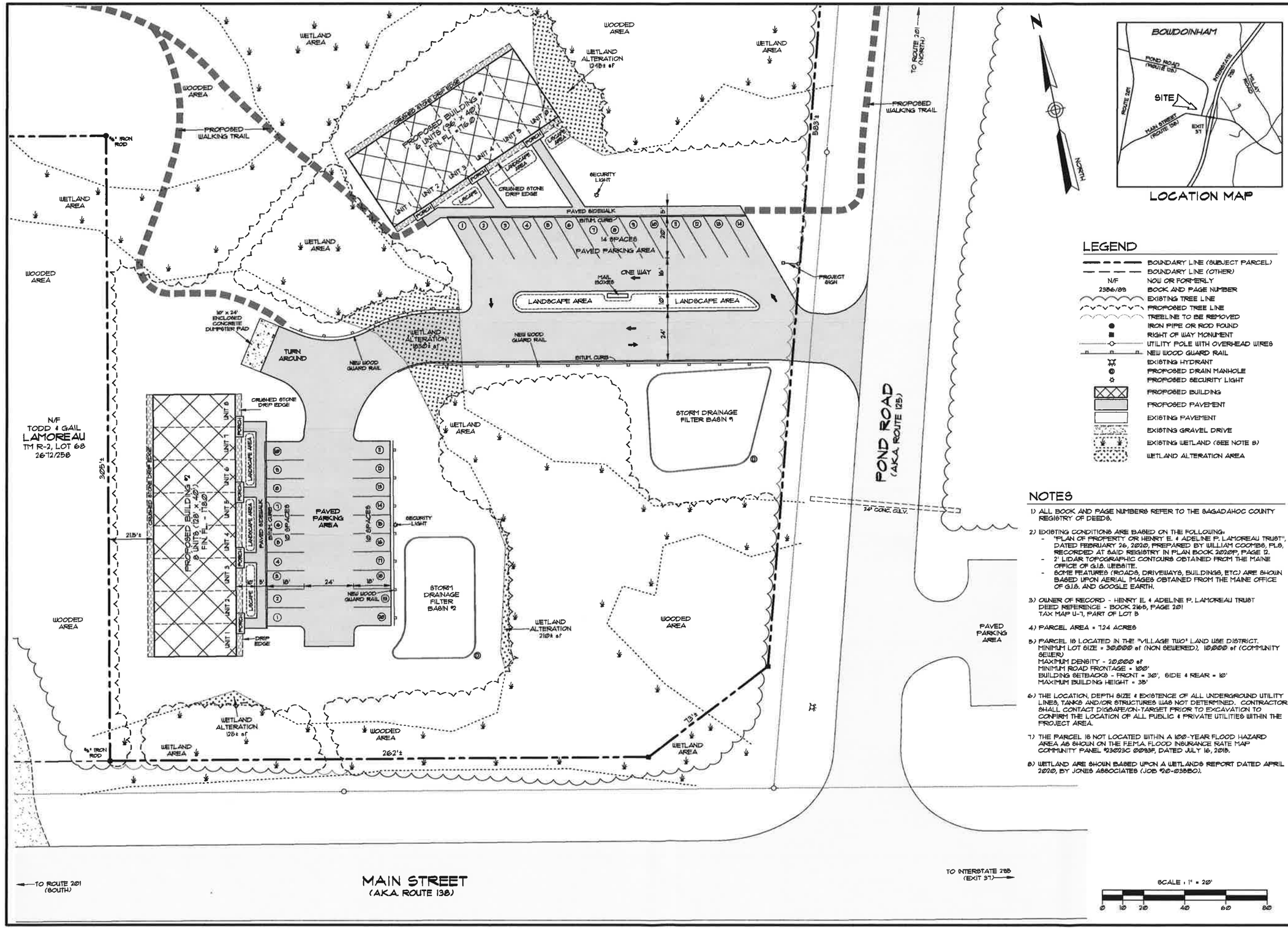
SJR ENGINEERING, INC.
16 THURSTON DRIVE
MONMOUTH, MAINE 04259
(207) 242-6248 tel
steve@sjreng.com
SJR ENGINEERING

OVERALL SITE PLAN

SAMMCO WOODS
POND ROAD & MAIN STREET, BOUDOINHAM, ME
PREPARED FOR
SAMMCO HOLDINGS LLC
164 APPLECREST DRIVE - YARMOUTH, ME

DATE	PROJECT
JULY 3, 2021	2021-22
DRAWN BY	SCALE
SJR	1" = 40'

SHEET 1



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3) OWNER OF RECORD - HENRY E. & ADELINE P. LAMOREAU TRUST
   DEED REFERENCE - BOOK 2165, PAGE 201
   TAX MAP U-7, PART OF LOT B

4) PARCEL AREA = 7.24 ACRES

5) PARCEL IS LOCATED IN THE "VILLAGE TWO" LAND USE DISTRICT.
   MINIMUM LOT SIZE = 30,000 sf (NON SEWERED), 10,000 sf (COMMUNITY SEWER)
   MAXIMUM DENSITY - 20,000 sf
   MINIMUM ROAD FRONTAGE = 100'
   BUILDING SETBACKS - FRONT = 30', SIDE & REAR = 10'
   MAXIMUM BUILDING HEIGHT = 35'

6) THE LOCATION, DEPTH, SIZE & EXISTENCE OF ALL UNDERGROUND UTILITY LINES, TANKS AND/OR STRUCTURES WAS NOT DETERMINED. CONTRACTOR SHALL CONTACT DIGSAFE/ON-TARGET PRIOR TO EXCAVATION TO CONFIRM THE LOCATION OF ALL PUBLIC & PRIVATE UTILITIES WITHIN THE PROJECT AREA.

7) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE F.E.M.A. FLOOD INSURANCE RATE MAP COMMUNITY PANEL #23023C 0083F, DATED JULY 16, 2015.

8) WETLAND ARE SHOWN BASED UPON A WETLANDS REPORT DATED APRIL 2020, BY JONES ASSOCIATES (JOB #20-035EO).

REV:	BY:	DATE:	CHANGES:

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SJR ENGINEERING, INC.

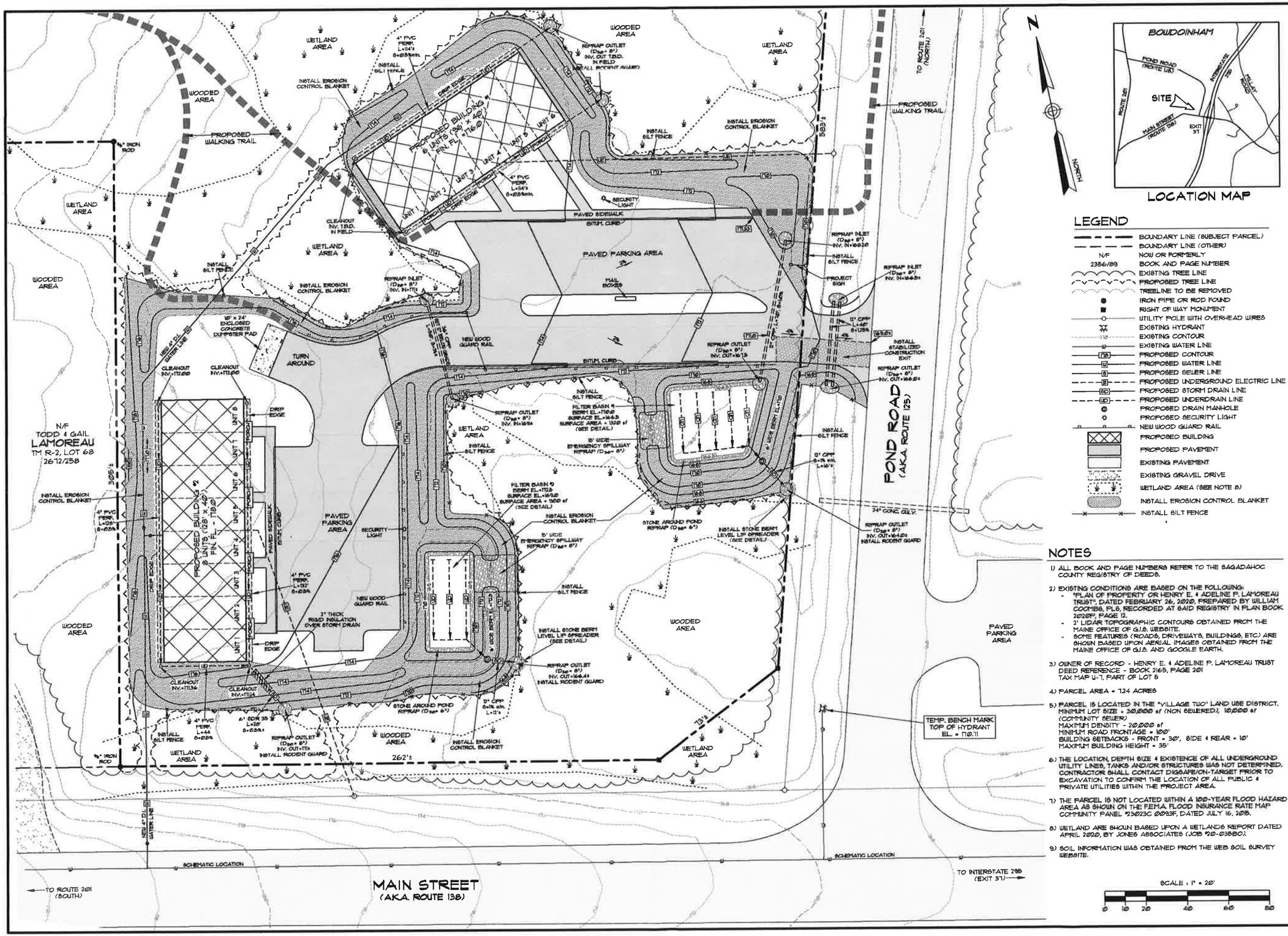
SJR ENGINEERING, INC.
16 THURSTON DRIVE
MONMOUTH, MAINE 04259
(207) 242-6248 tel
steve@sjreng.com

SITE PLAN

SAMMCO WOODS
POND ROAD & MAIN STREET, BOWDOINHAM, ME
PREPARED FOR
SAMMCO HOLDINGS LLC
164 AFFLECREST DRIVE - YARMOUTH, ME

DATE	PROJECT
JULY 3, 2021	2021-22
DRAWN BY	SCALE
SJR	1" = 20'

SHEET 2



LOCATION MAP

LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- BOUNDARY LINE (OTHER)
- N/F — NOW OR FORMERLY
- 2386/89 — BOOK AND PAGE NUMBER
- EXISTING TREE LINE
- PROPOSED TREE LINE
- TREELINE TO BE REMOVED
- IRON PIPE OR ROD FOUND
- RIGHT OF WAY MONUMENT
- UTILITY POLE WITH OVERHEAD WIRES
- EXISTING HYDRANT
- EXISTING CONTOUR
- EXISTING WATER LINE
- PROPOSED CONTOUR
- PROPOSED WATER LINE
- PROPOSED SEWER LINE
- PROPOSED UNDERGROUND ELECTRIC LINE
- PROPOSED STORM DRAIN LINE
- PROPOSED UNDERDRAIN LINE
- PROPOSED DRAIN MANHOLE
- PROPOSED SECURITY LIGHT
- NEW WOOD GUARD RAIL
- PROPOSED BUILDING
- PROPOSED PAVEMENT
- EXISTING PAVEMENT
- EXISTING GRAVEL DRIVE
- WETLAND AREA (SEE NOTE 8)
- INSTALL EROSION CONTROL BLANKET
- INSTALL SILT FENCE

NOTES

1) ALL BOOK AND PAGE NUMBERS REFER TO THE SAGADAHOC COUNTY REGISTRY OF DEEDS.

2) EXISTING CONDITIONS ARE BASED ON THE FOLLOWING:
   - "PLAN OF PROPERTY OF HENRY E. & ADELINE P. LAMOREAU TRUST", DATED FEBRUARY 26, 2020, PREPARED BY WILLIAM COOPERS, PLS, RECORDED AT SAID REGISTRY IN PLAN BOOK 2020PP, PAGE 12.
   - 2' LIDAR TOPOGRAPHIC CONTOURS OBTAINED FROM THE MAINE OFFICE OF G.I.S. WEBSITE.
   - SOME FEATURES (ROADS, DRIVEWAYS, BUILDINGS, ETC.) ARE SHOWN BASED UPON AERIAL IMAGES OBTAINED FROM THE MAINE OFFICE OF G.I.S. AND GOOGLE EARTH.

3) OWNER OF RECORD - HENRY E. & ADELINE P. LAMOREAU TRUST
   DEED REFERENCE - BOOK 2165, PAGE 201
   TAX MAP U-7, PART OF LOT 5

4) PARCEL AREA = 7.24 ACRES

5) PARCEL IS LOCATED IN THE "VILLAGE TWO" LAND USE DISTRICT.
   MINIMUM LOT SIZE = 30,000 sf (NON SEWERED), 10,000 sf (COMMUNITY SEWER)
   MAXIMUM DENSITY - 20,000 sf
   MINIMUM ROAD FRONTAGE = 100'
   BUILDING SETBACKS - FRONT = 30', SIDE & REAR = 10'
   MAXIMUM BUILDING HEIGHT = 35'

6) THE LOCATION, DEPTH SIZE & EXISTENCE OF ALL UNDERGROUND UTILITY LINES, TANKS AND/OR STRUCTURES WAS NOT DETERMINED. CONTRACTOR SHALL CONTACT DIGSAFE/ON-TARGET PRIOR TO EXCAVATION TO CONFIRM THE LOCATION OF ALL PUBLIC & PRIVATE UTILITIES WITHIN THE PROJECT AREA.

7) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP COMMUNITY PANEL #23023C 0093F, DATED JULY 16, 2015.

8) WETLAND ARE SHOWN BASED UPON A WETLANDS REPORT DATED APRIL 2020, BY JONES ASSOCIATES (JOB #20-03BBO).

9) SOIL INFORMATION WAS OBTAINED FROM THE WEB SOIL SURVEY WEBSITE.

SCALE : 1" = 20'

0 10 20 40 60 80

REV.	BY:	DATE:	CHANGES:

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16 THURSTON DRIVE
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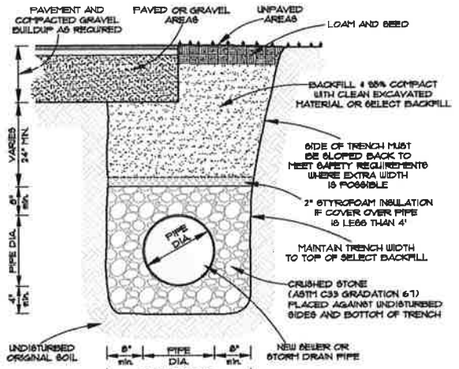
SJR ENGINEERING

TOPOGRAPHIC & UTILITY PLAN

SAMMCO WOODS
POND ROAD & MAIN STREET, BOWDOINHAM, ME
PREPARED FOR
SAMMCO HOLDINGS LLC
164 APPLECREST DRIVE - YARMOUTH, ME

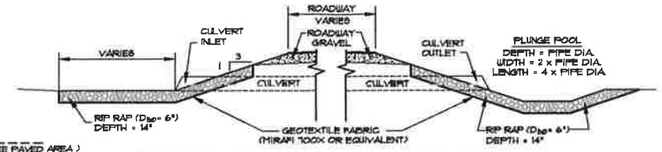
DATE	PROJECT
JULY 3, 2021	2021-22
DRAWN BY	SCALE
SJR	1" = 20'

SHEET 3



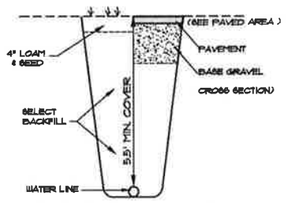
STORM DRAIN, CULVERT / SEWER TRENCH DETAIL

NOT TO SCALE



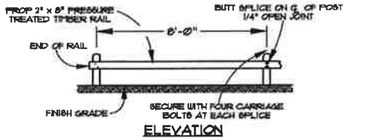
TYPICAL CULVERT INLET & OUTLET DETAIL

NOT TO SCALE

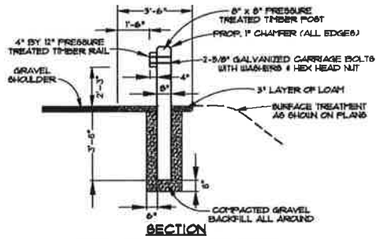


WATER SERVICE TRENCH DETAIL

NOT TO SCALE



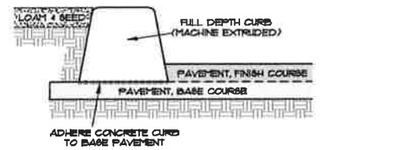
ELEVATION



SECTION

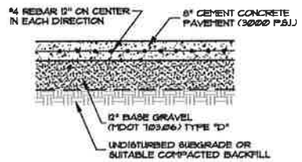
TIMBER GUARD RAIL

NOT TO SCALE



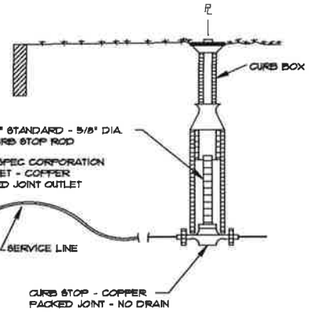
CONCRETE CURB CROSS SECTION

NOT TO SCALE



CONCRETE PAD CROSS SECTION

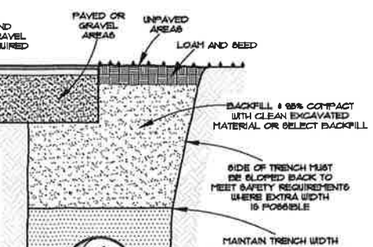
NOT TO SCALE



NOTE: INSTALL 6" (8" IN ROCK) OF SAND, OR WATER DISTRICT APPROVED BACKFILL, ALL AROUND SERVICE LINE.

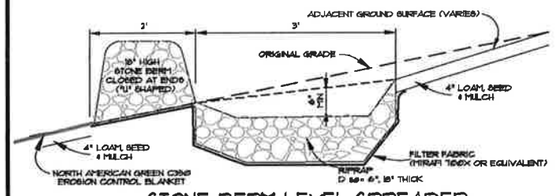
TYPICAL DOMESTIC WATER SERVICE

NOT TO SCALE



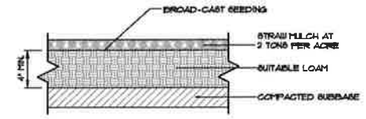
FOUNDATION UNDERDRAIN DETAIL STONE DRIP EDGE

NOT TO SCALE



STONE BERM LEVEL SPREADER

NOT TO SCALE

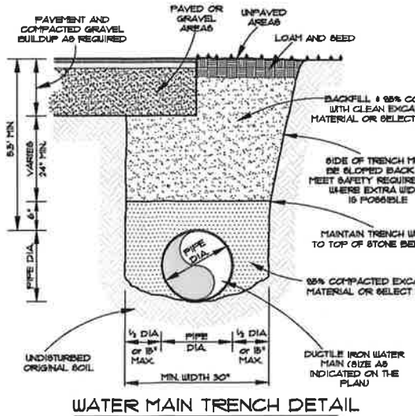


PLACE LOAM & SEED ON ALL DISTURBED AREAS NOT TO BE RIP RAPPED OR GRAVELED

PERMANENT SEED MIX	APPLICATION RATE
	lbs/1000 s.f.
KENTUCKY BLUEGRASS	46
CREEPING RED FESCUE	46
PERENNIAL RYEGRASS	11
TOTAL SEED RATE	103

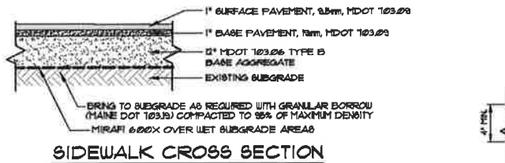
LOAM & SEED DETAIL

NOT TO SCALE



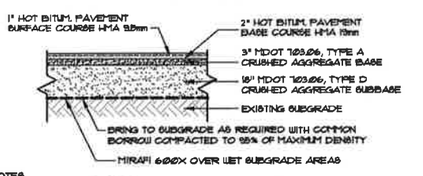
WATER MAIN TRENCH DETAIL

NOT TO SCALE



SIDEWALK CROSS SECTION

NOT TO SCALE



NOTES

1) COMPACT GRAVEL SUBBASE, BASE COURSE TO 95% OF THEIR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557.

2) HOT MIX ASPHALT PAVEMENT MUST BE COMPACTED TO 92%-97% OF ITS THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D-2041.

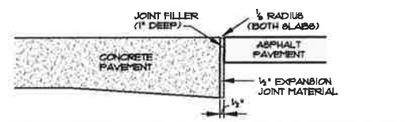
3) A TACK COAT MUST BE USED BETWEEN SUCCESSIVE LIFTS OF BITUMINOUS PAVEMENT.

4) PROVIDE NON-FROST SUSCEPTIBLE COMPACTED FILL GRANULAR BORROW OR FRACTURED ROCK FILL BELOW PAVEMENT IN FILL AREAS.

5) CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

PAVEMENT CROSS SECTION

NOT TO SCALE



CONCRETE PAD / ASPHALT INTERFACE

NOT TO SCALE

GENERAL CONSTRUCTION NOTES

1) THE CONTRACT WORK TO BE PERFORMED ON THIS PROJECT CONSISTS OF FURNISHING ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, IMPLEMENTS, PARTS AND SUPPLIES NECESSARY FOR OR APPURTENANT TO, THE INSTALLATION OF CONSTRUCTION IMPROVEMENTS IN ACCORDANCE WITH THESE DRAWINGS AND AS FURTHER ELABORATED IN ANY ACCOMPANYING SPECIFICATIONS.

2) THE WORK SHALL BE PERFORMED IN A THOROUGH WORKMANLIKE MANNER. ALL CONTRACTORS TO CONFORM TO ALL APPLICABLE OSHA STANDARDS. ANY REFERENCE TO A SPECIFICATION OR DESIGNATION OF THE AMERICAN SOCIETY FOR TESTING MATERIALS, FEDERAL SPECIFICATIONS, OR OTHER STANDARDS, CODES OR ORDERS, REFERS TO THE MOST RECENT OR LATEST SPECIFICATION OR DESIGNATION.

3) THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED BY THE TOWN OF BOWDOINHAM PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE TOWN OF BOWDOINHAM REQUIRED TO PERFORM ALL THE WORK (STREET OPENINGS, BUILDING PERMIT, ETC.). THE CONTRACTOR SHALL POST ALL BONDS AS REQUIRED, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.

4) PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR IS TO INFORM ALL AREA UTILITY COMPANIES AND GOVERNMENTAL AGENCIES OF PLANNED CONSTRUCTION. THE SITE CONTRACTOR IS REQUIRED TO CONTACT DIG-SAFE (1-800-225-4977) AT LEAST 3 BUSINESS DAYS PRIOR TO ANY EXCAVATION TO VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY LOCATIONS.

5) THIS PLAN IS GENERALLY SCHEMATIC AND DOES NOT INDICATE THE POSSIBLE LOCATION OF EXISTING UNDERGROUND UTILITIES. IT IS NOT GUARANTEED TO BE CORRECT OR COMPLETE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE EXISTENCE AND LOCATIONS AND ELEVATIONS OF ALL UTILITIES, INCLUDING SERVICES, WHEN THOSE SERVICES ARE TO BE LEFT IN PLACE. THE CONTRACTOR IS TO PROVIDE ADEQUATE MEANS OF SUPPORT AND PROTECTION DURING THE EXCAVATING AND BACKFILLING OPERATIONS. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED UTILITIES BE FOUND, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH THE WORK IN THIS AREA.

6) OSHA REGULATIONS MAKE IT UNLAWFUL TO OPERATE CRANES, BOOMS, HOISTS, ETC. WITHIN TEN FEET (10') OF ANY ELECTRIC LINE . IF THE CONTRACTOR MUST OPERATE CLOSER THAN 10', THE CONTRACTOR MUST CONTACT THE POWER COMPANY TO MAKE ARRANGEMENTS FOR PROPER SAFEGUARDS BEFORE ENCROACHING ON THIS REQUIREMENT.

7) IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLANS, APPROVALS, AND DETAILS FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL VERIFY ALL THE SITE CONDITIONS IN THE FIELD AND CONTACT THE DESIGN ENGINEER IF THERE ARE ANY DISCREPANCIES REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS SO THAT AN APPROPRIATE REVISION CAN BE MADE PRIOR TO BIDDING.

8) ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF REVIEWED AND APPROVED IN WRITING BY THE OWNER, DESIGN ENGINEER, AND APPROPRIATE GOVERNMENTAL AGENCY PRIOR TO INSTALLATION.

9) THE CONTRACTOR SHALL RESTORE ALL UTILITY STRUCTURES, PIPE, UTILITIES, PAVEMENT, CURBS, SIDEWALKS, AND LANDSCAPED AREAS DISTURBED BY CONSTRUCTION TO AS GOOD AS BEFORE BEING DISTURBED AS DETERMINED BY TOWN OF BOWDOINHAM CODE ENFORCEMENT OFFICIALS. ANY DAMAGES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

10) THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL PRODUCT, MATERIALS AND PLANT SPECIFICATIONS TO THE OWNER AND DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OR DELIVERY TO THE SITE. ALLOW A MINIMUM OF 10 WORKING DAYS FOR REVIEW.

11) ALL EXCAVATION SHALL BE BACKFILLED TO EXISTING GRADE BEFORE THE END OF THE DAY OR ADEQUATELY PROTECTED FROM DANGER TO HUMANS AND ANIMALS.

12) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT.

13) THE CONTRACTOR SHALL FURNISH ELECTRICAL POWER, WATER, AND SANITARY FACILITIES FOR HIS EXCLUSIVE USE AT THE CONSTRUCTION SITE SHOULD THE CONTRACTOR DEEM THIS ESSENTIAL FOR THE PROPER PERFORMANCE OF THE CONTRACT.

14) WORK MAY PROGRESS MONDAY THROUGH SATURDAY 7:00 AM TO 7:00 PM. WORK AT OTHER TIMES MAY PROCEED UPON WRITTEN APPROVAL BY THE OWNER AND THE TOWN OF BOWDOINHAM. THE CONTRACTOR SHALL BE REQUIRED TO CONFORM WITH ALL RULES AND REGULATIONS SET FORTH IN TOWN OF BOWDOINHAM LAND USE REGULATIONS.

15) THE CONTRACTOR SHALL GUARANTEE THE FAITHFUL REMEDY OF ANY DEFECTS DUE TO FAULTY MATERIALS OR WORKMANSHIP AND GUARANTEES PAYMENT FOR ANY RESULTING DAMAGE WHICH SHALL APPEAR WITHIN A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT.

16) THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES) TO THE OWNER AT THE END OF CONSTRUCTION.

17) A PRE-CONSTRUCTION CONFERENCE WITH THE OWNER, DESIGNERS, TOWN OFFICIALS AND CONTRACTOR SHALL BE REQUIRED BEFORE ANY CONSTRUCTION OCCURS ON THE PROJECT. DURING CONSTRUCTION THERE SHALL BE WEEKLY PROGRESS MEETINGS WITH THE OWNER (ON SITE OR TELECONFERENCE) UNTIL PROJECT COMPLETION.

18) PROPER IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL MEASURES ARE OF PARAMOUNT IMPORTANCE FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ONSITE INSPECTIONS OF THE OWNER, THEIR REPRESENTATIVES, OR STATE/LOCAL/ FEDERAL INSPECTORS AT NO ADDITIONAL COST TO THE OWNER.

EROSION & SEDIMENTATION CONTROL NOTES

1) THE CONTRACTOR SHALL INSPECT EROSION & SEDIMENT CONTROL MEASURES WEEKLY AND AFTER HEAVY RAINFALLS THROUGHOUT THE DURATION OF THE PROJECT INCLUDING WEEKENDS AND HOLIDAYS. ALL EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED AS STIPULATED IN THE BASIC AND GENERAL STANDARDS SUBMISSION IN THE STORMWATER APPLICATION SUBMITTED TO THE TOWN OF EDGECOMB.

2) THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE "MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES", DEPARTMENT OF ENVIRONMENTAL PROTECTION, AS REVISED 2014. ADDITIONAL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY DURING ON-SITE INSPECTIONS BY THE OWNER, THEIR REPRESENTATIVES OR STATE/LOCAL/FEDERAL INSPECTORS AT NO ADDITIONAL COST TO THE OWNER.

3) AREAS DISTURBED DURING CONSTRUCTION SHALL BE MINIMIZED. AREAS SHALL BE TEMPORARILY STABILIZED WITH MULCH OR NON-ERODABLE COVER IF EXPOSED SOILS WILL NOT BE WORKED FOR MORE THAN 7 DAYS. STABILIZE AREAS WITHIN 75' OF THE WETLAND AREA WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OR PRIOR TO ANY STORM EVENT. PERMANENT SEEDING SHALL TAKE PLACE WITHIN 7 DAYS OF FINAL GRADING.

4) PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWN GRADIENT EDGE OF THE DISTURBED AREA AND ADJACENT TO DRAINAGE CHANNELS WITHIN THIS AREA.

5) SILT FENCE LOCATIONS SHOWN ARE APPROXIMATE. INSTALL WHERE APPROPRIATE TO CONTROL SEDIMENTATION ON AND OFF SITE. SILT FENCE SHALL BE REMOVED AFTER THE SITE IS STABILIZED WITH AT LEAST 90% VEGETATED GROWTH.

6) NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN ONE AND A HALF TO ONE (1:1.5 TO 1).

7) IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST, USE TEMPORARY MULCHING (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

8) TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINAL GRADED SHALL BE COMPLETED BY AUGUST 5th OR 45 DAYS PRIOR TO THE FIRST KILLING FROST (OCT. 1) TO PROTECT FROM SPRING RUNOFF PROBLEMS.

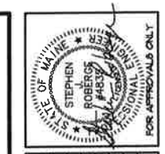
9) REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED AND PREPARED FOR FINAL SEEDING AS FOLLOWS:

A) 4" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.

B) APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 1000 POUNDS PER ACRE OR 20 POUNDS PER SQUARE FEET USING 10-10-7 (N-P2O5-K2O) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3.3 TONS PER ACRE (150 lbs. PER 1000 s.f.)

C) FOLLOWING SEED BED PREPARATION, DITCHES AND BARK SLOPES WILL BE SEEDED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF 46% KENTUCKY BLUEGRASS, 46% CREEPING RED FESCUE AND 12% PERENNIAL RYEGRASS. SEEDING RATE IS ONE POUND PER 1000 s.f. LAWN QUALITY SOD MAY BE SUBSTITUTE FOR SEED. SEED MIX SHALL CONTAIN 10% ANNUAL RYEGRASS.

D) HAY MULCH AT THE RATE OF 70-90 lbs PER 1000 s.f. OR A HYDRO-APPLICATION OF ASPHALT, WOOD OR PAPER FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER SUCH AS CURASOL OR RMB PLUS WILL BE USED ON HAY MULCH FOR WIND CONTROL.



REV.	BY:	DATE:	CHANGES:

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SJR ENGINEERING, INC.

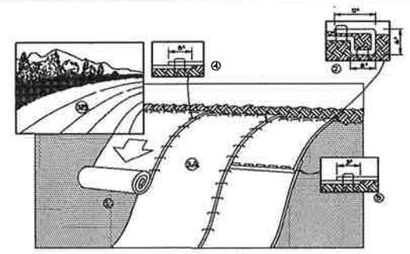
SJR ENGINEERING, INC.
21 MAYFLOWER ROAD
AUGUSTA, MAINE 04330
(207) 622-1616 tel & fax
steve@sjreng.com

SJR ENGINEERING

CONSTRUCTION NOTES & DETAILS
SAMMCO WOODS
POND ROAD & MAIN STREET, BOWDOINHAM, ME
PREPARED FOR
SAMMCO HOLDINGS LLC
164 APPLECREST DRIVE - YARMOUTH, ME

DATE	PROJECT
JULY 3, 2021	2021-22
DRAWN BY	SCALE
SJR	AS NOTED

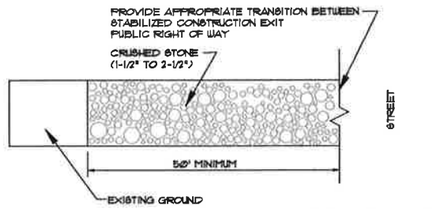
SHEET 4



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAPLES APPROXIMATELY 5" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAPLES SPACED APPROXIMATELY 5" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAPLES AT APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SOIL ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET DIRECTLY OVER THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.
NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAPLE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

EROSION CONTROL BLANKET DETAIL

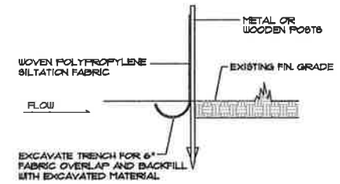
NOT TO SCALE

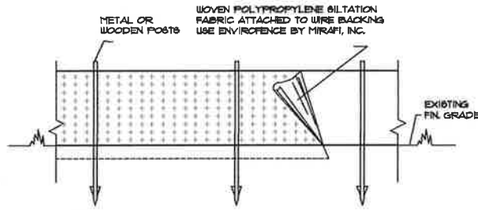


1. STONE SIZE - AASHTO DESIGNATION M 43, SIZE #2 (2½" - 1½") USE CRUSHED STONE
2. LENGTH - AS EFFECTIVE BUT NOT LESS THAN 50'
3. THICKNESS - NOT LESS THAN 6"
4. WIDTH - NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS
5. WASHING - WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS, OR OTHER APPROVED METHODS.
6. MAINTENANCE - THE STABILIZED CONSTRUCTION EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT OF WAYS MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION EXIT DETAIL

NOT TO SCALE





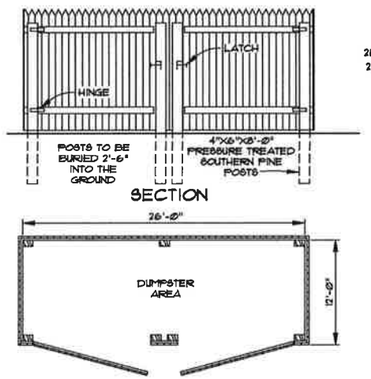
NOTES

REFERENCE IS MADE TO THE BEST MANAGEMENT PRACTICE FOR EROSION AND SEDIMENT CONTROL: B-1 SEDIMENT BARRIERS.

SILTATION FABRIC WITH INTEGRAL MESH & POSTS MAY BE USED.

SILT FENCE DETAIL

NOT TO SCALE

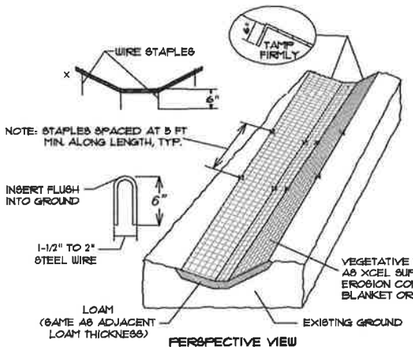


SECTION

PLAN

STOCKADE FENCE TRASH DUMPSTER ENCLOSURE

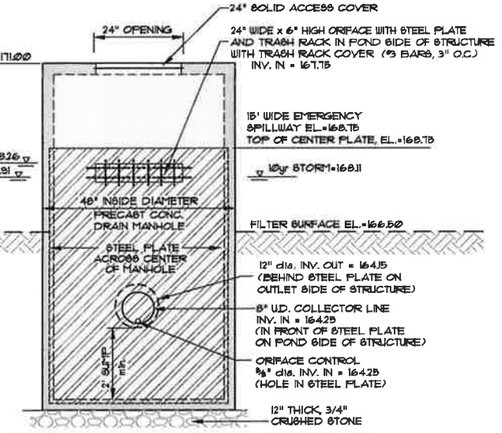
NOT TO SCALE



PERSPECTIVE VIEW

VEGETATIVE MAT LINED DITCH

NOT TO SCALE



ELEVATION VIEW FROM POND SIDE OF STRUCTURE

FILTER BASIN #1 OUTLET CONTROL STRUCTURE (DMH-11) DETAIL

(NOT TO SCALE)

STORMWATER CONSTRUCTION OVERSIGHT NOTES

THE CONTRACTOR SHALL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES TO BE BUILT AS PART OF THIS PROJECT. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE CONSTRUCTION PLANS FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES AND CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER SHALL NOTIFY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION IN WRITING WITHIN 30 DAYS TO STATE THAT THE STRUCTURES HAVE BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION SHALL BE A COPY OF THE TEST RESULTS FOR ANY SOIL FILL, AGGREGATE OR MULCH MATERIALS USED IN THE CONSTRUCTION OF THE STORMWATER MANAGEMENT STRUCTURES AND A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION AND THE TIME INSPECTED ON EACH VISIT.

WETPONDS WITH UNDERDRAINED GRAVEL TRENCH OUTLET

CONSTRUCTION INSPECTIONS - INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE BY THE ENGINEER TO INSPECT THE EMBANKMENT FOUNDATION PREPARATION, THE PLACEMENT OF THE EMBANKMENT FILL, THE CONSTRUCTION OF THE UNDERDRAINED GRAVEL TRENCH OUTLET, THE INSTALLATION OF THE OUTLET CONTROL STRUCTURE, THE PLACEMENT OF THE GEOSYNTHETIC LINER AND THE CONSTRUCTION OF THE EMERGENCY SPILLWAY FROM INITIAL GROUND DISTURBANCE TO FINAL STABILIZATION OF THE WETPOND.

TESTING AND SUBMITTALS - ALL SOIL AND AGGREGATE USED FOR CONSTRUCTION OF THE WETPOND'S IMPOUNDMENT EMBANKMENT AND THE UNDERDRAINED GRAVEL TRENCH OUTLET SHALL BE CONFIRMED AS SUITABLE BY TESTING. THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH FILL OR AGGREGATE AND OBTAIN SAMPLES FOR TESTING. ALL TESTING MUST BE DONE BY A CERTIFIED LABORATORY. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE COMPLETION OF THE FOLLOWING SAMPLING AND TESTING BEFORE THE FILL OR AGGREGATE IS PLACED AS PART OF THE WETPOND'S CONSTRUCTION.

OBTAIN A SAMPLE OF THE FILL MATERIAL. THE SAMPLE MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. THE SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY. PERFORM ANALYSES OF THE EMBANKMENT FILL AS NEEDED, TO DETERMINE THE FILL GRADATION AND PERCENT CLAY. THE EMBANKMENT FILL MUST CONFORM TO THE GRADATION SPECIFIED ON THE PROJECT PLANS AND MUST BE APPROVED BY THE DESIGN OR RESIDENT ENGINEER.

OBTAIN A SAMPLE OF THE GRAVEL FILL TO BE USED FOR THE UNDERDRAIN GRAVEL TRENCH OUTLET. THE SAMPLE MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. THE SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996A) OF THE FILL FOR THE UNDERDRAINED GRAVEL TRENCH OUTLET. THE FILL MUST CONFORM TO MEDOT 703.22 TYPE B.

VEGETATED UNDERDRAINED SOIL FILTER BASINS

CONSTRUCTION INSPECTIONS - AT A MINIMUM, THE PROFESSIONAL ENGINEER'S INSPECTION SHALL OCCUR AFTER FOUNDATION SOIL PREPARATION BUT PRIOR TO PLACEMENT OF THE EMBANKMENT FILL, AFTER THE UNDERDRAIN PIPES AND INSTALLED BUT NOT BACKFILLED, AFTER THE PIPE BEDDING IS PLACED BUT PRIOR TO THE PLACEMENT OF THE FILTER MEDIA AND AFTER THE FILTER MEDIA HAS BEEN PLACED AND THE FILTER SURFACE SEEDED.

TESTING AND SUBMITTALS - ALL THE SOIL, MULCH AND AGGREGATE USED FOR THE CONSTRUCTION OF THE VEGETATED UNDERDRAINED SOIL FILTER BASIN SHALL BE CONFIRMED AS SUITABLE BY TESTING. THE CONTRACTOR SHALL IDENTIFY THE SOURCE OF EACH MATERIAL AND OBTAIN SAMPLES FROM EACH MATERIAL FOR TESTING. ALL TESTING SHALL BE DONE BY A CERTIFIED LABORATORY. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE COMPLETION OF THE FOLLOWING SAMPLING AND TESTING BEFORE THE FILL OR AGGREGATE IS PLACED AS PART OF THE VEGETATED UNDERDRAINED SOIL FILTER BASIN'S CONSTRUCTION.

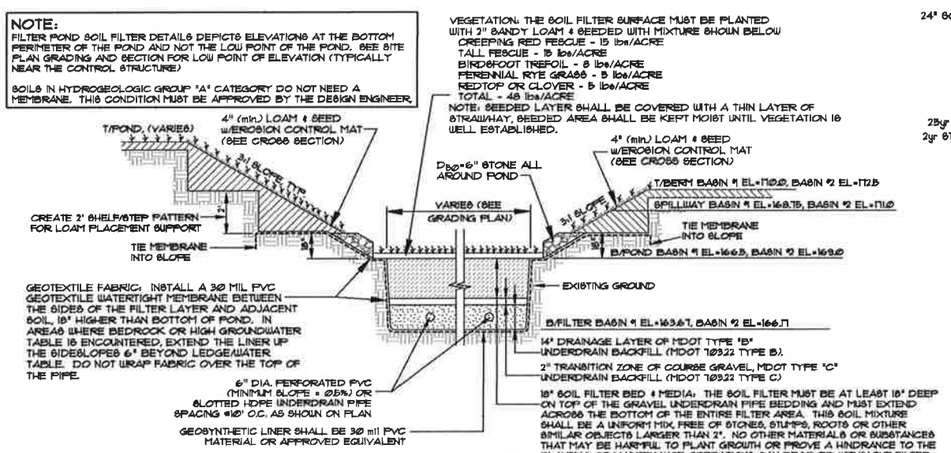
OBTAIN A SAMPLE OF THE FILTER MEDIA CONSISTING OF A BLEND OF SAND, TOPSOIL AND WOOD FIBER MULCH (OR OTHER APPROVED ORGANIC SOURCE). THE SAMPLE MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE. THE SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY. PERFORM ANALYSES OF THE BLENDED FILTER MEDIA SHOWING IT HAS 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE AS DETERMINED BY ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996A) HAS A CLAY CONTENT OF LESS THAN 2% AND HAS AN ORGANIC MATTER CONTENT OF NO LESS THAN 10% BY DRY WEIGHT.

IF THE UNDERDRAIN PIPES WILL BE BEDDED IN GRAVEL, OBTAIN A SAMPLE OF THE GRAVEL FILL TO BE USED FOR THE PIPE BEDDING. THE SAMPLE MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. THE SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996A) OF THE GRAVEL TO BE USED FOR THE UNDERDRAIN PIPE BEDDING. THE GRAVEL FILL MUST CONFORM TO MEDOT SPECIFICATION 703.22 UNDERDRAIN TYPE B.

IF THE UNDERDRAIN PIPE WILL BE BEDDED IN CRUSHED STONE, OBTAIN A SAMPLE OF THE CRUSHED STONE TO BE USED FOR THE PIPE BEDDING. THE SAMPLE MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE. THE SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996A) OF THE CRUSHED STONE TO BE USED FOR THE UNDERDRAIN PIPE BEDDING. THE CRUSHED STONE FILL MUST CONFORM TO MEDOT SPECIFICATION 703.22 UNDERDRAIN TYPE C.

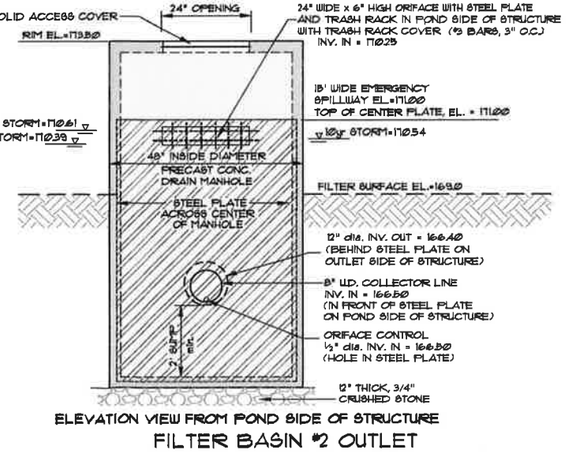
NOTE:
FILTER POND SOIL FILTER DETAILS DEPICTS ELEVATIONS AT THE BOTTOM PERIMETER OF THE POND AND NOT THE LOW POINT OF THE POND. SEE SITE PLAN GRADING AND SECTION FOR LOW POINT OF ELEVATION (TYPICALLY NEAR THE CONTROL STRUCTURE)

SOILS IN HYDROGEOLOGIC GROUP "A" CATEGORY DO NOT NEED A MEMBRANE. THIS CONDITION MUST BE APPROVED BY THE DESIGN ENGINEER.



SOIL FILTER POND DETAIL

NOT TO SCALE



ELEVATION VIEW FROM POND SIDE OF STRUCTURE

FILTER BASIN #2 OUTLET CONTROL STRUCTURE (DMH-11) DETAIL

(NOT TO SCALE)

SOIL FILTER MEDIA SPECIFICATIONS *

FILTER MEDIA	SAND	TOPSOIL	MULCH
MIXTURE BY VOL.	50% (±5%)	25% (±5%)	25% (±5%)
SPECIFICATION	MEDOT SPEC. #703.01 FINE AGGREGATE FOR CONCRETE	USDA LOAMY SANDY TOPSOIL	WOODY FIBER & MODERATELY FINE, SHREDDED BARK SUPERMULCH OR EQUAL, ADJUSTED FOR MINERAL SOIL CONTENT WITH LESS THAN 5% PASSING THE #200 SIEVE
GRADATION			
SIEVE SIZE	% BY WEIGHT	% BY WEIGHT	% BY WEIGHT
⅜"	100	-	-
4	90-100	75-95	-
8	80-100	-	-
10	-	60-90	-
16	50-85	-	-
30	25-60	-	-
40	-	35-85	-
60	10-30	-	-
100	2-10	-	-
200	0-5	15-25	-
200 CLAY	<2% **	<2% **	<2% **

* FOR GRASSED UNDERDRAINED SOIL FILTER BMP, PER THE MAINE DEP VOLUME III : BMP'S TECHNICAL DESIGN MANUAL, MAY 2014

** COMBINED MIXTURE CLAY CONTENT SHALL NOT EXCEED 2%

NOTE: THE SOIL FILTER SHALL DRAIN IN NO LESS THAN 24 hrs BUT NO MORE THAN 48 hrs.

STATE OF MAINE * STEPHEN ROBERTS #4830 * REGISTERED PROFESSIONAL ENGINEER
FOR APPROVALS ONLY

REV.:	BY:	DATE:	CHANGES:

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SJR ENGINEERING, INC.

SJR ENGINEERING, INC.
21 MAYFLOWER ROAD
AUGUSTA, MAINE 04330
(207) 622-1676 tel & fax
steve@sjreng.com

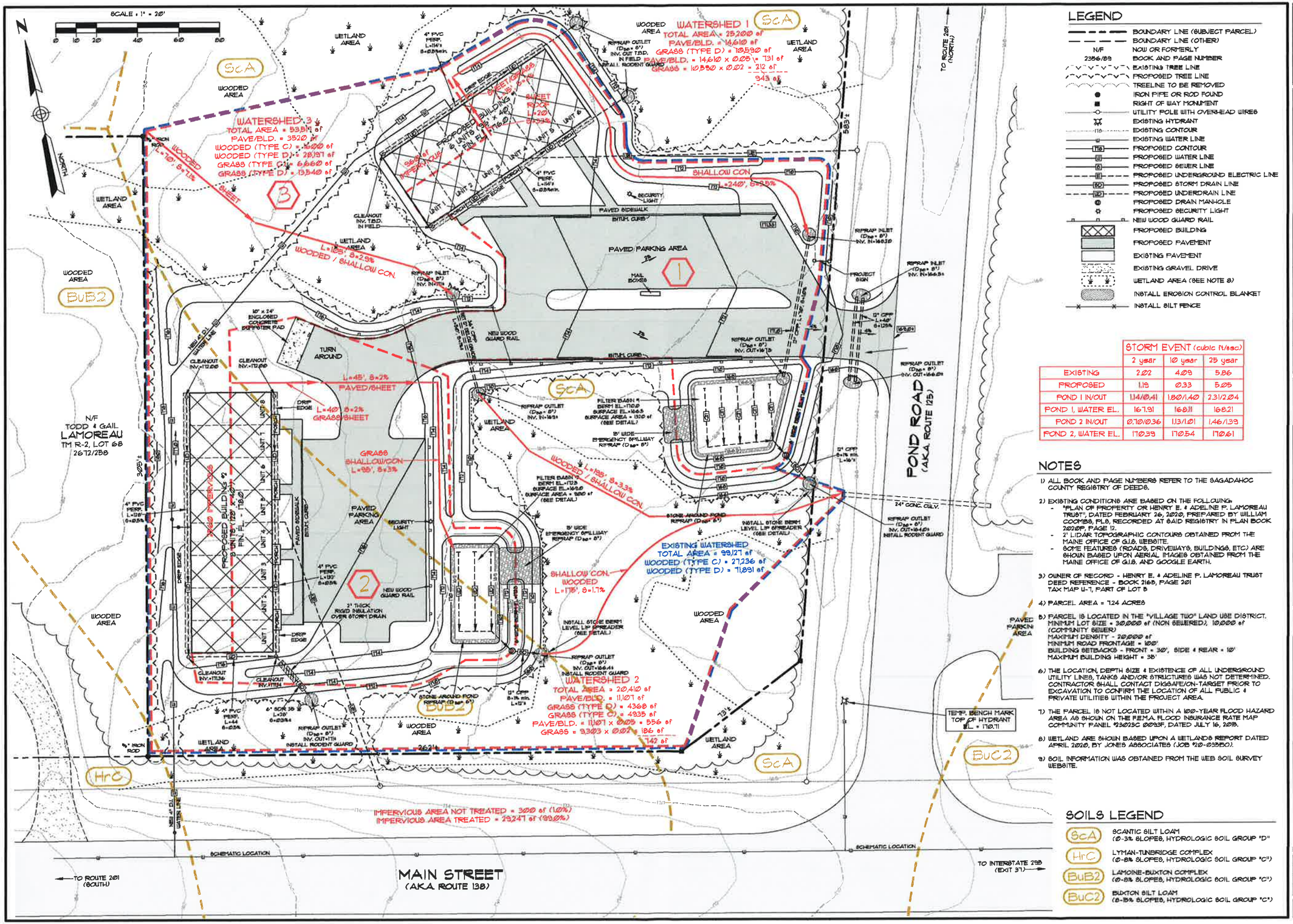
SJR ENGINEERING

CONSTRUCTION NOTES & DETAILS

SAMMCO WOODS
POND ROAD & MAIN STREET, BOWDOINHAM, ME
PREPARED FOR
SAMMCO HOLDINGS LLC
164 APPLECREST DRIVE - YARMOUTH, ME

DATE	PROJECT
JULY 3, 2021	2021-22
DRAWN BY	SCALE
SJR	AS NOTED

SHEET 5



	STORM EVENT (cubic ft/sec)		
	2 year	10 year	25 year
EXISTING	2.02	4.09	5.86
PROPOSED	1.19	0.33	5.25
POND 1 IN/OUT	1.14/0.41	1.80/1.40	2.31/2.24
POND 1, WATER EL.	167.91	168.11	168.21
POND 2 IN/OUT	0.70/0.36	1.13/1.01	1.46/1.39
POND 2, WATER EL.	170.39	170.54	170.61

NOTES

1) ALL BOOK AND PAGE NUMBERS REFER TO THE SAGADAHOC COUNTY REGISTRY OF DEEDS.

2) EXISTING CONDITIONS ARE BASED ON THE FOLLOWING:
   - "PLAN OF PROPERTY OF HENRY E. & ADELINE P. LAMOREAU TRUST", DATED FEBRUARY 26, 2020, PREPARED BY WILLIAM COOMBS, PLS, RECORDED AT SAID REGISTRY IN PLAN BOOK 2020PP, PAGE 12.
   - 2' LIDAR TOPOGRAPHIC CONTOURS OBTAINED FROM THE MAINE OFFICE OF GIS, WEBSITE.
   - SOME FEATURES (ROADS, DRIVEWAYS, BUILDINGS, ETC.) ARE SHOWN BASED UPON AERIAL IMAGES OBTAINED FROM THE MAINE OFFICE OF GIS, AND GOOGLE EARTH.

3) OWNER OF RECORD - HENRY E. & ADELINE P. LAMOREAU TRUST
   DEED REFERENCE - BOOK 2165, PAGE 201
   TAX MAP U-7, PART OF LOT 8

4) PARCEL AREA = 7.24 ACRES

5) PARCEL IS LOCATED IN THE "VILLAGE TWO" LAND USE DISTRICT.
   MINIMUM LOT SIZE = 30,000 sf (NON SEWERED); 10,000 sf (COMMUNITY SEWER)
   MAXIMUM DENSITY - 20,000 sf
   MINIMUM ROAD FRONTAGE = 100'
   BUILDING SETBACKS - FRONT = 30', SIDE & REAR = 10'
   MAXIMUM BUILDING HEIGHT = 35'

6) THE LOCATION, DEPTH SIZE & EXISTENCE OF ALL UNDERGROUND UTILITY LINES, TANKS AND/OR STRUCTURES WAS NOT DETERMINED. CONTRACTOR SHALL CONTACT DIGSAFE/ON-TARGET PRIOR TO EXCAVATION TO CONFIRM THE LOCATION OF ALL PUBLIC & PRIVATE UTILITIES WITHIN THE PROJECT AREA.

7) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP COMMUNITY PANEL #230236 0003F, DATED JULY 16, 2015.

8) WETLAND ARE SHOWN BASED UPON A WETLANDS REPORT DATED APRIL 2020, BY JONES ASSOCIATES (JOB #20-035BO).

9) SOIL INFORMATION WAS OBTAINED FROM THE WEB SOIL SURVEY WEBSITE.

SOILS LEGEND

- ScA — SCANTIC SILT LOAM (0-3% SLOPES, HYDROLOGIC SOIL GROUP "D")
- HrC — LYMAN-TUNBRIDGE COMPLEX (0-8% SLOPES, HYDROLOGIC SOIL GROUP "C")
- BuB2 — LAMOINE-BUXTON COMPLEX (0-8% SLOPES, HYDROLOGIC SOIL GROUP "C")
- BuC2 — BUXTON SILT LOAM (8-15% SLOPES, HYDROLOGIC SOIL GROUP "C")

REV.	BY:	DATE:	CHANGES:

SJR ENGINEERING, INC.
16 THURSTON DRIVE
MONMOUTH, MAINE 04259
(207) 242-6248 tel
steve@sjreng.com
SJR ENGINEERING

WATERSHED PLAN
SAMMCO WOODS
POND ROAD & MAIN STREET, BOWDOINHAM, ME
PREPARED FOR
SAMMCO HOLDINGS LLC
164 APPLECREST DRIVE - YARMOUTH, ME

DATE	PROJECT
JULY 3, 2021	2021-22
DRAWN BY	SCALE
SJR	1" = 20'

SHEET WS-1