STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0016

JOHN ELIAS BALDACCI
GOVERNOR

DAVID A. COLE
COMMISSIONER

Please Note: The attached Army Corps of Engineers Permit contains details on the required Mitigation of the project. The Maine Department of Transportation will/has put the Mitigation Project out as a separate contract and contractors bidding on this project should not consider the Wetland Mitigation Plan as work to be completed under this contract. If you have any questions, please call Ben Condon @ 207-592-0921

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THE MAINE DEPARMENT OF TRANSPORTATION IS AN AFFIRMATIVE ACTION - EQUAL OPPORTUNITY EMPLOYER

DEPARTMENT OF THE ARMY PERMIT

Permittee Maine Dept. of Transportation, 16 State House Station, Augusta, Maine 04333

Permit No. NAE-2005-4220

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

Place fill in numerous streams and in adjacent freshwater wetlands in the vicinity of Gorham, Maine in order to construct a bypass of Gorham Village. The proposed bypass consists of two sections, a two-lane, southwest bypass of the village that connects Route 114 just south of

(Project Description Continued on Page 4)

This work is shown on the attached plans entitled "Bypass, GORHAM, CUMBERLAND" on 30 sheets undated.

Project Location:

In named and unnamed streams and in adjacent freshwater wetlands at Gorham, Maine

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on 19 JUN 2012. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee shall ensure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for work.

(Special Conditions continued on Page 4)

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

X Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Kenneth L. Sweeney Dep Chief Eng — 6/20/07

(PERMITTEE) *(DATE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Christine Godfrey — 6-18-07

(DISTRICT ENGINEER) *(DATE)*

Curtis L. Thalken
Colonel, Corps of Engineers
District Commander

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) *(DATE)*

☆U.S. GOVERNMENT PRINTING OFFICE: 1986 — 717-425

(Project Description Continued from Page 1)

Waterhouse Road to Route 25 west of Cressey Road; and a separated, two-lane northerly bypass of the village connecting Route 25 near West Gorham to Route 25 at Mosher Corner. The total length of the bypass is 8.42 miles. The project will be built in two distinct phases. **Phase 1, the subject of this permit, will impact approximately 12.74 acres of wetland and stream bed.** Approximately 29.14 acres of wetland stream bed will be impacted by the bypass project as a whole.

DOT PIN: 8151.XX

(Special Conditions continued from Page 2)

If the permit is issued after the construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. If the permit is issued after receipt of bids or quotes, the entire permit shall be included in the contract or sub-contract as a change order. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

2. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland. All exposed soils resulting from the construction will be promptly seeded and mulched in order to achieve vegetative stabilization.

3. The permittee shall complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work.

4. The permittee shall implement all terms and conditions contained in the attached water quality certification from the Maine Dept. of Environmental Protection dated "May 16, 2007". Copies of all required submittals shall also be provided to the Corps.

5. This permit authorizes impacts to only those areas of wetlands shown on the attached plans. <u>No other filling, clearing or other disturbance in wetlands shall occur.</u> Furthermore, this permit only authorizes those impacts for which the permittee has a valid Water Quality Certification & Permit from the State of Maine (Phase 1). No work may be performed on the Phase 2 project until a separate Corps of Engineers permit and a Water Quality Certification & Permit from the Maine Dept. of Environmental Protection has been received.

(Special Conditions Continued on Page 5)

(Special Conditions Continued from Page 4)

6. The permittee and his contractors shall conduct a pre-construction meeting with Corps, Maine Dept. of Environmental Protection and other appropriate resource agency staff prior to construction at the project site.

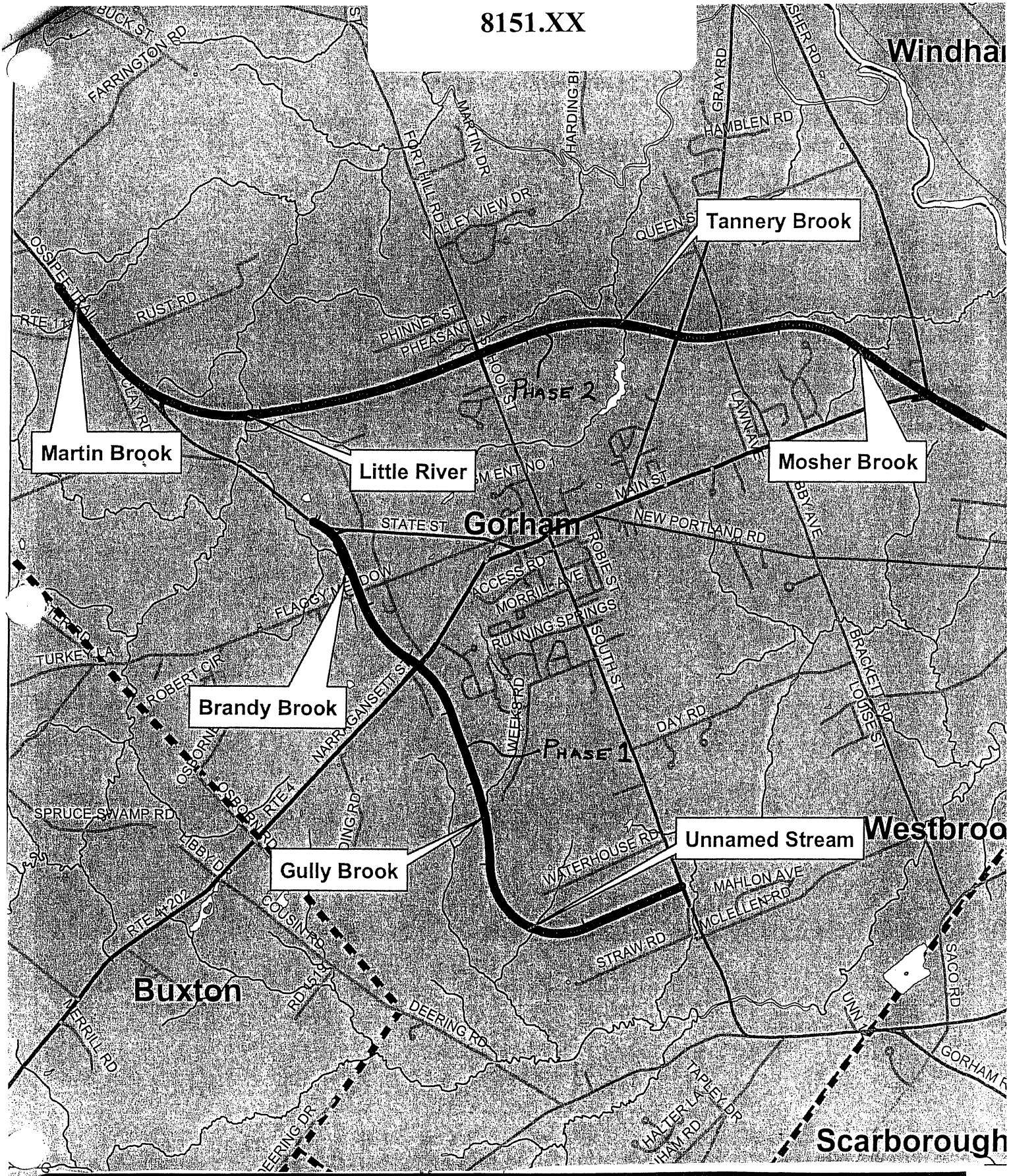
7. Mitigation shall be performed in accordance with the attached mitigation plan entitled, "Compensatory Mitigation Project: Wetland Creation, Wetland Preservation, Upland Buffer Preservation, and Vernal Pool Habitat Creation at Grondin Aggregates' Larrabee Farms Wetland Mitigation Site, Scarborough, Maine" dated "1 December 2006".

8. Your responsibility to complete the required compensatory mitigation as set forth in Special Condition 7 will not be considered fulfilled until you have demonstrated mitigation success and have received written verification from the U.S. Army Corps of Engineers. The term 'mitigation success' means success as defined in the mitigation plan this permit requires you to implement. Demonstration of success under this permit shall consist of the required mitigation monitoring, corrective measures, submittal of mitigation monitoring reports, and a final wetland assessment.

9. Culverts shall be installed with their inverts at or below existing grade so as to preserve hydraulic connectivity, at its present level, between the wetlands on either side of the road. If future inspections discover wetland damage likely due to lack of hydraulic connectivity, the Permittee shall take necessary measures to correct this deficiency. Any road crossing of wetlands shall be culverted to municipal or state standards (number & size) sufficient to prevent restriction of flows and/or faunal movement.

10. Except where stated otherwise, reports, drawings, correspondence and any other submittals required by this permit shall be marked with the words "Permit No. NAE-2005-4220" and shall be addressed to "Inspection Section, CENAE-R, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751." Documents which are not marked and addressed in this manner may not reach their intended destination and do not comply with the requirements of this permit.

11. Instream work within Gully Brook, the unnamed tributary to Gully Brook, Brandy Brook, and Trout Brook will occur between July 15 and October 1 of any year in order to minimize impacts to fisheries and local water quality.



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	Bypass GORHAM CUMBERLAND	SHEET NUMBER
8151.20	PLANS	1 OF 30

Gorham Bypass
8151.XX

Station	Wetland #	PEM	PEM WSS	PSS	PSS WSS	PFO	PFO WSS	PUB	Stream Area	L.F. Stream	GRD	FFA	FSH	STR	NRRT	PE	SSS	WH	OTHER
Beginning of Phase 1																			
2+50L		527																	
100+00L									467	45									
100+75 - 103+50R				933	2810														
103+25 -106+50	B	2704										X		X	X				
109+10 - 114+10	A	4015										X		X	X				
1000+25 - 1001+00L	C	809		5488							X				X			X	
1001+25 - 1004+50	E	8983									X			X				X	
1008+00 - 1010+60	F					12382						X		X				X	
1018+00 - 1020+00	H					7981	1690				X							X	
1032+50 - 1034+50	L					9569					X	X		X	X			X	
1045+00 - 1047+75	M			4329			3714					X	X		X	X		X	
1049+55 - 1054+45	N					33423					X							X	
1055+60 - 1056+25	O	8121									X							X	
1056+50 - 1059+75	O	27242									X							X	
1062+50 - 1063+75	O		9464								X							X	
1069+00 - 1069+60	Q					6861						X						X	
1072+25 - 1072+50	R					2361					X	X						X	
1073+80 - 1074+55	S					6937					X	X						X	
1076+80 - 1077+25	S					1029					X	X						X	
1079+50 - 1080+00	T					110					X	X			X			X	
1080+25 - 1080+90	T					4371					X	X			X			X	
1082+75 - 1084+25	U					1499	3221		1412	461	X	X	X	X	X	X		X	
1093+75 - 1094+40	U					534	3920		556	367	X	X	X	X	X	X	X	X	
1115+60 - 1128+70	V					123414				*	X	X						X	
1144+50 - 1157+50	W					116140	5241		190	220	X	X			X	X		X	
1156+50 - 1158+30R	W					665	1427				X	X			X	X		X	
Flaggy 402+75 - 403+75R	W						2533		205	65	X	X			X	X		X	
Flaggy 402+50 - 403+50L	X						560		132	33	X	X	X		X			X	
Flaggy 404+00 - 405+25R	W					3068					X	X			X	X		X	
1162+00 -1163+50	X					9613					X	X	X		X			X	
1165+50 - 1171+25	X					10158	28483		1543	1337	X	X	X		X			X	
1172+25 - 1175+00L	Z					6882					X	X							
1174+25 - 1175+30L	Z					1573					X	X							
End of Phase 1																			

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Gorham Bypass
8151.XX

Phase 1 Totals:		**52401**	[redacted]	**9817**	[redacted]	**358570**	[redacted]		**4038**	**2483**									
Impacts:		**W**	**420788 S.F.**	[redacted]	[redacted]	**S.F.**	**4038**	[redacted]	[redacted]										
			9.66 Ac		**1.45 Ac**	**S.F.**	**2483**												
Compensation Ratios:			**1 to 1**		**2 to 1**		**2 to 1**												
[redacted]																			
Count of Principle Functions	**29**										**25**	**22**	**6**	**6**	**15**	**7**	**1**	**26**	**0**
1018, W at 1156 contains a vernal pool																			

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Gorham 8151.XX
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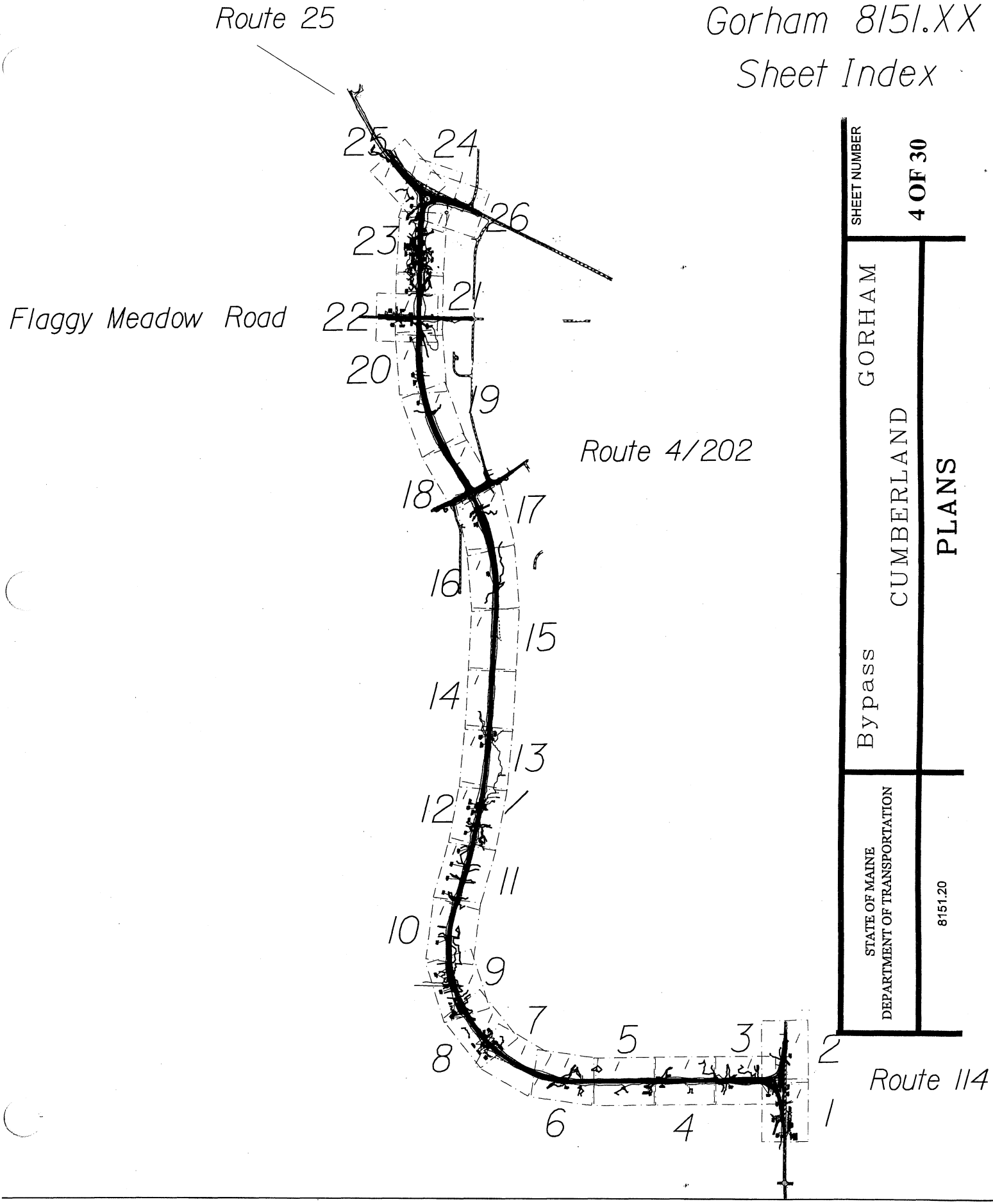

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GORHAM
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Bypass

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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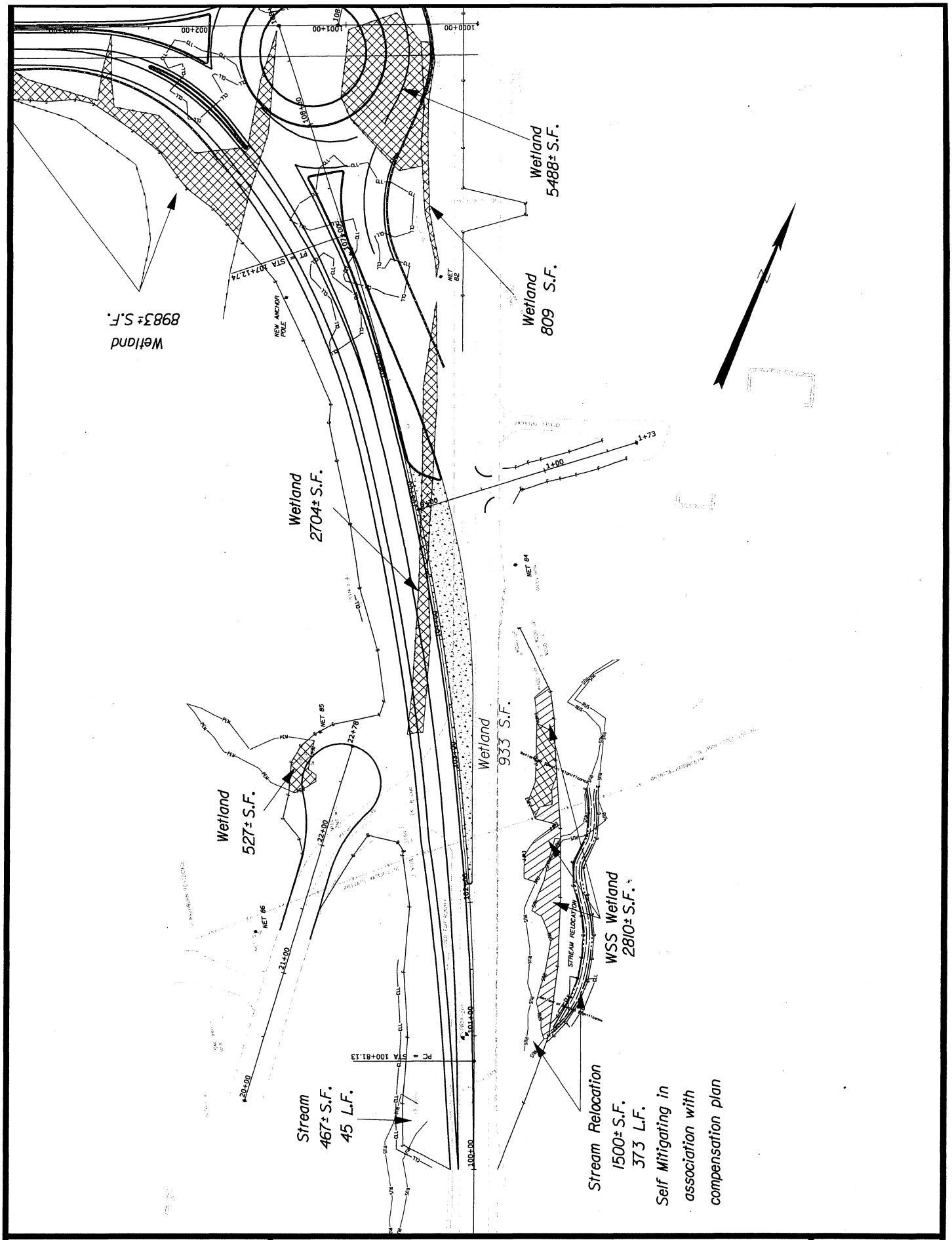

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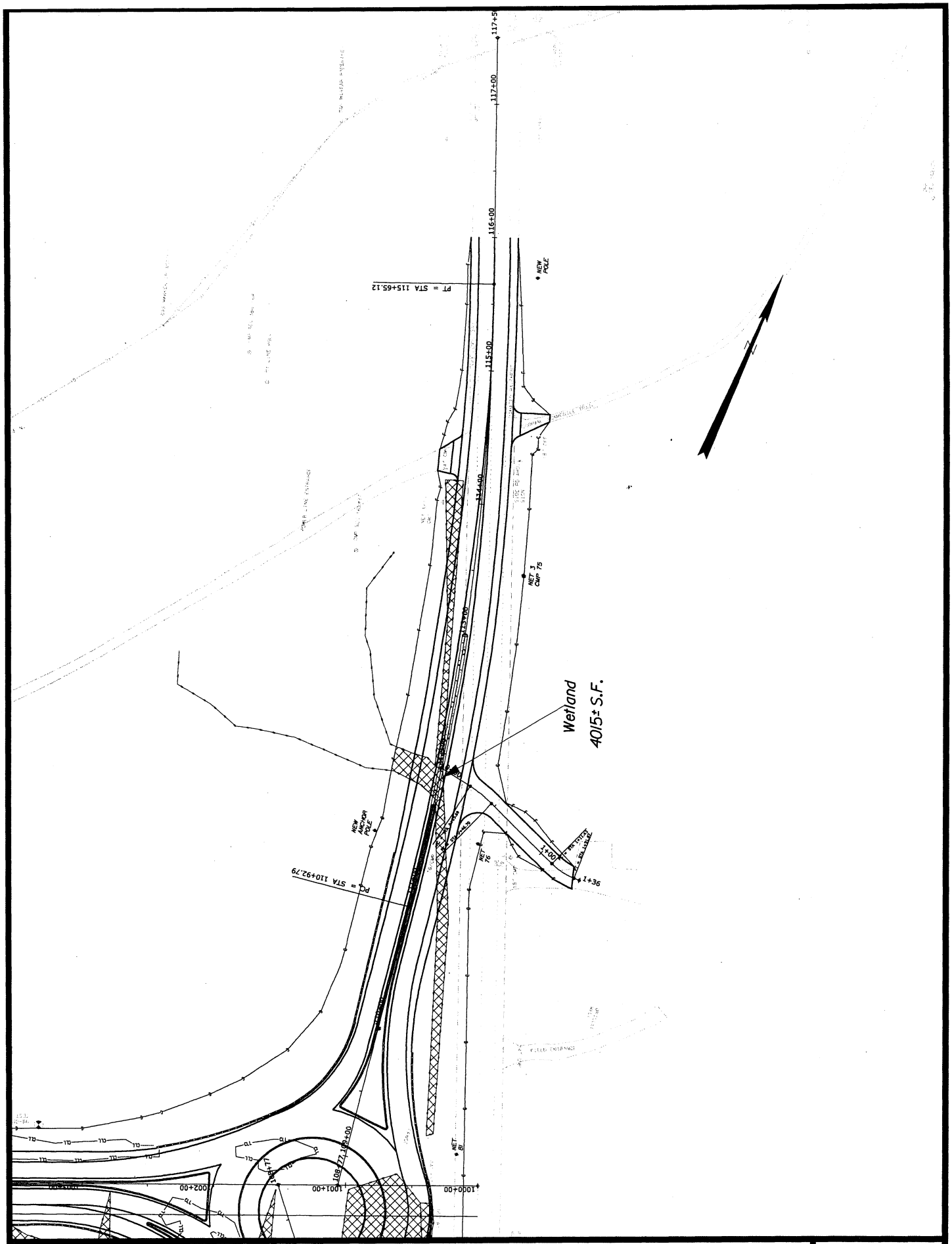

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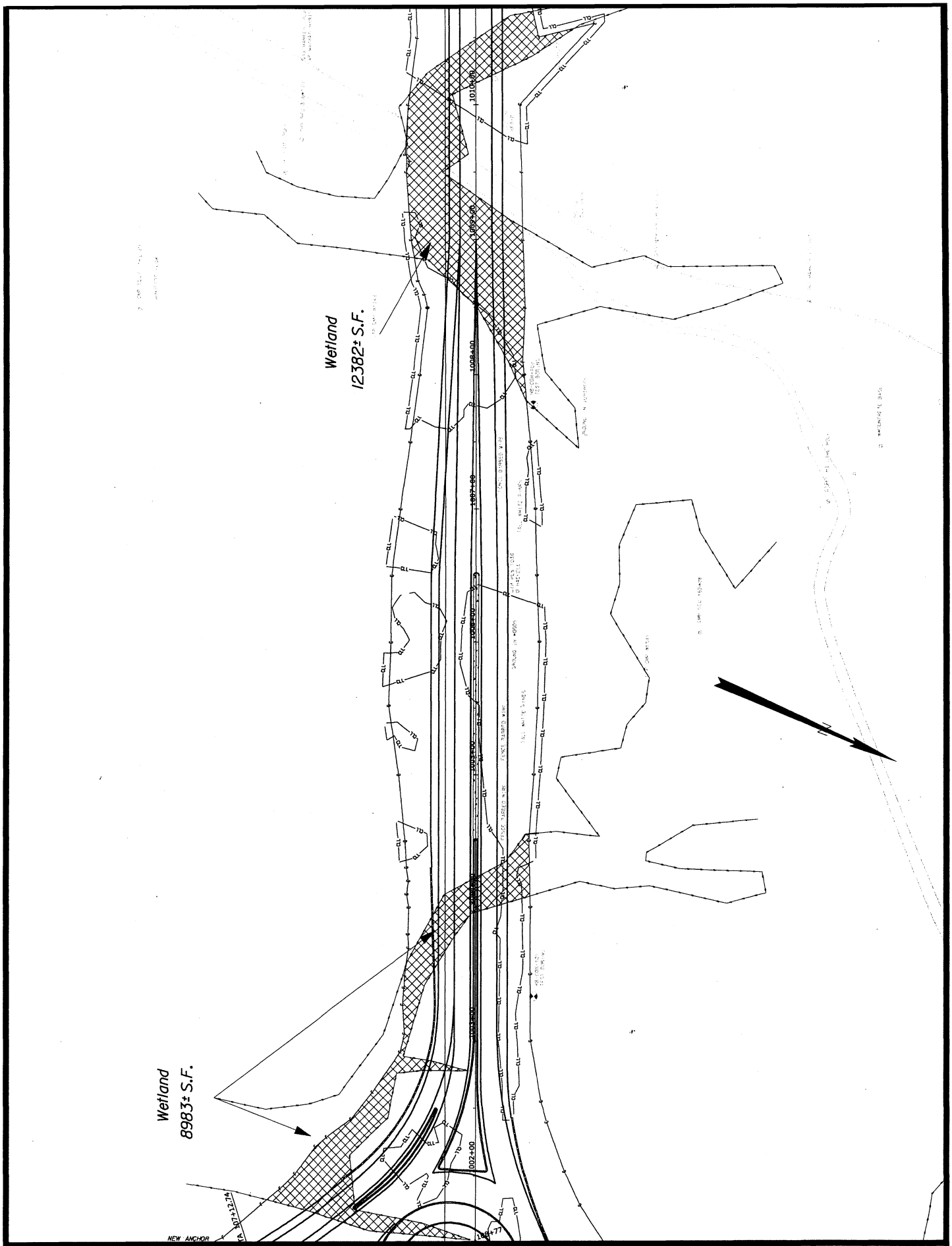

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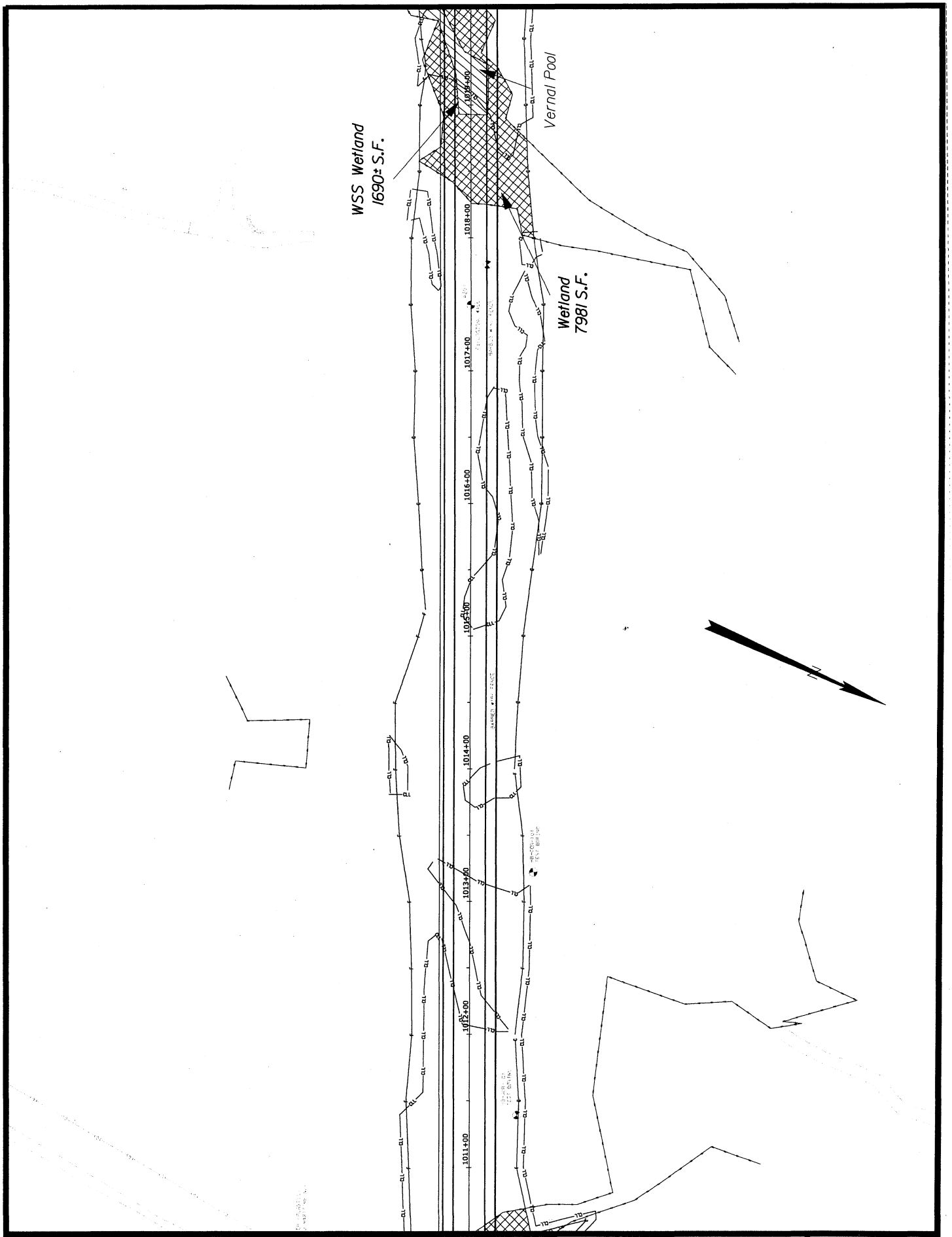

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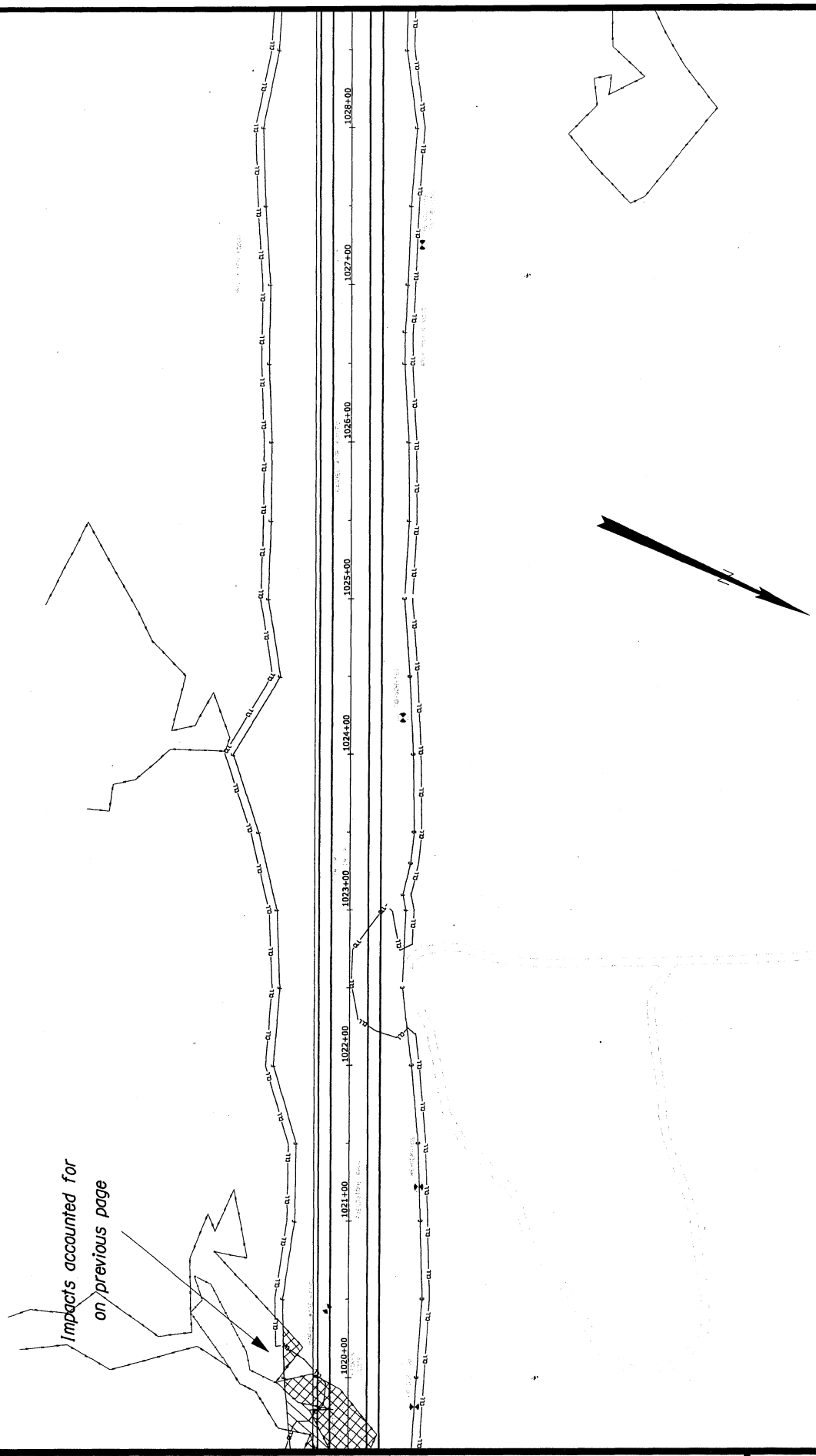

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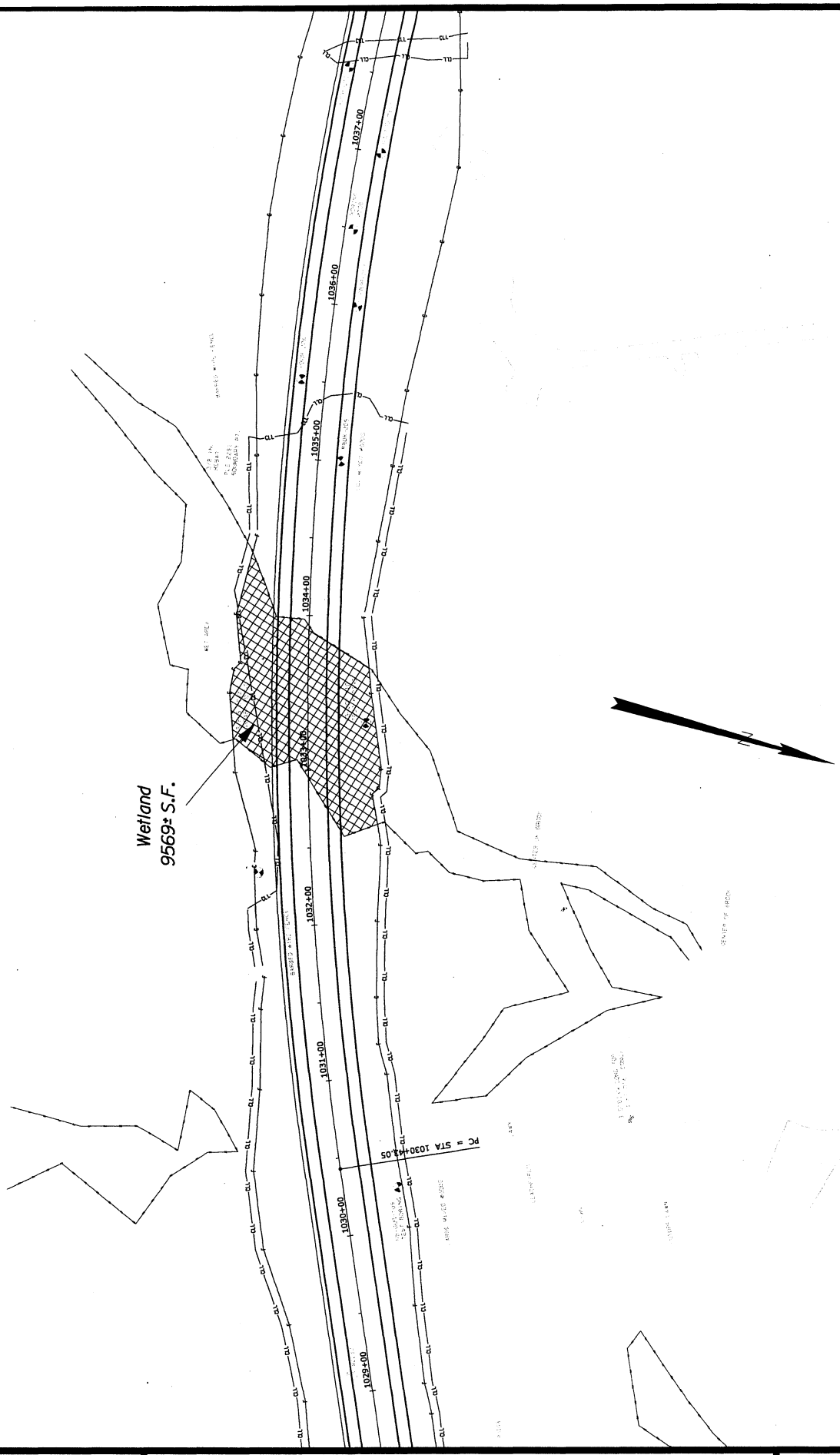

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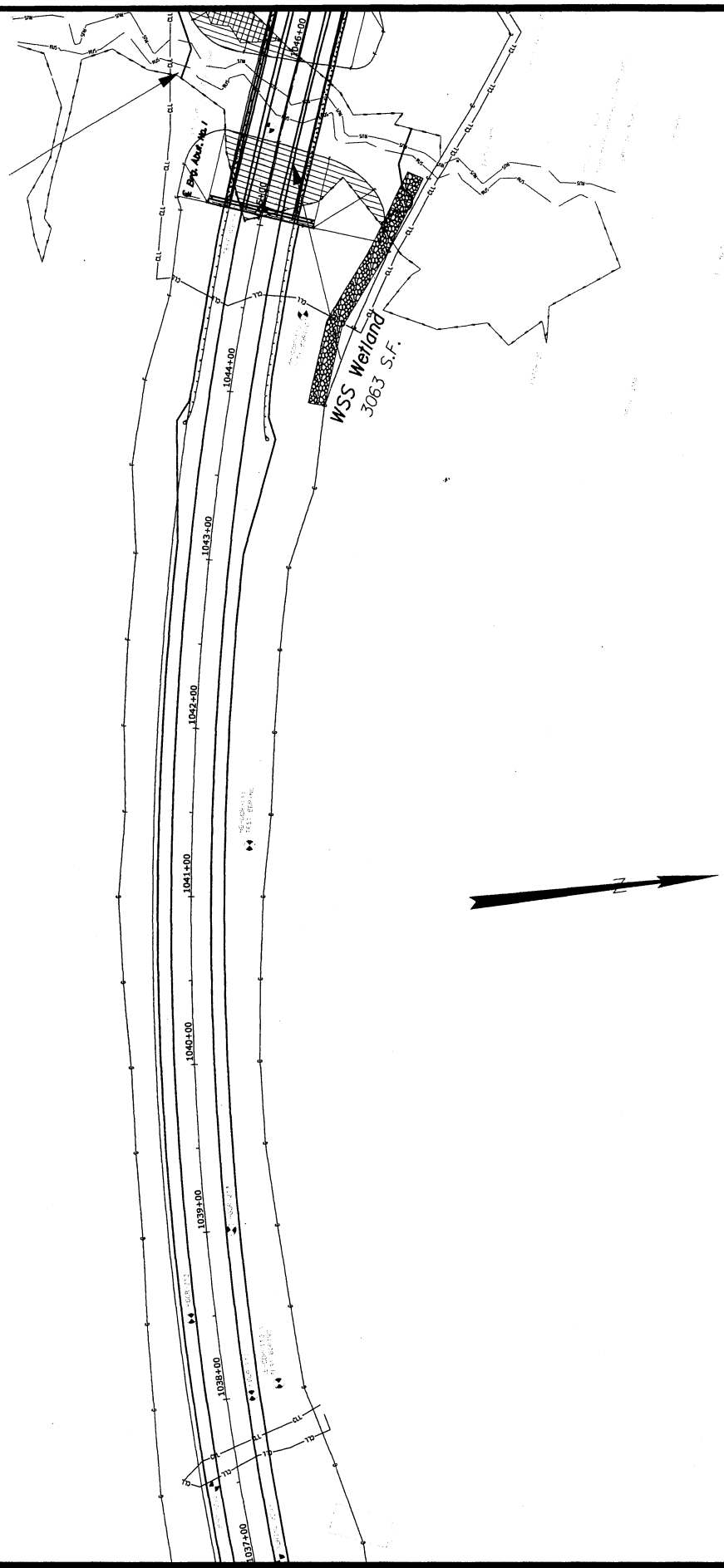

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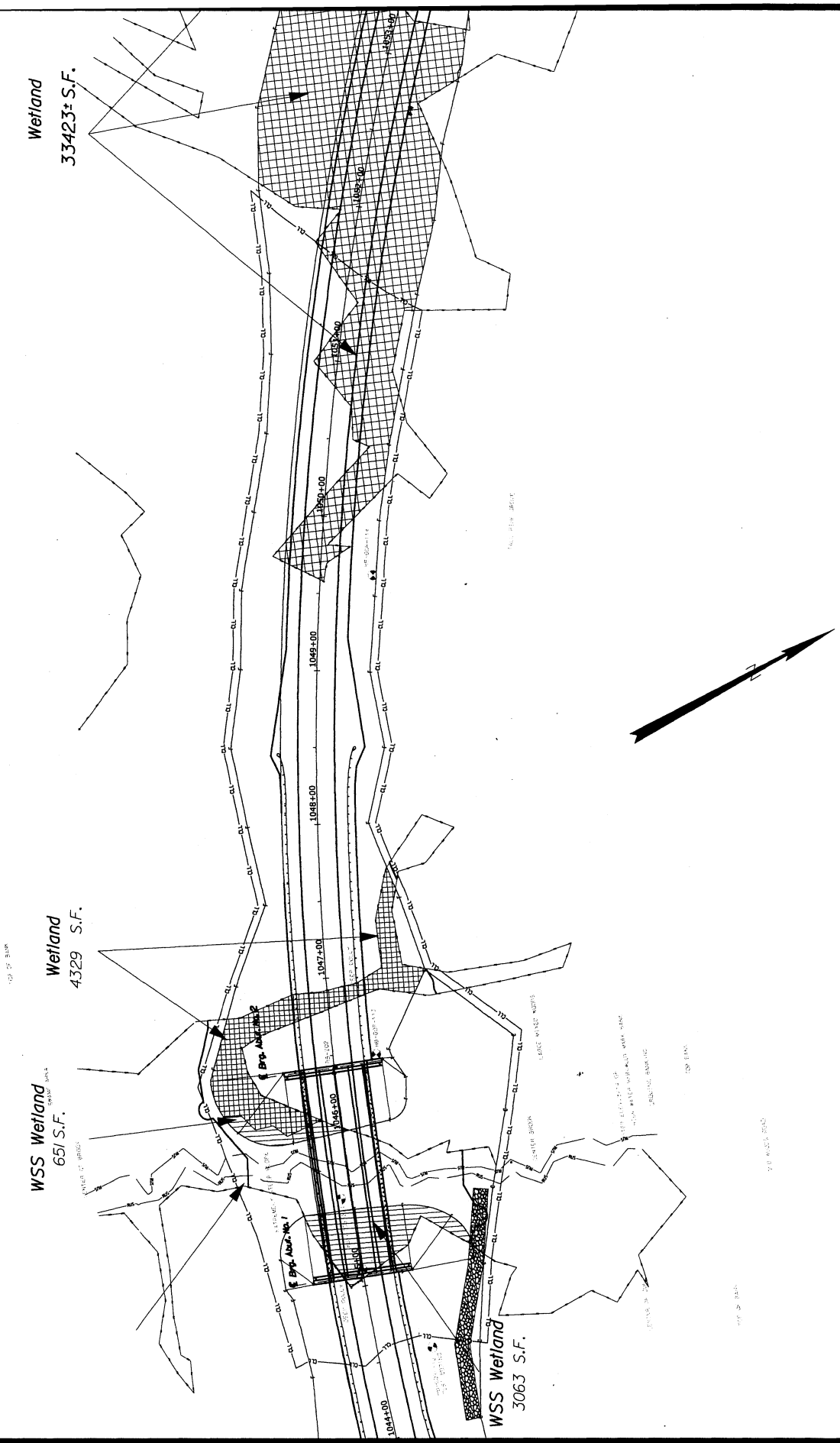

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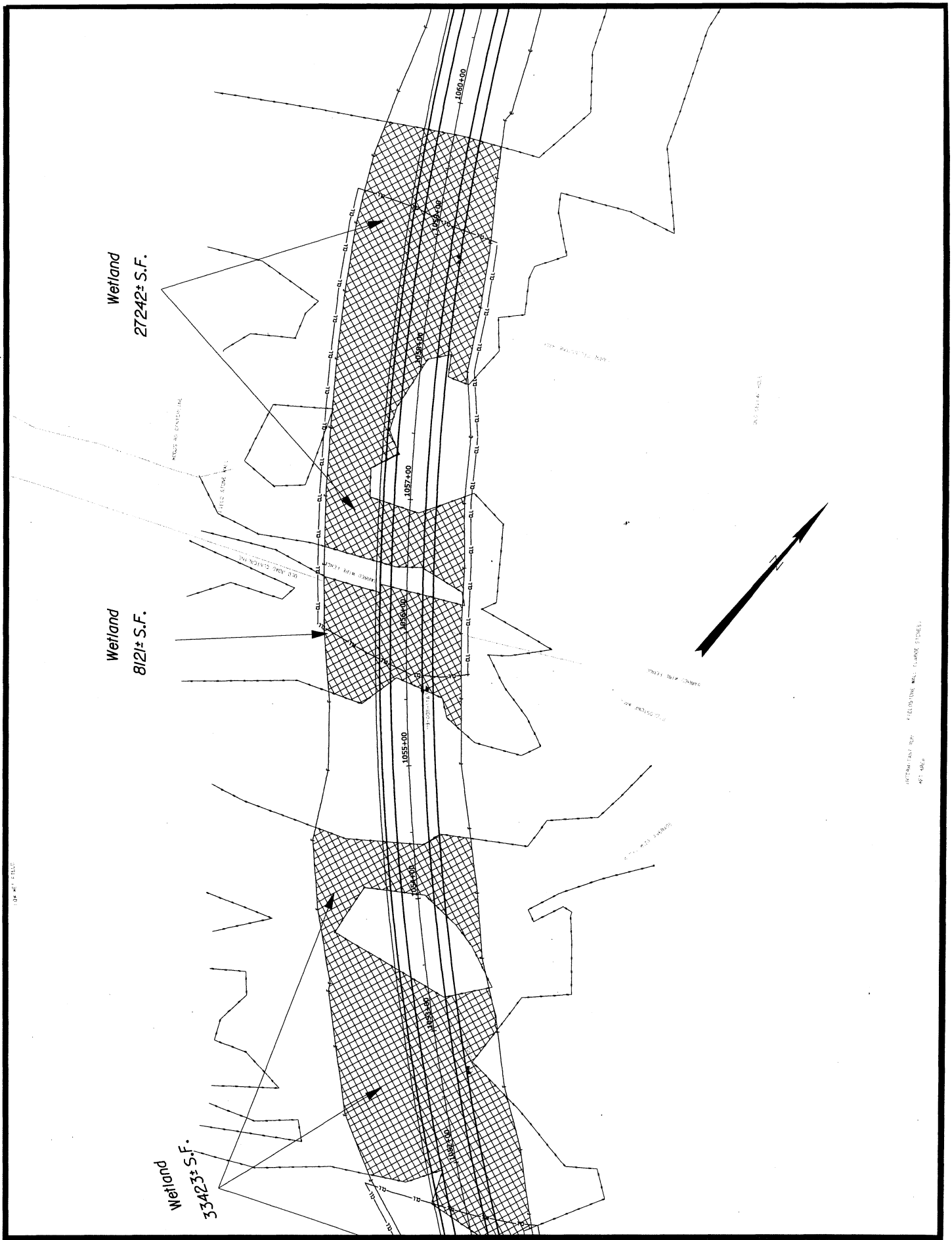

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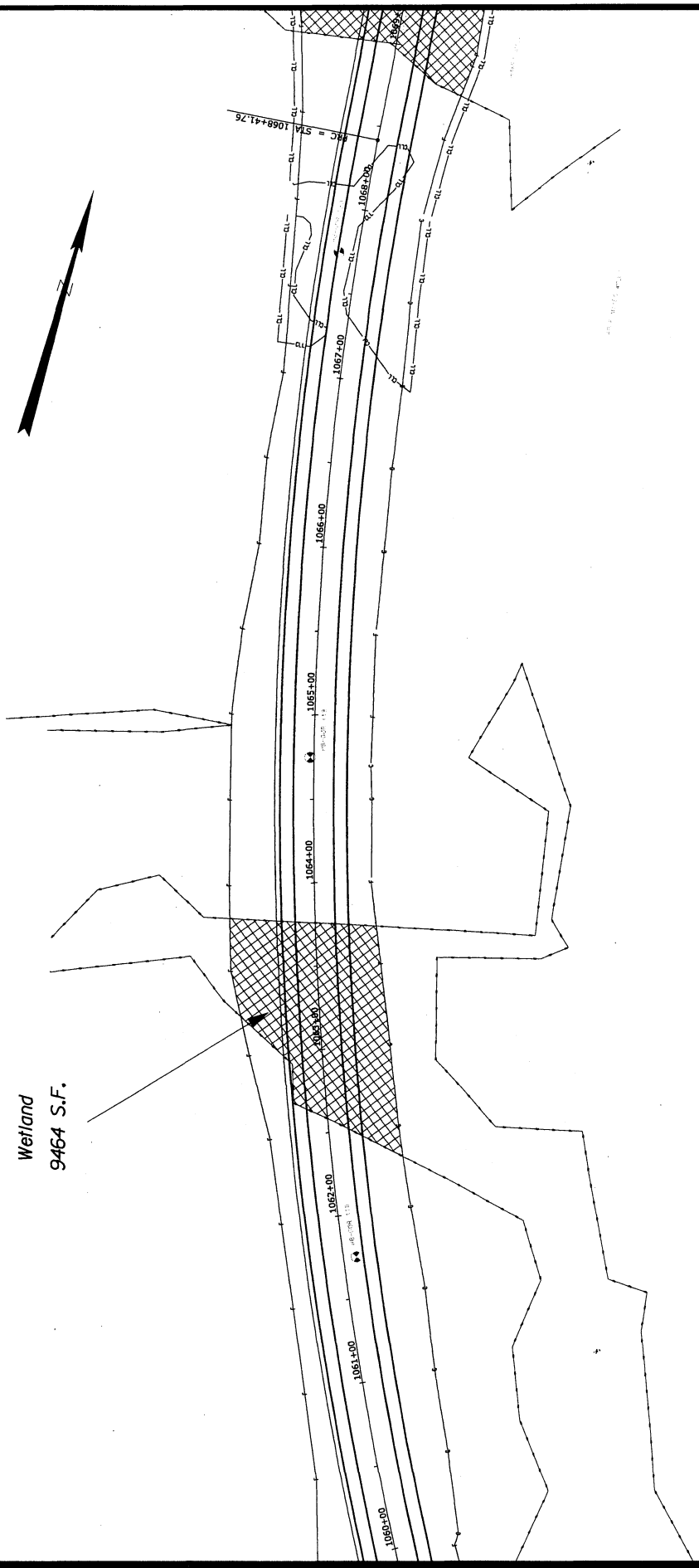

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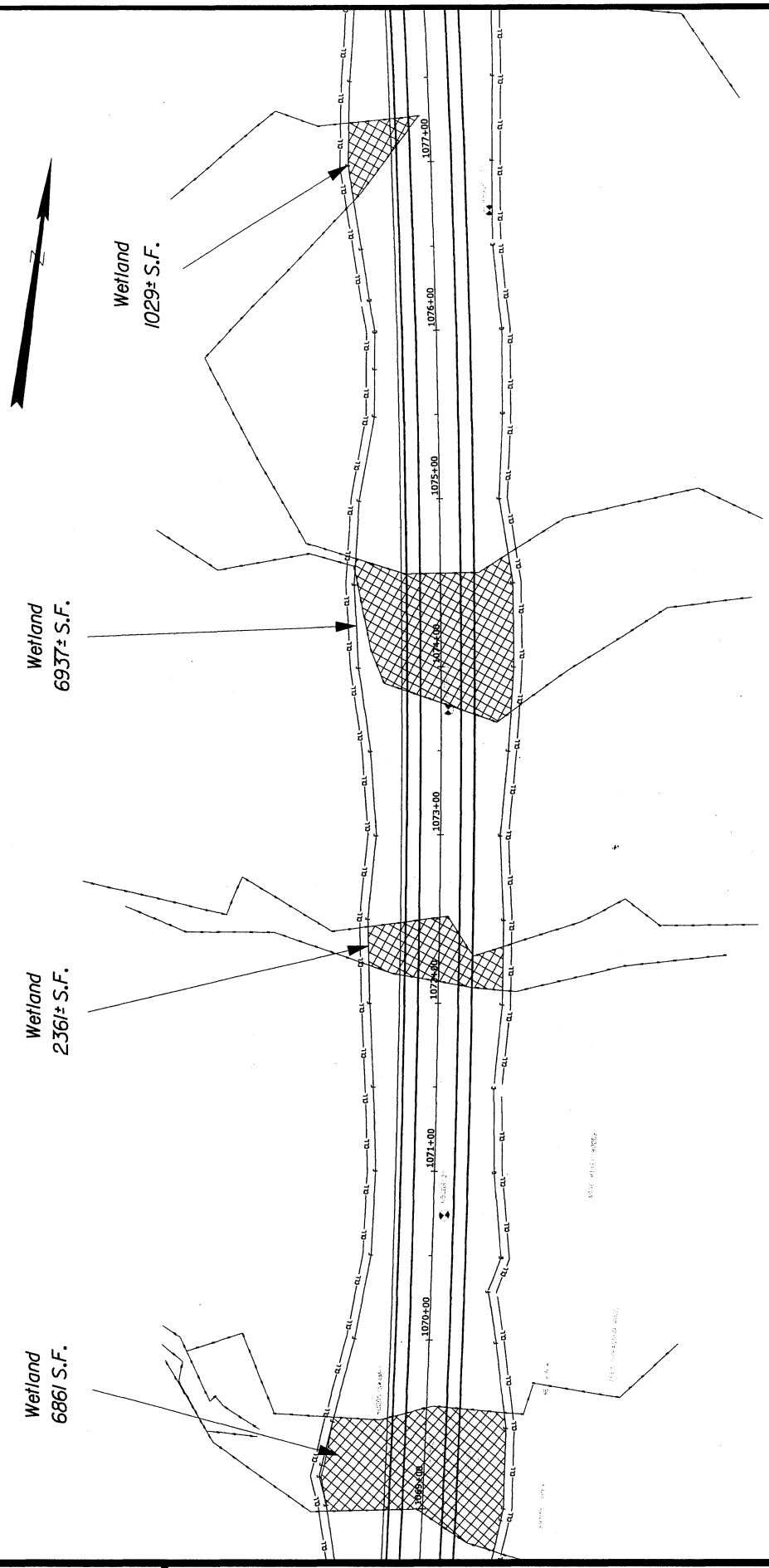

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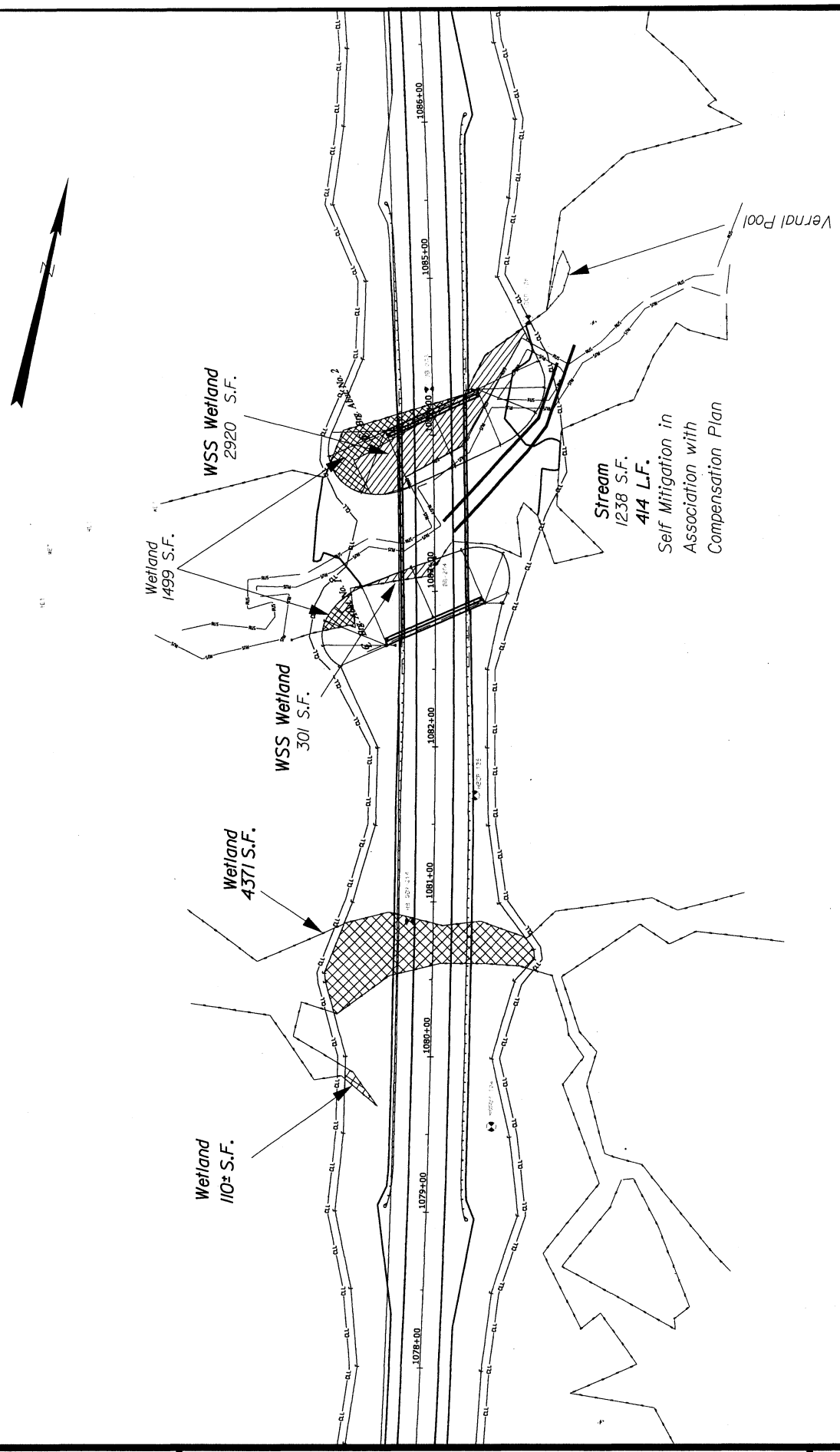

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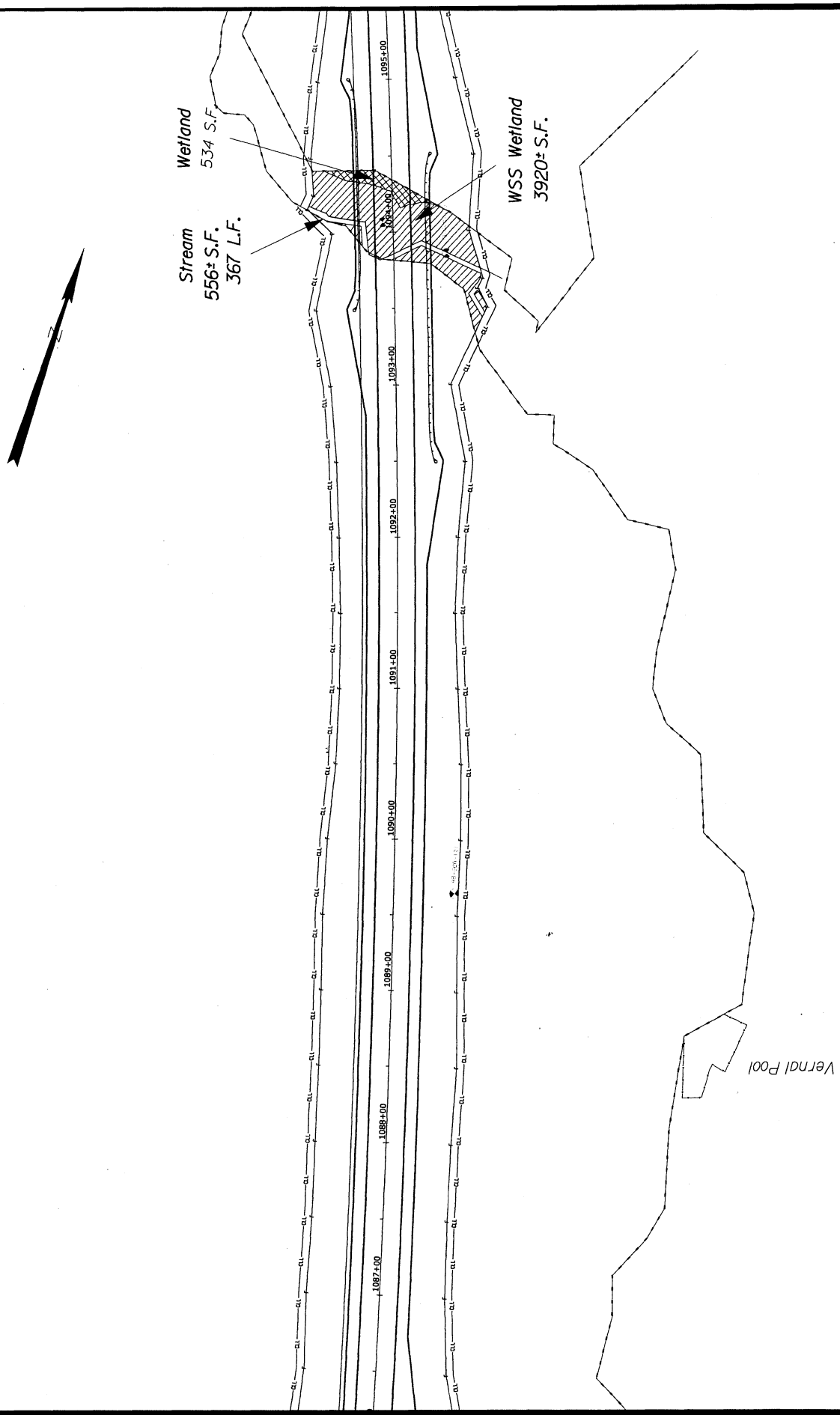

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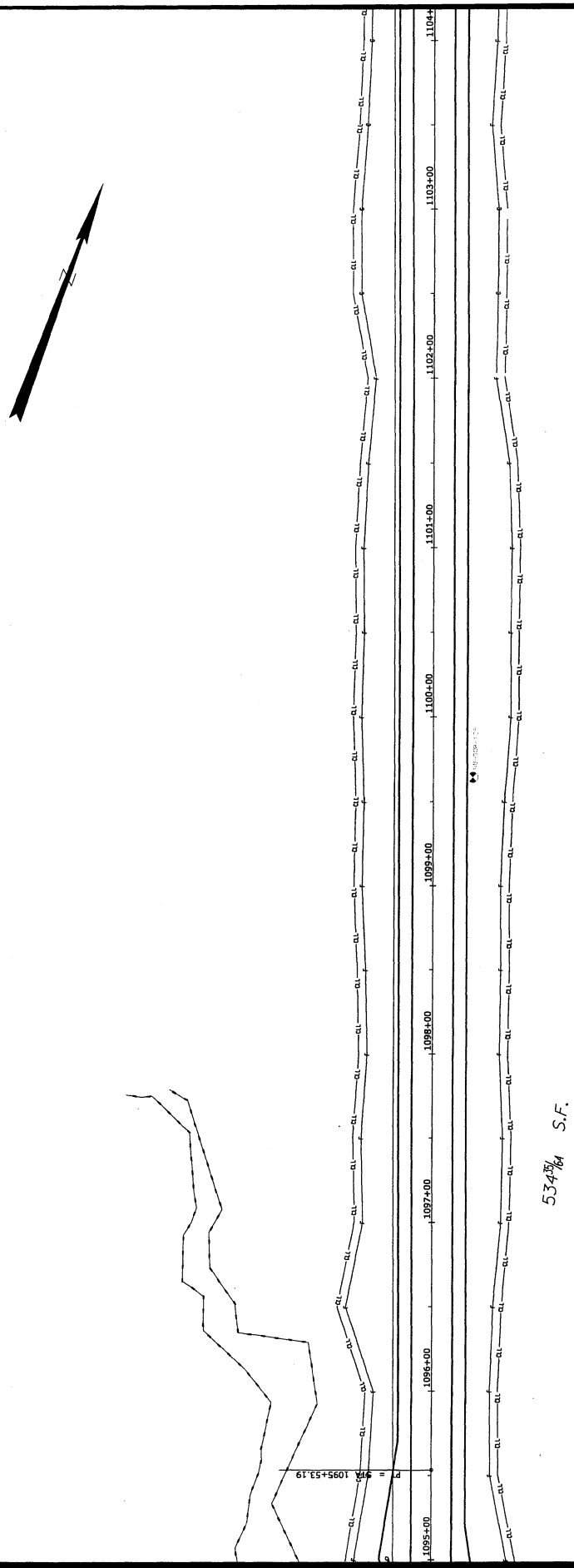

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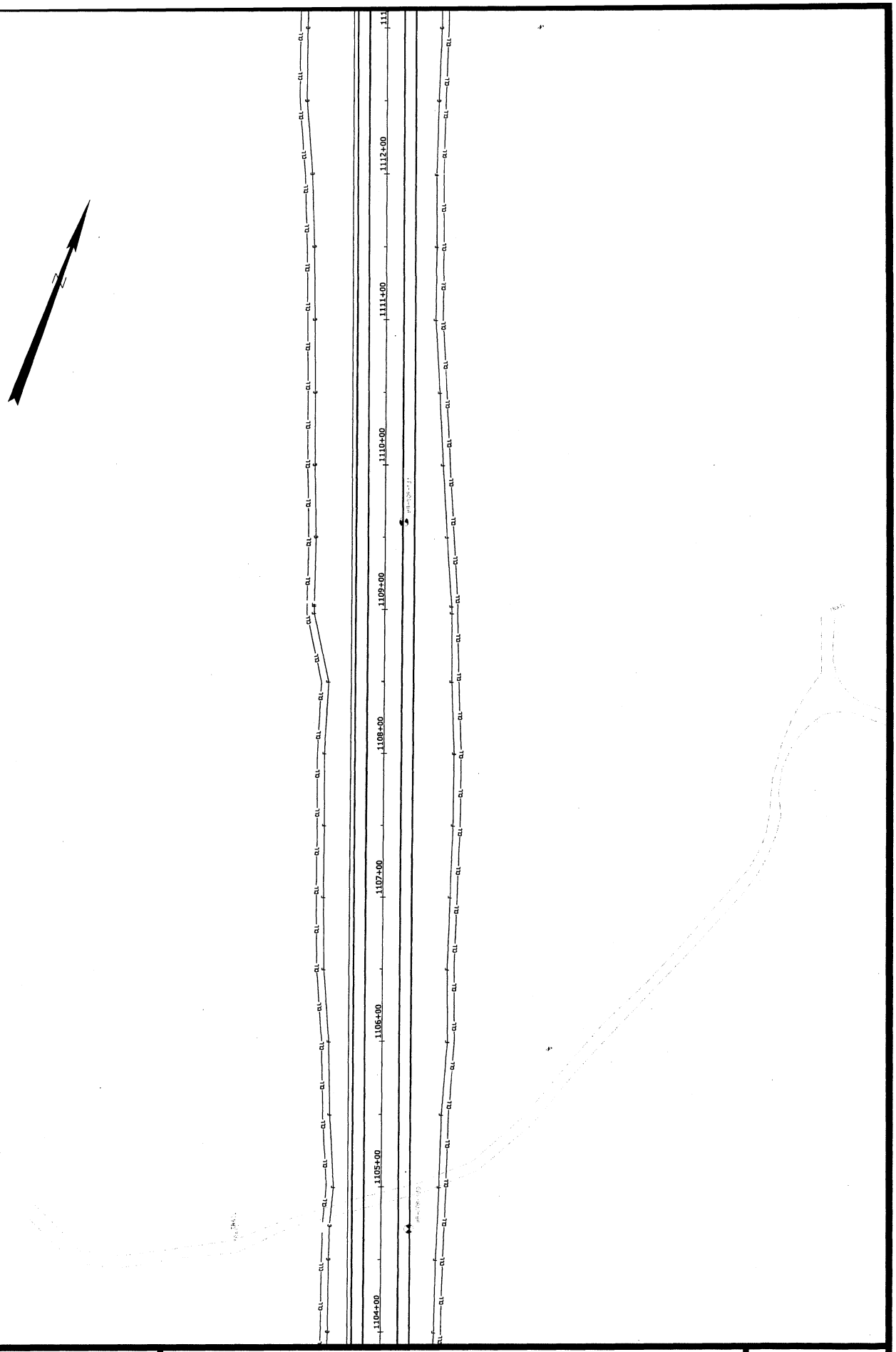

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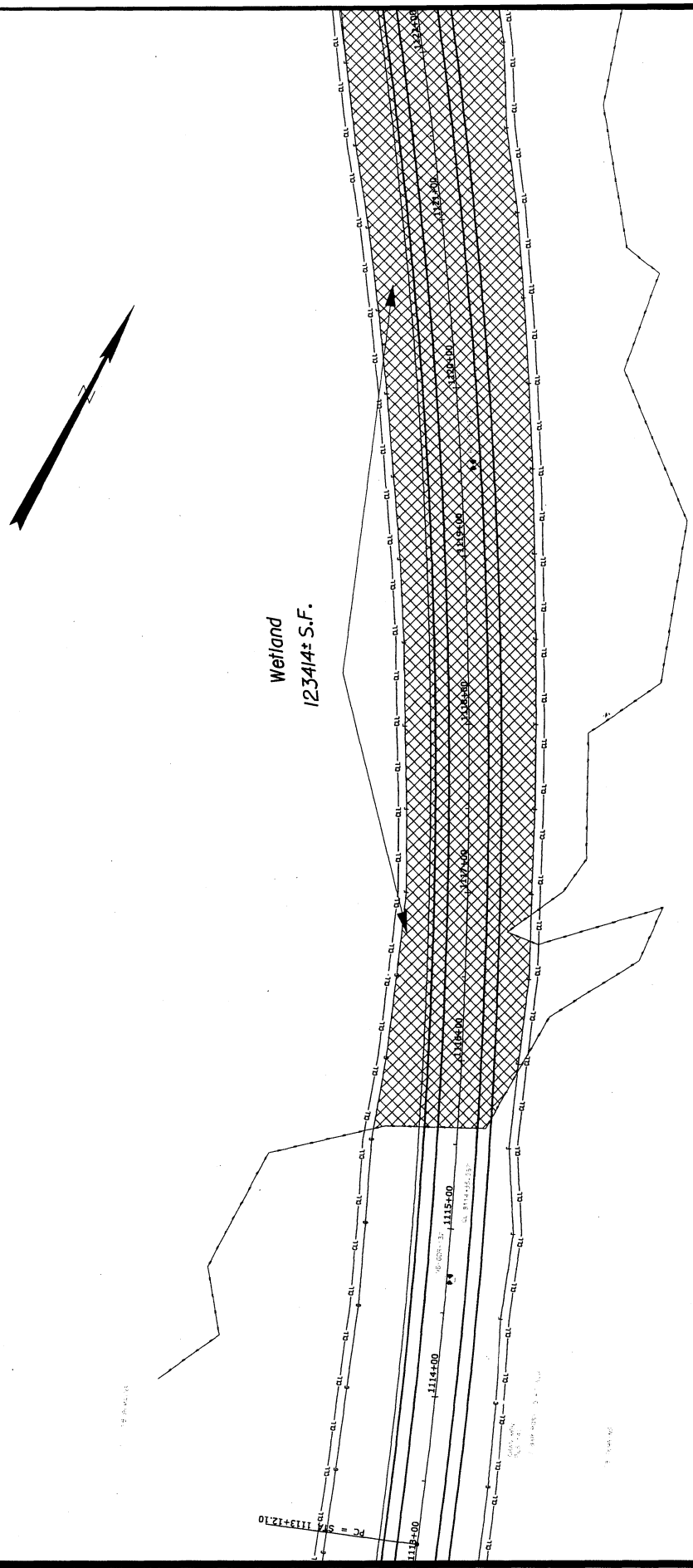

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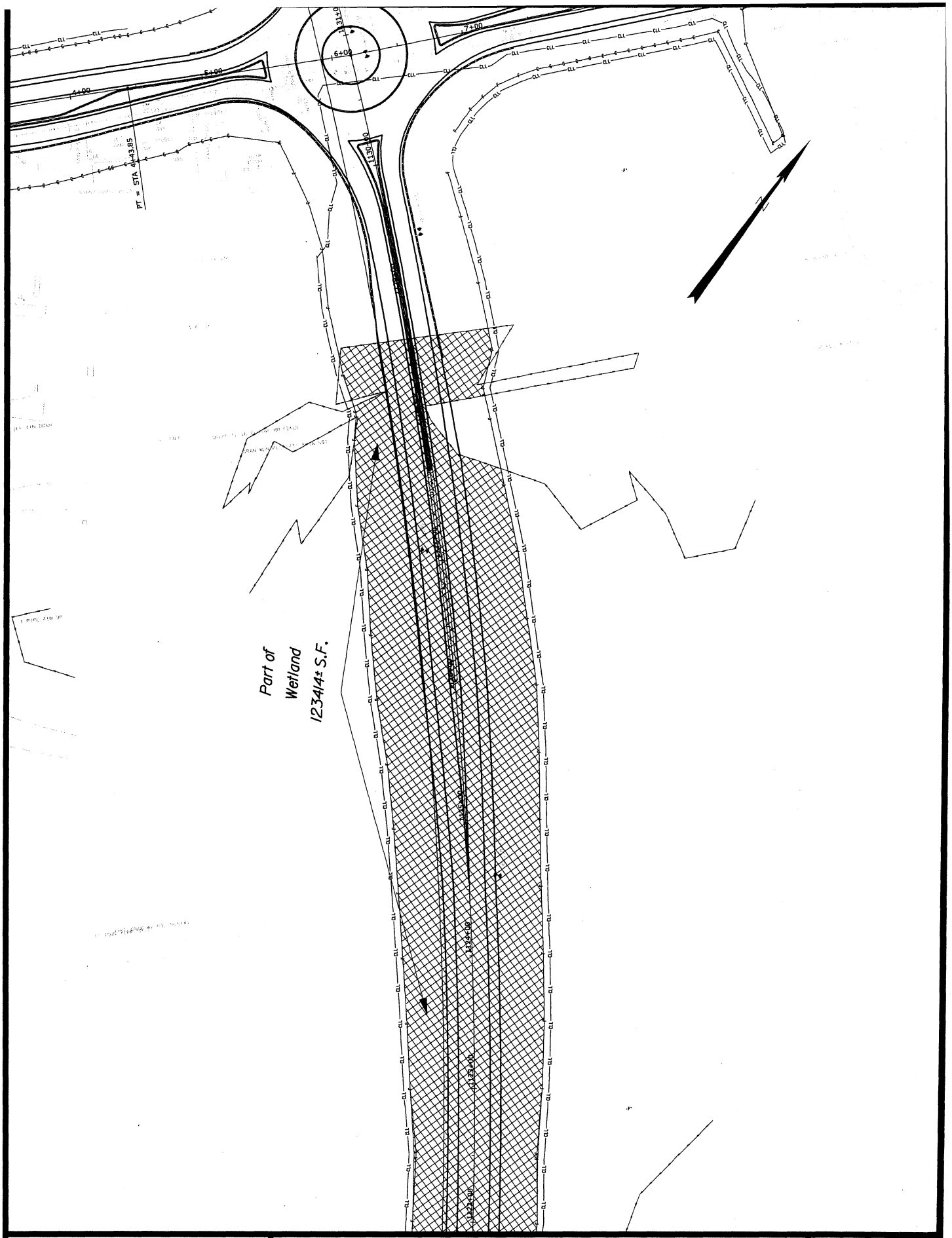

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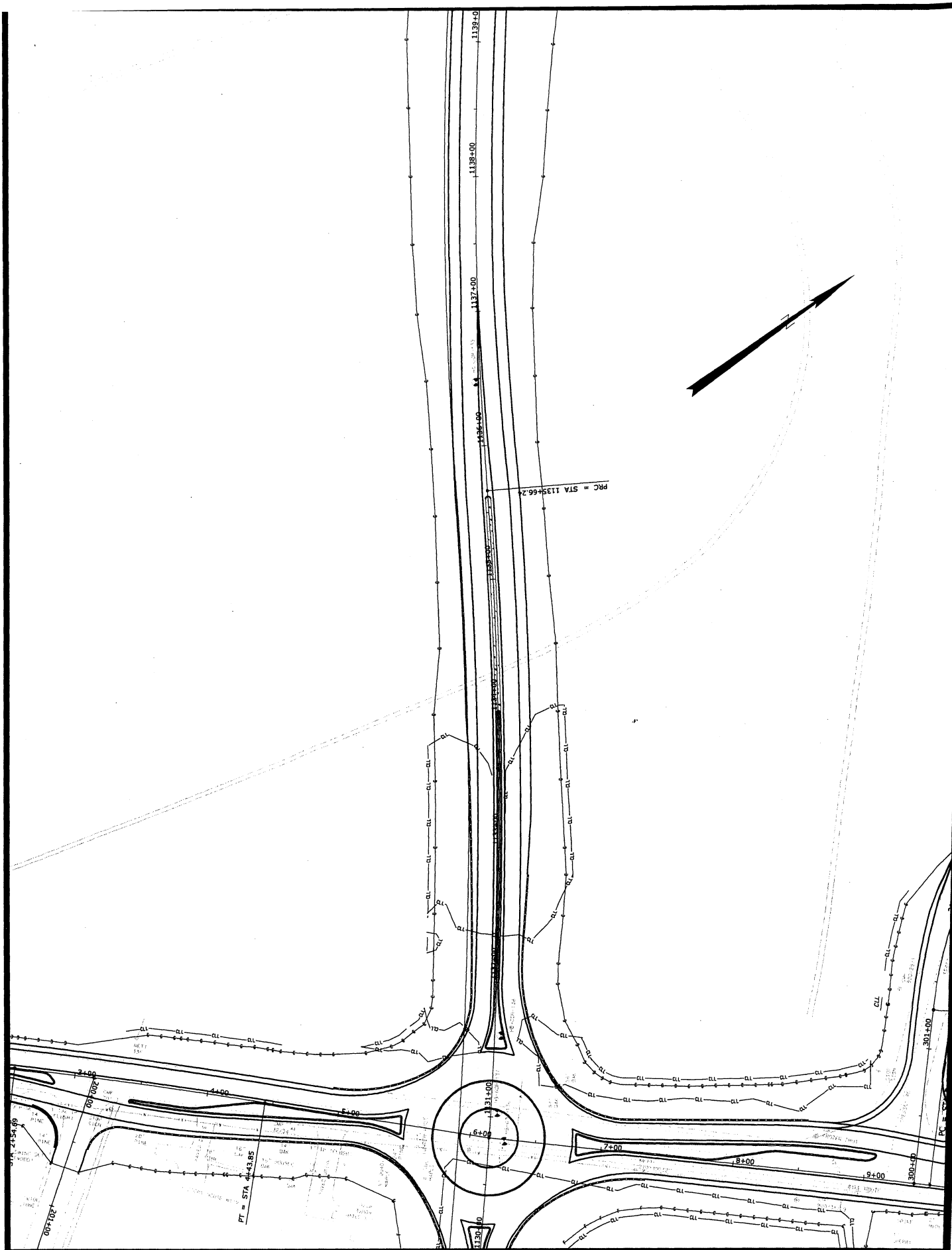

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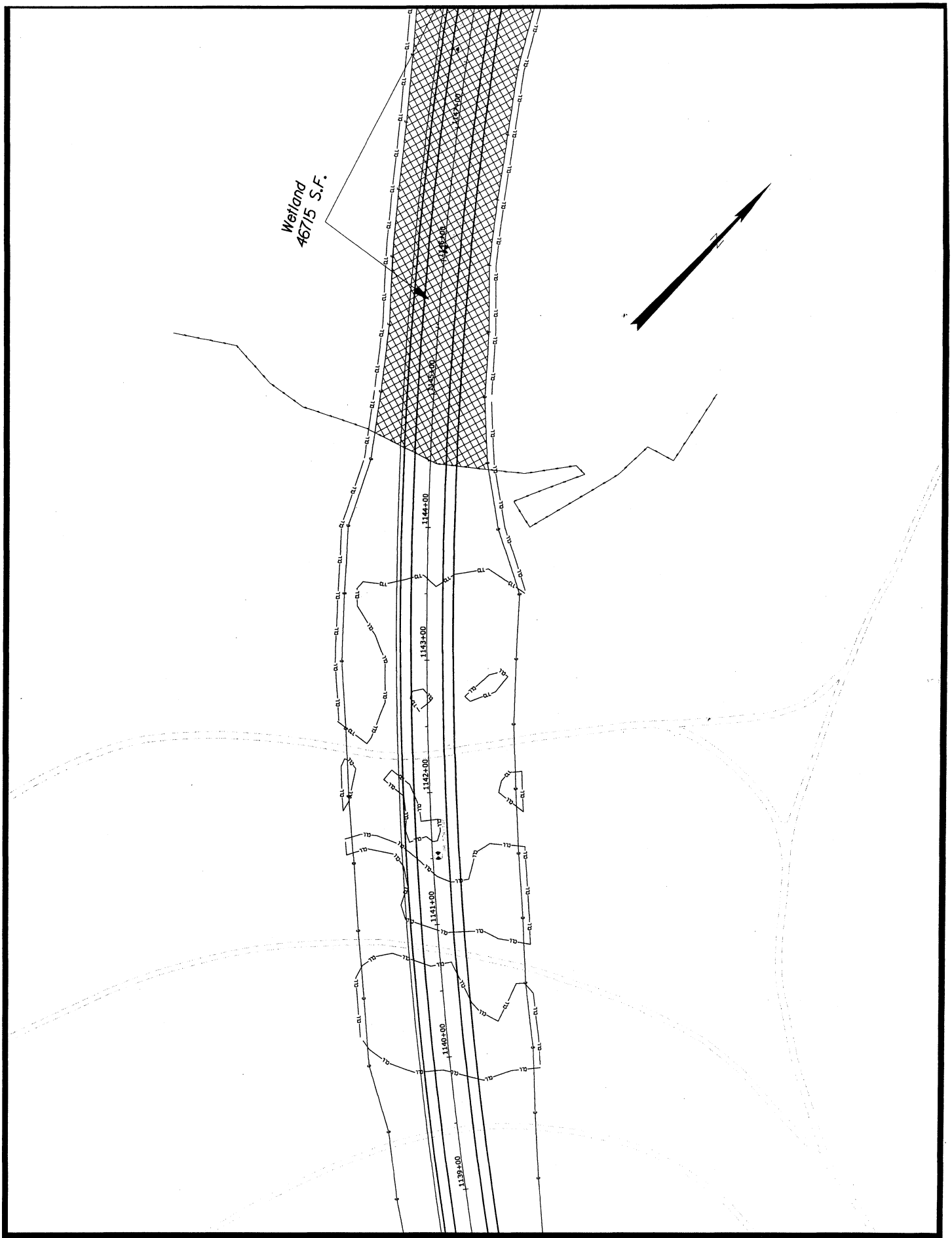

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	Bypass GORHAM CUMBERLAND	SHEET NUMBER
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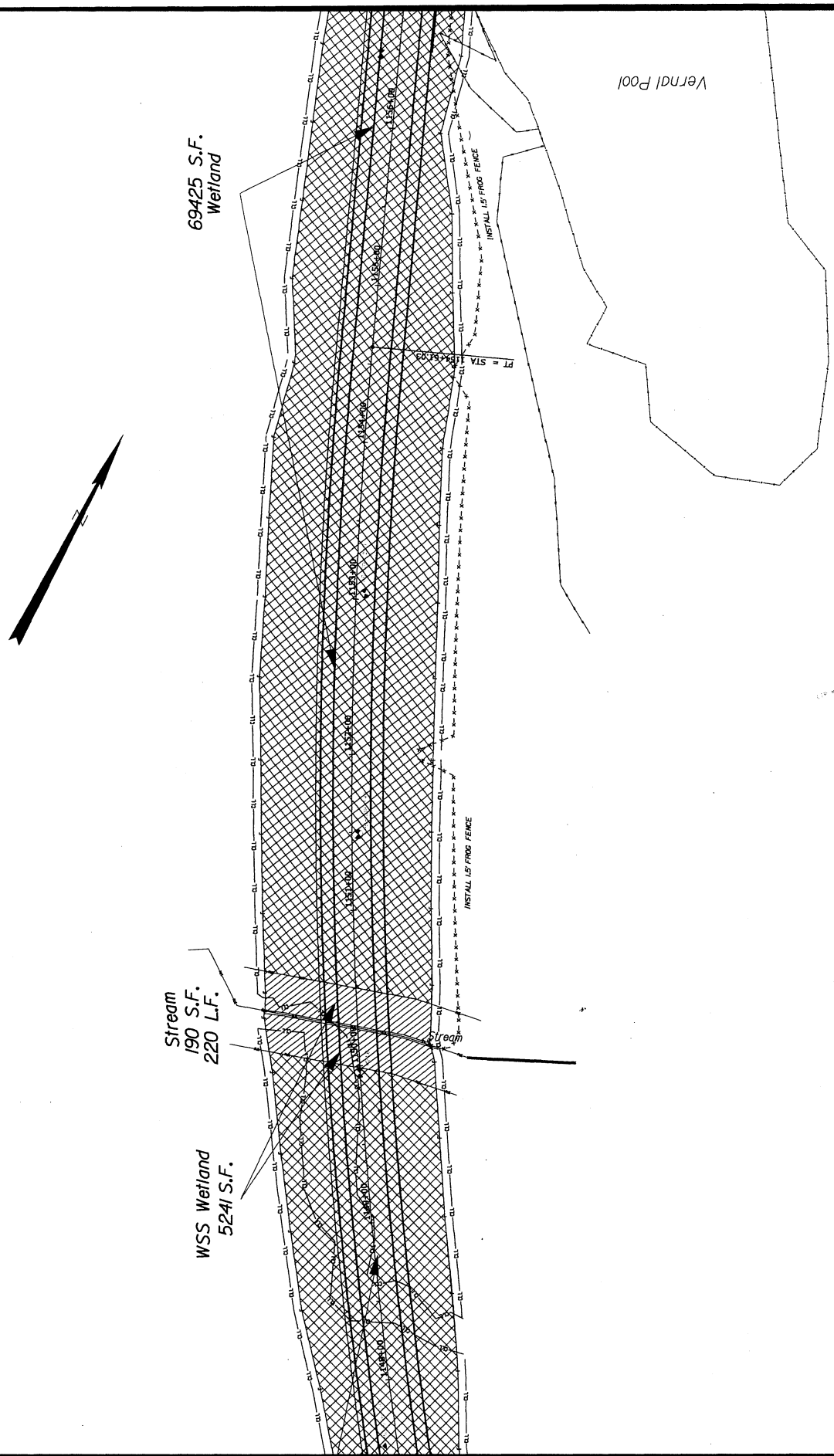

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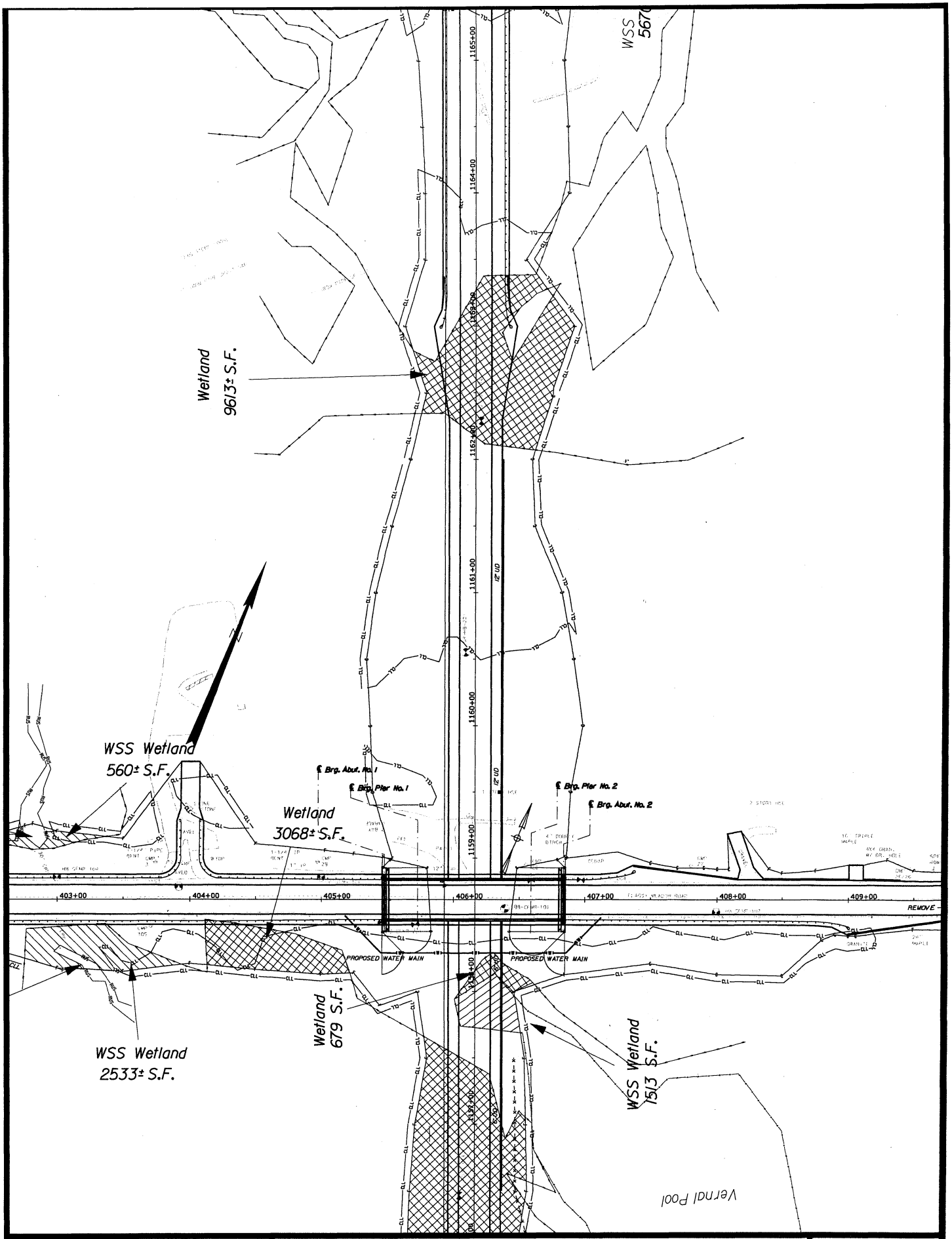

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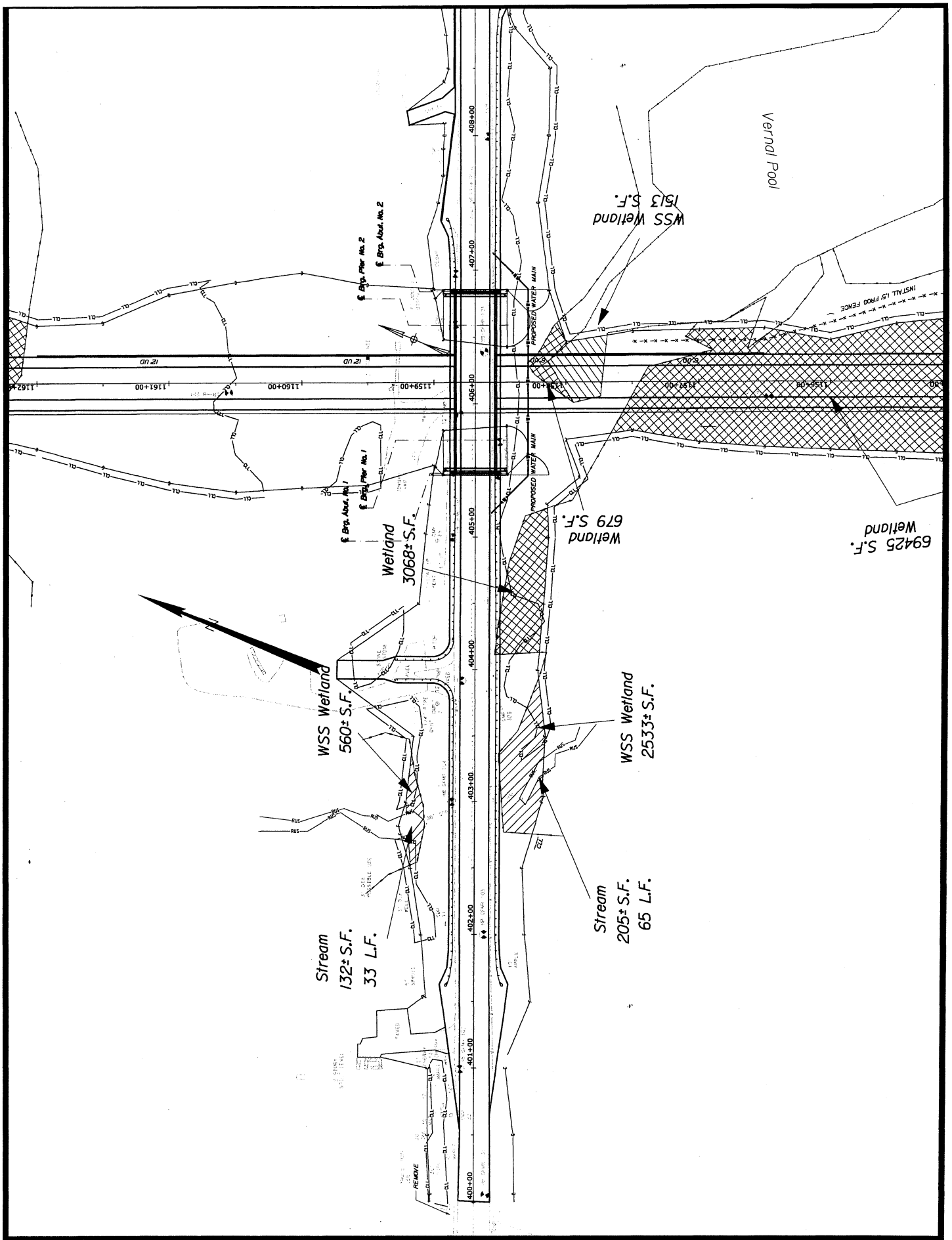

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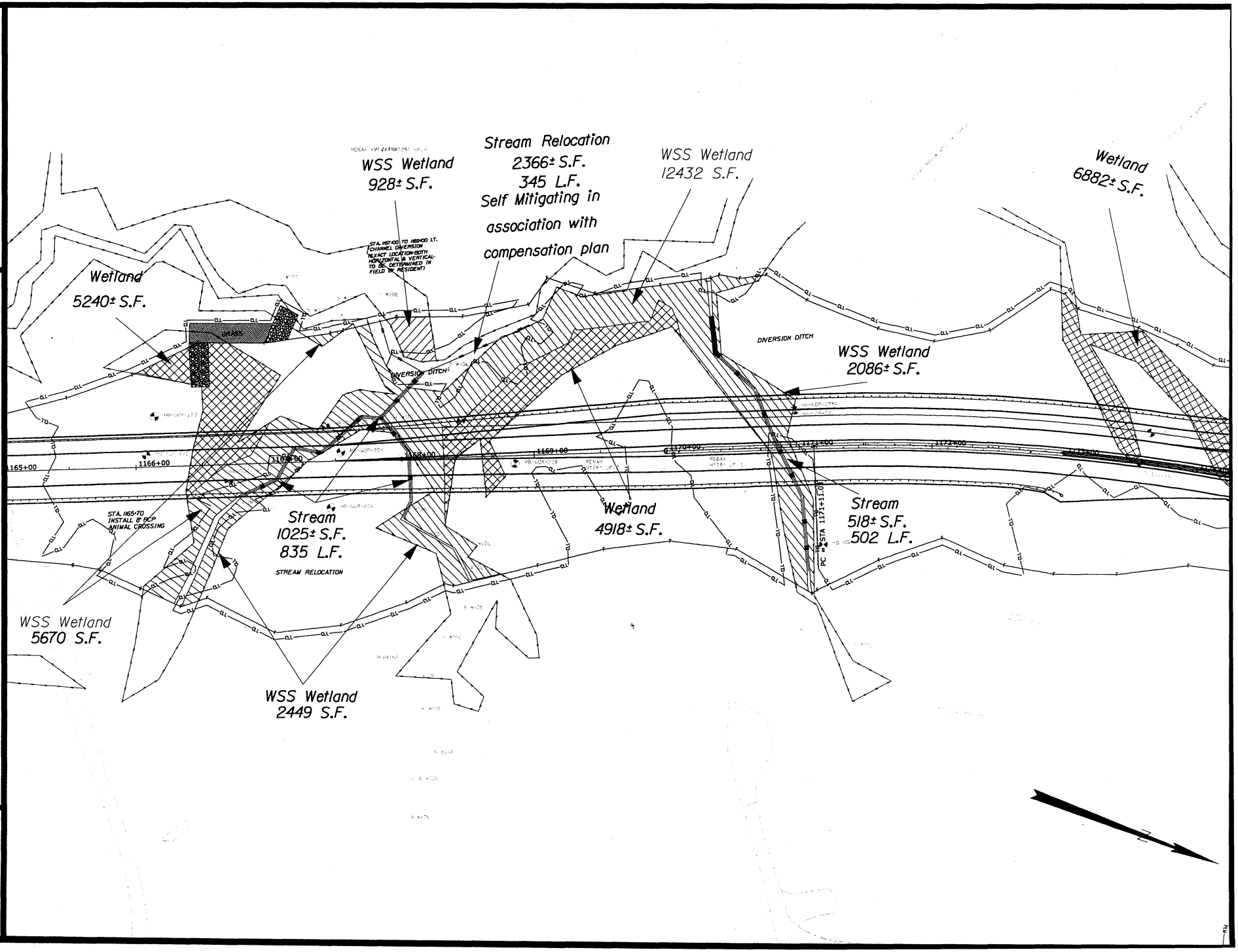

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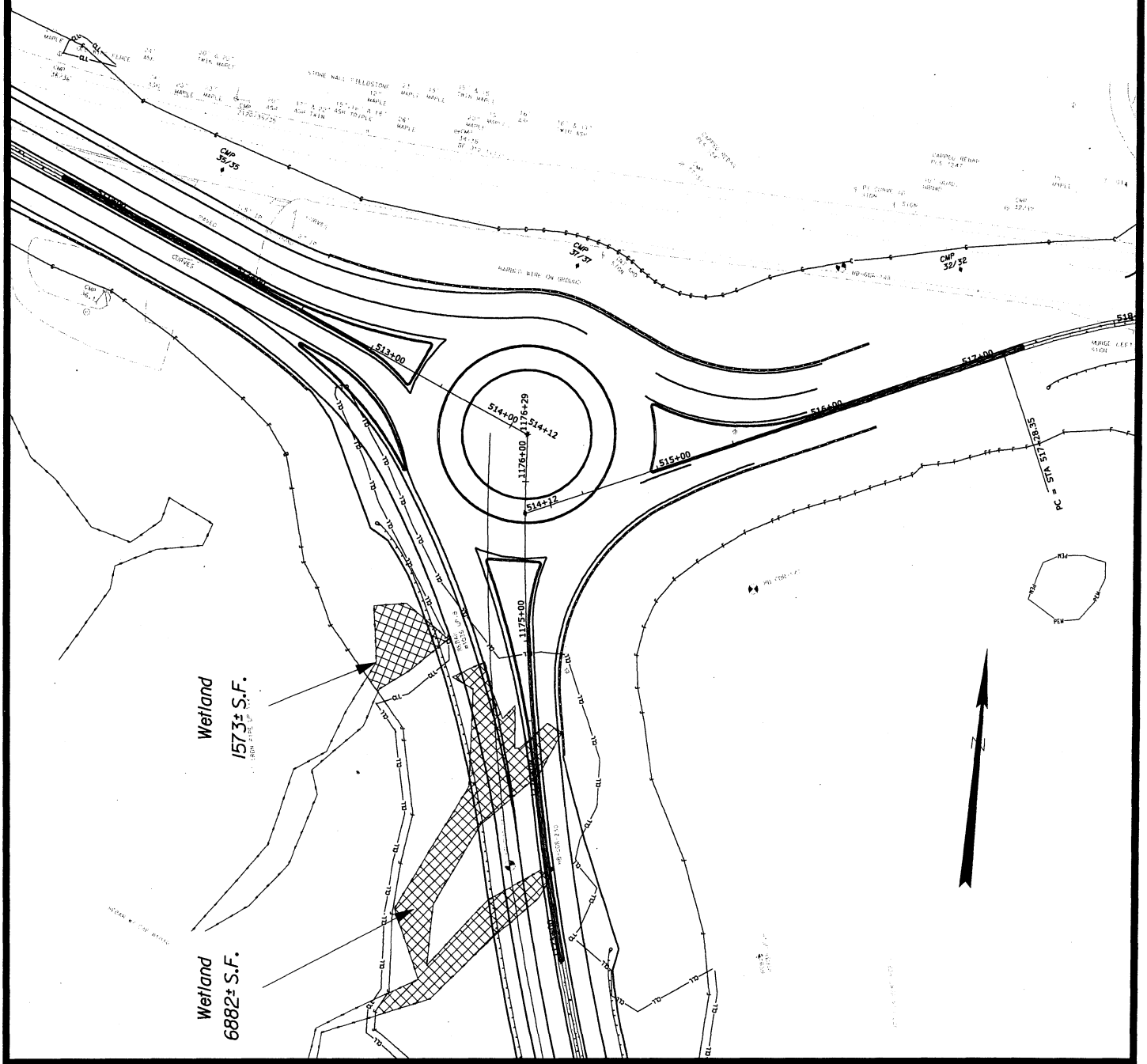

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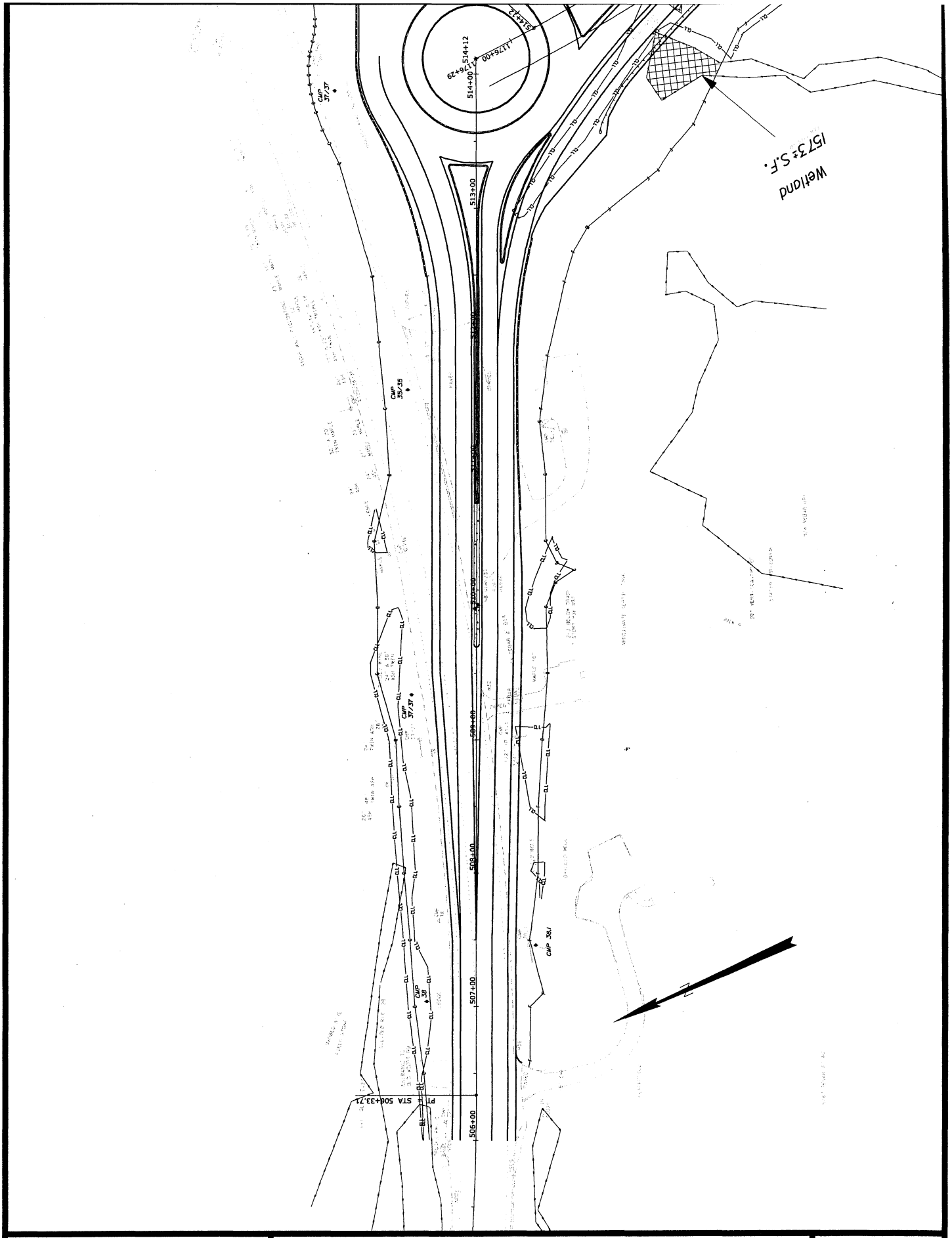

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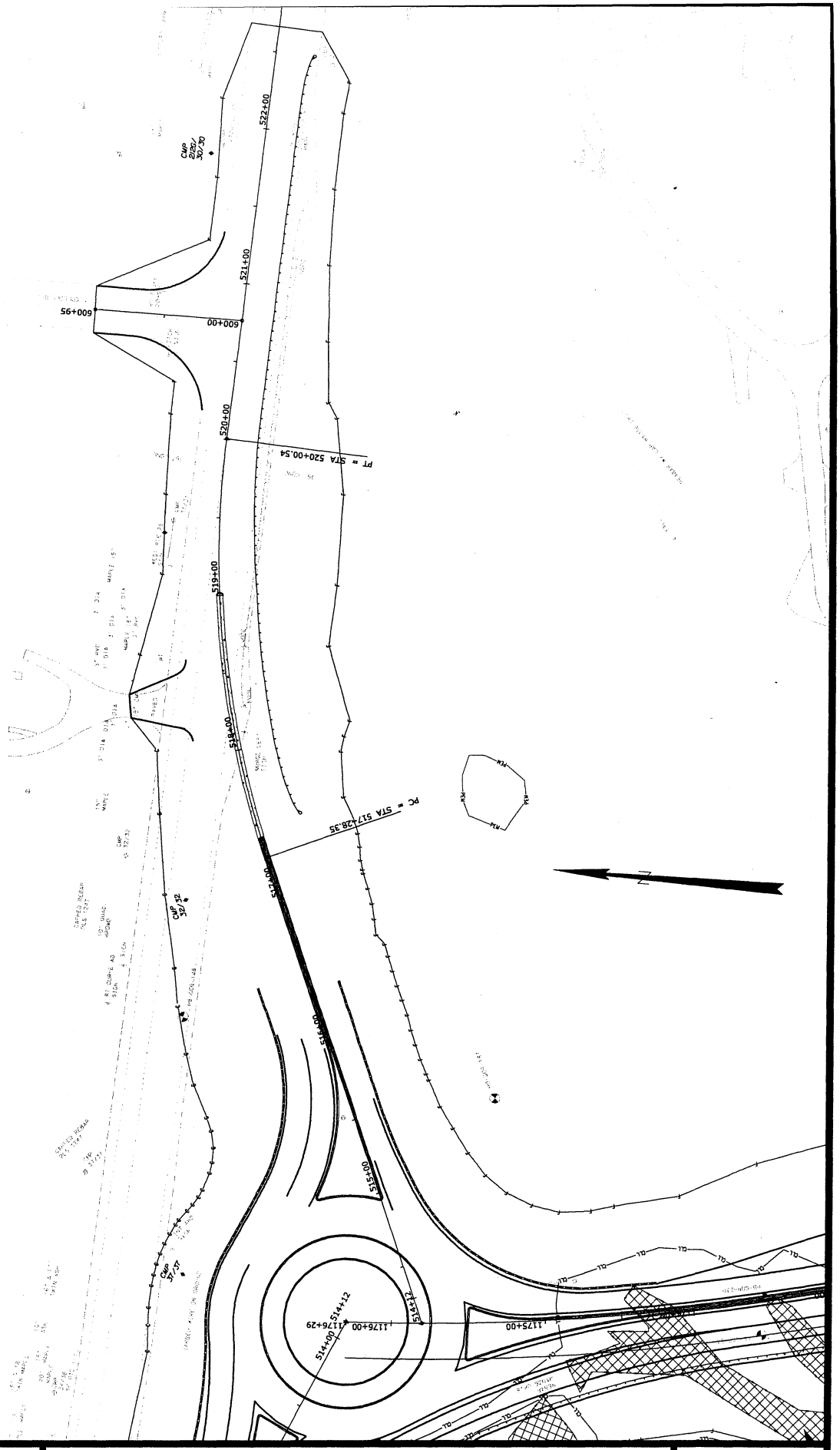

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	Bypass GORHAM CUMBERLAND	SHEET NUMBER
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JURISDICTIONAL DETERMINATION

Revised 8/13/04

U.S. Army Corps of Engineers

DISTRICT OFFICE: New England District
FILE NUMBER & APPLICANT: NAE-2005-4220; Maine Dept. of Transportation

PROJECT LOCATION INFORMATION:
State: Maine
County: Cumberland
Center coordinates of site (latitude/longitude): 43.6796072° N; Longitude 70.4434658° W.
Approximate size of area (parcel) reviewed, including uplands: Total ROW for both bypasses – 361 acres.
Name of nearest waterway: Numerous named and unnamed streams
Name of watershed: Presumpscot

JURISDICTIONAL DETERMINATION
Completed: Desktop determination ☒ Date: Febrary 8, 2000
Site visit(s) ☒ Date(s): Numerous; most recent 6/10/05.

Jurisdictional Determination (JD):

☐ Preliminary JD - Based on available information, ☐ *there appear to be* (or) ☐ *there appear to be no* "waters of the United States" and/or "navigable waters of the United States" on the project site. A preliminary JD is not appealable (Reference 33 CFR part 331).

☒ Approved JD – An approved JD is an appealable action (Reference 33 CFR part 331).
Check all that apply:

☐ *There are* "navigable waters of the United States" (as defined by 33 CFR part 329 and associated guidance) within the reviewed area.
Approximate size of jurisdictional area: .

☒ *There are* "waters of the United States" (as defined by 33 CFR part 328 and associated guidance) within the reviewed area.
Approximate size of jurisdictional area: .

☐ *There are "isolated, non-navigable, intra-state* waters or wetlands" within the reviewed area.
☐ Decision supported by SWANCC/Migratory Bird Rule Information Sheet for Determination of No Jurisdiction.

BASIS OF JURISDICTIONAL DETERMINATION:

A. Waters defined under 33 CFR part 329 as "navigable waters of the United States":
☐ The presence of waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

B. Waters defined under 33 CFR part 328.3(a) as "waters of the United States":
☐ (1) The presence of waters, which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
☐ (2) The presence of interstate waters including interstate wetlands[1].
☐ (3) The presence of other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such waters (check all that apply):
☐ (i) which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ (iii) which are or could be used for industrial purposes by industries in interstate commerce.
☐ (4) Impoundments of waters otherwise defined as waters of the US.
☒ (5) The presence of a tributary to a water identified in (1) – (4) above.
☐ (6) The presence of territorial seas.
☒ (7) The presence of wetlands adjacent[2] to other waters of the US, except for those wetlands adjacent to other wetlands.

Rationale for the Basis of Jurisdictional Determination (applies to any boxes checked above). *If the jurisdictional water or wetland is not itself a navigable water of the United States, describe connection(s) to the downstream navigable waters. If B(1) or B(3) is used as the Basis of Jurisdiction, document navigability and/or interstate commerce connection (i.e., discuss site conditions, including why the waterbody is navigable and/or how the destruction of the waterbody could affect interstate or foreign commerce). If B(2, 4, 5 or 6) is used as the Basis of Jurisdiction, document the rationale used to make the determination. If B(7) is used as the Basis of Jurisdiction, document the rationale used to make adjacency determination:* **Unnamed and named waterways on site are tributaries to the Stroudwater or Presumpscot Rivers. The Presumpscot River discharges directly to Casco Bay and is tidal/navigable to the site of the former Smelt Hill Dam at Falmouth. The Stroudwater River discharges directly to the tidal/navigable Fore River at Portland. The wetlands in the project area are either contiguous, bordering, or neighboring to these water courses.**

Lateral Extent of Jurisdiction: (Reference: 33 CFR parts 328 and 329)

☒ Ordinary High Water Mark indicated by:
- ☒ clear, natural line impressed on the bank
- ☒ the presence of litter and debris
- ☒ changes in the character of soil
- ☒ destruction of terrestrial vegetation
- ☒ shelving
- ☐ other:

☐ High Tide Line indicated by:
- ☐ oil or scum line along shore objects
- ☐ fine shell or debris deposits (foreshore)
- ☐ physical markings/characteristics
- ☐ tidal gages
- ☐ other:

☐ Mean High Water Mark indicated by:
☐ survey to available datum; ☐ physical markings; ☐ vegetation lines/changes in vegetation types.

☒ Wetland boundaries, as shown on the attached wetland delineation map and/or in a delineation report prepared by: Maine DOT staff

Basis For Not Asserting Jurisdiction:

☐ The reviewed area consists entirely of uplands.
☐ Unable to confirm the presence of waters in 33 CFR part 328(a)(1, 2, or 4-7).
☐ Headquarters declined to approve jurisdiction on the basis of 33 CFR part 328.3(a)(3).
☐ The Corps has made a case-specific determination that the following waters present on the site are not Waters of the United States:
- ☐ Waste treatment systems, including treatment ponds or lagoons, pursuant to 33 CFR part 328.3.
- ☐ Artificially irrigated areas, which would revert to upland if the irrigation ceased.
- ☐ Artificial lakes and ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- ☐ Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
- ☐ Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States found at 33 CFR 328.3(a).
- ☐ Isolated, intrastate wetland with no nexus to interstate commerce.
- ☐ Prior converted cropland, as determined by the Natural Resources Conservation Service. Explain rationale:
- ☐ Non-tidal drainage or irrigation ditches excavated on dry land. Explain rationale:
- ☐ Other (explain):

DATA REVIEWED FOR JURSIDICTIONAL DETERMINATION (mark all that apply):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant.
☒ Data sheets prepared/submitted by or on behalf of the applicant.
- ☒ This office concurs with the delineation performed by Maine DOT staff and reviewed in the field on 6/10/05:
- ☐ This office does not concur with the delineation report, dated , prepared by (company):

☐ Data sheets prepared by the Corps.
☐ Corps' navigable waters' studies:
☒ U.S. Geological Survey Hydrologic Atlas:
☒ U.S. Geological Survey 7.5 Minute Topographic maps: Gorham, ME
☒ U.S. Geological Survey 7.5 Minute Historic quadrangles: Gorham, ME
☐ U.S. Geological Survey 15 Minute Historic quadrangles:
☒ USDA Natural Resources Conservation Service Soil Survey: Cumberland County; Gorham, ME
☒ National wetlands inventory maps: Gorham, ME
☐ State/Local wetland inventory maps:
☒ FEMA/FIRM maps (Map Name & Date): Gorham, ME
☐ 100-year Floodplain Elevation is: unknown (NGVD)
☒ Aerial Photographs (Name & Date): Gorham, ME vicinity; unknown date
☒ Other photographs (Date): Ground photos taken by applicant in 2005
☐ Advanced Identification Wetland maps:
☒ Site visit/determination conducted on: numerous; most recent 6/10/05
☐ Applicable/supporting case law:
☐ Other information (please specify):

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[1]Wetlands are identified and delineated using the methods and criteria established in the Corps Wetland Delineation Manual (87 Manual) (i.e., occurrence of hydrophytic vegetation, hydric soils and wetland hydrology).

[2]The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent.

NON-TIDAL NAVIGABLE WATERS OF THE UNITED STATES
NEW ENGLAND DISTRICT

The following non-tidal waters have been determined to be Navigable Waters of the United States subject to permit jurisdiction in the New England District area.

Maine – Kennebec River to Moosehead Lake; Penobscot River to the confluence of the East and West Branch at Medway, Maine; Lake Umbagog within the State of Maine.

New Hampshire – Merrimack River from the MA – NH state line to Concord, New Hampshire; Lake Umbagog within the State of New Hampshire; Connecticut River to Pittsburg, New Hampshire.

Massachusetts – Merrimack River to the New Hampshire state line; all of the Connecticut River within the Massachusetts state line.

Connecticut – Connecticut River to the Massachusetts state line.

Vermont – Navigability studies and determination has been completed in Vermont. The following lists show the results of these determinations:

Navigable waterways based on present or potential future use for interstate commerce:

Lake Champlain
Lake Memphremagog
Connecticut River
Ompompanoosuc River to Mile 3.8
Waits River to Mile 0.9

Navigable waterways based on past historical use for interstate commerce:

Black River from mouth to Mile 25 Craftsbury
Battenkill River to Mile 50 Manchester
Lamoille River from mouth to Mile 79 Greensboro
Missisquoi River from mouth to Mile 88.5 Lowell
Otter Creek from mouth to Mile 63.8 Procter
Winooski River from mouth to Marshfield
Moose River from Passumpsic River to Victory Town line
Nulhegan River from its mouth to its source including the East Branch, Back Branch, and Yellow Branch
Paul Stream from mouth to source
East Branch, Passumpsic River from Passumpsic River to East Haven
Passumpsic River from mouth to the East Branch
Wells River from mouth to Groton Pond
White River from mouth to its source

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Maine Dept. of Transportation		File Number: NAE-2005-4220	Date:
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
X	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
X	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization in care of "Regulatory Division." If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the District Engineer, in care of the Chief, Regulatory Division, as specified in the last paragraph of the coverletter. Your objections must be received within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the District Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the District Engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization in care of "Regulatory Division." If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer in care of: James W. Haggerty, Regulatory Appeals Review Officer, US Army Engineer Division, North Atlantic Fort Hamilton Military Community, Bldg. 301, General Lee Avenue, Brooklyn, NY 11252-6700 Telephone: (718) 765-7150, E-mail: James.W.Haggerty@nad02.usace.army.mil. The Division Engineer must receive this form within 60 days of the date of this notice.

- C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer in care of: James W. Haggerty, Regulatory Appeals Review Officer, US Army Engineer Division, North Atlantic Fort Hamilton Military Community, Bldg. 301, General Lee Avenue, Brooklyn, NY 11252-6700. Telephone: (718) 765-7150, E-mail: James.W.Haggerty@nad02.usace.army.mil. The Division Engineer must receive this form within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer in care of: James W. Haggerty, Regulatory Appeals Review Officer, US Army Engineer Division, North Atlantic Fort Hamilton Military Community, Bldg. 301, General Lee Avenue, Brooklyn, NY 11252-6700. Phone: (718) 765-7150, E-mail: James.W.Haggerty@nad02.usace.army.mil. The Division Engineer must receive this form within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district at the address below for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

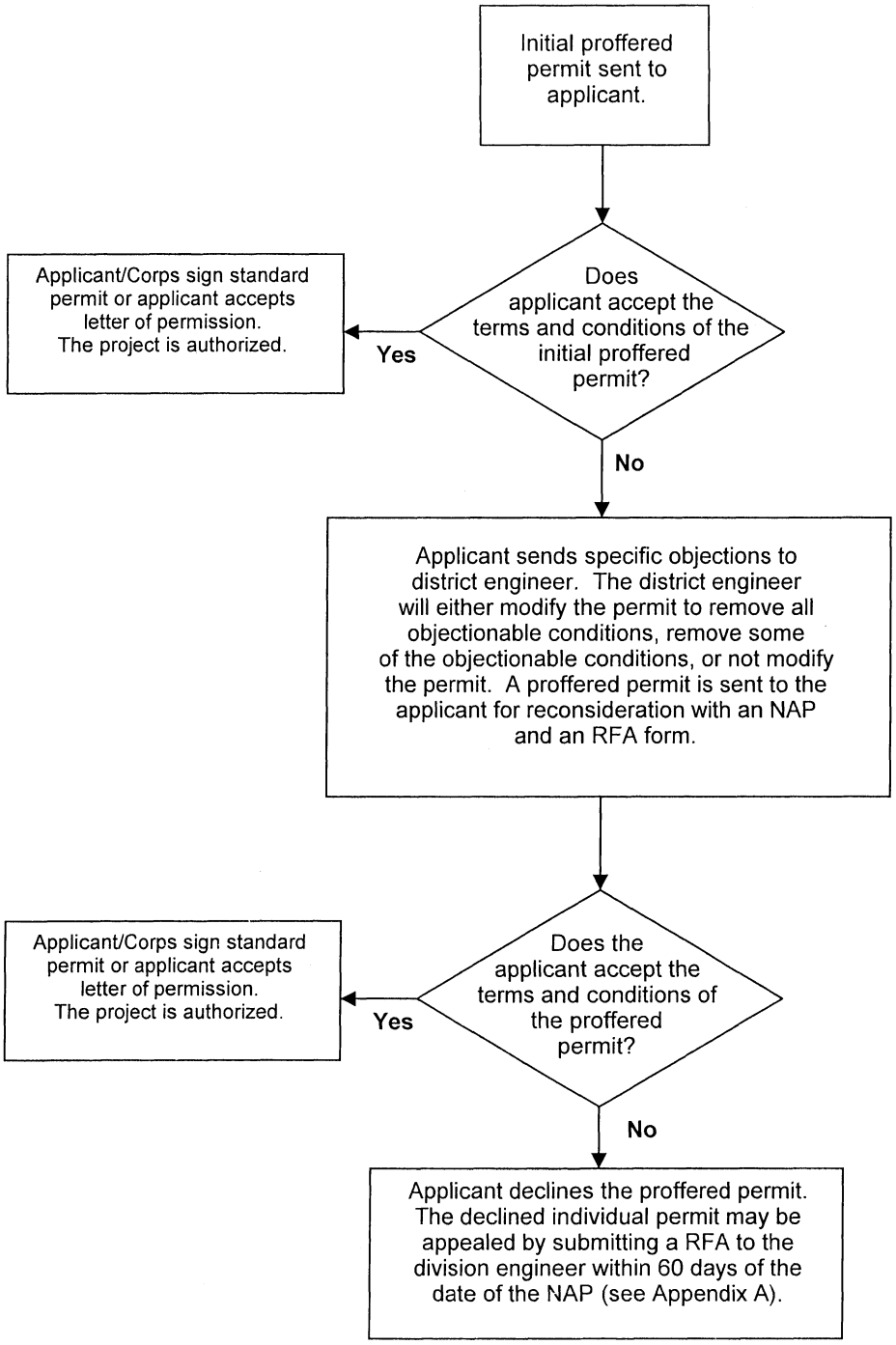
If you have questions regarding this decision and/or the appeal process you may contact Ms. Ruth Ladd at:

Chief, Policy Analysis/Technical Support Branch
Corps of Engineers
696 Virginia Road
Concord, MA 01742 or by calling (978) 318-8818

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

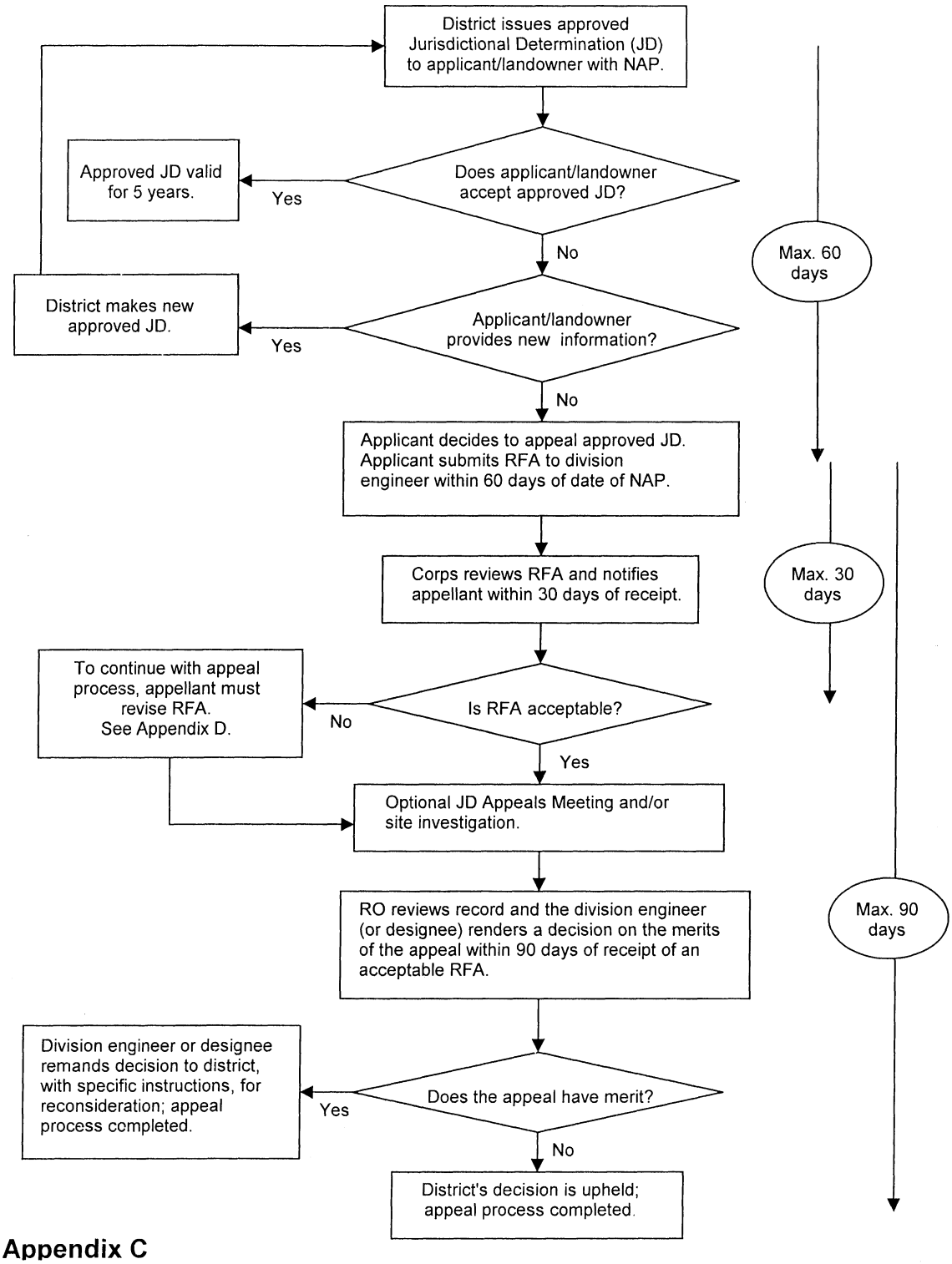
Kenneth L. Sweeney Dep Chief Engg.	Date: 6/20/07	Telephone number: 207 624 3400
Signature of appellant or agent.		

Applicant Options with Initial/Proffered Permit



Appendix B

Administrative Appeal Process for Approved Jurisdictional Determination



Appendix C

WETLAND MITIGATION PLAN:

Project: MaineDOT Gorham Bypass Project, Gorham, Maine
[MaineDOT PIN 8151.20/Federal Aid Project Number HP-8151(200)]

Compensatory Mitigation Project: Wetland Creation, Wetland Preservation, Upland Buffer Preservation, and Vernal Pool Habitat Creation at Grondin Aggregates' Larrabee Farms Wetland Mitigation Site, Scarborough, Maine

Date: 01 December 2006

Applicant:

MAINEDOT
Maine Department of Transportation

16 State House Station
Augusta, Maine 04333

Prepared By:

BOYLE ASSOCIATES

Environmental Consultants
1309 Broadway Avenue. South Portland.Maine.04102
www.boyleassociates.net

&

Grondin Aggregates, LLC
11 Bartlett Road
Gorham, Maine 04038

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Prologue: Cross-reference between compensation plan and the N.E. District, ACOE's *Mitigation Plan Checklist (*06/15/2004 version*)* & Cross-reference between Compensation Plan and MDEP's NRPA Chapter 310 Standards

Cross-reference between Mitigation plan and the N.E. District, ACOE's Mitigation Plan Checklist (Please Note - this is based on the 10/23/2006 DRAFT CHECKLIST)		
Check-list Item	**Description**	**Mitigation Plan Section #**
A. General Information		
1.	One complete package	?
2.a	Locus map	A
2.b	Aerial photo	A
2.c	Lat/Long	A
2.d	HUC	A
B. Impact Areas		
1.	Wetland acreage	B
2.	Wetland classes	B
3.	Streams Section	B, Appendix 1
4.	Wetland and stream functions and values	B, Appendix 1
5.	Type and purpose of work	B, NRPA 9 &11
6.	Watershed plans	B
C. Mitigation Area		
1.a	Mitigation alternatives	C, Appendix 3
1.b	Existing wildlife use	C
1.c	Existing soil	C
1.d	Existing vegetation	C
1.e	Surrounding land use	C
1.f	USFWS Clearance Letter	C
1.g	SHPO Clearance Letter	C, Appendix 4
2.a	Wetland acreages at each site	C
2.b	Wetland classes at each site	C
2.c	Functions and values proposed at each site	C
2.d	Stream mitigation	C
2.e	Reference site(s)	C
2.f	Design Constraints	C
2.g	Construction oversight	C
2.h	Project construction timing	C
2.i	Responsible parties	C
2.j	Financial assurances	C, Appendix 10
2.k	FAA Issues	C
D. Hydrology		
1.	Adequate hydrology	D, Appendix 7
1.a	Typical year water budget	D, Appendix 7

Cross-reference between Mitigation plan and the N.E. District, ACOE's Mitigation Plan Checklist (Please Note - this is based on the 10/23/2006 DRAFT CHECKLIST)		
Check-list Item	**Description**	**Mitigation Plan Section #**
1.b	Wet year water budget	D, Appendix 7
1.c	Dry year water budget	D, Appendix 7
2.	Water source(s)	D, Appendix 7
3.	If vernal pool, adequate hydrology	D, Appendix 7
E. Grading Plan		
1.a	Plan View - existing and proposed contours	E, Appendix 8
1.b	Plan View – microtopography	E, Appendix 8
1.c	Plan View – scale	E, Appendix 8
1.d	Plan View - legible	E, Appendix 8
2.	Representative cross-sections	E, Appendix 8
3.	Other grading comments (if any) N/A	N/A
F. Topsoil		
1.	Proposed source	F
2.	Depth	F
3.	Organic content	F
G. Planting Plan		
1.	Scientific names	G
2.	Native materials	G
3.	Community types	G
4.	Location on plans	G, Appendix 8
5.	Plantings for community type	G
6.	Woody stock density	G
7.	Herbaceous stock density	G
8.	Seed mix composition	G
9.	Cross-sections	G
10	Relocation text	G
11.	Other	N/A
H. Coarse Woody Debris		H
I. Erosion Controls		I
Deadline for removal		I
J. Invasive and Noxious Species		
1.	Risk Section	J
2.	Constraints	J
3.	Control plan	J
K. Off-Road Vehicle Use		
1.	Usage in vicinity	K
2.	Control plan	K
L. Preservation		
1.	Adequate buffers	L, Appendix 9

Cross-reference between Mitigation plan and the N.E. District, ACOE's Mitigation Plan Checklist (Please Note - this is based on the 10/23/2006 DRAFT CHECKLIST)		
Check-list Item	**Description**	**Mitigation Plan Section #**
2.	Internal wetlands protected	L, Appendix 9
3.	Preservation language	L, Appendix 9
4.	Preservation site plans	L, Appendix 9
5.	Legal instrument	L, Appendix 9
6.	Acceptance by receiving agency	L, Appendix 9
M. Monitoring Plan		
Appropriate language		M
N. Assessment Plan		
Appropriate language		N
O. Contingency		
Plan in place		O
P. Long-term Stewardship		P
Q. Other		Q

Cross-reference between Compensation Plan and Maine DEP NRPA Standards: Chapter 310; Wetlands and Waterbody Protection

Chapter Section	**Description**	**Mitigation Plan Section #**
6-A	**Expertise.** The applicant shall demonstrate sufficient scientific expertise to carry out the proposed compensation work.	A
6-B	**Financial Resources.** The applicant shall demonstrate sufficient financial resources to complete the proposed compensation work, including subsequent monitoring and corrective actions.	C, Appendix 10
6-C	**Persistence.** For restoration, enhancement and creation projects, on the basis of an updated functional assessment, a minimum of 85% of the compensation area must successfully replace the altered wetland's functions after a period of three years unless otherwise approved by the department. If this level is not achieved, or if evidence exists that the compensation site is becoming less effective, the department may require additional monitoring and corrective action, or additional wetland restoration, enhancement or creation in order to achieve the compensation ratio as originally approved.	A, B, C
6-D	**Monitoring.** The applicant shall set forth a plan for interim reporting and remediation measures during monitoring of the restored or created wetland over a minimum of five years, which shall include contingency plans for replanting, contouring or other corrections if the project fails to meet project goals during that time.	M

Cross-reference between Compensation Plan and Maine DEP NRPA Standards: Chapter 310; Wetlands and Waterbody Protection

Chapter Section	Description	Mitigation Plan Section #
6-E	**Maintenance.** A compensation project that will naturally maintain itself without active intervention is preferred. However, the permittee may be required to conduct activities to assure continuation of the wetland, or the accomplishment of compensation goals, after a compensation project has been technically completed. Such activities may include, but are not limited to, water level manipulations and control of non-native plant species.	M, O
6-F-1	A compensation project involving restoration, enhancement or creation must provide for covenant and restriction or a conservation easement conveyed to a qualified holder that requires maintenance of the area as a coastal wetland, freshwater wetland or great pond in perpetuity. The conservation easement must list the department as an enforcing agent. Regardless of the size of the compensation area, any future alterations in, on or over it must be approved by the department.	L, Appendix 9
6-F-2	A compensation project involving preservation must provide for a conservation easement conveyed to a qualified holder or covenant and restriction so that the parcel will remain undeveloped in perpetuity. The easement must list the department as an enforcing agent. Compensation areas may be deeded to local or state conservation groups or agencies, but any land management practices must be approved by the department.	L, Appendix 9
6-G	**Source of Water (Creation Only).** For a creation project, the department prefers that the created wetland be located adjacent to an existing wetland or waterbody.	D, Appendix 7
6-H	**Implementation Schedule.** A schedule for implementing the compensation plan must be submitted. Generally, compensation will be required to be completed prior to, or concurrent with, the permitted alteration. For on-going or long-term alterations, such as mining, compensation must be completed no later than within the first year of operation unless otherwise approved by the department.	C
9-D	**Compensation Plan.** A plan for the proposed compensation work, if any, including a topographic map at a scale of a minimum of 1 inch equals 100 feet showing two-foot contour intervals and proposed wetland boundaries. This plan must also include:	Appendix 8
9-D-1	Proposed boundaries and characteristics of the compensation site, including elevation, sources of water, and proposed vegetation;	C, D, E, G, Appendix 8

Cross-reference between Compensation Plan and Maine DEP NRPA Standards: Chapter 310; Wetlands and Waterbody Protection

Chapter Section	Description	Mitigation Plan Section #
9-D-2	A narrative describing the specific goals of the compensation work in terms of particular wetland functions and values as related to those of the original wetland. This narrative must also identify the criteria by which to measure success of the compensation work (e.g. water level within tolerances as defined in the proposal, percent survival of plants, etc.);	C
9-D-3	A narrative describing the available literature or experience to date (if any) for carrying out the compensation work;	Appendix 11
9-D-4	Proposed implementation and management procedures for the compensation work;	C
9-D-5	A description of the short-term and long-term sources of water for the wetland, including the water quality of these sources;	D, Appendix 7
9-D-6	Plans for re-planting, including a description of plant species, sizes and sources of plant material, numbers of each species/size, proposed spacing of plants, and explanation of how, when and where seeding or planting will take place;	G
9-D-7	Proposed buffers or protective measures such as sediment control methods;	L, Appendix 8
9-D-8	Plans for monitoring the compensation work, identifying criteria which require mid-course corrections (e.g. less than 75% plant survival after 2 years). A description of proposed remediation measures and a construction schedule for them shall be included unless otherwise approved by the department; and	M
9-D-9	Plans, if any, for control of non-indigenous plant species.	J
9-E	Covenant and Restriction or Conservation Easement. For compensation projects involving a covenant and restriction or a conservation easement, the proposed deed or easement language, developed in accordance with Section 6(F) above, must be submitted. Additionally, any agreements or terms necessary to execute the restriction or easement, such as an agreement for the holder of the easement, must also be included.	L

A. General Information

A.1. Gorham Bypass Project Description

This Wetland Compensation Plan (the Plan) describes the compensatory mitigation proposed by the Maine Department of Transportation (MaineDOT) for impacts to aquatic resources associated with the proposed construction of the Gorham Bypass in Gorham, Cumberland County (MaineDOT PIN 8151.20). The project includes construction of a new 2-lane public, controlled access highway, the primary objective of which is to provide a bypass around Gorham Village. The project's purpose and need are further detailed in Exhibits 1 and 2 of the NRPA permit application. The road project was designed to achieve the project purpose and need while avoiding sensitive cultural, environmental, and historic resources as well as private properties located within the project area. The proposed Gorham Bypass project will result in impacts to freshwater wetlands and streams. Impacts to aquatic resources include permanent impacts from fill, as well as temporary and intermittent impacts from clearing and long-term maintenance of the new right-of-way.

The proposed road project is subject to the compensation requirements of the Maine Department of Environmental Protection (MDEP) Natural Resources Protection Act (NRPA) (Code of Maine Rules, Chapter 310; (2) 38 M.R.S.A. Section 480-A et seq. Chapter 310); and the compensatory mitigation rules of the U.S. Army Corps of Engineers (ACOE) Section 404 of the U.S. Clean Water Act (33 U.S.C. Section 1344). This wetland compensation plan outlines the compensatory mitigation that will be implemented to offset the unavoidable wetland impacts associated with the project. Note that this Compensation Plan was developed to meet the application requirements of both the MDEP and the ACOE in a single document, even though the compensation plan requirements are slightly different for each agency. Cross-reference spreadsheets that detail where to find the requirements of the two guidelines are provided in the Prologue to this report.

A.2 Proposed Compensatory Wetland Mitigation Project Description

The wetland compensation plan described herein is intended to offset 11 acres of direct impact to freshwater wetlands and stream bottoms resulting from the MaineDOT Gorham Bypass road project (13.2 acres when impacts to MDEP-defined Wetlands of Special Significance (WOSS) are doubled). Wetland compensation will take place at Grondin Aggregates' Larrabee Farms Wetland Mitigation Project site in Scarborough, Maine. The Larrabee Farms Wetland Mitigation Project is situated southeast of the corner of Routes 114 and Beech Ridge Road, on Delorme's The Maine Atlas and Gazetteer Map 3, quadrant A-3, and on the USGS 7.5 minute series *Gorham* quadrangle. The parcel center is located at latitude 43.6343, longitude -70.3982. The wetlands impacted by the bypass project are all included within the Little River and Stroudwater River Watersheds (HUC's 010600010303 and 010600010501, respectively). The Larrabee Farms mitigation site is located approximately 1.8 miles to the south of the southern end of the bypass in the Nonesuch River Watershed (HUC 010600010402).

The Larrabee Farms site consists of forested and cleared uplands and wetlands, former sand and gravel quarries, a former clay extraction operation, former agricultural fields, and the expansive floodplain of the Nonesuch River. The proposed project site is well situated near the heart of the most rapidly developing region in Maine. The proposed compensation area has been designed to replace the lost functions and values of the wetlands directly filled or bisected by the

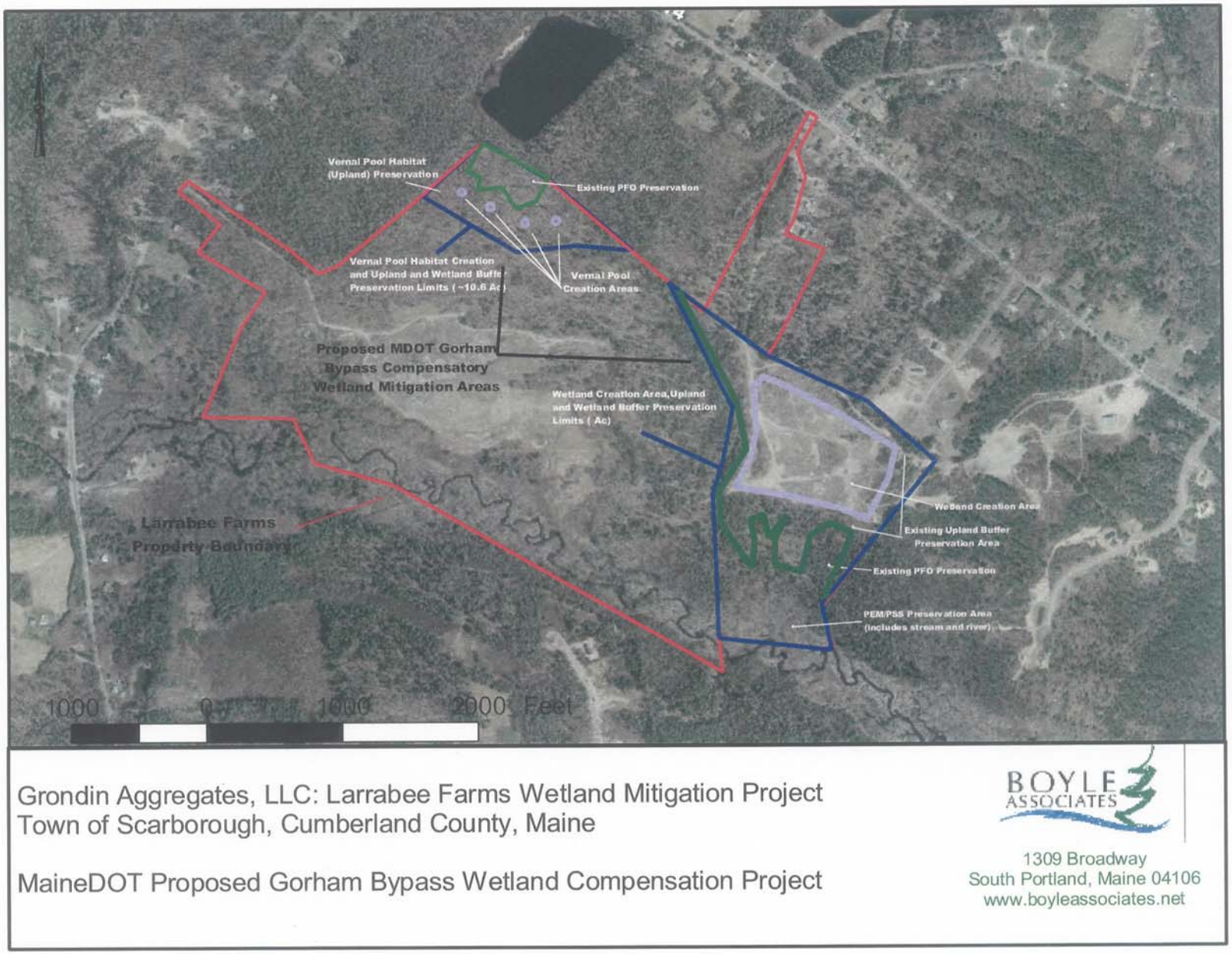
construction of the Gorham Bypass Project. The goal of the compensation project, thus, is to create and provide protection for wetlands and buffers in order to fully replace the lost functions, not just to offset wetland acreage.

While ratios of compensation acreage to impact acreage were ***not*** used to design the final plan, they are helpful in envisioning the compensation strictly in terms of area. This proposed compensation project provides more than enough compensation following the MDEP NRPA suggested ratios of 1:1 for creation, restoration or enhancement and 8:1 for preservation. The purpose of increasing the MDEP's standard creation to impact ratio and including the larger area of preservation with the project is to overcompensate for direct impacts, and thus, to provide compensation for indirect impacts associated with construction. Indirect impacts are hard to quantify, and include fragmentation of habitat, loss or change of cover type, temporal loss of wetland functionality, risk of some failure inherent in wetland creation projects, and other secondary impacts from construction.

Wetland creation will include PFO, PSS, PEM, and vernal pools, designed in order to mimic the conditions of and to provide similar functionality as the wetlands impacted by the proposed bypass. As depicted in Figure 1, the compensation plan provides 15.7 acres of wetland creation, 12.8 acres of existing wetland preservation, 28.4 acres of upland buffer preservation, creation of 4 discrete vernal pools, and preservation of 10.2 acres of upland and wetland habitat buffers adjacent to the created vernal pools. The existing wetland preservation includes primarily mature, forested areas, with a component of scrub/shrub and emergent floodplain wetland systems. The upland buffers included in the mitigation package include upland forest areas adjacent to the existing wetlands. The calculations included in this report for preservation areas include all upland area within the preservation area in the 'upland buffers' category. Also included with the proposed compensation plan are approximately 2,042 linear feet of a forested, intermittent stream channel and the eastern side of its floodplain and banks, and 100 linear feet of the Nonesuch River. Including all proposed creation and preservation areas, the total proposed compensation area for the MaineDOT project is approximately 67.5 acres.

A.3. Project Maps

(Please see following pages)



Grondin Aggregates, LLC: Larrabee Farms Wetland Mitigation Project
Town of Scarborough, Cumberland County, Maine

MaineDOT Proposed Gorham Bypass Wetland Compensation Project

BOYLE ASSOCIATES

1309 Broadway
South Portland, Maine 04106
www.boyleassociates.net

Figure 1. Sketch plan and 2001 aerial photo of proposed compensation for MaineDOT Gorham Bypass at the Larrabee Farms Project Site.

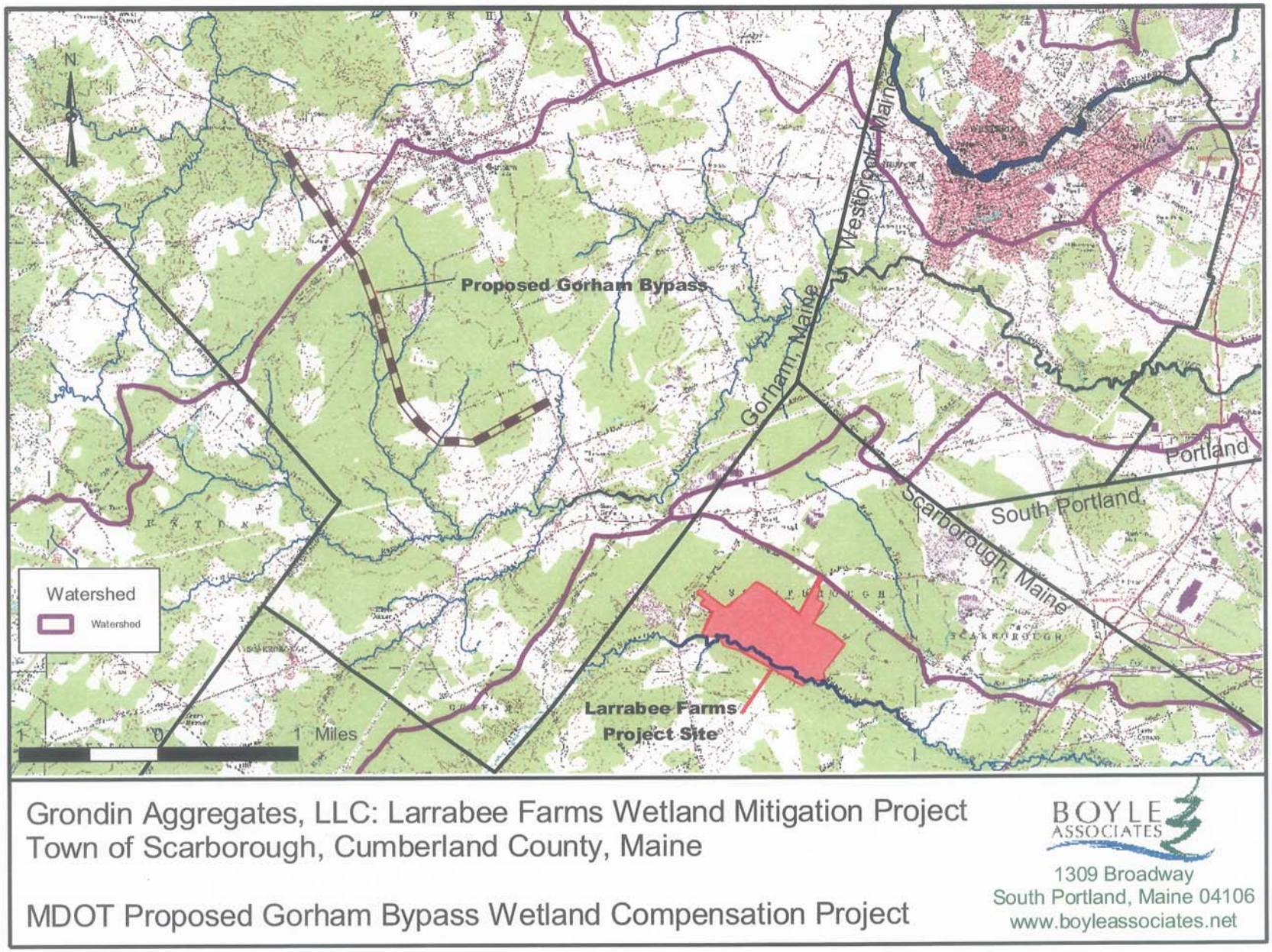


Figure 2. Locus Map: Larrabee Farms Wetland Mitigation Project

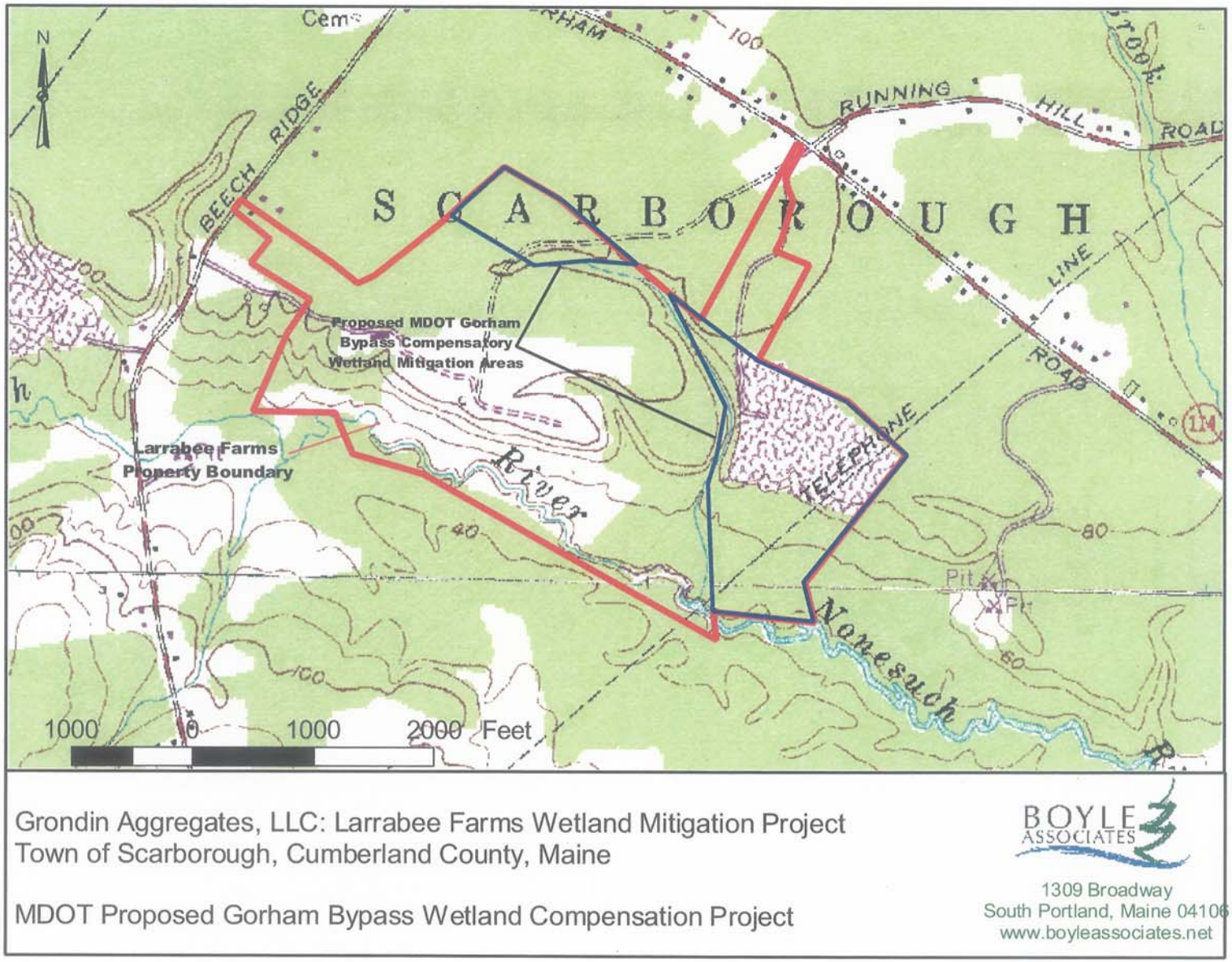


Figure 3. Close-up USGS Topographic quadrangle: Larrabee Farms Wetland Mitigation Project

B. Impact Areas: Gorham Bypass Project

Wetlands along the proposed project were delineated and classified by the MaineDOT Environmental Office. In accordance with MDEP guidelines, the Army Corps Highway Methodology, and the 1990 Memorandum of Agreement between ACOE and the U.S. Environmental Protection Agency, and as further discussed in the NRPA permit application Exhibit 11, the proposed roadway design includes measures to avoid wetland impacts where practicable and to minimize impacts where unavoidable. A table of the wetland impacts by station along the project route is included as an attachment to the MDEP permit application in Exhibit 11.

The proposed Bypass project will result in direct impacts to freshwater impacts totaling 11 acres (Tables B.1. and B.2., below). The wetland impacts include approximately 1.4 acres of emergent wetlands (PEM), 0.2 acre of shrub wetlands (PSS), 9.2 acres of forested wetlands (PFO), and .2 acre of streambed (RUS – a total of 1,665 linear feet of stream impact). The area listed for impacts to wetlands includes 2.2 acres of MDEP-defined Freshwater Wetlands of Special Significance (WOSS). Following the guidance of the NRPA, while calculating direct wetland impacts in order to determine acreage of impact, impact acreage of WOSS wetlands was doubled. On the proposed project route, the WOSS wetlands include all wetland area located within 25 feet of streams and wetlands that contain at least 20,000 square feet of open water, emergent vegetation or aquatic vegetation. **Therefore, for the purposes of MDEP NRPA permitting, the total area of impacted wetlands is 13.2 acres, for the purposes of federal permitting (thus disregarding WOSS,) the total direct wetland impacts are 11.0 acres.**

MaineDOT conducted a functional assessment of the impacted wetlands on the proposed bypass project during the summer and fall of 2006. A copy of this assessment report is included in this mitigation plan as Appendix 1. A Wetland Scientist from Boyle Associates conducted a site walk of the proposed Bypass project area in 2004. The information contained in the MaineDOT functional assessment and gathered from the site walk was used in planning and design of the wetland compensation plan. The Site Conditions Report (NRPA Exhibit 9) further discusses the areas found along the proposed route. In general, MaineDOT identified the following principal functions and values for the wetlands affected by the project are groundwater discharge/recharge, flood flow alteration, wildlife habitat, and nutrient retention.

Table B.1. Summary of wetland impacts by type for the proposed MaineDOT Gorham Bypass project (source: MaineDOT – November 2006)

Wetland Type	Impact	
	Square Feet	Acres
PEM*	52,401	1.2
PEM (WOSS**)	9,464	0.2
PSS	5,488	0.1
PSS (WOSS*)	3,523	0.1
PFO	324,826	7.5
PFO (WOSS*)	76,173	1.7
Stream Area (WOSS*) (linear feet of stream impacts= 3,435 ft)	7,942	0.2
Total Wetland Impact (with WoSS impacts *not* doubled)	**479,817**	**11.0**
Total Wetland Impact (with WoSS impacts doubled)	**576,919**	**13.2**

*Wetland types (i.e. PEM, PSS, PFO) per Cowardin *et al*. 1979. Classifications of Wetlands and Deepwater Habitats of the United States. U.S. F.W.S, Washington, DC.

**WOSS = MAINE DEP-Defined Wetlands of Special Significance

Table B.2. Summary of percentage of impact by wetland type for the proposed MaineDOT Gorham Bypass project (source: MaineDOT – November 2006)

Wetland Type	Amount of Direct Impact (square feet)	Percentage of Total Impact
PEM Total:	61,865	12.9%
PSS Total:	9,011	1.9%
PFO Total:	400,999	83.6%
Stream Area:	7,942	1.7%
Total Area of Impact:	479,817	100.0%

Table B.3. Summary of principal wetland functions and values at impacted wetlands organized by station number along the proposed route from south to north, Gorham Bypass project (source: MaineDOT – November 2006)

Station	Wetland #	GRD	FFA	FSH	STR	NRRT	PE	SSS	WH	OTHER
2+50L										
100+00L										
100+75 - 103+50R										
103+25 -106+50	B		X		X	X				
109+10 - 114+10	A		X		X	X				
1000+25 - 1001+00L	C	X				X			X	
1001+25 - 1004+50	E	X			X				X	
1008+00 - 1010+60	F		X		X				X	
1018+00 - 1020+00	H	X							X	
1032+50 - 1034+50	L	X	X		X	X			X	
1045+00 - 1047+75	M		X	X		X	X		X	
1049+55 - 1054+45	N	X							X	
1055+60 - 1056+25	O	X							X	
1056+50 - 1059+75	O	X							X	
1062+50 - 1063+75	O	X							X	
1069+00 - 1069+60	Q		X						X	
1072+25 - 1072+50	R	X	X						X	
1073+80 - 1074+55	S	X	X						X	
1076+80 - 1077+25	S	X	X						X	
1079+50 - 1080+00	T	X	X			X			X	
1080+25 - 1080+90	T	X	X			X			X	
1082+75 - 1084+25	U	X	X	X	X	X	X		X	
1093+75 - 1094+40	U	X	X	X	X	X	X	X	X	
1115+60 - 1128+70	V	X	X						X	
1144+50 - 1157+50	W	X	X			X	X		X	
1156+50 - 1158+30R	W	X	X			X	X		X	
Flaggy 402+75 - 403+75R	W	X	X			X	X		X	
Flaggy 402+50 - 403+50L	X	X	X	X		X			X	
Flaggy 404+00 - 405+25R	W	X	X			X	X		X	
1162+00 -1163+50	X	X	X	X		X			X	
1165+50 - 1171+25	X	X	X	X		X			X	
1172+25 - 1175+00L	Z	X	X							
1174+25 - 1175+30L	Z	X	X							

C. Mitigation Area

C.1. Introduction and Background Information: Larrabee Farms Wetland Mitigation Project

The proposed wetland compensation plan described herein will take place at Grondin Aggregates' Larrabee Farms Wetland Mitigation Project Site. The Larrabee Farms project involves a planned pooled user or multi-stage wetland mitigation project on a 250-acre parcel of undeveloped land abutting the Nonesuch River. The parcel is located in northwestern Scarborough, Cumberland County Maine. The site is owned by Grondin Aggregates, LLC, a local family-owned industrial, commercial and transportation construction company located in Gorham, Maine. Grondin purchased the property in 2000.

The Larrabee Farms Wetland Mitigation Project site offers a wide array of wetland mitigation opportunities. The project site has a good source of mineral material overlying an appreciable and predictable watertable. The site is also well buffered from paved roads and development and is connected by habitat and hydrology directly to a one-mile stretch of the Nonesuch River. These conditions make the site an ideal candidate for wetland creation and habitat preservation. Furthermore, the site has an abundance of existing wetland areas, including a small, woodland stream, several acres of forested wetlands and the extensive floodplain of the Nonesuch River. Upland forested areas, while cut-over, offer protected corridors between the wetland areas, both created and existing, and offer a corridor to and from the floodplain of the river.

The site has seen extensive management over the previous century. Historical and anecdotal evidence suggests that much of the land area was farmed in the late 18th and early 19th century. Logging has taken place throughout much of the land area as well, with trees more than 50 years old only found in pockets across the site. The most recent and most intensive land use at the site has been extractive industries. Sand, gravel, and clay materials have been removed from the site over the previous 30 years. The sand and gravel operations left the large, unforested tract of land upon which the wetland creation portion of this compensation plan is proposed. Clay removal conducted approximately 10 years ago resulted in exposure of several granite outcrops on the western portion of the property. Despite all of the previous impacts and disturbance, the wetland areas on the property have remained relatively undisturbed. This is especially true by the Nonesuch River where large pines, hemlocks and sugar maples can be observed throughout the floodplain wetland.

The property has approximately 74 acres of existing wetlands. Wetland creation potential onsite is approximately 45 acres, as currently envisioned. The site designers foresee an approximate 10 year buildout of all wetland mitigation potential at the site, following which, the entire 250 +/- acres will be entered into a permanent conservation easement and deeded to a not-for-profit entity, qualified under 33 M.R.S.A. Sections 476 through 479-B to hold such easements.

The design team for the Larrabee Farms Wetland Mitigation Project includes Hydrogeologists and Professional Engineers from R.W. Gillespie & Associates, Wetland Mitigation Scientists from Boyle Associates, Professional Engineers and CAD Designers from Sebago Technics, and Site Designers and General Contractors from R. J. Grondin & Sons and Grondin Aggregates, LLC. In 2005, Grondin sought a Contract Zone agreement with the Town of Scarborough to allow for excavation below the water table at the Larrabee Farms Site. The contract zoning agreement was approved by a vote of the Town Council on August 16, 2006. A copy of the

contract is included in Appendix 5 and lists the allowed uses on the parcel as well as the implementation schedule for permanent protection of the project parcel. As part of this agreement, Grondin has agreed to give the Town an approximately 20-acre parcel of land that abuts Route 114, to the north of the proposed wetland mitigation project. The allowed uses on the parcel are for municipal uses, most likely an intermediate or primary school (to be determined).

The proposed wetland compensation project for MaineDOT bypass project will essentially include the eastern third of the Larrabee Farms property and a 10.6 portion of the northwestern corner of the parcel. The proposed preservation limits on the eastern portion of the project will extend from the centerline of the deep gully that bisects the property to the eastern border (wetland B), and from the northern border of the property to the southern border along both sides of the Nonesuch River (wetland C). The preservation on the northwestern portion of the project includes all of wetland E and an approximately 6-acre upland forest adjacent to the wetland. Including wetland creation, vernal pool habitat creation, existing wetland and upland preservation, and stream and river preservation, the total footprint of the proposed compensation area for the MaineDOT project is 67.5 acres.

C.1.a. Mitigation Site Search

MaineDOT conducted a search for compensatory mitigation opportunities as described and detailed in the document entitled "Gorham Bypass Wetland Mitigation Site Search Preliminary Results", contained in Appendix 3. Because of the large amount of unavoidable wetland impact associated with the proposed roadway project, the project designers and regulatory agencies sought to site the wetland compensation in a project area that provides connectivity to existing protected resources. By designing wetland compensation and preservation projects adjacent to existing protected areas, the designers aim to maximize benefits to the surrounding biophysical region of the project area. While analyzing alternatives for wetland compensation, project designers sought a mitigation project that provided the best replacement of wetland functions and values in terms of overall water quality improvements, wildlife habitat and corridor improvements, while ensuring that the mitigation site also tied into other permanently protected areas.

The mitigation site search team investigated 16 wetland compensation opportunities located near the proposed bypass route. Several of these sites were removed from consideration based on such factors as size (e.g., too small), compatibility and extent of wetland functions, effectiveness and likelihood of success, site availability, distance from project area, relative isolation from other protected areas, and agency recommendations. Two sites that were chosen for further study in October 2005 by the agencies and MaineDOT (sites numbered 7 and 8 on Table 2 in Appendix 3). In addition to requesting further review of these two sites, the agencies urged MaineDOT to expand the search for alternative compensation projects, in order to satisfactorily provide the least environmentally damaging practicable alternative for consideration.

On January 10, 2006, and at the request of MaineDOT staff, the design team for the Larrabee Farms Wetland Mitigation Project made a presentation at an interagency meeting at the headquarters of MaineDOT. The design team included Wetland Scientists from Boyle Associates and Hydrogeologists from R.W. Gillespie & Associates, as well as the Larrabee Farms Project Manager, Ken Grondin. A site visit to the Larrabee Farms site was conducted on May 10, 2006, and was attended by representatives from ACOE, MDEP, U.S. Environmental Protection

Agency (EPA), MaineDOT, the U.S. Fish and Wildlife Service (FWS), and the Larrabee design team. Following this site visit and two successive meetings (one in person and one via conference call), the agencies and MaineDOT designated Larrabee Farms as the preferred alternative site on which to conduct compensatory wetland mitigation for impacts to wetlands resulting from MaineDOT's proposed Gorham Bypass Project.

C.1.b. Larrabee Farms Existing Wildlife Use

The site contained two abandoned mineral excavation areas at the time of purchase, in 2000. The property is diverse in both its geology and surface features. Historic disturbances, however, including sand and gravel mining have effectively altered both the hydrology and vegetation present in centralized portions of the site, and logging activities beginning in the early 1990's have reduced the structural and vegetative diversity in upland forested tracts. Most of the "upper portion" of the land is ringed with berms, as the result of grading. Conversely, intact forest stands containing mature maple, hemlock and pine are abundant in areas within and immediately adjacent to the Nonesuch River flood plain.

Although the site is diverse in its surface features, the elimination of vertical strata in logged forested portions minimizes its current ability to support a diverse element of wildlife. A variety of tracks were observed throughout the site, including white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), and raccoon (*Procyon lotor*), and avian species observed included black-capped chickadees (*Parus atricapillus*), white-breasted nuthatches (*Sitta carolinensis*), American goldfinch (*Carduelis tristis*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), wild turkey (*Meleagris gallopavo),* ruffed grouse (*Bonasa umbellus*), American crow (*Corvus brachyrhynchos*) and several unidentified ducks. Beaver (*Castor canadensis*) activity (cuttings and transport runs) can be observed on the northern bank of the Nonesuch River.

From a wildlife perspective, the presence of the Nonesuch River and its associated riparian habitat provides the greatest potential benefit of the site. Wildlife activity within the flood plain wetland is likely extensive upon the return of avian migrants in the spring, with wetlands associated with the Nonesuch River providing a diversity of food, nesting, and refuge substrates. In addition, forested wetlands adjacent to and aquatic habitats within the Nonesuch River undoubtedly provide suitable resources to support a variety of herpetological species during favorable ambient conditions. An adult male wood turtle (*Clemmys insculpta)* was observed on the western side of the property in August 2006. Wood turtles are listed in Maine as Species of Special Concern.

C.1.c. Larrabee Farms Existing Soil conditions

Soils – Wetland Creation Area

Soils on the Larrabee Farms project are made up of the Windsor-Deerfield-Hinkley Association, described by the Soil Conservation Service' Soil Survey for Cumberland County, Maine (USDA, 1974) by the following:

> *Deep, excessively drained to moderately well drained, nearly level to steep, coarse-textured soils.* This association is in areas scattered throughout the county. It is on bottomlands, glacial terraces, outwash plains, and few hills and ridges (fig 3). Valleys are sandy and broad. Windsor soils make up about 26 percent of the association, Hinckley soils about 24 percent, Deerfield soils about 15

> percent, and minor soils the remaining 35 percent. This association occupies about 18 percent of the county. Windsor soils are deep, excessively drained, medium sands. These barely level to gently rolling soils are mainly in glacial outwash plains. Hinckley soils are deep, excessively drained sandy soils that have a stratified sand and gravel substratum. Deerfield soils are deep, moderately well drained, nearly level to moderately sloping sandy soils. They are in depressional areas. Most if the soils in this association are wooded, but a few areas are used for farmland. Urban and recreational use is increasing, particularly in the vicinity of Brunswick, Gorham, and Sebago Lake. The principle limitations of the major soils are rapid permeability and a seasonal high water table. Because of the rapid permeability, ground-water contamination is a hazard in area where septic tank systems are used. Soils on outwash plains, particularly Hinckley soils, are a good source of gravel.

Original soils found in the proposed creation area were mapped (USDA Soil Survey, Cumberland County, Maine) as Windsor loamy sand. Windsor soils are excessively drained and generally found on terraces adjacent to streams and rivers in Cumberland County, and formed in glacial outwash deposits. Historic mineral extraction in the area removed sand and gravel to depths ranging from approximately 17 feet along the northern edge, to near zero at the southern edge. It appears some site leveling was done, resulting in a berm/drop-off effect along the southern edge of the existing sand pit. Information from test pits dug by Grondin, and monitoring wells installed by Gillespie indicate a high probability that there is a "buried groundwater stream channel" in the eastern portion of "Creation Area 1A". This "buried groundwater stream channel" is the result of geologic processes during glaciations, not recent mineral extraction activities. It is a "stream channel" in the sense that groundwater flows through this area due to the presence of more porous materials than in the surrounding areas. There is evidence of standing water during wet seasons in the eastern portion of the proposed creation area. In addition, there is evidence of groundwater discharge where the sandy, outwash Windsor soils meet the silt loam, alluvial Limerick-Saco soils south of the mineral extraction area. Throughout the proposed creation area, soil test pits have indicated mixed sands with inclusions of clay lenses at various depths.

Soils – Preservation Area

Soils in the preservation area flood plain are mapped (USDA Soil Survey, Cumberland County, Maine) as Podunk fine sandy loam and Limerick-Saco silt loam. Podunk soils are moderately well drained, found on bottomlands adjacent to streams and rivers in Cumberland County, and formed in alluvial deposits. Limerick-Saco soils are poorly drained, found on flood plains adjacent to major streams and rivers in Cumberland County, and formed in alluvial deposits.

Soils in the upland buffer preservation area are mapped as Windsor. The soil description matches that given earlier for Windsor soils, except that slopes in the buffer area are generally steeper than in other areas of Windsor soil on the property.

C.1.d. Larrabee Farms Existing Vegetation

The main wetland creation area proposed for the MaineDOT project is devoid of mature vegetation due to historical and ongoing sand and gravel extraction work. In addition, many of the non-pit, upland areas across the Larrabee Farms site have been logged over the previous 3 decades. Shrubs across the proposed preservation area include grey birch and alder, many of which have been removed due to recent sand and gravel operations. Mature vegetation, however, including large sugar maple, red maple, red oak, and hemlock can be found extensively through the floodplain and adjacent upland areas along the Nonesuch River. Two existing wetland areas

are proposed for inclusion with the compensation plan for the MaineDOT project, these are shown on the Larrabee Farms Site Plan as Wetland B and Wetland C and are discussed below.

Wetland B is a forested wetland associated with a significant ravine that courses through most of the Grondin property before outletting into the Nonesuch River. The channel contained within the ravine is intermittent in its flow patterns, but during storm events evidence (i.e., scouring) suggests both the volume and flow rates of the channel increase markedly. Because the wetland is limited in its width, its function is minimized along the course of the ravine. However, given the proximity of the wetland to PFO wetlands, the pronounced topographical variant of the ravine, and outletting into the Nonesuch River, Wetland B provides wetland function and value of groundwater recharge/discharge and wildlife habitat.

Wetland C is situated entirely within the flood plain of the Nonesuch River and is comprised of a variety of wetland types including PFO, PEM, and PSS. Forested portions of the wetland complex include intact stands of old forest hemlock and sugar maple that exist in a relatively pristine state when compared to adjacent upland tracts. Herbaceous and shrub components of the wetland exist within the Nonesuch River flood plain. Ground seeps were observed along the wetland/upland interface along the length of the flood plain, and surface water was abundant during our approach to the River. Wetland C supports a variety of wildlife, and its habitats are likely utilized by both resident and migratory species for seasonal and annual activities. The Maine Department of Inland Fisheries and Wildlife periodically stocks the Nonesuch River with brown trout (*Salmo trutta*) and native fish species were observed in the River during visits to the site. The diversity of wetland-types, their existence within the Nonesuch River flood plain, and relatively pristine state of the resources resulted in the assignment of a number of functions and value to this wetland complex. The principal wetland functions and values provided by Wetland C include groundwater recharge/discharge, flood flow alteration, sediment and toxicant retention (mostly off-site), nutrient removal and transformation, production export, fish and shellfish habitat, wildlife habitat, education and scientific value, and visual quality and aesthetics.

C.1.e. Surrounding Land Use and Proximity to other protected lands

Another important and valuable aspect of the Larrabee Farms Wetland Mitigation Project is that the preservation area contains approximately 1 mile of frontage and floodplain on the Nonesuch River. By protecting the forested and non-forested floodplain of this stretch of the river, the area will maintain its status as a wildlife corridor for both game and non-game species. Corridors are extremely important to maintaining the health of Maine's large mammals such as deer, moose and black bear. Also reliant upon non-developed areas, are other game species such as beaver, raccoon, woodcock, pheasant, turkey, and grouse, as well as countless non-game species. As stated in Chapter 6 of the Town of Scarborough Comprehensive Plan: "*Many of Scarborough's unique natural areas and wildlife habitats are located in the Nonesuch River watershed. The impact of potential growth on these resources should be kept in mind as areas for growth and protection are delineated in the development of this Comprehensive Plan.*" In fact, the Scarborough Conservation Land Trust has recently established the *Nonesuch River Protection Corridor,* which includes a goal of protecting the riparian habitat along the Nonesuch River for its entire course through the town. The land trust has purchased 2 large tracts of land upstream from the Larrabee Farms parcel known as Fuller Farm and Meserve Farm, each protecting over 2,000 feet of frontage on the Nonesuch River. Further down its course, the Nonesuch drains into the expansive Scarborough Marsh. The marsh is owned by the State of Maine, and is a natural

resource protected by local, state and federal laws. Please see Figure 5 for a depiction of protected open space, public lands and recreation areas in Scarborough.

In addition to the Land Trust and State protection efforts, the Town of Scarborough has begun the process of updating its zoning ordinances to reflect the Town's commitment to protection of the Nonesuch River resource. In its *Updates to the Comprehensive Plan* - 2006, the Town of Scarborough included the following:

> Action C.3.D Update and strengthen the development review standards that require the protection of natural resources and/ or the mitigation of impacts on these resources. These standards should require that a holistic approach be taken to maintaining resource values within these non-residential districts including the protection of an adequate functional buffer where appropriate, and the maintenance of a significant buffer along the Nonesuch River.
>
> Objective F. 7. Establish a "greenway" along the length of the Nonesuch River. Most of the area adjacent to the Nonesuch River is subject to either Resource Protection or Shoreland Zoning. The width and requirements of these zones vary. The Town should work with landowners to maintain a naturally vegetated "greenway" along the entire length of the Nonesuch. Where possible, the objective should be to establish a 250 foot wide vegetated buffer along both sides of the river. In doing this, existing development rights should not be reduced by allowing the development that could have occurred on the land within the greenway to be clustered on other parts of the property away from the river.
>
> Action F. 7. a. As set out in the Future Land Use Plan, the width of the Shoreland Zone should be increased from 75 feet to 250 feet and new development should be required to be set back 250 feet from the river where feasible. A naturally vegetated buffer should be required to be maintained along the river with provisions for water access and low- intensity trail and recreational use within the buffer.

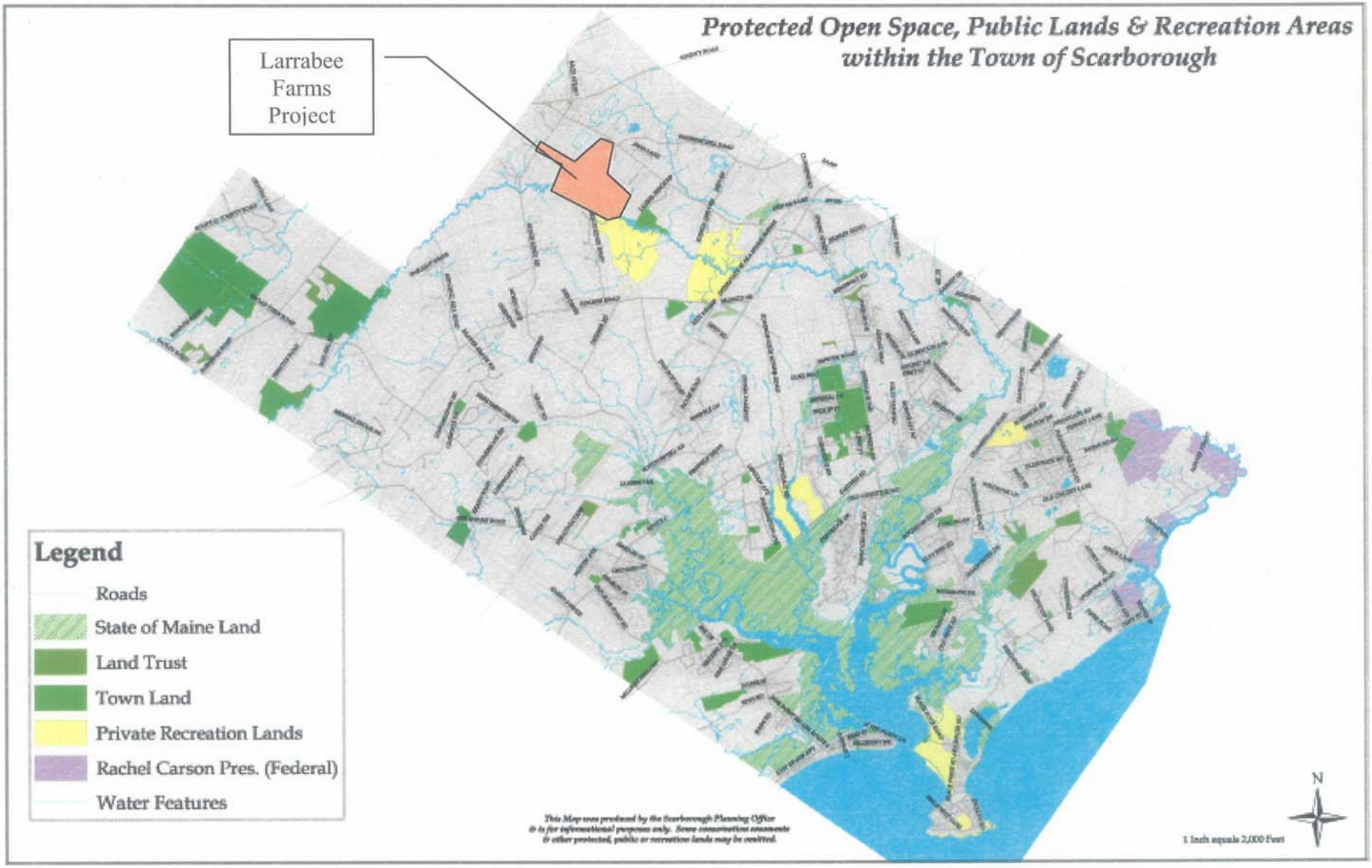


Figure 4. Protected Open Space, Public Lands and Recreation Areas within the Town of Scarborough.

C.1.f. USFWS Clearance Letter

Below, please find a copy of written correspondence from MaineDOT to the USFWS regarding clearance for the Larrabee Farms site. FWS correspondence will be copied directly to the MDEP and ACOE when received.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0016

JOHN ELIAS BALDACCI
GOVERNOR

DAVID A. COLE
COMMISSIONER

November 15, 2006

Dr. Mark McCullough
US Fish & Wildlife Service
1168 South Main Street
Old Town, Maine 04468

RE: Request for concurrence under Section 7. Gorham Bypass Mitigation site Scarborough, ME
MaineDOT PIN 008151.10

Dear Dr. ~~McCollough~~ MARK,

The Maine Department of Transportation (MaineDOT) is in the process of designing a two-lane bypass around the Town of Gorham in Cumberland County, Maine. You have already reviewed the bypass project and have orally indicated that there is no affected to species that are listed or candidates for the Endangered Species list. We are currently proposing Compesatory Wetland Mitigation for this project in the town of Scarborough at an abandoned gravel pit. The attached information shows the location of the area and ground photography of the site. The site known as Larrabee farm is a large site along the Nonesuch River. The MaineDOT portion of this site is at the east end.

A review of existing MDIFW species data has indicated that there are no eagle's nests or other known state or federal threatened or endangered species recorded in the vicinity. It is known that the this Project will be constructed within the range of New England cottontail, an ESA candidate species. MaineDOT is submitting this letter to ask for a determination of need for consultation under Section 7 of the Endangered Species Act (ESA) as amended (16 U.S.C. 1531-15453). Our review of existing data has indicated that the mitigation project will have no effect on species included on the Endangered Species list. Since the area to be altered for wetland mitigation is disturbed gravel pit and adjacent forest land, it is our opinion that the project will not affect any candidate species.

If you have any questions, please feel free to contact me either by the telephone number or email address listed below.

Sincerely,

Richard Bostwick
Maine Department of Transportation Environmental Office
16 State House Station
Augusta, ME 04333-0016
207-624-3079 Fax 207-624-3101
Richard.Bostwick@maine.gov

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THE MAINE DEPARMENT OF TRANSPORTATION IS AN AFFIRMATIVE ACTION - EQUAL OPPORTUNITY EMPLOYER

C.1.g. Maine Historic Preservation Commission Review

The Maine Historic Preservation Commission (MHPC) has reviewed the proposed mitigation areas pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended. In a memo dated March 27, 2003, MHPC requested that Grondin contract for a Phase 1 survey of any areas where the subsoil has not been disturbed in order to search for any structure or site of historic or archaeological significance. Grondin hired Archaeological Consultant Deborah Wilson and Historical Archeologist Timothy Dinsmore to conduct preliminary surveys at the property. Ms. Wilson and Mr. Dinsmore's report is attached as Appendix 4. The following text describes the survey methodology and is copied from the archeology report:

> The Maine Historic Preservation Commission initially requested that a Phase I survey be carried out as part of the permitting process. MHPC later agreed to allow a preliminary prehistoric archaeological assessment which will result in Phase I investigations of locations exhibiting archaeological sensitivity. The goals of the current project are, thus, to evaluate the project area in terms of known prehistoric settlement criteria and disturbance, and to develop a plan for Phase I investigations if necessary. (*Wilson, D. and Dinsmore, T., Report on the Preliminary Archaeological Assessment: Prehistoric and Historic Components - R.J. Grondin and Sons Property, Scarborough, Maine – MHPC# 0522-03; 2003.* Page 1 – included in Appendix 4)

During the assessment, Mr. Dinsmore found no sites of historical significance on the property. Ms. Wilson highlighted several areas across the property that had not been disturbed by previous excavations as requiring further prehistorical assessment prior to disturbance. None of the areas flagged by Mr. Dinsmore and deemed to require further investigation will be disturbed during construction of the compensation project. Disturbance areas for the MaineDOT compensation project include only those areas previously mined for mineral materials.

C.2.a./b. Wetland Acreages and Classes Proposed at the Mitigation Site

As depicted in Table C.1., the proposed wetland compensation project includes a combination of wetland creation, vernal pool creation, existing wetland preservation, and upland buffer preservation. The compensation project includes a total of 67.5 acres of preservation land. The compensation goal of replacement of functions and values will be achieved through a 2-part wetland mitigation design at the Larrabee Farms Site. A wetland creation and buffer preservation project will take place on the eastern side of the Larrabee Farms site and a vernal pool creation area will take place in the northwestern corner of the site. The two parts of the plan will be completed on the same schedule. Please see Figure 1 for a sketch of the proposed mitigation plan. A copy of the mitigation plan drawing is also attached to this report in Appendix 8.

Eastern Wetland Creation and Preservation Area:

The eastern portion of the wetland compensation plan includes a total preservation area of 56.9 acres. This area includes 15.7 acres (+/-) of wetland creation, 12.8 acres of existing wetland preservation and 28.4 acres of upland buffer preservation. Wetland creation will include PFO, PSS and PEM wetland types, designed and planted in order to mimic the conditions of natural wetlands and to provide similar functionality as the wetlands impacted by the proposed bypass. The PFO wetland creation area will include primarily pit and mound forested habitat, with an additional area of ephemeral pools designed to provide a wide range of habitat options. The eastern portion of the compensation plan also includes preservation of approximately 28.4 acres of upland buffer and habitat preservation. The upland buffers included in the mitigation package include upland forest areas adjacent to the existing wetlands, and recreational trails with planned

vegetative screen improvements. The existing wetland preservation includes primarily forested wetland area, with a component of scrub/shrub and emergent floodplain wetland systems. Included within the wetland preservation area are approximately 2,042 linear feet of an intermittent stream channel, and 100 linear feet of the Nonesuch River.

Northwestern Vernal Pool Habitat Creation and Preservation Area:
Located in the northwest corner of the Larrabee Farms project site, the vernal pool habitat creation and preservation area will include construction of 3 discrete vernal pools within an existing upland forest. The combined basin size of the pools will be approximately 0.25 to .3 acre. Pool creation locations were located mapped in 2006 using a GPS and will be more accurately located and mapped prior to construction in 2007. The basin area of the vernal pools will be at least .3 acre. Larger pools may be constructed depending on field conditions. Preservation areas adjacent to the created pools includes 6.9 acres of upland forest preservation and 3.3 acres of forested wetland preservation. In total, the northwestern portion of the compensation area will include 10.6 acres.

Table C.1. Summary of proposed mitigation for the Gorham Bypass Project (Larrabee Farms Wetland Mitigation Project Site)

Eastern Portion: Wetland Creation, Upland and Wetland Buffer Preservation					
Mitigation Type		**Acres**		**Proposed Mitigation Ratio**	**Mitigation Acreage**
Wetland Creation	PFO (90%)	14.1	15.7	1.5:1	9.4
	PSS (7.5%)	1.2			0.8
	PEM (2.5%)	0.4			0.3
Wetland Preservation		12.8		20:1	0.64
Upland Buffer Preservation		28.4		10:1	2.84
Total Mitigation Acreage (eastern portion):					**13.9**

Northwestern Portion: Vernal Pool Creation and Upland and Wetland Habitat Preservation			
Mitigation Type	**Acres**	**Proposed Mitigation Ratio**	**Mitigation Acreage**
Vernal Pool Creation	0.3*	1.5:1	0.2
Vernal Pool Habitat Preservation (upland)	7	10:1	0.7
Vernal Pool habitat Preservation (adjacent wetland)	3.3	20:1	0.2
Total Mitigation Acreage (northwestern portion):			**1.1**

Total Acres Included in Mitigation Project:	**#VALUE!**	**Proposed Mitigation-Acres:**	**15.0**
Stream Preservation (not included in mitigation acreage caculation)	2,042 linear feet (+/-)	Wooded, Intermittent Stream	
	100 linear feet (+/-)	Nonesuch River	

* The location of the vernal pool creation area will vary, but will include *at least* .3 acre of basin area. Wetland Scientists GPS-located potential basins in 2006, these areas will more accurately located and mapped prior to construction.

C.2.c. Anticipated Wetland Functions and Values at Each Mitigation Site

Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and that result from both living and non-living components of a specific wetland resource. These include all processes necessary for the self-maintenance of the wetland ecosystem such as primary productivity and nutrient cycling, among others. Therefore, functions relate to the ecological significance of wetland properties without regard to subjective human values.

Values are benefits that derive from one or more functions and the physical characteristics associated with a wetland. Most wetlands have corresponding societal value. The value of a particular wetland function, or combination of functions, is based on human judgment of the worth, merit, quality or importance attributed to those functions. (*ACOE New England Division, Wetland Functions and Values; The Highway Methodology Workbook Supplement. 1993).*

The preservation areas associated with this mitigation plan currently provide a wide range of benefits to the surrounding areas. The Nonesuch River, the floodplain wetlands and the forested and scrub/shrub wetlands that are found throughout the site provide the following functions and values: groundwater discharge, wildlife habitat (including that for fish and shellfish), sediment retention, nutrient retention, flood flow alteration, sediment stabilization, recreation, aesthetic/scenic value, and educational/scientific value. The wetland and vernal pool creation areas proposed in this mitigation plan, along with the proposed upland habitat and wetland preservation envelopes, are designed to augment the existing habitats on the property, thus increasing the ability of the property to provide these functions. While designing the grading and planting plans for the areas, project designers also planned for habitats that will provide or will have the *potential* to provide the same functions and values that are provided by the wetlands at the impact site. Mitigation will take place in two parts, with wetland creation and upland and wetland preservation on the eastern portion of Larrabee Farms, and vernal pool habitat creation and preservation in the northwest corner of the Larrabee Farms property.

Eastern Wetland Creation and Preservation Area:
The wetland creation area on the eastern side of the property will consist of mostly (90%) forested wetlands, with a component of scrub/shrub and emergent habitat types. In addition, several shallow, ephemeral pools will be designed into the forested areas, nearest the existing forest in order to provide additional habitat within the overall creation area. The creation area is designed and anticipated to provide the following principal functions and values: groundwater recharge and discharge, flood flow alteration, production export, wildlife habitat, recreation value, and educational value.

Northwestern Vernal Pool Habitat Creation and Preservation Area: The vernal pool habitat creation and preservation area will consist of 3 discrete vernal pool basins created in an upland forest. Preservation will include a 10.6-acre area, including the pools, 6.9 acres of upland and 3.3 acres of existing wetland. This area is designed and anticipated to provide the following principal functions and/or values: groundwater recharge/discharge, production export, wildlife habitat, and educational/scientific value. The means by which the mitigation project will provide these functions is explained below.

Groundwater recharge and discharge - *This function considers the potential for the wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.*

A portion of the wetland creation area on the eastern side of the parcel is situated over a mapped significant sand and gravel aquifer (low-flow). Water quality of groundwater in this area is presumably high, due to the lack of any known source of contaminants in the watershed upstream from this area. The wetland creation area, designed with a 1-2% slope across its gradient, will capture groundwater discharge in some areas near the northern slopes, and allow for settling and recharge of groundwater by stormwater and surface runoff. All surface flow will tend to the southwest, with the ultimate outflow through a rip-rap spillway and into the adjacent upland forest. The created vernal pools in the northwestern portion of the property will act as settling ponds, allowing surface and atmospheric water to interact with groundwater.

Flood flow alteration – *This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.*

The preservation areas, which include large portions of the Nonesuch River floodplain, currently provide this functionality. Preserving the uplands and forested wetlands adjacent to the floodplain protects the riverine wetlands' ability to provide this functionality. Furthermore, the created wetland areas north of the river will have dense, hydrophytic vegetation and organic-rich, hydric soils to help retain water. The wetland will receive sheet flow from surrounding upland areas and slowly direct to the river, attenuating the flood effects of storm events.

Production export - *This function evaluates the effectiveness of the wetland to produce food or usable products for man or other living organisms.*

The created wetland and vernal pool habitats, and the preserved upland and wetland buffers will provide habitat and food sources for all trophic levels on the food chain. The planting plan for the creation areas includes berry and cone-producing tree and shrub species. The habitat created and preserved by both parts of the mitigation project will provide breeding habitat for invertebrates, amphibians and birds, all of which will emigrate from the area and provide food sources for higher trophic level consumers.

Wildlife habitat – *This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and migrating species are considered.*

Wildlife habitat is a primary function present in almost 80% of the wetlands found along the proposed bypass route. Wildlife habitat was identified in PFO, PSS and PEM wetland habitats, within several of which are found vernal pools, streams and/or floodplain areas. Within the proposed compensation plan, wildlife habitat is currently provided by all of the preservation areas (uplands and wetlands). Permanent protection for the buffers along these areas will help maintain a high-quality, undisturbed area for wildlife. The overall Larrabee project will ultimately provide approximately 250 acres of preservation area, with most of the area either currently or proposed as forested habitat types. The mix of upland, wetland, pool, and stream systems will provide habitat for a variety of species. Currently, the property is known to provide

habitat for amphibians, a large mix of bird species, and large and small mammals (see Section C.1.b.)

Within the wetland creation area presented in this plan, project designers have proposed a mixture of forested, shrub and emergent wetland types. Within the forested creation areas, planners have designed several small, shallow depressions designed to act as ephemeral pools. These pools may provide habitat for vernal pool indicator species. If the hydroperiod, water chemistry, temperature or surrounding habitat proves unsuitable for indicator species, the pools can certainly provide habitat for other types of amphibians, insects and birds. Experience with similar types of wetland creation indicates that the created PEM wetlands begin providing wildlife habitat within the first season. For example, woodcock probe holes are often encountered, indicating that insects are quick to colonize new areas. Created PSS and PFO wetlands have been observed to provide shelter, food and nesting sites within the first couple of growing seasons as well.

The preservation area associated with the eastern portion of this mitigation plan also includes approximately 2,040 feet of protection along a small, intermittent stream located in a deep, forested valley that bisects the property. The stream flows from north to south, outletting eventually into the Nonesuch River. Protection along the stream and river stretches will preserve wildlife habitat for fish and shellfish, and for other wildlife that feed and live within the borders of the valley.

The vernal pool habitat creation and preservation areas in the northwestern corner of the Larrabee site are designed to provide vernal pool habitat. While there are currently no known pools occurring on the western side of the property, an abutting property does have vernal pools (personal communication). It is our hope that pools will function as true vernal pools, providing breeding habitat for mole salamanders (Ambystoma spp.), wood frogs (*Rana sylvatica)* and possibly fairy shrimp (*Eubranchipus* sp.) The created pools will be located within a forested upland, and much of the existing vegetation will be left in place. The pools will be mostly shaded throughout the growing season, and the substrate will be made up of the existing topsoil and duff (leaf and needle litter). As further discussed in Section M., the pools will be monitored in the spring, during the vernal pool species breeding season. Information on the pools, including hydroperiod, vegetation and wildlife use will be included in the annual monitoring reports.

Recreation value – *This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting and other active or passive recreational activities.*

The wetland and vernal pool creation areas, and the preservation areas associated with this mitigation plan will provide recreational opportunities. Grondin donated a 20-acre portion of the parcel (abutting Route 114) to the Town of Scarborough in November 2006. The Town may use the site as an intermediate school. Grondin has also worked with the Public Recreation Director from the town during the planning process of the Larrabee project. Several trail designs were incorporated into the overall design of the site. Trails will primarily be primitive, consisting of narrow unimproved trails throughout the existing forest areas. A parking lot is provided on the western side of the site and additional access is accomplished via the Larrabee Farms Road. Current recreation uses of the site will remain, these include hunting, hiking, bird watching, and fishing.

Educational/Scientific value - *This value considers the suitability of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.*

The Town of Scarborough has shown interest in building a school adjacent to the Larrabee Farms site. The presence of the large preservation site and the created wetlands and vernal pools provide an excellent opportunity for an 'outdoor classroom'. The site includes a huge preservation area, connected directly to the Nonesuch River. Foot trails provide access to the various habitat types on all areas across the site. Wildlife use is abundant throughout, and there are several plant communities available for botanizing and exploration.

Furthermore, this compensation plan includes designs for vernal pool creation areas. There are pools designed for the existing upland forest on the northwestern corner of the site, and several pools designed with in the large created forested wetland area on the eastern side of the site. Data from the pools on both of these locations will be collected annually to determine how each of the areas are performing in terms of wildlife use. It will be interesting and educational to catalogue how the relatively exposed pools in the creation area fair in comparison to the shaded pools created in the upland forest. This data will be made available in the annual monitoring reports and can be used to help design future ephemeral and vernal pool ecosystems.

C.2.d. Stream Mitigation

MaineDOT will be performing a portion of the mitigation for stream impacts at the impact site, by restoring a reach along Brandy Brook (station 1167+50L to 1169+00L). This work will consist of relocating a portion of the degraded stream channel where a new construction fill will be placed. A pool-riffle sequence will be developed next to the new channel to promote the flood flow storage function. All of these newly developed characteristics will be restored improvements that did not exist prior to the Bypass construction. In addition, an un-vegetated 200-foot long, and 20-foot wide stretch of riparian area along an unnamed channel (station 100+75R to 102+50R) will be re-vegetated with plantings. Finally, several of the stream and wetland crossings will include amphibian and/or small mammal traversable box culverts, further reducing the impact of the bypass in the stream areas.

In addition to onsite mitigation efforts for affected stream channels, offsite mitigation for stream impacts will include permanent preservation of approximately 2,042 linear feet of a wooded, intermittent stream channel and preservation of approximately 100 linear feet of the Nonesuch River and its associated floodplain. The wetland and vernal pool creation projects, and the preservation areas associated therewith, will provide significant buffering for the stream and riverine systems.

C.2.e. Reference Site

The Larrabee Farms site has several types of existing wetlands that will be permanently protected as part of future mitigation projects. The compensation plan for the Bypass impacts includes approximately 16 acres of wetland preservation, including forested wetland, scrub/shrub wetlands and emergent wetlands. No particular reference site has been chosen for wetland comparison purposes, however, the onsite wetlands provide a good representation of the type of wetlands being impacted by the proposed bypass. The creation site will be monitored for success based on the criteria provided by the New England Army Corps Mitigation Guidance documentation (11/2006 draft version).

C.2.f. Design Constraints

Overall and common landscape level concerns with mitigation sites, such as erosion controls, soil makeup, subsoil removal, grading, hydrology, local zoning, trucking expense, access, and abutters concerns have been allayed by Grondin through four years of planning and permitting at the Larrabee Farms site. Grondin has the equipment and manpower necessary to safely and efficiently undertake all earthwork associated with large-scale wetland creation, and has need and use for all of the subsoil material that will be removed from the site. Grondin has entered into a contract zoning agreement with the Town of Scarborough that allows the Larrabee Farms site to function as a wetland mitigation and land preservation site, allowing all of the necessary extractive industry work and reclamation associated therewith. Additionally, Grondin has built very stable access routes throughout the previously disturbed uplands across the property. There is relatively good access to all of the proposed wetland and vernal pool creation areas across the site, and access to mitigation sites for construction, planting, monitoring, and maintenance will not provide constraints. Finally, Grondin has developed working relationships with most of the abutters throughout the planning process of the site. Abutters were given ample opportunity to learn about the project through three public hearings held with the Planning Board and Town Council. There are no known abutter concerns as of this time.

Grondin has prepared for uncontrollable or unforeseen design constraints at the project site. Given the types of wetland mitigation proposed under this plan, it is expected that potential remedial measures could include:

- re-grading;
- surface water diversion;
- modification of the spillway elevation to adjust water depths and flows;
- re-planting or re-seeding;
- re-soiling due to erosion;
- repair of erosion control features;
- supplemental seeding;
- invasive plant control;
- installation of ORV control measures;
- removal or control of herbaceous vegetation competition around trees and shrubs;
- herbivore control (e.g., fencing, tree guards); and
- fertilizing woody plantings.

C.2.g. Construction Oversight

A wetland scientist shall be on-site to monitor construction of the wetland creation area to ensure compliance with the mitigation plan. Grondin will be the primary contractor that works on the site and will provide construction and detail oversight regarding grading, survey, planting, erosion controls, and other ongoing maintenance and construction issues regarding the Larrabee Farms project site throughout the entirety of all mitigation projects thereon.

C.2.h. Project Construction Schedule

Compensatory mitigation shall be initiated not later than 90 days after project initiation and completed not later than one year after the permitted wetland impacts occur unless ACOE-approved mitigation plan specifically states otherwise and compensation for the temporal impacts are appropriate. Construction of the mitigation project creation areas is scheduled to

begin in the late summer of 2007 and woody plantings will be installed in fall of 2007 or spring of 2008. Any lag time between final grading and planting will allow for any changes to surface conditions or the outlet areas in order to address any minor needs for changes in hydrology observed after grading. Grondin will notify MaineDOT, MDEP and ACOE of any changes in this anticipated schedule. *If the impact will occur before the mitigation is constructed, the mitigation plan will address temporal losses and the permittee will work with ACOE to develop financial assurances for the mitigation completion and monitoring, including remedial actions.* Financial assurances are further discussed in section C.2.j., below.

C.2.i. Grondin Aggregates, LLC - Description, Rights and Responsibilities

Grondin Aggregates, LLC (Grondin) is working with MaineDOT to furnish wetland mitigation designed to offset impacts from the proposed Gorham Bypass Project. Grondin is a construction company with its headquarters in Gorham, Maine. Grondin is the operating company for the Larrabee Farms project. Grondin is responsible for contracting with appropriate professionals for the data collection and design of the mitigation site, constructing the mitigation site, overseeing the construction to insure that it is in substantial conformance with the design, and overseeing the monitoring and maintenance of the site. MaineDOT will enter into a contractual agreement with Grondin who will construct the proposed mitigation and protect the area with a conservation easement. A draft purchase and sale agreement has been prepared by MaineDOT and is currently being revised. MaineDOT will provide MDEP and ACOE with a copy of the fully executed agreement before MaineDOT's Gorham Bypass project begins. A copy of the draft P&S is included as Appendix 10.

C.2.j. Financial Assurances

Grondin Aggregates and MaineDOT have prepared a preliminary purchase and sales agreement that provides for an agreed payment for the mitigation project from MaineDOT. This P&S Contract is designed pursuant to and shall be governed by and construed in accordance with the laws of the State of Maine. The Purchase Price is based on conveyance of good, clear record and marketable easement interest and is payable at the time of closing by check from the Treasurer, State of Maine. In the event that Grondin fails to close hereunder for any reason other than the default of MaineDOT, MaineDOT shall have all remedies available at law and equity. Except as otherwise provided in the P&S Contract, the closing of title for purchase of the Conservation Easement pursuant to t the P&S Contract shall take place on or before December 31, 2008. MaineDOT will provide MDEP and ACOE with a copy of the fully executed agreement before MaineDOT's Gorham Bypass project begins. Grondin respectfully submits that the contractual obligations Grondin set forth with MaineDOT through the P&S agreement (Appendix 10), and with the Town of Scarborough through the Contract Zoning Agreement (Appendix 5), provide sufficient assurance that Grondin will perform, monitor and maintain the wetland mitigation project as planned and described herein.

C.2.k. FAA Correspondence

The New England Region Manager of the Environmental Program, Airports Division of the FAA found "no problem" with the Larrabee Farms Wetland Mitigation project site. Please see FAA correspondence regarding the Larrabee Farms Wetland Mitigation Site in Appendix 6 of this report.

D. Hydrology/Source of Water

Primary sources of hydrology at the Larrabee Farms site include groundwater and stream flow, with a limited supply of surface flow. It appears some site leveling was done, resulting in a berm/drop-off effect along the southern edge of the existing sand pit. There is evidence of standing water during wet seasons in the eastern portion of the proposed creation area. In addition, there is evidence of groundwater discharge where the sandy, outwash Windsor soils meet the silt loam, alluvial Limerick-Saco soils south of the mineral extraction area. Information from test pits dug by Grondin, and monitoring wells installed by Gillespie indicate that there is a "buried groundwater stream channel" in the eastern portion of the proposed creation area (by MW 7, as shown on the plan). This 'buried channel' is the result of geologic processes during the last glaciations, not recent mineral extraction activities. Groundwater flows heavy through this area because it contains a vein of very porous materials in relation to the surrounding areas, and partly due to the semi-impervious clay lenses that provides a medium for groundwater perching.

In general, hydrology tends from the upper part of the Nonesuch River watershed, located approximately along Route 114, north of the project, and flows south to the Nonesuch River. The Nonesuch River flows generally from west to east from its origins near the Saco Heath to the Scarborough River. The Nonesuch River flows in the bottom of large valley carved by the late-glacial, proto-Saco River. The Nonesuch River drains into the Scarborough Marsh (outletting into the Scarborough River by Black Point) approximately 5 miles east of the project area. Five wetland bodies were previously delineated at the Larrabee Farms site and include emergent/scrub shrub types adjacent to the Nonesuch River (Wetland C), a small flood plain wetland associated with a riparian ravine (Wetland B), and forested pit and mound wetlands along the eastern boundary of the property (Wetlands A, D, and E.) Road construction and landscape alterations (*i.e., grading*) associated with mining and logging activities has slightly altered the site's hydrology, especially along the abovementioned forested wetlands, and surface flow patterns were not evident, although standing water is present in portions of the forested wetland tracts away from the Nonesuch River. The Larrabee Farms Wetland Mitigation Project Site includes approximately 1 mile of frontage on the Nonesuch River. Included with the proposed compensation package for the MaineDOT project is a 100-foot stretch of the river, and the surrounding associated floodplain wetlands. Also included in the compensation package are approximately 2,040 linear feet of a wooded intermittent stream channel and the eastern half of the stream's riparian wetlands.

The primary source of hydrology in the wetland creation areas will come from groundwater interception. Further hydrologic input will be provided by surface runoff and atmospheric deposition. The overall grading for the site is designed for the average proposed surface grade to intercept groundwater as it flows from north to south through the site. Additionally, in areas where discharge occurs, or where surface water inputs are sufficient, the site is designed with a 1.5% slope from northeast to southwest. This slope is designed to slowly carry surface flow through the pit and mound microtopraphy eventually discharging any surface flow to a detention basin and level spreader outlet.

The proposed surface grades are based on geohydrologic data gathered and analyzed by R.W. Gillespie & Associates. In the spring of 2002, Gillespie & Associates installed piezometers at several locations across the Larrabee Farms site. The piezometers were installed to serve as groundwater monitoring stations in order to enable assessment of the site geohydrology relative

to wetland creation. **A copy of the Gillespie report is included as Appendix 6. This report provides a summary of methodologies for well installation, and provides an initial analysis and recommendations for the site pertaining to wetland creation. An additional report compiled by Gillespie & Associates is also included that provides a short synopsis of geohydrologic conditions at the site through the fall of 2006. In this synopsis, the eastern wetland creation area portion of the mitigation plan is discussed as Area 1, and the northwestern vernal pool creation area is discussed as Area 6.**

The wetland creation area proposed for use in this compensation plan is an approximately 15-acre, abandoned sandpit. Seven piezometers were installed in this area. Groundwater elevation data from the groundwater monitoring stations were collected monthly or bi-monthly between April 2002 and the present. Groundwater data have indicated a consistent groundwater flow at each of the well locations with groundwater fluctuations generally mirroring precipitation and snowmelt events (please see Figure 5).

According to information provided by Gillespie, there will be sufficient groundwater feeding the proposed creation area to support the required wetland hydrology. Final elevations (approximate) will range from 65.0 feet at the northern end of the proposed wetland creation area to 52.0 feet at the southern end. The creation area has been designed to achieve a flow pattern that slowly directs surface and ground water through the site and to the drainage outfall located in the southeast corner of the creation area (a 1 to 2% slope from northwest to southeast). Data indicate that excavation to finished grade in the eastern portion of wetland creation will intercept existing groundwater, causing discharge of groundwater to the finished ground surface. The data also indicate there may be some recharge to groundwater in the western portion of the proposed wetland creation area, especially in times of prolonged drought. A shallow catchment basin with a level-lip-spreader and a mellow swale drainage outlet will be constructed at the southeastern corner of the wetland creation area to slow the release of surface runoff to areas down slope of the new wetland. The basin and swale outlet area will be lined with appropriately sized rip-rap (to be determined by the Project Engineer) and allowed to re-vegetate with volunteer species of woody and herbaceous vegetation.

General hydrology across the wetland creation area will vary from seasonally saturated to occasionally flooded. The proposed vernal pool creation areas are designed to be seasonally flooded. With hydrologic conditions sufficient to allow for various water regimes across the wetland creation area, designers have planned the wetland creation project to sustain varying types of wetland habitats. Micro-topography and planting species types and densities will further define the habitats. Within the approximately 15.7-acre wetland creation area, there will be three main types of wetlands created. The wetland types include forested (PFO), scrub/shrub (PSS) and emergent (PEM). In order to adequately mimic the functions of the wetlands being impacted by the proposed bypass project, the ratios of PFO:PSS:PEM wetlands at the creation site will be loosely based on the ratios of these types of wetlands being impacted. We have rounded the numbers for site simplicity, and propose that within the wetland creation area, 90% of the creation is designed as forested wetlands, 7.5% is designed as shrub wetlands and 2.5% is designed as emergent wetland habitat type.

Most of the PSS wetlands impacted by the site are fringe habitats, occurring at edge of forests or on maintained right-of-ways. At the creation site, therefore, we propose to create the PSS wetlands mostly along the northern edge of the creation area, and between the PFO and PEM

wetlands near the southwestern corner of the site. The emergent zone of the wetland creation area will be located near the outlet of the wetland system, and is designed to have the longest period of saturation. The forested wetland creation area will be primarily located in the center of the wetland creation site.

Within the proposed forested creation areas, data indicate that there is high water table near monitoring well 7. This area has consistently shown a spike in groundwater elevation in relation to abutting wells. The project's Hydrogeologist believes that this area represents a buried 'stream channel', a relic from the glacial era. The mineral material that surrounds this channel provides an easier passage for groundwater, and thus groundwater through this stretch of the sandpit tends to channelize through the vein of course, sandy materials. In this area, we anticipate a slightly more active groundwater discharge. In order to make use of the higher groundwater, ephemeral, or 'vernal' pool creation areas will be included around these sites, substantially in accordance with the attached grading plan. The vernal pools will range in depth from 18 to 24 inches below the proposed median grade within the forested systems. This will allow for dry down during summer months, and flooding during the spring and fall. Transition areas between each type of wetland habitat will have features of both habitats, and the designers will designate these areas as mixed-type wetland habitats. Between forested and scrub/shrub wetlands will be a mixture of tree and shrub species, typical of PFO/PSS wetlands. Between scrub/shrub and emergent wetland types is vegetation and hydrology indicative of PEM/PSS-type wetlands.

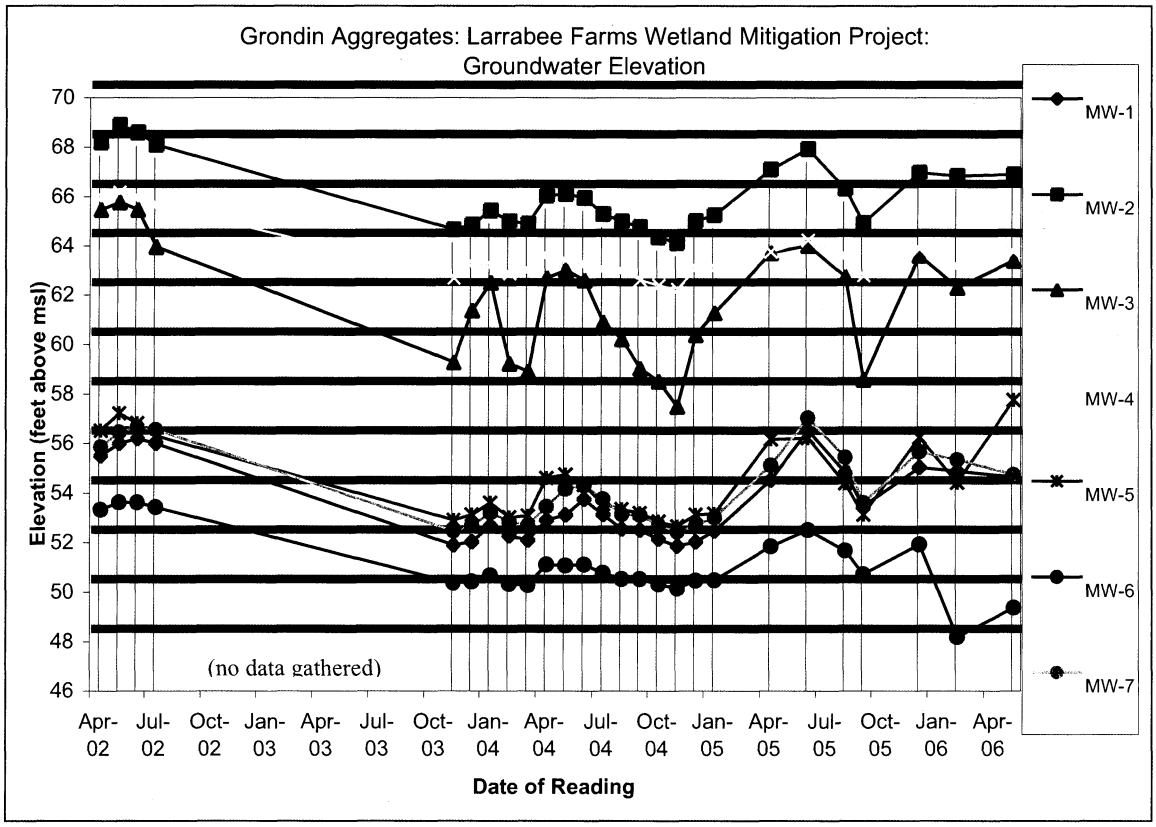


Figure 5: Groundwater elevations for the seven monitoring wells included in vicinity of the proposed wetland creation area.

E. Grading Plan

Across the bottom of the proposed 15.7-acre wetland creation area, the general grading plan is designed to shed surface water slowly through the wetland area and toward an outlet structure located in the southwest corner of the site. The structure will include a rip rap-lined basin and a level-lip spreader overflow chamber, designed to slowly sheet-flow water into the adjacent upland forest. The site includes creation of PFO, PSS and PEM wetland types. Each type of wetland will receive slightly different grading elevations, and each has been planned to have slightly different hydrologic regimes. In the vernal pool creation areas, no outlets will be installed. The pools have been designed to fill with surface runoff and high groundwater and to empty through evaporation, evapotranspiration, and groundwater recharge. *A wetland scientist shall be on-site to monitor construction of the wetland mitigation area to ensure compliance with the mitigation plan.* The proposed grading for each of these areas is explained below.

PFO Creation Area - The hydrology of the forested wetland creation areas will mimic that of natural forested wetlands found along the bypass project route. A large majority of the wetland impacts resulting from the proposed bypass is to PFO wetland systems. Consequently, project designers will seek to achieve a majority of PFO in this compensation plan (we will design for 90% PFO creation). Common forested wetlands along the bypass route include red maple and ash swamps that are saturated by groundwater throughout the spring of most years. Many of these forests display pit-and-mound microtopography, with wetter pits interspersed amongst drier mounded areas. Some of these pits are deep enough to hold surface water, at or just above groundwater elevation, for periods throughout the year. The created forested wetland microtopography will mimic this hydrologic situation. The forested wetland creation areas will be graded such that the overall top of soil averages approximately 8 to 12 inches above the seasonal high water table. Through the process of capillary fringe (adhesion of water to the poor spaces within the soil matrices,) effective saturation throughout the forested area will be to the surface during periods of high water table. Pit and mound microtopography will range from 6-inches below this average grade in the pits, to approximately 12-inches above the average grade on the mounds. A graphic guide of the overall pit and mound relief that designers are seeking can be seen in Figures 6 and 6a, below.

Ephemeral Pools w/in the PFO - The forested wetland creation area will also include at least three ephemeral, or vernal pool features. These features will generally consist of large pits, included within the overall pit and mound relief. The basins of the proposed vernal pools will be approximately 18-24 inches below the average grade of the wetland area, and will include at least on island. The pool features will be designed to provide groundwater discharge and recharge potential, and to slowly dry through the process of evaporation, evapotranspiration and groundwater recharge. The pools will be located and created such that hydrology in the pools will provide approximately 12-24 inches of surface water for periods of time in the spring, and possibly fall, in order to mimic naturally occurring vernal pool hydrology.

In order to provide the best chance for attracting amphibians, the pools will be located in the southern end of the PFO creation area, near the existing mature upland and wetland forest system. This forest is included in the permanent preservation area included with the mitigation package. One small vernal pool was observed in 2006 in the preservation area that had 4 spotted salamander egg masses.

The created pools will be monitored during the first and second spring walk-throughs and any necessary changes to hydrology will be achieved at that time. If it appears that the hydrology of the pools sufficiently mimics that of natural vernal pools, project designers will work with MDIFW and USFWS to proposed egg mass stocking of vernal pool indicator species (mole salamanders or wood frogs). If the pools appear to be too wet for vernal pool indicator species breeding habitat needs (i.e. if they remain flooded throughout the year,) then they will be left as is to provide habitat for other amphibian species, insects, birds, and mammals. Success of these ephemeral pool features will be based on whether they maintain adequate hydrology to provide habitat (food, breeding habitat, refuge, etc.) for any amphibians or macro-invertebrates, not limited to vernal pool indicator species. Recordings of wildlife usage during both the spring walk-throughs and during the full site monitoring efforts will be included in the year-end reports. With each monitoring report, a comparison will be included of the relative success and hydroperiods of these 'ephemeral pools' in the creation area with the 'vernal pool' creation areas in the existing upland forest in the northwestern component of this plan.

PSS Creation Area - PSS wetlands along the proposed bypass route consist mainly of wetlands found on powerline and pipeline right-of-ways and those found as fringe habitats adjacent to larger PFO and PEM wetlands. At the creation area, PSS wetlands will be created along the edge of the PFO wetland, and will provide a habitat and structural transition between the PFO creation area and the PEM and surrounding uplands. In time, it is assumed that the PFO areas and the PSS areas will intermingle, forming PSS/PFO zones and PFO/PSS zones. The scrub/shrub wetland creation areas will be graded similar to the forested wetland creation areas, with pit and mound microtopography. The PSS creation areas are located at the southern and northern borders of the PFO creation area, near groundwater discharge sites in the north and a graded mound in the southern end. The PSS area then is planned to be slightly wetter than the PFO zones. During periods of high groundwater elevation and heavy precipitation events, standing water may be found within some of the lower portions of the PSS creation areas. With major grading on site designed to direct surface water toward the southwest, standing water will never be deeper than the pits in the pit and mound minor grades.

PEM Creation Area - The emergent, wet meadow portion of the wetland creation area is designed to be located in the wettest portion of the site. The top of topsoil elevation of the PEM creation areas will be approximately at the elevation of the seasonal high water table, and will capture surface flow and groundwater discharge from the PFO and PSS systems above it. The average surface elevation in the PEM area will be roughly equivalent to the elevation of the outlet structure. This design will allow for saturation in the solum, but will prevent prolonged flooding in the PEM area. General grading design will be flat to undulating in order to create microtopographical and hydrological gradients to support a variety of hydrophytes.

Vernal Pool Creation Areas – The vernal pool creation areas, constructed in the northwestern corner of the Larrabee Farms site, will consist of approximately 1,500 to 3,000 square foot basins. The basins are located in upland forest dominated by red maple, eastern hemlock (*Tsuga canadense)* and red oak (*Quercus rubra).* The pools have been designed in areas where minimal clearing of overstory vegetation will be necessary, and generally where there is convenient access for equipment (thus, reducing the needs for road building or clearing.) The topsoil and duff from the area containing the pools will be separated, then subsoil will be removed to create depressions approximately 1.5 to 3 feet in depth (depending on the hydrology and site conditions) generally to a bottom elevation range of 96 to 98 feet. Where feasible, root masses

and clumps of red maples will be left in the pool areas and excavation will take place around the masses. The trees left in these areas will provide shading for the pools in the spring and summer, and when (or if) the vegetation dies or sheds branches, the detritus can provide egg mass attachment and refuge sites for amphibians. Where trees need to be trimmed or cut adjacent to pools, for safety or other reasons, during construction, the stumps of regenerating tree species will be left in place in order to promote regeneration. The combined basin size of the pools will be approximately 0.25 to .3 acre. Pool creation locations were located mapped in 2006 using a GPS and will be more accurately located and mapped prior to construction in 2007. The basin area of the vernal pools will be at least .3 acre. Larger pools may be constructed depending on field conditions. Please see Figure 6b for a depiction of a typical pool creation area.

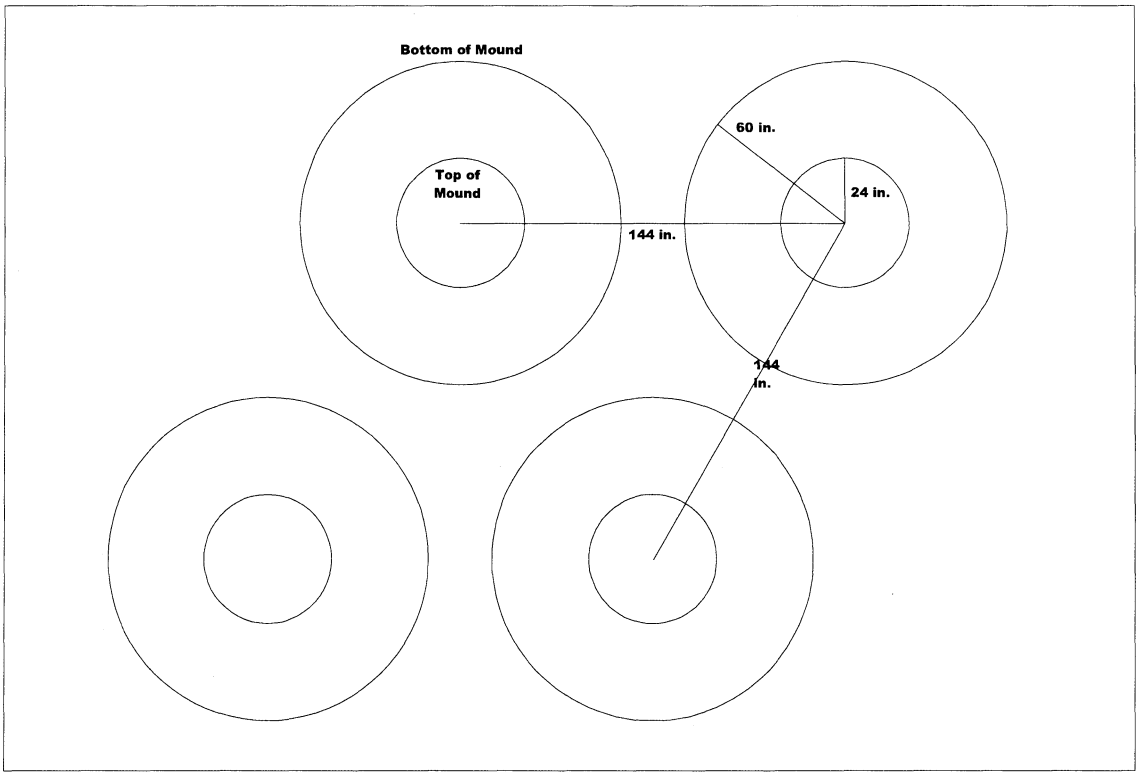


Figure 6. Aerial view of typical/target pit and mound microtopography in PFO and PSS wetland creation areas.

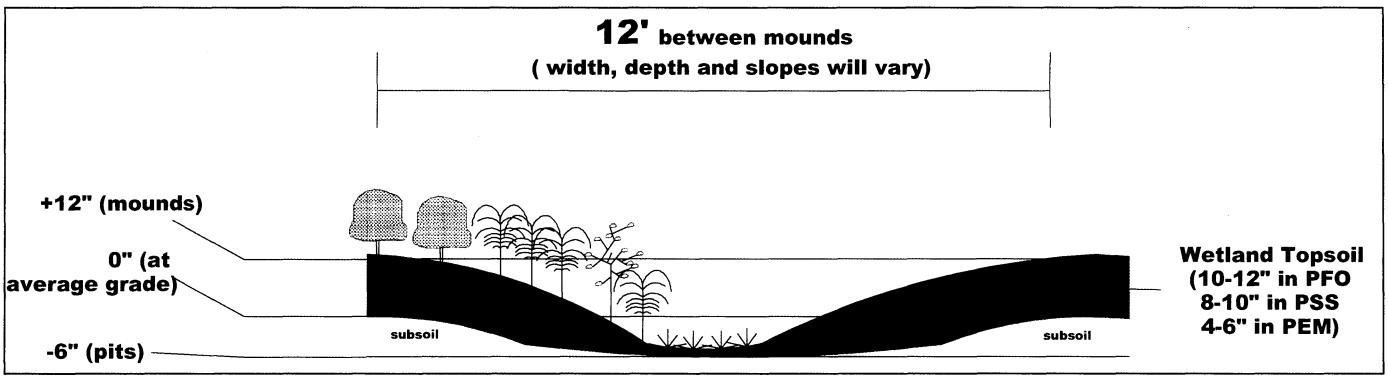


Figure 6a. Cross-section of typical/target pit and mound microtopography in PFO and PSS wetland creation areas.

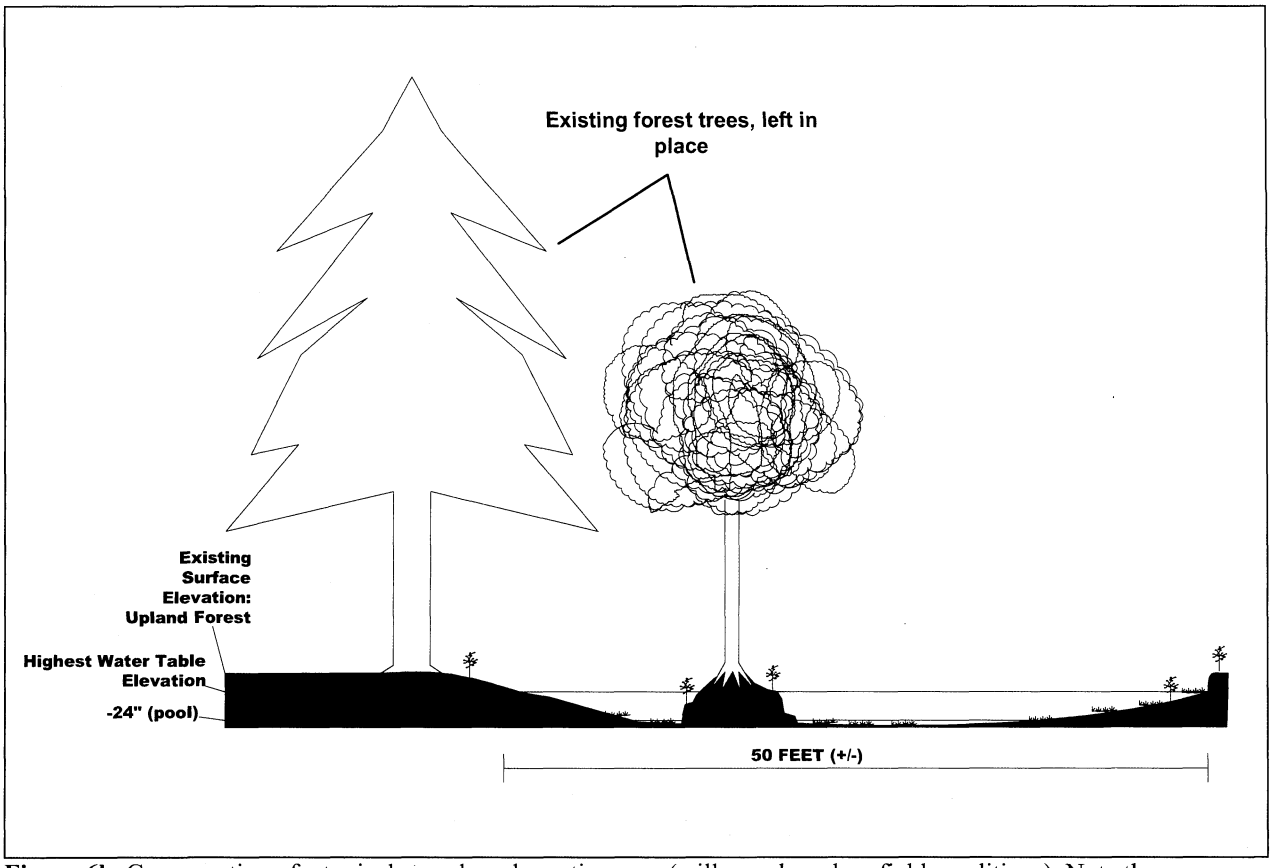


Figure 6b. Cross-section of a typical vernal pool creation area (will vary based on field conditions). Note the representation of a red maple and trunk left in the midst of the excavated pool.

F. Topsoil

Wetland Creation Areas
Topsoil across the creation area will consist of a mixture of organic and mineral soil materials. At least, and on average, 10 inches of augmented topsoil will be installed in all of the wetland creation areas. Because the proposed wetland creation area has been previously mined of mineral materials, the area has limited topsoil resources. Topsoil will be imported primarily from cleared forested sites in the area (e.g. the Scarborough Gallery Project in Scarborough, Maine). Topsoil will be augmented to achieve between 4% and 12% organic carbon content, by weight, depending on where it is installed (for example, PFO and PSS creation areas will have a target OC percentage by weight between 10 and 12.) Topsoil sources will be visually inspected by a Wetland Mitigation specialist prior to installation on creation areas in order to reduce the risk of invasive weeds. Planned forested and shrub wetland creation areas will receive a mixture of topsoil with about equal amounts by volume of topsoil and a carbon source, whereas planned emergent wetland creation areas will receive about 25% carbon and 75% topsoil material, by volume. Adequate hydrology will be the driving force behind success of emergent wetland creation areas. As with grading and planting, and as is the case in natural wetland systems, the organic carbon content of the soil will vary across the wetland creation sites. The percentages listed herein will be sought, on average, across the site.

Topsoil augmentation will be from organic sources, and may include more than one source. Grondin began grinding and composting stumpage on the site in 2006. These piles will be turned throughout the year to ensure proper aeration and sufficient microbial respiration, consumption and breakdown. This material will then be mixed with topsoil on site to increase available carbon and to provide structure and increased water holding capacity. Additional carbon sources may include municipal composted sludge materials, commercially available compost mixtures, clean wetland and/or organic topsoil from permitted impacts on other projects, or clean leaf compost. Note the "clean" refers both to the lack of physical contaminants such as plastic and to the lack of chemical contaminants. Compost or other organic matter will be clean and free of weed seeds, specifically seeds of the species listed in Table J.1. Grondin may use wetland topsoil from the impacted forested wetlands systems, where appropriate and cost-effective, and when the source soils are certified to be invasive species-free. The presence of invasive species along the roads and right-of-ways near the project may limit the effective use of impact site soils.

The following guidelines will be followed regarding soil storage onsite:
•Avoid stockpiling compost organics in piles over 4 feet in height;
•Protect stockpiles from surface water flow and contain them with haybales and/or silt fence;
•Cover stockpiles with a material that prevents erosion (tarps, erosion control mat, straw and temporary seed, depending on size and duration of storage)
•Inspect and repair protection measures listed above regularly (weekly), as well as prior to (to the extent possible) and after storm events.
•Maintain moisture in the soils during droughty periods.

Vernal Pool Creation Areas
Vernal pool areas will be constructed in existing upland forests. The duff layer, including leaf and needle litter, and approximately 4-6 inches of the existing Ap topsoil horizon will be stockpiled on site while excavating the basins. The topsoil and leaf litter will be restored in the vernal pool basins. Side slopes will be kept, where feasible, less than 1:3. Where site conditions

warrant, side slopes will be stabilized using seed and mulch and organic fiber netting (not curlex or similar material, which has been known to snag wildlife).

Upland Slopes and Other Disturbance Areas

It is important to ensure quick stabilization of the upland slopes adjacent to the wetland creation areas in order to prevent erosion and siltation. Upland slopes will be rough graded to help slow surface flow and avoid rill and gully erosion, as well as to maintain seed contact with the soil and prevent wind erosion. Topsoil will be added on the side slopes to a depth of approximately 4". On sandy and clay-material side slopes, like those found at the Larrabee Farms site, Grondin has had great success using a topsoil product, often referred to as 'rough loam,' to achieve quick stabilization and regrowth on poor soils and disturbance areas. The rough loam includes the first and second stage screening leftover from the procedure used to make screened loam. The topsoil resulting from this process includes small stones, and root materials that provide stability and coarseness to the soil, further helping to slow runoff velocity, to provide seeds with an organic carbon source and to help anchor the soil, seeds and mulch in place. After it is installed on the slopes and disturbance areas similar to traditional loam, the rough loam then receives an application of the upland seed mix and mulch. Finally, seed and mulch on slopes steeper than 2:1 will be tacked in place using Tenax® netting, or some equivalent RECP, as required.

G. Planting Plan

A mixture of vegetation has been chosen to plant across the forested, emergent and scrub/shrub wetland creation areas. Native species were chosen based on several factors, including known suitability for wetland creation plantings, known ability to provide wildlife habitat, known ability to survive in a range of hydrologic and cover conditions, and availability. Woody plants will be installed as potted stock and/or broadcast seed across the creation areas and throughout the upland buffer areas on slopes and bare ground (as needed).

Woody Plantings
After returning the native topsoil to the site and discing or grade-mixing compost (if necessary and as described in Topsoil section), pit and mound microtopography will be graded into the PFO and PSS creation area basins. Pits and mounds will add topographic relief to the site and allow for planting survival of a diverse group of species. See Figure 6 for a depiction of the typical mounded topography. Species that do not tolerate prolonged wet conditions, such as *Pinus strobus* and *Abies balsamea* in the forest areas and *Aronia melanocarpa, Cornus sericea,* and *Viburnum dentatum* in the shrub areas, will be planted mostly on the highest portion of the mounded areas. Further down the mounds and into wetter soils, planted species will include *Larix laricina* in the forest areas and *Alnus incana, Betula populifolia,* and *Viburnum cassinoides* in the shrub areas. Species planted near the bottom of the mounds in the wettest areas will include *Acer rubrum* and *Fraxinus pensylvanicum* in the forest areas and *Salix discolor, Ilex verticillata,* and *Alnus incana* in the shrub areas.

In general, plants will be installed in groups and clumps depending on site conditions, rather than evenly spaced rows. Potted nursery stock will be used, with shrubs 18 to 24 inches tall and tree species 3 to 4 feet tall. Some healthy tree and shrub species may be transplanted from stock found onsite in uplands on the Larrabee Farms site (not in the proposed preservation areas). All shrub and trees planted on the site will be mulched with a wood-fiber mulch (aged bark mulch or erosion control mix) to reduce competition from herbaceous vegetation. Mulch will be added to an average depth of three inches and to a radius of approximately three feet around plantings.

A qualified wetland professional will be on-site to monitor construction of the wetland mitigation area to ensure compliance with the mitigation plan. *During planting, the wetland professional may relocate up to 50 percent of the plants in each community type if as-built site conditions would pose an unreasonable threat to the survival of plantings installed according to the mitigation plan. The plantings shall be relocated to locations with suitable hydrology and soils and where appropriate structural context with other plantings can be maintained.*

TABLE G.1. Scrub/Shrub Wetland Creation Plant List – Planted at a uniform density, at approximately 600 plants per acre in the proposed PSS creation zones. Plants will include potted nursery stock, approximately 18 to 24 inches tall.

Scientific Name	Common Name	Plant I.D.	Wetland Indicator Status
Aronia melanocarpa	Black Chokeberry	Aromel	FAC
Cornus sericea	Red osier Dogwood	Corser	FACW
Viburnum dentatum	Northern Arrowwood	Vibden	FACW
Viburnum cassinoides	Wild Raisin	Vibcas	FACW
Alnus incana	Speckled Alder	Alninc	FACW
Ilex verticillata	Winterberry Holly	Ilever	FACW
Salix discolor	Pussy Willow	Saldis	FACW
Betula populifolia	Grey Birch	Betpop	FAC

TABLE G.2. Forested Wetland Creation Plant List – Planted at a uniform density, at approximately 400 plants per acre in the proposed PFO creation zones. Plants will include potted nursery stock, approximately 2 to 3 feet tall.

Scientific Name	Common Name	Plant I.D.	Wetland Indicator Status
Acer rubrum	Red Maple	Acerub	FAC
Pinus strobus	White Pine	Pinstr	FACU
Abies balsamea	Balsam Fir	Abibal	FAC
Larix laricina	American Larch	Larlar	FACW
Fraxinus pensylvanicum	Green ash	Frapen	FACW

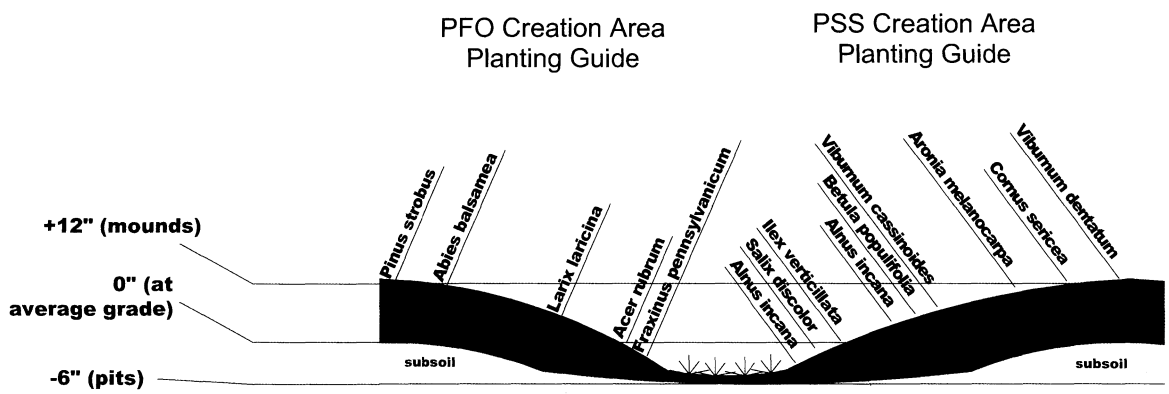


FIGURE 7. Cross-section of typical mound feature and planting locations. Note : this sketch is meant to serve as a guideline for the grading contractor, the ultimate finish grades are intended to reflect this sketch rather than replicate it exactly. Finish grade conditions will vary slightly, and depend much upon ground conditions.

Seeding
Following installation of the woody plants, exposed soils will be seeded and mulched to provide soil stabilization and to promote the growth of native herbaceous plants. Across the wetland creation sites, including in PEM wetland creation areas, New England Erosion Control/Restoration Mix or a similar native seed mixture, will be applied at a rate of 35 lbs/acre (see table G.3. for species included - *species not specified in the mitigation plan shall not be used without prior written approval from ACOE*). Straw mulch will be applied at a rate of 70-90 lbs. (about 2 bales)/1,000 square feet. To reduce the immediate threat and minimize the long-term potential of degradation, the species included on the invasive plant species list in Table 4 of the New England District Mitigation Plan Guidance shall not be included as planting stock in the overall project (Table J.1., herein). Only plant materials native and indigenous to the region shall be used.

Ephemeral and Vernal Pool Creation Basins
The side slopes of the ephemeral will be seeded and mulched similar to the PEM creation areas. The basins of the created pools will be filled to 3-6 inches with leaf litter and duff, gathered onsite prior to removal of subsoil. Additional leaf litter will be collected from the site area and, if necessary, from municipal sources (transfer station leaf piles). In the vernal pool creation areas, this material will come from the forest floor of the area cleared in order to create the pools.

Table G.3. Wetland Creation Seeding Species List: New England Erosion Control/Restoration Seed Mix (or equivalent)- to be applied at a rate of 35 lbs/acre. Straw mulch will be applied at a rate of 70-90 lbs. (about 2 bales)/1,000 square feet.

Common Name	**Scientific Name**	**Wetland Indicator Status**
Creeping Bentgrass	*Agrostis stolonifera*	FACW
New York Aster	*Aster novi-belgii*	FACW
Flat-top Aster	*Aster umbellatus*	FACW
Nodding Bur-marigold	*Bidens cernua*	OBL
Fox Sedge	*Carex vulpinoidea*	OBL
Silky Wild Rye	*Elymus villosus*	NI
Virginia Wild Rye	*Elymus virginicus*	FACW
Joe-Pye Weed	*Eupatorium maculatum*	FACW
Boneset	*Eupatorium perfoliatum*	FACW
Redtop	*Festuca rubra*	FACU
Soft Rush	*Juncus effusus*	FACW
Sensitive Fern	*Onoclea sensibilis*	FACW
Switchgrass	*Panicum virgatum*	FAC
Lanced-Leaved Goldenrod	*Euthamia graminifolia*	FAC
Blue Vervain	*Verbena hastata*	FACW

Created Upland Slopes and Disturbance Areas
Upland buffers and slopes created during wetland creation will be stabilized and broadcast seeded with native, herbaceous, upland vegetation. Created and disturbed slopes around the wetland creation area will be broadcast seeded with herbaceous vegetation to provide habitat for small mammals, birds and insects, and to provide wildlife habitat between the created forest and shrub wetlands and the adjacent upland forested areas. Upland buffers that have not been

disturbed will be left in their current state, ranging from upland fields to shrub and forest uplands and wetlands. Disturbed slopes adjacent to the wetland creation areas will be temporarily stabilized using a commercially available rolled erosion control product, or RECP, as needed (Tenax or curlex netting, coconut fiber mat, etc). Prior to applying the RECP, slopes will have at least 4" of loam or topsoil product added and will be seeded with a native upland seed mix. Fertilizer and lime will be added to ensure quick vegetation growth, as necessary. Please see Table G.4. for seeding and fertilizer rates for disturbed upland areas.

Previously Disturbed Upland Buffer Areas

As shown on the plan, north of the wetland creation area, between the abutting properties and the Larrabee Farms site, white pine (*Pinus strobus)* trees will be installed approximately 20-feet apart, where natural terrain and trails allow. White pine trees will be transplanted from a stand found on site using a mechanized tree spade, and will range in height from 5 to 20 feet tall. The area will be seeded with upland herbaceous vegetation seed mix as described in Table G.4.

Table G.4. Upland area seeding and fertilizer[1] application rates.

Item:	Application Rate:
10-20-20 Fertilizer (N-P205-K20 or equal)	18 lbs/1,000 sq. ft.
Ground limestone (50% Ca & MgOH)	138 lbs/1,000 sq. ft.
Upland seed mix[2]	3-lbs/1,000 sq. ft

[2] Fertilizer and limestone application rates may vary or not be required at all depending on site characteristics – soil tests will be performed to determine the appropriate requirements prior to applying seed.

[1] Seed mixture shall be comprised of a mixture designed to provide quick cover and a lasting seed base for wildlife food sources. The following list represents a sample mixture: creeping red fescue (*Festuca rubra*), annual rye-grass (*Lolium multiflorum*), timothy (*Phleum pratense*), white clover (*Trifolium repens*), red top (*Agrostis alba*), little bluestem (*Schizachyrium scoparium*), indian grass (*Sorgastrum nutans*). **The seed mix shall be free of the invasive and nuisance weeds listed in Table J.1.**

H. Coarse Woody Debris and Other Features

A supply of dead and dying woody debris and other structural items such as snags, logs, branches, stumps, and boulders shall cover at least 4% of the ground throughout the creation area (approximately 27,000 sq. ft.). For the purposes of this plan, the term 'coarse woody debris and other features' includes such materials as logs, stumps, smaller branches, rocks, and standing snags. These materials will not include species shown on the list of invasive species in Table J.1. As much as possible, these materials will be in various stages of decomposition and salvaged from areas within the Larrabee Farms Wetland Mitigation Project site (from road construction, pit creation and development, and as found within several of the disturbed upland areas onsite). **None of these materials will be removed from wetlands within the preservation areas, except as necessary for trail creation and design. No further stumping or grubbing will occur in the preservation areas except that which has occurred for wetland creation.** During site grading and planting, these non-living features will be installed randomly throughout the wetland creation areas to provide habitat and to mimic similar, natural environments.

Sampling of some inert fill materials (stumps and logs) that were buried by previous extraction operations – to be stored and spread across site as woody debris and other features in order to jumpstart habitat and structural diversity in the creation areas.

I. Erosion Control

A. Pre-construction Phase – roads and uplands adjacent to creation areas
Prior to beginning the wetland creation area and associated road construction, silt fence, staked haybales or erosion control mix sediment barriers will be installed across the slope(s), on the contour, at or just below the limits of clearing or grubbing, and/or just above any watercourse to protect against construction related erosion. The placement of sediment barriers shall be completed in accordance with guidelines established in the guidebook *Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices* and in accordance with this erosion control plan. This network is to be maintained by the contractor until all exposed slopes have at least 85%-90% vigorous perennial vegetative cover to prevent erosion.

B. Construction and Post-Construction Phase– roads and uplands adjacent to creation areas
1a.) Areas undergoing actual construction shall only expose that amount of mineral soil necessary for progressive and efficient construction and shall not be left exposed longer than 14 days. Areas that will not be completed (covered and/or finish graded) within fourteen days of disturbance shall be anchored with temporary erosion control measures. Temporary erosion control measures shall include erosion control mesh, netting, or mulch as directed by the project designer/manager. If mulch is used, straw shall be applied at the rate of 2 bales per 1,000 square feet. The application area shall be covered with enough mulch to avoid any visible soil exposure. Mulch shall be kept moist or otherwise anchored to avoid loss due to wind. Mulch and netting shall be applied in the base of all grassed waterways (i.e. roadway ditches) and in slopes that exceed 15%.

1b.) If disturbed areas do not receive final seeding by November 1st of the year of construction, then all disturbed areas shall be seeded with a winter cover crop of winter rye at the rate of 3 lbs/1,000 sq. ft. to provide winter protection. Winter seeding shall be covered with twice the normal application rate of straw mulch.

1c.) During winter conditions, areas that will not be completed (covered and/or finish graded) within seven days of disturbance shall be anchored with temporary erosion control measures. Temporary erosion control shall include erosion control mesh, netting or mulch as directed by the inspecting engineer and as shown on the design plans. If mulch is used, straw mulch shall be applied. The application area shall be sufficiently covered with enough mulch to avoid any visible soil exposure.

2.) All topsoil shall be collected, stockpiled, seeded with rye at 3-lbs/1,000 sq. ft. and mulched, and re-used as required. An erosion control barrier shall be installed down gradient from any stockpiled loam; loam shall be stockpiled at locations designated by the owner and/or inspecting engineer.

3.) All silt fences and other erosion control measures shall be installed according to this plan. These shall be maintained during development to remove sediment from runoff water. All the silt fences and erosion control measures shall be inspected before and after any rainfall or runoff event, and maintained and cleaned until all areas have at least 85%-90% vigorous perennial vegetative cover of grasses.

4.) Roadway areas on the site shall be periodically swept or washed to avoid tracking of mud, dust or debris from the construction area. Dust control during construction shall be achieved by the use of a soil binding agent and/or water applied to the roadway areas as necessary to reduce dust during the dry months.

5.) All area shall be seeded and stabilized in accordance with the following vegetation plan.

C. Vegetation plan - roads and uplands adjacent to creation areas
Re-vegetation measures shall commence immediately upon completion of the installation of the wetland vegetation in the creation area. Disturbed areas adjacent to wetland creation areas shall also be mulched and anchored prior to any storm event (in this context, 'adjacent' means within 100 linear feet). If final seeding cannot be accomplished by November 1st, then all disturbed areas shall be seeded with a cover crop of winter rye at the rate of 3-lbs/1,000 sq. ft. to provide winter protection, and mulched at a rate of 140-180 lbs. of straw (about 4 bales)/1,000 square feet. Seeded and mulched areas on slopes greater than 1.5:1 shall be covered with erosion control mesh that is properly anchored in place.

Permanent re-vegetation measures in upland areas shall consist of the following:

1. Four inches of loam will be spread over disturbed areas and smoothed to a uniform surface. Loam shall be free of subsoil, clay lumps, stones and other objects over 3" in diameter, and without weeds or other objectionable material.

2. Soil amendments may be applied as follows:

Item:	Application Rate:
10-20-20 Fertilizer (N-P205-K20 or equal)	18.4 lbs/1,000 sq. ft.
Ground limestone (50% Ca & MgOH)	138 lbs/1,000 sq. ft.

3. Following seedbed preparation, swale areas, disturbance areas and side slopes shall be seeded at a rate of 3-lbs/1,000 sq. ft. with a upland seed mix that is certified free of any nuisance and invasive species listed in Table J.1.

4. Erosion control mesh shall be applied in accordance with the plans over all finish-seeded areas as specified in the designs.

5. All hay bale, silt fence or erosion control mix sedimentation barriers will remain in place until seeding has become 85%-90% established and then removed within 1 year.

J. Invasive and Noxious Species

J.1. Risk Section

During the first few years, while the designed wetland vegetative zones become established, they are susceptible to colonization and subsequent domination by invasive species. A number of plants are known to be especially troublesome in this regard. Table J.1. provides a list of invasive and nuisance weeds for which care will be taken to avoid importing in any manner or number to the compensation site.

Table J.1. Invasive and other Unacceptable Plant Species (adapted from Table 4, *U.S. Army Corps of Engineers New England District, Guidance for Mitigation Plan Checklist, 06/15/2004*)

A. Herbaceous Plants [1]	
Scientific Name	**Common Name**
Aegopodium podagraria	Goutweed or Bishop's weed
Aira caryophyllea	Silver hairgrass
Alliaria petiolata	Garlic mustard
Allium vineale	Field garlic
Ampelopsis brevipedunculata	Porcelain berry
Anthoxanthum odoratum	Sweet vernal grass
Anthriscus sylvestris	Chervil
Arctium minus	Common burdock
Asparagus officinalis	Asparagus
Barbarea vulgaris	Yellow rocket
Bromus tectorum	Drooping brome-grass
Butomus umbellatus	Flowering rush
Cabomba caroliniana	Fanwort
Callitriche stagnalis	Water-starwort
Calystegia sepium	Japanese bindweed
Cardamine impatiens	Bushy rock-cress
Cardamine pratensis	Cuckoo-flower
Carex kobomugi	Japanese sedge
Centaurea biebersteinii	Spotted knapweed
Chelidonium majus	Celandine
Cirsium arvense	Canada-thistle
Cirsium palustre	Marsh thistle
Commelina communis	Asiatic day-flower
Coronilla varia	Crown vetch
Cyperus esculentus	Yellow nutsedge
Dactylis glomerata	Orchard-grass
Datura stramonium	Jimsonweed
Echinochloa crusgalli	Barnyard grass
Egeria densa	Giant waterweed
Eichhornia crassipes	Water hyacinth
Eleusine indica	Goosegrass
Elsholtzia ciliata	Elsholtzia
Elytrigia repens	Quack-grass
Epilobium hirsutum	Hairy willow-herb
Euphorbia cyparissias	Cypress spurge
Euphorbia esula	Leafy spurge
Festuca filiformia	Hair fescue
Festuca ovina	Sheep fescue
Froelichia gracilis	Slender snake cotton

Geranium nepalense (G. sibericum)	Nepalese crane's-bill
Geranium thunbergii	Thunberg's geranium
Glaucium flavum	Sea- or horned poppy
Glechoma hederacea	Gill-over-the-ground
Glyceria maxima	Sweet reedgrass
Hemerocallis fulva	Tiger-lily
Heracleum mantegazzianum	Giant hogweed
Hesperis matronalis	Dame's rocket
Hydrilla verticillata	Hydrilla
Hydrocharis morsus-ranae	European frog-bit
Hylotelephium telephium (Sedum telephium)	Live-forever or Orpine
Hypericum perforatum	St. John's wort
Impatiens glandulifera	Ornamental jewelweed
Iris pseudacorus	Yellow iris
Kochia scoparia	Summer cypress
Lamium spp. (all)	Dead nettle
Lepidium latifolium	Tall pepperwort
Lotus corniculatus	Birdsfoot trefoil
Lysimachia nummularia	Moneywort
Lysimachia vulgaris	Garden loosestrife
Lythrum salicaria	Purple loosestrife
Malva neglecta	Cheeses or common malva
Marsilea quadrifolia	Water shamrock or water clover
Mentha arvensis	Field-mint
Microstegium vimineum	Japanese stilt-grass
Miscanthus sinensis	Eulalia
Myosotis scorpioides	True forget-me-not
Myosoton aquaticum	Giant chickweed
Myriophyllum aquaticum	Parrot feather
Myriophyllum heterophyllum	Variable water-milfoil
Myriophyllum spicatum	Eurasian water-milfoil
Najas minor	Lesser naiad
Nymphoides peltata	Yellow floating heart
Ornithogalum umbellatum	Star of Bethlehem
Pastinaca sativa	Wild parsnip
Phalaris arundinacea	Reed canary-grass
Phragmites australis	Reed grass, Phragmites
Poa compressa	Canada bluegrass
Poa pratensis	Kentucky bluegrass
Poa trivialis	Rough bluegrass
Polygonum aubertii	Silver lace-vine
Polygonum cespitosum	Cespitose knotweed
Polygonum cuspidatum	Japanese knotweed
Polygonum perfoliatum	Mile-a-minute vine
Polygonum persicaria	Lady's thumb
Polygonum sachalinense	Giant knotweed.-28-
Potamogeton crispus	Curly pondweed
Puccinellia maritima	Seaside alkali-grass
Pueraria montana	Kudzu
Ranunculus ficaria	Lesser celandine
Ranunculus repens	Creeping buttercup
Rorippa microphylla	One-row yellow cress

Rorippa nasturtium-aquaticum	Watercress
Rorippa sylvestris	Creeping yellow cress
Rumex acetosella	Sheep-sorrel
Rumex obtusifolius	Bitter dock
Salvinia molesta	Salvinia
Senecio jacobaea	Tansy ragwort
Setaria pumila (S.lutescens, S. glauca)	Yellow foxtail or y. bristlegrass
Silphium perfoliatum	Cup plant
Solanum dulcamara	Bittersweet nightshade
Stellaria graminea	Common stitchwort
Tanacetum vulgare	Tansy
Thymus pulegioides	Wild thyme
Trapa natans	Water-chestnut
Tussilago farfara	Coltsfoot
Typha latifolia [2]	Common or Broad-leaved cattail
Typha angustifolia [4]	Narrow-leaved cattail
Valeriana officinalis	Garden heliotrope
Verbascum thapsus	Common mullein
Veronica beccabunga	European speedwell
Vincetoxicum rossicum (V. nigrum)	Black swallow-wort
Xanthium strumarium	Common cocklebur
b. Woody Plants:	
Acer ginnala	Amur maple
Acer platanoides	Norway maple
Acer pseudoplatanus	Sycamore maple
Actinidia arguta	Kiwi vine
Ailanthus altissima	Tree-of-heaven
Berberis thunbergii	Japanese barberry
Berberis vulgaris	Common barberry
Catalpa speciosa	Western catalpa
Celastrus orbiculatus	Oriental bittersweet
Cynanchum louiseae	Black swallow-wort
Cytisis scoparius	Scotch broom
Elaeagnus angustifolia	Russian olive
Elaeagnus umbellata	Autumn olive
Euonymus alata	Winged euonymus
Euonymus fortunei	Climbing euonymus
Humulus japonicus	Japanese hops
Hypericum prolificum	Shrubby St. John's Wort
Ligustrum obtusifolium	Japanese privet
Ligustrum vulgare	Common/hedge privet
Lonicera japonica	Japanese honeysuckle
Lonicera maackii	Amur honeysuckle
Lonicera morrowii	Morrow's honeysuckle
Lonicera tartarica	Tatarian honeysuckle
Lonicera x bella	Morrow's X Tatarian honeysuckle
Lonicera xylosteum	European fly-honeysuckle
Morus alba	White mulberry
Paulownia tomentosa	Princess tree or empress tree
Phellodendron japonicum	Corktree
Populus alba	Silver poplar
Rhamnus cathartica	Common buckthorn

Rhamnus frangula	European buckthorn
Ribes sativum	Garden red currant
Robinia pseudoacacia	Black locust
Rosa multiflora	Multiflora rose
Rosa rugosa	Rugosa rose
Rubus phoenicolasius	Wineberry
Salix purpurea [3]	Basket or purple-osier willow
Sorbus aucuparia	European mountain-ash
Taxus cuspidata	Japanese yew
Ulmus pumila	Siberian elm
Wisteria floribunda	Wisteria

1 Scientific names are those used in Gleason, Henry and A. Cronquist, 1991, *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*: Second Edition, The New York Botanical Garden: New York
2 *Typha* spp. are native species which provide good water quality renovation and other functions/values. However, they are aggressive colonizers which, given the opportunity, will preclude establishment of other native species. They are included in this list as species not to be planted, not because they are undesirable in an established wetland, but to provide opportunities for other species to become established. It is likely they will eventually move in without human assistance.
3 This is not appropriate for use in wetland mitigation. In some circumstances, it may be appropriate in stream bank stabilization.

The risk of invasion from species brought into the site from adjacent areas is limited due to isolated, protected nature of site. The property is surrounded by a forested buffer, and most development within an approximately 1-mile radius of the property is residential. Because the site is relatively isolated from roadways, commercial areas or other common avenues of invasive species colonization, we are confident that given proper and rigorous control methodologies, invasive species can be controlled within the wetland mitigation area. The main threat posed by invasive plants to the project is from the species and individuals currently found onsite. Found mostly in the hayed field portions of the property on the western side of the project area, the following invasive species have been documented: autumn and Russian olive (*Elaeagnus umbellata/angustifolia)*, black locust (*Robinia pseudoacacia)*, common reed (*Phragmites australis)*, honeysuckle (Lonicera spp.), Rosa species, Asiatic bittersweet (*Celastrus orbiculata*), and buckthorn (Rhamnus spp.). While not traditionally thought of as invasive, canary reed grass (*Phalaris arundinacea)* and broad-leaved cattail (*Typha latifolia)* are also found in existing wetland areas on the property. Another potential source of invasive species is the soil, seeds, mulch, and other site augmentations that are installed on the property.

J.2. Constraints

Overall and common landscape level concerns with mitigation sites, such as erosion controls, soil makeup, subsoil removal, grading, hydrology, local zoning, trucking expense, access, and abutters concerns have been allayed by Grondin through four years of planning and permitting the Larrabee Farms site. Grondin has the equipment and manpower necessary to safely and efficiently undertake the earthwork associated with large-scale wetland creation, and has need and use for all of the subsoil material that will be removed from the site. Grondin has entered into a contract zoning agreement with the Town of Scarborough to allow the Larrabee Farms site to function as a wetland mitigation and land preservation site, allowing all of the necessary extractive industry work and reclamation associated therewith. Additionally, Grondin has built very stable access routes throughout the previously disturbed uplands across the property. There is relatively good access to all of the proposed wetland and vernal pool creation areas across the site, and access to mitigation sites for construction, planting, monitoring, and maintenance will not provide constraints. Finally, Grondin has developed working relationships with most of the abutters throughout the planning process of the site. Abutters were given ample opportunity to

learn about the project through three public hearings held with the Planning Board and Town Council. There are no known abutter concerns as of this time.

J.3. Invasive Species Control Plan

Because many of the invasive species found near the wetland creation area are already well established in southern Maine, the goal will be to control the invasive species within the wetland creation area. Eventually, the plan provides that the native and planted wetland vegetation will provide sufficient competition. Furthermore, the planned hydrology of the wetland creation area will be sufficient to reduce the chance for colonization by upland invasive plants. Wetland invasive species will be controlled before, during and after the mitigation project is constructed. During the fall of 2006 and spring of 2007, and during each successive monitoring period, invasive species found in or adjacent to the wetland creation area will be destroyed. The combination of hand removal prior to disturbance, addition of organic matter, seeding with native herbs, weed blocking around new plantings, and shading from the planted shrub and tree species will help control wetland invasive species. Furthermore, care will be taken to avoid importing invasive species onto the site during construction activities. The wetland mitigation specialist will visually inspect soil, seed, organic materials, and mulch sources prior to their use on the site to ensure that clean materials are being installed. After construction, and during successive monitoring periods, invasive species invasions will be documented and attempts will be made to keep invasive species from colonizing the creation area.

Depending on the severity of an invasion, an integrated pest management (IPM) plan to include hand-pulling of individual plants, cutting of vines and runners, mowing, flaming, and/or spot and swab application of glyphosate herbicide (Roundup® or Rodeo®) will be considered for use singly or in combination. Herbicide use, if necessary, will be done in accordance with guidance provided by the MDEP regarding herbicide use in wetlands, and rules administered by the Maine Board of Pesticide Control. Additionally, biological control methods, such as a release of *Galerucella* beatles for purple loosestrife control, may be considered if specific species control is needed. Any biological control methods will be administered following the guidelines of the Department of Agriculture.

K. Off-Road Vehicle Use

K.1. Usage in the Vicinity of Larrabee Farms

There are several active ORV trails that course through the Larrabee Farms site. These are currently not in use, as Grondin is actively mining the site and has put up permanent fencing and signage requesting no trespassing. There are a few known trails that access the Larrabee site from other areas, including foot paths from the adjacent church property and ORV, hiking and hunting trails from abutting landowners' properties.

K.2. ORV Control Plan

ORV's will be kept out of the wetland creation areas by a combination of signage, blocked access and maintenance of existing trails around and away from creation areas. Grondin has a long history of working with local recreational groups, such as ATV clubs, and will work with local organizations and abutting landowners to prevent resource impacts at the site. Signage at the site will describe the mitigation site's purpose and design. Signage will clearly detail the repercussions of causing impacts to any of the non-designated trail areas on the property including prohibition of further entrance, fines and criminal charges. Roads and trails created during construction and for maintenance and restoration of the creation sites will be blocked using a combination of gates, boulders, brush, and debris piles.

L. Protection and Long-Term Stewardship

L.1. Adequate buffers

The Larrabee Farms project includes adequate buffers to protect the ecological integrity of the wetland compensation projects. The wetland creation and vernal pool creation areas are preserved within large and diverse preservation parcels that includes at least 100-foot buffers between excavation work and the abutting properties. The mitigation project is further buffeted from outside impacts by the presence of the Nonesuch River on the south and by its distance from the nearest roads or commercial developments.

L.2. Internal Wetlands Protected

Not applicable – no development associated within mitigation parcel.

L.3. Preservation Language

Compensatory mitigation sites and on-site unimpacted wetlands and buffers to be set aside for conservation shall be protected in perpetuity from future development. Please see the draft Deed of Conservation Easement in Appendix 9 – this is the proposed model easement that will be followed for all mitigation projects conducted at the Larrabee Farms site. *Within 90 days of the date the NRPA and/or DOA permit is issued (whichever is latest), Grondin shall submit to the Corps of Engineers a final draft of the conservation easement. Within 30 days of the date ACOE approves this draft document in writing, Grondin shall execute and record it with the Registry of Deeds for the Town of Scarborough and the State of Maine. A copy of the executed and recorded document must then be sent to the Corps of Engineers and Maine MDEP within 90 days of the date it was recorded. The conservation easement or deed restriction shall enable the site or sites to be protected in perpetuity from any future development. For preservation as part of compensation, the conservation easement or deed restriction shall expressly allow for the creation, restoration, remediation and monitoring activities required by this permit on the site or sites. It shall prohibit all other filling, clearing and other disturbances (including vehicle access) on these sites except for activities explicitly authorized by the Corps of Engineers in these approved documents.*

L.4. Preservation Site Plans

Site plans are included in Appendix 8.

L.5. Legal Instrumentation

Please see the attached draft of Deed of Conservation Easement in Appendix 9.

L.6. Acceptance by Receiving Agency

MaineDOT, the applicant, is the grantee of the conservation easement.

M. Mitigation Monitoring Plan

M.1 Performance Standards

The wetland creation areas and the vernal pool creation areas will be monitored pursuant to the guidelines included below, as adapted from the New England District Mitigation Guidance For New England District Mitigation Plan Checklist, 10/24/2006 Draft Version. The wetland and vernal pool creation and buffer areas will be assessed once annually during the summer growing season (May-October) for at least 10 years. Monitoring will take place twice per season during the first, second and third years following planting. One visit will take place in the spring, and will include a general site walk and assessment of general site health, an assessment of any winter damage and in order to determine any correction needs. A second visit will take place between June and October to assess plant mortality/vitality and to gather data for the annual monitoring reports. The data gathering procedure will then take place once during the first through fifth years, and during the 7th and 10th year, if necessary, following construction.

The success of the mitigation will be evaluated at the end of year 5 to determine if additional corrective measures are necessary. *Please note, it is understood that creating forested conditions will take at least 15–20 years, the time it typically takes for plantings to attain sufficient heights to be considered trees. However, if at the end of the five-year monitoring period the buffer areas meet the performance standards discussed below, it will be assumed that the mitigation objective has been met in regard to creation of forested habitats.* Provided the site meets the success criteria listed below, the fifth year will be the final monitoring year during which full reports are provided. Two additional site visits will be made, once during the 7th and once during the 10th year following construction. Truncated reports will be provided during these years, including general information on site health and photographs. If the site experiences failure, as measured by non-attainment of any of the success standards discussed below, or if it is clear that the objectives of the compensation area have not been met, the monitoring period will be extended upon consultation with ACOE and MDEP.

Notification of Construction Completion

Within 60 days of completing a mitigation project that includes restoration, creation, and/or enhancement, MaineDOT will submit a signed letter to ACOE and MDEP specifying the date of completion of the mitigation work. If mitigation construction is initiated in, or continues throughout the year, but is not completed by December 31, 2007, MaineDOT will provide ACOE, Policy Analysis and Technical Support Branch, a letter providing the date mitigation work began and the work completed as of December 31. The letter will be sent no later than January 31, 2008 and the letter will include the ACOE permit number.

M.2. Monitoring Methods and Reporting

For at least each of the first 5, and during the 7th and 10th full growing seasons following construction of the mitigation sites, the sites shall be monitored and annual monitoring reports submitted. During the first 3 years following construction, observations will occur at least two times during the growing season – in late spring/early summer and again in late summer/early fall. Each annual monitoring report shall be submitted to ACOE and MDEP, no later than December 15 of the year being monitored. Failure to perform the monitoring and submit monitoring reports constitutes permit non-compliance. A self-certification form will be completed, and signed as the transmittal of each annual monitoring report and shall indicate the permit number and the report number (monitoring report 1 of 5, for example). The reports shall

answer the following success-standard questions in the summary data section and shall address the additional items listed after the questions, in the appropriate section. The reports shall also include the monitoring-report appendices listed below. The first year of monitoring shall be the first year that the site has been through a full growing season after completion of construction and planting. For these special conditions, a growing season starts no later than May 31. However, if there are problems that need to be addressed and if the measures to correct them require prior approval from ACOE and/or MDEP, the permittee shall contact ACOE and MDEP as soon as the need for corrective action is discovered.

Remedial measures shall be implemented at least two years prior to the completion of the monitoring period to attain the success standards described below within 3 growing seasons after completion of construction of the mitigation sites. Should measures be required within two years of the end of the monitoring period, the monitoring period will be extended to ensure two years of monitoring after the remedial work is completed. Measures requiring earth movement or changes in hydrology shall not be implemented without written approval from ACOE and MDEP.

Success Standards (ACOE NE District, Mitigation Guidance: 10/23/2006 Draft)

1) Is the proposed hydrology met at the site? What percentage of the site is meeting projected hydrology levels. Areas that are too wet or too dry should be identified along with suggested corrective measures.

2) Is the proposed vegetation standard met? At least 500 trees and shrubs per acre, of which at least 350 per acre are trees for proposed forested cover types, that are healthy and vigorous and are at least 18" tall in 75% of each planned woody zone AND at least the following number of non-exotic species including planted and volunteer species:

# species planted minimum (volunteer and planted)	# species required
2	2
3	3
4	3
5	4
6	4
7	5
8	5
9 or more	6
To count a species, it should be well represented on the site (e.g., at least 50 individuals of that species per acre).	

3) Does each mitigation site have at least 80% aerial cover, excluding planned open water areas, by noninvasive species (See Table J.1)? Do planned emergent areas on each mitigation site have at least 80% cover by noninvasive hydrophytes? Do planned shrub and forested cover types have at least 60% cover by noninvasive hydrophytes, of which at least 15% are woody species? For the purpose of this success standard, invasive species of hydrophytes are: cattails (*Typha latifolia, Typha angustifolia, Typha glauca)*; common reed (*Phragmites australis)*; purple

loosestrife (*Lythrum salicaria)*; reed canary grass (*Phalaris arundinacea)*; and buckthorn (*Rhamnus spp.)*.

4) Are common reed (*Phragmites australis*), purple loosestrife *(Lythrum salicaria*), Russian and autumn olive (*Elaeagnus* spp.), buckthorn (*Rhamnus* spp.), Japanese knotweed (*Polygonum cuspidatum*), and/or multiflora rose (*Rosa multiflora*) plants at the mitigation site(s) being controlled?

5) Are all slopes, soils and substrates within and adjacent to the mitigation site(s) stabilized?

Monitoring Report Requirements

Project Overview

- Highlighted summary of problems that need immediate attention (e.g., problem with hydrology, severe invasive problem, serious erosion, major losses from herbivory, etc.). This should be at the beginning of the report and highlighted in the project overview and in the self-certification form.

Requirements

- A copy of this permit's mitigation special conditions and summary of the mitigation goals.

Summary Data

- Address success standard questions (above).

- Describe the monitoring inspections that occurred since the last report.

- Soils data, commensurate with the requirements of the soils portion of the 1987 Corps Delineation Manual (Technical Report Y-87-1) New England District data form, should be collected after construction and every alternate year throughout the monitoring period. If monitoring wells or gauges were installed as part of the project, this hydrology data should be submitted annually.

- Concisely describe remedial actions done during the monitoring year to meet the five success standards – actions such as removing debris, replanting, controlling invasive plant species (with biological, herbicidal, or mechanical methods), regrading the site, applying additional topsoil or soil amendments, adjusting site hydrology, etc. Also describe any other remedial actions done at each site.

- Report the status of all erosion control measures on the compensation site(s). Are they in place and functioning? If temporary measures are no longer needed, have they been removed?

- Give visual estimates of (1) percent vegetative cover for each mitigation site and (2) percent cover of the invasive species listed under Success Standard No. 2, above, in each mitigation site.

- What fish and wildlife use the site(s) and what do they use it for (nesting, feeding, shelter, etc.)?

- By species planted, describe the general health and vigor of the surviving plants, the prognosis for their future survival and a diagnosis of the cause(s) of morbidity or mortality.

Vernal Pool Creation

- Does the vernal pool creation take into account the critical need for unobstructed access to and from the pool, as well as an adequate extent of upland habitat to ensure success?

- Pools are monitored for obligate and facultative vernal pool species weekly for four weeks from the beginning of the vernal pool activity in the spring (will vary throughout New England) and then biweekly until the end of July for the entire monitoring period. The period of monitoring is specified. Data identify frog species, salamander genera, and the presence/absence of fairy shrimp. Macroinvertebrates should be identified to the order if possible.

- In addition, photographs of the pools taken monthly during the pool monitoring period (March/April-July) from a set location(s) will be included. Photographs will include panoramas of surrounding habitat.

- Other data required: pH and temperature of water at beginning and end of each monitoring cycle; pool depth at deepest point(s) (or state if >3') to nearest inch; substrate of pools (dead leaves, herbaceous vegetation, bare soil—organic or mineral, etc.); plant species noted in and around the perimeter of the pools.

Conclusions

- What remedial measures are recommended to achieve or maintain achievement of the five success standards and otherwise improve the extent to which the mitigation site(s) replace the functions and values lost because of project impacts?

Monitoring Report Appendices

Appendix A An as-built plan showing topography to 1-foot contours, any inlet/outlet structures and the location and extent of the designed plant community types (e.g., shrub swamp). Within each community type the plan shall show the species planted—but it is not necessary to illustrate the precise location of each individual plant. This should be included in the first monitoring report unless there are grading modifications or additional plantings of different species in subsequent years.

Appendix B A vegetative species list of volunteer species in each plant community type. The volunteer species list should, at a minimum, include those that cover at least 5% of their vegetative layer.

Appendix C Representative photos of each mitigation site taken from the same locations for each monitoring event. Photos should be dated and clearly labeled with the

direction from which the photo was taken. The photo sites must also be identified on the appropriate maps.

N. Assessment Plan

A post-construction assessment of the condition of the mitigation sites shall be performed following the fifth growing season after completion of the mitigation sites construction, or by the end of the monitoring period, whichever is later. "Growing season" in this context begins no later than May 31st. To ensure objectivity, the persons who prepared the annual monitoring reports shall not perform this assessment without written approval from the MDEP and Corps. The assessment report shall be submitted to the MDEP and Corps by December 15 of the year the assessment is conducted; this will coincide with the year of the final monitoring report, so it is acceptable to include both the final monitoring report and assessment in the same document.

The post-construction assessment shall include the four assessment appendices listed below and shall:

- summarize the original or modified mitigation goals and discuss the level of attainment of these goals at each mitigation site (including vernal pool creation);
- describe significant problems and solutions during construction and maintenance (monitoring) of the mitigation sites;
- identify agency procedures or policies that encumbered implementation of the mitigation plan. Specifically note procedures or policies that contributed to less success or less effectiveness than anticipated in the mitigation plan;
- recommend measures to improve the efficiency, reduce the cost, or improve the effectiveness of similar projects in the future.

Assessment Appendices:

Appendix A Summary of the results of a functions and values assessment of the mitigation sites, using the same methodology used to determine the functions and values of the impacted wetlands.

Appendix B Calculation of the area of wetlands in each mitigation site using the 1987 Corps Wetlands Delineation Manual. Supporting documents shall include:

(1) a scaled drawing showing the wetland boundaries and representative transects, and

(2) datasheets for corresponding data points along each transect.

Appendix C Comparison of the area and extent of delineated constructed wetlands (from Appendix B) with the area and extent of created wetlands proposed in the mitigation plan. This comparison shall be made on a scaled drawing or as an overlay on the as-built plan. This plan shall also show the major vegetation community types.

Appendix D Photos of each mitigation site taken from the same locations as the monitoring photos, including photos of vernal pools.

O. Contingency

To ensure mitigation success, problems identified during monitoring visits at the Wetland Creation Area mitigation site will be addressed within the same monitoring year that they are encountered. Given the types of wetland mitigation proposed under this plan, it is expected that potential remedial measures could include:

- re-grading;
- surface water diversion;
- modification of the spillway elevation to adjust water depths and flows;
- re-planting or re-seeding;
- re-soiling due to erosion;
- repair of erosion control features;
- supplemental seeding;
- invasive plant control;
- installation of ORV control measures;
- removal or control of herbaceous vegetation competition around trees and shrubs;
- herbivore control (e.g., fencing, tree guards); and
- fertilizing woody plantings.

Grondin will undertake any and all remedial and or maintenance needs on a timely basis, and in coordination with the project design team. MDEP and ACOE will be consulted on a case-by-case basis regarding the need for remedial measures.

P. Long-Term Stewardship

The Larrabee Farms Wetland Mitigation Project site, in which the MaineDOT Gorham Bypass mitigation is proposed, includes over 250 acres of land abutting the Nonesuch River in Scarborough, Maine. The Town and the local land trust have both expressed interest, and have stated goals of preserving lands along the Nonesuch River. In fact, as is discussed in Section C.1.e. of this report, several nearby areas have already been preserved and the town is considering a new 'Nonesuch River Corridor' that will help limit development within and adjacent to the Nonesuch River floodplain. Finally, by 2026, 20 years after final approval of the project by the Town of Scarborough, the entire 250-acre (+/-) lot will be permanently preserved through a conservation easement or easements. At that time, either the Town or the Scarborough Conservation Land Trust will combine all existing easements across the property into a complete document. The following is copied from the Contract Zoning agreement for Larrabee Farms (please see complete document in Appendix 5):

4. **Property Conveyance:** Grondin shall have the right to convey its fee interest in the property, in whole or in part, as necessary to satisfy applicable requirements of the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection in connection with the wetlands mitigation project and sale of the authorized wetlands mitigation credits; provided, however, that any parcel conveyed shall first be encumbered by conservation easement or easements limiting its use to the uses permitted by this Agreement. Portions of the property conveyed for wetlands compensation and restricted in perpetuity by conservation easement or easements to wetlands preservation shall not be considered lots under the Zoning Ordinance or the Subdivision Ordinance. Within 90 days of approval of this Agreement, Grondin shall convey the dedicated lot shown on Exhibit A to the Town, provided such dedicated lot is accepted by the Town Council. Upon completion of all phases of the wetlands mitigation and sale of the authorized wetlands mitigation credits or at the end of 20 years after the date of this Agreement, whichever occurs first, Grondin agrees to convey as a gift any remaining portions of the property to the Town, or to a land trust or similar entity designated by the Town, if such conveyance is approved by the Scarborough Town Council, subject to the same use limitations prescribed for conservation easements under Section 3(p) of this Agreement.

Q. Other Comments

No further comments at this time

Appendix 1: MaineDOT Wetland Functional Assessment

See Exhibit 13 of MaineDOT Permit Application

Appendix 2: Photographs

Existing Conditions: Larrabee Farms:

Photo 1: Facing south over existing sand pit and area for proposed Bypass creation, 10/11/2002

Photo 2: Facing west across existing sand pit and area for proposed Bypass creation, 10/11/2002

Photo 3. Facing south across the proposed wetland creation area during excavation activities, 09/07/2006.

Photo 4. Portion of Nonesuch River in proposed preservation area, 10/11/2002.

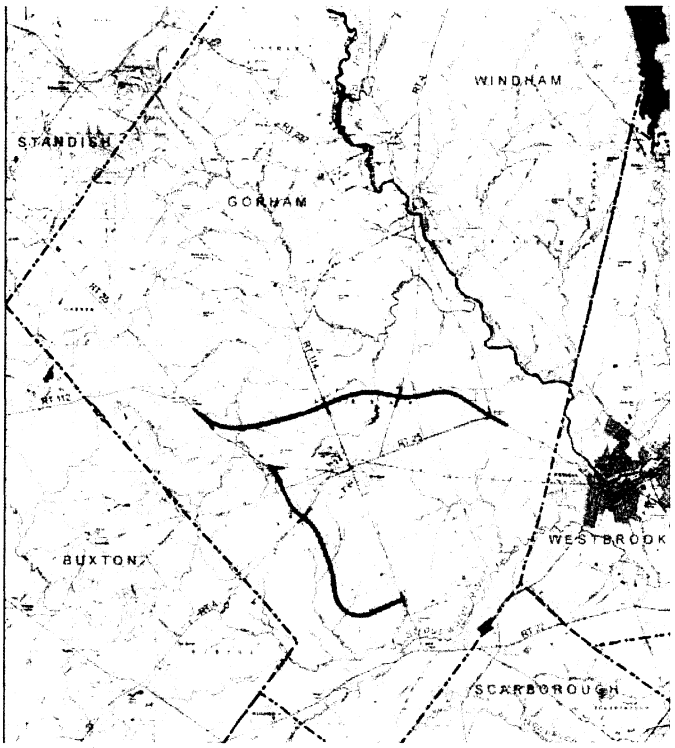
Photo 5. Portion of Nonesuch River floodplain in proposed preservation area, 10/11/2002.

Photo 6. Giant sugar maple (*Acer saccharinum*) located at the end of the proposed *Sugar Maple Spur Trail* – just west of proposed preservation area.

Appendix 3: MaineDOT Mitigation Site Search

(attached)

GORHAM BYPASS
WETLAND MITIGATION SITE SEARCH
PRELIMINARY FINDINGS
MDOT PIN 8151.40



Prepared for
Maine
Department of Transportation

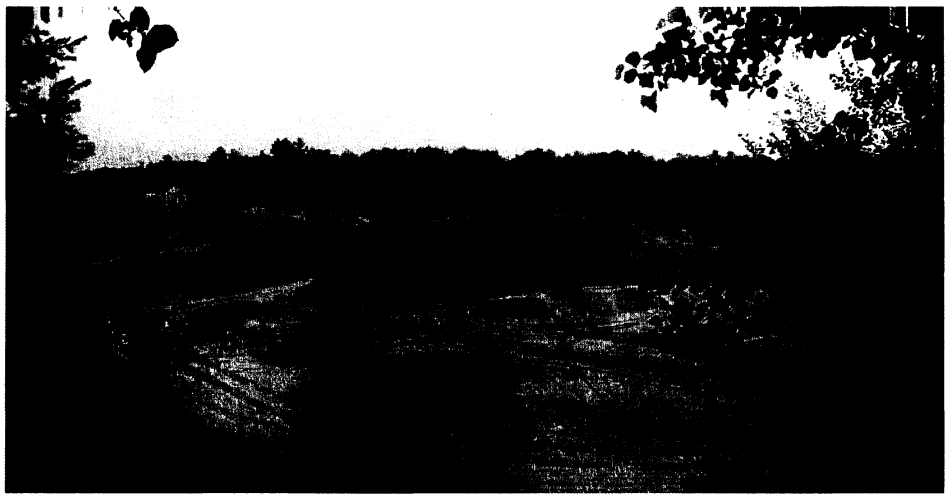
Prepared by
Normandeau Associates, Inc.

October 2005

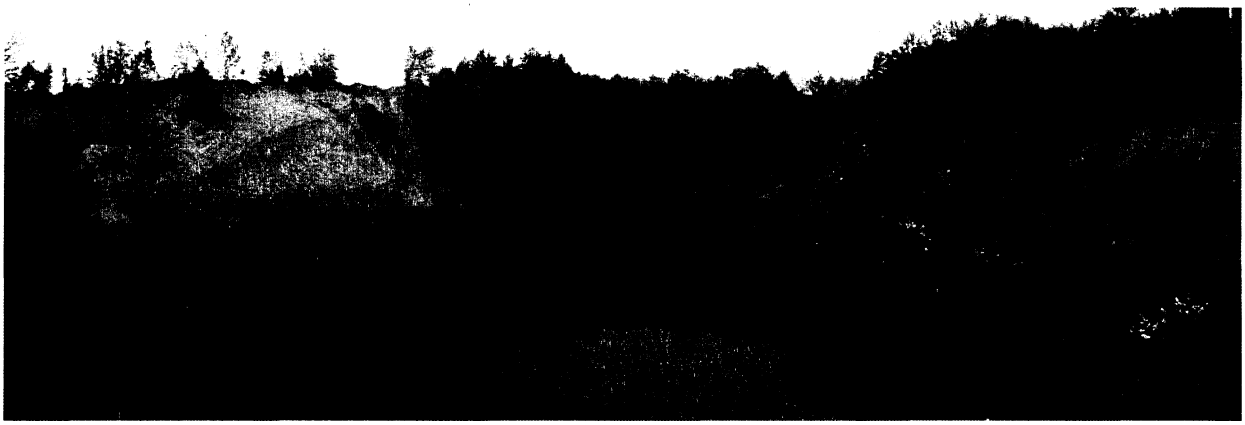
PRELIMINARY SITE SCREENING

Site 1: Fort Hill Road Gravel Pits

Town: Gorham
Location: Fort Hill Road
Parcel size: 65A
Mitigation area: ~30A
Map/Lot #: 66/7 & 63/26
Watershed: Douglas Brook to Presumpscot R.



Northern Pit



Southern Pit

Existing Conditions: Old gravel pits located on opposite sides of Fort Hill Road. The south pit, which is located on the south side of the road, does not appear to be actively mined. The northern pit still is actively mined. Both pits have intersected the groundwater table.
Potential Mitigation Opportunities: Excavate additional acreage to create a forested/scrub shrub wetland.
Ranking: Low, creation in gravel pits, isolated from other conservation lands.

PRELIMINARY SITE SCREENING

Site 1: Fort Hill Road Gravel Pits

Town: Gorham
Parcel size: 65A
Map/Lot #: 66/7 & 63/26
Watershed: Douglas Brook to Presumpscot R.
Location: Fort Hill Road
Mitigation area: ~30A

Northern Pit

Southern Pit

Existing Conditions: Old gravel pits located on opposite sides of Fort Hill Road. The south pit, which is located on the south side of the road, does not appear to be actively mined. The northern pit still is actively mined. Both pits have intersected the groundwater table.
Potential Mitigation Opportunities: Excavate additional acreage to create a forested/scrub shrub wetland.
Ranking: Low, creation in gravel pits, isolated from other conservation lands.

Site 2: *Rt. 237 & Huston Road*

Town:	Gorham	**Location**:	Huston Road
Parcel size:	75	**Mitigation area:**	<10A
Map/Lot #:	69/1, 53/1-1, 1-2, 1-3, 1-4		
Watershed:	Presumpscot		

Existing Conditions: Old field, has not been mowed in a number of years.
Potential mitigation opportunities: Link to the adjacent Robie School site and enhance species diversity within old field.
Ranking: **low**, isolated from town/conservation lands and limited restoration and enhancement potential.

Site 3: *Canal Street*

Town:	Gorham	**Location**:	Route 237 at corner of Canal Street
Parcel size:	41 acres	**Mitigation area:**	<10 acres
Map/Lot #:	49/36 & 49/30		
Watershed:	Presumpscot River		

Existing Conditions: Old field, has not been mowed in a number of years. Forested edge bordering river.
Potential mitigation opportunities:

- Compensation focus would be on preservation of upland adjacent to the Presumpscot River and restoration of old field to shrub/forest.
- Preservation of wildlife corridor along Presumpscot River. This could potentially connect with adjacent Canal St parcel in Little Falls.
- Recreation and open space potential by connecting walking trail along canal below Little Falls

Ranking: **Medium**, borders Presumpscot and near existing conservation lands, limited area for wetland restoration and enhancement.

Site 4: *Little River Channel Improvements*

Town:	Gorham	**Location:**	Upper Brackett St.
Parcel size:	~8	**Mitigation area: ~8**	
Map/Lot #:	Not identified		
Watershed:	Little River to Presumpscot R.		

Existing Conditions: Bank erosion is evident along the river downstream of the road crossing. Additional areas potentially could be identified.
Potential Mitigation Opportunities: Enhance river bank where needed. Potential for preservation of upland buffer along river.
Ranking: Low, limited area for restoration and enhancement and not contiguous with existing town/conservation lands.

Site 5: Farrington Rd Gravel Pits

Town:	Gorham	**Location:**	Route 237, north of Mosher Corner
Parcel size:	112	**Mitigation Area**: 24+	
Map/Lot #:	62/10, 18, 19, 20		
Watershed:	Presumpscot River		

Existing Conditions: Gravel pits available for wetland creation, nearby high quality wetlands and uplands would benefit from protection

Potential mitigation opportunities:

- Compensation focus would include wetland creation in gravel pits to meet or exceed compensatory mitigation requirements.
- Preservation of upland and high quality forest wetland and bog.

Ranking: **Medium**, adequate acreage available for wetland mitigation, high quality upland and wetland preservation, but creation project and isolated from wildlife and conservation lands.

Site 6: *Mosher*

Town: Gorham
Parcel size: 16.5 A
Map/Lot #: 31/8
Watershed: Presumpscot River

Location: Route 237, north of Mosher Corner
Mitigation Area: ± 8A

Existing Conditions: Tile drainage has been installed in the field allowing it to be mowed annually. This parcel is part of a large family farm.
Potential mitigation opportunities: Restoration of wet meadow by removal of tile drainage and planting to trees and shrubs.
Ranking: Low, although the site is in the vicinity of the bypass it is actively farmed for hay and has value for grassland birds.

Site 7: RWS Parcel

Town: Gorham
Parcel size: 264 ac
Map/Lot #: 33/1 & 32/12
Watershed: Presumpscot R.

Location: Route 25
Mitigation area: ~ 20 ac

Existing Conditions

The site is currently owned by Regional Waste Systems (RWS), which handles the waste for over twenty communities within the Portland area. The site has been reviewed for a number of industrial uses and most recently a permit was received for the construction of a gas-to-energy facility. The facility was never built. Currently the RWS board has had the site appraised and is looking at potential options for the site, including as a wetland mitigation bank. The lot is zoned for commercial development.

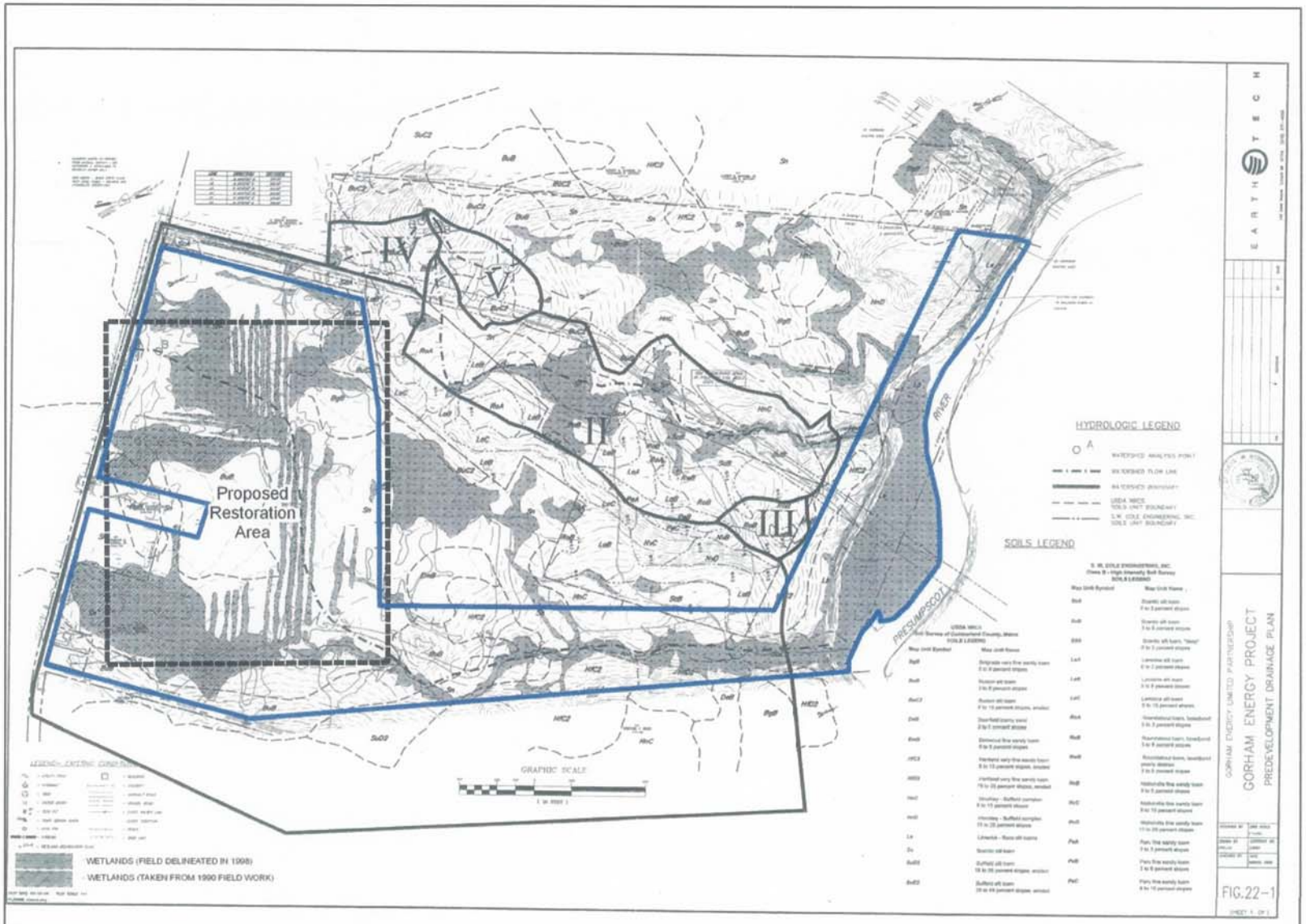
The site has frontage along the southern bank of the Presumpscot River. Aerial photography from 1958 shows the site as open farmland with a series of ditches installed to drain the wetter portions of the site. It was farmed up until the 1960's when the uplands were planted to white pines. The site is currently not maintained and the open fields are dominated by early successional herbaceous species and shrubs. The wet meadows are generally a mix of shrub swamp dominated by glossy buckthorn and open wet meadow. The river shoreline is wooded in the uplands and shrub swamp within the floodplain. The estimated river frontage is 1950 ft. A portion of the old Cumberland & Oxford canal and associated tow path cross the site adjacent to the river floodplain.

The entire parcel could be preserved, or a smaller section that includes the restored wetlands, a riparian buffer along the Presumpscot River, and adequate upland buffers. The Town of Gorham has expressed interest in commercial development on uplands in the southeast corner. The Gorham Land Trust and Presumpscot River Watershed Coalition consider this parcel to be a keystone in protecting the Presumpscot and conservation land in Gorham.

Potential Mitigation Opportunities:

Mitigation at the site would include restoration of hydrology by removal and/or alteration of existing agricultural ditches, enhancement of existing wetlands through plantings to provide diversity of habitat, control of invasives and preservation of a corridor bordering the Presumpscot River floodplain.

Restoration of hydrology. A series of ditches have been installed in the southern half of the site. The ditches were constructed with a plow resulting in narrow berms between ditches. The effectiveness of the ditches in draining the site is variable as they have not been maintained for over 30 years. Glossy buckthorn, an invasive species, is the dominant shrub within the transitional wetland sections of the site. The initial restoration concept would regrade areas within the ditched portion of the site to slow water flow from the site. The goal would be to increase habitat diversity within the wetland with microrelief, forming moist condtions in slightly elevated areas, seasonal pools in selected areas, and saturated conditions in the remainder. Planting of the graded areas would focus on species that would compete against the glossy buckthorn and provide a diversified habitat. Removal of glossy buckthorn in other areas would also be considered.



Site Plan Showing Wetlands, Subwatersheds and Soils for RWS Site, Gorham, ME.

Habitat Enhancement. Portions of the existing wet meadows would be enhanced through plantings of shrubs and trees as well as the construction of seasonal pools. Other areas of the wet meadows and adjacent wooded uplands could be enhanced through plantings, possibly to develop New England cottontail habitat. This declining species occurs within Gorham, although is not know to occur on the RWS site. Selective harvesting within the white pine plantation and planting to hardwoods would also aid in habitat diversity.

Preservation would focus along the riparian corridor extending approximately 1900 feet along the Presumpscot River at the eastern boundary of the site. It would include both the wetland floodplain and the adjacent upland, and would include a combination of wildlife and historical components. The maintenance of a wooded corridor would provide a wildlife travel corridor as well as habitat for a variety of species. The old canal could either be protected in its current condition, or public access along the riparian corridor along the towpath could be incorporated into the plan. The preservation corridor would extend along the eastern side of the site to include a small stream and connect to the restoration area at the southern end.

Ranking: High, good wetland restoration potential, Presumpscot River preservation opportunity, and support within local conservation organizations and Town.

Site 8: Presumpscot River Corridor

Town:	Gorham	**Location:**	Route 25
Parcel size:	1.25 miles of riverbank	**Mitigation area:**	~130 ac
Map/Lot #:	Multiple		
Watershed:	Presumpscot R.		

This concept would extend a riparian corridor bordering the west bank of the Presumpscot approximately 1.25 miles from the Westbrook/Gorham town line north to the powerline right-of-way, which crosses Route 237 adjacent to the Mosher property (Site1). The RWS parcel (Site 2) is included in this section. In the long term it would be hoped that additional corridors would be preserved linking lands already acquired or preserved by the Gorham Land Trust. This option relies heavily on the landowners' willingness to participate in some level of long-term protection of their property. East of the RWS property three Rines brothers own property along the river. West of the RWS parcel, the land bordering the river is owned by Albert Mosher and Central Maine Power. The parcels to the north of the ROW are owned by other members of the Rines and Mosher families, who may be interested in some level of protection. The Gorham Land Trust and Presumpscot River Watershed Coalition consider protection of the riparian buffer along the Presumpscot River to be the highest priority for enhancing the quality of the river in Gorham.

Rines Parcels

The Rines properties consist of three contiguous parcels managed as pasture,with a small area of woodland. The river frontage extends from the Westbrook town line to the RWS site and is approximately 4,000 feet in length. At the eastern limit of the pasture a section of bank, approximately 220 feet in length is eroding, probably as a result of cattle accessing the river. This area is just downstream of the outlet of a section of the old canal. Remediation of the eroding bank would require fencing off cattle access and stabilizing the slope with plantings.

The 100-year floodplain extends from the river to approximately the old canal and includes the lower one-third of the pasture. Within this area cattle have accessed the river at numerous locations. These areas are generally eroding, bare ground, which are now sources of sediment and nutrients. Remediation of these areas would require stabilization of the soil and planting to shrubs.

The riverbank bordering the pasture contains a very narrow band of shrubs, primarily limited to the bank, extending into the field 5 to 15 feet. The remediation along the entire length of the pasture

would entail restricting cattle from accessing the river. The riverbank in the wetland and upland could be protected either by limiting mowing to maintain a 100-ft buffer along the river or the bank could be fenced to prevent cattle access, while harvesting of hay would continue.

The site is unusual in that the old canal is still clearly visible as it is mowed on a regular basis. The preservation area would be extended from the riverbank to include the canal thus protecting a historical resource. Potentially, public access along the riparian corridor along the towpath could be incorporated into the plan.

RWS Parcel

This effort would include approximately 1900 feet of frontage along the riparian corridor extending along the Presumpscot River. It would include the wetland floodplain and the adjacent upland, the small stream along the east side of the parcel and the outlet of Mosher Brook. These features encompass a combination of wildlife and historical components. The maintenance of a wooded corridor would provide a wildlife travel corridor as well as habitat for a variety of species. The old canal could either be protected in its current condition, or public access along the riparian corridor along the towpath could be incorporated into the plan. For a more detailed description of the site, see Site 2.

Mosher and CMP Parcels

Additional acreage owned by Albert Mosher and Central Maine Power would extend the corridor to the powerline right-of-way (ROW). Albert Mosher owns the riverbank frontage from the western boundary of RWS to the Central Maine Power ROW, which crosses Route 237. The Mosher lot is wooded along the river while the vegetation in the CMP ROW is maintained to a height not exceeding 15 feet. The approximate length of shoreline encompassed by these two parcels is 700 feet.

Ranking: High, wetland restoration potential along the riverbank, potential to protect a long reach of the west bank of the Presumpscot River with the potential for future connections with other conservation parcels upstream, and support within local conservation organizations and Town.

Site 9: *Dolloff St Lot*

Town: Gorham
Parcel size: 67
Map/Lot #: 31/2.001
Watershed: Presumpscot

Location: Route 25
Mitigation area:>20

Existing Conditions: Old field, has not been mowed in a number of years. In vicinity of proposed by pass.

Potential mitigation opportunities:

Compensation focus would be on wetland enhancement and preservation of upland adjacent to a tributary of Mosher brook.

- Enhancement of old field growing back to alder thickets.
- Cover type: forest/shrub wetland habitat.

Ranking: **Medium**, adequate wetland acreage, landowner not receptive based on past communications. Parcel isolated from other conservation lands

Site 10: *Tannery Brook*

Town:	Gorham	**Location**:	Wentworth Road
Parcel size:	99	**Mitigation area:**	<20A
Map/Lot #:	46/9.002		
Watershed:	Tannery Brook to Presumpscot River		

Existing Conditions: Existing dam no longer functional. Town and DEP are debating whether to fix dam or let brook run its natural course. The Town recently acquired lot from Gorham Savings Bank. The only trails within the site have been developed by ATV users. The adjacent uplands in the vicinity of the dam are planted to white pine. The width of the wetlands bordering the brook are variable but may range from 50 to 200 feet wide.

Potential Mitigation Opportunities:

- Compensation focus would be on preservation of upland adjacent to brook and restoration of brook corridor through removal of dam.
- Recreation and open space potential through development of trail system.

Ranking: Low, disagreement on how site should be maintained, no connectivity with other conservation lands.

Site 11 : Gully Brook Site

Town: Gorham
Parcel size: 128 ac
Map/Lot #: 20/4
Watershed: Gully Brook to Stroudwater R.

Location: Weeks Road
Mitigation area: 5 ac wetland

Past uses:
A small section of the site near Weeks Road was used as the town opening burning dump and 12 acres was mined for sand and gravel. The dump was used up until 1973 or 1974 when it was closed and covered. The substantive part of the closure work was completed prior to state close out requirements. The Town has discussed with MDEP whether additional work should be done at the site. As part of the investigation, the Town hired Sebago Technics in 2000 to conduct a review of the site to determine the exact extent of the dump. The investigation mapped the limits of the old dump, which encompasses approximately 6.75 acres along the western side of Weeks Road. Two samples of the brook were collected by the town in 1999 to determine if there are any water quality issues. One sample was collected upstream of the dump and one collected downstream. The results indicated that they were both unsatisfactory due to excess bacteria, iron and manganese. MDEP did not require further studies believing that as a burning dump the majority of the toxic materials would have been removed during burning. They did indicate that a permit from the Division of Solid Waste Facility Regulation would be required if this area was proposed for development (Theodore Wolfe, DEP, letter to David Cole, Town Manager, December 13, 1999). Four parcels between 10 and 20 acres in size were identified in a 1999 Comprehensive Facilities Use Study, however the Town has expressed preliminary interest in using this site for Bypass mitigation.

A tributary of Gully Brook, which originally ran parallel to Weeks Road through the dump was redirected by the town during the dump closure to a ditch that flows west into Gully Brook. A small pond is located at the head of the ditch. The area between the pond and road appears to contain asphalt waste according to the Sebago Technics assessment. Downstream of the dump, along the original stream channel, illegal dumping has occurred along the banks.

Potential Mitigation Opportunities:
Four areas at the site have remediation potential: the ditched stream, tires dumped along the tributary, an eroding earthen dam associated with the small pond, and unvegetated areas within the gravel pit. The following is a brief overview of these areas.

Ditched stream: Currently, the ditched stream is linear, sandy, approximately 600 feet long, and shaded by alders. Restoration of the stream would include reconstructing the channel to a more sinuous path, stabilizing the stream banks, and enhancing cover and substrates for aquatic habitat. Improving the species diversity along the edge of the stream by planting a variety of shrub species would increase the quality of wildlife habitat.

Bank cleanup: Water quality and habitat would be improved through the removal of tires and other materials dumped along the embankment of a tributary to Gully Brook. Many of the tires are concentrated in one area, as shown in the above photo, while others are dispersed in the surrounding forest. Cleanup would include removal of the tires and reseeding the exposed substrates where necessary to stabilize the disturbed soils.

Earthen dam: A small pond was constructed during the landfill closure and currently impounds water prior to releasing it to the ditched stream . The earthen dam at the pond has been overtopped resulting in an eroded channel to the ditched stream. Two options are available: 1) stabilize the dam and improve the outfall; and 2) remove the dam and restore the stream and its riparian buffer. Stabilizing the dam would include repair of the earthen face with topsoil and vegetation, and installing an outfall that was less likely to clog such as a stop-log weir or a rip-rap spillway. Removing the dam would involve draining the pond to expose the former stream banks, construction of a stream corridor and riparian area to connect with the ditched stream, excavation of the earthen berm, and planting the terrestrial wetland and upland habitats.

Unvegetated areas: Approximately 5 acres of the old borrow pit are unvegetated due to the low fertility and poor water-holding capacity of the sandy soil. In addition, ORVs appear to use the site, which further destabilizes the area. This area is upslope of Gully Brook and has the potential to erode into the stream. Restoration would require controlling access by ORVs, improving the soil quality with topsoil and organic matter amendments, and planting to stabilize the soil and enhance vegetation recolonization.

Ranking: High, would protect a corridor for wildlife passage along Gully Brook, linking with the wildlife crossing constructed on the Bypass, restoration of aquatic stream habitat and bordering wetlands. Open land combined with the partially developed high school lot could provide an initial focal point for land conservation in Gorham.

Site 12: *Waterhouse Road Parcel*

Town:	Gorham	**Location**:	Route 114
Parcel size:	81	**Mitigation area:**	<20
Map/Lot #:	18/4		
Watershed:	Gully Brook & Stroudwater River		

Existing Conditions: Mixed hay field and old field, sections of which have not been mowed in a number of years. In vicinity of proposed bypass.
Potential mitigation opportunities:

- Compensation focus would be on preservation of upland adjacent to a tributary of Gully brook.
- Enhancement of old field growing back to alder thickets.

Ranking: Low, adjacent to bypass corridor and provides a potential upland buffer to Gully Brook. Limited opportunities for restoration and enhancement, and it is actively maintained for hay.

Site 13 : *Route 22 Stream Crossing*

Town:	Gorham	**Location**:	Route 22
Parcel size:	Unknown	**Mitigation area:**	<1A
Map/Lot #:	Not identified		
Watershed:	South Branch Brook to Stroudwater River		

Existing Conditions: New culvert installed at road crossing in the last ten years. Remnants of the old bridge were left in place on the upstream side of the road. A portion of the old sidewall has fallen into the brook.
Potential Mitigation Opportunities: Enhance habitat through removal of debris within brook channel and on road sideslopesl. Provide additional culvert or bridge to improve wildlife passage.
Ranking: Low, small size, limited improvements to habitat, no connectivity with existing conservation lands.

Site 14: *Deering Farm*

Town:	Gorham	**Location**:	Burnham Road
Parcel size:	75	**Mitigation area:**	<20A
Map/Lot #:	2/15		
Watershed:	South Branch Brook to Stroudwater River.		

Existing Conditions: Hay field with narrow drainage swales.

Potential Mitigation Opportunities: Enhance wet meadow and conservation easement to preserve upland farm and woodland.

Ranking: Low, limited wetland restoration and enhancement potential, actively farmed and isolated from other conservation lands.

Site 15: *Beech Ridge Farm*

Town:	Scarborough	**Location**:	Beech Ridge Road
Parcel size:	>100	**Mitigation area:**	±20
Map/Lot #:	R021005		
Watershed:	Beech Ridge Brook, Nonesuch R.		

Existing Conditions: Old field in wetland has not been mowed in a number of years. Rest is working hay fields, Christmas tree farm with forested edge. Owner says site has small settling basin (and possibly drain tiles).

Potential Mitigation Opportunities:

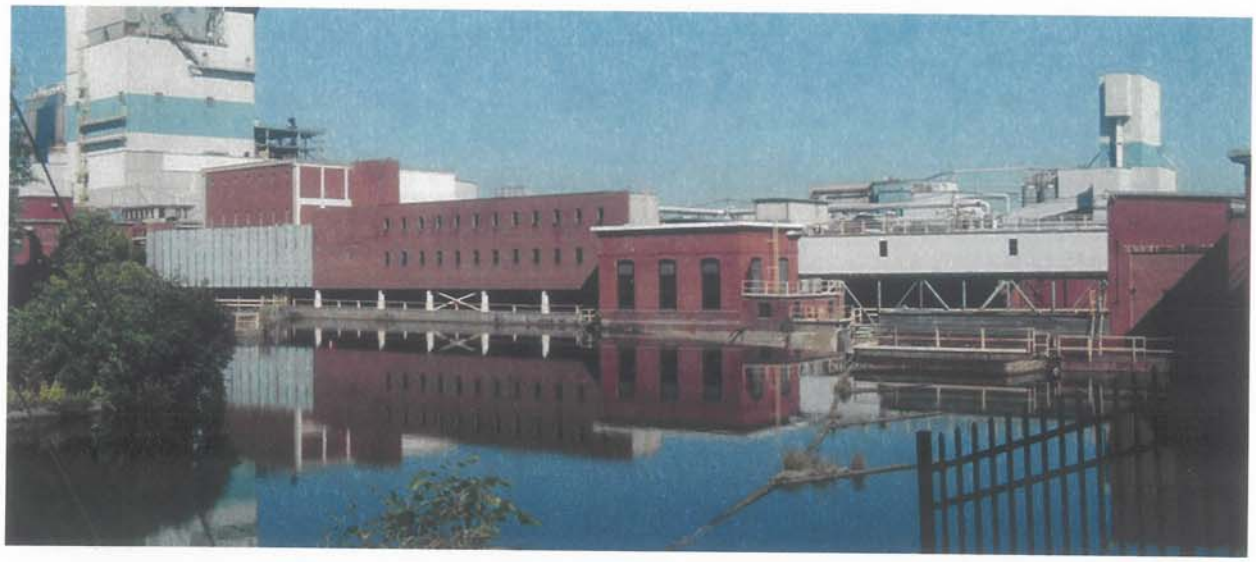
- Compensation focus would be on preservation of upland grasslands and restoration of old field to shrub/forest wetland.
- Restoration would include combination of regrading and planting.
- Recreation and open space potential through development of trail system.

Ranking: Low, active farmland, no connectivity with other conservation lands, potentially reticent landowner.

Site 16: Cumberland Mills Dam Removal

Town: Westbrook
Parcel size:
Map/Lot #:
Watershed: Presumpscot

Location: Center of Westbrook
Mitigation area: Up to 6 river miles



Existing Conditions: The Cumberland Mills dam is a non-generating mill dam providing water for the SD Warren paper mill in Westbrook. It is the first impediment to fish passage on the Presumpscot, , following the 2002 dam removal at Smelt Hill dam. The anadromous American shad and alewife were documented at the foot of the Cumberland Mills dam shortly after the Smelt Hill dam removal. The dam owner, S.D.Warren, is weighing the options of installing a fishway or removing the dam. Either action will potentially restore anadromous fish habitat up to the foot of the next dam, Saccarappa, approximately 1 river mile upstream. Once fish passage is restored at Cumberland Mills dam, FERC license conditions require that fish passage be provided at Saccarappa Dam and 4 additional dams above it, potentially restoring an additional 5 river miles. A financial and technical contribution from DOT could allow the most ecologically sound solution at the dam.

Potential Mitigation Opportunities:

- Compensation focus would be a monetary contribution to the fish passage solution at the dam.
- Pre- and post-construction monitoring would provide data lacking from other dam removals in the state.

Ranking: Medium-High, out-of-kind, but strong ecological benefit to the region; little control of project decisions and schedule.

Table 1. Summary of Preliminary Sites for Gorham Bypass Wetland Mitigation

#	Site Name	Town	Project Size (A)	Estimated Mitigation Area (A)	Current Land Use	Watershed	Mitigation Potential	Compensation Potential		Attributes	Limitations	River/ Stream Restoration	Wetland Restoration /Enhancement	Wetland Creation	Connectivity	High-value Upland Preservation	Mitigation Potential
1	Fort Hill Gravel Pits	Gorham	65	<30	gravel pit	Presumpscot (Douglas Bk)	Create wetland, water table has been intersected in one section.	**WQI**, W,G,	PSS, PFO, OW	Known shallow water table, restores gravel pit	Creation site. Not associated with potential corridors.			X			L
2	Rt. 237, Huston Rd	Gorham	75	<10	Old field	Presumpscot (Little R.)	Enhance wetland areas and potential NE cottontail habitat. Preserve upland habitat.	**WQI, W**, ROS	PFO, PSS, upland habitat	Old field. Extends to tributary to Little River.	Scattered, small wetlands. Not associated with potential corridors.		X			X	L
3	Canal St. Rt. 237 Lot	Gorham	41	<10	Perennial stream, old field, woods along shore	Presumpscot	Streambank restoration, enhancement by planting of wet meadow and preservation of uplands adjacent to river.	WQI, **W**, G, ROS	PSS, PFO, Upland habitat	Possible link for C&O canal corridor. Old field.	Small size. Ownership in question.		X		X	X	M
4	Little River Channel Improvements	Gorham	8	8	Old field, wet meadow	Presumpscot	Enhance floodplain and/or stream bottom.	WQI, W, SS, **FI**, Fish	PSS	Old field & riparian habitat	Small size of parcel and wetlands. Not associated with potential corridors.	X	X				L
5	Farrington Rd Gravel Pits	Gorham	112	25+	Gravel pit and forested upland	Presumpscot	Create wetlands, preserve adjacent upland/wetland complex	WQI, W, G	PEM, PSS, PFO	Known shallow water table, adequate wetland acreage, restores gravel pit, high value upland & wetlands	Creation site. Not associated with potential corridors.			X		X	M
6	Mosher Parcel	Gorham	55	16	Hay field	Presumpscot (Mosher Bk)	Combination of wetland restoration by removal of drainage tiles and planting to shrubs & trees, and upland habitat preservation of wildlife corridor along river.	**W, WQI**, ROS, G	PEM, PFO, PSS, upland forested habitat	Part of larger scenic vista of farm. Frontage along Mosher Brook	Active hayfields. Limited restoration opportunities.		X			X	L
7	RWS Parcel	Gorham	112	20 R & E.92 P	Old field, white pine plantation, PFO, PSS	Presumpscot	Restoration by ditch removal & planting wet meadow. Preservation of wildlife corridor along river. Preservation of C&O canal segment.	**W, WQI, ROS, H**, SS, F, G	PFO,PSS, PEM, upland habitat	Good overall potential due to size and range in habitats within site. Potential for connectivity to other sites along river. Potential for "keystone" site for town open space. Local conservation organizations support protection.	Town supports commercial development on adjacent upland within lot.		X		X	X	H
8	Presumpscot R. Riparian Buffer	Gorham	1.25 mi shoreline (~130 acres)	2 R, 7 E, 120 P	Wetland, forested floodplain, pasture	Presumpscot	Restore riverbank eroded by cattle. Preservation of riparian buffer to protect wildlife corridor and water quality of river.	**W, WQI, Fl, SS,ROS**	PFO, PSS, PEM, Upl	Good overall potential due to size, connectivity to other sites along river. Potential "keystone" site for town open space. Supported by conservation organizations	Limited restoration opportunities, not all landowners enthusiastic	X	X		X	X	H
9	Dolloff Rd	Gorham	67	>20	Old field	Presumpscot (Mosher Bk)	Enhance wetland areas and potential NE cottontail habitat. Preserve upland habitat.	**WQI, W**, ROS	PFO, PSS, upland habitat	Adjacent to bypass. Old field. Adequate wetland acreage.	Isolated from potential corridor. Owner reluctant.		X			X	M
10	Tannery Brook	Gorham	99	<20	Forested, small pond	Presumscot	Remove dam & restore brook, upland preservation	W, ROS	PFO, upland habitat	Dam removal, owned by town	Dam removal controversial, small size of restoration		X			X	L
11	Gully Brook	Gorham	128	1000' SR, 4 E, 122 P	Forested, closed Town Dump	Stroudwater	Remove dam, restore stream, remove tires, restore upland forest, preserve stream corridor and upland	**WQI, W, SS**, ROS	PF01, PSS	Stream restoration, enhance/ preserve wildlife corridor connecting to Bypass wildlife crossing, part of last large forested block in Gorham, Town support	Small size of wetland restoration, isolated, though has potential as keystone parcel	X	X		X	X	H
12	Waterhouse Rd	Gorham	81	<20	Hay field	Stroudwater (Gully Brook)	Enhance wet meadow, upland habitat preservation.	**WQI, W**, G	PSS, PFO, Upland habitat	In vicinity of bypass. Near Gully Brook wildlife crossing, part of last large forested block in Gorham.	Wet meadow areas are scattered. Active farmland		X			X	L
13	Rt 22 Stream Crossing	Gorham	<1	<1	Road crossing and large culvert	Stroudwater (S. Branch)	Replace/augment existing culvert to enhance wildlife passage, enhance wetland & upland	**W**, F, SS	PSS, Upland	Greatly enhance terrestrial and wetland wildlife movement across Rt 22	Small size. Not associated with existing conservation lands	X					L
14	Deering Farm	Gorham	127	18	Hay field	Stroudwater (S. Branch Brook)	Enhancement by modifying and planting of wet meadow. Preserve adjacent uplands.	**W**, G, **WQI**	PSS, PFO, upland habitat	Maintained field with wetland drainages.	Not associated with potential corridor. Active farmland. Isolated.		X			X	L
15	Beech Ridge Farm	Scarborough	>100	20	Hay field	Nonesuch (Beech Ridge Brook)	Enhancement of wet meadow with removal of drainage and planting. Preservation of upland habitat.	**WQI, W**, G,	PSS, PFO, upland habitat	Adequate area. Old field. Owner wants long-term protection of land.	Not in Gorham. Owner skeptical of outside control of land.		X			X	L
16	Cumberland Mills Dam	Westbrook	Dam	1 river mile direct, 5 river miles indirect	Mill pond	Presumpscot	Remove dam & restore upstream riverine wetlands	WQI, SS, Fl, **F**,W	PSS, PFO	Restore anadromous fish passage on Presumpscot, & force enhancements at upstream dams	Out-of-kind, project dependent on other agency negotiations	X			X		MH

Mitigation types: E=enhancement, P=preservation, R=restoration, SR=stream restoration
Functions: Fl=flooding; Fish=Fish habitat, G=groundwater, H=historical, ROS=Recreation/open space, SS=streambank stabilization, W=Wildlife, WQI= Water quality improvement (sediment & nutrient reduction)

Table 2. Preliminary Priority Assessment of Gorham Bypass Mitigation Alternatives

					Connectivity		
Site	**In Impacted Watersheds**	**In-kind**	**Wetland Restoration/ Enhance**	**Regionally Significant**	**Wildlife Corridor**	**Conservation Lands**	**Mit Potential**
1 Fort Hill Gravel Pits	Presumpscot	X					L
2. Rt 237 & Huston Rd	Presumpscot	X	X				L
3. Canal St	Presumpscot	X	X		X	x	M
4. Little River Channel	Presumpscot	x	X		x		L
5. Farrington Rd Gravel Pits	Presumpscot	X					M
6. Mosher Farm	Presumpscot	X	X		x		L
7. RWS Parcel	Presumpscot	X	X	X	X	Potential keystone	H
8. Presumpscot River Corridor	Presumpscot	x	X	X	X	Potential keystone	H
9. Dolloff Rd	Presumpscot	X	X				M
10. Tannery Brook	Presumpscot	X	X		X	Potential keystone	L
11. Gully Brook	Stroudwater	X	X		X	Potential keystone	H
12. Waterhouse Rd.	Stroudwater	X	X				L
13. Rt 22 Stream Crossing	Stroudwater		X		X		L
14. Deering Farm	Stroudwater	X	X				L
15. Beech Ridge Farm	Nonesuch	X	X				L
16. Cumberland Mills Dam	Presumpscot			X	X	x	MH

Appendix 4: Archeological Assessment: Larrabee Farms Wetland Mitigation Project

(attached)

Deborah B. Wilson
Archaeological Consultant
P.O. Box 476 *Boothbay Harbor, Maine 04538* *207-633-2013*

May 28, 2003

James Boyle
Boyle Associates
27 Gorham Rd., Suite 12
Scarborough, Maine 04074

RE: Preliminary Archaeological Survey Report
R.J. Grondin and Sons Property, Scarborough

Dear Jim:

Enclosed please find the report on the Grondin project in Scarborough. It's a little more than a letter report—there was quite a lot of property to cover. I have enclosed two copies of the report, one for you and the client and the second for you to submit to MHPC. Let me know if you have any questions or need additional information.

Thanks for your help in the field. I look forward to working with again.

Sincerely,

Deborah B. Wilson
Archaeological Consultant

REPORT ON THE PRELIMINARY ARCHAEOLOGICAL ASSESSMENT
PREHISTORIC AND HISTORIC COMPONENTS
R.J. GRONDIN AND SONS PROPERTY
SCARBOROUGH, MAINE
MHPC # 0522-03

prepared for:

R.J. Grondin and Sons
11 Bartlett Road
Gorham, Maine 04038

prepared by:

Deborah B. Wilson
Archaeological Consultant
P.O. Box 476
Boothbay Harbor, Maine 04538

and

Timothy S. Dinsmore
Historical Archaeologist
57 Walpole Meeting House Road
Walpole, Maine 04573

May 28, 2003

I. INTRODUCTION

R.J. Grondin and Sons of Gorham, Maine proposes to carry out a multi-phased project involving gravel extraction followed by wetlands creation on a 288-acre parcel of land in Scarborough (Figure 1). The project is under review for environmental impacts, including potential effects to cultural resources. In the context of the review, the Maine Historic Preservation Commission required an assessment of the property for prehistoric resources and a preliminary survey of the Snow homestead, located on the 1871 Cumberland County map of Scarborough. This report presents the results of the survey, which was carried out by prehistoric archaeologist Deborah Wilson, historical archaeologist Timothy Dinsmore, and assistant Joanne Anthony during May, 2003.

II. ASSESSMENT FOR PREHISTORIC ARCHAEOLOGICAL SENSITIVITY

Prehistoric archaeological sensitivity in Maine is based on known site location criteria. Generally, prehistoric sites are situated on level, well-drained land near a source of navigable and/or potable water. Features such as rapids, falls, stream confluences, and overlooks enhance prehistoric sensitivity. For some periods of prehistory—including the Paleoindian or earliest period—sites are frequently situated on sandy soils near a wetland or minor drainage.

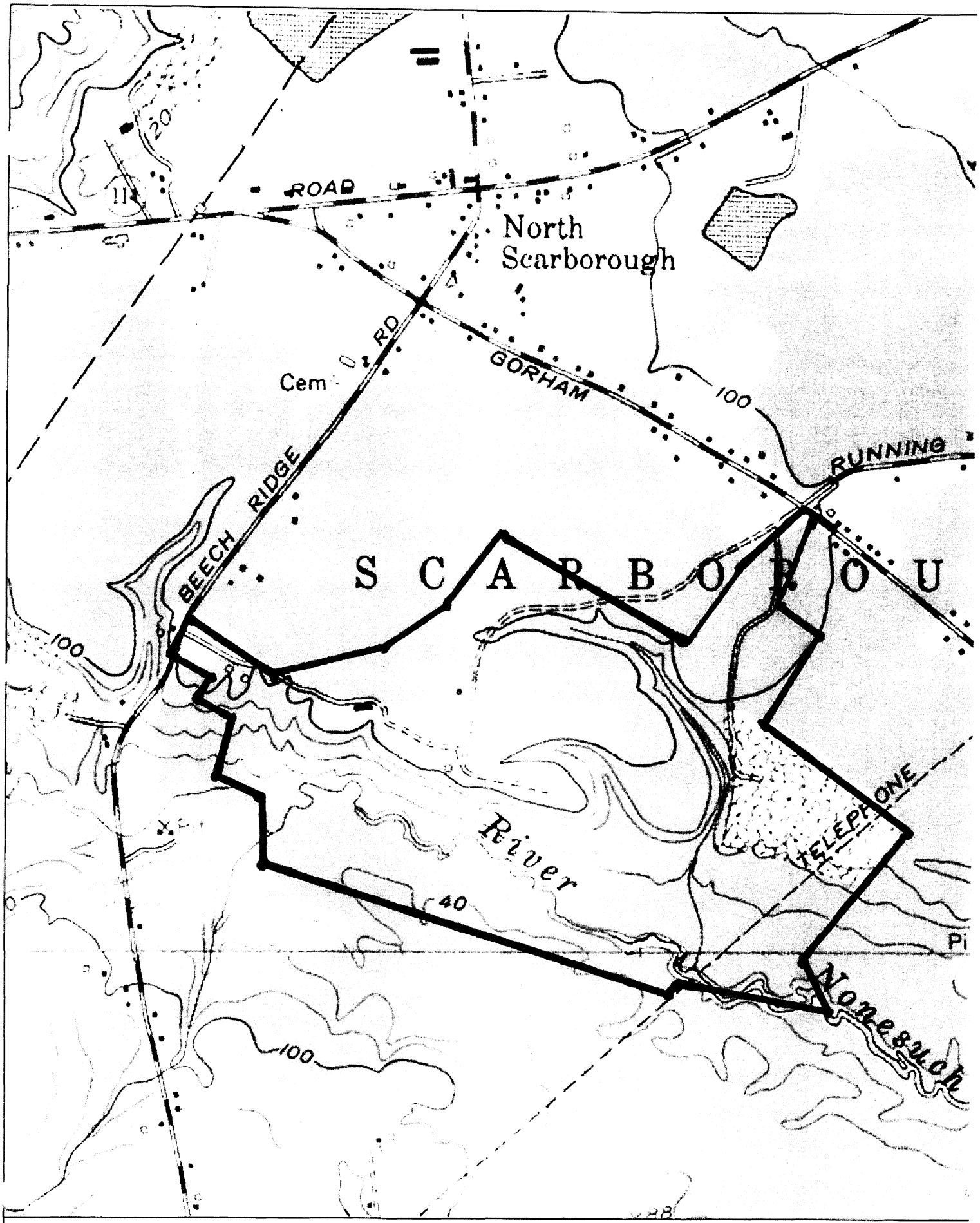
A. PROJECT AREA DESCRIPTION

The R.J. Grondin property includes land on the north and south sides of the Nonesuch River, which flows into Scarborough Marsh approximately seven miles southeast of the project area. Located inside the marine limit, surficial deposits in the project locale are patchy and include sandy outwash and fine-grained Presumpscot Formation materials. A deeply incised stream marking the margin of a late Pleistocene eddy separates the parcel into east and west halves. Sand is more common on the east half of this drainage than on the west half, where silt and clay blanket extensive areas. The outwash varies considerably in thickness and, where present, is underlain by fine-grained materials. Thus, even when sand is present at the surface, drainage is sometimes only moderate to poor.

The project area has seen considerable historic disturbance. A homestead visible on the 1871 Cumberland County map of Scarborough indicates that the area was farmed in the past. Stumps, common throughout wooded portions of the property, indicates past logging activity. The most invasive historic use, however, has been sediment extraction. Both sand and clay have been extensively mined, and a number of large pits are present on the property. On the west side of the property clay has been mined to bedrock, which is close to the surface there.

B. SURVEY METHODOLOGY

The Maine Historic Preservation Commission initially requested that a Phase I survey be carried out as part of the permitting process. MHPC later agreed to allow a preliminary prehistoric archaeological assessment which will result in Phase I investigations of locations exhibiting archaeological sensitivity. The goals of the current project are, thus, to evaluate the project area in terms of known prehistoric settlement criteria and disturbance, and to develop a plan for Phase I investigations if necessary.



Name: GORHAM
Date: 5/27/2003
Scale: 1 inch equals 1000 feet

Location: 043° 37' 56.61" N 070° 23' 52.25" W
Caption: Figure 1: Location of the R J Grondin property in Scarborough, Maine.

Copyright (C) 2002, Maptech, Inc.

Prior to a field review of the property, the site plan, soils maps, and background information on the project were reviewed to gain an overview of the terrain. On May 7, James Boyle of Boyle Associates who is developing the project and an assistant aided in the initial reconnaissance of the property by the author and field assistant Joanne Anthony. On May 14, the author returned to the property with historic archaeologist Timothy Dinsmore and completed the field review. General characteristics of the property were noted as they pertain to archaeological sensitivity and soil exposures were examined for evidence of prehistoric settlement. For descriptive purposes, the property was divided into the anticipated areas of impact and defined outlying areas (Figure 2).

C. SURVEY COVERAGE AND RECOMMENDATIONS

The following descriptions are keyed to the numbered areas in Figure 2.

1 (Wetland Creation Area 1A)

a. Description

The massive sandy soils that once blanketed fine-grained Presumpscot Formation materials in this location have been extensively mined. It is possible to get a sense of the former landscape at the margins of the pit, where sediments have been left largely undisturbed. Such exposures are present along the west margin of the pit, which is adjacent to a deeply incised stream channel, and along the south side, which marks the margin of an erosional terrace of the Nonesuch River.

b. Recommendations

Wetland Creation Area 1A has been extensively disturbed by gravel extraction activities and, as a result, exhibits a low sensitivity for archaeological resources. However, land along the south and west margins of the area exhibits a moderate sensitivity and, therefore, Phase I survey is recommended prior to further disturbance.

2 (Wetland Creation Area 1B)

a. Description

Located in the northeast corner of the parcel, the land in this area is presently wooded. A soil probe was used to examine surficial deposits, which included medium-grained sands of variable thickness overlying fine-grained Presumpscot Formation materials. The area had been logged in the past but the soils were not plowed in the locations that were examined.

b. Recommendations

The terrain in Wetland Creation Area 1A is relatively level and the soils are sandy, both characteristics known to have attracted prehistoric settlement. However, no landscape features are present in the area to serve as a focus for settlement. Therefore, the locale is rated low in archaeological sensitivity and no further testing is recommended.

3 (Future Mitigation Area 1)

a. Description

This area, divided into north and south halves by a woods road, is centrally located on the north side of the property. The land on the north side of the woods road is lower in elevation and somewhat more poorly drained than the land on the south side. In the latter

location, sandy surficial deposits are relatively deep and several dune-like landforms were observed in the field. The entire area is currently forested. An irregular ground surface in some places is suggestive of prior subsurface disturbance.
b. Recommendations
Given the somewhat poorly drained nature of the land on the north side of the woods road, the area is rated low in archaeological sensitivity. In contrast, land on the south side is rated moderate to high in archaeological sensitivity because of the combination of deep sandy soils and possible duned landforms there. Phase I testing is recommended prior to disturbance in this area.

4 (Future Mitigation Area 2)
a. This area is located near the west side of the property where a large late Pleistocene eddy blanketed the area with fine-grained glaciomarine deposits. These deposits have been extensively mined, and bedrock and clay comprise the surface in the area today. No undisturbed areas were noted during the survey.
b. Recommendations
This area is extremely disturbed and, therefore, does not exhibit any archaeological sensitivity.

5 (Future Mitigation Area 3)
a. Description
This is a long, narrow area situated to the east of Future Mitigation Area 2. Surficial deposits are fine-grained on the west side but are somewhat sandier to the east. The south edge of the area is bordered by an incised stream valley.
b. Recommendations
Most of Future Mitigation Area 3 exhibits a low sensitivity for prehistoric settlement. However, land at the east end is sandy, generally level, and adjacent to an incised stream. Phase I testing is recommended in this locale before it is disturbed.

6 (Future Mitigation Area 4)
a. Description
This area is a sand ridge that is well-drained and affords an overlook of an adjacent incised stream valley. The area is wooded and soils are only minimally disturbed.
b. Recommendation
This area exhibits a moderate to high sensitivity for archaeological resources because of the sandy soils and the high, defined nature of the landform that provides an overlook of surrounding terrain. Phase I testing is recommended in this location.

7 (Future Mitigation Area 5)
a. Description
This area is situated in the locale where a late Pleistocene eddy blanketed terrain with fine-grained glaciomarine materials. The silt/clay has been mined, and the bedrock exposures are visible at the surface today.

b. Recommendations
Highly disturbed, this area exhibits no sensitivity for prehistoric settlement.

8/9/10 (As numbered on Figure 2)
a. Description
These areas are along the margin of an erosional terrace overlooking the current course of the Nonesuch River. The land is all three locations is generally level and surficial deposits are sandy and undisturbed. Each place provides an overlook of the incised river valley below.
b. Recommendations
Phase I testing is recommended if these areas are ever disturbed.

11 (As numbered in Figure 2)
a. Description
The land in this area is level, sandy, and adjacent to a deeply incised stream valley. The area is currently wooded and past disturbance appears to be minimal.
b. Recommendations
Phase I testing is recommended in this area if disturbance is anticipated.

12 (As numbered in Figure 2)
a. Description
Area 12 includes the end of an esker-like outwash feature that extends west into Future Mitigation Area 4. It is composed of sand, has a level top, and is adjacent to and overlooks a deeply incised stream valley. The area is presently wooded and appears to have been minimally disturbed except by logging. A woods road separates the area from Future Mitigation Area 4.
b. Recommendations
Phase I testing is recommended prior to any disturbance.

13 (As numbered in Figure 2)
a. Description
This is a high, sandy rise adjacent to the confluence of a small stream and the Nonesuch River valley. The land is generally level, soils are sandy, and the location affords an overlook of the valley below. Disturbance in this locale appears to be minimal.
b. Recommendations
Phase I testing is recommended if this area will be disturbed.

14 (As numbered in Figure 2)
a. Description
The R.J. Grondin property includes a narrow strip of land on the south side of the Nonesuch River that includes poorly drained floodplain and a higher erosional terrace edge. Area 14 encompasses this terrace edge, which is high and blanketed with sandy outwash. Some sections of the terrace margin have a level top while, in other places, the margin is sloped or incised. The land is wooded and appear to be undisturbed.

b. Recommendations
Phase I testing is recommended if this area is disturbed in the future.

D. PREHISTORIC ASSESSMENT: SUMMARY RECOMMENDATIONS

Phase I survey is recommended prior to disturbance in the following areas, as identified in Figure 2:

- 1 (Wetland Creation Area 1A) — partial, south and west edges
- 3 (Future Mitigation Area 1) — partial, south of woods road
- 5 (Future Mitigation Area 3) — east end only
- 6 (Future Mitigation Area 4) — entire area
- 8/9/10 (As numbered on Figure 2) — three small areas
- 11 (As numbered on Figure 2) — entire area
- 12 (As numbered on Figure 2) — entire area
- 13 (As numbered on Figure 2) — entire area
- 14 (As numbered on Figure 2) — level terrace edge only

III. ASSESSMENT FOR HISTORIC RESOURCES (by Timothy S. Dinsmore)

A. PROJECT DESCRIPTION

At the request of the Maine Historic Preservation Commission the property slated for wetlands creation in Scarborough, Maine by R. J. Grondin and Sons, was recommended for a walkover by a historical archaeologist. Specifically, the 1871 atlas map for Scarborough indicates that a "Mrs. Snow" had a farmstead in the vicinity of the development (Figure 3), but due to the generality of the map, it is unclear where precisely on the aforementioned property the structure was located, if at all. The objective for this portion of the study is therefore to determine if the Mrs. Snow homestead site exists within the project area.

B. METHODOLOGY

To determine whether the Mrs. Snow homestead site is located within the project area historic maps were studied in more detail. Once these maps were scrutinized a walkover of suspected areas was conducted.

C. SURVEY RESULTS AND RECOMMENDATIONS

Because the Mrs. Snow farmstead existed in 1871, there is a good chance that the foundation or cellar hole will still be visible during a walkover of the property, provided that the landscape has not been adversely impacted since that time. An examination of the earliest 7.5 minute topographic map of the region, dated 1891 and surveyed in 1889, shows a structure on the east-side of a well defined ravine and north of the Nonesuch River (Figure 4). This structure may

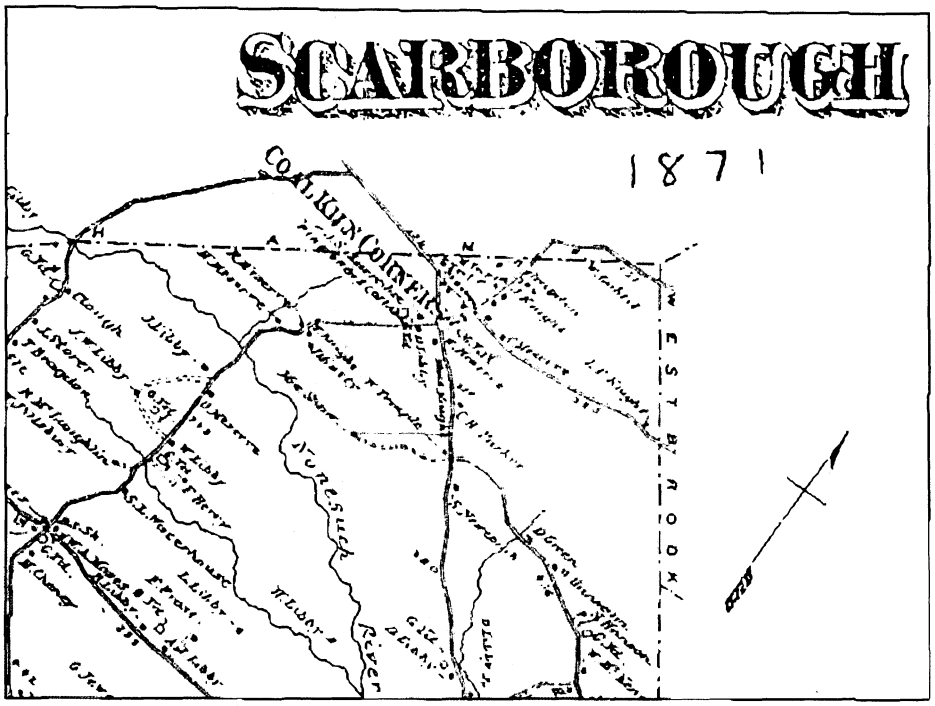


Figure 3: Location of the Mrs. Snow Homestead on the 1871 Atlas.

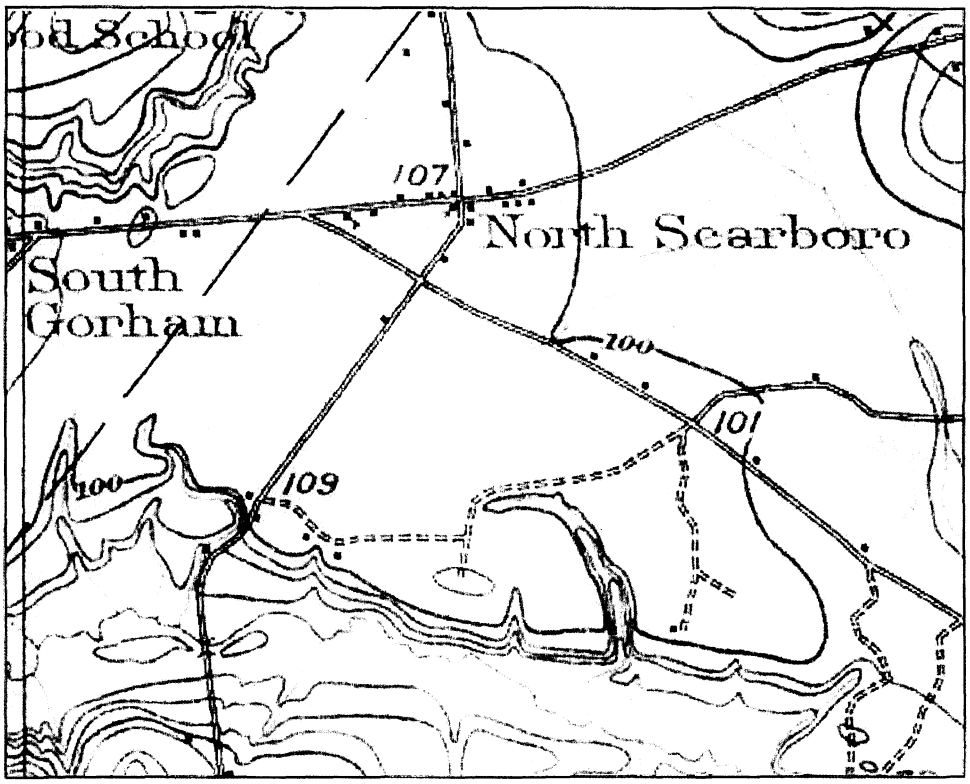


Figure 4: 1891 topographic map indicating the presence of a structure in Area A.

indeed be the Mrs. Snow homestead seen on the 1871 atlas map.

A walkover of this portion of the project area (Figure 2, Area A) was conducted on May 14, 2003 in order to locate the Snow farmstead site. After completing the walkover, it was clear that this portion of the project area had been extensively mined for soils for years, and consequently, the Mrs. Snow homestead site, if located here, would have been completely compromised.

Because it is unclear whether the structure on the topographic map is the same structure as that found on the atlas, other areas of the project area were searched as well. West of the aforementioned ravine is found an open grassy area, which too, has been extensively mined for soils. Located at the bottom of the field is found a small knoll with an apparent intact soil horizon (Figure 2, Area B). Also found in the vicinity of the knoll is several apple and Sumac trees. No foundation, however, is visible and it is again quite possible that if a historic site existed nearby, that it was destroyed during soil extraction.

Extensive soil mining activities within the project area likely impacted the Mrs. Snow homestead site if in fact the site was located here and thus no further work is recommended.

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

March 27, 2003

James Boyle
Boyle Associates
27 Gorham Rd., Suite 12
Scarborough, ME 04074

Project: MHPC #0522-03 - R.J. Grondin & Sons; Larrabee Farm
Location: Scarborough, ME

Dear Mr. Boyle:

In response to your recent request, I have reviewed the information received March 7, 2003 to initiate consultation on the above referenced project. This project was reviewed pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

Based upon the proposed location and scope of work for this project, I have concluded that the topographic setting of the project area is likely to have attracted prehistoric (Indian) settlement. This area has never been surveyed by a professional archaeologist; therefore, we are requesting that you or the applicant contract for a Phase I survey of any areas where the subsoil has not been disturbed.

Additionally, we are requesting information indicating whether the house shown as "Mrs. Snow" on the enclosed 1871 map is within the project area.

A list of qualified contract archaeologists is enclosed along with material explaining the Phase I/II/III approach to archaeological survey. This office must approve any proposal for archaeological fieldwork. Please contact Dr. Art Speiss of this office if we can be of further assistance in this matter.

Sincerely,

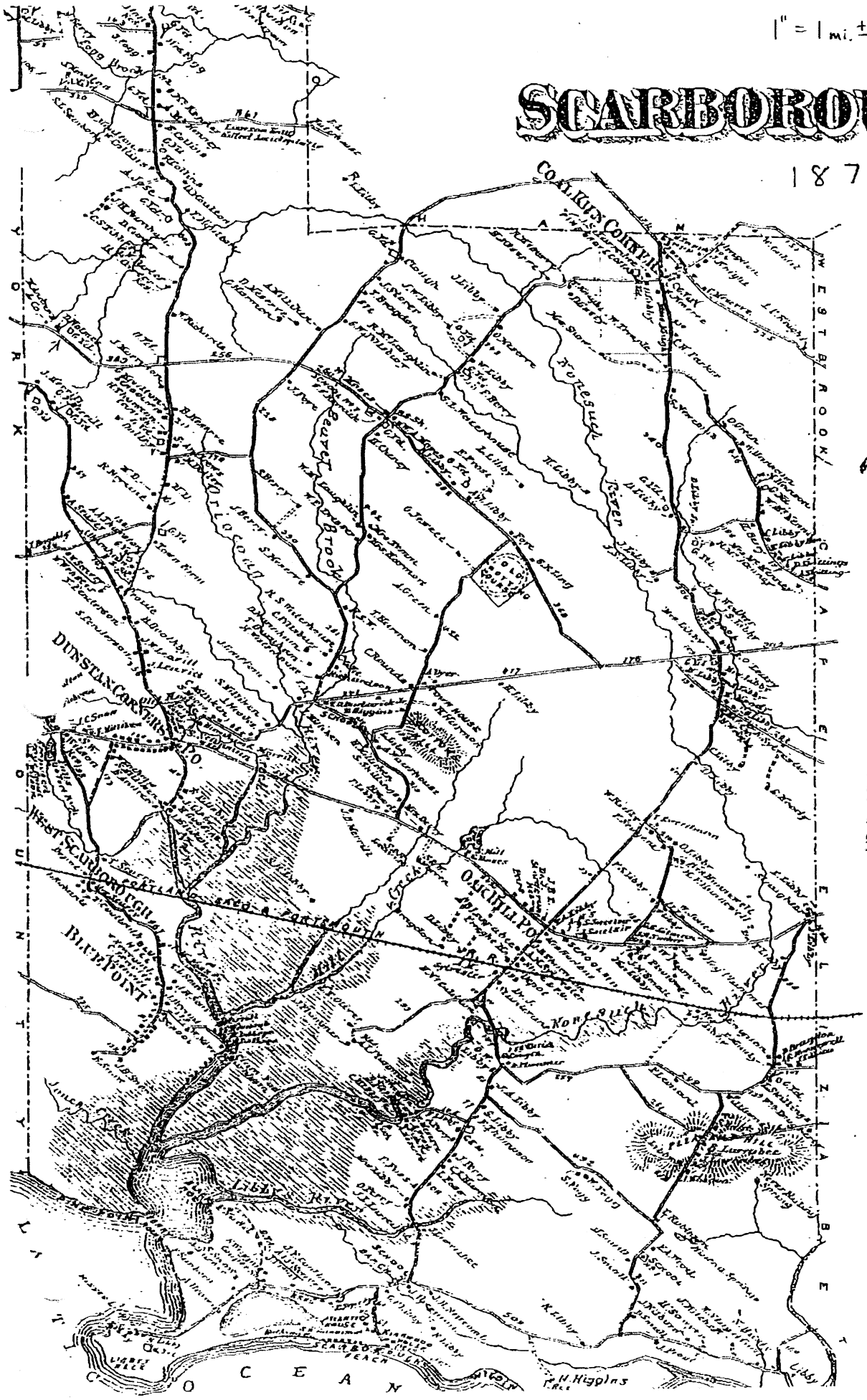
Earle G. Shettleworth, Jr.
State Historic Preservation Officer

EGS/mj
enc:

SCARBOROUGH

1871

1" = 1 mi. ±



MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

CONTRACT ARCHAEOLOGY GUIDELINES

June 10, 2002

This document is provided as background information to agencies, corporations, professional consultants or individuals needing contract archaeological services (also known as Cultural Resources Management archaeology) in Maine. These guidelines are based on state rules (94-089 Chapter 812).

Finding an Archaeologist

At the time that MHPC issues a letter requiring archaeological survey work, MHPC will also supply one (or more) lists of archaeologists (Levels 1 and/or 2, historic or prehistoric) appropriate to the type of work (Phase I, II, III, historic or prehistoric). **Archaeologists on the Level 2 Approved Lists can do projects of any level, including Phase I archaeological survey projects.** Level 1 archaeologists are restricted to doing Phase I surveys, and certain planning projects for municipal governments.

MHPC maintains lists of archaeologists interested in working in different geographic areas of Maine, and those who are qualified in different types of work. The archaeologists themselves indicate their availability (except for short-term absence) to MHPC on a periodic basis, so archaeologists on the list can be expected to respond to inquiries. The applicant should solicit proposals or bids for work from archaeologists whose names appear on the list supplied by MHPC.

These archaeologists' names are taken from lists of archaeologists approved for work in Maine by MHPC under a set of rules establishing minimal qualifications, such as previous supervisory experience in northern New England, and an appropriate graduate degree. *However, the inclusion of an archaeologist on one of these lists should not be interpreted as an endorsement by the MHPC beyond these limited qualification criteria. Moreover, the MHPC cannot recommend the services of an individual archaeologist.*

Project Types

The vast majority of contract archaeology survey work falls into one of three categories. **Phase I** surveys are designed to determine whether or not archaeological sites exist on a particular piece of land. Such work involves checking records of previous archaeology in the area, walking over the landscape to inspect land forms and look for surface exposures of soil and possible archaeological material, and the excavation of shovel test pits in areas of high probability.

Phase II surveys are designed to focus on one or more sites that are already known to exist, find site limits by digging test pits, and determine site content and preservation. Information from Phase II survey work is used by the Maine Historic Preservation Commission (MHPC) to determine site significance (eligibility for listing in the National Register of Historic Places). **Phase III** archaeological work, often called data recovery, is careful excavation of a significant archaeological site to recover the artifacts and information it contains in advance of construction or other disturbance.

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DIRECTOR

List of Qualified (Chapter 812; 94-089) Prehistoric Archaeologists Active in the Project Area

Ms. Geraldine E Baldwin
1 Croton Point Avenue, Suite B
Croton-on-Hudson, New York
10520
914-271-0898
gbaldwin@johnmilnerassociates.com

Mr. Robert N. Bartone
Archaeology Research Center
University of Maine at Farmington
Farmington, Maine 04938
B_Bartone@maine.edu

Dr. William R. Belcher
US Army CILHI
310 Worchester Ave Bldg 45
Hickam AFB, HI 96853-5530
(808) 448-8062 X174
wbelcher@msn.com

Dr. Bruce J. Bourque
Maine State Museum
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Augusta, Maine 04333-0083
(207) 287-3909
bbourque@abacus.bates.edu

Mr. Michael Brigham
Archaeology Research Center
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(207) 778-7012
brigham@maine.edu

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R.R. 1, Box 195E
Africa Road
Alton, New Hampshire 03809
(603) 776-4306)
victoria@worldpath.net

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(207) 667-4055
clark@midcoast.com

Ms. Rebecca Cole-Will
Archaeological Research Consultants, Inc.
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(207) 667-4055
abbebcw@midmaine.com

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Farmington, Maine 04938-1507
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ecowie@maine.edu

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Portland, Maine 04103
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seldridge@neamaine.com

Prof. Nathan Hamilton
Department of Geography & Anthropology
University of Southern Maine
Gorham, Maine 04038
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Dr. Jonathan C. Lothrop
GAI Consultants
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Monroeville, Pennsylvania
15146-1334
(412) 856-6400
j.lothrop@gaiconsultants.com

Dr. James B. Petersen
Department of Anthropology
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Burlington, Vermont 05405-0168
(802) 656-3884
Jpeterse@zoo.uvm.edu

Dr. Richard Will
Archaeological Research Services
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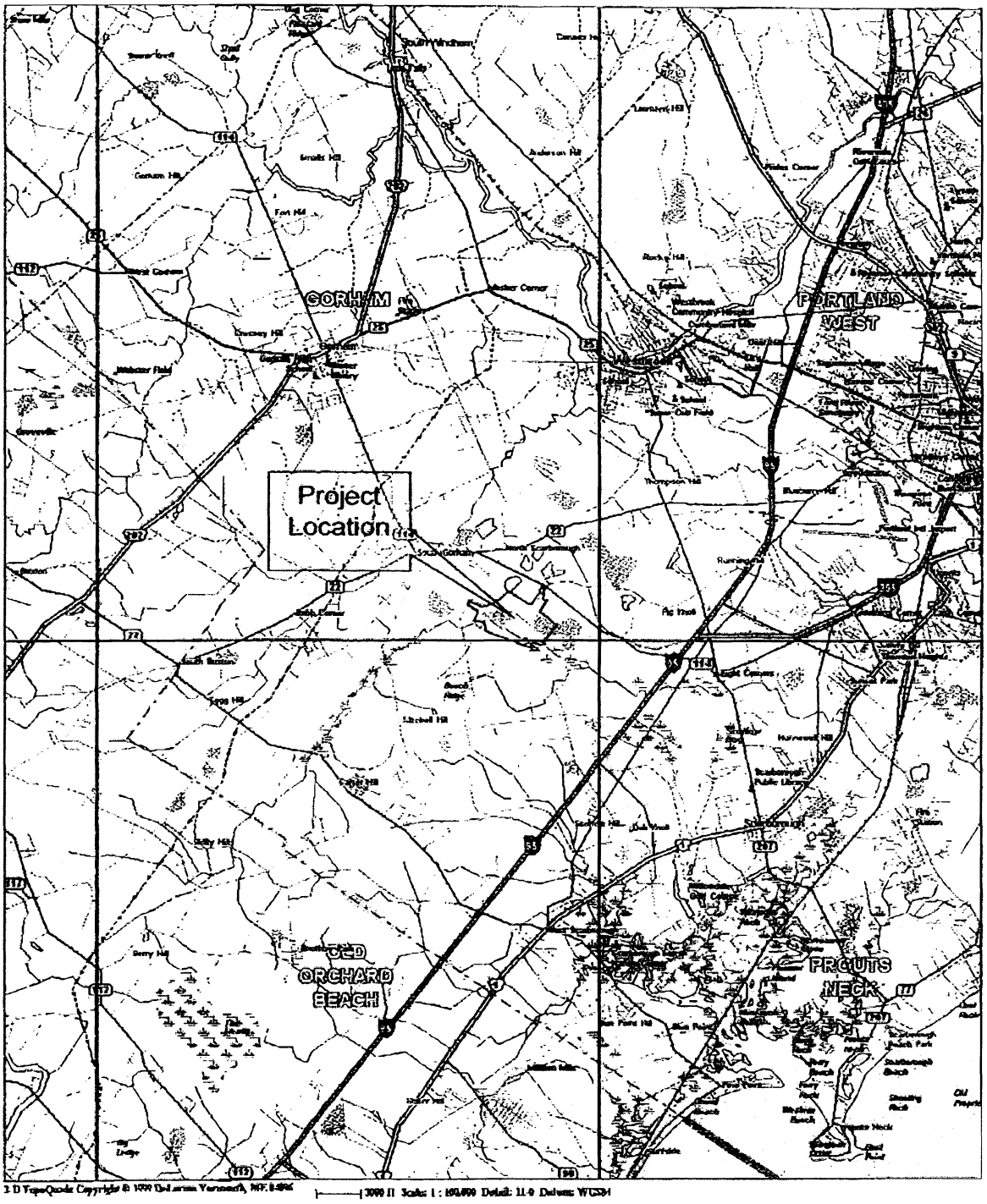
(207) 667-4055
willarc@acadia.net

Ms. Deborah B Wilson
P.O. Box 476
Boothbay Harbor, Maine 04538-0476
(207) 633-2013
dwil@gwi.net

Exhibit 2: Project Location Map



REPORT ON THE PRELIMINARY ARCHAEOLOGICAL ASSESSMENT
PREHISTORIC AND HISTORIC COMPONENTS
R.J. GRONDIN AND SONS PROPERTY
SCARBOROUGH, MAINE
MHPC # 0522-03

prepared for:

R.J. Grondin and Sons
11 Bartlett Road
Gorham, Maine 04038

prepared by:

Deborah B. Wilson
Archaeological Consultant
P.O. Box 476
Boothbay Harbor, Maine 04538

and

Timothy S. Dinsmore
Historical Archaeologist
57 Walpole Meeting House Road
Walpole, Maine 04573

May 28, 2003

I. INTRODUCTION

R.J. Grondin and Sons of Gorham, Maine proposes to carry out a multi-phased project involving gravel extraction followed by wetlands creation on a 288-acre parcel of land in Scarborough (Figure 1). The project is under review for environmental impacts, including potential effects to cultural resources. In the context of the review, the Maine Historic Preservation Commission required an assessment of the property for prehistoric resources and a preliminary survey of the Snow homestead, located on the 1871 Cumberland County map of Scarborough. This report presents the results of the survey, which was carried out by prehistoric archaeologist Deborah Wilson, historical archaeologist Timothy Dinsmore, and assistant Joanne Anthony during May, 2003.

II. ASSESSMENT FOR PREHISTORIC ARCHAEOLOGICAL SENSITIVITY

Prehistoric archaeological sensitivity in Maine is based on known site location criteria. Generally, prehistoric sites are situated on level, well-drained land near a source of navigable and/or potable water. Features such as rapids, falls, stream confluences, and overlooks enhance prehistoric sensitivity. For some periods of prehistory—including the Paleoindian or earliest period—sites are frequently situated on sandy soils near a wetland or minor drainage.

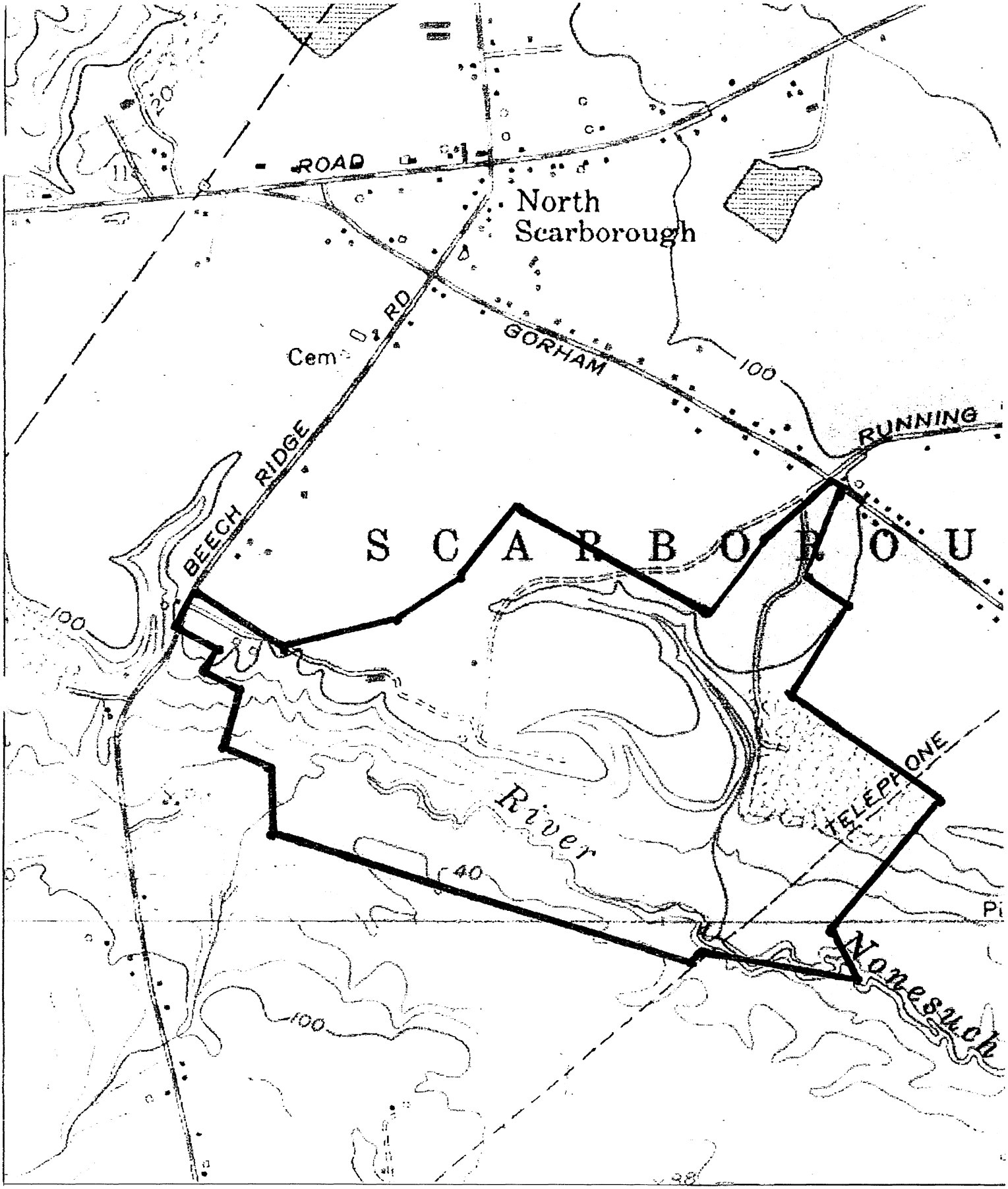
A. PROJECT AREA DESCRIPTION

The R.J. Grondin property includes land on the north and south sides of the Nonesuch River, which flows into Scarborough Marsh approximately seven miles southeast of the project area. Located inside the marine limit, surficial deposits in the project locale are patchy and include sandy outwash and fine-grained Presumpscot Formation materials. A deeply incised stream marking the margin of a late Pleistocene eddy separates the parcel into east and west halves. Sand is more common on the east half of this drainage than on the west half, where silt and clay blanket extensive areas. The outwash varies considerably in thickness and, where present, is underlain by fine-grained materials. Thus, even when sand is present at the surface, drainage is sometimes only moderate to poor.

The project area has seen considerable historic disturbance. A homestead visible on the 1871 Cumberland County map of Scarborough indicates that the area was farmed in the past. Stumps, common throughout wooded portions of the property, indicates past logging activity. The most invasive historic use, however, has been sediment extraction. Both sand and clay have been extensively mined, and a number of large pits are present on the property. On the west side of the property clay has been mined to bedrock, which is close to the surface there.

B. SURVEY METHODOLOGY

The Maine Historic Preservation Commission initially requested that a Phase I survey be carried out as part of the permitting process. MHPC later agreed to allow a preliminary prehistoric archaeological assessment which will result in Phase I investigations of locations exhibiting archaeological sensitivity. The goals of the current project are, thus, to evaluate the project area in terms of known prehistoric settlement criteria and disturbance, and to develop a plan for Phase I investigations if necessary.



Name: GORHAM
ate: 5/27/2003
cale: 1 inch equals 1000 feet

Location: 043° 37' 56.61" N 070° 23' 52.25" W
Caption: Figure 1: Location of the R.J. Grondin property in Scarborough, Maine.

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Prior to a field review of the property, the site plan, soils maps, and background information on the project were reviewed to gain an overview of the terrain. On May 7, James Boyle of Boyle Associates who is developing the project and an assistant aided in the initial reconnaissance of the property by the author and field assistant Joanne Anthony. On May 14, the author returned to the property with historic archaeologist Timothy Dinsmore and completed the field review. General characteristics of the property were noted as they pertain to archaeological sensitivity and soil exposures were examined for evidence of prehistoric settlement. For descriptive purposes, the property was divided into the anticipated areas of impact and defined outlying areas (Figure 2).

C. SURVEY COVERAGE AND RECOMMENDATIONS

The following descriptions are keyed to the numbered areas in Figure 2.

1 (Wetland Creation Area 1A)

a. Description

The massive sandy soils that once blanketed fine-grained Presumpscot Formation materials in this location have been extensively mined. It is possible to get a sense of the former landscape at the margins of the pit, where sediments have been left largely undisturbed. Such exposures are present along the west margin of the pit, which is adjacent to a deeply incised stream channel, and along the south side, which marks the margin of an erosional terrace of the Nonesuch River.

b. Recommendations

Wetland Creation Area 1A has been extensively disturbed by gravel extraction activities and, as a result, exhibits a low sensitivity for archaeological resources. However, land along the south and west margins of the area exhibits a moderate sensitivity and, therefore, Phase I survey is recommended prior to further disturbance.

2 (Wetland Creation Area 1B)

a. Description

Located in the northeast corner of the parcel, the land in this area is presently wooded. A soil probe was used to examine surficial deposits, which included medium-grained sands of variable thickness overlying fine-grained Presumpscot Formation materials. The area had been logged in the past but the soils were not plowed in the locations that were examined.

b. Recommendations

The terrain in Wetland Creation Area 1~~A~~B is relatively level and the soils are sandy, both characteristics known to have attracted prehistoric settlement. However, no landscape features are present in the area to serve as a focus for settlement. Therefore, the locale is rated low in archaeological sensitivity and no further testing is recommended.

3 (Future Mitigation Area 1)

a. Description

This area, divided into north and south halves by a woods road, is centrally located on the north side of the property. The land on the north side of the woods road is lower in elevation and somewhat more poorly drained than the land on the south side. In the latter

location, sandy surficial deposits are relatively deep and several dune-like landforms were observed in the field. The entire area is currently forested. An irregular ground surface in some places is suggestive of prior subsurface disturbance.
b. Recommendations
Given the somewhat poorly drained nature of the land on the north side of the woods road, the area is rated low in archaeological sensitivity. In contrast, land on the south side is rated moderate to high in archaeological sensitivity because of the combination of deep sandy soils and possible duned landforms there. Phase I testing is recommended prior to disturbance in this area.

4 (Future Mitigation Area 2)
a. This area is located near the west side of the property where a large late Pleistocene eddy blanketed the area with fine-grained glaciomarine deposits. These deposits have been extensively mined, and bedrock and clay comprise the surface in the area today. No undisturbed areas were noted during the survey.
b. Recommendations
This area is extremely disturbed and, therefore, does not exhibit any archaeological sensitivity.

5 (Future Mitigation Area 3)
a. Description
This is a long, narrow area situated to the east of Future Mitigation Area 2. Surficial deposits are fine-grained on the west side but are somewhat sandier to the east. The south edge of the area is bordered by an incised stream valley.
b. Recommendations
Most of Future Mitigation Area 3 exhibits a low sensitivity for prehistoric settlement. However, land at the east end is sandy, generally level, and adjacent to an incised stream. Phase I testing is recommended in this locale before it is disturbed.

6 (Future Mitigation Area 4)
a. Description
This area is a sand ridge that is well-drained and affords an overlook of an adjacent incised stream valley. The area is wooded and soils are only minimally disturbed.
b. Recommendation
This area exhibits a moderate to high sensitivity for archaeological resources because of the sandy soils and the high, defined nature of the landform that provides an overlook of surrounding terrain. Phase I testing is recommended in this location.

7 (Future Mitigation Area 5)
a. Description
This area is situated in the locale where a late Pleistocene eddy blanketed terrain with fine-grained glaciomarine materials. The silt/clay has been mined, and the bedrock exposures are visible at the surface today.

b. Recommendations
Highly disturbed, this area exhibits no sensitivity for prehistoric settlement.

8/9/10 (As numbered on Figure 2)
a. Description
These areas are along the margin of an erosional terrace overlooking the current course of the Nonesuch River. The land is all three locations is generally level and surficial deposits are sandy and undisturbed. Each place provides an overlook of the incised river valley below.
b. Recommendations
Phase I testing is recommended if these areas are ever disturbed.

11 (As numbered in Figure 2)
a. Description
The land in this area is level, sandy, and adjacent to a deeply incised stream valley. The area is currently wooded and past disturbance appears to be minimal.
b. Recommendations
Phase I testing is recommended in this area if disturbance is anticipated.

12 (As numbered in Figure 2)
a. Description
Area 12 includes the end of an esker-like outwash feature that extends west into Future Mitigation Area 4. It is composed of sand, has a level top, and is adjacent to and overlooks a deeply incised stream valley. The area is presently wooded and appears to have been minimally disturbed except by logging. A woods road separates the area from Future Mitigation Area 4.
b. Recommendations
Phase I testing is recommended prior to any disturbance.

13 (As numbered in Figure 2)
a. Description
This is a high, sandy rise adjacent to the confluence of a small stream and the Nonesuch River valley. The land is generally level, soils are sandy, and the location affords an overlook of the valley below. Disturbance in this locale appears to be minimal.
b. Recommendations
Phase I testing is recommended if this area will be disturbed.

14 (As numbered in Figure 2)
a. Description
The R.J. Grondin property includes a narrow strip of land on the south side of the Nonesuch River that includes poorly drained floodplain and a higher erosional terrace edge. Area 14 encompasses this terrace edge, which is high and blanketed with sandy outwash. Some sections of the terrace margin have a level top while, in other places, the margin is sloped or incised. The land is wooded and appear to be undisturbed.

b. Recommendations

Phase I testing is recommended if this area is disturbed in the future.

D. PREHISTORIC ASSESSMENT: SUMMARY RECOMMENDATIONS

Phase I survey is recommended prior to disturbance in the following areas, as identified in Figure 2:

- 1 (Wetland Creation Area 1A) — partial, south and west edges
- 3 (Future Mitigation Area 1) — partial, south of woods road
- 5 (Future Mitigation Area 3) — east end only
- 6 (Future Mitigation Area 4) — entire area
- 8/9/10 (As numbered on Figure 2) — three small areas
- 11 (As numbered on Figure 2) — entire area
- 12 (As numbered on Figure 2) — entire area
- 13 (As numbered on Figure 2) — entire area
- 14 (As numbered on Figure 2) — level terrace edge only

III. ASSESSMENT FOR HISTORIC RESOURCES (by Timothy S. Dinsmore)

A. PROJECT DESCRIPTION

At the request of the Maine Historic Preservation Commission the property slated for wetlands creation in Scarborough, Maine by R. J. Grondin and Sons, was recommended for a walkover by a historical archaeologist. Specifically, the 1871 atlas map for Scarborough indicates that a "Mrs. Snow" had a farmstead in the vicinity of the development (Figure 3), but due to the generality of the map, it is unclear where precisely on the aforementioned property the structure was located, if at all. The objective for this portion of the study is therefore to determine if the Mrs. Snow homestead site exists within the project area.

B. METHODOLOGY

To determine whether the Mrs. Snow homestead site is located within the project area historic maps were studied in more detail. Once these maps were scrutinized a walkover of suspected areas was conducted.

C. SURVEY RESULTS AND RECOMMENDATIONS

Because the Mrs. Snow farmstead existed in 1871, there is a good chance that the foundation or cellar hole will still be visible during a walkover of the property, provided that the landscape has not been adversely impacted since that time. An examination of the earliest 7.5 minute topographic map of the region, dated 1891 and surveyed in 1889, shows a structure on the east-side of a well defined ravine and north of the Nonesuch River (Figure 4). This structure may

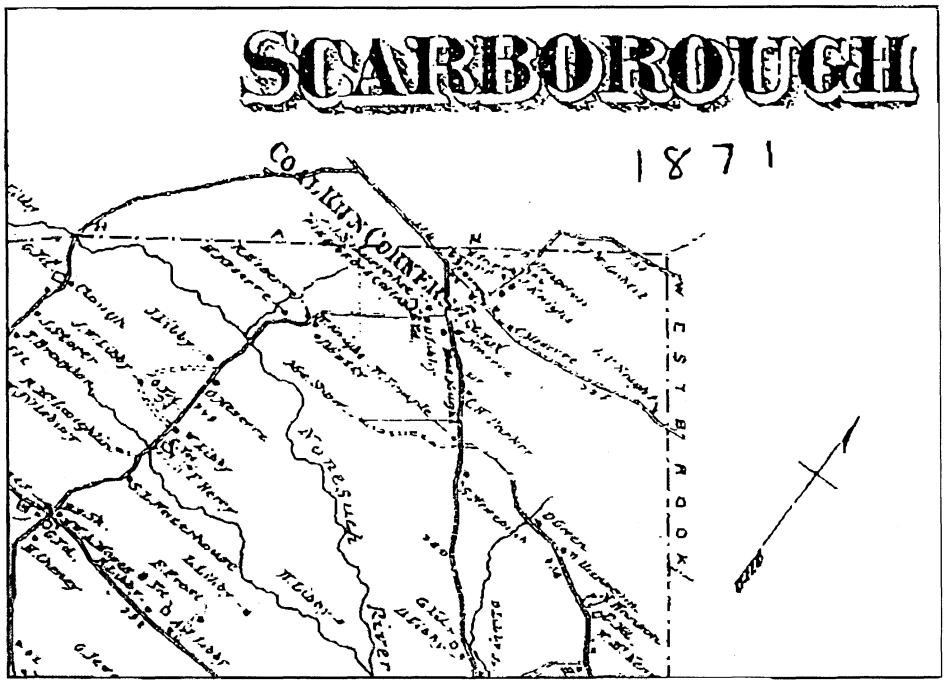


Figure 3: Location of the Mrs. Snow Homestead on the 1871 Atlas.

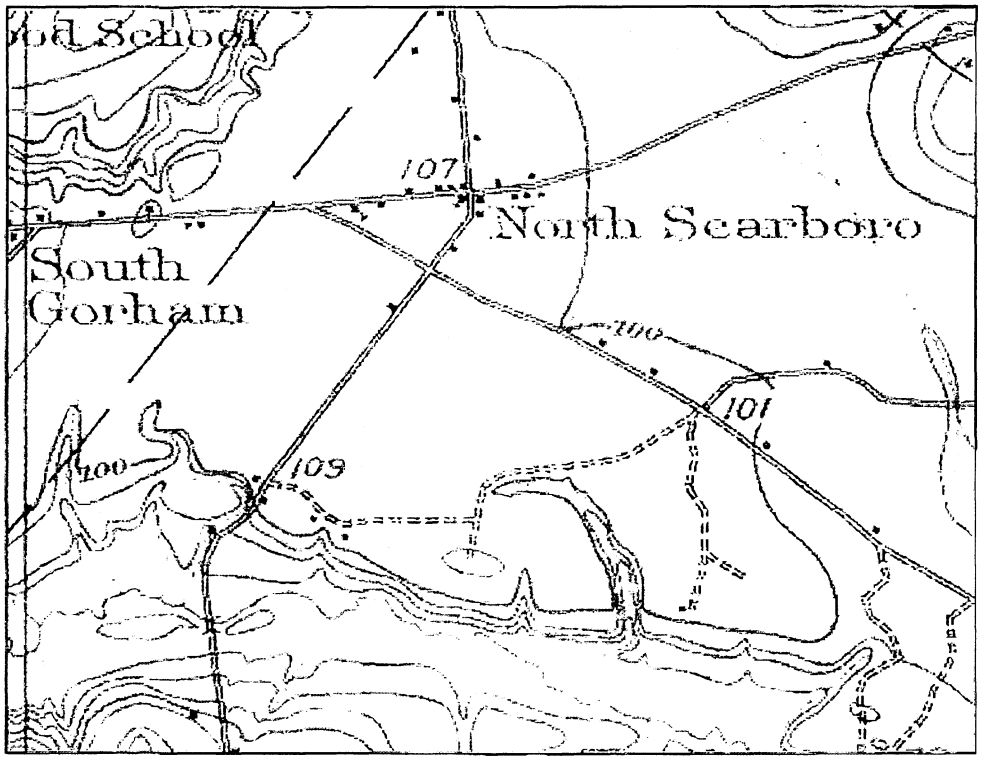


Figure 4: 1891 topographic map indicating the presence of a structure in Area A.

indeed be the Mrs. Snow homestead seen on the 1871 atlas map.

A walkover of this portion of the project area (Figure 2, Area A) was conducted on May 14, 2003 in order to locate the Snow farmstead site. After completing the walkover, it was clear that this portion of the project area had been extensively mined for soils for years, and consequently, the Mrs. Snow homestead site, if located here, would have been completely compromised.

Because it is unclear whether the structure on the topographic map is the same structure as that found on the atlas, other areas of the project area were searched as well. West of the aforementioned ravine is found an open grassy area, which too, has been extensively mined for soils. Located at the bottom of the field is found a small knoll with an apparent intact soil horizon (Figure 2, Area B). Also found in the vicinity of the knoll is several apple and Sumac trees. No foundation, however, is visible and it is again quite possible that if a historic site existed nearby, that it was destroyed during soil extraction.

Extensive soil mining activities within the project area likely impacted the Mrs. Snow homestead site if in fact the site was located here and thus no further work is recommended.

Appendix 5: Larrabee Farms Wetland Mitigation Project Contract Zoning Agreement with the Town of Scarborough, Maine: Contract Zone #8, Approved by Vote of Town Council on August 6, 2006

(attached)

CONTRACT ZONING AGREEMENT
BETWEEN THE TOWN OF SCARBOROUGH AND
GRONDIN AGGREGATES LLC

This is a Contract Zoning Agreement made as of the 16th day of August 2006, by and between the TOWN OF SCARBOROUGH, a body corporate and politic, located in the County of Cumberland and State of Maine (hereinafter "the Town"), and GRONDIN AGGREGATES LLC, with a mailing address of 11 Bartlett Rd, Gorham, Maine 04038 (hereinafter "Grondin") pursuant to the Contract Zoning provisions of Section II, Subsection I of the Scarborough Zoning Ordinance (hereinafter the "Zoning Ordinance").

WHEREAS, Grondin owns a parcel of real estate located southeast of the corner of Beech Ridge Road and Route 114 in Scarborough, Maine consisting of 284.2 acres (hereinafter "the property"); and

WHEREAS, the property is currently zoned in a Rural Residence and Farm District (RF) under the Zoning Ordinance, and the land within 75 feet of the Nonesuch River is zoned within the Stream Protection District (SPD) under the Scarborough Shoreland Zoning Ordinance (hereinafter the "Shoreland Zoning Ordinance") and will be maintained in its current state; and

WHEREAS, the Rural Residence and Farm District allows wetlands creation on previously excavated property pursuant to a contract zoning agreement approved by the Town Council under Section II(I) of the Zoning Ordinance; and

WHEREAS, the property contains over 1 mile of frontage on the Nonesuch River, and the associated floodplain and wetlands, which provide unique and quality resources of wildlife habitat and opportunities for recreation, and the area currently zoned within the Stream Protection District will remain undeveloped; and

WHEREAS, Grondin wishes to establish a large wetlands mitigation project on the site, the Larrabee Farms Wetlands Mitigation Project (the "project"), which would involve preservation and creation of wetlands to provide compensation for wetlands impacts on other properties; and

WHEREAS, the size, location, hydrogeology, and topography of this site provide a unique and viable opportunity for a wetlands creation and preservation project, and the project will be satisfactorily buffered from abutting properties; and

WHEREAS, the entire parcel that includes this contract zone, except approximately 20 acres shown on Exhibit A and dedicated to the Town for possible use as a school or other municipal uses, will be encumbered by a conservation easement or easements limiting the use of the property to wetlands and open space preservation and passive outdoor recreation; and

WHEREAS, Grondin has requested a rezoning of the property to allow construction of said wetlands mitigation project; and

WHEREAS, each wetlands creation and preservation phase of the proposed project would be overseen and authorized by the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899; and

WHEREAS, each wetlands creation and preservation phase of the proposed project would also be overseen and authorized by the Maine Department of Environmental Protection pursuant to the Maine Natural Resources Protection Act (38 M.R.S.A. §§480-A *et seq.*), and the Maine Department of Environmental Protection may also act as a third-party enforcer of the conservation easement or easements on the property; and

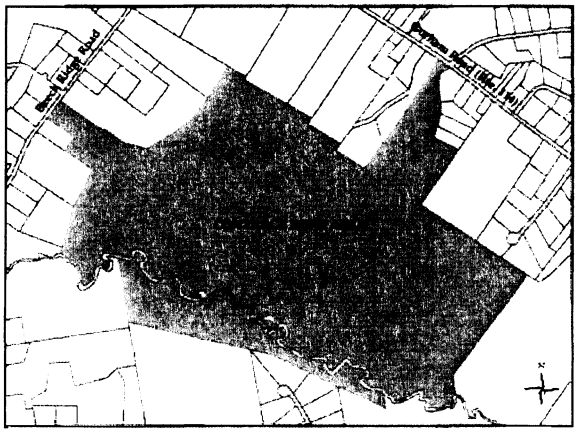
WHEREAS, the rezoning would be consistent with the Policies and Future Land Use Plan of Part III of the Scarborough Comprehensive Plan; and

WHEREAS, the Larrabee Farms Wetlands Mitigation Project site will provide unique and expansive recreational opportunities for the Town of Scarborough through the creation of trails and the permanent protection placed upon parcel and trail areas; and

WHEREAS, the Town of Scarborough, by and through its Town Council, has determined that the said rezoning would be pursuant to and consistent with the Town's Comprehensive Plan and consistent with the existing and permitted uses within the original zoning district classification and has authorized the execution of this Contract Zoning Agreement on August 16, 2006.

NOW THEREFORE, in consideration of the mutual promises made by each party to the other, the parties covenant and agree as follows:

1. **Zoning Map**: The Town hereby amends the Zoning Map of the Town of Scarborough, by adopting the map change amendment shown below:



2. **Depth of Excavation:** Except as otherwise specified in this Agreement, the project shall not be subject to and shall not require review under the Town of Scarborough

Extractive Industry and Land Reclamation Ordinance (the "Extractive Industry Ordinance"). Notwithstanding contrary provisions in the Extractive Industry Ordinance, excavation may occur below the seasonal high water table for the purpose of accessing groundwater for wetlands creation. Any excavation deeper than 12 inches above the seasonal high water table is limited to a wetlands creation area within a compensation package which has been accepted for use as mitigation by the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection and has been approved by the Town Engineer under Section 3(h) below and secured by a performance guarantee under Section 3(h) below.

3. Process and Regulations: Grondin is authorized to create a wetlands mitigation project including wetlands creation, and wetlands with surrounding uplands preservation on the property, subject to the following conditions:

(a) Commencement: The project must be commenced within two years of the date of this Agreement.

(b) **Plan Approval:** With the exception of the property to be dedicated to the Town and shown on Exhibit A, the property subject to this Agreement shall be developed and used substantially in accordance with the Larrabee Farms Wetlands Mitigation Project Plan granted preliminary approval by the Scarborough Planning Board on July 17, 2006, as such plan is finally approved by the Planning Board and may be amended from time to time by the Planning Board (hereinafter the "Plan").

(c) **Permitted Uses:** The permitted uses on the property shall be limited to the following:

(i) wetlands mitigation and associated work; specifically: wetlands creation in previously excavated areas, wetlands creation in areas excavated in order to create wetlands, extractive industry incidental to or in preparation for wetlands creation; and land reclamation;

(ii) passive recreation, including trails as depicted on the Plan and trail maintenance;

(iii) public schools, municipal uses and uses allowed in the RF District on the property depicted on Exhibit A and hereby dedicated to the Town;

(iv) preservation of wetlands and open space.

(d) **Wetland Mitigation Packages:** As wetlands compensation packages are accepted for use as mitigation by the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection, wetlands creation will be conducted pursuant to the terms of this Agreement. Grondin shall give first priority to wetlands compensation packages which will mitigate or compensate for the effects of impacts to wetlands located in Scarborough and shall give second priority to wetlands compensation packages which will mitigate or compensate for the effects

of impacts to wetlands located outside Scarborough but within the Nonesuch River watershed. Prior to the commencement of development of each wetlands creation area, Grondin shall submit to the Town Planner and the Town Engineer a description of the wetlands creation project, which shall include the identity of the off-site project being benefited by the wetlands compensation package. If such benefited project is not within the Town of Scarborough or the Nonesuch River watershed, Grondin must demonstrate to the satisfaction of the Town Planner that there are no projects in Scarborough or the Nonesuch River watershed that have pending applications with the U.S. Army Corps of Engineers and/or the Maine Department of Environmental Protection that will necessitate wetlands creation or mitigation and which therefore could be benefited by, and are willing to participate in, a wetlands compensation package through Grondin.

(e) **Wetlands Creation Area Development:** Excavation on the property shall be undertaken by area, substantially in accordance with the Plan. Any deviations in wetland creation areas from the depictions on the plan shall require Town Engineer approval in accordance with Section 3(h). Substantial changes to the plan, as determined by the Town Engineer, shall require approval from the Planning Board. No more than three areas may be open at any one time. For purposes of this paragraph, an area is considered open from the time any excavation has commenced within the area until the area has been permanently reclaimed or work within the area has commenced on a wetlands creation plan approved by the Town Engineer and secured by a performance guarantee under Section 3(h) below.

(f) **Excavation without Approved Wetlands Creation Plan:** If Grondin elects to undertake excavation in any designated wetlands creation area before receiving approval from the Town Engineer of a plan for wetlands creation under Section 3(h) of this Agreement, Grondin shall submit: a detailed plan of the excavation and a contingent permanent reclamation plan for approval by the Town Engineer and an application fee as set forth in the Schedule of License, Permit and Application Fees established by order of the Town Council. The reclamation plan shall comply with the Standards of Section 10 of the Extractive Industry Ordinance. Upon approval of the excavation and reclamation plans by the Town Engineer, Grondin shall furnish to the Town a performance guarantee for the cost of implementing the approved reclamation plan meeting the requirements of Section 9 of the Town of Scarborough Subdivision Ordinance and a construction inspection fee meeting the requirements of Section 11 of the Subdivision Ordinance. Grondin shall pay for the services of any consultants the Town Engineer deems appropriate to evaluate the application and inspect the work. Excavation pursuant to this paragraph is limited to a depth of no greater than 12 inches above the seasonal high water table.

(g) **Temporary Reclamation:** An area which is excavated pursuant to Section 3(f) above shall be temporarily stabilized with a nurse crop and mulch until such time as a plan for wetlands creation is approved under Section 3(h) of this Agreement. Any such area excavated and temporarily stabilized which is not converted to wetlands within 5 years after the approval of the excavation and

reclamation plans by the Town Engineer shall be permanently reclaimed in accordance with the contingent permanent reclamation plan approved under Section 3(f).

(h) **Wetlands Creation Plans and Performance Guarantees:** Prior to excavation deeper than 12 inches above the seasonal high water table for the commencement of a Wetlands Mitigation Plan in any designated wetlands creation area, whether or not the area has previously been excavated, Grondin shall submit for approval by the Town Engineer: a detailed plan of the wetlands creation; a reclamation plan that complies with the Standards of Section 10 of the Extractive Industry Ordinance; an application fee as set forth in the Schedule of License, Permit and Application Fees established by order of the Town Council; and copies of the approved permits and wetland mitigation plans for the wetlands creation areas issued by the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection. Upon approval by the Town Engineer of the plan for wetlands creation, Grondin shall furnish to the Town a performance guarantee meeting the requirements of Section 9 of the Town of Scarborough Subdivision Ordinance for the cost of implementing the reclamation plan that complies with the Standards of Section 10 of the Extractive Industry Ordinance, and a construction inspection fee meeting the requirements of Section 11 of the Subdivision Ordinance. Grondin shall pay for the services of any consultants the Town Engineer deems appropriate to evaluate the application and inspect the work.

(i) **Buffering:** A 200-foot buffer shall be maintained around the property except in those areas shown on the Plan. This buffer shall be maintained around the property as sound and site screen during development of the wetlands creation areas and be maintained as buffers following development.

(j) **Hours of Operation:** With the exception of emergency situations, the hours during which extractive industries work shall be allowed on the property shall be limited to between 7:00 a.m. and 5:30 p.m. Monday through Saturday.

(k) **Public Use:** Public access to the designated trails on site and to the Nonesuch River shall be made available following completion of the applicable portions of the project, with the trails to be protected in the conservation easement or easements encumbering the parcel. The approximate locations of the trails and the timing of their construction shall be approved by the Planning Board and depicted on the Plan.

(l) **Road Improvements:** No later than 90 days after approval of the Plan by the Planning Board, Grondin shall make improvements to and pave a section of the existing roadway abutting the properties identified on the Plan as N/F Jerome and Carmen Gayle, N/F Robert Rawding, N/F Shirley Bodman and N/F Howard Rawding, and shown as a private easement for access and utilities on the Plan. Thereafter, such road shall not be used for the hauling of materials excavated from the property or transportation of fill materials into the property. As shown on the

Plan, a portion of the roadway will be deeded to the abutting landowners as a private right-of-way in a form acceptable to the landowners and the Town.

(m) **Water Quality and Testing:** Grondin shall, at its sole expense, perform testing on all domestic water supply wells serving any residences located within ½ mile (2,640 feet) of the blasting area, and wells within 300 feet of any sand and gravel excavation that are not included within the ½ mile blasting radius. The well testing will be conducted in order to determine the volume, quantity and quality of water provided by each such well. Such testing shall be in accordance with testing protocols to be established by a hydrogeologist selected by the Town and paid by Grondin. As a component of these testing protocols, the hydrogeologist shall determine the requisite time period necessary for water supply testing to be performed in advance of any excavation below the seasonal high water table. Grondin agrees that, for a period of 20 years after the date of this Agreement, it will, at its sole expense, repair, replace or provide a substitute water source for any such well if it is determined by a hydrogeologist selected by the Town and paid by Grondin that such well was damaged, degraded or impaired for use as a domestic water supply by any activities occurring on the property or associated with the project.

(n) **Reports to the Planning Board:** One year after the commencement of excavation pursuant to this Agreement and then every three years thereafter, Grondin shall submit a report to the Planning Board on the progress of the project. Such report shall address traffic, environmental monitoring, operational impacts on the neighborhood (for example, noise and dust), the creation or opening of trail areas to the public, drainage, rate of wetlands creation, anticipated wetlands creation over the next three-year period, and any other factors which relate to compliance with the requirements of this Agreement and with the Planning Board's approval of the Plan. Upon review of the progress report, the Planning Board may, if the Board finds that the Project is not proceeding in accordance with the Plan or this Agreement, impose additional conditions on its approval of the Plan and/or may refer the report to the Town Council with recommendations for amendments to this Agreement.

(o) **Off-site Road and Traffic Mitigation:** Grondin shall implement, at Grondin's sole expense, all off-site traffic mitigation measures described in the June 15, 2005 memorandum from Scarborough Town Engineer Jim Wendel to Scarborough Town Manager Ron Owens, attached to and incorporated into this Agreement as Addendum A.

(p) **Conservation Easement(s):** Upon approval by the Maine DEP and the U.S. Army Corps of Engineers, and prior to approval by the Town Engineer of the plan for wetlands creation under Section 3(h), each wetland mitigation project will be entered into a Conservation Easement. Ultimately, and within a time period of no more than 20 years from the date of approval of this Agreement by the Town of Scarborough, the entire property with the exception of the land area shown on

Exhibit A that is hereby dedicated to the town for a school or other municipal use, will be entered into a conservation easement to be held by the Town, or a land trust or similar entity designated by the Town, if such conveyance is approved by the Scarborough Town Council. The conservation easement or easements shall be permanent and shall limit the uses of the property to wetlands mitigation and monitoring, open space preservation, passive outdoor recreation, excluding use by motorized vehicles other than service and emergency vehicles, and may allow hunting provided hunting is limited to those areas where the hunting will not create a danger to persons using the property for walking, hiking, jogging, bicycling, picnicking and other passive recreational activities. The conservation easement or easements shall allow the uses permitted under Section 3(c) above. As is required under state and federal wetland statutes, the Maine DEP and the U.S. Army Corps of Engineers will have third party oversight in the easement.

4. Property Conveyance: Grondin shall have the right to convey its fee interest in the property, in whole or in part, as necessary to satisfy applicable requirements of the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection in connection with the wetlands mitigation project and sale of the authorized wetlands mitigation credits; provided, however, that any parcel conveyed shall first be encumbered by conservation easement or easements limiting its use to the uses permitted by this Agreement. Portions of the property conveyed for wetlands compensation and restricted in perpetuity by conservation easement or easements to wetlands preservation shall not be considered lots under the Zoning Ordinance or the Subdivision Ordinance. Within 90 days of approval of this Agreement, Grondin shall convey the dedicated lot shown on Exhibit A to the Town, provided such dedicated lot is accepted by the Town Council. Upon completion of all phases of the wetlands mitigation and sale of the authorized wetlands mitigation credits or at the end of 20 years after the date of this Agreement, whichever occurs first, Grondin agrees to convey as a gift any remaining portions of the property to the Town, or to a land trust or similar entity designated by the Town, if such conveyance is approved by the Scarborough Town Council, subject to the same use limitations prescribed for conservation easements under Section 3(p) of this Agreement.

5. Recordation: Grondin shall record this Contract Zoning Agreement in the Cumberland County Registry of Deeds within 30 days after its approval by the Scarborough Town Council.

6. Contract Zoning Agreement and Amendments: The provisions of this Contract Zoning Agreement shall be deemed restrictions on the use of the property except as this Contract Zoning Agreement may be amended by future written agreement of the Town of Scarborough and Grondin, or their successors in interest.

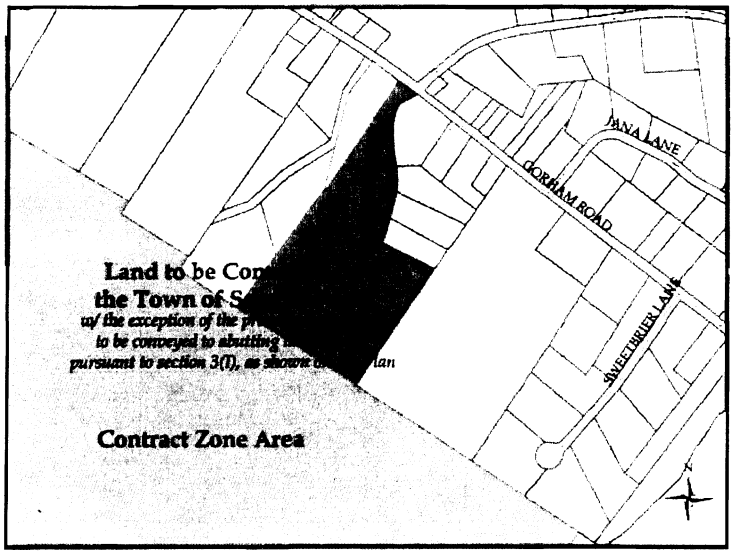
7. Property Restrictions: The above restrictions, provisions and conditions are an essential part of the rezoning, shall run with the property, shall bind Grondin, their successors in interest and assigns of said property or any part thereof, and shall inure to the benefit of and be enforceable by the Town of Scarborough.

8. Zoning Ordinance Applicability: Except as expressly modified herein, the use and occupancy of the subject premises shall be governed by and comply with the provisions of the Zoning Ordinance of the Town of Scarborough and any applicable amendments thereto or replacement thereof. The land within the Stream Protection District, as depicted on the Town of Scarborough, Maine GIS Zoning Map prior to the adoption of this Contract Zoning Agreement and as illustrated on Exhibit B to this Agreement, shall continue to be governed by the applicable provisions of the Shoreland Zoning Ordinance, none of which are abrogated or modified by this Agreement.

9. Agreement Termination: In the event that Grondin or its successors or assigns fail to develop the project in accordance with this Agreement, or in the event of any other breach hereof, this Contact may be terminated by vote of the Scarborough Town Council. In that event, the property may then be used only for such uses as are otherwise allowed by law.

10. Section 901: This Agreement is subject to Section 901 of the Council-Manager Charter of the Town of Scarborough.

11. Exhibit A:



WITNESS:

TOWN OF SCARBOROUGH

By: _____

Ronald W. Owens, Its Town Manager (duly authorized by vote of the Scarborough Town Council on August 16, 2006)

_____

GRONDIN AGGREGATES LLC

_____

Philip H. Grondin Jr., Its Manager

EXHIBIT 8
ADDENDUM "A" – PAGE 1

Town of Scarborough, Maine

259 US Route One • P.O. Box 360
Scarborough, Maine • 04074-0360

MEMORANDUM

TO: Ron Owens, Town Manager

CC: Joe Ziepniewski, Planner
Dan Bacon, Assistant Planner
Mike Shaw, Director of Public Works

FROM: Jim Wendel, PE, Planning Department

DATE: June 15, 2005

RE: Larabee Wetland Mitigation Contract Zone

Below is a summary of the Planning Departments requirements for off-site traffic mitigation for the project.

1. All truck access to the site shall only be through the Beech Ridge Road entrance. Further, no trucks exiting the site shall take a left and drive southerly on Beech Ridge Road. However, the Public Works Director may authorize the use of the southern portion Beech Ridge Road for a specific project based on the review of a written request by the applicant identifying the project location, route and anticipated round trips between the pit and the project.
2. Reconstruct approximately 2,740 LF of Beech Ridge Road from Rte 114 south towards the proposed site entrance. The actual beginning and end points shall be coordinated with and agreed to by the Director of Public Works. The work shall include;
   a. Grinding the existing pavement and mixing a certain depth of the underlying existing subgrade granular material.
   b. Fine grade the surface for paving.
   c. Placement of a total of 4inches of pavement to a width of 32ft (12ft travel lanes and 4ft shoulders).
   d. Install pavement markings for a double yellow centerline and white travel edge lines.
   e. Reconstruct all existing driveways and Town roads within the work limits to allow a proper match with the new road grade. Reconstructed driveways shall include a paved apron if the driveway is not paved. The paved driveway apron shall be 3ft long by 3 inches of total pavement depth with a width to match the reconstructed driveway. The existing paved driveway shall have a total replacement paving depth of 3 inches. The Town road replacement paving shall be 4 inches.
3. Construct, prior to the start of pit operations, an exclusive left-turn lane of sufficient length to accommodate two "wheeler" trucks on the south approach of Beech Ridge Road at the site

PHONE 207.730.4040 • FAX: 207.730.4046 • www.scarborough.me.us

entrance. The design shall be based upon MDOT standards as presented in their 1994 Highway Design Manual.

4. Widen, prior to the start of pit operations, the southwest corner of Beech Ridge Road and Route 114 intersection as conceptually depicted on Figure 5 enclosed with the March 16, 2005 Gorrill-Palmer, Inc. letter to accommodate a turning WB-50 tractor trailer vehicle.
5. Detailed designs for items 2, 3 &4 above shall evaluate surface and subsurface drainage, and subgrade soil conditions and provide appropriate designs in response to any identified deficiencies. Detailed design plans including plan and profiles and typical sections for these improvements will be submitted to both the Director of Public Works and the Town Engineer for review and approval.
6. Construction of the site entrance shall be in general conformance to the conceptual design depicted on Figure 4 enclosed with the March 16, 2005 Gorrill-Palmer, Inc. letter. However, in addition, the entrance shall include a paved apron. The apron shall be 10ft long with 4inches of total pavement depth and shall match the width of the proposed entrance drive geometry.
7. The Applicant will commit in writing to complete by October 15, 2010 or in year five of the pit operation to either a heavy maintenance shim or the road reconstruction improvements on Beech Ridge Road identified in item 2. The Director of Public Works will advise the applicant in writing which level of improvement will be required by late summer of the same year. If the maintenance shim is required than the applicant will complete the required final reconstruction improvements to Beech Ridge Road, identified in item 2, in a time frame required by the Director of Public Works.
8. Install a truck actuated flashing warning light and "TRUCK ENTERING" sign assembly on Beech Ridge Road southerly of the site entrance in conformance with MUTCD. Maintenance of the installation is the applicant's responsibility.
9. The Payne Road Impact Fee computation for Zone #2 should be revised for a total of 9 trips @ $292.42=$2,631.78. The total impact fee is therefore revised from $12,160.83 to $13,038.09
10. Prior to the start of pit operations, the applicant shall provide a performance guarantee for the value of the required off-site improvements outlined in item 2 above. The initial minimum duration of the performance guarantee shall be to December 31, 2011 or the end of the first six years of the pit operation. Pit operation is defined as mobilization to, and set-up of pit equipment on the site and hauling of any natural resource material from or to the site.

Thank you,

Appendix 6: Correspondence

- Maine Department of Inland Fisheries and Wildlife Correspondence: Locations of Significant Wildlife Resources in the Area of Larrabee Farms
- Maine Natural Areas Program: Locations of Rare, Threatened or Endangered Natural Resources in the Area of Larrabee Farms
- Preliminary U.S. Army Corps Comments (checklist format) received by MaineDOT 11/13/2006
- FAA Mitigation Site Correspondence

Boyle Associates
Environmental Consultants

September 11, 2002

Phil Bozenhard
Regional Wildlife Biologist
Maine Department of Inland Fisheries and Wildlife
RR1, 358 Shaker Road
Gray, ME 04039

Subject: Wildlife Resources, R.J. Grondin & Sons, Larrabee Farm Wetland Mitigation Banking Project, Scarborough, Maine

Dear Mr. Bozenhard:

I am writing to request your review of Grondin's wetland mitigation banking project area as outlined on the attached USGS topographic map for any known or potential significant wildlife resources. The purpose of this review is to aid us in documenting potential rare species or habitats along the project area so that avoidance, protection and mitigation steps can be taken. It is my understanding that you visited the site with Sandy Eldridge, Ken Grondin and Phil Grondin. The Town of Scarborough has indicated that there is an 'intermediate value' deer wintering area, as listed on their "Special Natural Areas" inventory map (please see a copy of the map below.) The map is hand drawn and the limits of the deer yard are shown to be mainly on the southern side of the Nonesuch River, just south of the Grondin property. Could you please tell me if this deer yard has been mapped by the state, and if so, how can we acquire an accurate map of the wintering area?

As part of this project, the Maine Department of Environmental Protection, the U.S. Army Corps of Engineers, the Maine Natural Areas Program, and several local authorities and agencies have also been or will be contacted. I sincerely appreciate your help in this matter. Please call me if you have any questions or if you need any more information about the project or project site

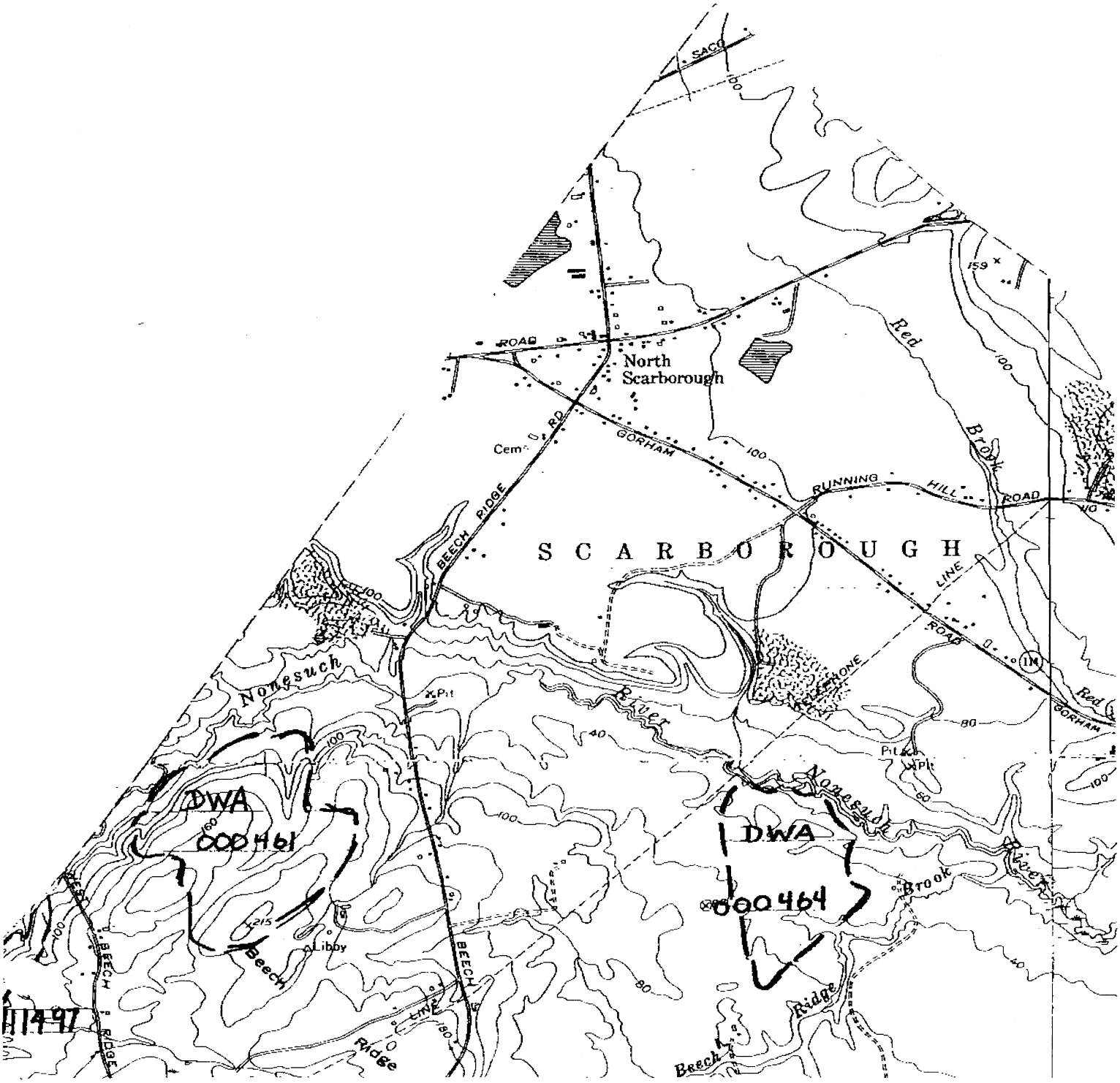
Respectfully submitted,

RICHARD PLEASE C
ATTACHED MAP

Richard Jordan, Boyle Associates

Cc. Ken Grondin, R.J. Grondin & Sons

27 GORHAM ROAD, SUITE 12 · SCARBOROUGH, MAINE 04074 · PHONE: (207) 883-6040 · FAX
www.boyleassociates.net


SACO
North Scarborough
ROAD
GORHAM
RUNNING HILL ROAD
Red Brook
Cem
BEECH RIDGE
SCARBOROUGH
LINE
ROAD
Nonesuch
River
Pit
Pit
Pit
Nonesuch
River
Brook
Ridge
Beech
Libby
BEECH
RIDGE
Ridge
Beech
DWA
000461
DWA
000464
11497

JOHN ELIAS BALDACCI
GOVERNOR

PATRICK K. McCOWAN
COMMISSIONER

March 11, 2003

James Boyle
Boyle Associates
27 Gorham Road, Suite 12
Scarborough, Maine. 04074

Re: Rare and exemplary botanical features, R.J. Grondin & Sons, Larrabee Farm Wetland Mitigation Project, Scarborough

Dear Mr. Boyle:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request of February 14, 2003 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in the town of Scarborough, Maine. Rare and unique botanical features include the habitat of rare, threatened or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been

NATURAL RESOURCES PROTECTION AND MANAGEMENT
ROBERT G. MARVINNEY, DIRECTOR

TELEPHONE: (207) 287-8044
FAX: (207) 287-8040
TTY: (207) 287-2213

documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $75.00 for our services.

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

Sincerely,

Michael Auger
Assistant Ecologist
93 State House Station
Augusta, ME 04333-0093
207-287-8670
mike.auger@maine.gov

Enclosures

Rare or Exemplary Botanical Features in the Project Vicinity

Documented within a four mile radius of the proposed R.J. Grondin & Sons, Larrabee Farm Wetland Mitigation Project, Scarborough

Scientific Name Common Name	Last Seen	State Rarity	Global Rarity	State Legal Status	Federal Legal Status	Habitat Description
ADLUMIA FUNGOSA ALLEGHENY VINE	1860	S1	G4	T		Wet or recently burned woods, rocky wooded slopes.
ALLIUM TRICOCCUM WILD LEEK	1988	S3	G5	SC		Rich hardwood forests, usually alluvial.
ARABIS MISSOURIENSIS MISSOURI ROCKCRESS	1905	S1	G4G5Q	T		Circumneutral bluffs, ledges or rocky woods.
ASPLENIUM PLATYNEURON EBONY SPLEENWORT	1910	S2	G5	SC		Rich partly forested slopes, rocky ledges, and dry, circumneutral outcrops.
CAREX STERILIS DIOECIOUS SEDGE	1936	S2	G4	T		Wet calcareous soils.
COASTAL DUNE-MARSH ECOSYSTEM COASTAL DUNE-MARSH ECOSYSTEM	1995	S3				Low-lying coastal areas with sand beaches, dunes, and (in places) saltmarshes behind the dunes. Most common along the southwestern coast; uncommon east of Penobscot bay.
ERIOCAULON PARKERI PARKER'S PIPEWORT	1924	S3	G3	SC		Fresh to brackish tidal mud and estuaries
PHEGOPTERIS HEXAGONOPTERA BROAD BEECH FERN	1872	S2	G5	SC		Rich, often rocky, hardwood forests.

Rare or Exemplary Botanical Features in the Project Vicinity

Documented within a four mile radius of the proposed R.J. Grondin & Sons, Larrabee Farm Wetland Mitigation Project, Scarborough

Scientific Name Common Name	Last Seen	State Rarity	Global Rarity	State Legal Status	Federal Legal Status	Habitat Description
POTAMOGETON VASEYI VASEY'S PONDWEED	1901	S1	G4	T		Quiet muddy or calcareous waters.
PRUNUS MARITIMA BEACH PLUM	1933	S1	G4	E		Sandy soil along or near the coast
RANUNCULUS AMBIGENS WATER-PLANTAIN SPEARWORT	1862	SH	G4	PE		Sloughs, ditches, and muddy swamps.
SAXIFRAGA PENSYLVANICA SWAMP SAXIFRAGE	1926	S3	G5	T		Wet meadows, swamps, boggy thickets, and seeping banks.
SELAGINELLA APODA CREEPING SPIKE-MOSS	1924	S1	G5	E		Meadows, lawns, and streambanks.
SPARTINA SALTMARSH SALT-HAY SALTMARSH	2000	S3	G5			Saltmarshes dominated by Spartina grasses. May form large expanses behind dunes, or may be found in pockets along larger rivers. Peat is typically more than a meter thick
SUAEDA CALCEOLIFORMIS AMERICAN SEA-BLITE	1932	S1	G5	T		Rocky or gravelly saltmarshes and sea-strands
ZANNICHELLIA PALUSTRIS HORNED PONDWEED	1972	S2	G5	SC		Fresh, brackish or alkaline waters, and stream edges.

STATE RARITY RANKS

S1 Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine

S2 Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline

S3 Rare in Maine (on the order of 20-100 occurrences).

S4 Apparently secure in Maine.

S5 Demonstrably secure in Maine.

SH Occurred historically in Maine, and could be rediscovered; not known to have been extirpated

SU Possibly in peril in Maine, but status uncertain, need more information.

SX Apparently extirpated in Maine (historically occurring species for which habitat no longer exists in Maine).

Note: **State Ranks** determined by the Maine Natural Areas Program.

GLOBAL RARITY RANKS

G1 Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.

G2 Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline

G3 Globally rare (on the order of 20-100 occurrences).

G4 Apparently secure globally.

G5 Demonstrably secure globally

Note: **Global Ranks** are determined by The Nature Conservancy.
T indicates subspecies rank, **Q** indicates questionable rank, **HYB** indicates hybrid species.

STATE LEGAL STATUS

Note. State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's endangered and threatened plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

E ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.

T THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

SC SPECIAL CONCERN: Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered

PE POSSIBLY EXTIRPATED, Not known to currently exist in Maine; not field-verified (or documented) in Maine over the past 20 years.

FEDERAL STATUS

LE Listed as Endangered at the national level.

LT Listed as Threatened at the national level.

Please note that species names follow Flora of Maine: A Manual for Identification of Native and Naturalized Vascular Plants of Maine, Arthur Haines and Thomas F. Vining, 1998, V.F. Thomas Co., P.O. Box 281, Bar Harbor, Maine 04069-0281

Where entries appear as binomials, all representatives (subspecies and varieties) of the species are rare in Maine; where names appear as trinomials, only that particular variety or subspecies is rare in Maine, not the species as a whole.

Visit our web site for more information on rare, threatened and endangered species!
http://www.state.me.us/doc/nrimc/mnap/factsheets/mnapfact.htm

NEW ENGLAND DISTRICT
MITIGATION PLAN CHECKLIST
(see New England District Mitigation Guidance document for information on these items)

Project: MEDOT Gorham Bypass
File No: NAE 2005-4220
Corps Project Manager: Clement
City: Gorham, Scarborough
State: Maine
Plan Title, Preparer, Date: MEDOT Gorham Bypass Project Wetland mitigation Plan: McConkey Farm (should be Larrabee Farms??) Wetland Mitigation Site; Boyle Associates; October 2006

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H. Coarse Woody Debris and Other Features
I. Erosion Controls
J. Invasive and Noxious Species
K. Off-Road Vehicle Use
L. Preservation
M. Monitoring Plan
N. Assessment Plan
O. Contingency
P. Other Comments

A. General Information

1. [OK] Mitigation plan and documentation submitted as one complete package.
2. Site location:
   a. [OK] Locus map(s)
   b. [OK] Aerial photo(s)
   c. [ ] Latitude/Longitude of mitigation site(s) in decimal format.
   d. [OK] 8-digit Hydrologic Unit Code(s) for impact area(s) and mitigation area(s).

Impacts: *Little River – 010600010303*
Stroudwater River – 010600010501
Mitigation: *Nonesuch River - 010600010402*

B. Impact area(s)

1. [OK] Wetland acreage at each impact site.

10.4 acres

2. [ ] Wetland classes at each impact site.

PFO, PSS, PEM – amounts to be determined

3. [OK] Stream(s) at each impact site.

1665 linear feet

4. [OK] Describe both site specific and landscape level wetland and stream functions and values at each impact site.

Wildlife habitat, floodflow alteration, and groundwater recharge

5. [OK] Describe type and purpose of work at each impact site.

Roadway alignment

6. [OK] Watershed or regional plans for the area.

Regional plans for establishing and preserving greenway along the Nonesuch River.

C. Mitigation area(s)

1. Background information
   a. [OK] Mitigation alternatives.
   b. [OK] Existing wildlife use.
   c. [OK] Existing soil.

Part of site, particularly proposed creation areas, was part of mineral mining area

   d. [OK] Existing vegetation.

Portions of upland forests have been recently logged

   e. [OK] Surrounding land use.

Including other nearby conservation parcels along the Nonesuch River

   f. [ ] USFWS and/or NOAA Clearance Letter or Biological Opinion
   g. [OK] SHPO Cultural Resource Clearance Letter

2. Mitigation proposed
   a. [ ] Wetland acreage proposed at each site.

15.7 acres creation, 12 acres wetland preservation, 21 acres upland buffer preservation + preservation of undetermined linear feet of stream channel

   b. [OK] Wetland classes (e.g., Cowardin, et. al. and hydrogeomorphic classification) proposed at each site.

Creation: 14.0 acres PFO, 1.2 acres PSS, and 0.4 acre PEM creation (0.1 acre above creation unaccounted for)

   c. [ ] Site specific and landscape level functions and values proposed at each site.
   d. [ ] Describe nature of any stream mitigation.
   e. [ ] Reference site(s).
   f. [ ] Design Constraints
   g. [OK] Construction oversight.
   h. [ ] Project construction timing.
   i. [OK] Responsible parties.
   j. [ ] Appropriate financial assurances.
   k. [ ] Potential to attract waterfowl and other bird species that might pose a threat to aircraft?

D. Hydrology

1. [ ] Evidence of adequate hydrology to support the desired wetland or stream.

Groundwater monitoring took place, but methodology not clear; not known if followed Corps hydrology monitoring guidance.

a. [ ] "Typical" year water budget
b. [ ] "Wet" year water budget
c. [ ] "Dry" year water budget

2. [OK] Water source(s)

Groundwater and stream flow, some limited surface flow.

3. [ ] Vernal pool (if any) hydrology is appropriate.

E. Grading Plan

1. Plan View
   a. [ ] Existing and proposed grading plans.
   b. [OK] Microtopography
   c. [ ] The scale should be in the range of 1"=20' to 1"=100'.
   d. [ ] All items on the plan must be legible on 8 ½ x 11" sheets.
   e. [ ] Plans have a bar scale.
2. [ ] Representative cross-sections
3. [ ] Other - Specific staff recommendations related to grading.

F. Topsoil

1. [ ] Proposed source of topsoil.
2. [ ] Twelve or more inches of natural or manmade topsoil in all wetland mitigation areas.

Minimum of 10" proposed; should be at least 12" for proposed forested areas, especially since past mining activities have removed existing topsoil.

3. [ ] Appropriate organic content of topsoil.

4% to 12% organic carbon content proposed; actual target values should be specified.

G. Planting Plan

1. [OK] Plans use scientific names.
2. [OK] Plant materials are native and indigenous to the area of the site(s).
3. [OK] Vegetation community types or zones are classified in accordance with Cowardin, et al. (1979) or other similar classification system.
4. [ ] Plan view drawings show proposed locations of planted stock.
5. [OK] More than 50% of the plantings in each zone are structural determinants for the community type designated for that zone.
6. [OK] Woody stock density is appropriate.
7. [N/A] Herbaceous stock density is appropriate.
8. [OK] Seed mix composition is provided.
9. [ ] Representative cross section plans showing vegetative community zones.

Rather than showing vegetative communities, this has been diagrammed showing various species indicator status at different elevations. It is important to note that a plant species indicator status was developed to estimate how often that species was predicted to occur in wetlands, <u>not</u> how wet of a wetland it occurred in.

10. [OK] Invasive species not proposed for planting or seeding.
11. [OK] Relocation of plantings allowed when appropriate.
12. [ ] Other - Specific staff recommendations related to planting.

H. Coarse Woody Debris and Other Features

[ ] Appropriate amounts and range of decomposition of coarse woody debris are proposed.

It is stated that the coarse woody debris is to be salvaged from other parts of the mitigation site. Care should be taken not to disturb and degrade the preservation areas.

I. Erosion Controls

[OK] Erosion control removal deadline is included.

J. Invasive and Noxious Species

1. [OK] Risk
2. [NONE] Constraints
3. [OK] Control Plan

K. Off-Road Vehicle Use

1. [OK] No off-road vehicle use in immediate vicinity, or if so, control measures addressed.
2. [OK] Control plan, if appropriate.

L. Preservation

1. [ ] Adequate buffers
2. [N/A] Wetlands within subdivisions are protected along with appropriate buffers.
3. [ ] Required preservation language is included.
4. [ ] Plans of preservation area(s).
5. [OK] Form of legal means of preservation
6. [ ] Documentation of acceptance by receiving agency (if applicable)

M. Monitoring Plan

[ ] Appropriate monitoring is proposed.

To comply with Regulatory Guidance Letter 06-03, the monitoring language in our mitigation checklist guidance is being changed (public notice on 31 October 2006). It is recommended that the newer language be used here. Also, since much of the creation area is proposed as forested wetland, the monitoring period should be for 10 years with monitoring reports submitted for years 1, 2, 3, 4, 5, 7, and 10.

N. Assessment Plan

[OK] An appropriate assessment plan is included.

O. Contingency

[ ] Plan for dealing with unanticipated site conditions or changes.

P. Other Comments

It is recognized that this is a preliminary plan and therefore, lacking some of the specific information required for a complete mitigation plan. Items missing from the plan are noted above.

Without the plans, it is difficult to fully assess the mitigation proposal. However, the combination of wetland creation, wetland preservation, and upland buffer preservation has potential to compensate for the project impacts. Since we strive for replacement of lost functions, the functions impacted versus those to be gained through the mitigation must be evaluated to determine if the relative amounts of each mitigation type is adequate.

ERS Scientist: Paul Minkin Date Plan Reviewed: 30 October 2006

Richard Jordan

From: john.silva@faa.gov
Sent: Tuesday, November 21, 2006 10:21 AM
To: rjordan@boyleassociates.net
Cc: bob.siris@faa.gov
Subject: Fw: Wetland Mitigation Project in Scarborough, Maine (near Airport PWM)

FAA Letter.pdf

I do not see a problem with this mitigation plan, since it is over 10,000 feet from the nearest runway at PWM and forested or scrub/shrub wetland generally attracts solitary bird activity rather than flocking or waterfowl activity. Within 10,000 feet FAA is generally opposed to open water and wet meadow creation or enhancement.

John Silva, Manager, Environmental Programs
Airports Division
FAA New England Region
12 New England Executive Park
Burlington, MA 01803
781-238-7602-voice
781-238-7608-fax
----- Forwarded by John Silva/ANE/FAA on 11/21/2006 10:14 AM -----

Bob Siris/ANE/FAA
ANE-620, Safety &
Standards

To
John Silva/ANE/FAA@FAA

cc

11/21/2006 06:56
AM

Subject
Fw: Wetland Mitigation Project in Scarborough, Maine (near Airport PWM)

John

Can you advise him on this?

-Bob

----- Forwarded by Bob Siris/ANE/FAA on 11/21/2006 06:55 AM -----

"Richard Jordan"
<rjordan@boyleass
ociates.net>
11/16/2006 02:28
PM
Please respond to
<rjordan@boyleass
ociates.net>

To
Bob Siris/ANE/FAA@FAA
cc
Subject
Wetland Mitigation Project in
Scarborough, Maine (near Airport
PWM)

Hi Mr. Siris -

I am working on a wetland mitigation project for the Maine DOT - the project involves wetland creation and preservation along a stretch of the Nonesuch River in Scarborough, Maine - approximately 2.5 miles from the Portland Jetport (PWM). Please see the attached map. As part of the overview process, the Army Corps PM has requested that we seek clearance from FAA pursuant to the Advisory Circular 150/5200-33.

No open water systems proposed as part of the mitigation (except for small vernal pool-type features). Further, we anticipate about 75-90% of our wetland creation efforts to include forested wetland systems, with the rest containing shrubs and emergent wetlands. Would you please advise me as to what we need to do to receive review from FAA as to our project in order to satisfy the Corps recommendations?

Please call or write for more information.

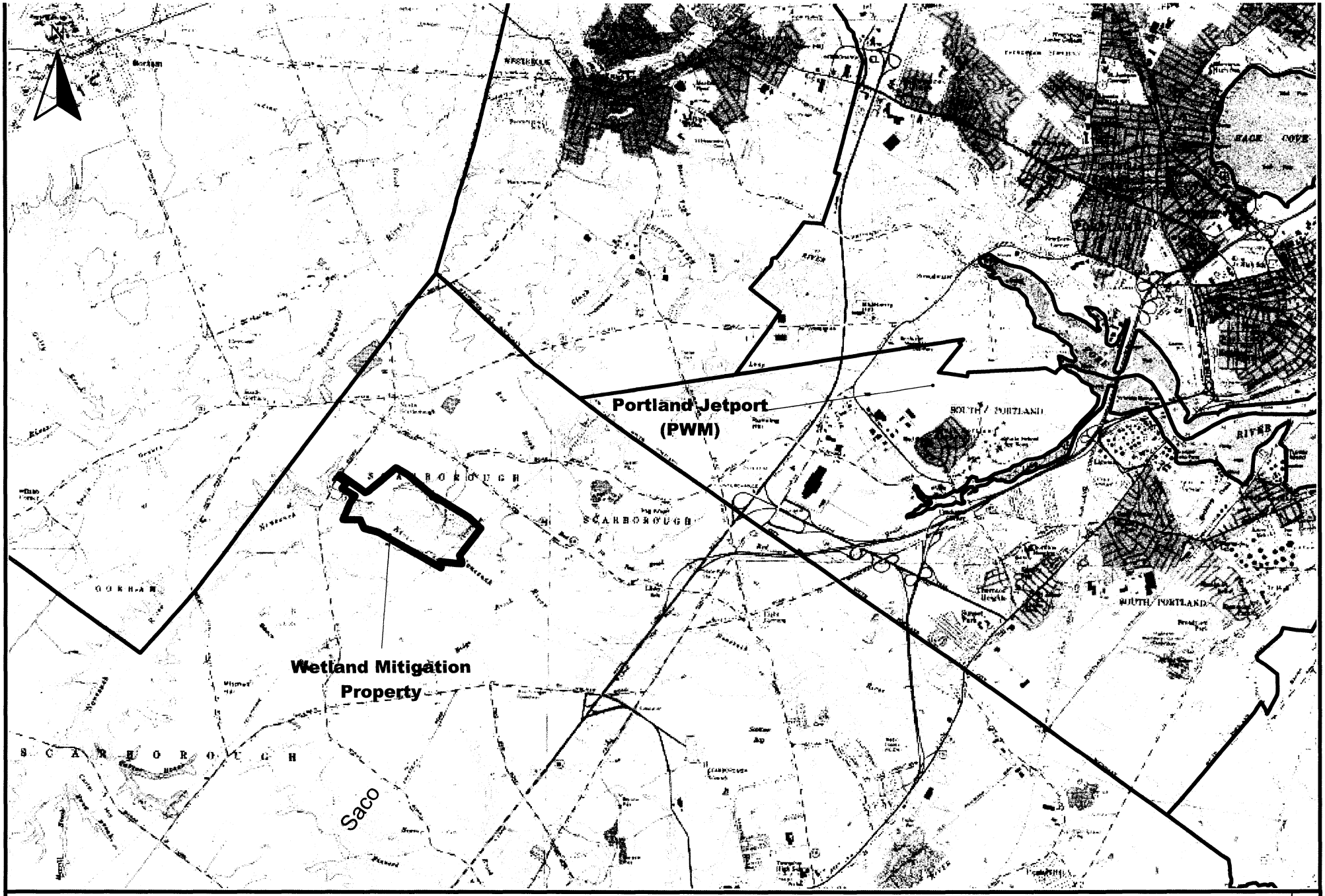
Thank you very much,

Rich

PS - I copied this email to John Silva.

Richard Jordan, PWS, CPESC

Boyle Associates, Inc.
Environmental Consultants
1309 Broadway
South Portland, Maine 04106
Office: 207.799.5855
Cell: 207.671.2760
www.boyleassociates.net
(See attached file: FAA Letter.pdf)



Grondin Aggregates, LLC
Larrabee Farms Wetland Mitigation Project
Scarborough, Cumberland County Maine
November 2006 -- REJ

0.5 0 0.5 1 1.5 2 Miles

BOYLE ASSOCIATES
Environmental Consultants
1309 Broadway
South Portland, Maine 04106
(P) 207.799.5855
www.boyleassociates.net

Appendix 7: R.W. Gillespie Hydrogeological Reports
(attached)

R. W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

September 16, 2002

Mr. Kenneth Grondin
R. J. Grondin & Sons, Inc.
11 Bartlett Road
Gorham, Maine 04038

Subject: Report of Piezometer Installation and Summary of Groundwater Level Observations
Wetlands Compensation Site - Larrabee Farm Road
Scarborough, Maine
RWG&A Project No. 395-07.ENV

Dear Mr. Grondin:

As requested and authorized, R.W. Gillespie & Associates, Inc., (RWG&A) has completed the installation of piezometers at the wetlands compensation site located off Larrabee Farm Road to the southwest of Route 114 (Gorham Road) in Scarborough, Maine. The piezometers were installed to serve as groundwater monitoring stations to enable assessment of site geohydrology relative to the proposed wetland compensation areas. The installation program was implemented in general accordance with our March 2002 proposal.

A total of 15 test borings were advanced in predetermined areas of the site; each boring location was instrumented with an overburden or bedrock piezometer upon completion. Initial static groundwater levels were measured eight days after installation, and stabilized levels were monitored at frequent intervals during the period April to July 2002 to document seasonal high groundwater elevations. The attached report provides a summary of our observations and recommendations for your consideration.

RWG&A appreciates the opportunity to be of continued service to R. J. Grondin & Sons, Inc., on this project. If you have any questions, or if we may be of additional assistance, please contact us.

Very truly yours,
R. W. GILLESPIE & ASSOCIATES, INC.

Cynthia A. Thayer

Cynthia A. Thayer, C.G.
Chief Geohydrologist

Robert W. Gillespie

Robert W. Gillespie, P.E.
Principal Geotechnical Engineer

SRS/CAT:ci
In quadruplicate

REPORT OF PIEZOMETER INSTALLATION AND SUMMARY OF GROUNDWATER LEVEL OBSERVATIONS

at the

WETLANDS COMPENSATION SITE - LARRABEE FARM ROAD
SCARBOROUGH, MAINE

Prepared
for
R. J. GRONDIN & SONS, INC.
GORHAM, MAINE

Prepared
by
R. W. GILLESPIE & ASSOCIATES, INC.
SACO, MAINE

RWG&A Project No. 395-07.ENV

September 2002

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- Graph 2. Graphical Depiction of Bedrock Piezometer Data

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- Figure 2. Site Plan with Piezometer Locations

Appendix - Test Boring Logs and Piezometer Construction Details

PURPOSE AND SCOPE

As requested and authorized, R. W. Gillespie & Associates, Inc., (RWG&A) has completed piezometer installation and observed shallow groundwater levels at the wetlands compensation site located off of Larrabee Farm Road to the southwest of Route 114 (Gorham Road) in Scarborough, Maine. The purpose of the piezometer installation was to construct monitoring stations to enable evaluation of groundwater elevations on the site relative to its development as a created wetland. As performed, RWG&A's scope of services consisted of the following tasks:

- Observe, log, and sample 15 test borings advanced at predetermined locations of the site.
- Direct the installation of an overburden or bedrock piezometer in each boring location. The piezometers were extended a minimum of five feet into the shallow groundwater table in each test boring location to accommodate for seasonal groundwater fluctuations. Bedrock piezometers were purged and developed, utilizing a submersible pump, following installation.
- After a minimum five day quiescent period, measure and record initial static groundwater table elevations at each piezometer location to provide "baseline" data for future comparison. Stabilized groundwater levels were measured monthly during April through July 2002 to document seasonal high groundwater elevations.
- A Piezometer Installation Report was prepared summarizing RWG&A's observations and presenting recommendations for future monitoring and development.

SITE LOCATION AND DESCRIPTION

The subject site is located to the southwest of Route 114 (a.k.a. Gorham Road), southeast of its intersection with Beech Ridge Road and north of the Nonesuch River in Scarborough, Maine. The USGS 7.5 minute topographic map adapted as Figure 1, *Locus Map*, illustrates the project location. Portions of the property have previously been used as sand and gravel borrow pits. A large ravine is present within the northern portion of the study area; abundant bedrock outcrops are located at western portions of the site. Figure 2, *Site Plan with Piezometer Locations*, illustrates the project area and piezometer locations.

SUBSURFACE INVESTIGATION

Test Borings

A series of 11 overburden and 4 bedrock test borings were drilled in former borrow pit areas and peripheral to the ravine, 9 through17 April 2002 by Great Works Pump & Test Boring, Inc., of Rollinsford, New Hampshire. Test boring locations are illustrated on Figure 2, *Site Plan with Piezometer Locations*. A track mounted B-59 "Mobile Drill" drill rig, outfitted with 8-inch diameter, hollow-stem augers was used to investigate and sample subsurface soils at each of the predetermined locations. As drilling progressed, soil samples were recovered at five foot intervals utilizing 24-inch, split-spoon samplers. The test borings and samples were observed and logged by RWG&A geologist Sean Sirois for evidence of stratification, texture, consistency, and grain size; depth to the shallow groundwater table was observed and recorded in each of the exploration locations. Four borings were advanced into bedrock using a diamond faced drill bit. Continuous rock core samples were collected from the core barrel and logged for rock type, hardness, grain size, and jointing. The borings were advanced several feet into the apparent saturated zone to enable piezometer installation. RWG&A test boring logs documenting our field observations are included within the attached Appendix.

Subsurface materials were observed by RWG&A to be primarily semi-stratified medium to fine sands overlying glacio marine silts and clays. Sediments within the exploration interval appeared to generally grade finer with depth. Subsurface soils appeared generally consistent with geologic mapping as the upper "coarse grain facies" and underlying "fine grain facies" of the Presumpscot Formation.

Observed bedrock was primarily phyllite with chlorite and biotite mineralization interpreted to be part of the metasedimentary Cape Elizabeth Formation. Bedrock samples from recovered cores were medium to soft with frequent fracturing. Observed bedrock lithology generally confirmed geologic mapping of the area by the Maine Geological Survey.

Piezometer Installation

After completion, each test boring was instrumented with a 2 inch diameter, polyvinyl chloride (PVC) piezometer in preparation for future groundwater level monitoring. Overburden piezometers were installed with a 10 foot screened interval extending partially into the shallow groundwater table; please see Appendix for bedrock well construction information. To complete the construction, the bore holes were filled at least one foot over the screened interval with #2 silica filter sand and sealed with a bentonite plug installed a minimum of one foot above the top of the screened interval. Native back fill material was used to complete the piezometer installation to grade; a locking, steel stand pipe was placed over the exposed portion of the piezometer above the ground surface as a protective measure. Piezometer construction details are provided in the Appendix

Groundwater Levels and Elevations

Initial groundwater level measurements were obtained on 16 April and 29 April 2002, by RWG&A; supplemental rounds of stabilized levels were obtained over the following three months, on 22 May, 04 June, and16 July 2002, to document seasonal high groundwater elevations. An electronic water level indicator was employed to determine the depth to the static groundwater table, below the top of the steel stand pipe (measuring point) with the cap removed. Survey locations and elevations of the standpipe measuring point for each piezometer were provided to RWG&A by R. J. Grondin & Sons, Inc. Measuring point and groundwater table elevation data are tabulated within Table 1 and Table 2 based upon project elevations provided. Water level data trends for the overburden and bedrock piezometers are shown on Graph 1 and Graph 2, attached.

Evidence of seasonal high groundwater levels was documented during the April through July 2002 monitoring period for all of the piezometers. Data presented in Tables 1 and 2 have been shaded to denote the seasonal high levels for spring 2002. RWG&A noted that hydrologic conditions in this area of Maine are somewhat atypical because of the prolonged, severe drought that has affected groundwater levels for more than a year. For this reason, these data should be considered approximate.

SLOPE STABILITY EVALUATION - SAND BORROW AREA

Engineering evaluations for this project included estimating soil properties and developing representative subsurface profiles for use in slope stability analyses. The stability analyses were based on currently available topographic information, subsurface explorations, laboratory test results and the anticipated range in pit bottom elevation.

The slope stability analyses performed for this project were based on the semi-infinite slope method. This method assumes that a shallow circular failure surface develops beneath the slope surface and that soils within the circle rotate due to unbalanced forces in the slope. It is applicable because the overall slope is developed through frictional strength of the soils along the failure surface. When the driving and resisting forces are the same, the factor of safety is equal to 1.0, and the slope failure is considered imminent. When resisting forces are greater than driving forces, the factor of safety is greater than 1. Permanent slopes are generally considered stable if the factor of safety is at least 1.5. A factor of safety of 1.3 is considered acceptable for short-term conditions.

The visual soil descriptions and penetration test N-values measured in the test borings were used to estimate unit weight and angle of internal friction for the granular materials. N-values range from 3 to 10 blows per foot with most in the range of 5 to 9, indicating a loose material. The angle of internal friction, ϕ, ranges between 28° and 32° based on literature reviews and extensive experience with similar materials. The factor of safety can be estimated using the equation

$$FS = \frac{\text{Tan } \phi}{\text{Tan } i}$$

where ϕ is the angle of internal friction, and i is the slope inclination. For a mid-range value of 30° and a slope of 2.75H:1V, the factor of safety is 1.1. If the lower bound is used, the factor of safety is 1.3 and applicable to construction (excavation) conditions. We conclude that a final slope of 2.5 to 2.75H:1V is appropriate for the site.

SUMMARY

Based on our observations, the following summary is presented for consideration:

- In accordance with our proposal, fifteen piezometers were installed at preselected locations on the subject property. The piezometers will serve as future monitoring stations to enable groundwater level observations.

- At the time of our observations, the shallow groundwater table was encountered within the borings at depths ranging from approximately 1 to 22 feet below the ground surface. During the intervening stabilization period, static groundwater levels were observed to fluctuate only slightly and respond to precipitate events within a relatively short time.

- Due to complex subsurface soil conditions (glaciomarine delta stratigraphy) and an undulating, shallow bedrock surface, the local groundwater flow regime is variable in some areas of the site but is interpreted to flow regionally from north to south toward an ultimate discharge point at the Nonesuch River.

- Final slopes in the borrow area should be 2.5 to 2.75H:1V in the final configuration.

CLOSURE

This piezometer installation report has been prepared for the exclusive use of R. J. Gre[illegible] & Sons, Inc., and their designated recipients. The report was prepared in accordance with gene[illegible]y accepted professional engineering practices consistent with the level of skill ordinarily practiced by members of the profession in the same locality under similar conditions.

Table 1. Measuring Point and Groundwater Elevation Data

Larrabee Farm Road Wetlands Reclaimation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Measuring Point Elevation (ft)	16-Apr-02		29-Apr-02		22-May-02		4-Jun-02		16-Jul-02	
		Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation
MW-1	74.77	19.8	55.0	19.8	54.9	19.3	55.5	19.1	55.6	19.3	55.5
MW-2	78.46	--	--	10.8	67.6	10.1	68.3	10.4	68.0	10.9	67.6
MW-3	68.94	4.0	64.9	4.0	64.9	3.7	65.2	4.0	64.9	5.5	63.4
MW-4	69.05	3.6	65.5	3.6	65.5	3.4	65.6	3.6	65.4	3.9	65.2
MW-5	67.59	11.6	56.0	11.6	56.0	10.9	56.7	11.3	56.3	11.8	55.8
MW-6	67.89	15.1	52.8	15.1	52.8	14.8	53.1	14.8	53.1	15.0	52.9
MW-7	69.63	14.5	55.1	14.3	55.3	13.7	55.9	13.5	56.2	13.6	56.0
MW-8	98.44	5.6	92.8	6.0	92.4	5.9	92.6	7.1	91.4	9.4	89.0
MW-9	102.12	6.9	95.3	7.3	94.9	8.5	93.7	10.1	92.0	11.1	91.0
MW-10	104.28	4.4	99.9	5.5	98.8	4.6	99.7	5.5	98.8	6.2	98.1
MW-11	95.91	--	--	6.4	89.5	6.5	89.4	7.4	88.6	8.0	87.9
MW-12	95.54	--	--	19.3	76.2	18.9	76.6	20.1	75.5	20.9	74.6
MW-13	99.23	--	--	3.0	96.2	3.7	95.5	5.0	94.2	5.9	93.3
MW-14	67.15	--	--	24.1	43.0	24.3	42.9	25.3	41.9	25.3	41.9
MW-15	70.54	--	--	8.3	62.2	8.3	62.2	8.9	61.7	9.0	61.5

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"--" indicates that data was not collected from the monitoring point during the field event.
BMP - Below Measuring Point
2002 Seasonal High Groundwater Observations Indicated by Shaded Cells.

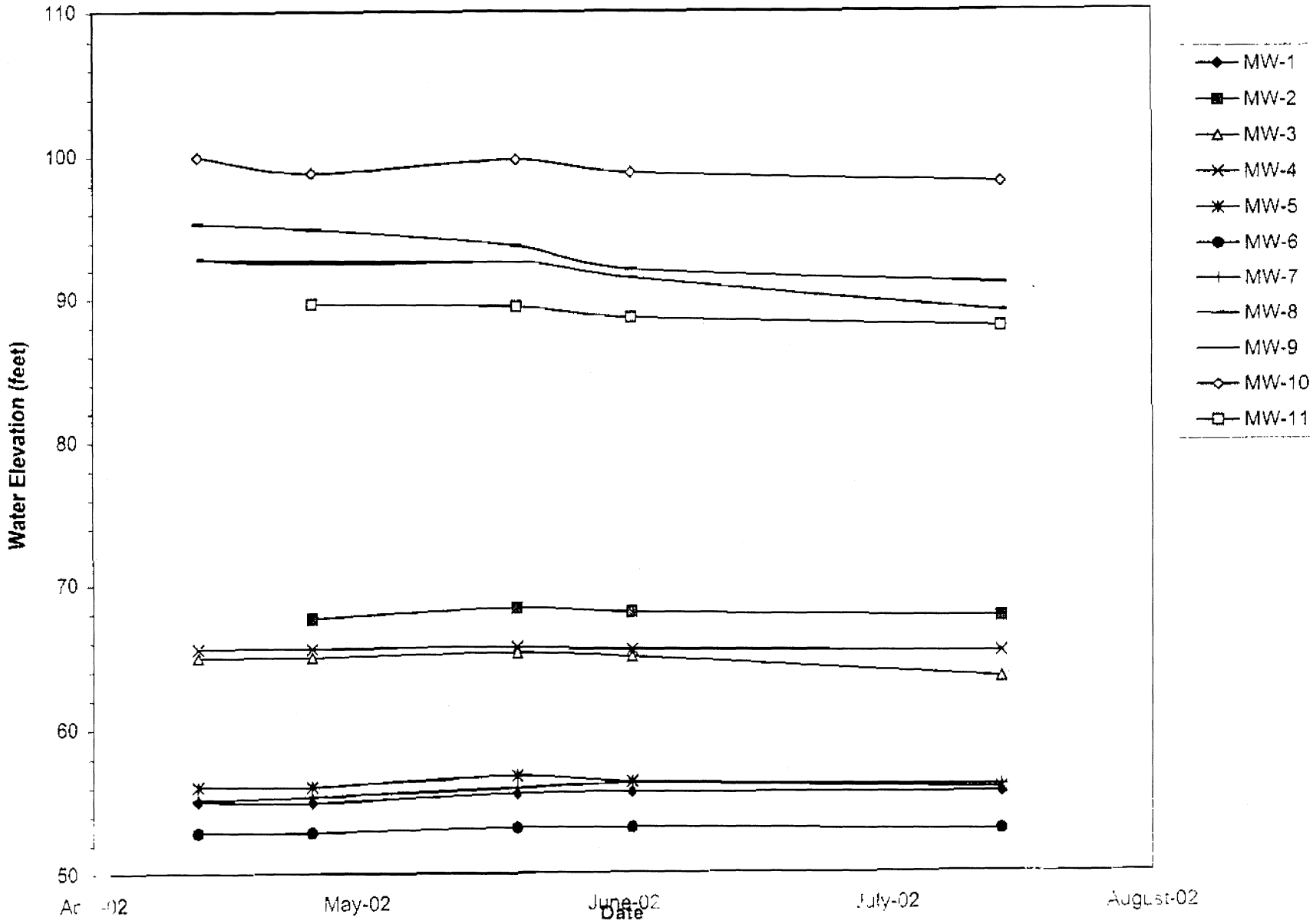
Table 2. Groundwater Depths Below Ground Surface

'oundwater Data
'arm Road Wetlands Reclaimation Site
gh, Maine
'roject No. 395-07

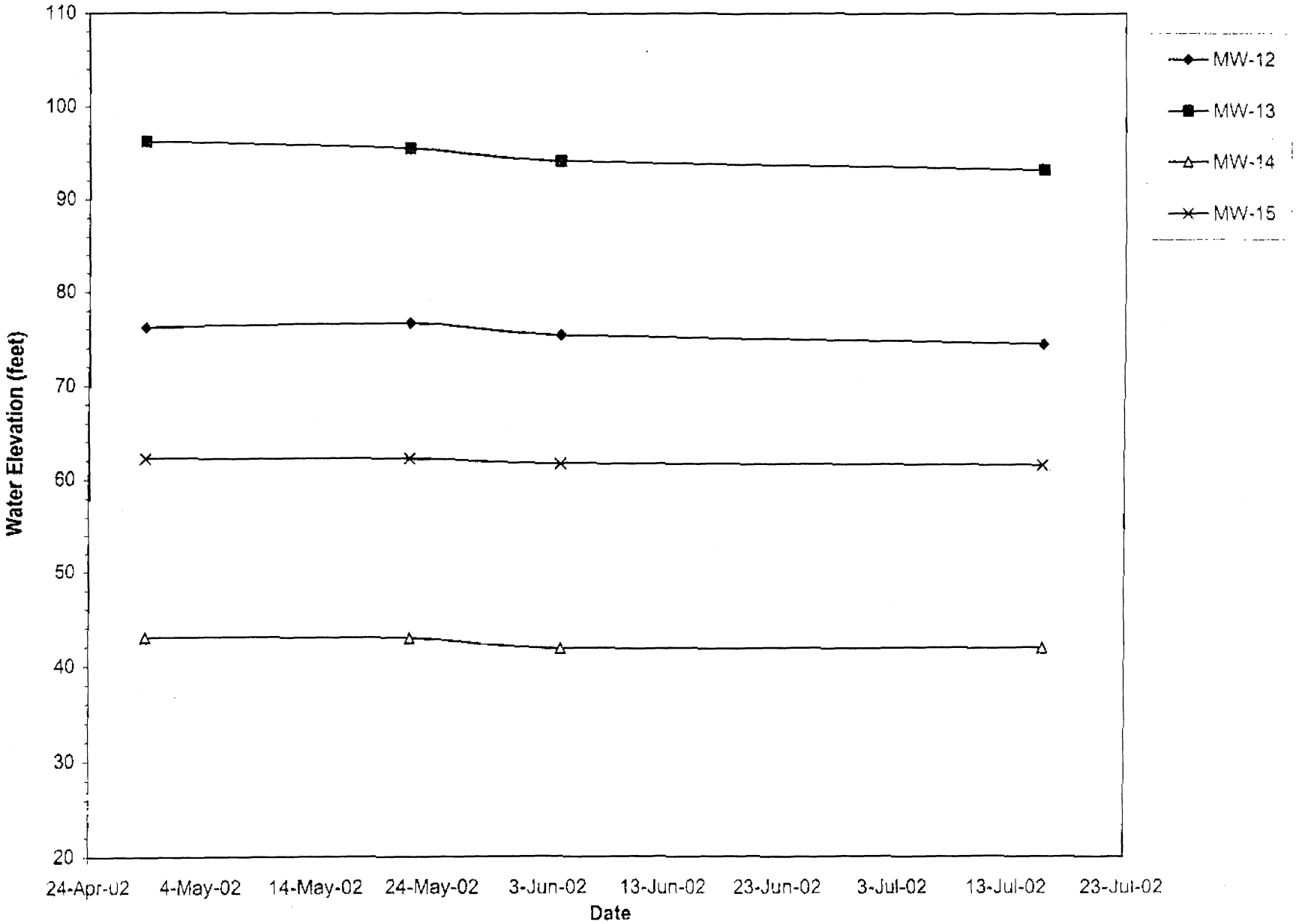
Ground Surface Elevation (ft)	16-Apr-02 Depth BGS	29-Apr-02 Depth BGS	22-May-02 Depth BGS	4-Jun-02 Depth BGS	16-Jul-02 Depth BGS
72.09	17.1	17.2	16.6	16.5	16.6
75.94	--	8.3	7.6	7.9	8.4
66.32	1.4	1.4	1.1	1.4	2.9
66.47	1.0	1.0	0.8	1.0	1.3
65.02	9.0	9.0	8.3	8.7	9.2
65.39	12.6	12.6	12.3	12.5	12.5
67.06	12.0	11.8	11.1	10.9	11.0
95.66	2.9	3.2	3.1	4.3	6.6
99.56	4.3	4.7	5.9	7.6	8.5
101.19	1.6	2.4	1.5	2.4	3.1
93.35	--	3.8	4.0	4.8	5.4
92.93	--	16.7	16.3	17.5	18.3
96.74	--	0.5	1.2	2.5	3.4
64.55	--	21.6	21.7	22.7	22.7
67.76	--	5.6	5.6	6.1	6.2

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"--" indicates that data was not collected from the monitoring point during the field event
BGS- Below Ground Surface
2002 Seasonal High Groundwater Observations Indicated by Shaded Cells

Graph 1. Graphical Depiction of Overburden Piezometer Data



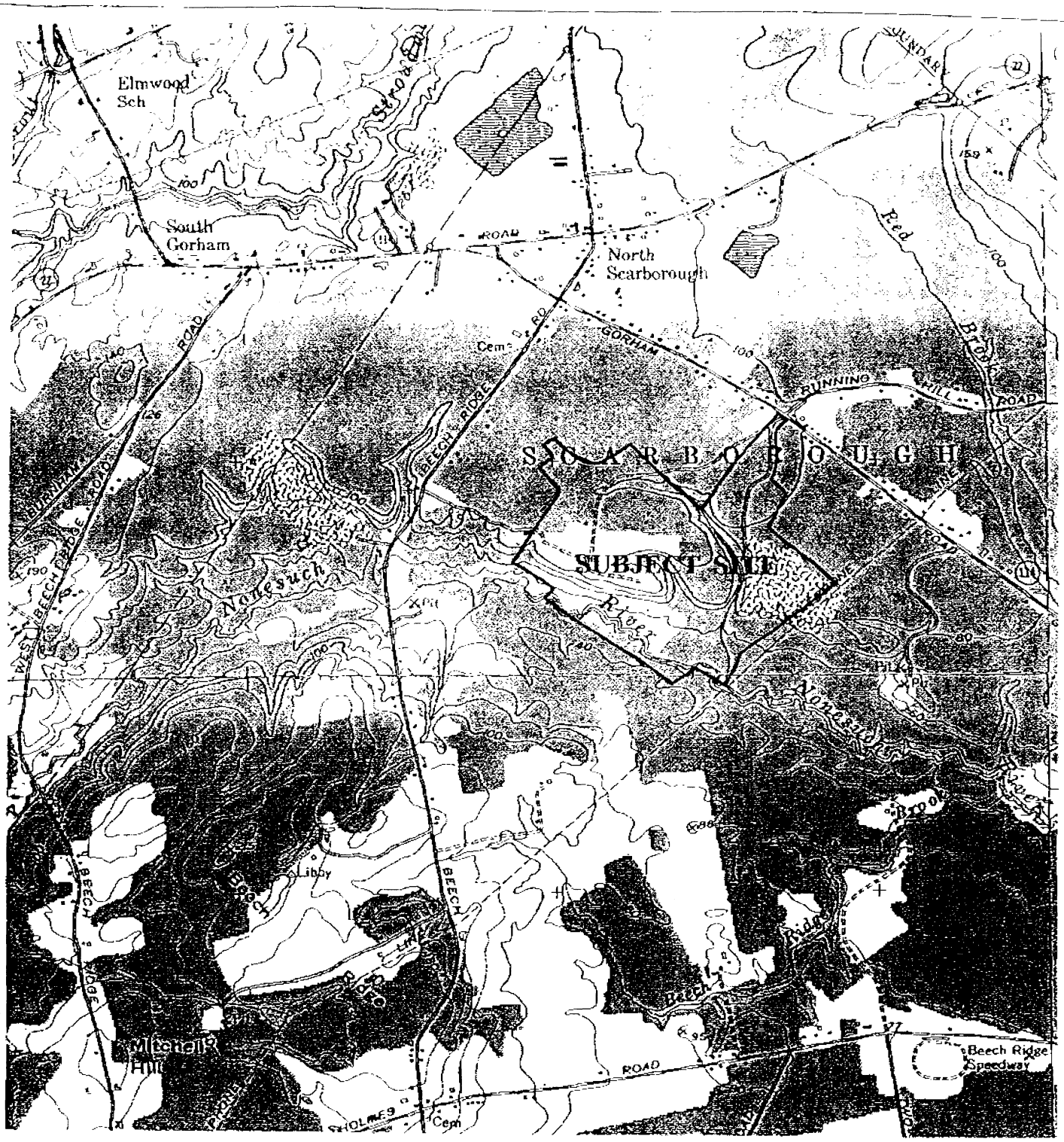
Graph 2. Graphical Depiction of Bedrock Piezometer Data



Wetlands Compensation Site
Larrabee Farm Road

RWGA Project No. 395-07.ENV

June 2002



N

0 2000 3000 4000

SCALE, FEET

SOURCE:

USGS 7.5-MINUTE TOPOGRAPHIC QUADRANGLE OF GORHAM (NORTH), DATED 1990, AND OLD ORCHARD BEACH (SOUTH), DATED 1970.

FIGURE 1
LOCUS MAP
WETLANDS COMPENSATION SITE
LARRABEE FARM ROAD
SCARBOROUGH, MAINE

JULY 2002

PROJECT NO. 395-07

R.W.Gillespie & Associates, Inc.
CONSULTING GEOTECHNICAL & ENVIRONMENTAL SPECIALISTS

86 Industrial Park Rd., Suite 4 Saco, Maine 04072 (207) 286-8008
Fax (207) 286-2882 E-mail: rwg-o@cyberlours.com

APPENDIX

Test Boring Logs and Piezometer Construction Details

Report of Piezometer Installation
Wetland Compensation Site - Larrabee Farm Road
Scarborough, Maine

BORING LOG P-1

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 72.1'
Ground Water Depth: 16.6'

Client: Grondin

Date: 4/9/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (8").	19	1 3 6 8	9		
				SAND (SP); loose, moderately moist, coarse to fine, mostly medium to fine, little silt, brown. (some organics)					
2.5									
5			S-2	Becomes medium dense, fine, trace silt, light brown. (some mottling / iron oxide staining at 5.5')	18	4 6 7 7	13		
				Becomes medium to fine, mostly medium, trace silt.					
7.5									
10			S-3	Becomes fine, trace silt, wet.	21	2 2 2 3	4		
				CLAY (CL-ML); soft, wet, little silt, brown, some silty partings, brown mottling.					
12.5									
15			S-4	SAND (SP); medium dense, moderately moist, fine, trace silt, light brown	20	2 8 8 9	16		
				Becomes moist, coarse to fine, mostly medium to fine.					
17.5									

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

BORING LOG P-1

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 72.1'
Ground Water Depth: 16.6'

Client: Grondin

Date: 4/9/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
20			S-5	CLAY (CL-ML); soft, wet, little silt, brown, some silty partings, brown mottling. Becomes soft, wet, bluish gray, somewhat plastic.	24	WOH 2 1 1	3		
22.5				Bottom of Exploration at 22'. Set Well P-1					
25									
27.5									
30									
32.5									
35									

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

BORING LOG P-4

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 66.5'
Ground Water Depth: 0.8'

Client: Grondin

Date: 4/9/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (4").	18	WOH	4		
				SAND (SP); loose, moist, coarse to fine, mostly medium to fine, little silt, brown.		2 2 3			
2.5									
5			S-2	Becomes medium dense, wet, coarse to fine, mostly medium to fine.	16	2 4 8 7	12		
7.5									
10			S-3		14	WOR WOH 1 1	WOR		
				Bottom of Exploration at 12': no refusal. (running sands) Set Monitoring Well P-4.					
12.5									
15									
17.5									

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

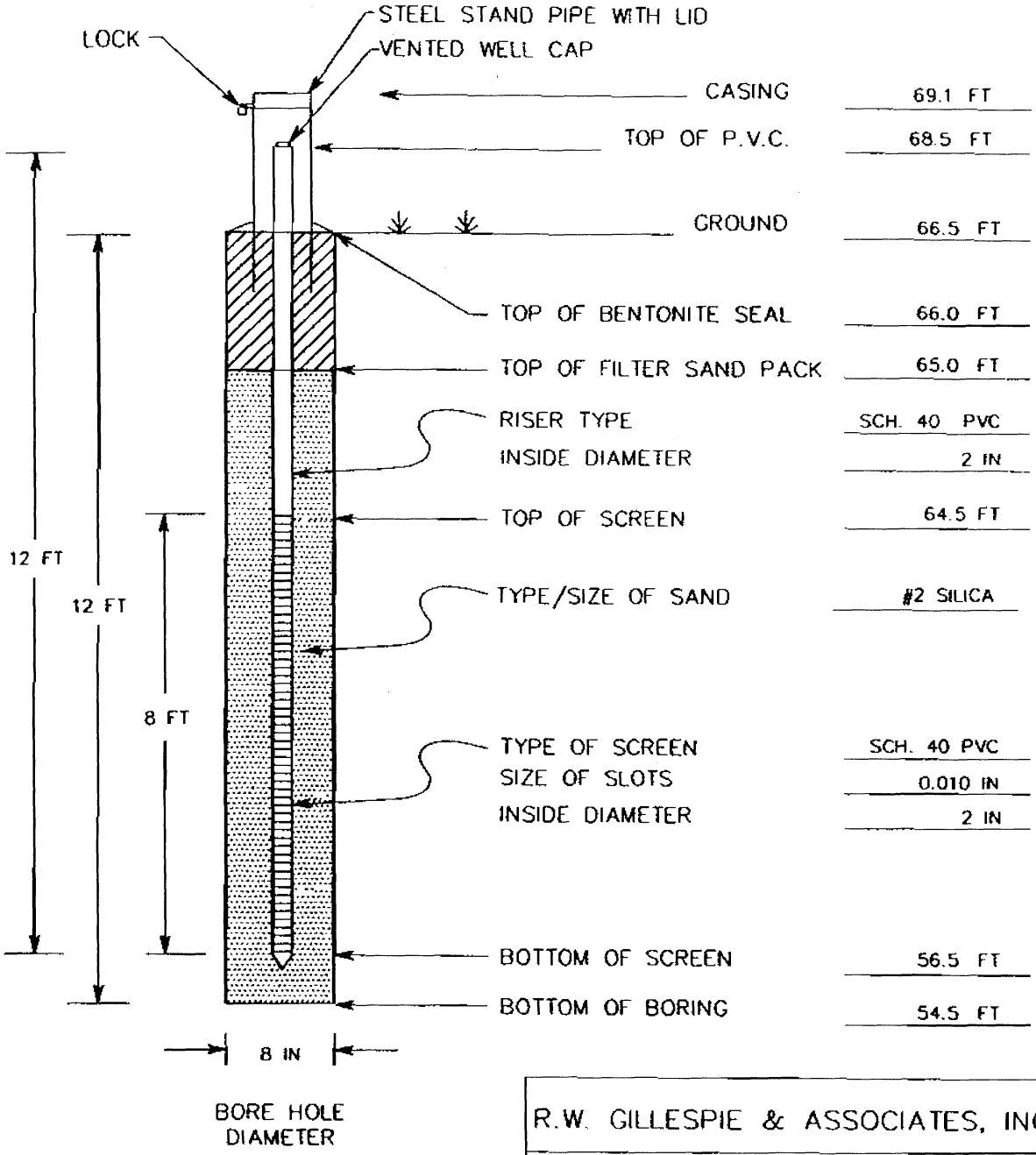
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-4

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 65.6 FT

DISTANCE BELOW GROUND: 0.8 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT: WETLAND COMPENSATION SITE

LOCATION: SCARBOROUGH, MAINE

PROJECT NO.: 395-07

DESCRIPTION: OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)

DRILLING DATE: 4/9/2002

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BORING LOG P-5

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 65.0
Ground Water Depth: 8.3'

Client: Grondin

Date: 4/9/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	SAND (SP); loose, moist, coarse to fine, mostly medium to fine, little silt, brown.	16	WOH 1 2 2	3		
2.5									
5			S-2	Becomes coarse to fine, mostly medium with little fine gravel.	19	2 3 2 3	5		
7.5									
10			S-3	Becomes wet.	18	1 1 1 2	2		
12.5									
15			S-4		15	1 1 1 2	2		
17.5				Bottom of Exploration at 17': no refusal. Set Monitoring Well P-5.					

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

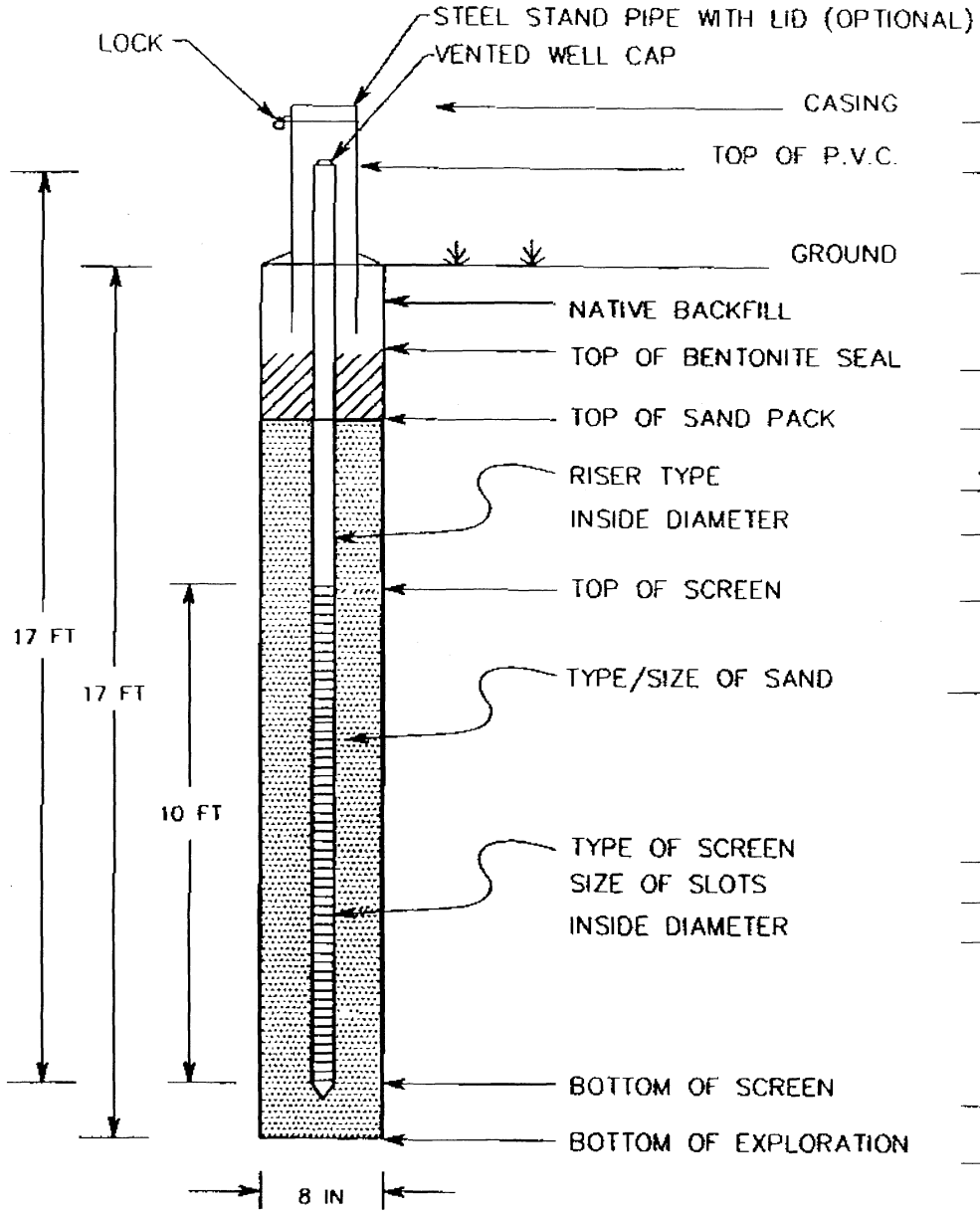
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-5

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 56.7 FT

DISTANCE BELOW GROUND: 8.3 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT:	WETLAND COMPENSATION SITE
LOCATION:	SCARBOROUGH, MAINE
PROJECT NO.:	395-07
DESCRIPTION:	OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)
INSTALLATION:	4/9/2002

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BORING LOG P-6

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 65.4'
Ground Water Depth: 12.3'

Client: Grondin

Date: 4/9/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (12").	20	1 3 6 7	9		
				SAND (SP); loose, moderately moist, coarse to fine, mostly medium to fine, little silt, brown.					
2.5									
5			S-2	Becomes medium to fine, mostly fine, trace silt.	16	2 3 3 4	6		
7.5									
10			S-3	Becomes moist.	18	3 4 4 4	8		
				Becomes wet.					
12.5									
15			S-4		15	WOR 1 2 2	3		
17.5				Bottom of Exploration at 17': no refusal. Set Monitoring Well P-6.					

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

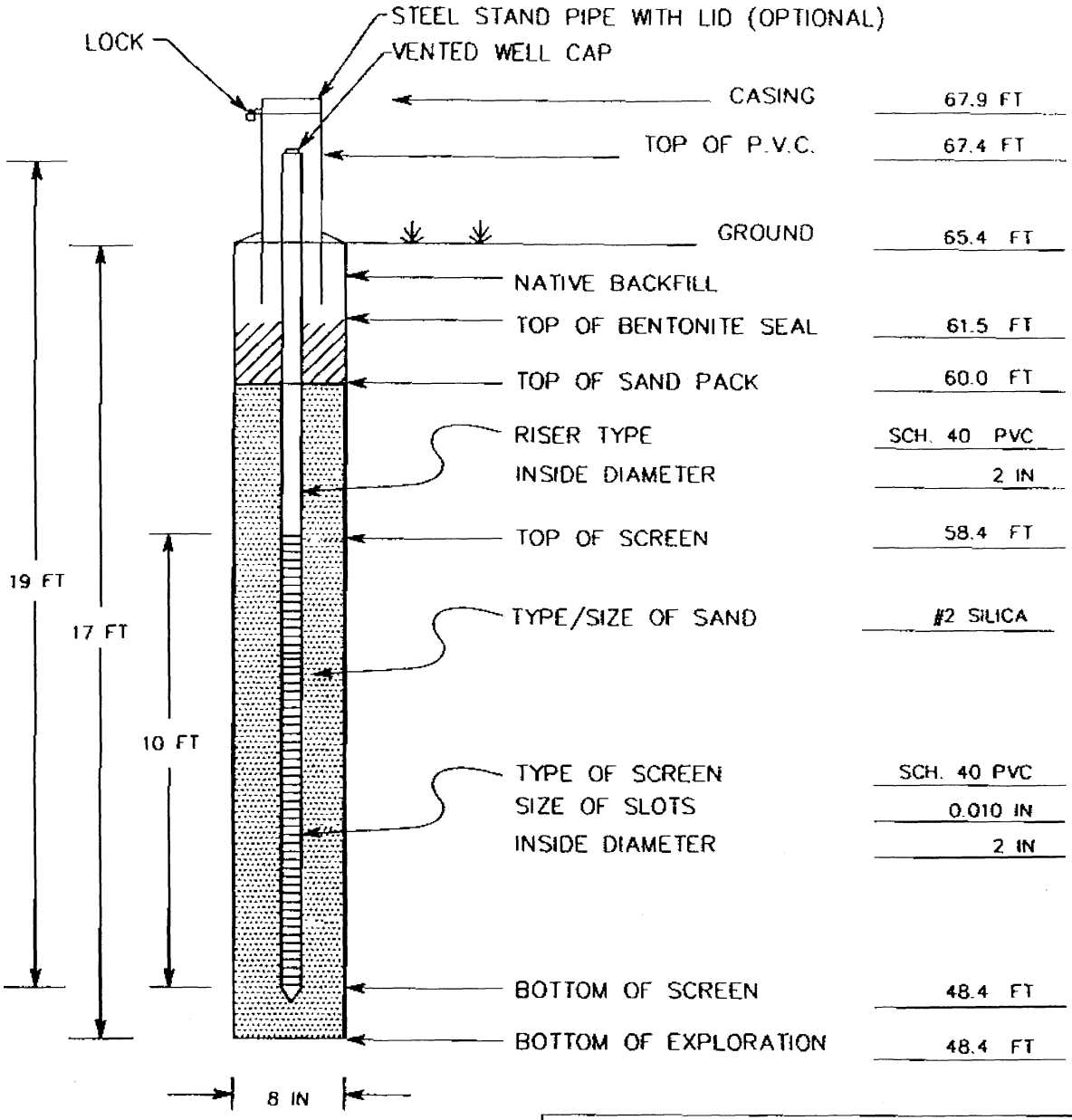
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-6

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 53.1 FT

DISTANCE BELOW GROUND: 12.3 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT: WETLAND COMPENSATION SITE

LOCATION: SCARBOROUGH, MAINE

PROJECT NO.: 395-07

DESCRIPTION: OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)

INSTALLATION: 4/9/2002

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BORING LOG P-7

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 67.1'
Ground Water Depth: 11.1'

Client: Grondin

Date: 4/10/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (4").	19	1 2 3 5	5		
				SILTY SAND (SP-SM); loose, moist, coarse to fine, mostly fine, some silt, brown.					
				SAND (SP); loose, moist, coarse to fine, mostly medium to fine, little silt, brown.					
2.5									
5			S-2		18	2 4 4 5	8		
				Becomes wet (probably perched groundwater above thin clayey seam).					
7.5									
10			S-3	Becomes loose, moist, medium to fine, trace silt, light brown.	18	2 4 5 5	9		
12.5									
15			S-4	Becomes wet, mostly medium.	12	1 1 1 1	2		
17.5									

BORING LOG P-7

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 67.1'
Ground Water Depth: 11.1'

Client: Grondin

Date: 4/[illegible]

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
20			S-5	Thin clayey lense at about 19ft.	19	1 1 2 3	3		
22.5				Bottom of Exploration at 22': no refusal. Set Monitoring Well MW-7					
25									
27.5									
30									
32.5									
35									

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

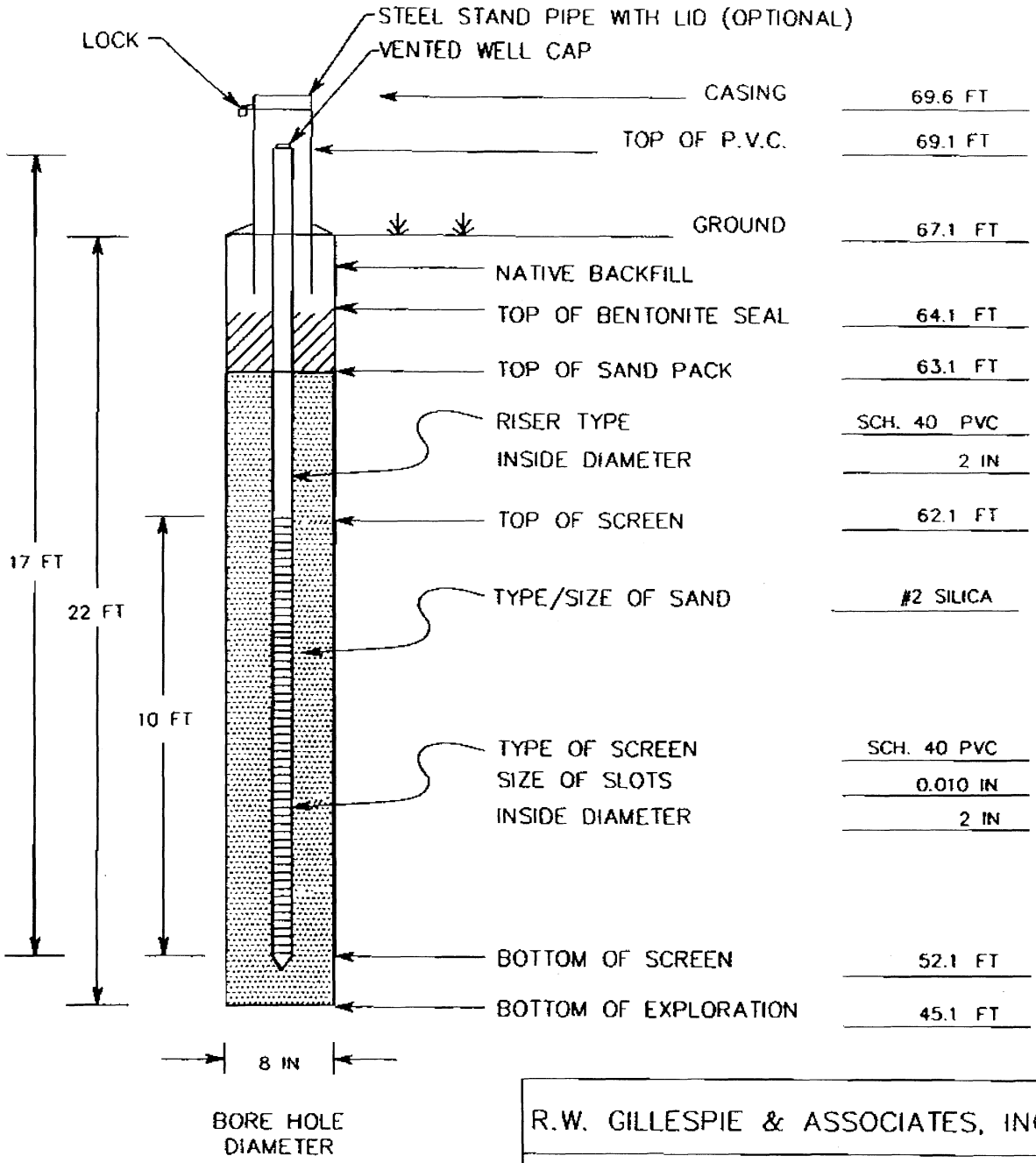
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-7

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 55.9 FT

DISTANCE BELOW GROUND: 11.1 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT:	WETLAND COMPENSATION SITE
LOCATION:	SCARBOROUGH, MAINE
PROJECT NO.:	395-07
DESCRIPTION:	OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)
INSTALLATION:	4/10/2002

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BORING LOG P-8

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 95.7'
Ground Water Depth: 3.1'

Client: Grondin

Date: 4/10/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (5").	18	2 2 5 3	7		
				SILTY SAND (SP-SM); loose, moist, coarse to fine, mostly medium to fine, some silt, yellowish orange.					
				SILTY SAND (SM); loose, moist, coarse to fine, mostly medium to fine, some silt, brown.					
2.5									
5			S-2	CLAYEY SILT (ML); stiff, moist, trace fine sand, brown. (some gray mottling). Becomes wet.	22	3 4 3 3	7		
7.5									
10			S-3	SILTY CLAY (ML); soft, wet, some silt, bluish gray, plastic.	24	1 1 1 1	2		
				CLAY (CL-ML); soft, wet, bluish gray, plastic.					
12.5									
15			S-4	SILTY CLAY (ML); very soft, wet, some silt, bluish gray.	24	WOH WOH WOH WOH			
17.5				Bottom of Exploration at 17': no refusal. Set Monitoring Well MW-8.					

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

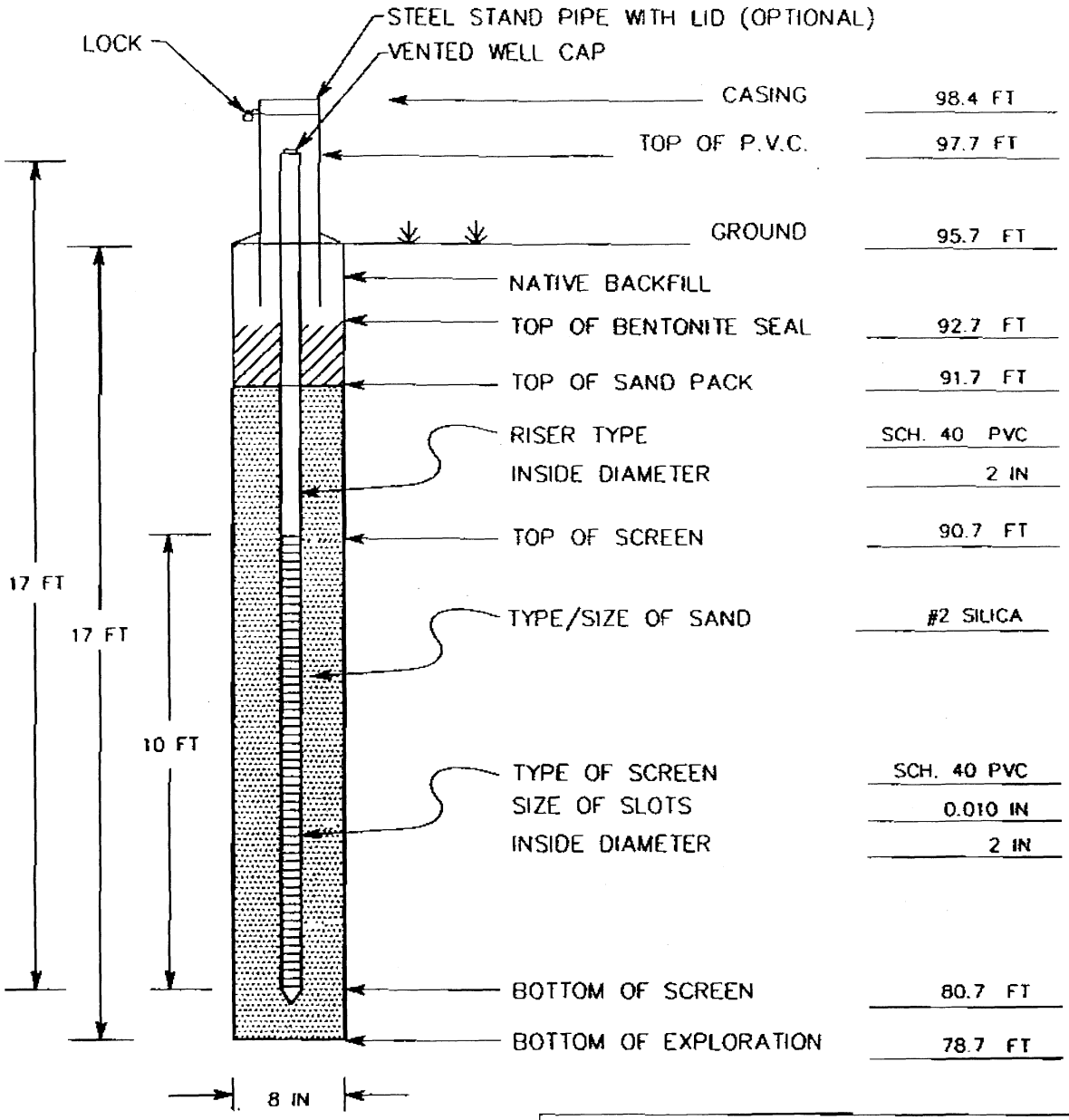
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-8

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 92.6 FT

DISTANCE BELOW GROUND: 3.1 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT:	WETLAND COMPENSATION SITE
LOCATION:	SCARBOROUGH, MAINE
PROJECT NO.:	395-07
DESCRIPTION:	OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)
INSTALLATION:	4/9/2002

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BORING LOG P-9

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 99.6'
Ground Water Depth: 5.9'

Client: Grondin

Date: 4/10/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (4").	10	1 2 1 1	3		
				SAND (SP); loose, moderately moist, coarse to fine, mostly medium to fine, little silt, yellowish orange.					
2.5									
5			S-2	SILTY CLAY (CL-ML); moderately moist, dense, some silt, brown. (some gray mottling).	24	5 10 12 13	22		
				Becomes moist.					
7.5									
10			S-3	Becomes wet.	24	WOH 3 3 2	6		
				CLAY (CL-ML); soft, wet, little silt, bluish gray, plastic.					
12.5									
15			S-4		24	WOH WOH WOH WOH			
				Silty seam (3")					
17.5				Bottom of Exploration at 17': no refusal. Set Well P-9					

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

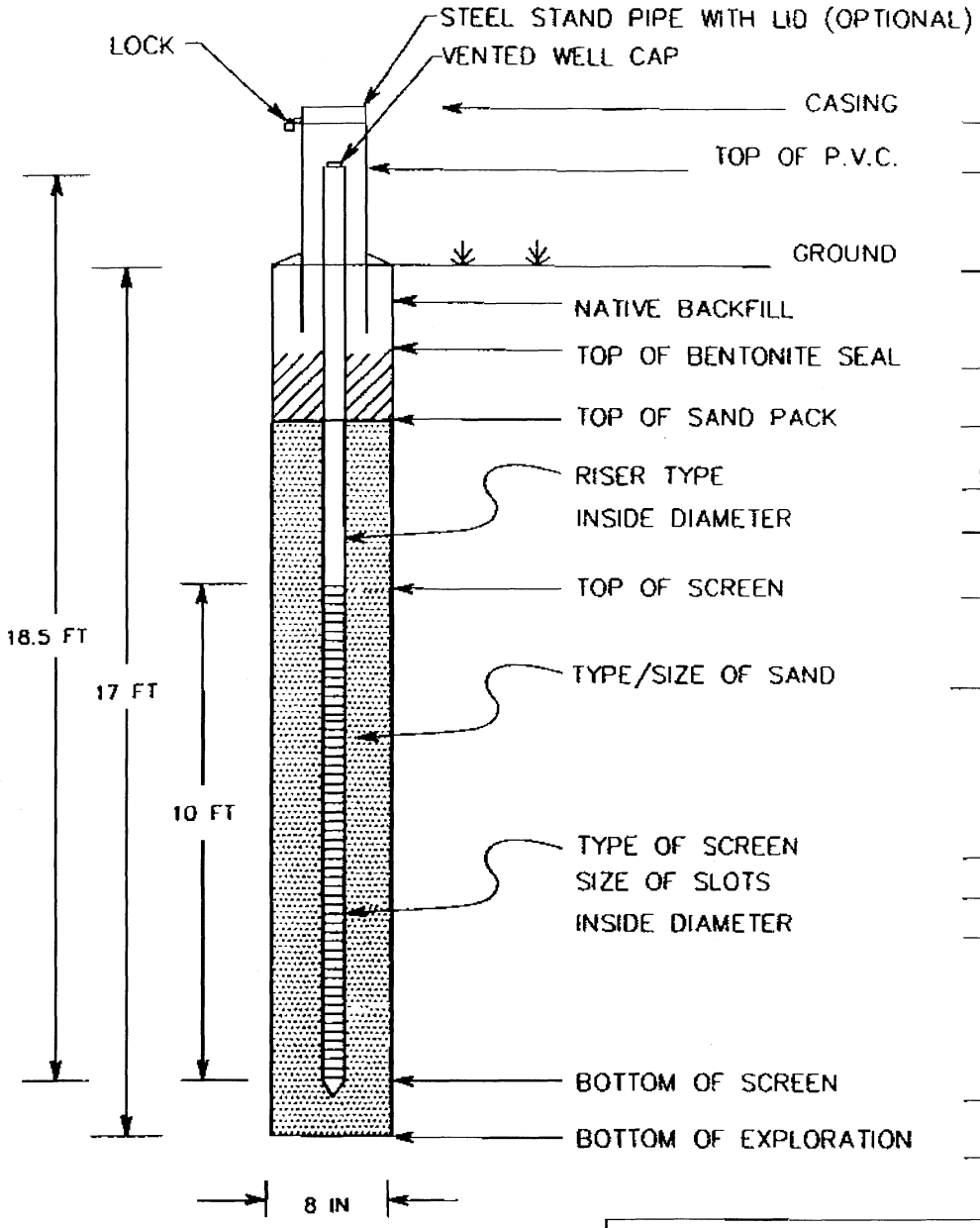
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-9

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 93.7 FT

DISTANCE BELOW GROUND: 5.9 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT:	WETLAND COMPENSATION SITE
LOCATION:	SCARBOROUGH, MAINE
PROJECT NO.:	395-07
DESCRIPTION:	OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)
INSTALLATION:	4/10/2002

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BORING LOG P-10

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 101.2'
Ground Water Depth: 1.5'

Client: Grondin

Date: 4/10/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (6").	8	1 2 3 12	5		
				SAND (SP); loose, moist, coarse to fine, mostly medium to fine, little silt, yellow orange.					
2.5									
5			S-2	Becomes wet.	18	1 2 2 3	4		
				CLAY (ML-CL); stiff, wet, some silt, bluish gray.					
7.5									
10			S-3		24	WOH WOH WOH WOH			
				CLAY (CL-ML); soft, wet, bluish gray.					
12.5				Bottom of Exploration at 12': no refusal. Set Monitoring Well P-10.					
15									
17.5									

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

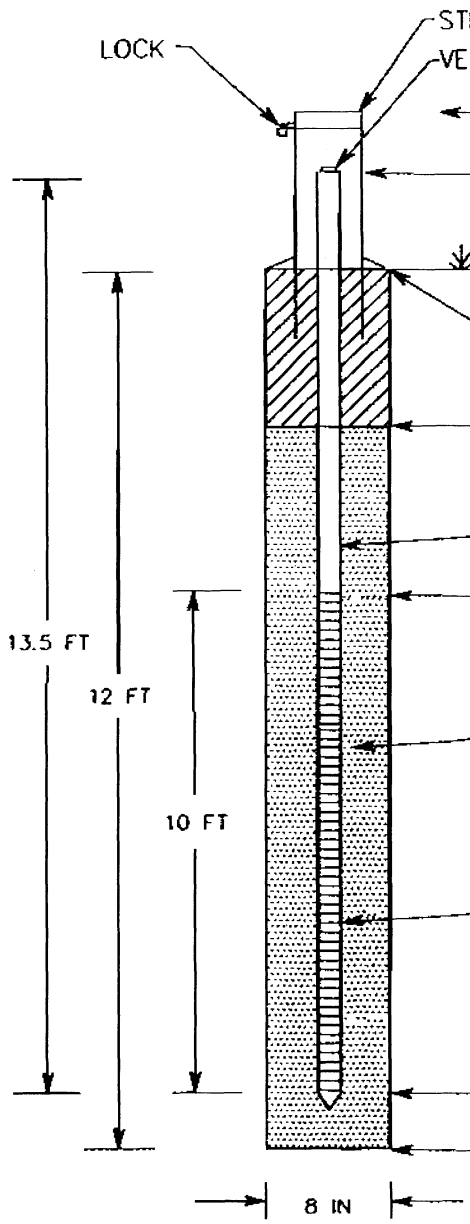
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-10

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 99.7 FT

DISTANCE BELOW GROUND: 1.5 FT



CASING	104.3 FT
TOP OF P.V.C.	103.7 FT
GROUND	101.2 FT
TOP OF BENTONITE SEAL	101.2 FT
TOP OF FILTER SAND PACK	100.7 FT
RISER TYPE	SCH. 40 PVC
INSIDE DIAMETER	2 IN
TOP OF SCREEN	100.2 FT
TYPE/SIZE OF SAND	#2 SILICA
TYPE OF SCREEN	SCH. 40 PVC
SIZE OF SLOTS	0.010 IN
INSIDE DIAMETER	2 IN
BOTTOM OF SCREEN	90.2 FT
BOTTOM OF BORING	89.2 FT

R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT: WETLAND COMPENSATION SITE
LOCATION: SCARBOROUGH, MAINE
PROJECT NO.: 395-07
DESCRIPTION: OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)
DRILLING DATE: 4/10/2002

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BORING LOG P-11

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 93.4'
Ground Water Depth: 4'

Client: Grondin

Date: 4/10/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (7").	20	WOH 1 2 3	3		
				SAND (SP); loose, moist, coarse to fine, mostly medium to fine, little silt, yellow orange.					
				SILTY CLAY (ML-CL); soft, moist, some silt, brown.					
2.5									
5			S-2		24	1 2 3 5	5		
7.5									
10			S-3	Becomes wet, some fine sandy silt lenses and mottling.	24	WOH WOH WOH WOH			
12.5									
15			S-4	CLAY (CL-ML); very soft, wet, bluish gray.	24	WOR WOR WOR WOR			
17.5				Bottom of Exploration at 17': no refusal. Set Monitoring Well P-11.					

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

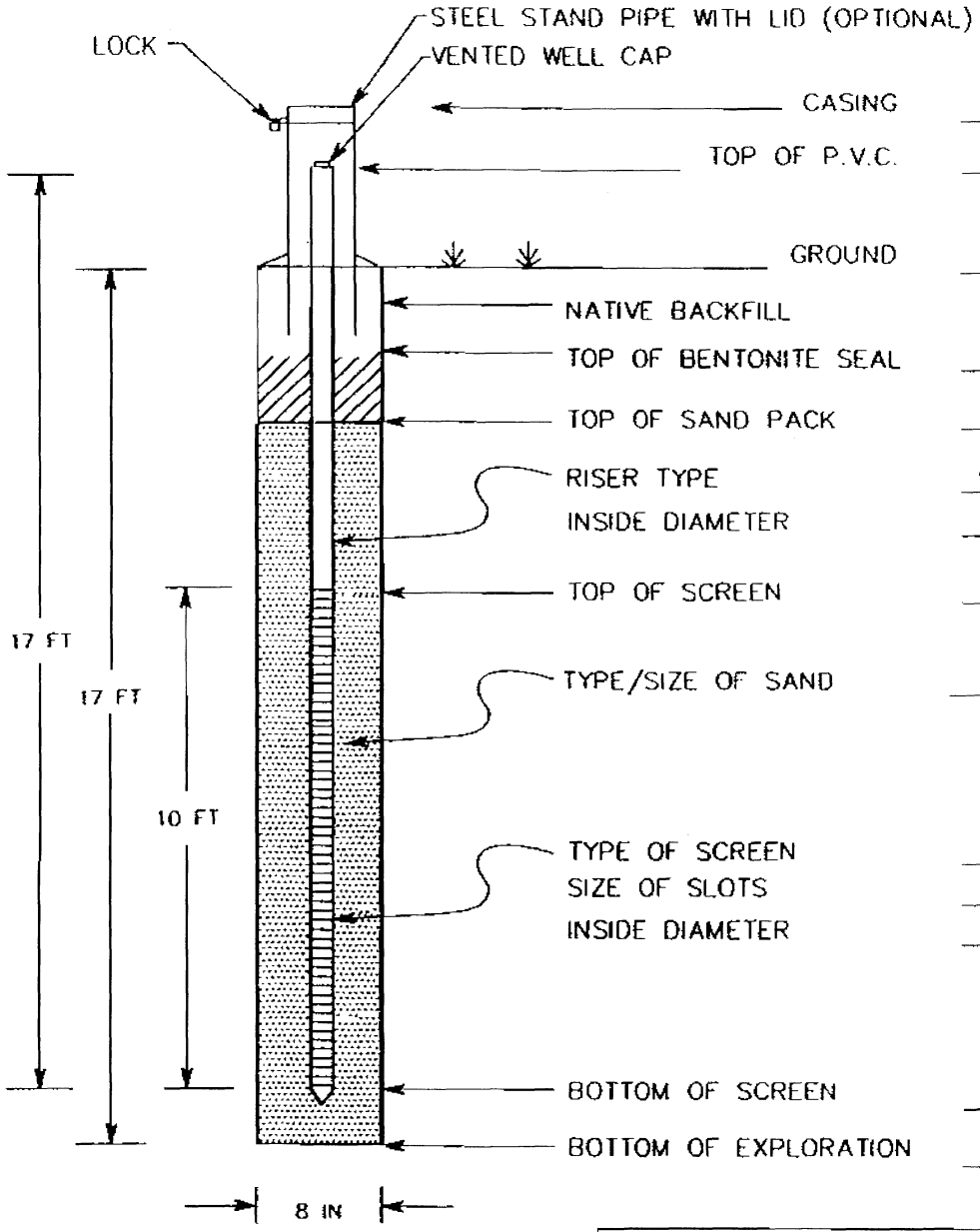
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-11

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 89.4 FT

DISTANCE BELOW GROUND: 4.0 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT: WETLAND COMPENSATION SITE

LOCATION: SCARBOROUGH, MAINE

PROJECT NO.: 395-07

DESCRIPTION: OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)

INSTALLATION: 4/10/2002

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BORING LOG P-12

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 92.9'
Ground Water Depth: 16.3'

Client: Grondin

Date: 4/11/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0				TOPSOIL AND ORGANIC MATERIAL					
				SILTY CLAY (ML-CL); olive brown. (Presumpscot Formation)					
2.5									
5									
7.5									
10				Transitions to bluish gray.					
12.5									
15									
17.5									

R.W. Gillespie & Associates, Inc.
Saco, Maine

BORING LOG P-12

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 92.9'
Ground Water Depth: 16.3'

Client: Grondin

Date: 4/11/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
				SILTY CLAY (ML); olive brown, some silt, some medium to fine sand seams.					
20									
22.5									
25				WEATHERED BEDROCK; Surface encountered at 25ft.					
27.5									
				Begin bedrock coring at 29'.					
30			R-1	Medium to soft, slightly weathered, fine grained, Chlorite-Biotite PHYLLITE with close to moderately spaced, moderate to high angle, rough, discolored to decomposed, partly open jointing.	60				
32.5				Depth (ft) Time (min) 30.0 to 31.0 2.50 31.0 to 32.0 2.50 32.0 to 33.0 2.00 33.0 to 34.0 2.25					
35			R-2		60				

R.W. Gillespie & Associates, Inc.
Saco, Maine

BORING LOG P-12

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 92.9'
Ground Water Depth: 16.3'

Client: Grondin

Date: 4/11/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
				Becomes fresh, jointing tight.					
				Depth (ft) Time (min)					
				35.0 to 36.0 2.00					
				36.0 to 37.0 2.50					
				37.0 to 38.0 2.50					
37.5				38.0 to 39.0 3.00					
				39.0 to 40.0 3.00					
40			R-3	Depth (ft) Time (min)	60				
				40.0 to 41.0 2.00					
				41.0 to 42.0 2.50					
				42.0 to 43.0 2.50					
				43.0 to 44.0 2.00					
				44.0 to 45.0 2.00					
42.5									
				Becomes moderately weathered.					
45			R-4	Depth (ft) Time (min)	60				
				45.0 to 46.0 1.75					
				46.0 to 47.0 2.00					
				47.0 to 48.0 3.00					
				48.0 to 49.0 4.00					
				49.0 to 50.0 4.00					
47.5				Becomes slightly weathered.					
50			R-5	Depth (ft) Time (min)	60				
				50.0 to 51.0 4.50					
				51.0 to 52.0 4.00					
				52.0 to 53.0 3.50					
				53.0 to 54.0 3.50					
				54.0 to 55.0 4.00					
52.5									

BORING LOG P-12

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 92.9'
Ground Water Depth: 16.3'

Client: Grondin

Date: 4/11/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
55			R-6	Depth (ft) Time (min) 55.0 to 56.0 3.50 56.0 to 57.0 3.50 57.0 to 58.0 4.00 58.0 to 59.0 4.00 59.0 to 60.0 4.00	60				
57.5									
60			R-7	Depth (ft) Time (min) 60.0 to 61.0 4.00 61.0 to 62.0 4.50 62.0 to 63.0 4.00 63.0 to 64.0 4.50 64.0 to 65.0 4.50	60				
62.5									
65			R-8	Depth (ft) Time (min) 65.0 to 66.0 3.75 66.0 to 67.0 4.00 67.0 to 68.0 3.50 68.0 to 69.0 3.50 69.0 to 70.0 4.00	60				
67.5									
70				Bottom of Exploration at 70'. Set Monitoring Well P-12					

R.W. Gillespie & Associates, Inc.
Saco, Maine

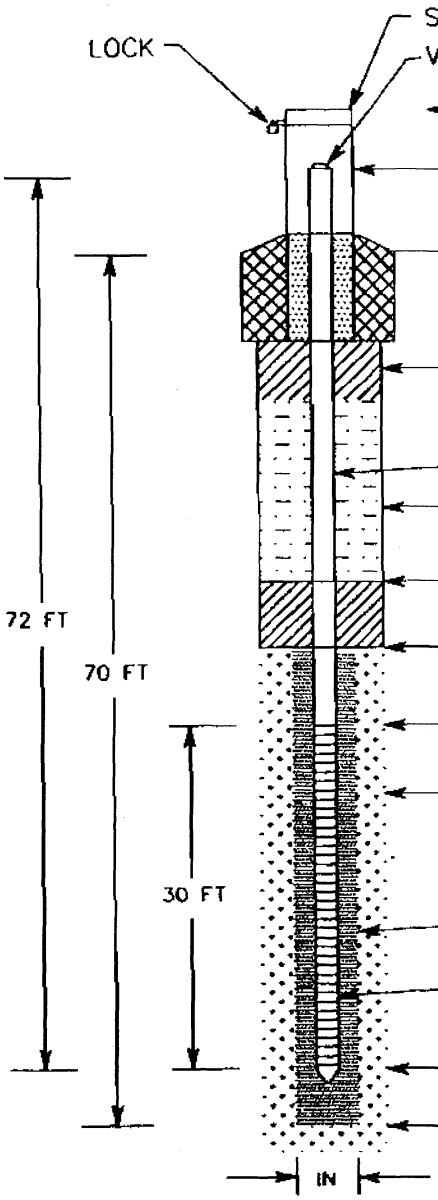
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-12

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 76.7 FT

DISTANCE BELOW GROUND: 16.3 FT



CASING	95.5 FT
TOP OF P.V.C.	94.9 FT
GROUND	92.9 FT
BENTONITE ANNULAR SEAL	
RISER TYPE	SCH. 40 PVC
INSIDE DIAMETER	2 IN
NATIVE BACKFILL MATERIAL	
TOP OF BENTONITE SEAL	69.9 FT
TOP OF FILTER SAND PACK	67.9 FT
TOP OF BEDROCK CORE	65.9 FT
TOP OF SCREEN	52.9 FT
BEDROCK	
TYPE/SIZE OF SAND	#2 SILICA
TYPE OF SCREEN	SCH. 40 PVC
SIZE OF SLOTS	0.010 IN
INSIDE DIAMETER	2 IN
BOTTOM OF SCREEN	22.9 FT
BOTTOM OF BEDROCK CORE	22.9 FT

CORE HOLE DIAMETER

R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT:	WETLAND COMPENSATION SITE
LOCATION:	SCARBOROUGH, MAINE
PROJECT NO.:	395-07
DESCRIPTION:	BEDROCK GROUNDWATER MONITORING WELL (NEAR SURFACE, CONFINED)
DRILLING DATE:	4/9/2002

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BORING LOG P-13

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation:
Ground Water Depth:

Client: Grondin

Date: 4/15/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0				TOPSOIL AND ORGANIC MATERIAL; some brick, bone, and ceramic fragments incorporated with near surface soils.					
				SILTY CLAY (ML-CL); olive brown. (Presumpscot Formation)					
2.5									
				Reworked till deposits at 4'.					
5									
7.5									
10									
12.5									
15			R-1	BEDROCK SURFACE ENCOUNTERED AT 15'. Begin bedrock coring at 15' Medium to soft, fresh, fine grained, Biotite - Chlorite PHYLLITE with close to moderately spaced, moderate to high angle, rough, fresh, tight jointing. (some quartz infilling) Depth (ft) Time (min) 15.0 to 16.0 4.00 16.0 to 17.0 6.00	60				
17.5									

R.W. Gillespie & Associates, Inc.
Saco, Maine

BORING LOG P-13

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation:
Ground Water Depth:

Client: Grondin

Date: 4/15/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL		SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
				17.0 to 18.0	4.00					
				18.0 to 19.0	4.50					
				19.0 to 20.0	5.00					
20			R-2	Depth (ft)	Time (min)	60				
				20.0 to 21.0	5.00					
				21.0 to 22.0	4.50					
				22.0 to 23.0	4.00					
				23.0 to 24.0	4.50					
				24.0 to 25.0	5.00					
22.5										
25			R-3	Depth (ft)	Time (min)	60				
				25.0 to 26.0	4.50					
				26.0 to 27.0	4.25					
				27.0 to 28.0	4.50					
				28.0 to 29.0	5.00					
				29.0 to 30.0	5.00					
27.5										
30			R-4	Depth (ft)	Time (min)	60				
				30.0 to 31.0	5.00					
				31.0 to 32.0	5.50					
				32.0 to 33.0	4.00					
				33.0 to 34.0	4.00					
				34.0 to 35.0	3.75					
32.5										
35			R-5	Depth (ft)	Time (min)	60				

BORING LOG P-13

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation:
Ground Water Depth:

Client: Grondin

Date: 4/15/0?

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL		SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
				35.0 to 36.0	3.00					
				36.0 to 37.0	3.00					
				37.0 to 38.0	3.00					
				38.0 to 39.0	3.00					
				39.0 to 40.0	3.00					
37.5										
40			R-6	Depth (ft)	Time (min)	60				
				40.0 to 41.0	2.50					
				41.0 to 42.0	3.00					
				42.0 to 43.0	3.00					
				43.0 to 44.0	3.00					
				44.0 to 45.0	2.75					
42.5										
45			R-7	Depth (ft)	Time (min)	60				
				45.0 to 46.0	2.50					
				46.0 to 47.0	3.00					
				47.0 to 48.0	2.50					
				48.0 to 49.0	2.75					
				49.0 to 50.0	3.25					
47.5										
50			R-8	Depth (ft)	Time (min)	60				
				50.0 to 51.0	2.50					
				51.0 to 52.0	3.00					
				52.0 to 53.0	3.00					
				53.0 to 54.0	3.50					
				54.0 to 55.0	4.00					
52.5										

BORING LOG P-13

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation:
Ground Water Depth:

Client: Grondin

Date: 4/15/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
55			R-9	Depth (ft) Time (min) 55.0 to 56.0 4.00 56.0 to 57.0 4.50 57.0 to 58.0 5.00 58.0 to 59.0 4.00 59.0 to 60.0 4.00	60				
57.5									
60			R-10	Depth (ft) Time (min) 60.0 to 61.0 2.50 61.0 to 62.0 3.00 62.0 to 63.0 2.50 63.0 to 64.0 3.00 64.0 to 65.0 3.00	60				
62.5									
65			R-11	Depth (ft) Time (min) 65.0 to 66.0 3.25 66.0 to 67.0 3.50 67.0 to 68.0 3.50 68.0 to 69.0 3.00 69.0 to 70.0 3.50	60				
67.5									
70				Bottom of Exploration at 70': no refusal. Set Monitoring Well P-13					

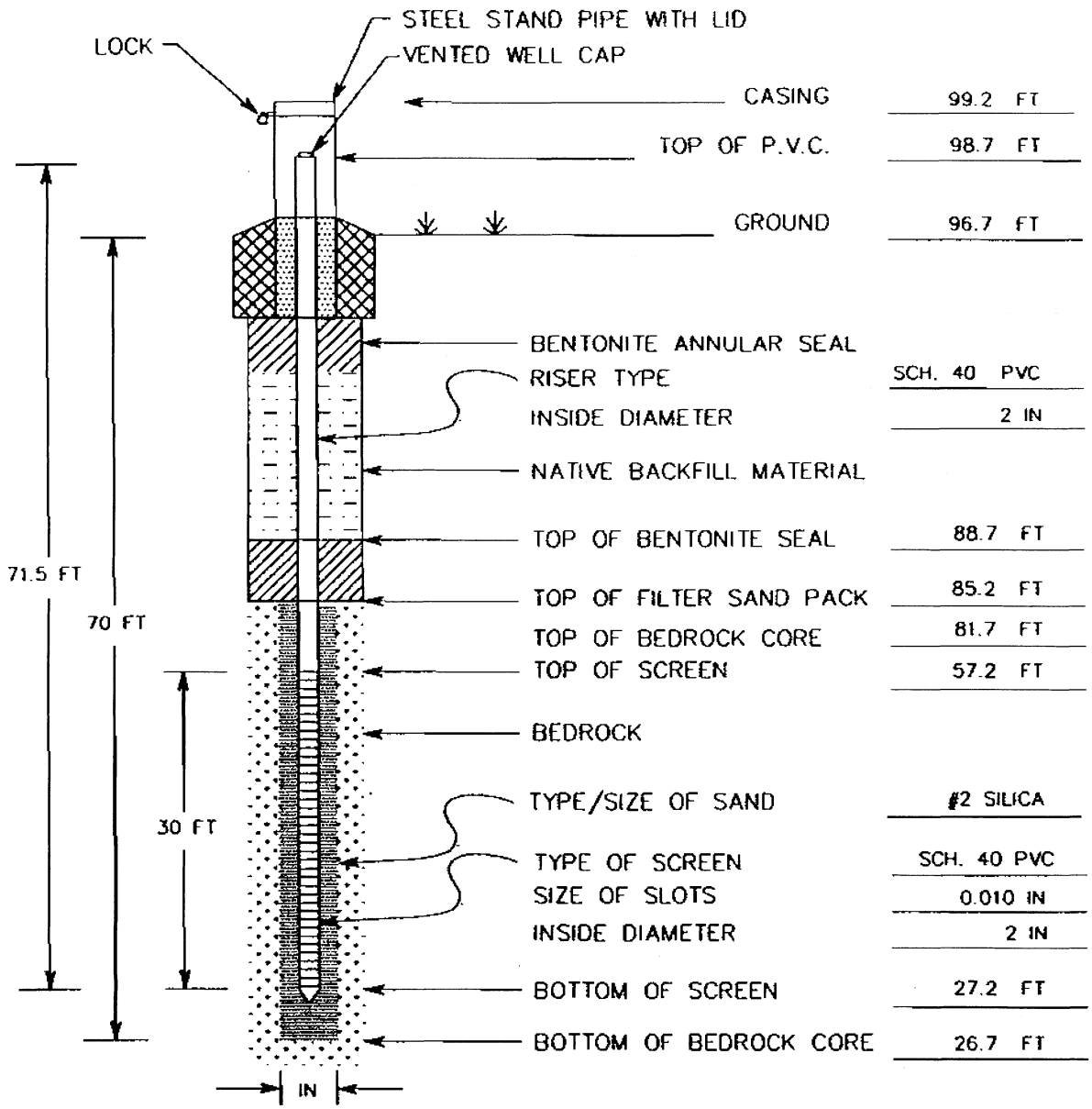
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-13

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 95.5 FT

DISTANCE BELOW GROUND: 1.2 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT: WETLAND COMPENSATION SITE
LOCATION: SCARBOROUGH, MAINE
PROJECT NO.: 395-07

DESCRIPTION: BEDROCK GROUNDWATER MONITORING WELL (NEAR SURFACE, CONFINED)

DRILLING DATE: 4/15/2002

c:\0-mwells\mw-brock

BORING LOG P-14

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 64.6'
Ground Water Depth: 21.7'

Client: Grondin

Date: 4/16/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0				TOPSOIL AND ORGANIC MATERIAL					
				SILTY CLAY (ML-CL); olive brown. (Presumpscot Formation).					
2.5									
5				Reworked till deposits at 5'.					
7.5									
10									
12.5									
15									
17.5									

BORING LOG P-14

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 64.6'
Ground Water Depth: 21.7'

Client: Grondin

Date: 4/16/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
20									
22.5				BEDROCK SURFACE ENCOUNTERED AT 23'.					
			R-1	Begin bedrock coring at 23'. Medium to soft, fresh, fine grained, Quartz-Chloritic-Biotite PHYLLITE with close to moderately spaced, moderate to high angle, rough, fresh, closed to partly open jointing.	24				
25			R-2	Depth (ft) Time (min) 23.0 to 24.0 3.50 24.0 to 25.0 3.50 Depth (ft) Time (min) 25.0 to 26.0 4.00 26.0 to 27.0 4.00 27.0 to 28.0 4.00 28.0 to 29.0 4.00 29.0 to 30.0 4.00	60				
27.5									
30			R-3	Depth (ft) Time (min) 30.0 to 31.0 5.00 31.0 to 32.0 4.25 32.0 to 33.0 3.00 33.0 to 34.0 3.00 34.0 to 35.0 3.25	60				
32.5									
35			R-4	Depth (ft) Time (min)	60				

BORING LOG P-14

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 64.6'
Ground Water Depth: 21.7'

Client: Grondin

Date: 4/16/07

Project No. 395 07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
				35.0 to 36.0 3.25					
				36.0 to 37.0 3.50					
				37.0 to 38.0 3.50					
				38.0 to 39.0 4.00					
37.5				39.0 to 40.0 4.00					
40			R-5	Depth (ft) Time (min)	60				
				40.0 to 41.0 4.50					
				41.0 to 42.0 4.00					
				42.0 to 43.0 3.00					
				43.0 to 44.0 3.00					
42.5				44.0 to 45.0 3.00					
45				Bottom of Exploration at 45'. Set Monitoring Well P-14					
47.5									
50									
52.5									

R.W. Gillespie & Associates, Inc.
Saco, Maine

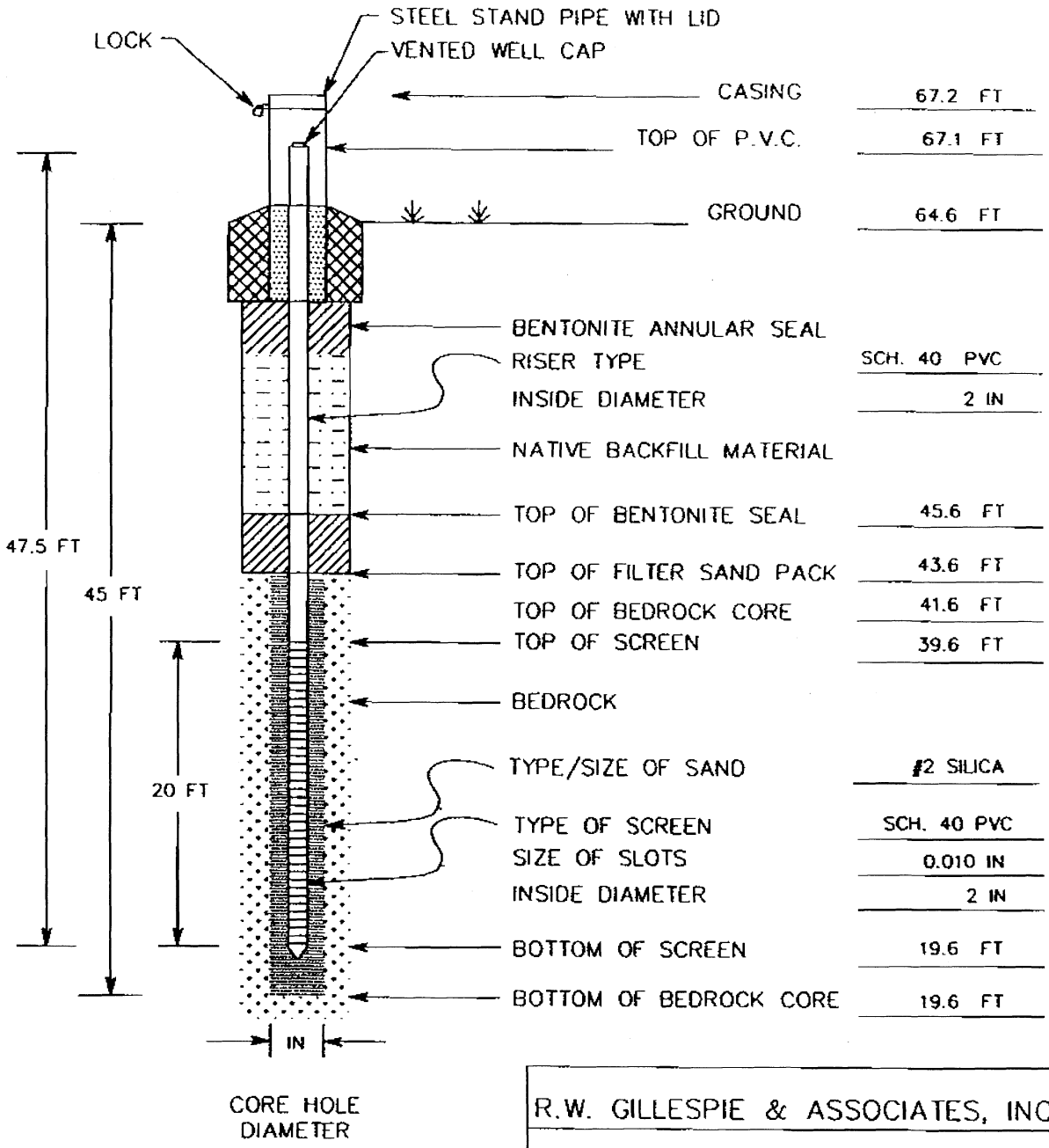
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-14

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 42.9 FT

DISTANCE BELOW GROUND: 21.7 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT:	WETLAND COMPENSATION SITE
LOCATION:	SCARBOROUGH, MAINE
PROJECT NO.:	395-07
DESCRIPTION:	BEDROCK GROUNDWATER MONITORING WELL (NEAR SURFACE, CONFINED)
DRILLING DATE:	4/16/2002

c:\0-mwells\mw-brock

BORING LOG P-15

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 67.8'
Ground Water Depth: 5.6'

Client: Grondin

Date: 4/17/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0				TOPSOIL AND ORGANIC MATERIAL					
				SANDY CLAY (SW-SC); probable reworked till.					
2.5									
5				BEDROCK ENCOUNTERED AT 5'; begin coring.	60				
				BEDROCK Medium to soft, fresh, fine grained, Chlorite-Biotite PHYLLITE with moderately spaced, moderate to high angle, rough fresh to discolored, closed jointing.					
				Depth (ft) Time (min)					
7.5				5.0 to 6.0 3.50					
				6.0 to 7.0 4.00					
				7.0 to 8.0 3.25					
				8.0 to 9.0 3.25					
				9.0 to 10.0 3.25					
10			R-2	Depth (ft) Time (min)	60				
				10.0 to 11.0 4.00					
				11.0 to 12.0 3.75					
				12.0 to 13.0 4.00					
				13.0 to 14.0 4.00					
				14.0 to 15.0 4.00					
12.5									
15			R-3	Depth (ft) Time (min)	60				
				15.0 to 16.0 4.00					
				16.0 to 17.0 4.25					
				17.0 to 18.0 4.50					
				18.0 to 19.0 4.25					
				19.0 to 20.0 4.50					
17.5									

BORING LOG P-15

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 67.8'
Ground Water Depth: 5.6'

Client: Grondin

Date: 4/17/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
20			R-4	Depth (ft) Time (min) 20.0 to 21.0 4.25 21.0 to 22.0 5.25 22.0 to 23.0 4.50 23.0 to 24.0 6.00 24.0 to 25.0 7.00	60				
22.5									
25			R-5	Joints become closely spaced, rough, discolored to decomposed, open. Depth (ft) Time (min) 25.0 to 26.0 5.75 26.0 to 27.0 5.50 27.0 to 28.0 5.50	48				
27.5									
30			R-6	Depth (ft) Time (min) 30.0 to 31.0 5.50 31.0 to 32.0 6.00 32.0 to 33.0 3.50 33.0 to 34.0 3.00 34.0 to 35.0 3.50	60				
32.5									
35			R-7	Depth (ft) Time (min)	60				

BORING LOG P-15

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 67.8'
Ground Water Depth: 5.6'

Client: Grondin

Date: 4/17/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
				35.0 to 36.0 4.00 36.0 to 37.0 5.50 37.0 to 38.0 4.50 38.0 to 39.0 6.50 39.0 to 40.0 5.00					
37.5									
40			R-8	Depth (ft) Time (min) 40.0 to 41.0 3.00 41.0 to 42.0 4.50 42.0 to 43.0 3.50 43.0 to 44.0 3.75 44.0 to 45.0 4.50	60				
42.5									
45				Bottom of Exploration at 45'. Set Monitoring Well P-15					
47.5									
50									
52.5									

R.W. Gillespie & Associates, Inc.
Saco, Maine

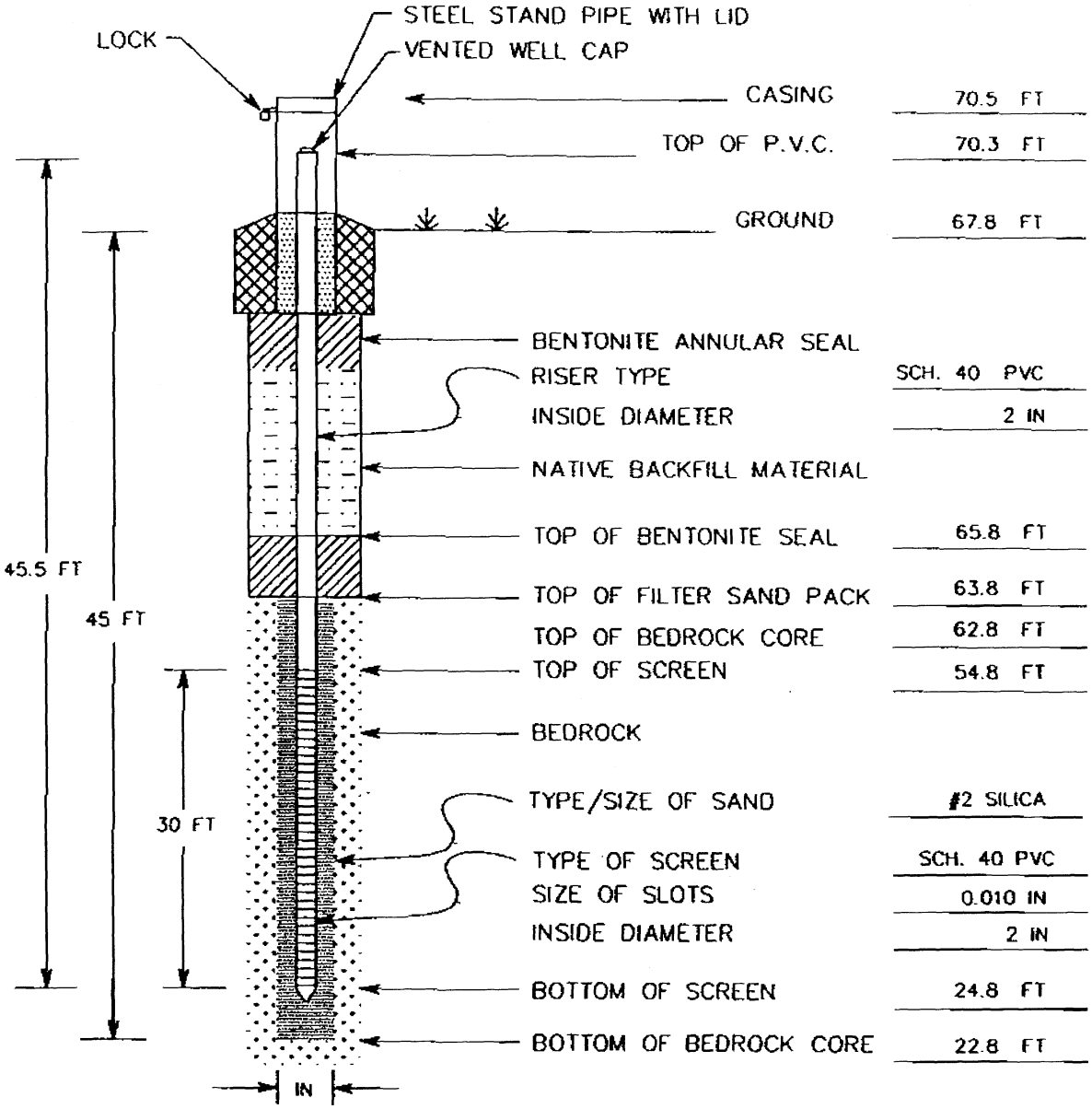
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-15

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 62.2 FT

DISTANCE BELOW GROUND: 5.6 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT: WETLAND COMPENSATION SITE

LOCATION: SCARBOROUGH, MAINE

PROJECT NO.: 395-07

DESCRIPTION: BEDROCK GROUNDWATER MONITORING WELL (NEAR SURFACE, CONFINED)

DRILLING DATE: 4/17/2002

c:\0-mwells\mw-brock

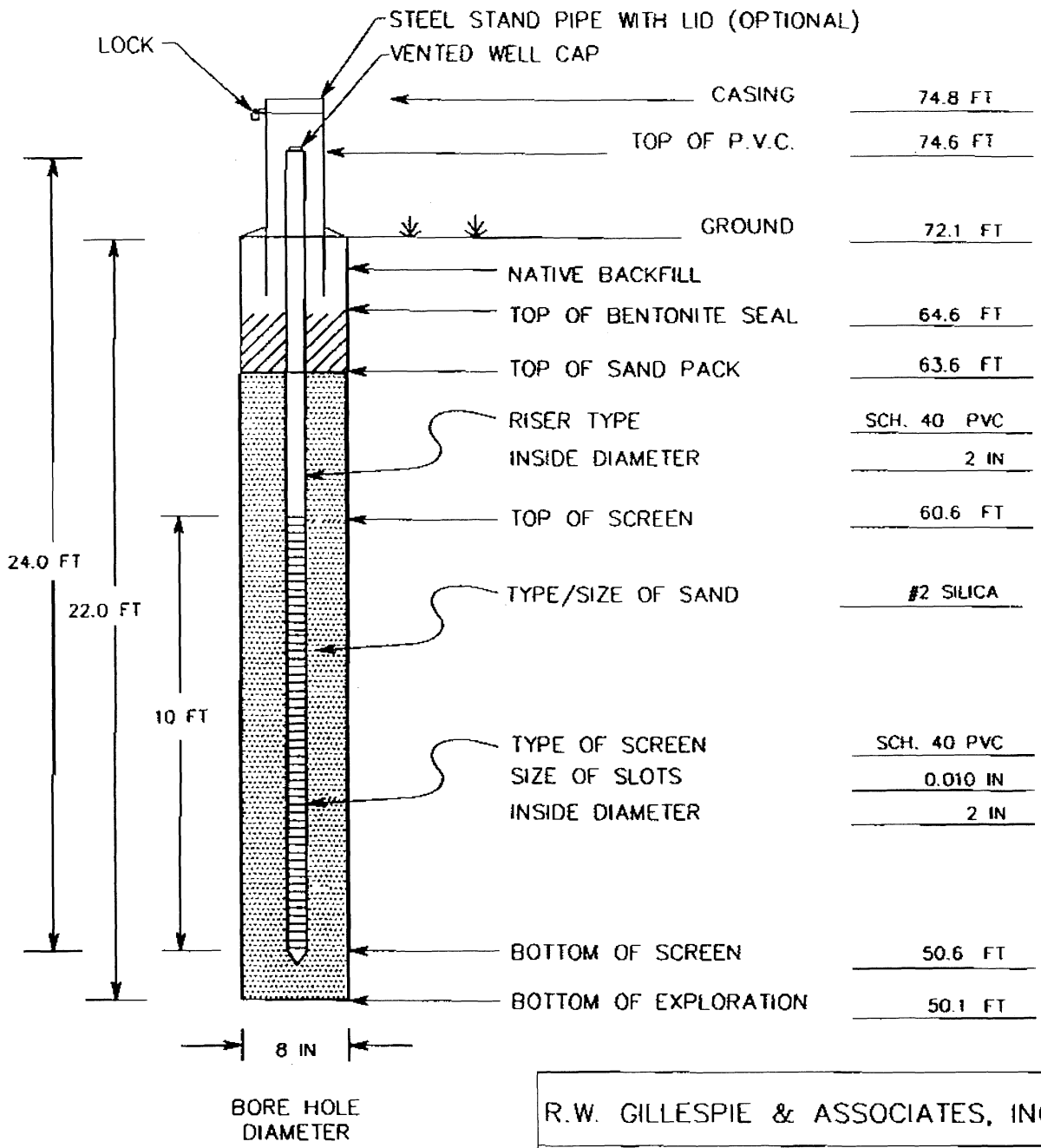
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-1

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 55.5 FT

DISTANCE BELOW GROUND: 16.6 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT: WETLAND COMPENSATION SITE

LOCATION: SCARBOROUGH, MAINE

PROJECT NO.: 395-07

DESCRIPTION: OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)

INSTALLATION: 4/9/2002

c:\0-mwells\mw-piez1.dwg

BORING LOG P-2

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 75.9'
Ground Water Depth: 7.6'

Client: Grondin

Date: 4/9/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (6").	12	1	4		
				SAND (SP); loose, moderately moist, coarse to fine, some silt, brown.		2 2 3			
2.5									
5			S-2	Becomes medium dense, medium to fine, mostly fine, light brown.	18	4	18		
				Becomes coarse to fine, mostly medium, trace silt.		9 9 7			
7.5									
10			S-3	Becomes medium dense, wet, medium to fine, mostly fine, light brown.	17	2	5		
				SANDY SILT (SM); loose, wet, some fine sand, light brown. (not cohesive)		3 2 2			
12.5									
15			S-4		20	WOH	6		
				Becomes somewhat clayey and cohesive.		2 4 5			
17.5				Bottom of Exploration at 17': no refusal. Set Monitoring Well P-2					

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

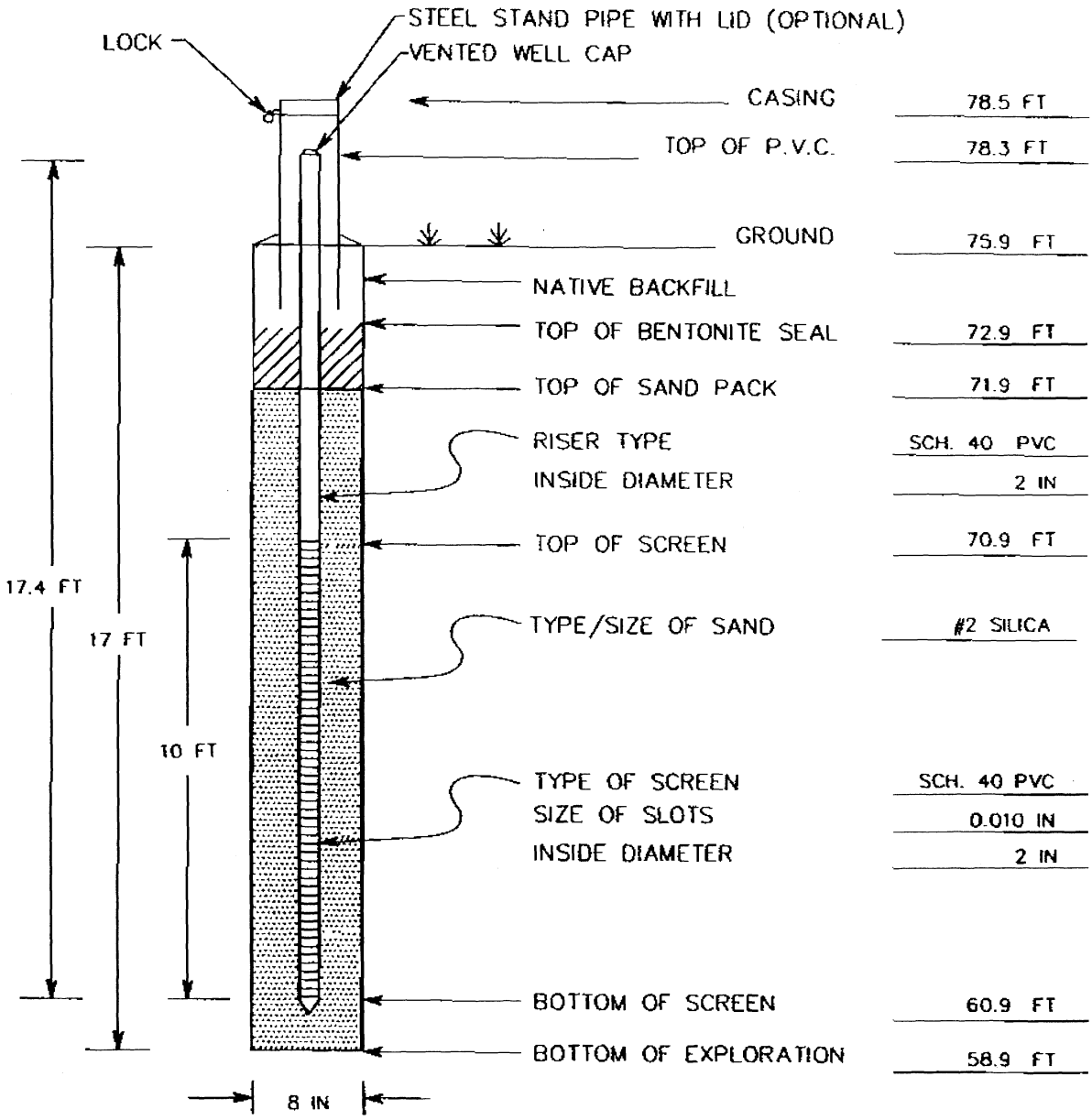
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-2

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 68.3 FT

DISTANCE BELOW GROUND: 7.6 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT: WETLAND COMPENSATION SITE

LOCATION: SCARBOROUGH, MAINE

PROJECT NO.: 395-07

DESCRIPTION: OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)

INSTALLATION: 4/9/2002

c:\0-mwells\mw-piez1.dwg

BORING LOG P-3

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 66.3'
Ground Water Depth: 1.1'

Client: Grondin

Date: 4/9/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (8").	18	WOH 2 2 4	4		
				SAND (SP); loose, moderately moist, coarse to fine, mostly medium to fine, little silt, brown.					
2.5									
5			S-2	Becomes wet, medium to fine, mostly fine, light brown.	19	1 2 2 2	4		
				Becomes silty, little clay, cohesive.					
7.5									
10			S-3	Becomes loose, wet, medium to fine, mostly fine, little silt, light brown.	23	1 2 2 4	4		
12.5									
15			S-4		18	3 5 7 4	13		
17.5									

BORING LOG P-3

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 66.3'
Ground Water Depth: 1.1'

Client: Grondin

Date: 4/9/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
20			S-5		3	3 3 3 4	6		
22.5									
25			S-6		0	1 2 3 3	5		
27.5									
30			S-7		10	2 3 3 4	6		
32.5				Bottom of Exploration at 32': no refusal. Set Monitoring Well P-3.					
35									

R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

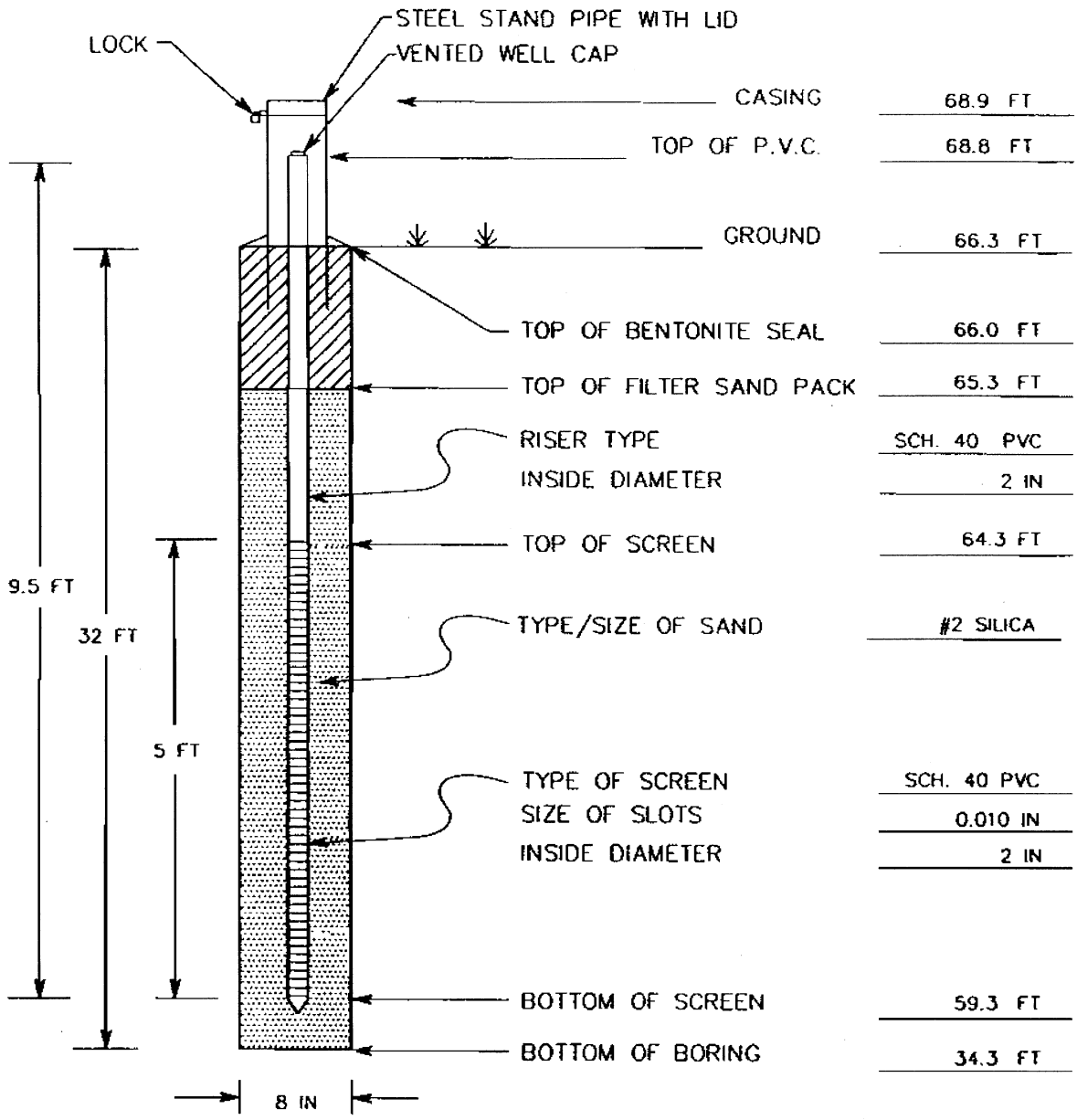
GROUNDWATER PIEZOMETER CONSTRUCTION DETAIL

WELL ID.: P-3

DATE: 5/22/2002

OBSERVED WATER SURFACE ELEVATION: 65.2 FT

DISTANCE BELOW GROUND: 1.1 FT



R.W. GILLESPIE & ASSOCIATES, INC.

PROJECT: WETLAND COMPENSATION SITE

LOCATION: SCARBOROUGH, MAINE

PROJECT NO.: 395-07

DESCRIPTION: OVERBURDEN GROUNDWATER MONITORING WELL (SHALLOW, UNCONFINED)

DRILLING DATE: 4/9/2002

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R. W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

SYNOPSIS OF GEOHYDROLOGIC CONDITIONS AT LARRABEE FARMS WETLANDS CREATION SITE SCARBOROUGH, MAINE

The following sections present a short synopsis of geotechnical geohydrologic conditions at the subject site. The purpose of the synopsis is to provide relevant information with respect to anticipated soil types at wetland construction elevations and probable groundwater conditions based on current data.

Broadly, soil types at construction elevations range from sands (fine to medium) to silty clay and bedrock. Groundwater flows to the Nonesuch River in a general southerly direction and is supported by a recharge area greater than 2 square miles.

Area 1: Area 1 will be contoured to dip from north to south in a deep sand deposit consisting of fine to medium sand with discontinuous coarse interbeds. Groundwater data indicate that fluctuations occur within a 1 to 2 foot range and that springs on the downgradient edge are perennial. The data indicate that the site will have sufficient groundwater at depths appropriate to generation of wetland soils and vegetation types. Fluctuations in groundwater elevations do not appear to be rapid or flashy, and gradients remain in a narrow range of less than 0.5 to 1 percent.

Area 2: Area 2 has silty clay overburden underlain by phyllite bedrock. Construction floor elevations indicate the wetland creation area will be cut at least 25 feet into bedrock thereby requiring a clay bottom to manage water within the wetland. Discharge from the rock cut face to the north is expected to yield numerous small flows on a nearly year round basis. Piezometers installed in the bedrock indicate an upward gradient to within 4 to 6 feet of existing grade, and additional work could show that more flow might be obtained to support the wetlands. At this time it is our opinion that the area is amenable to wetlands development.

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P.O. Box 289
Augusta, ME 04344
207-623-4914 • Fax 207-623-3429

Area 2A: Area 2A is south and east of Area 2 and connected by surface water gradients. Geotechnical conditions include silty clay overlying phyllite bedrock and exposed bedrock, especially at the extreme eastern end. Proposed construction elevations indicate that groundwater is available to creation wetlands, and MW-15 suggests an upward gradient in bedrock similar to Area 2; a more detailed evaluation is probably warranted. The surface water connection as well as anticipated groundwater availability appear favorable for wetland development.

Area 3: Area 3 is directly east of Area 2 and is programmed for a construction elevation of 95 feet, or cuts of 5 to 9 feet. Overburden soils are silty clays with numerous thin silt and very fine sand seams which carry groundwater. This is clearly visible in the sidewalls of the deep drainage east of the area. The clays are 20 to 25 feet thick and overlie phyllite bedrock. At Elevation 95, the wetland will have to depend on surface runoff and precipitation as primary water sources. In order to utilize groundwater on a regular basis the construction floor would need to be in the range of 80 to 85 feet.

Area 4: Area 4 is located north of Area 3 and is in a sand deposit. Groundwater flows to the north and east with both directions being a function of the adjacent Wetland B. Soils are fine to medium sands which extend to at least Elevation 85. Plans show the wetland floor at Elevation 98 which is at least 1 foot too high for anticipated groundwater conditions. With an elevation of 96.5+/- sufficient groundwater should be available for support of wetland creation activities.

Area 5: At this time there is no information available for Area 5. However, its location on the slope below Areas 2 and 2A suggest that groundwater may be available from bedrock and/or the overburden. Further investigations are warranted.

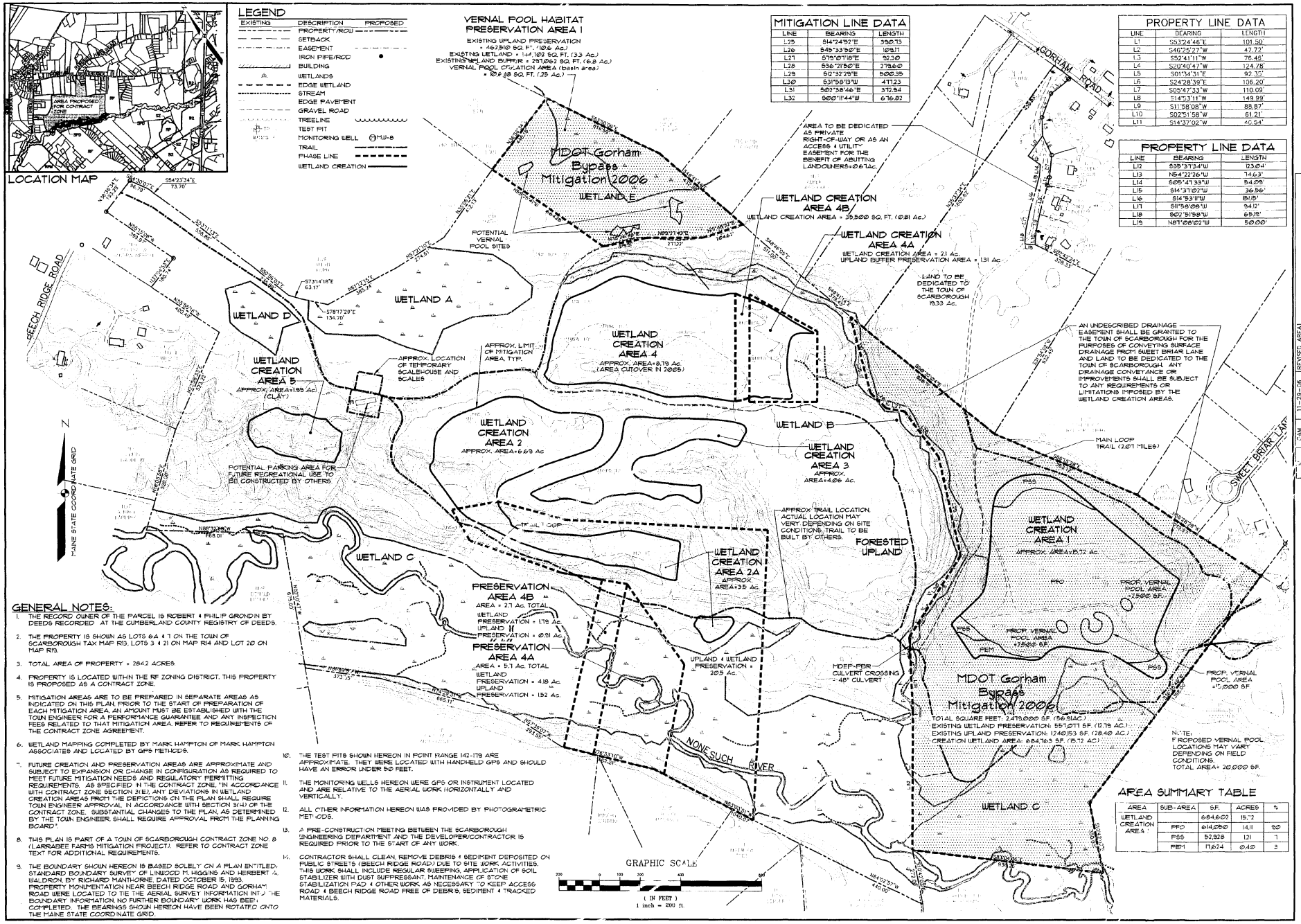
Area 6: This area is located in a flat portion of the site northwest of Area 4 and is bounded on the southwest and southeast by Wetlands A and B, respectively. Proposed wetland floor is shown as Elevation 100 with a gentle slope from the northeast. Groundwater flows are to the east primarily and appear to be a function of Wetland B. Elevation data with respect to groundwater indicates that Elevation100 might be too high and that 97.5 to 98.5 would be more compatible with presently available data.

Overall Site Suitability: It is our opinion, based on available data and evaluation thereof, that the site has the requisite characteristics of soil types, topography, and groundwater conditions to support creation and/or enhancement of wetlands. Several of the proposed areas require additional work and study, most notably Area 5.

Appendix 8: Plan Drawings

(attached)

11/30/06, 02:03 P



MITIGATION LINE DATA

LINE	BEARING	LENGTH
L25	S14°24'57"E	390.73
L26	S45°33'50"E	109.17
L27	S75°07'18"E	92.30
L28	S36°21'50"E	279.60
L29	S12°37'29"E	500.35
L30	S31°58'13"W	47.23
L31	S07°38'46"E	372.94
L32	S00°11'44"W	676.87

PROPERTY LINE DATA

LINE	BEARING	LENGTH
L1	S53°24'46"E	101.50'
L2	S40°25'27"W	47.72'
L3	S52°41'11"W	75.48'
L4	S20°40'47"W	124.78'
L5	S01°34'31"E	92.35'
L6	S24°28'39"E	106.20'
L7	S05°47'33"W	110.09'
L8	S14°53'11"W	149.99'
L9	S11°58'08"W	88.87'
L10	S02°51'58"W	61.21'
L11	S14°37'02"W	40.54'

PROPERTY LINE DATA

LINE	BEARING	LENGTH
L12	S35°37'34"W	103.04'
L13	N54°22'26"W	74.63'
L14	S05°41'33"W	54.09'
L15	S14°31'02"W	36.56'
L16	S14°53'11"W	151.15'
L17	S11°58'08"W	94.12'
L18	S02°51'58"W	65.78'
L19	N87°08'02"W	50.00'

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS ROBERT & PHILIP GRONDIN BY DEEDS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. THE PROPERTY IS SHOWN AS LOTS 6A & 7 ON THE TOWN OF SCARBOROUGH TAX MAP R13, LOTS 3 & 21 ON MAP R14 AND LOT 20 ON MAP R19.
3. TOTAL AREA OF PROPERTY = 284.2 ACRES.
4. PROPERTY IS LOCATED WITHIN THE RF ZONING DISTRICT. THIS PROPERTY IS PROPOSED AS A CONTRACT ZONE.
5. MITIGATION AREAS ARE TO BE PREPARED IN SEPARATE AREAS AS INDICATED ON THIS PLAN. PRIOR TO THE START OF PREPARATION OF EACH MITIGATION AREA, AN AMOUNT MUST BE ESTABLISHED WITH THE TOWN ENGINEER FOR A PERFORMANCE GUARANTEE AND ANY INSPECTION FEES RELATED TO THAT MITIGATION AREA. REFER TO REQUIREMENTS OF THE CONTRACT ZONE AGREEMENT.
6. WETLAND MAPPING COMPLETED BY MARK HAMPTON OF MARK HAMPTON ASSOCIATES AND LOCATED BY GPS METHODS.
7. FUTURE CREATION AND PRESERVATION AREAS ARE APPROXIMATE AND SUBJECT TO EXPANSION OR CHANGE IN CONFIGURATION AS REQUIRED TO MEET FUTURE MITIGATION NEEDS AND REGULATORY PERMITTING REQUIREMENTS. AS SPECIFIED IN THE CONTRACT ZONE, "IN ACCORDANCE WITH CONTRACT ZONE SECTION 3(E), ANY DEVIATIONS IN WETLAND CREATION AREAS FROM THE DEPICTIONS ON THE PLAN SHALL REQUIRE TOWN ENGINEER APPROVAL. IN ACCORDANCE WITH SECTION 3(H) OF THE CONTRACT ZONE, SUBSTANTIAL CHANGES TO THE PLAN, AS DETERMINED BY THE TOWN ENGINEER, SHALL REQUIRE APPROVAL FROM THE PLANNING BOARD".
8. THIS PLAN IS PART OF A TOWN OF SCARBOROUGH CONTRACT ZONE NO. 8 (LARRABEE FARMS MITIGATION PROJECT). REFER TO CONTRACT ZONE TEXT FOR ADDITIONAL REQUIREMENTS.
9. THE BOUNDARY SHOWN HEREON IS BASED SOLELY ON A PLAN ENTITLED: STANDARD BOUNDARY SURVEY OF LINWOOD H. HIGGINS AND HERBERT A. WALDRON BY RICHARD MANTHORNE, DATED OCTOBER 15, 1993. PROPERTY MONUMENTATION NEAR BEECH RIDGE ROAD AND GORHAM ROAD WERE LOCATED TO TIE THE AERIAL SURVEY INFORMATION INTO THE BOUNDARY INFORMATION. NO FURTHER BOUNDARY WORK HAS BEEN COMPLETED. THE BEARINGS SHOWN HEREON HAVE BEEN ROTATED ONTO THE MAINE STATE COORDINATE GRID.
10. THE TEST PITS SHOWN HEREON IN POINT RANGE 142-179 ARE APPROXIMATE. THEY WERE LOCATED WITH HANDHELD GPS AND SHOULD HAVE AN ERROR UNDER 50 FEET.
11. THE MONITORING WELLS HEREON WERE GPS OR INSTRUMENT LOCATED AND ARE RELATIVE TO THE AERIAL WORK HORIZONTALLY AND VERTICALLY.
12. ALL OTHER INFORMATION HEREON WAS PROVIDED BY PHOTOGRAMETRIC METHODS.
13. A PRE-CONSTRUCTION MEETING BETWEEN THE SCARBOROUGH ENGINEERING DEPARTMENT AND THE DEVELOPER/CONTRACTOR IS REQUIRED PRIOR TO THE START OF ANY WORK.
14. CONTRACTOR SHALL CLEAN, REMOVE DEBRIS & SEDIMENT DEPOSITED ON PUBLIC STREETS (BEECH RIDGE ROAD) DUE TO SITE WORK ACTIVITIES. THIS WORK SHALL INCLUDE REGULAR SWEEPING, APPLICATION OF SOIL STABILIZER WITH DUST SUPPRESSANT, MAINTENANCE OF STONE STABILIZATION PAD & OTHER WORK AS NECESSARY TO KEEP ACCESS ROAD & BEECH RIDGE ROAD FREE OF DEBRIS, SEDIMENT & TRACKED MATERIALS.

AREA SUMMARY TABLE

AREA	SUB-AREA	S.F.	ACRES	%
WETLAND CREATION AREA 4		684,602	15.72	
	PFO	614,050	14.11	90
	PSS	52,928	1.21	7
	PEM	17,624	0.40	3

REV.	BY:	DATE	STATUS
A	WTC	1-03	SUBMIT TO TOWN FOR REVIEW
B	WTC	3-7-03	REVISE ACCESS ROAD LOCATION
C	WMH	01-06-06	REVISE - REMOVE PROPOSED WCT - REI BOYLE ASSOCIATES
D	WMH	03-13-06	ADDED WETLAND CREATION AREAS 4A & 4B
E	OAM	6-20-06	REVISED PER TOWN ENGINEER REVIEW
F	OAM	10-17-06	REVISED PER TOWN ENGINEER REVIEW
G	OAM	11-14-06	REVISED AREAS IN WC-4A, WC-4B, PA-4A, PA-4B
H	OAM	11-29-06	REVISED AREA1

THIS PLAN SHALL NOT BE MADE WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

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Westbrook, Maine 04092
Tel (207) 856-0277

PROJECT NO.	FIELD BOOK	DESIGN	CHKD	DRAWN
01484	-	TC	SMF	BCM

SITE MITIGATION PLAN OF LARRABEE FARMS WETLAND MITIGATION PROJECT

GORHAM ROAD AND BEECH RIDGE ROAD
SCARBOROUGH, MAINE

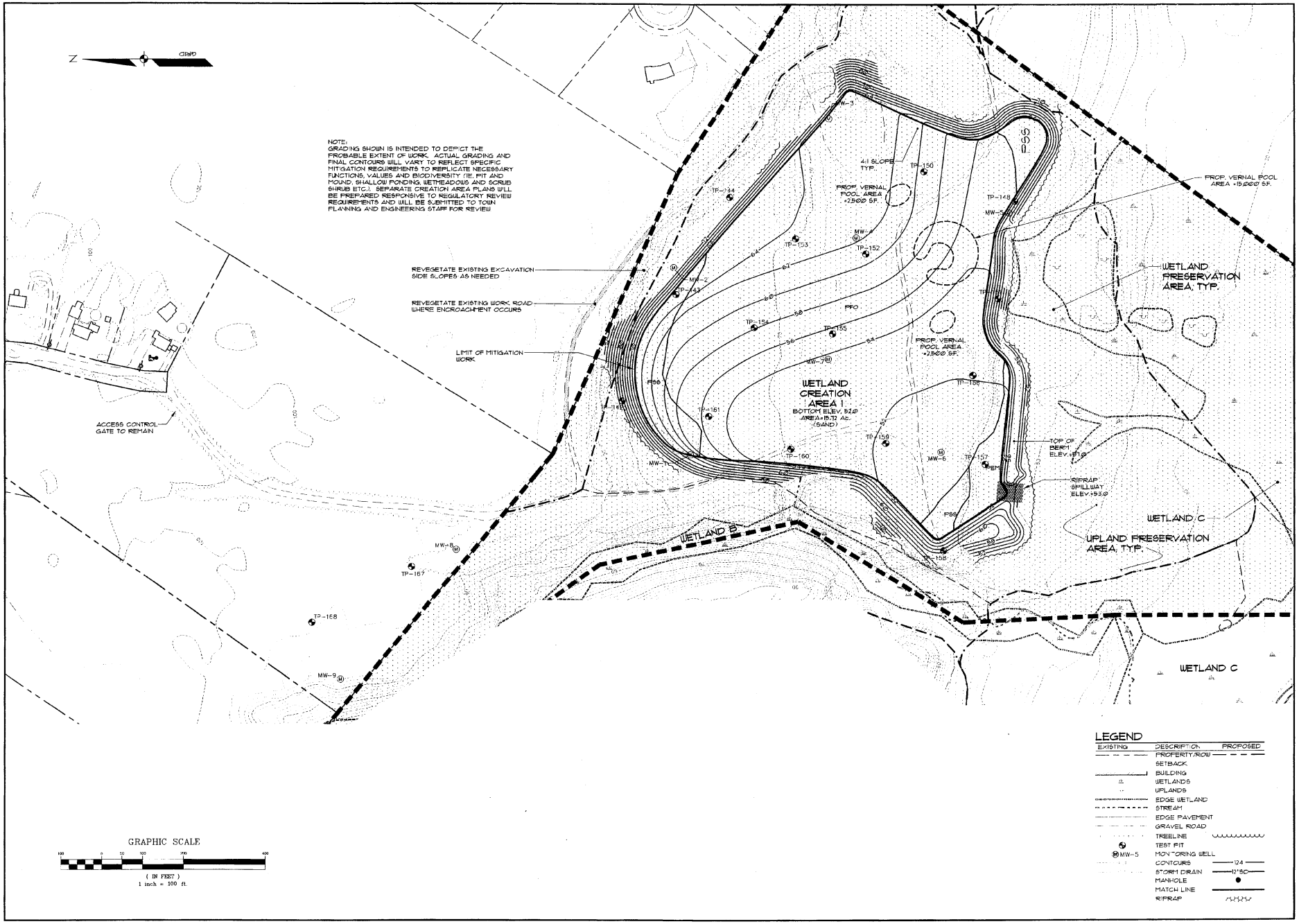
GRONDIN AGGREGATES, LLC
11 BARLEY ROAD
CUMBERLAND, MAINE 04138

DATE	SCALE
1-14-03	1"=200'

SHEET 2 OF 6

01484GI.dwg, TAB CONCEPT

11/30/06, 01:09 I



REV.	BY:	DATE:	STATUS:
D	OAM	4-20-06	REVISED PER TOWN ENGINEER REVIEW
C	OAM	4-9-06	ISSUED FOR TOWN REVIEW AND APPROVAL
B	WTC	3-16-03	REVISE ACCESS ROAD LOCATION
A	WTC	1-14-03	SUBMIT TO TOWN FOR REVIEW

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PROJECT NO.	FIELD BOOK	DESIGN	CHKD	DRAWN
01494	-	WTC	SMF	BCM

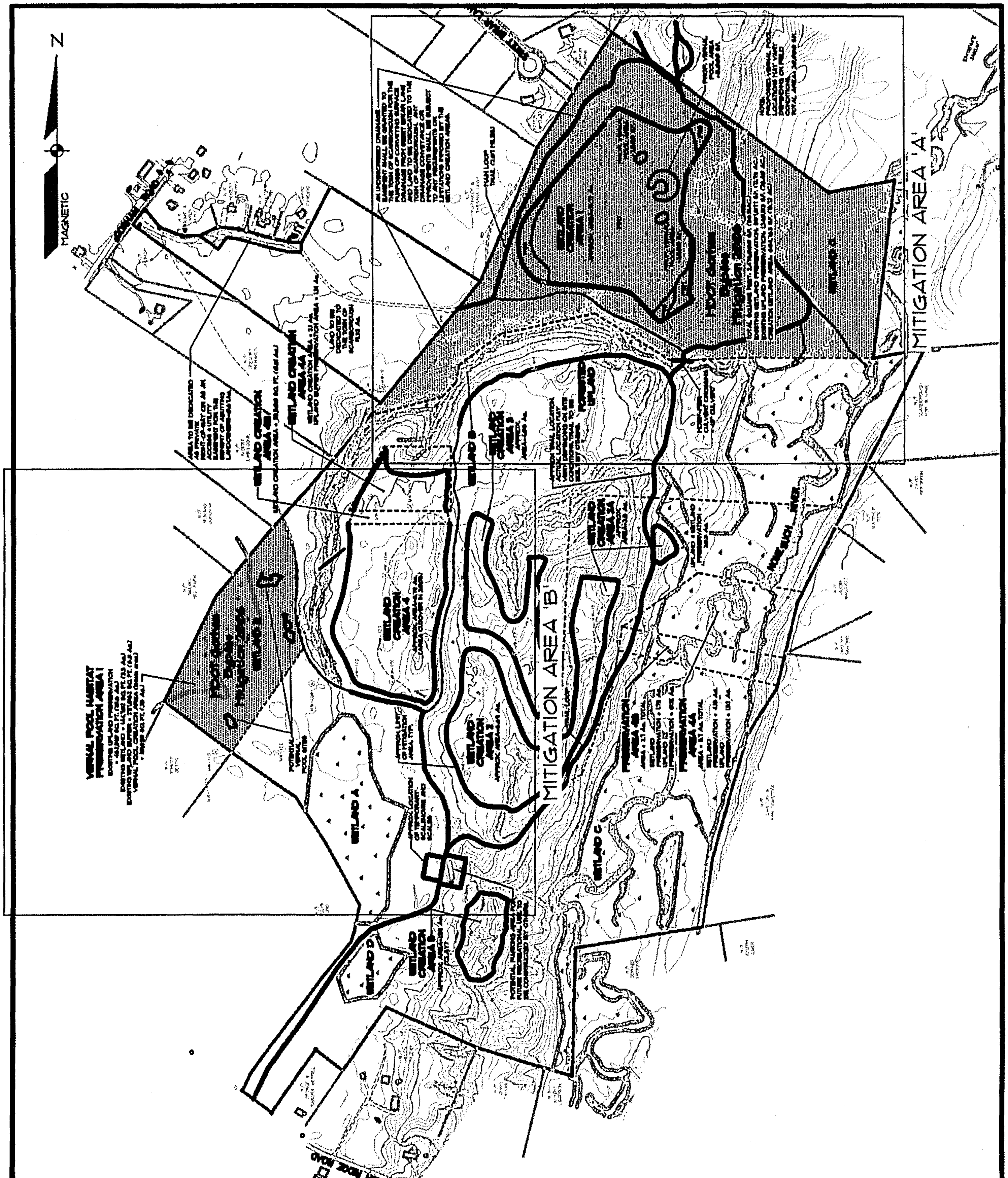
GRADING PLAN
OF:
LARRABEE FARMS WETLAND MITIGATION PROJECT
GORHAM ROAD AND BEECH RIDGE ROAD
SCARBOROUGH, MAINE

R.J. GRONDIN & SONS
11 BARLETT ROAD
GORHAM, MAINE 04038

DATE	SCALE
1-14-03	1"=100'

SHEET 3 OF 6

01494GU.dwg, 1AB.GU1



OVERALL SITE PLAN
OF LARRABEE FARMS WETLAND MITIGATION

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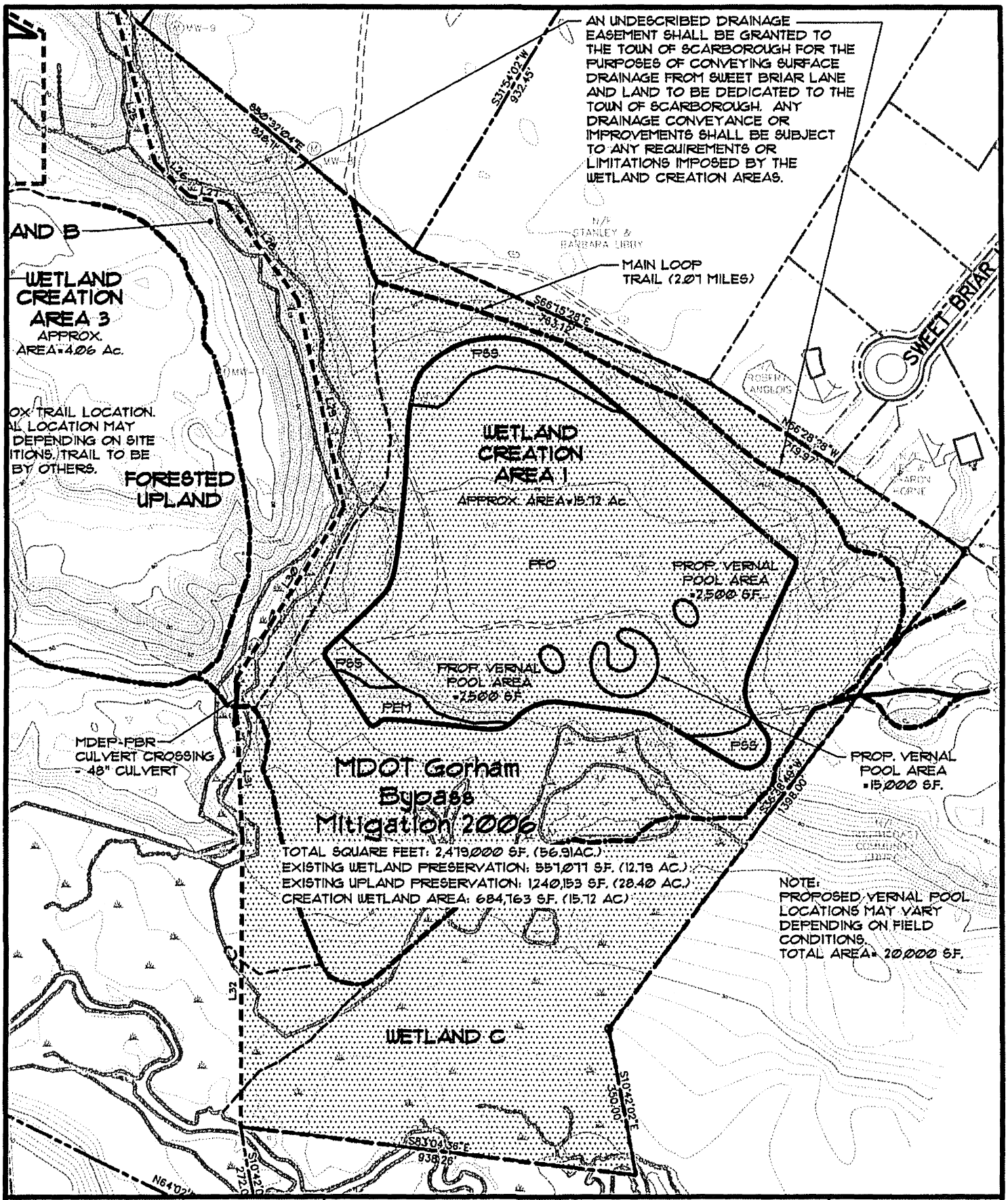
Westbrook, Me 04098-1339
Tel (207) 856-0277

SCALE:	1" = 400'
DATE:	11/30/06
SHEET:	1 OF 5

LOCATION:
GORHAM ROAD
SCARBOROUGH, MAINE

FOR:
GRONDIN AGGREGATES, LLC
GORHAM, MAINE 04038

01494GU.dwg, TAB: COE-1



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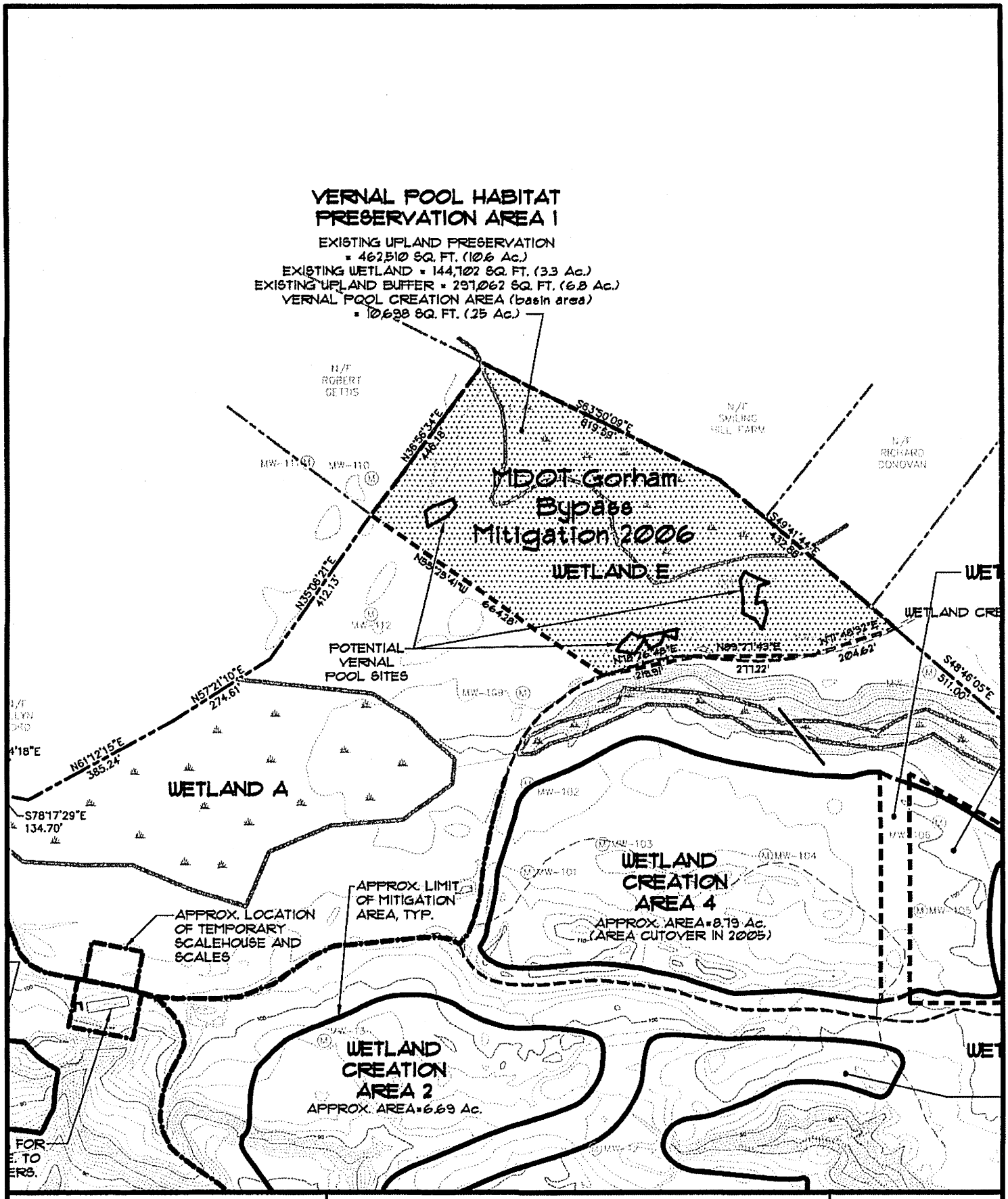
MITIGATION AREA 'A'

OF LARRABEE FARMS WETLAND MITIGATION

SCALE:	1" = 300'
DATE:	11/30/06
SHEET:	2 OF 5

LOCATION:	FOR:
GORHAM ROAD SCARBOROUGH, MAINE	GRONDIN AGGREGATES, LLC GORHAM, MAINE 04038

01494GU.dwg, TAB: COE-2



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MITIGATION AREA 'B'

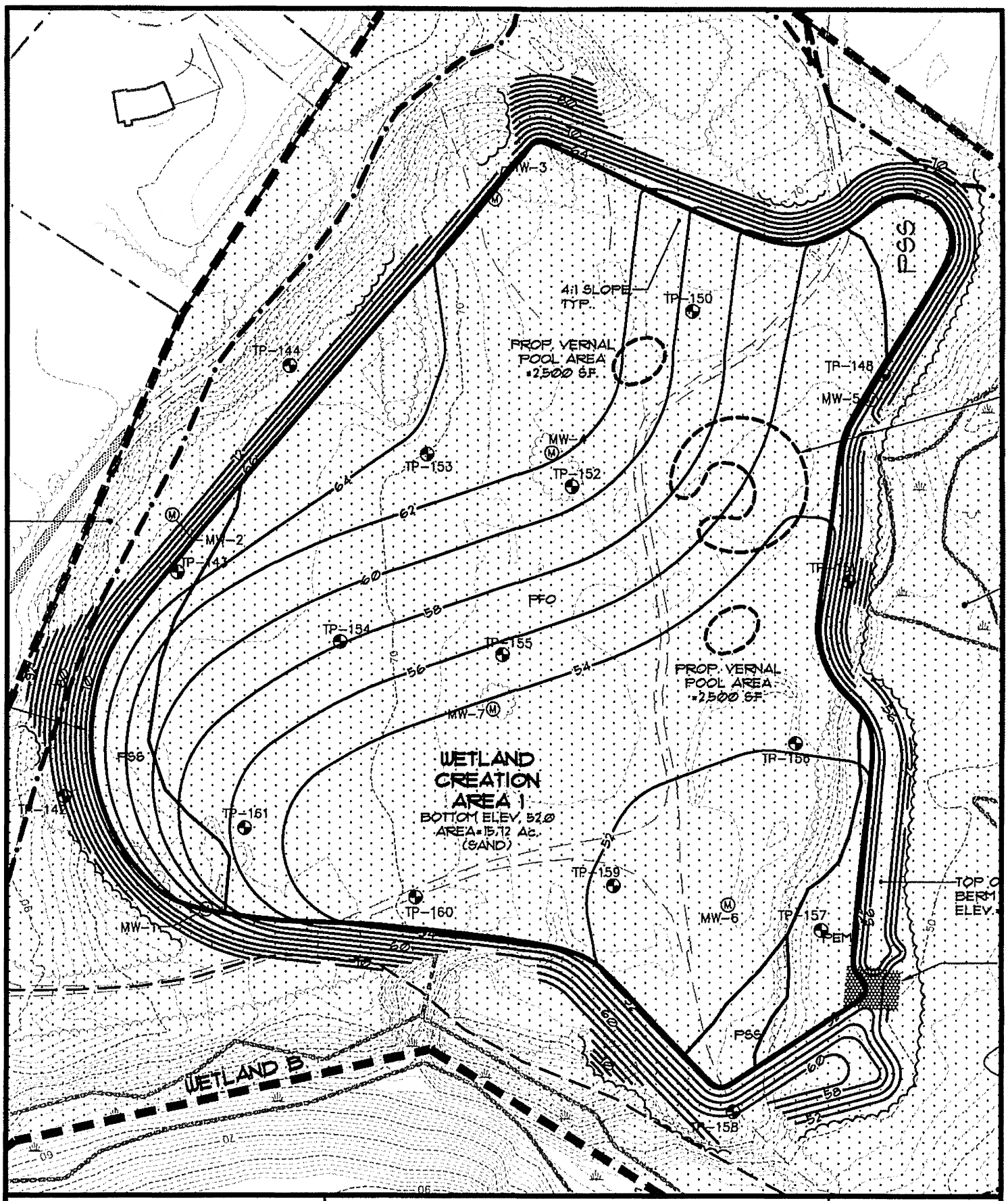
OF LARRABEE FARMS WETLAND MITIGATION

SCALE:	1" = 300'
DATE:	11/30/06
SHEET:	3 OF 5

LOCATION: GORHAM ROAD SCARBOROUGH, MAINE

FOR: GRONDIN AGGREGATES, LLC GORHAM, MAINE 04038

01494GU.dwg, TAB: COE-3



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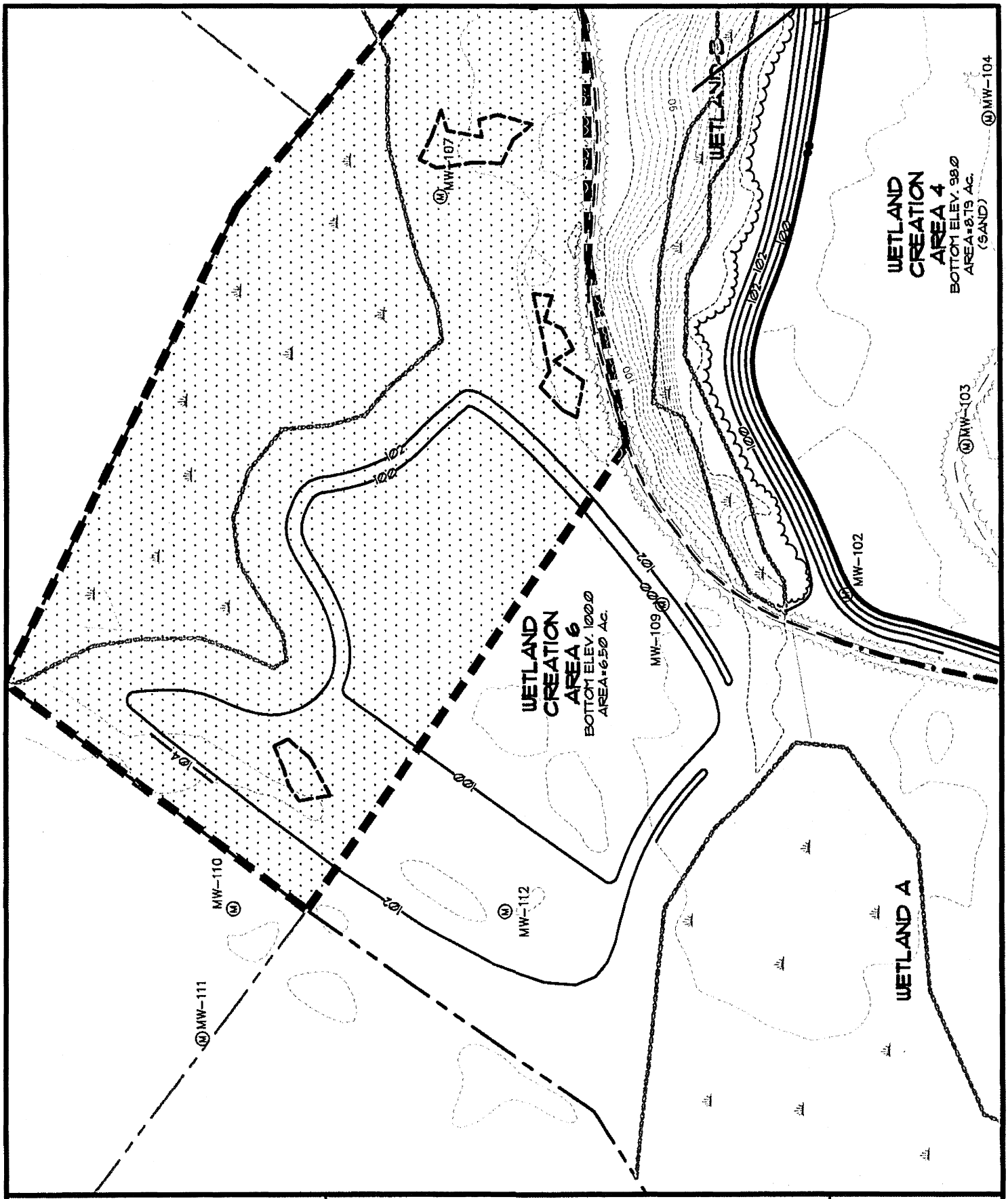
MITAGATION AREA 'A' GRADING

OF LARRABEE FARMS WETLAND MITIGATION

SCALE:	1" = 150'
DATE:	11/30/06

LOCATION:	FOR:	SHEET:
GORHAM ROAD SCARBOROUGH, MAINE	GRONDIN AGGREGATES, LLC GORHAM, MAINE 04038	4 OF 5

01494GU.dwg, TAB: COE-4



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MITAGATION AREA 'B' GRADING

OF LARRABEE FARMS WETLAND MITIGATION

SCALE:	1" = 150'
DATE:	11/30/06
SHEET:	5 OF 5

LOCATION:
GORHAM ROAD
SCARBOROUGH, MAINE

FOR:
GRONDIN AGGREGATES, LLC
GORHAM, MAINE 04038

01494GU.dwg, TAB: COE-5

Appendix 9: Deed of Conservation Easement (Draft)

(attached)

DRAFT 11-21-2006

DEED OF CONSERVATION EASEMENT
(Larrabee Farms Wetland Mitigation Site)
Scarborough, Maine

THIS GRANT OF CONSERVATION EASEMENT is made this _____ day of _____, 2006, by **GRONDIN AGGREGATES, LLC**, (hereafter "Grantor" or "Grondin"), having an address of 11 Bartlett Road, Gorham, Maine 04038, and in favor of the **STATE OF MAINE by and through its DEPARTMENT OF TRANSPORTATION** (hereinafter "Grantee" or "MaineDOT"), having an address of 16 State House Station, Augusta, Maine, and the **STATE OF MAINE, acting by and through its Department of Environmental Protection** as Third Party Enforcer, having an address of 17 State House Station, Augusta, ME 04333-0017 (hereafter "Third Party Enforcer" or "DEP").

WHEREAS, this Indenture is created pursuant to the provisions of 33 M.R.S.A § 476 through 479-B inclusive, as amended; and

WHEREAS, the Grantor holds title to certain real property situated in Scarborough, County of Cumberland, State of Maine, described in a deed from Robert Grondin and Philip Grondin to Grondin Aggregates, LLC dated February 9, 2001 and recorded in Book 16018, Page 27 of the Cumberland County Registry of Deeds (the "Grondin Property"); and

WHEREAS, the Grondin Property comprises approximately 284± acres of undeveloped land in the Nonesuch River watershed, including over one mile of frontage on the Nonesuch River, with significant natural, wildlife, and scenic functions and values ("Conservation Values"); and

WHEREAS, the Grantor has entered into a Contract Zoning Agreement with the Town of Scarborough dated August 16, 2006 and recorded in Book 24332, Page 285 of said Registry of Deeds which provides for the development of the Grondin Property for Wetland Mitigation Purposes (the "Zoning Agreement"); and

WHEREAS, in accordance with the Zoning Agreement, the Grantor intends to preserve and enhance existing wetland areas and create additional wetland areas within the Grondin Property as outlined on a plan entitled Site Plan of Larrabee Farms Wetland Mitigation Project dated January 14, 2003 attached hereto as Exhibit A (said preservation, enhancement and creation when completed collectively represent the "Improvements" or reference to the property "As Improved"); and

WHEREAS, MaineDOT has identified a portion of the Grondin Property As Improved as suitable for partial compensatory mitigation (pursuant to 23 M.R.S.A. § 153(b)(1)(G),) for the environmental effects of MaineDOT's transportation project known as the Gorham project, PIN 8151.20 (the "Project"); and

WHEREAS, through a Contract of Sale dated _____, 2006, Grantor has agreed to convey and Grantee has agreed to accept a *Conservation Easement* over a portion of the Grondin Property As Improved as described in the attached Exhibit B and as further depicted on Exhibit A as Wetland Creation Area 1, Wetland C and Wetland E (collectively, Wetland Creation Area

1, Wetland C and Wetland E as depicted on Exhibit A and as described in Exhibit B as improved represent the "Protected Property"), together with rights to access the Protected Property; and

WHEREAS, MaineDOT desires to preserve the Protected Property pursuant to 1) DEP Wetland Protection Rules, Code of Maine Rules, Chapter 310; (2) 38 M.R.S.A. § 480-A et seq.; (3) Section 404 of the Clean Water Act (22 U.S.C. § 1344) and federal regulations promulgated thereunder; and (4) pursuant to permits issued by DEP (L-21048-TG-A-N) and the United States Army Corps of Engineers; and

WHEREAS, the Protected Property is located in Scarborough, a community that is experiencing increased development of its traditional landscapes; and

WHEREAS, the Grantor and the Grantee, recognizing the Conservation Values of the Protected Property as described above, have the common purpose of conserving the values of the Protected Property by the conveyance of a Conservation Easement over the Protected Property, which easement shall benefit, protect and conserve the Conservation Values of the Protected Property, conserve and protect the indigenous plant and animal populations, and prevent the use or development of the Protected Property for any purpose or in any manner that would conflict with its improved condition, for the benefit of Cumberland County and the State of Maine; and

WHEREAS, the Grantor intends as owner of the Protected Property, to convey to the within Third Party Enforcer the Third Party Enforcement Rights contained herein; and

WHEREAS, the Grantee and Third Party Enforcer agree, by accepting this grant, to honor the intentions of Grantor stated herein and to preserve and protect in perpetuity the Conservation Values of the Protected Property for the public benefit of this generation and the generations to come; and

WHEREAS, the preservation of the Protected Property is consistent with federal, state and local governmental conservation policy.

NOW THEREFORE, in consideration of the above and the mutual covenants, terms, conditions, and restrictions contained herein, Grantor does hereby give, grant, bestow, and convey unto the Grantee, its successors and assigns forever, a *CONSERVATION EASEMENT* in perpetuity over the Protected Property consisting of the following:

1. PURPOSE

The purpose of this easement is to preserve and protect in perpetuity the natural, ecological, scenic and wildlife values of the Nonesuch River watershed by assuring that the Protected Property: (1) will be used for the purposes set out in the Grantee's Mitigation Plan for the Project dated December 1, 2006 (the "Plan"); (2) will be retained forever in its improved status; (3) will not be used in a way that will significantly impair or impede the conservation uses of the Protected Property; and (4) will be maintained in accordance with permits issued by the State of Maine, Department of Environmental Protection (Permit # _____), and the United States Army Corps of Engineers (Permit #_____).

2. RIGHTS OF GRANTEE

To accomplish the purposes of this Easement, the following rights are conveyed to the Grantee, its successors and assigns:

a. The right to preserve and protect the Conservation Values of the Protected Property;

b. The right to enter and inspect the Protected Property over other lands or easements held by the Grantor, its successors and assigns, at any reasonable time, provided that the time and manner of such entry does not unreasonably interfere with the Grantor's uses of the Protected Property permitted hereunder or the quiet enjoyment of other lands of the Grantor. Grantee shall make reasonable efforts to notify the Grantor prior to entering the property.

c. The right to prevent any activity on or use of the Protected Property that is inconsistent with the purpose of this Easement and to require the restoration of such areas or features of the Protected Property that may be damaged by any inconsistent activity or use;

d. The right to place small, unlit signs or erect barriers in a manner consistent with the terms of this Easement as may be necessary or desirable to protect the Conservation Values of and to prevent unauthorized access to the Protected Property, such signs and barriers to be subject to Grantor's approval, which shall not be unreasonably withheld.

e. The right to transfer or assign the rights in this Easement to a local land trust or another qualified conservation organization. MaineDOT shall notify the Grantor in writing prior to any such transfer.

f. The right for the Grantee, or DEP pursuant to its said Wetland Protection Rules, Code of Maine Rules, Chapter 310 as Third Party Enforcer, to enforce the terms of this Easement by proceedings at law and in equity, including the right to require the restoration of the Protected Property to its prior condition after reasonable prior written notice of any concerns or apparent violations to afford the Grantor a reasonable opportunity to correct any infringements on the restrictions herein that are the result of actions or omissions on the part of the Grantor. The parties hereto intend that Grantee, its successors and assigns, shall be primarily responsible for the enforcement of this Easement, and that the said Third Party Enforcer will assume such responsibility only if Grantee shall fail to enforce such. Nothing herein shall be construed to entitle the Grantee or the Third Party Enforcer to bring an enforcement action against the Grantor for any injury to or changes in the Protected Property due to causes beyond the Grantor's control, such as changes caused by fire, flood, storm, industrial accident, and earth movement, or the unauthorized wrongful acts of a third party, or for any prudent action taken by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Protected Property resulting from such causes. The Third Party Enforcer shall not be entitled to bring enforcement action against the Grantee or the Grantor for the unauthorized wrongful use by a third party of off-road vehicles on the

Property provided that reasonable measures have been made to discourage such use, consistent with the terms of this Easement.

g. The Protected Property has been surveyed and Grantor has the obligation to maintain boundaries in a clearly marked condition for MaineDOT's monitoring and enforcement purposes. If the boundaries are not so maintained, MaineDOT has the right to reestablish and mark Easement boundaries on the Protected Property only if and to the extent necessary to determine whether a prohibited land use has occurred within the limits of the Protected Property.

In addition, the Grantee has the following rights required to satisfy permitting requirements associated with the Project, which shall terminate upon the completion of MaineDOT's monitoring period as described herein:

a. The right to monitor the physical and biological conditions of the enhanced portion of the Protected Property for ten (10) years, or as necessary to meet the permit requirements for the Project;

b. The right to conduct remedial activities within the enhanced portion of the Protected Property, such as maintaining and replanting vegetation, controlling weeds and repairing erosion.

c. The right, subject to prior notification of Grantor, within the Protected Property to cut, dig, remove, spray with herbicide (in accordance with state and federal rules governing its use), and biologically control any non-native invasive species, such as, but not limited to, purple loosestrife, common reed, Japanese knotweed, and common buckthorn, that threaten the native plant or animal communities or the survival of the enhancement plantings within the Protected Property.

3. EASEMENT PROHIBITIONS

As of the date of this Easement, the Protected Property consists of approximately 67.5 acres with three specific wetland areas (see Exhibit B). The Wetland Creation Area 1 consists of an active aggregate mining operation with intact wooded upland buffers. As part of this agreement, the disturbed mining areas will be transformed into a forested wetland system, and the upland buffers will be preserved. The Wetland C area consists of forested Nonesuch River floodplain that will be preserved. Wetland E consists of forested upland and wetland, where three vernal pools will be constructed. There are no buildings or other structures present. The Protected Property has been surveyed and corners pinned as shown on the said Right of Way Map to define the limits of the Protected Property.

The conveyance of the within described easement rights precludes and prohibits the following uses of the Protected Property, any of which shall constitute a violation under the terms of this Conservation Easement.

a. Filling, paving, dumping, excavation or other alteration to the surface of the Protected Property other than that caused by the forces of nature.

b. Activities that result in significant compaction or erosion of soils, or trampling or destruction of vegetation of the Protected Property, except in an emergency and when necessary to accomplish the rights reserved by the Grantor and Grantee, their heirs, successors and assigns.

c. Construction of any new temporary or permanent structures, including utilities, within the Protected Property.

d. The cutting, mowing, destruction or removal of standing timber, plants, shrubs or other vegetation except that the Grantor shall have the right to:

1. Clear vegetation and forest cover in the event of an emergency to prevent the spread of fire and, when necessary, to alleviate conditions that create an unacceptably high risk of fire, and that pose a hazard to human safety;

2. Clear vegetation that is damaged or destroyed by the forces of nature, such as fire or disease, and, with the prior written approval of the Grantee, when necessary to prevent the spread of disease;

3. Cut dead trees along the riverbank that pose a significant threat to the stability of the soils or human safety, provided that prior written notice shall be given to the Grantee;

4. Cut, dig, remove, spray with herbicides (in accordance with state and federal regulations governing its use), and biologically control any non-native invasive species such as, but not limited to, purple loosestrife, common reed, Japanese knotweed, and common buckthorn, that threaten the native plant or animal communities or the survival of the enhancement plantings within the Protected Property.

e. Commercial, industrial, quarrying, or mining activities within the Protected Property, together with the placement, storage, dumping of soil, loam, peat, sand, gravel, concrete, rock or other mineral substances other than that caused by the forces of nature within the Protected Property, except as necessary for the Grantor to maintain access roads and footpaths permitted herein in a passable condition using only spot treatments of soil, loam or other natural pervious granular materials. This provision shall not be interpreted to allow an improved road or driveway.

f. The ditching, draining, manipulation or alteration of natural watercourses or hydrology, or water withdrawals from created pools within the enhanced portions of the Property.

g. The placement, storage or dumping of refuse, trash, debris, waste materials, vehicle bodies or parts, pollutants or other fill materials within the Protected Property.

h. Any other activity on or use of the Protected Property inconsistent with the purposes of this Easement is prohibited.

4. ADDITIONAL RIGHTS RESERVED TO GRANTOR

a. The Grantor shall have the right to sell, give, or otherwise convey its fee interest in the Protected Property, provided such conveyance is subject to the terms of this Easement and the condition that the Protected Property must remain in its current configuration, and shall not be divided, subdivided, or pledged as security for a loan, or otherwise conveyed in lots or parcels. Notwithstanding the foregoing, the Grantor shall have the right to transfer any portion of the Protected Property to the Grantee or any other qualified conservation organization, provided that such conveyance is subject to the terms of this Easement. The Grantor agrees to provide written notification to Grantee of any such transfer of ownership.

b. This Easement in no way implies a right of access by the general public to any portion of the Protected Property. Grantor shall have the right to permit public and private use of the Protected Property for permitted uses, so long as such uses are conducted in a manner that preserves the Conservation Values of the Protected Property and are in accordance with the Zoning Agreement. The Grantor and Grantee reserve the rights and protections against liability for injury to the public to the fullest extent of Maine law, pursuant to 14 M.R.S.A §159-A and all other applicable statutes.

5. CONTRACT ZONING AGREEMENT

Grantor covenants and agrees that all activities involving the Protected Property shall be carried out in accordance with the requirements of the within referenced Zoning Agreement.

6. TAXES

Grantor covenants and agrees to pay any and all real property taxes and assessments levied by competent authority on the Protected Property, if any, and bear all costs and responsibility for upkeep of the Protected Property, and does hereby relieve, indemnify and hold harmless the Grantee therefrom.

7. SUCCESSORS

Except as otherwise indicated herein, the covenants, terms, conditions, and restrictions of this Easement shall be binding upon, and inure to the benefit of, the parties hereto and their respective heirs, executors, successors and assigns, and shall continue as a servitude running in perpetuity with the Protected Property.

8. TERMINATION OF RIGHTS AND OBLIGATIONS

A party's rights and obligations under this Easement terminate upon transfer of the party's interest in the Easement or Protected Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

9. NOTICES

Any communications, requests, or notices required or appropriate to be given under this Agreement shall be in writing and mailed via Certified Mail. Said communications, requests or notices shall be sent to the other party as follows:

FOR THE GRANTEE:	Maine Department of Transportation Attn.: Deane Van Dusen Environmental Office 16 State House Station Augusta, Maine 04333-0016
FOR THE GRANTOR:	Grondin Aggregates, LLC Attn.: Kenneth Grondin, President 11 Bartlett Road Gorham, ME 04038

10. RECORDATION

Grantee shall record this instrument in timely fashion in the official records of Cumberland County, Maine, and may re-record it at any time as may be required to preserve its rights in the Easement.

11. CONTROLLING LAW

The interpretation and performance of this Easement shall be governed by the laws of the State of Maine. This Easement shall be liberally construed in favor of the Grantee to effect the purpose of this Easement.

12. SEVERABILITY

If any provision of this Easement or the application thereof is found to be invalid, the remainder of the provisions of the Easement, or the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

13. ENTIRE AGREEMENT

This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement, and supersedes all prior discussions, negotiations, understandings or agreements relating to the Easement, all of which are merged herein.

14. ACCEPTANCE BY HOLDER AND THIRD PARTY ENFORCER

By execution hereof, Grantee and the Third Party Enforcer hereby accept the rights and duties set forth in this instrument.

TO HAVE AND TO HOLD the said Conservation Easement unto the Grantee, its successors and assigns forever, and the Third Party Rights unto the Third Party Enforcer, its successors and assigns forever.

IN WITNESS WHEREOF, Grantor, Grantee, and Third Party Enforcer have executed and sealed this document the day and year first above written.

GRANTOR:
Grondin Aggregates, LLC

_____
Witness

By:_____
Kenneth Grondin
Duly Authorized

STATE OF MAINE
County of Oxford
Dated:_____

Then personally appeared the above named Kenneth Grondin, _____of Grondin Aggregates, LLC, and acknowledged the foregoing instrument to be his free act and deed.

Before me,

_____
Attorney/Notary Public
Print Name:
My Commission Expires:

GRANTEE:
STATE OF MAINE
Department of Transportation

_____
Witness

By:_____
David A. Cole, Commissioner
Duly authorized

THIRD PARTY ENFORCER:

STATE OF MAINE
Department of Environmental Protection

_____	By:_____
Witness	David P. Littell, Commissioner
	Print Name:_____
	Duly authorized

EXHIBIT A
Site Plan Larrabee Farms

EXHIBIT B
Easement description of Protected Property

Appendix 10: Purchase and Sale Agreement (Draft)

(attached)

CONTRACT OF SALE
Of Conservation Easement

THIS CONTRACT OF SALE made as of this _____ day of _____, 2006, between the **STATE OF MAINE, acting by and through its DEPARTMENT OF TRANSPORTATION,** with an address of 16 State House Station, Augusta, Maine 04333-0016 (the "Department" or "Purchaser") and **GRONDIN AGGREGATES, LLC,** a limited liability company organized under the laws of the State of Maine, with an address of 11 Bartlett Road, Gorham, Maine 04038 ("Grondin" or "Seller");

WITNESSETH:

For valuable consideration received, the Department and Grondin hereby covenant and agree as follows:

Section 1. Sale of the Premises and Acceptable Title:

1.1 Notwithstanding Section 1.2 herein, Seller agrees to sell, and Purchaser agrees to purchase, a Conservation Easement encumbering that certain property located in the Town of Scarborough, County of Cumberland, and State of Maine, as described in **Exhibit A** attached hereto (the "Premises") and as further depicted as Wetland Creation Area 1, Wetland C, and Wetland E on a plan identified as Site Mitigation Plan of Larrabee Farms Wetland Mitigation Project, Gorham Road and Beech Ridge Road, Scarborough, Maine dated January 14, 2003 (entire site plan being the "Grondin Property"), and attached hereto as **Exhibit B**, on the terms and conditions set forth in this Contract.

1.2 Seller shall convey, and Purchaser shall accept, good clear record and marketable easement interest to the Premises conveyed by Conservation Easement Deed, a draft copy of which is attached hereto as **Exhibit C**, notwithstanding Section 4.2 herein, free and clear of any and all liens, encumbrances, or other defects that would otherwise render it unmarketable and subject only to building and zoning restrictions. The parties agree that such matters shall constitute title defects.

Section 2. Purchase Price:

2.1 The purchase price for the Premises shall be Two Million Two Hundred Six Thousand, Two Hundred Eighty Eight Dollars **($2,206,288.00)** (the "Purchase Price"), based on $157,592.00 per "compensation acre of credit", with the Premises totaling 14± compensation acres of credit.

2.2 The Purchase Price is based on conveyance of good, clear record and marketable easement interest as required in Section 1.2 above, and is payable at the time of closing by check from the Treasurer, State of Maine. In the event that Seller fails to close hereunder for any reason other than the default of Purchaser, Purchaser shall have all remedies available at law and equity.

2.3 In the event that the Purchaser determines in good faith that actions pursuant to Sections 1.2 or 4.1 to cure unmarketable, questionable or defective title or boundaries are or would be insufficient, uneconomic, or for other reasons unacceptable to it, or if the Purchaser determines in good faith that the results of its work under Section 6.1 herein are unsatisfactory, then the Purchaser shall so notify the Seller and the parties shall negotiate in good faith to establish an adjusted purchase price. If the parties are unable to reach an agreement upon such a price within fourteen (14) days after such notice, then either party shall have the right to elect to terminate this Contract within seven (7) days thereafter. In the event that the price is adjusted under this provision, then such adjusted price thereafter shall constitute the Purchase Price under this Contract. If either party elects to terminate this Contract pursuant to this section then, upon notice thereof to the other party, this Contract shall be void.

Section 3. Closing of Title:

3.1 Except as otherwise provided in this Contract, the closing of title for purchase of the Conservation Easement pursuant to this Contract (the "Closing") shall take place on or before **December 31, 2008**. The Closing shall be held at a location mutually agreed upon by the parties.

3.2 The Closing of title as agreed to herein shall be expressly subject to the following terms and conditions:

a. The Purchaser's ability to secure all necessary permitting approval from the State of Maine, Department of Environmental Protection and the United States Army Corps of Engineers, permitting the Purchaser to utilize the Premises for compensatory wetland mitigation;

b. The availability and continued appropriation of funds, both Federal and State, and in no event shall the Purchaser be liable for any payments hereunder in excess of such available appropriated funds.

c. The Seller shall have constructed a wetlands mitigation site on the Premises pursuant to the Purchaser's Mitigation Plan dated December 1, 2006 (the "Plan"), a copy of which has been provided to the Seller so as to permit Seller to deliver the Property to the Purchaser by the Closing Date in a so-called built-out condition. The Premises as constructed shall meet the requirements of the State and Federal permitting authorities in order to satisfy the off-site mitigation required of the Purchaser in connection with the Purchaser's highway project in Gorham, Maine identified as Gorham PIN 8151.20, Federal Identification No. STP-8151(200)X (the "Project").

d. In constructing and planning the wetlands mitigation site on the Premises, Seller shall comply with all requirements of the Contract Zoning Agreement between the Seller and the Town of Scarborough dated August 16, 2006 and recorded in Book 24332, Page 285 of said Registry of Deeds which provides for the development of the Grondin Property for Wetland Mitigation Purposes.

e. The Seller shall enter into a Monitoring Services Agreement (the "MSA") with the Purchaser at the time of the Closing pursuant to which Seller will perform wetlands monitoring services as described in the MSA.

f. Seller shall execute a Waiver of Rights under the Federal Uniform Relocation Act attached hereto as **Exhibit D**.

Section 4. Objections to Title. Failure of Seller or Purchaser to Perform:

4.1 Notwithstanding Section 3.2 herein, Purchaser will order an examination of title. Purchaser shall give Seller notice of defects in the title, if any, together with any request for an extension of the Closing as hereinafter provided, at least ten (10) days prior to the Closing. Upon the receipt of such notice of defects and a request for an extension of the Closing, the Closing hereunder shall be extended automatically for a period of ninety (90) days to enable the Purchaser, at its own expense, to take steps to cure the title defects. The Seller shall fully and in good faith cooperate with the Purchaser in such efforts. In the event that the Purchaser determines on or before the Closing, as extended, that actions to be taken by it to cure the title defects are or would be insufficient, uneconomic, or for other reasons unacceptable to it, in part or as a whole, it may elect to exercise the rights set forth under Section 2.3 herein.

4.2 Seller agrees that, should the Purchaser in its sole discretion decide to acquire the Conservation Easement over the Premises by eminent domain, Seller agrees to a so-called friendly condemnation, so long as Seller is paid the Purchase Price hereunder and, by the execution hereof, the Seller waives and forever releases to the Purchaser any and all rights to a hearing on said taking, all rights to compensation except as provided in this Contract, all rights of appeal and any and all rights to relocation benefits as pertain to the Premises, if any. No condemnation shall occur before the Closing Date unless specifically agreed to by the Seller. In the event of condemnation, the Purchase Price shall be issued to the Seller in one check payable to the Seller and any mortgagees or lien holders of record as of the date of Closing.

Section 5. Destruction, Damage or Condemnation:

5.1 If, prior to Closing, there shall occur any material damage or destruction to the Premises by fire or other casualty or any material taking of the Premises (or any part thereof) by eminent domain and Seller shall not have substantially repaired or restored such damage or destruction prior to the Closing, Purchaser shall have the option (i) to receive the insurance proceeds or the condemnation award resulting from the loss or the taking, as the case may be, but without any abatement of its obligations, or (ii) to terminate this Contract. Upon termination pursuant to clause (ii) above, neither Seller nor Purchaser shall have any obligation or liability to or against the other hereunder. Purchaser shall exercise this option by notice to Seller within ten (10) days after notice from the Seller specifying the occurrence of the damage or destruction or the taking by eminent domain. Material damage, destruction, or taking shall mean damage, destruction or taking in excess of $2,500.00 and any destruction, damage, or taking which (in the sole judgment of the Purchaser) creates a long-term or permanent interference with, or has a negative impact upon, the purposes of the acquisition by the Purchaser.

5.2 If, prior to Closing, there shall occur any immaterial damage or destruction to the Premises by fire or other casualty or any immaterial taking of the Premises (or any part thereof) by eminent domain, this Contract shall remain in full force and effect, and the Closing shall nevertheless occur. Purchaser shall not be entitled to receive any abatement of the Purchaser's obligation hereunder, and Seller will assign to Purchaser the insurance proceeds or condemnation award payable as a result of such loss or taking, or Seller's right to receive such insurance proceeds or condemnation award. Immaterial damage or destruction shall mean damage or destruction in an amount of $2,500.00 or less.

Section 6. Access to the Premises:

6.1 Seller covenants that, between the date of this Contract and the Closing, Seller shall allow Purchaser or Purchaser's representatives access to the Premises, and Purchaser or Purchaser's representatives shall have the right to perform water, soil, and engineering tests (including, without limitation, tests for hazardous wastes, toxic substances and for the existence of any underground tanks) on the Premises and to conduct boundary, resource and topographical surveys. Provided, however, that (a) such access does not interfere with the conduct of Seller's business, if any; (b) such persons enter onto the Premises at their own risk of loss and harm; and (c) the Purchaser shall restore the Premises in the event of any significant disturbance as a result of such work. In the event that Purchaser is not satisfied with the results of its tests, including without limitation those for water quality, hazardous wastes, underground tanks, or toxic substances, it may seek an adjustment or terminate this Contract in accordance with Section 2.3. All test and survey results shall be made available to the Seller upon request and, in the event that this Contract is terminated, the information and documentation relating to such work shall become the property of the Seller to the extent of the Purchaser's power of transfer over such work.

Section 7. Apportionments:

7.1 At all times, both before and after the Closing, all real estate property taxes assessed against the Premises shall be the responsibility of the Seller. The Seller represents that the Premises are not subject to commercial forestry excise taxes, Farm Land, Open Space or Tree Growth Tax laws.

7.2 Certified municipal liens, if any, shall be paid in full by the Seller. In the event a pending lien of any type has been filed against the subject property which has not been certified as of the date of Closing, and the work and improvements for which the lien was filed have been completed prior to the Closing, despite the fact that the pending lien has not been certified, such lien will be paid by the Seller. Any lien filed against the subject property after the Closing that is not directly related to actions taken or caused to be taken by the Purchaser in fulfilling its conservation objectives shall be the sole responsibility of the Seller. Any such lien filed as a result of the Seller carrying out its obligations defined in the MSA shall be the sole responsibility of the Seller.

7.3 The parties hereto acknowledge that the transfer of the Conservation Easement is not subject to real estate transfer taxes pursuant to 36 M.R.S.A. §4641-C(1), as amended.

Section 8. Representations by Seller:

8.1 Seller represents and warrants to Purchaser that, to the best of its actual knowledge, no hazardous substance or toxic waste has been generated, treated, or stored in or on the Premises, including without limitation any underground tanks; that there is no hazardous substance or toxic waste in or on the Premises that may affect the Premises or any use thereof or may support a claim or cause of action under the common law or under any federal, state, or local environmental statute, regulation, ordinance, or other environmental regulatory requirement; nor has any action been instituted for enforcement of same.

Section 9. Waiver:

9.1 No provision of this Contract may be waived, changed, or modified orally, but only by an agreement in writing signed by the party against whom the enforcement of any waiver, change or modification is sought.

Section 10. Notices:

10.1 Any communications, requests, or notices required or appropriate to be given under this Contract shall be in writing and mailed via U.S. Mail. Said communications, requests or notices shall be sent to the other party as follows:

Seller:	Grondin Aggregates, LLC Attn.: Kenneth Grondin 11 Bartlett Rd Gorham, ME 04038
Purchaser:	Maine Department of Transportation Environmental Office Attn.: Deane Van Dusen 16 State House Station Augusta, ME 04333-0016
Purchaser's Attorney:	Toni L. Kemmerle, Esq. c/o Theresa L. Pulver, Legal Administrator MaineDOT Office of Legal Services 16 State House Station Augusta, ME 04333-0016

Section 11. Capacity:

11.1 Each party represents to the other that: such party has full power and authority to perform its obligations hereunder and that any person or entity executing this Contract by or on behalf of the representing party has the authority to act on behalf of and bind the representing party; and that any person or entity executing any closing documents by or on behalf of the representing party has been and will be duly authorized to act on behalf of the representing party; and that the performance of this Contract will not be in violation of any law, ordinance, rule,

regulation or order of any agreements to which the representing party is a party or by the terms of which is bound.

Section 12. Governing Law:

12.1 This Contract is made pursuant to and shall be governed by and construed in accordance with the laws of the State of Maine.

Section 13. Expenses:

13.1 Whether or not the transactions contemplated pursuant to this Contract are consummated, each party hereto, unless this Contract expressly provides otherwise, shall pay all costs and expenses incurred by it and incident to the preparation and performance of this Contract, and matters relating thereto, and such costs and expenses shall not be reimbursable by the other party hereto. Such costs shall include, but are not limited to, all closing costs, as well as all costs of survey, testing and title examination.

Section 14. Successors and Assigns:

14.1 This contract shall be binding upon and inure to the benefit of the legal representatives, successors and assigns of the parties hereto.

Section 15. Entire Agreement and Survival:

15.1 All understandings and agreements heretofore had between the parties hereto are merged into this Contract. The covenants, agreements and representations made by the parties and contained in this Contract shall survive the Closing.

Section 16. Counterparts:

16.1 This Contract may be executed in several counterparts, each of which shall be deemed an original, all of which together shall constitute one and the same Contract.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals on the day and year first above written.

SELLER:
Grondin Aggregates, LLC

_____
Witness

By:_____
Kenneth Grondin
Duly Authorized

PURCHASER:
State of Maine

Department of Transportation

_____
Witness

By:_____
Ken Sweeney, Director
MaineDOT Bureau of Project Development
Duly Authorized

EXHIBIT A

Description of Premises

EXHIBIT B

Copy of Site Plan Larrabee Farms Wetland Mitigation Project

EXHIBIT C

Conservation Easement

EXHIBIT D

Waiver of Rights

Appendix 11: Narrative describing the available literature or experience to date (if any) for carrying out the compensation work;

The Larrabee Farms Wetland Mitigation Site design team for the MaineDOT Gorham Bypass Wetland Mitigation Project includes experts in several fields. The project team includes the following:

Professional Wetland Scientists	Boyle Associates
Professional Engineers	Sebago Technics
Geotechnical Engineers, Geohydrologists	R.W. Gillespie & Associates
Project Owners and Construction Management	R.J. Grondin & Sons; Grondin Aggregates

Mitigation design and planting plans will be designed based on the project team's vast experience in mitigation sequencing and design. Further information sources include the following literature:

Hammer, Donald A. 1997. Creating Freshwater Wetlands Second Edition. Lewis Publishers, Boca Raton.

Harker, Donald; G. Libby, K. Harker, S. Evans, and M. Evans. 1999. Landscape Restoration Handbook Second Edition. Lewis Publishers, Boca Raton.

Marble, Anne D. 1992. A Guide to Wetland Functional Design. Lewis Publishers, Boca Raton.

Payne, Neil. 1992. Techniques for Wildlife Habitat Management of Wetlands. McGraw-Hill, New York.

Thunhorst, Gwendolyn A. 1993. Wetland Planting Guide for the Northeastern United States. Environmental Concerns, Inc, Maryland.

U.S. Army Corps of Engineers. 2006. Checklist for Review of Mitigation Plan (DRAFT 10/28/2006). United States Army Corps of Engineers, New England District Regulatory Branch.

Biebighauser, Thomas R. 2004. A Guide to Creating Vernal Ponds. U.S.D.A Forest Service, Kentucky.

Maine Audubon Society. 1999. Maine Citizen's Guide To Locating and Documenting Vernal Pools. Falmouth, ME.

Vernal Pool Construction Workshop. www.epa.gov. 2004. U.S. Environmental Protection Agency. 10 November 2006. <http://www.epa.gov/bioindicators/html/vernal_pool_construction.html>.