TOWN OF MILFORD, NEW HAMPSHIRE
OFFICE OF COMMUNITY DEVELOPMENT
1 UNION SQUARE, MILFORD, NH 03055 TEL: (603)249-0620 WEB: WWW.MILFORD.NH.GOV

STAFF MEMO

Date: February 24, 2021

To: Town of Milford Planning Board

From: Jason Cleghorn, Town Planner

Subject: **SP2021-08 Andrew and Krista Gardent and A.C. Engineering & Consulting (applicants/owners), 637 North River Road, Map 3, Lot 12.** Public Hearing for the review of a major site plan related to the excavation of approximately 70,000 cubic yards of material for construction of a new driveway, single family residence, and ~5,000 s.f. agricultural barn with associated stormwater control and re-contouring activities for planned agricultural/silvicultural fields.

BACKGROUND:
The applicant is before the Planning Board seeking approval of a major site plan application within Map 3 Lot 12 for the excavation of sand and gravel of approximately 70,000 cubic yards to be used in the construction of an access driveway and future agricultural fields and associated future farm and silvicultural (tree farm) uses. The application was continued from the March 16, 2021.

ADDRESS:
637 North River Road

EXISTING USE:
The property has been partially excavated and an existing access road traversing northward toward the rear of the parcel has been created along a wetland system, which created access to a future homestead site.

LOT AREA:
The property totals approximately 31 acres. The area to be excavated is in a smaller sub-area of around +/- 4 acres.

APPLICATION STATUS:
The application is complete and ready to be accepted. The Board will need to make a determination of regional impact.

NOTICES:
Notices were sent to all property abutters on February 24, 2021.

ZONING DISTRICT/INFORMATION:
The subject property is within the Residential "R" District: The intent of the Residence "R" District is to provide for low-density residential and agricultural land uses, and other compatible land uses, that are sensitive to the rural character and environmental constraints existing in the district.

Zoning Ordinance § 5.04.1 (D) permits the harvesting of natural resources, which sand and gravel excavation such as this major site plan contemplates would fall under.

EXISTING CONDITIONS:
The subject property, Tax Map 3, Lot 12 is a large 31 acre parcel with limited frontage along North River Road. The property is flanked on the west side by a linear wetland system and on the east side by single family residences along Cortland Rd. The property itself is narrow nearest the North River Road frontage and widens as it moves northward. The

parcel is approximately 2,700 (~1/2 mile) feet in depth. An access road traversing the property has already been constructed and excavation has occurred onsite without benefit of the Alteration of Terrain permit from NHDES or the major site plan review as part of this application.

A 12-foot access road (driveway) begins at the property's frontage along North River Road and extends up and over an esker (*glacial deposit of organic material in a linear formation*) toward the rear of the property. Excavation has occurred along the slopes of the access road although it should be noted that it appears after staff made a site visit that the applicant did a thorough job with silt fencing and stormwater management, in general. The property would be served in the future via well and septic as public water and sewer lines end at the other side of the Veterans Bridge over the Souhegan River.

TRAFFIC AND ACCESS MANAGEMENT:

Vehicular ingress and egress to the property will be a single entrance driveway connection onto North River Road. Through discussions with the NH DOT, Town Staff, and the applicant, all parties have agreed to shift the driveway over as previously discussed and the site plan now reflects this. This will serve to shift the driveway away from the single family residence at Map 6 Lot 27, helping to mitigate impacts to that residence. The applicant has provided information on the haul route. The material is being taken to 412 Elm Street, a distance of 1.0 miles from the site.

OPEN SPACE/LANDSCAPING:

As part of *Milford Gravel and Earth Removal Regulations 2014*, Staff would request that the applicant as contemplated in *§ Article V (9) and § Article IX (2)* that a vegetative buffer of arborvitae or other similar plant material be constructed on but not limited to the boundary of the property with **Map 4 Lot 3-2** to minimize the impact of the haul trucks, the sand and gravel separation via shaker/separator and the general impact of the operation on those particular adjacent properties. Staff would welcome the Planning Board's input as to other areas in which it may believe that additional sound reducing vegetative barriers would benefit the adjacent public and the operation.

DRAINAGE:

Although the project is not located within the 100-year flood plain as shown on the Flood Insurance Rate Map Number 330096, dated September 25, 2009, the properties fall within the Milford Groundwater Protection Zone 2 Overlay.

PARKING: N/A

LIGHTING PLAN: N/A

BUILDING ELEVATIONS: N/A

INTERDEPARTMENTAL REVIEWS:

Ambulance:

Assessing:

Building Department:

Conservation Commission:

Fire Department: No comments.

Heritage Commission:

Police Department: No comments.

Public Works:

1. Driveway sloping does get close to wetland buffer in one spot (near match line), may require some extra siltation protection.

SoRLAC: N/A

Water Utilities:

Zoning Administrator:

Stormwater:

1. Borings or test pits must be added to the plans to verify water table elevations in the excavation area.

2. Update the Sequence of Construction to reflect the excavation process.

Planning Department:

1. Article X, § (A and B) of the *Milford Gravel and Earth Removal Regulations* (*MGERR* hereafter) will require a yearly $50.00 permit fee for future inspections and compliance and a bond of $7,500 per acre of any excavated area for potential reclamation to be made by the Town(in lieu of applicant reclamation) will be required moving forward.
2. What were the results of any soil borings or test pits to determine groundwater levels onsite?

Informational comments:

1. As work has already been done without benefit of an Alteration of Terrain (AoT) permit for NHDES or site plan approval from the Town of Milford, **no additional excavation should occur** until both of these permitting activities are completed.
2. The hours of operation as well as the days of the week are limited by the *MGERR*. Moving forward, strict adherence to these dates and times will be paramount to the success of the operation and the minimization of impact on adjacent residences.
3. The location of the shaker/separator will have a large impact on the adjacent neighbors. While it is understood that the equipment will need to be moved according to the area being excavated, please be diligent in choosing potential locations for it which minimize auditory impacts to those neighboring properties. Any temporary (or permanent) sound screening adjacent to the shaker/screener which might reduce the sound will be constructive.

Comments and recommendations provide an overview of areas needed to be addressed at the Public Hearing or shown as part of the application:

STAFF RECOMMENDATIONS:

The applicant should be prepared to address all of the comments raised by the Planning Board, Conservation Commission, Town Consultants, Staff, and public pertaining to the Subdivision Plan. The Planning Board's discussion should center on the applicant's need to cure the outstanding state and local permitting issues including the outstanding Alteration of Terrain Permit.

Aerial of 637 North River Rd, Map 3 Lot 12.

Existing Conditions at the frontage along N. River Rd.

Photos along the access driveway (taken in the summer)

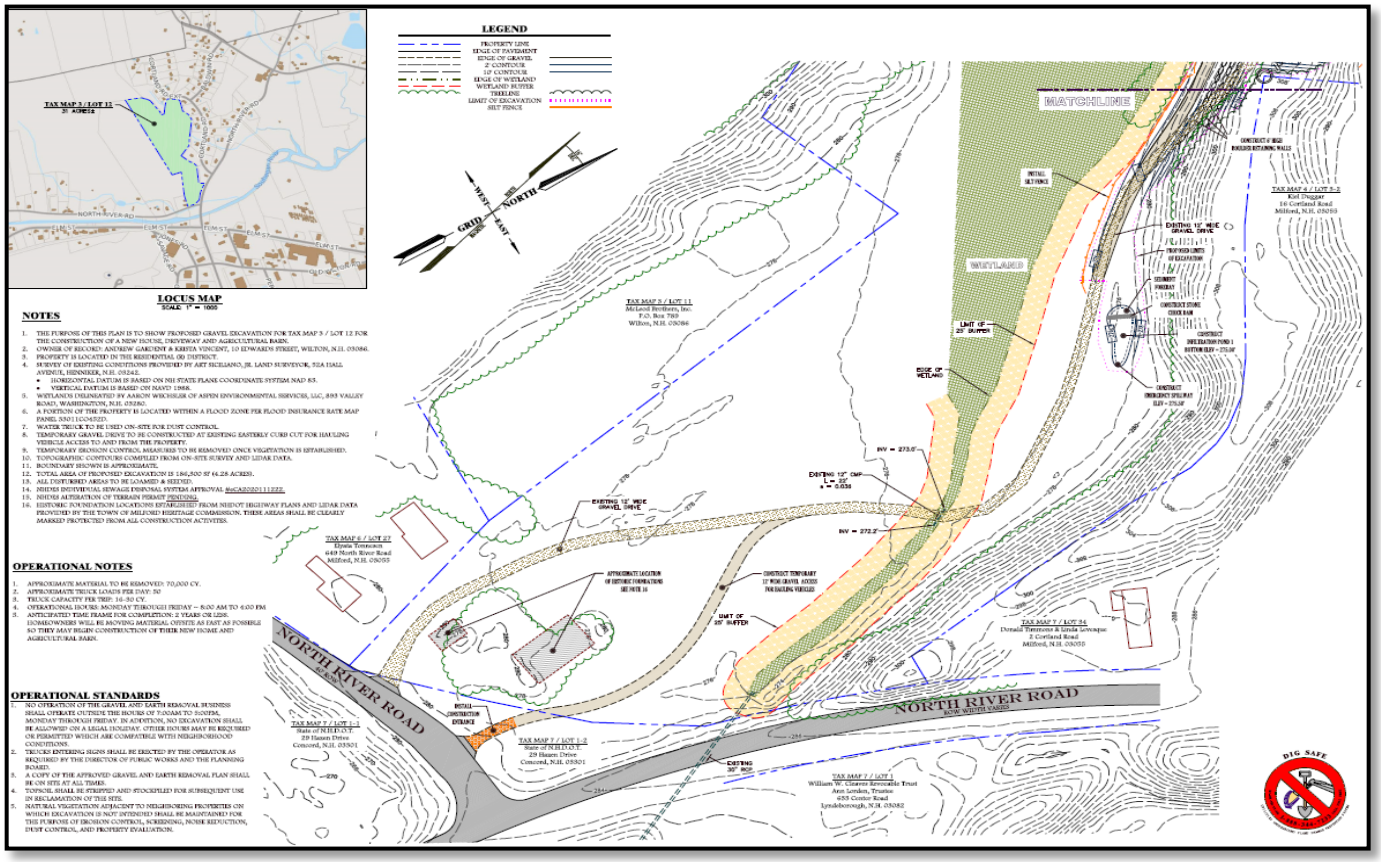
Photo 1

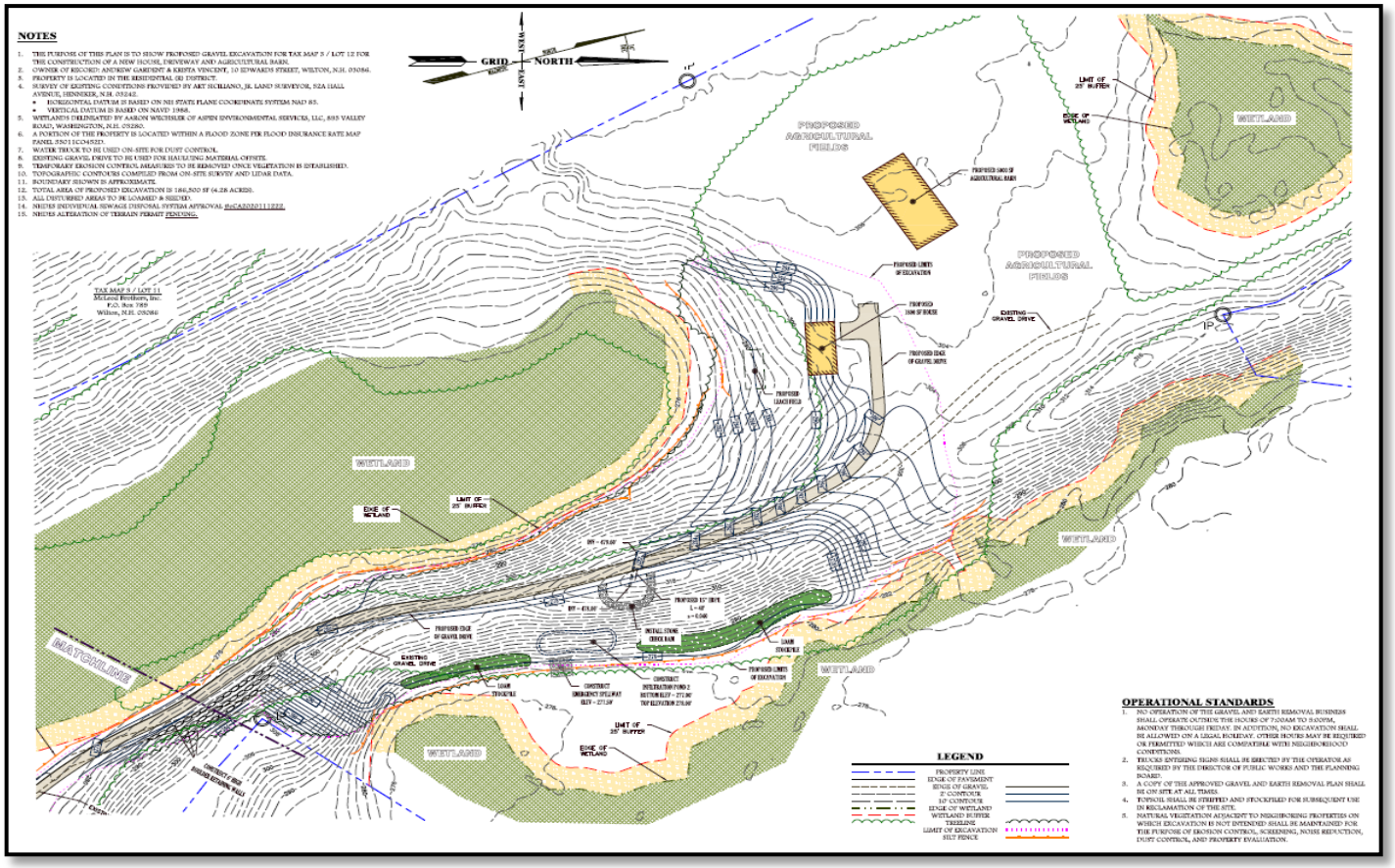
Photo 2

Photo 3

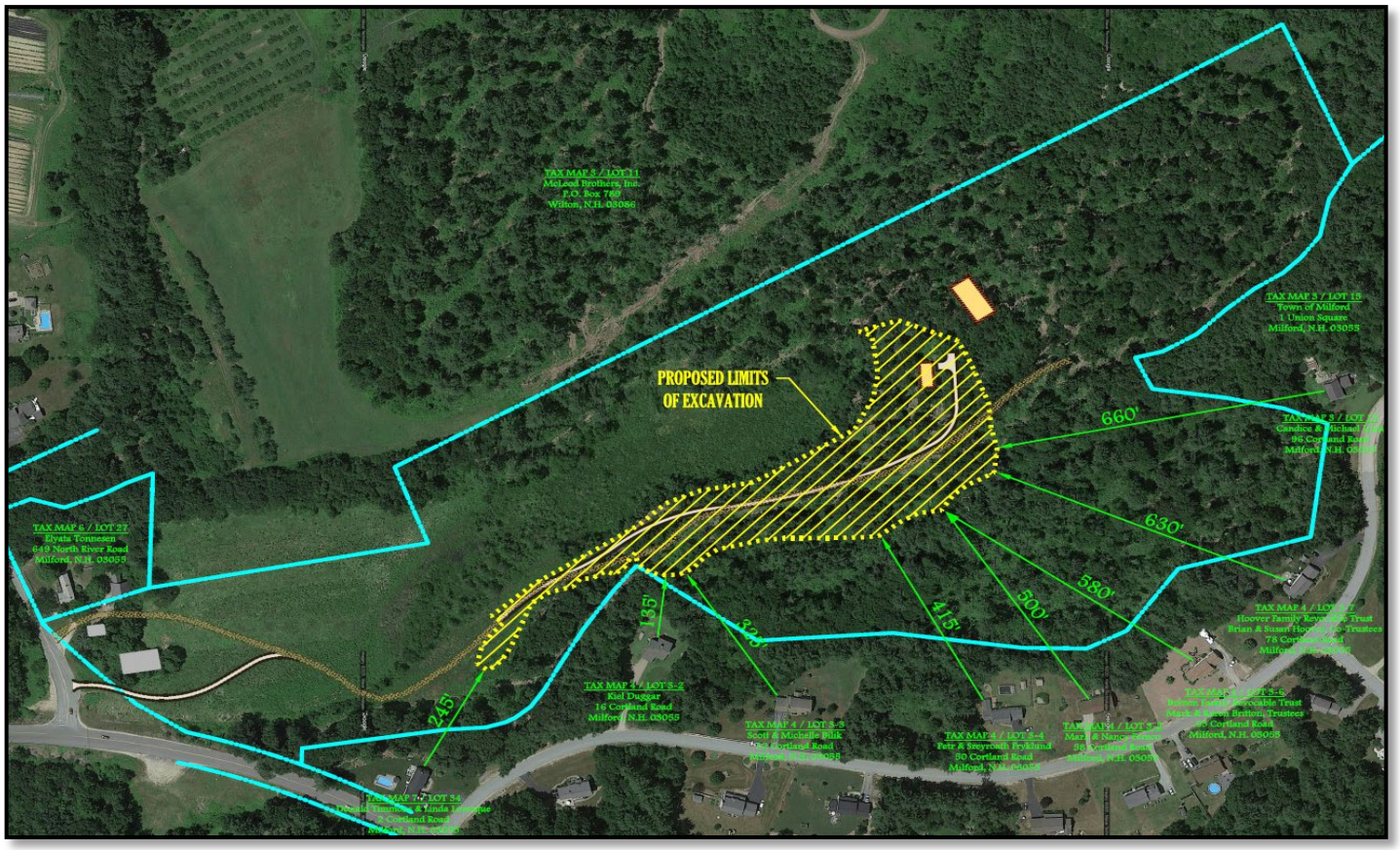
Photo 4

Site Plan Sheets showing the access drive, the wetland areas and the proposed residence and agricultural barn





Abutter distances to the limits of excavation

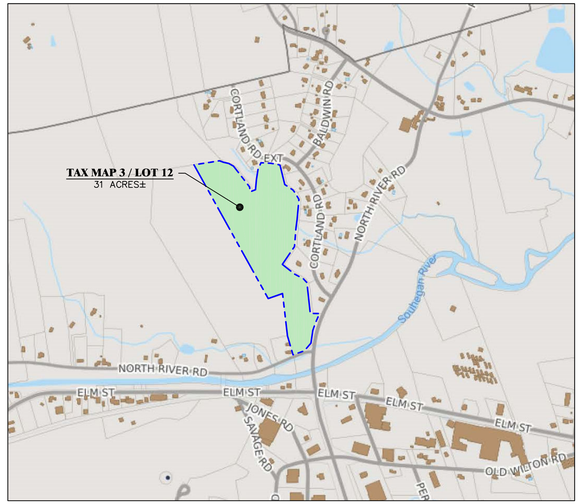


SITE OVERVIEW

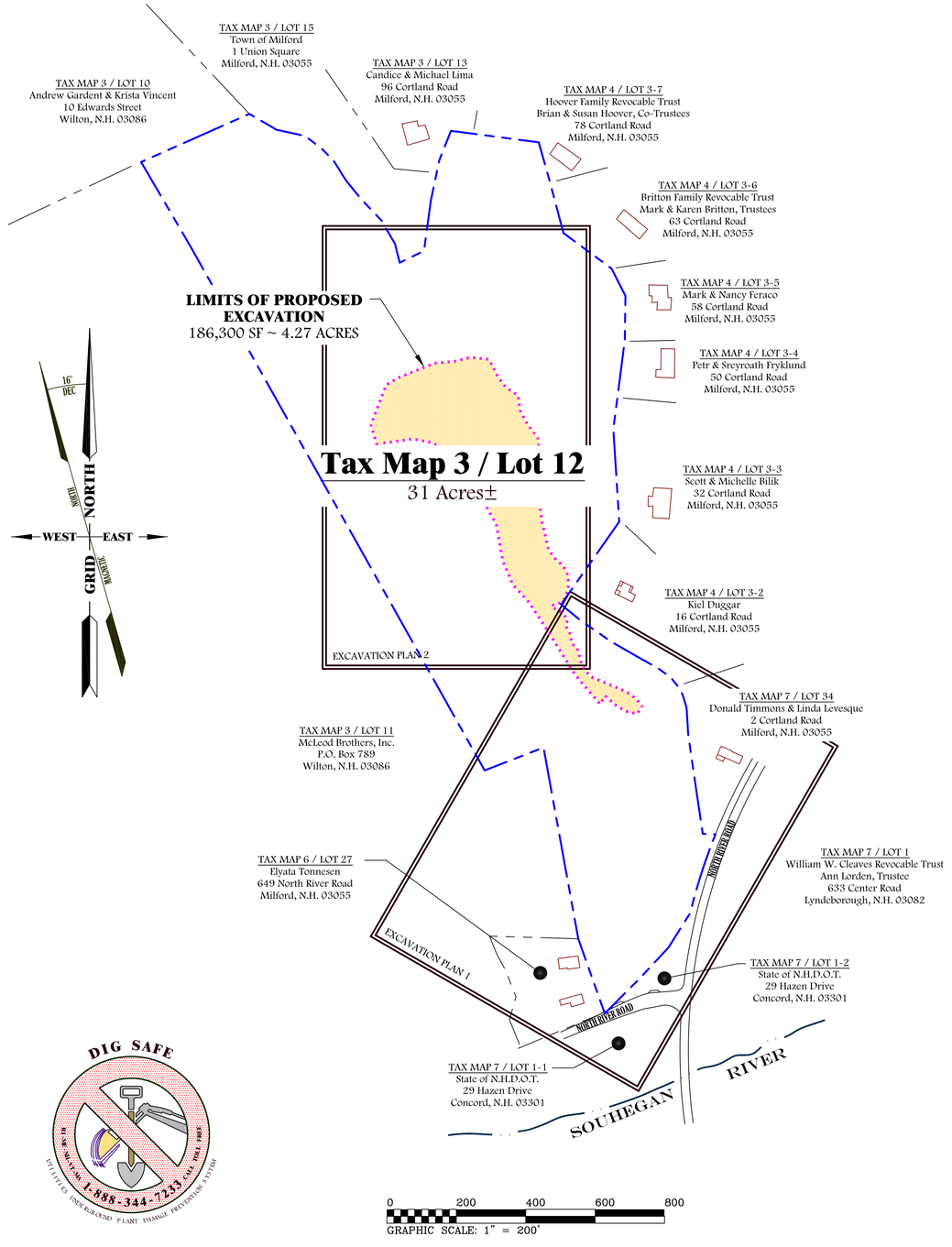
Gardent Property

Tax Map 3 / Lot 12

North River Road ~ Milford, N.H.



LOCUS MAP
SCALE: 1" = 1000



SHEET INDEX

OWNER OF RECORD:
Andrew & Krista Gardent
10 Edwards Street
Wilton, N.H. 03086
Book 9209 / Page 1674

SURVEYOR:
Arthur F. Siciliano, Jr.
Land Surveyor
52A Hall Avenue
Henniker, N.H. 03242

STATE OF NEW HAMPSHIRE — No. 626 ARTHUR F. SICILIANO — LICENSED LAND SURVEYOR — SIGNATURE

WETLAND SCIENTIST:
Aaron Wechsler
41 Liberty Hill Road
Building 2 ~ Suite 201
Henniker, N.H. 03242

STATE OF NEW HAMPSHIRE — AARON J. WECHSLER — No. 250 — CERTIFIED WETLAND SCIENTIST

A.C.Engineering & Consulting
Civil Engineering & Land Planning
43 Bear Hill Road
East Washington, N.H. 03280
Phone: (603) 325-5114
acengineer@gsinet.net

STATE OF NEW HAMPSHIRE — ANTHONY T. COSTELLO No. 10020 — LICENSED PROFESSIONAL ENGINEER

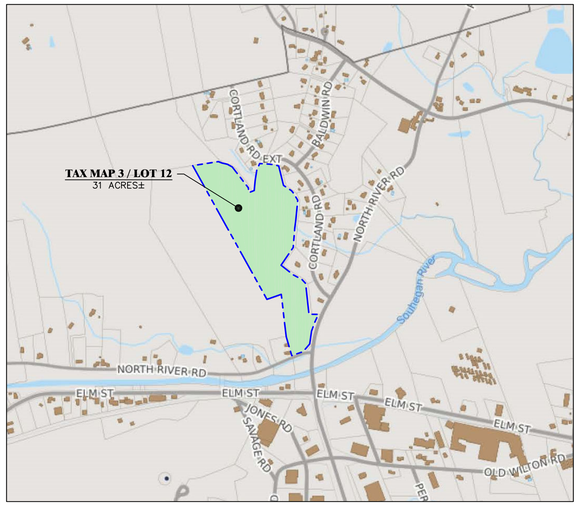
DIG SAFE — BEFORE YOU DIG — 1-888-344-7233 — UTILITIES NOTIFICATION CENTER, INC.

OWNER SIGNATURE:

DATE _____ ANDREW GARDENT _____

APPROVED
TOWN OF MILFORD, NEW HAMPSHIRE
PLANNING BOARD
SITE PLAN #_____ APPROVAL DATE:_____
SIGNATURES:

JN2014



LOCUS MAP
SCALE: 1" = 1000

NOTES

1. THE PURPOSE OF THIS PLAN IS TO SHOW PROPOSED GRAVEL EXCAVATION FOR TAX MAP 3 / LOT 12 FOR THE CONSTRUCTION OF A NEW HOUSE, DRIVEWAY AND AGRICULTURAL BARN.
2. OWNER OF RECORD: ANDREW GARDENT & KRISTA VINCENT, 10 EDWARDS STREET, WILTON, N.H. 03086.
3. PROPERTY IS LOCATED IN THE RESIDENTIAL (R) DISTRICT.
4. SURVEY OF EXISTING CONDITIONS PROVIDED BY ART SICILIANO, JR. LAND SURVEYOR, 52A HALL AVENUE, HENNIKER, N.H. 03242.
   - HORIZONTAL DATUM IS BASED ON NH STATE PLANE COORDINATE SYSTEM NAD 83.
   - VERTICAL DATUM IS BASED ON NAVD 1988.
5. WETLANDS DELINEATED BY AARON WECHSLER OF ASPEN ENVIRONMENTAL SERVICES, LLC, 893 VALLEY ROAD, WASHINGTON, N.H. 03280.
6. A PORTION OF THE PROPERTY IS LOCATED WITHIN A FLOOD ZONE PER FLOOD INSURANCE RATE MAP PANEL 33011C0452D.
7. WATER TRUCK TO BE USED ON-SITE FOR DUST CONTROL.
8. TEMPORARY GRAVEL DRIVE TO BE CONSTRUCTED AT EXISTING EASTERLY CURB CUT FOR HAULING VEHICLE ACCESS TO AND FROM THE PROPERTY.
9. TEMPORARY EROSION CONTROL MEASURES TO BE REMOVED ONCE VEGETATION IS ESTABLISHED.
10. TOPOGRAPHIC CONTOURS COMPILED FROM ON-SITE SURVEY AND LIDAR DATA.
11. BOUNDARY SHOWN IS APPROXIMATE.
12. TOTAL AREA OF PROPOSED EXCAVATION IS 186,300 SF (4.28 ACRES).
13. ALL DISTURBED AREAS TO BE LOAMED & SEEDED.
14. NHDES INDIVIDUAL SEWAGE DISPOSAL SYSTEM APPROVAL #eCA2020111222.
15. NHDES ALTERATION OF TERRAIN PERMIT PENDING.
16. HISTORIC FOUNDATION LOCATIONS ESTABLISHED FROM NHDOT HIGHWAY PLANS AND LIDAR DATA PROVIDED BY THE TOWN OF MILFORD HERITAGE COMMISSION. THESE AREAS SHALL BE CLEARLY MARKED PROTECTED FROM ALL CONSTRUCTION ACTIVITES.

OPERATIONAL NOTES

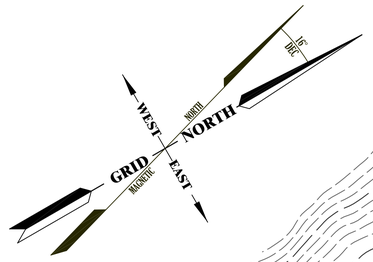
1. APPROXIMATE MATERIAL TO BE REMOVED: 70,000 CY.
2. APPROXIMATE TRUCK LOADS PER DAY: 50
3. TRUCK CAPACITY PER TRIP: 16-30 CY.
4. OPERATIONAL HOURS: MONDAY THROUGH FRIDAY ~ 8:00 AM TO 4:00 PM
5. ANTICIPATED TIME FRAME FOR COMPLETION: 2 YEARS OR LESS. HOMEOWNERS WILL BE MOVING MATERIAL OFFSITE AS FAST AS POSSIBLE SO THEY MAY BEGIN CONSTRUCTION OF THEIR NEW HOME AND AGRICULTURAL BARN.

OPERATIONAL STANDARDS

1. NO OPERATION OF THE GRAVEL AND EARTH REMOVAL BUSINESS SHALL OPERATE OUTSIDE THE HOURS OF 7:00AM TO 5:00PM, MONDAY THROUGH FRIDAY. IN ADDITION, NO EXCAVATION SHALL BE ALLOWED ON A LEGAL HOLIDAY. OTHER HOURS MAY BE REQUIRED OR PERMITTED WHICH ARE COMPATIBLE WITH NEIGHBORHOOD CONDITIONS.
2. TRUCKS ENTERING SIGNS SHALL BE ERECTED BY THE OPERATOR AS REQUIRED BY THE DIRECTOR OF PUBLIC WORKS AND THE PLANNING BOARD.
3. A COPY OF THE APPROVED GRAVEL AND EARTH REMOVAL PLAN SHALL BE ON SITE AT ALL TIMES.
4. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR SUBSEQUENT USE IN RECLAMATION OF THE SITE.
5. NATURAL VEGETATION ADJACENT TO NEIGHBORING PROPERTIES ON WHICH EXCAVATION IS NOT INTENDED SHALL BE MAINTAINED FOR THE PURPOSE OF EROSION CONTROL, SCREENING, NOISE REDUCTION, DUST CONTROL, AND PROPERTY EVALUATION.

LEGEND

PROPERTY LINE
EDGE OF PAVEMENT
EDGE OF GRAVEL
2' CONTOUR
10' CONTOUR
EDGE OF WETLAND
WETLAND BUFFER
TREELINE
LIMIT OF EXCAVATION
SILT FENCE



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43 Bear Hill Road
East Washington, N.H. 03280
Phone: (603) 325-5114
acengineer@comcast.net

NO.	DATE	DESCRIPTION	BY
1	3/26/21	ADDACCESS / FOUNDATIONS	A.T.C.

OWNER:
Andrew Gardent &
Krista Vincent
10 Edwards Street
Wilton, N.H. 03086
Book 9209 / Page 1674

EXCAVATION PLAN 1
Gardent Property
Tax Map 3 / Lot 12
North River Road ~ Milford, N.H.

50 0 25 50
SCALE: 1" = 50 ft.

DATE: 1-21-21
DWG: 2014-BASE

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14. NHDES INDIVIDUAL SEWAGE DISPOSAL SYSTEM APPROVAL #eCA2020111222.
15. NHDES ALTERATION OF TERRAIN PERMIT PENDING.

GRID NORTH
MAGNETIC NORTH
16 DEG
WEST
EAST

TAX MAP 3 / LOT 11
McLeod Brothers, Inc.
P.O. Box 789
Wilton, N.H. 03086

PROPOSED AGRICULTURAL FIELDS

PROPOSED 5000 SF AGRICULTURAL BARN

PROPOSED LIMITS OF EXCAVATION

PROPOSED 1800 SF HOUSE

PROPOSED EDGE OF GRAVEL DRIVE

EXISTING GRAVEL DRIVE

PROPOSED LEACH FIELD

LIMIT OF 25' BUFFER

EDGE OF WETLAND

WETLAND

IP

INV = 479.60'

INV = 478.00'

PROPOSED 15" HDPE
L = 40'
s = 0.040

INSTALL STONE CHECK DAM

LOAM STOCKPILE

CONSTRUCT EMERGENCY SPILLWAY ELEV = 277.50'

CONSTRUCT INFILTRATION POND 2
BOTTOM ELEV = 277.00'
TOP ELEVATION 278.00'

CONSTRUCT 6' HIGH BOULDER RETAINING WALLS

MATCHLINE

LEGEND

- PROPERTY LINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- 2' CONTOUR
- 10' CONTOUR
- EDGE OF WETLAND
- WETLAND BUFFER
- TREELINE
- LIMIT OF EXCAVATION
- SILT FENCE

OPERATIONAL STANDARDS

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STATE OF NEW HAMPSHIRE — ANTHONY T. COSTELLO No. 10020 LICENSED PROFESSIONAL ENGINEER

A.C.Engineering & Consulting
Civil Engineering & Land Planning
43 Bear Hill Road
East Washington, N.H. 03280
Phone: (603) 325-5114
acengineer@gsinet.net

NO.	DATE	DESCRIPTION	BY

OWNER:
Andrew Gardent &
Krista Vincent
10 Edwards Street
Wilton, N.H. 03086
Book 9209 / Page 1674

EXCAVATION PLAN 2
Gardent Property
Tax Map 3 / Lot 12
North River Road ~ Milford, N.H.

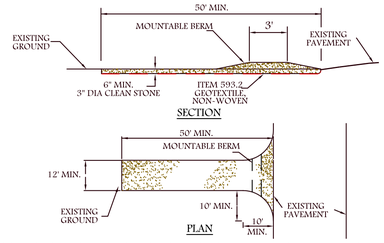
SCALE: 1" = 50 ft.

DATE: 1-21-21

DWG: 2014-BASE

STABILIZED CONSTRUCTION ENTRANCE

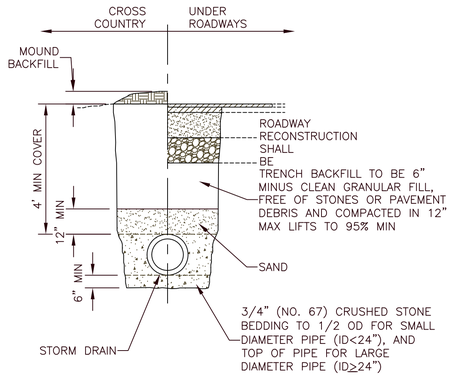
NOT TO SCALE



THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC ROADS . THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE, INCREASING THE LENGTH, AND TIRE WASHDOWN INTO WASHOUT PITS OR APPROVED SEDIMENT TRAPS BEFORE EXITING THE STONE .

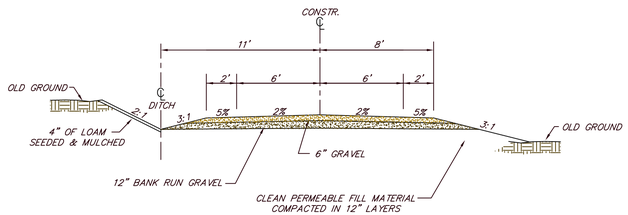
STORM PIPE TRENCH DETAIL

NOT TO SCALE



TYPICAL DRIVEWAY SECTION

–NOT TO SCALE–



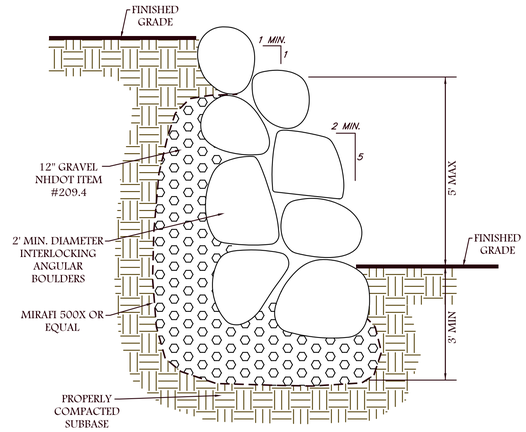
SECTION NOTES

A. IN FILL AREAS:
ORIGINAL GROUND TO BE "STRIPPED & GRUBBED" AND PROPERLY SHAPED. NON–ACCEPTABLE MATERIALS, i.e.: STUMPS, BRANCHES, LEAVES, ROOTS, MUCK, CLAY, ETC. SHALL BE REMOVED PRIOR TO PLACING FILL.

B. IN CUT AREAS:
SUB–GRADE SHALL BE SHAPED & GRADED PRIOR TO THE PLACING OF GRAVEL.

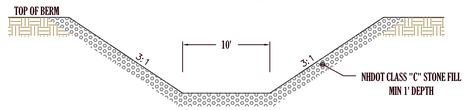
BOULDER RETAINING WALL DETAIL

–NOT TO SCALE–



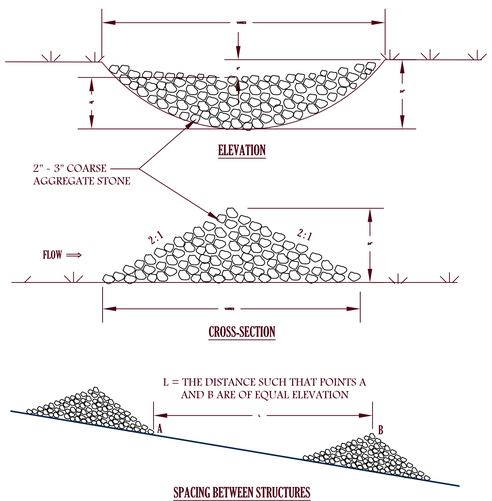
SPILLWAY DETAIL

NOT TO SCALE



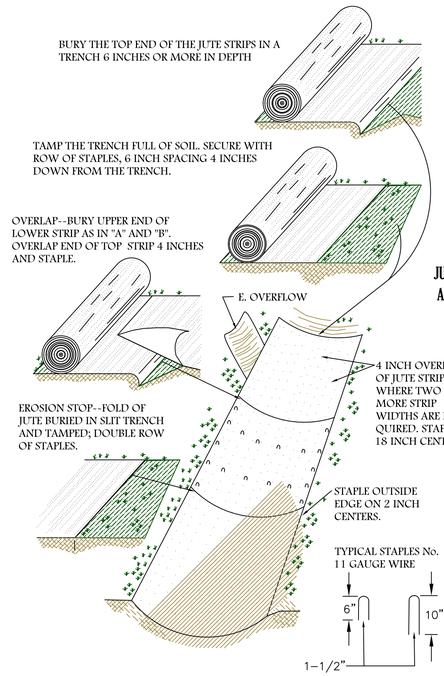
STONE CHECK DAM DETAIL

NOT TO SCALE



DETAIL FOR STABLIZING WITH JUTE MATTING

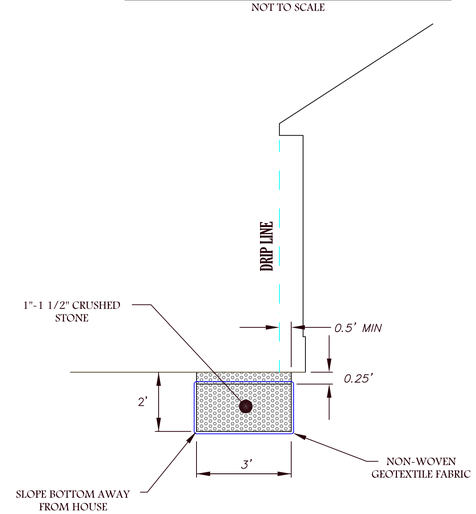
–NOT TO SCALE–



JUTE MATTING TO BE NORTH AMERICAN GREEN SC150BN OR EQUIVALENT

DRIP EDGE TRENCH DETAIL

NOT TO SCALE



ANTHONY T. COSTELLO No. 10020 LICENSED PROFESSIONAL ENGINEER — STATE OF NEW HAMPSHIRE

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NO.	DATE	DESCRIPTION	BY

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CONSTRUCTION DETAILS
Gardent Property
Tax Map 3 / Lot 12
North River Road ~ Milford, N.H.

DATE: 1-21-21

DWG: 2014-BASE

TEMPORARY VEGETATION

CONSIDERATIONS

- PROPER SEEDBED PREPARATION AND THE USE OF QUALITY SEED ARE IMPORTANT IN THIS PRACTICE. FAILURE TO CAREFULLY FOLLOW SOUND AGRONOMIC RECOMMENDATIONS WILL OFTEN RESULT IN AN INADEQUATE STAND OF VEGETATION THAT PROVIDES LITTLE OR NO EROSION CONTROL.
- NUTRIENTS AND PESTICIDES USED TO ESTABLISH AND MAINTAIN VEGETATION MUST BE MANAGED TO PROTECT SURFACE WATER AND GROUNDWATER QUALITY.
- TEMPORARY SEEDING SHOULD BE USED EXTENSIVELY IN SENSITIVE AREAS (E.G., POND AND LAKE WATERSHEDS, STEEP SLOPES, STREAMBANKS).
- LATE FALL SEEDING MAY FAIL, RESULTING IN INADEQUATE OVERWINTER EROSION PROTECTION, AS WELL AS POTENTIAL SURFACE STABILITY PROBLEMS ASSOCIATED WITH SPRING THAW AND SPRING RUNOFF EVENTS. IF FULL STABILIZATION IS NOT ACHIEVED BY LATE FALL, OTHER STABILIZATION MEASURES SUCH AS MULCHING SHOULD BE IMPLEMENTED.

MAINTENANCE REQUIREMENTS

- TEMPORARY SEEDING SHOULD BE INSPECTED WEEKLY AND AFTER ANY RAINFALL EXCEEDING ½ INCH IN 24 HOURS ON ACTIVE CONSTRUCTION SITES. TEMPORARY SEEDING SHOULD ALSO BE INSPECTED JUST PRIOR TO SEPTEMBER 15, TO ASCERTAIN WHETHER ADDITIONAL SEEDING IS REQUIRED TO PROVIDE STABILIZATION OVER THE WINTER PERIOD.
- BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABILIZATION OF EXPOSED SOILS. IF IT IS TOO LATE IN THE PLANTING SEASON TO APPLY ADDITIONAL SEED, THEN OTHER TEMPORARY STABILIZATION MEASURES SHOULD BE IMPLEMENTED
- AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.
- IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS SHOULD BE RESEEDED, WITH OTHER TEMPORARY MEASURES (E.G., MULCH) USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.

SPECIFICATIONS

SITE PREPARATION:

- INSTALL NEEDED EROSION AND SEDIMENT CONTROL MEASURES SUCH AS SILTATION BARRIERS, DIVERSIONS, AND SEDIMENT TRAPS.
- GRADE AS NEEDED FOR THE ACCESS OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING.
- RUNOFF SHOULD BE DIVERTED FROM THE SEEDED AREA.
- ON SLOPES 4:1 OR STEEPER, THE FINAL PREPARATION SHOULD INCLUDE CREATING HORIZONTAL GROOVES PERPENDICULAR TO THE DIRECTION OF THE SLOPE TO CATCH SEED AND REDUCE RUNOFF.

SEEDBED PREPARATION:

- STONES AND TRASH SHOULD BE REMOVED SO AS NOT TO INTERFERE WITH THE SEEDING AREA.
- WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
- IF APPLICABLE, FERTILIZER AND ORGANIC SOIL AMENDMENTS SHOULD BE APPLIED DURING THE GROWING SEASON.
  - APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 600 POUNDS PER ACRE OR 13.8 POUNDS PER 1,000 SQUARE FEET OF LOW PHOSPHATE FERTILIZER(1) (N-P2O5-K2O) OR EQUIVALENT. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB. PER 1,000 SQUARE FEET).
  - FERTILIZER SHOULD BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE(2) NITROGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 FEET AND 250 FEET FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25 FEET OF A SURFACE WATER BODY. **THESE LIMITATIONS ARE REQUIREMENTS FOR ANY WATER BODY PROTECTED BY THE COMPREHENSIVE SHORELAND PROTECTION ACT.**

SEEDING:

- SELECT SEED FROM RECOMMENDATIONS IN TABLE 4-1.
- APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM ¼ TO ½ INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10 % WHEN HYDROSEEDING.
- TEMPORARY SEEDING SHOULD TYPICALLY OCCUR PRIOR TO SEPTEMBER 15TH.
- AREAS SEEDED BETWEEN MAY 15TH AND AUGUST 15TH SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE.
- VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT OTHER TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.

(1) LOW PHOSPHATE FERTILIZER IS DEFINED BY THE COMPREHENSIVE SHORELAND PROTECTION ACT AS LESS THAN 2% PHOSPHORUS. THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION HAS FOUND THROUGH SOIL TESTS THAT NH'S SOILS HAVE AMPLE PHOSPHORUS AND RECOMMEND LOW PHOSPHORUS FERTILIZERS WITH 0% - 1% PHOSPHORUS SUCH AS 3:1:3 OR 10:0:10 N:P:K. THEY DISCOURAGE THE USE OF IMBALANCED FERTILIZERS.

(2) SLOW RELEASE FERTILIZERS MUST BE AT LEAST 50% SLOW RELEASE NITROGEN COMPONENTS, WHICH MEANS THAT HALF OF THE NITROGEN WILL NOT BE IMMEDIATELY AVAILABLE. TYPICALLY, IT TAKES 2-24 WEEKS FOR ALL SLOW-RELEASE NITROGEN TO BECOME AVAILABLE. SLOW-RELEASE FERTILIZERS DO NOT NECESSARILY REDUCE NITROGEN LOADING. NITROGEN FERTILIZERS ARE NECESSARY FOR GRASS LAWNS, HOWEVER, ACCORDING TO THE UNH COOPERATIVE EXTENSION, NITROGEN FERTILIZERS FOR LAWNS THAT CONSIST OF LEGUME AND CLOVER ARE NOT NECESSARY.

SEED MIXTURE SELECTION BASED ON SOILS

USE	SEED MIXTURE SEE TABLE	SOIL DRAINAGE: DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS & FILLS BORROWS & DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	FAIR	GOOD	EXCELLENT
	E	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENY SPILLWAYS & OTHER CHANNELS WITH FLOWING WATER	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	EXCELLENT	EXCELLENT	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LAND, & LOW INTENSITY USE RECREATIONAL SITES	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	FAIR	GOOD	GOOD	EXCELLENT
PLAY AREAS & ATHLETIC FIELDS (TOPSOIL ESSENTIAL FOR GOOD TURF)	B	FAIR	EXCELLENT	EXCELLENT	SEE NOTE 2
	D	FAIR	EXCELLENT	EXCELLENT	SEE NOTE 2
GRAVEL PIT	SEE SOURCE DOCUMENT FOR RECOMMENDATIONS, OR CONSULT WITH USDA NATURAL RESURCE CONSERVATION SERVICE				

SEED MIXTURES FOR PERMANENT VEGETATION

MIXTURE	SPECIES	LBS/AC	LBS/1000SF
A	TALL FESCUE	20	0.45
	CREEPING RED FESCUE	20	0.45
	REDTOP	2	0.05
	TOTAL	42	0.95
B(3)	TALL FESCUE	15	0.35
	CREEPING RED FESCUE	10	0.25
	CROWN FETCH	15	0.35
	OR		
	FLATPEA	30	0.75
	TOTAL	40 OR 55	0.95 OR 1.35
C(3)	TALL FESCUE	20	0.45
	CREEPING RED FESCUE	20	0.45
	BIRDSFOOT TREFOIL	8	0.20
	TOTAL	48	1.10
D(3)	REMOVED		
E	TALL FESCUE	20	0.45
	FLATPEA	30	0.75
	TOTAL	50	1.20
F	CREEPING RED FESCUE(2)	50	1.15
	KENTUCKY BLUEGRASS	50	1.15
	TOTAL	100	2.30
G	TALL FESCUE(2)	150	3.60

NOTES:

1. REED CANARY GRASS IS ON THE INVASIVE SPECIES WATCH LIST DUE TO ITS RAPID, AGGRESSIVE GROWTH AND ITS ABILITY TO MOVE INTO WETLANDS AND OUT COMPETE OTHER DESIRABLE WETLAND PLANTS. DO NOT USE ANY SEED MIXTURE THAT CONTAINS REED CANARY GRASS.
2. FOR HEAVY USE ATHLEVIC FIELDS, CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERTIVE EXTENSION TURF SPECIALIST FOR CURRENT VARITIES AND SEEDING RATES.
3. THE UNIVERSITY OF NEW HAMPSHIRE COOPERTIVE EXTENSION RECOMMENDS RED CLOVER TO SUBSTITUTE FOR CROWN VETCH OR BIRDSFOOT TREFOIL IF THEY ARE GOING TO BE MOWED TO A HEIGHT OF 4 INCHES OR LESS. RED CLOVER (ALSIKE VARIETY) SHOULD BE SEEDED AT A RATE OF 20 POUNDS PER ACRE.

PERMANENT VEGETATION

CONSIDERATIONS

- PROPER SEEDBED PREPARATION AND THE USE OF QUALITY SEED ARE IMPORTANT IN THIS PRACTICE. FAILURE TO CAREFULLY FOLLOW SOUND AGRONOMIC RECOMMENDATIONS WILL OFTEN RESULT IN AN INADEQUATE STAND OF VEGETATION THAT PROVIDES LITTLE OR NO EROSION CONTROL.
- NUTRIENTS AND PESTICIDES USED TO ESTABLISH AND MAINTAIN VEGETATION MUST BE MANAGED TO PROTECT SURFACE WATER AND GROUNDWATER QUALITY.

MAINTENANCE REQUIREMENTS

- PERMANENT SEEDED AREAS SHOULD BE INSPECTED AT LEAST MONTHLY DURING THE COURSE OF CONSTRUCTION. INSPECTIONS, MAINTENANCE, AND CORRECTIVE ACTIONS SHOULD CONTINUE UNTIL THE OWNER ASSUMES PERMANENT OPERATION OF THE SITE.
- SEEDED AREAS SHOULD BE MOWED AS REQUIRED TO MAINTAIN A HEALTHY STAND OF VEGETATION, WITH MOWING HEIGHT AND FREQUENCY DEPENDENT ON TYPE OF GRASS COVER.
- BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABILIZATION OF EXPOSED SOILS.
- AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.
- IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS SHOULD BE RESEEDED, WITH OTHER TEMPORARY MEASURES (E.G., MULCH) USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.

SPECIFICATIONS

SITE PREPARATION:

- INSTALL NEEDED EROSION AND SEDIMENT CONTROL MEASURES SUCH AS SILTATION BARRIERS, DIVERSIONS, AND SEDIMENT TRAPS.
- GRADE AS NEEDED FOR THE ACCESS OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING.
- RUNOFF SHOULD BE DIVERTED FROM THE SEEDED AREA.
- ON SLOPES 4:1 OR STEEPER, THE FINAL PREPARATION SHOULD INCLUDE CREATING HORIZONTAL GROOVES PERPENDICULAR TO THE DIRECTION OF THE SLOPE TO CATCH SEED AND REDUCE RUNOFF.

SEEDBED PREPARATION:

- WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM, FINE SEEDBED IS PREPARED. ALL BUT CLAY OR SILTY SOILS AND COARSE SANDS SHOULD BE ROLLED TO FIRM THE SEEDBED WHEREVER FEASIBLE.
- REMOVE FROM THE SURFACE ALL STONES 2 INCHES OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, CONCRETE, CLODS, LUMPS, TRASH OR OTHER UNSUITABLE MATERIAL.
- INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED; THE AREA MUST BE TILLED AND FIRMED AS ABOVE. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
- IF APPLICABLE, FERTILIZER AND ORGANIC SOIL AMENDMENTS SHOULD BE APPLIED DURING THE GROWING SEASON.
  - APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 600 POUNDS PER ACRE OR 13.8 POUNDS PER 1,000 SQUARE FEET OF LOW PHOSPHATE FERTILIZER(1) (N-P2O5-K2O) OR EQUIVALENT. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB. PER 1,000 SQUARE FEET).
  - FERTILIZER SHOULD BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE(2) NITROGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 FEET AND 250 FEET FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER. **THESE LIMITATIONS ARE REQUIREMENTS FOR ANY WATER BODY PROTECTED BY THE COMPREHENSIVE SHORELAND PROTECTION ACT.**

SEEDING:

- SELECT A SEED MIXTURE IN TABLE 4-2 THAT IS APPROPRIATE FOR THE SOIL TYPE AND MOISTURE CONTENT AS FOUND AT THE SITE, FOR THE AMOUNT OF SUN EXPOSURE AND FOR LEVEL OF USE. SELECT SEED FROM RECOMMENDATIONS IN TABLE 4-3.
- INOCULATE ALL LEGUME SEED WITH THE CORRECT TYPE AND AMOUNT OF INOCULANT.
- APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM ¼ TO ½ INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE. SEEDING OPERATIONS SHOULD BE ON THE CONTOUR.
- WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTIPACKER TYPE SEEDER OR HYDROSEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A ROLLER, OR LIGHT DRAG.
- SPRING SEEDING USUALLY GIVES THE BEST RESULTS FOR ALL SEED MIXES OR WITH LEGUMES. PERMANENT SEEDING SHOULD BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST. WHEN CROWN VETCH IS SEEDED IN LATER SUMMER, AT LEAST 35% OF THE SEED SHOULD BE HARD SEED (UNSCARIFIED). IF SEEDING CANNOT BE DONE WITHIN THE SPECIFIED SEEDING DATES, MULCH ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING PRACTICE," AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
  - TEMPORARY SEEDING SHOULD TYPICALLY OCCUR PRIOR TO SEPTEMBER 15TH.
  - AREAS SEEDED BETWEEN MAY 15TH AND AUGUST 15TH SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE.
- VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION, AND COMPLETE PERMANENT SEED STABILIZATION DURING THE NEXT GROWING SEASON.

HYDROSEEDING:

- WHEN HYDROSEEDING (HYDRAULIC APPLICATION), PREPARE THE SEEDBED AS SPECIFIED ABOVE OR BY HAND RAKING TO LOOSEN AND SMOOTH THE SOIL AND TO REMOVE SURFACE STONES LARGER THAN 2 INCHES IN DIAMETER.
- SLOPES MUST BE NO STEEPER THAN 2 TO 1 (2 FEET HORIZONTALLY TO 1 FOOT VERTICALLY).
- LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF FIBER MULCH ON CRITICAL AREAS IS NOT RECOMMENDED (UNLESS IT IS USED TO HOLD STRAW OR HAY). BETTER PROTECTION IS GAINED BY USING STRAW MULCH AND HOLDING IT WITH ADHESIVE MATERIALS OR 500 POUNDS PER ACRE OF WOOD FIBER MULCH.
- SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING.

(1) LOW PHOSPHATE FERTILIZER IS DEFINED BY THE COMPREHENSIVE SHORELAND PROTECTION ACT AS LESS THAN 2% PHOSPHORUS. THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION HAS FOUND THROUGH SOIL TESTS THAT NH'S SOILS HAVE AMPLE PHOSPHORUS AND RECOMMEND LOW PHOSPHORUS FERTILIZERS WITH 0% - 1% PHOSPHORUS SUCH AS 3:1:3 OR 10:0:10 N:P:K. THEY DISCOURAGE THE USE OF IMBALANCED FERTILIZERS.

(2) SLOW RELEASE FERTILIZERS MUST BE AT LEAST 50% SLOW RELEASE NITROGEN COMPONENTS, WHICH MEANS THAT HALF OF THE NITROGEN WILL NOT BE IMMEDIATELY AVAILABLE. TYPICALLY, IT TAKES 2-24 WEEKS FOR ALL SLOW-RELEASE NITROGEN TO BECOME AVAILABLE. SLOW-RELEASE FERTILIZERS DO NOT NECESSARILY REDUCE NITROGEN LOADING. NITROGEN FERTILIZERS ARE NECESSARY FOR GRASS LAWNS, HOWEVER, ACCORDING TO THE UNH COOPERATIVE EXTENSION, NITROGEN FERTILIZERS FOR LAWNS THAT CONSIST OF LEGUME AND CLOVER ARE NOT NECESSARY.

TEMPORARY & PERMANENT MULCHING

CONSIDERATIONS

- WITHIN 100 FEET OF STREAMS, WETLANDS AND IN LAKE WATERSHEDS, TEMPORARY MULCH SHOULD BE APPLIED **WITHIN 7 DAYS OF EXPOSING SOIL OR PRIOR TO ANY STORM EVENT.**
- AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED SHOULD BE MULCHED IMMEDIATELY FOLLOWING SEEDING.
- AREAS THAT CANNOT BE SEEDED WITHIN THE GROWING SEASON SHOULD BE MULCHED FOR OVER-WINTER PROTECTION. THE AREA SHOULD BE SEEDED AT THE BEGINNING OF THE NEXT GROWING SEASON.
- MULCH ANCHORING SHOULD BE USED ON SLOPES WITH GRADIENTS GREATER THAN 5% IN LATE FALL (PAST SEPTEMBER 15), AND OVER-WINTER (SEPTEMBER 15 - MAY 15).
- PERMANENT MULCH CAN BE USED IN CONJUNCTION WITH TREE, SHRUB, VINE, AND GROUND COVER PLANTINGS.

MAINTENANCE REQUIREMENTS

- ALL TEMPORARY MULCHES MUST BE INSPECTED PERIODICALLY AND IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION OR DISPLACEMENT OF THE MULCH. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHOULD BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGES OCCUR, REPAIR ANY DAMAGE TO THE SLOPE AND RE-INSTALL OR REPLACE NETTING AS NECESSARY. INSPECTIONS SHOULD TAKE PLACE UNTIL GRASSES ARE FIRMLY ESTABLISHED (85% SOIL SURFACE UNIFORMLY COVERED WITH HEALTHY STAND OF GRASS).
- EROSION CONTROL MIX MULCH USED FOR TEMPORARY STABILIZATION SHOULD BE LEFT IN PLACE. VEGETATION ADDS STABILITY AND SHOULD BE PROMOTED.
- WHERE PERMANENT MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED. PERMANENT MULCHED AREAS SHOULD BE INSPECTED AT LEAST ANNUALLY, AND AFTER EACH LARGE RAINFALL (2.5 INCHES OR MORE IN A 24-HOUR PERIOD). ANY REQUIRED REPAIRS SHOULD BE MADE IMMEDIATELY. WHERE EROSION CONTROL MIX HAS BEEN USED, PLACE ADDITIONAL MIX ON TOP OF THE MULCH TO MAINTAIN THE RECOMMENDED THICKNESS. WHEN THE MULCH IS DECOMPOSED, CLOGGED WITH SEDIMENT, ERODED OR INEFFECTIVE, IT MUST BE REPLACED OR REPAIRED.
- IF THE MULCH NEEDS TO BE REMOVED, SPREAD IT OUT INTO THE LANDSCAPE.

SPECIFICATIONS

GENERAL:

- APPLY MULCH PRIOR TO A STORM EVENT. THIS IS APPLICABLE IN EXTREMELY SENSITIVE AREAS SUCH AS WITHIN 100 FEET OF LAKES, PONDS, RIVERS, STREAMS, AND WETLANDS. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
- MULCHING SHOULD BE COMPLETED WITHIN THE FOLLOWING SPECIFIED TIME PERIODS FROM ORIGINAL SOIL EXPOSURE:
  - WITHIN 100 FEET OF RIVERS AND STREAMS, WETLANDS, AND IN OOLAKE AND POND WATERSHEDS, THE TIME PERIOD SHOULD BE NO GREATER THAN 7 DAYS. THIS 7-DAY LIMIT SHOULD BE REDUCED FURTHER DURING WET WEATHER PERIODS.
  - IN OTHER AREAS, THE TIME PERIOD CAN RANGE FROM 14 TO 30 OODAYS, THE LENGTH OF TIME VARYING WITH SITE CONDITIONS (SOIL ERODIBILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS. OTHER STATE OR LOCAL RESTRICTIONS MAY ALSO APPLY.
- THE CHOICE OF MATERIALS FOR MULCHING SHOULD BE BASED ON SITE CONDITIONS, SOILS, SLOPE, FLOW CONDITIONS, AND TIME OF YEAR.

HAY OR STRAW MULCHES:

- ORGANIC MULCHES INCLUDING HAY AND STRAW SHOULD BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS.
- APPLICATION RATE SHOULD BE 2 BALES (70-90 POUNDS) PER 1000 SQUARE FEET OR 1.5 TO 2 TONS (90- 100 BALES) PER ACRE TO COVER 75 TO 90 % OF THE GROUND SURFACE.
- HAY OR STRAW MULCH SHOULD BE ANCHORED TO PREVENT DISPLACEMENT BY WIND OR FLOWING WATER, USING ONE OF THE FOLLOWING METHODS:
  - NETTING: INSTALL JUTE, WOOD FIBER, OR BIODEGRADABLE PLASTIC NETTING OVER HAY OR STRAW TO ANCHOR IT TO THE SOIL SURFACE. INSTALL NETTING MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATION. NETTING SHOULD BE USED JUDICIOUSLY, AS WILDLIFE CAN BECOME ENTANGLED IN THE MATERIALS.
  - TACKIFIER: APPLY POLYMER OR ORGANIC TACKIFIER TO ANCHOR HAY OR STRAW MULCH. APPLICATION RATES VARY BY MANUFACTURER: TYPICALLY 40-60 LBS/ACRE FOR POLYMER MATERIAL, AND 80-120 LBS/ACRE FOR ORGANIC MATERIAL. LIQUID MULCH BINDERS ARE ALSO TYPICALLY APPLIED HEAVIER AT EDGES, IN VALLEYS, AND AT CRESTS THAN OTHER AREAS.
- WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON), IT SHOULD BE APPLIED TO A DEPTH OF FOUR INCHES (150-200 FOUNDS OF HAY OR STRAW PER 1000 SQUARE FEET, OR DOUBLE STANDARD APPLICATION RATE). SEEDING CANNOT GENERALLY BE EXPECTED TO GROW UP THROUGH THIS DEPTH OF MULCH AND WILL BE SMOTHERED. IF VEGETATION IS DESIRED, THE MULCH WILL NEED TO BE REMOVED IN THE SPRINGTIME AND THE AREA SEEDED AND MULCHED.

WOOD CHIPS OR BARK:

- WOOD CHIPS OR GROUND BARK SHOULD BE APPLIED TO A THICKNESS OF 2 TO 6 INCHES.
- WOOD CHIPS OR GROUND BARK SHOULD BE APPLIED AT A RATE OF 10 TO 20 TONS PER ACRE OR 460 TO 920 POUNDS PER 1,000 SQUARE FEET.

EROSION CONTROL MIX:

- EROSION CONTROL MIX CAN BE MANUFACTURED ON OR OFF THE PROJECT SITE. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.
- COMPOSITION OF THE EROSION CONTROL MIX SHOULD BE AS FOLLOWS:
  - EROSION CONTROL MIX SHOULD CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHOULD MEET THE FOLLOWING STANDARDS:
  - THE ORGANIC MATTER CONTENT SHOULD BE BETWEEN 25 AND 65%, DRY WEIGHT BASIS.
  - PARTICLE SIZE BY WEIGHT SHOULD BE 100% PASSING A 3" SCREEN, 90% TO 100% PASSING A 1-INCH SCREEN, 70% TO 100% PASSING A 0.75-INCH SCREEN, AND A MAXIMUM OF 30% TO 75%, PASSING A 0.25-INCH SCREEN.
  - THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
  - THE MIX SHOULD NOT CONTAIN SILTS, CLAYS OR FINE SANDS.
  - SOLUBLE SALTS CONTENT SHOULD BE < 4.0 MMHOS/CM.
  - THE PH SHOULD BE BETWEEN 5.0 AND 8.0.
- THE BARRIER MUST BE PLACED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BARRIER THROUGH THE GRASS BLADES OR PLANT STEMS.
- THE BARRIER MUST BE A MINIMUM OF 12" HIGH, AS MEASURED ON THE UPHILL SIDE OF THE BARRIER, AND A MINIMUM OF TWO FEET WIDE.

EROSION CONTROL BLANKETS AND MATS:

- MATS ARE MANUFACTURED COMBINATIONS OF MULCH AND NETTING DESIGNED TO PROTECT AGAINST EROSION, AND ALSO TO RETAIN SOIL MOISTURE AND MODIFY SOIL TEMPERATURE. SEE FURTHER SPECIFICATIONS UNDER "TEMPORARY EROSION BLANKETS."

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NO.	DESCRIPTION	DATE	BY

OWNER:
Andrew Gardent & Krista Vincent
10 Edwards Street
Wilton, N.H. 03086
Book 9209 / Page 1674

EROSION CONTROLS 1
Gardent Property
Tax Map 3 / Lot 12
North River Road ~ Milford, N.H.

DATE: 1-21-21
DWG: 2014-BASE

SOIL STOCKPILING

CONSIDERATIONS

- SOIL STOCKPILES SHOULD BE SITED ON THE SITE IN COMPLIANCE WITH ALL PERMIT CONDITIONS GOVERNING SETBACKS FROM ADJACENT PROPERTY LINES AND WATER RESOURCES (INCLUDING WETLANDS).
- SOIL AND EROSION CONTROL PRACTICES AT STOCKPILES SHOULD BE REGULARLY INSPECTED AND SHOULD BE ADJUSTED IMMEDIATELY TO RESPOND TO ONGOING CONSTRUCTION OPERATIONS, AS THE DELIVERY OF NEW MATERIALS OR THE REMOVAL OF MATERIALS FOR INCORPORATION INTO THE WORK MAY REQUIRE MODIFICATION AND UPDATING OF THE PROTECTIVE MEASURES TO KEEP THEM EFFECTIVE.

MAINTENANCE REQUIREMENTS

- INSPECT ALL SOIL STOCKPILES IMMEDIATELY AFTER STORM EVENTS AND AT THE FREQUENCIES SPECIFIED IN THE PROJECT EROSION AND SEDIMENT CONTROL PLAN AND IN APPLICABLE PERMITS. AT A MINIMUM, INSPECT WEEKLY DURING WET WEATHER PERIODS TO VERIFY THAT EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE AND FUNCTIONING PROPERLY.
- REPAIR AND/OR REPLACE PERIMETER CONTROLS AND STOCKPILE COVERINGS AS NEEDED TO KEEP THEM FUNCTIONING PROPERLY.

SPECIFICATIONS

GENERAL:
- LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CONCENTRATED FLOWS OF STORMWATER, DRAINAGE COURSES, AND INLETS.
- PROTECT ALL STOCKPILES FROM STORMWATER RUN-ON USING TEMPORARY PERIMETER MEASURES SUCH AS DIVERSIONS, BERMS, SANDBAGS, OR OTHER APPROVED PRACTICE.
- STOCKPILES SHOULD BE SURROUNDED BY SEDIMENT BARRIERS AS DESCRIBED IN THIS MANUAL, TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.
- IMPLEMENT WIND EROSION CONTROL PRACTICES AS APPROPRIATE ON ALL STOCKPILED MATERIAL.
- PLACE BAGGED MATERIALS ON PALLETS AND UNDER COVER.

PROTECTION OF INACTIVE STOCKPILES:
- INACTIVE SOIL STOCKPILES SHOULD BE COVERED WITH ANCHORED TARPS OR PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY SEED AND MULCH OR OTHER TEMPORARY STABILIZATION PRACTICE) AND TEMPORARY PERIMETER SEDIMENT BARRIERS AT ALL TIMES.
- INACTIVE STOCKPILES OF CONCRETE RUBBLE, ASPHALT CONCRETE RUBBLE AGGREGATE MATERIALS, AND OTHER SIMILAR MATERIALS SHOULD BE PROTECTED WITH TEMPORARY SEDIMENT PERIMETER BARRIERS AT ALL TIMES. IF THE MATERIALS ARE A SOURCE OF DUST, THEY SHOULD ALSO BE COVERED.

PROTECTION OF ACTIVE STOCKPILES:
- ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY LINEAR SEDIMENT BARRIERS PRIOR TO THE ONSET OF PRECIPITATION. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
- WHEN A STORM EVENT IS PREDICTED, STOCKPILES SHOULD BE PROTECTED WITH AN ANCHORED PROTECTIVE COVERING.

SURFACE ROUGHENING

CONSIDERATIONS

- GRADED AREAS WITH SMOOTH, HARD SURFACES MAY BE INITIALLY ATTRACTIVE, BUT SUCH SURFACES INCREASE THE POTENTIAL FOR EROSION. A ROUGH, LOOSE SOIL SURFACE GIVES A MULCHING EFFECT THAT PROVIDES MORE FAVORABLE MOISTURE CONDITIONS THAN HARD, SMOOTH SURFACES; THIS AIDS SEED GERMINATION.
- METHODS FOR ACHIEVING A ROUGHENED SOIL SURFACE ON A SLOPE INCLUDE TRACKING, FURROWING, AND SERRATING (OR GROOVING). SELECTION OF THE METHOD IS BASED ON SLOPE STEEPNESS, MOWING REQUIREMENTS, AND WHETHER THE SLOPE IS FORMED BY CUTTING OR FILLING.

MAINTENANCE REQUIREMENTS

- ANY SIGN OF RILL OR GULLY EROSION SHOULD BE IMMEDIATELY INVESTIGATED AND REPAIRED AS NEEDED.
- PERIODICALLY INSPECT SEEDED SLOPES FOR RILLS OR OTHER SIGNS OF EROSION. FILL THESE AREAS SLIGHTLY ABOVE THE ORIGINAL GRADE, RESEED, AND MULCH AS SOON AS POSSIBLE, BUT NO MORE THAN 3 DAYS FOLLOWING INSPECTION.

SPECIFICATIONS

CUT SLOPE ROUGHENING:
- GROOVE THE SLOPE USING MACHINERY TO CREATE A SERIES OF RIDGES AND DEPRESSIONS THAT RUN ACROSS THE SLOPE, ON THE CONTOUR.

FILL SLOPE ROUGHENING:
- IN GENERAL, FILL SLOPES WITH A GRADIENT STEEPER THAN 3:1 SHOULD BE CONSTRUCTED IN LIFTS NOT TO EXCEED 12 INCHES, COMPACTING EACH LIFT. THE CONTRACTOR SHOULD REFER TO THE PROJECT GEOTECHNICAL REPORT FOR SPECIFIC GUIDANCE.
- THE FACE OF THE SLOPE SHOULD CONSIST OF LOOSE, UNCOMPACTED FILL 4-6 INCHES DEEP.
- USE GROOVING OR TRACKING TO ROUGHEN THE FACE OF THE SLOPES, IF NECESSARY.
- APPLY SEED, FERTILIZER AND STRAW MULCH, AND THEN TRACK OR PUNCH IN THE MULCH WITH THE BULLDOZER.
- DO NOT BLADE OR SCRAPE THE FINAL SLOPE FACE.

CUTS, FILLS, AND GRADED AREAS:
- MAKE MOWED SLOPES NO STEEPER THAN 3:1.
- ROUGHEN THESE AREAS TO SHALLOW GROOVES BY NORMAL TILLING, DISKING, OR HARROWING. THE FINAL PASS OF ANY SUCH TILLAGE SHOULD BE ON THE CONTOUR.
- MAKE GROOVES FORMED BY SUCH IMPLEMENTS CLOSE TOGETHER (LESS THAN 10 INCHES), AND NOT LESS THAN 1 INCH DEEP.
- EXCESSIVE ROUGHNESS IS UNDESIRABLE WHERE MOWING IS PLANNED.

ROUGHENING WITH TRACKED MACHINERY:
- LIMIT ROUGHENING WITH TRACKED MACHINERY TO SOILS WITH A SANDY TEXTURAL COMPONENT TO AVOID UNDUE COMPACTION OF THE SOIL SURFACE.
- OPERATE TRACKED MACHINERY UP AND DOWN THE SLOPE TO LEAVE HORIZONTAL DEPRESSIONS IN THE SOIL. DO NOT BACK-BLADE DURING THE FINAL GRADING OPERATION.
- IMMEDIATELY SEED AND MULCH ROUGHENED AREAS TO OBTAIN OPTIMUM SEEDGERMINATION AND GROWTH.

DUST CONTROL

CONSIDERATIONS

- PHASE CONSTRUCTION AND SEQUENCE EARTH DISTURBANCE ACTIVITIES TO REDUCE THE AREA OF LAND DISTURBED AT ANY ONE TIME.
- MAINTAIN AS MUCH NATURAL VEGETATION AS IS PRACTICABLE.
- USE TRAFFIC CONTROL TO RESTRICT TRAFFIC TO PREDETERMINED ROUTES.
- USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, PERMANENT VEGETATIVE COVER, OR SODDING TO REDUCE THE NEED FOR DUST CONTROL.
- USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. STATIONARY SOURCES OF DUST (I.E., ROCK CRUSHERS) SHOULD UTILIZE FINE WATER SPRAYS TO CONTROL DUST.
- APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.

MAINTENANCE REQUIREMENTS

- WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHOULD BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

SPECIFICATIONS

WATER APPLICATION:
- MOISTEN EXPOSED SOIL SURFACES PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.
- AVOID EXCESSIVE APPLICATION OF WATER THAT WOULD RESULT IN MOBILIZING SEDIMENT AND SUBSEQUENT DEPOSITION IN NATURAL WATERBODIES

STONE APPLICATION:
- COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.
- IN AREAS ADJACENT TO WATERWAYS, USE ONLY CHEMICALLY STABLE OR WASHED AGGREGATE.

OTHER COMMERCIAL PRODUCTS:
- THE USE OF OTHER COMMERCIAL PRODUCTS (I.E., TACKIFIERS) TO STABILIZE EXPOSED SURFACES FOR DUST CONTROL WILL BE SUBJECT TO ACCEPTANCE BY NHDES ON A PROJECT-SPECIFIC BASIS.

OTHER PRACTICES:
- APPLY OTHER TEMPORARY AND PERMANENT STABILIZATION PRACTICES AS SPECIFIED IN THIS MANUAL.
- CALCIUM CHLORIDE CANNOT BE APPLIED IN WATERSHEDS WITH CHLORIDE-IMPAIRED WATERBODIES. ELSEWHERE, IT SHOULD ONLY BE USED WHEN OTHER METHODS ARE NOT PRACTICAL, AND FOLLOWING THESE GUIDELINES:
  - FOR DRY APPLICATION, USE A COMMERCIAL CHEMICAL PRODUCT THAT IS EITHER LOOSE DRY GRANULES OR FLAKES, FINE ENOUGH TO FEED THROUGH A SPREADER AT A RATE THAT WILL KEEP THE SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE.
  - FOR LIQUID APPLICATIONS, THE APPLICATION RATE WILL VARY DEPENDING ON THE RELATIVE QUALITY OF MATERIALS IN A GIVEN ROAD SURFACE. SOME CALCIUM CHLORIDE SUPPLIERS MAY REQUIRE A ROAD SAMPLE BEFORE RECOMMENDING AN APPLICATION RATE. TYPICALLY, 30% CALCIUM CHLORIDE IS RECOMMENDED FOR MOST GRAVEL ROADS.

TEMPORARY EROSION CONTROL BLANKET

CONSIDERATIONS

EROSION CONTROL BLANKETS CAN BE APPLIED TO STEEP SLOPES, VEGETATED WATERWAYS, AND OTHER AREAS SENSITIVE TO EROSION, TO SUPPLEMENT VEGETATION DURING INITIAL ESTABLISHMENT AND HELP PROVIDE FOR SAFE CONVEYANCE OF RUNOFF OVER THE PROTECTED SURFACE.
- DURING THE GROWING SEASON (APRIL 15 - SEPTEMBER 15) USE MATS (OR MULCH AND NETTING) ON:
  - THE BASE OF GRASSED WATERWAYS
  - STEEP SLOPES (15% OR GREATER)
  - ANY DISTURBED SOIL WITHIN 100 FEET OF LAKES, STREAMS AND WETLANDS
- DURING THE LATE FALL AND WINTER (SEPTEMBER 15 - APRIL 15) USE HEAVY GRADE MATS ON ALL AREAS NOTED ABOVE PLUS USE LIGHTER GRADE MATS (OR MULCH AND NETTING) ON:
  - SIDE SLOPES OF GRASSED WATERWAYS
  - MODERATE SLOPES (GREATER THAN 8%) THERE MAY BE CASES WHERE MATS WILL BE NEEDED ON SLOPES FLATTER THAN 8%, DEPENDING ON SITE CONDITIONS AND THE LENGTH OF THE SLOPE.
- THE MOST CRITICAL ASPECT OF INSTALLING MATS IS OBTAINING FIRM CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL. WITHOUT SUCH CONTACT, THE MAT IS USELESS AND EROSION OCCURS.
- INSTALL MATS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- THE DESIGNER MUST EXERCISE CARE TO CHOOSE THE TYPE OF BLANKET OR MATTING WHICH IS APPROPRIATE FOR THE SPECIFIC OBJECTIVES AND SITE CONDITIONS OF THE PROJECT. THERE ARE MANY SOIL STABILIZATION PRODUCTS AVAILABLE, AND A THOROUGH REVIEW BY AN ENGINEER OR EROSION CONTROL PROFESSIONAL IS NECESSARY TO EVALUATE THE ADVANTAGES, DISADVANTAGES, AND CONSTRUCTION REQUIREMENTS OF THE MANUFACTURED PRODUCTS, AND TO SELECT AND SPECIFY A PRODUCT FOR A PARTICULAR APPLICATION.

MAINTENANCE REQUIREMENTS

- ALL BLANKET AND MATS SHOULD BE INSPECTED WEEKLY DURING THE CONSTRUCTION PERIOD, AND AFTER ANY RAINFALL EVENT EXCEEDING ½ INCH IN A 24-HOUR PERIOD.
- ANY FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUT OF THE SLOPE, DISPLACEMENT OF THE MAT, OR DAMAGE TO THE MAT OCCURS, THE AFFECTED SLOPE SHALL BE REPAIRED AND RESEEDED, AND THE AFFECTED AREA OF MAT SHALL BE RE-INSTALLED OR REPLACED.

SPECIFICATIONS

SITE PREPARATION:
- PROPER SITE PREPARATION IS ESSENTIAL TO ENSURE COMPLETE CONTACT OF THE PROTECTION MATTING WITH THE SOIL.
- GRADE AND SHAPE AREA OF INSTALLATION.•
- REMOVE ALL ROCKS, CLODS, TRASH, VEGETATIVE OR OTHER OBSTRUCTIONS SO THAT THE INSTALLED BLANKETS WILL HAVE DIRECT CONTACT WITH THE SOIL.
- PREPARE SEEDBED BY LOOSENING 2-3 INCHES OF TOPSOIL ABOVE FINAL GRADE.
- INCORPORATE AMENDMENTS, SUCH AS LIME AND FERTILIZER, INTO SOIL ACCORDING TO SOIL TEST AND THE SEEDING PLAN.

SEEDING:
- SEED AREA BEFORE BLANKET INSTALLATION FOR EROSION CONTROL AND REVEGETATION. SEEDING AFTER MAT INSTALLATION IS OFTEN SPECIFIED FOR TURF REINFORCEMENT APPLICATION. WHEN SEEDING PRIOR TO BLANKET INSTALLATION, ALL CHECK SLOTS AND OTHER AREAS DISTURBED DURING INSTALLATION MUST BE RESEEDED.

WHERE SOIL FILLING IS SPECIFIED, SEED THE MATTING AND THE ENTIRE DISTURBED AREA AFTER INSTALLATION AND PRIOR TO FILLING THE MAT WITH SOIL.

INSTALLING AND ANCHORING BLANKETS:
- **BLANKETS SHALL BE INSTALLED AND ANCHORED PER THE MANUFACTURER'S SPECIFICATIONS. IF THE MANUFACTURER'S INSTRUCTIONS DIFFER FROM THOSE LISTED BELOW, THE MANUFACTURER'S INSTRUCTIONS SHOULD BE FOLLOWED.**
- BLANKETS SHALL BE PLACED WITHIN 24 HOURS AFTER SOWING SEED IN THAT AREA.
- U-SHAPED WIRE STAPLES, METAL GEOTEXTILE STAKE PINS, OR TRIANGULAR WOODEN STAKES CAN BE USED TO ANCHOR MATS TO THE GROUND SURFACE.
  - WIRE STAPLES SHOULD BE A MINIMUM GAUGE AS SPECIFIED BY THE MANUFACTURER.
  - METAL STAKE PINS SHOULD BE 3/16-INCH DIAMETER STEEL WITH A 1 1/2 INCH STEEL WASHER AT THE HEAD OF THE PIN, OR AS SPECIFIED BY THE MANUFACTURER.
- WIRE STAPLES AND METAL STAKES SHOULD BE DRIVEN FLUSH TO THE SOIL SURFACE. ALL ANCHORS SHOULD HAVE SUFFICIENT GROUND PENETRATION TO RESIST PULLOUT. LONGER ANCHORS MAY BE REQUIRED FOR LOOSE SOILS.

INSTALLATION ON SLOPES:
- **BLANKETS SHALL BE INSTALLED ON SLOPES PER THE MANUFACTURER'S SPECIFICATIONS. IF THE MANUFACTURER'S INSTRUCTIONS DIFFER FROM THOSE LISTED BELOW, THE MANUFACTURER'S INSTRUCTIONS SHOULD BE FOLLOWED.**
- BLANKETS SHALL BE LAID LOOSELY OVER THE SOILS, MAINTAINING CONTACT WITH THE SOIL, AND NOT STRETCHED.
- BLANKETS SHALL BE ANCHORED AT THE TOP OF THE SLOPE IN A TRENCH TO PREVENT RUNOFF FROM UNDERMINING THE MAT. SUBSEQUENT MATS SHOULD BE OVERLAPPED BY THE UPSLOPE MAT. BACKFILL TRENCH AND TAMP EARTH FIRMLY.
- BLANKETS SHALL BE UNROLLED IN THE DIRECTION OF THE WATER FLOW, OVERLAPPING THE EDGES BY A MINIMUM OF 4 INCHES AND STAPLING THE EDGES, AS DIRECTED BY THE MANUFACTURER.
- WHEN BLANKETS MUST BE SPLICED, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH 6-INCH MINIMUM OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12 INCHES APART, OR AS SPECIFIED BY MANUFACTURER.
- LAY BLANKETS LOOSELY AND MAINTAIN DIRECT CONTACT WITH THE SOIL - DO NOT STRETCH.
- BLANKETS SHALL BE STAPLED SUFFICIENTLY TO ANCHOR BLANKET AND MAINTAIN CONTACT WITH THE SOIL. STAPLES SHALL BE PLACED DOWN THE CENTER AND STAGGERED WITH THE STAPLES PLACED ALONG THE EDGES. STAPLING PATTERN AND NUMBER OF STAPLES WILL DEPEND ON STEEPNESS OF SLOPE AND MANUFACTURER'S ANCHORING METHODS; FOLLOW MANUFACTURER'S INSTRUCTIONS.

INSTALLATION IN CHANNELS:
- **BLANKETS SHALL BE INSTALLED IN CHANNELS PER THE MANUFACTURER'S SPECIFICATIONS. IF THE MANUFACTURER'S INSTRUCTIONS DIFFER FROM THOSE LISTED BELOW, THE MANUFACTURER'S INSTRUCTIONS SHOULD BE FOLLOWED.**
- DIG INITIAL ANCHOR TRENCH ACROSS THE CHANNEL AT THE LOWER END OF THE PROJECT AREA.
- EXCAVATE INTERMITTENT CHECK SLOTS, ACROSS THE CHANNEL AT 25-30 FOOT INTERVALS ALONG THE CHANNEL, OR AS SPECIFIED BY MANUFACTURER.
- CUT LONGITUDINAL CHANNEL ANCHOR SLOTS ALONG EACH SIDE OF THE INSTALLATION TO BURY EDGES OF MATTING. WHENEVER FOSSIBLE EXTEND MATTING 2-3 INCHES ABOVE THE CREST OF CHANNEL SIDE SLOPES.
- BEGINNING AT THE DOWNSTREAM END AND IN THE CENTER OF THE CHANNEL, PLACE THE INITIAL END OF THE FIRST ROLL IN THE ANCHOR TRENCH AND SECURE WITH FASTENING DEVICES, AS DIRECTED BY THE MANUFACTURER. NOTE: MATTING WILL INITIALLY BE UPSIDE DOWN IN ANCHOR TRENCH.
- IN THE SAME MANNER, POSITION ADJACENT ROLLS IN ANCHOR TRENCH, OVERLAPPING THE PRECEDING ROLL A MINIMUM OF 3 INCHES.
- SECURE THESE INITIAL ENDS OF MATS WITH ANCHORS AT MANUFACTURER'S SPECIFIED INTERVALS, BACKFILL AND COMPACT SOIL.
- UNROLL CENTER STRIP OF MATTING UPSTREAM. STOP AT NEXT CHECK SLOT OR TERMINAL ANCHOR TRENCH.
- UNROLL ADJACENT MATS UPSTREAM IN SIMILAR FASHION, MAINTAINING A 3-INCH MINIMUM OVERLAP.
- FOLD AND SECURE ALL ROLLS OF MATTING SNUGLY INTO ALL TRANSVERSE CHECK SLOTS. LAY MAT IN THE BOTTOM OF THE SLOT THEN FOLD BACK AGAINST ITSELF. ANCHOR THROUGH BOTH LAYERS OF MAT AT MANUFACTURER'S SPECIFIED INTERVALS, THEN BACKFILL AND COMPACT SOIL. CONTINUE ROLLING ALL MAT WIDTHS UPSTREAM TO THE NEXT CHECK SLOT OR TERMINAL ANCHOR TRENCH.
- ALTERNATE METHOD FOR NONCRITICAL INSTALLATIONS: PLACE TWO ROWS OF ANCHORS ON 6-INCH CENTERS AT 25-30 FEET INTERVALS IN LIEU OF EXCAVATED CHECK SLOTS.
- SHINGLE-LAP SPLICED ENDS BY A MINIMUM OF 1 FOOT WITH UPSTREAM MAT ON TOP TO PREVENT UPLIFTING BY WATER OR BEGIN NEW ROLLS IN A CHECK SLOT. ANCHOR OVERLAPPED AREA BY PLACING TWO ROWS OF ANCHORS, 1 FOOT APART ON 1-FOOT INTERVALS.
- PLACE EDGES OF OUTSIDE MATS IN PREVIOUSLY EXCAVATED LONGITUDINAL SLOTS, ANCHOR USING PRESCRIBED STAPLE PATTERN, BACKFILL AND COMPACT SOIL.
- ANCHOR, FILL AND COMPACT UPSTREAM END OF MAT IN A TERMINAL TRENCH, AS DIRECTED BY MANUFACTURER.
- SECURE MAT TO GROUND SURFACE USING U-SHAPED WIRE STAPLES, GEOTEXTILE PINS, WOODEN STAKES, OR OTHER ANCHORS AS RECOMMENDED BY THE MANUFACTURER.

DIVERSION CHANNEL

CONSIDERATIONS

- TEMPORARY DIVERSIONS MUST BE STABILIZED IMMEDIATELY FOLLOWING INSTALLATION TO PREVENT EROSION OF THE DIVERSION ITSELF.
- THE GRADIENT ALONG THE FLOW PATH MUST HAVE A POSITIVE GRADE TO ASSURE DRAINAGE, BUT SHOULD NOT BE SO STEEP AS TO RESULT IN EROSION DUE TO HIGH VELOCITY CHANNEL FLOW. IF SUCH EROSION OCCURS DURING CONSTRUCTION, CORRECTIVE ACTION SHOULD BE TAKEN TO STABILIZE THE CHANNEL AND BERM, FLATTEN THE GRADIENT OF THE CHANNEL, OR OTHERWISE ELIMINATE THE CAUSE OF EROSION.
- DIVERSIONS ARE TYPICALLY INSTALLED USING MATERIAL AVAILABLE ON THE SITE AND CAN USUALLY BE CONSTRUCTED WITH EQUIPMENT NEEDED FOR SITE GRADING. THE USEFUL LIFE OF THE PRACTICE CAN BE EXTENDED BY STABILIZING THE DIKE WITH VEGETATION.
- TEMPORARY DIVERSION DIKES ARE OFTEN USED AS A PERIMETER CONTROL IN ASSOCIATION WITH A SEDIMENT TRAP OR A SEDIMENT BASIN, OR A SERIES OF SEDIMENT-TRAPPING FACILITIES, ON MODERATE TO LARGE CONSTRUCTION SITES. IF INSTALLED PROPERLY AND IN THE FIRST PHASE OF GRADING, MAINTENANCE COSTS ARE VERY LOW.
- DIVERSIONS THAT ARE LOCATED UPSLOPE OF A CONSTRUCTION AREA SHOULD NOT THEMSELVES BE LOCATED BELOW HIGH SEDIMENT-PRODUCING AREAS UNLESS LAND TREATMENT PRACTICES OR STRUCTURAL MEASURES, DESIGNED TO PREVENT DAMAGING ACCUMULATIONS OF SEDIMENT IN THE CHANNELS, ARE INSTALLED WITH OR BEFORE THE DIVERSIONS. (THE EXCEPTION IS WHERE THE DIVERSION IS USED TO DIVERT SEDIMENT-LADEN WATER TO A SEDIMENTATION FACILITY.)
- WHERE DIVERSIONS CARRY CONCENTRATED FLOWS, THEIR OUTLETS MAY REQUIRE TREATMENT OR STRUCTURES TO DISSIPATE ENERGY AND RE-DISPERSE THE FLOW OR RE-CREATE SHEET FLOW INTO UNDISTURBED UPLAND AREAS, WHERE THE RUNOFF CAN BE ABSORBED. UNTREATED, SEDIMENT-LADEN RUNOFF SHOULD NOT BE DISCHARGED TO SUCH UNDISTURBED AREAS.

MAINTENANCE REQUIREMENTS

- THE MEASURE SHOULD BE INSPECTED WEEKLY AND AFTER EVERY STORM OF ½ INCH OR MORE IN A 24-HOUR PERIOD. REPAIRS SHOULD BE MADE TO THE BERM (DIKE), FLOW CHANNEL, OUTLET OR SEDIMENT TRAPPING FACILITY, AS NECESSARY.
- DIVERSION DIKES USED TO TRAP SEDIMENT SHOULD BE INSPECTED AND CLEANED OUT AFTER EVERY SIGNIFICANT STORM.
- DAMAGES CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY MUST BE REPAIRED BEFORE THE END OF EACH WORKING DAY.
- IF INSPECTION INDICATES VEGETATION HAS NOT BEEN ESTABLISHED OR HAS BEEN DAMAGED, THE AFFECTED AREAS MUST BE RESEEDED IMMEDIATELY.
- ONCE DIVERSIONS HAVE BEEN STABILIZED, THEY SHOULD BE MOWED PERIODICALLY TO MAINTAIN A HEALTHY VEGETATIVE COVER, BUT THE GRASS SHOULD NOT BE CUT SHORTER THAN 4 INCHES. DIVERSION RIDGES CAN BE HAZARDOUS TO MOW, AND EQUIPMENT OPERATORS SHOULD BE MADE AWARE OF THIS POTENTIAL HAZARD.

SPECIFICATIONS

DESIGN SPECIFICATIONS:
- DIVERSIONS SHOULD BE DESIGNED TO MEET THE CRITERIA IN THE FOLLOWING TABLE:

CONSTRUCTION SPECIFICATIONS:
- TEMPORARY DIVERSION DIKES SHOULD BE INSTALLED AS AN INITIAL STEP IN THE LAND-DISTURBING ACTIVITY. THEY MUST BE FUNCTIONAL PRIOR TO EXPOSURE OF SOILS IN THE AREA BEING SERVED BY THE DIVERSION.
- ALL DITCHES OR GULLIES WITHIN THE LIMITS OF THE DIVERSION SHOULD BE FILLED, AND TREES AND OTHER OBSTRUCTIONS SHOULD BE REMOVED BEFORE OR AS PART OF THE CONSTRUCTION.
- THE DIKE SHOULD BE LOCATED TO MINIMIZE DAMAGES BY CONSTRUCTION OPERATIONS AND TRAFFIC.
- WHERE THE DIVERSION CROSSES AN UNDERGROUND UTILITY OR OTHER STRUCTURE, MEASURES SHOULD BE EMPLOYED TO PREVENT DAMAGE TO THE UTILITY, AND TO PREVENT SETTLEMENT OR DISPLACEMENT OF TRENCH BACKFILL AS A RESULT OF THE PLACEMENT OF THE DIVERSION.
- ONCE SOIL IS EXPOSED FOR A DIVERSION CHANNEL, IT SHOULD BE IMMEDIATELY SHAPED, GRADED AND STABILIZED. THE DIKE SHOULD BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
- TEMPORARY OR PERMANENT SEEDING AND MULCH SHOULD BE APPLIED TO THE DIKE IMMEDIATELY FOLLOWING ITS CONSTRUCTION.
- DIVERSIONS MUST BE COMPLETELY STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- WHERE VEGETATION IS USED FOR STABILIZATION, DISTURBED AREAS SHOULD BE ESTABLISHED TO GRASS IMMEDIATELY AFTER CONSTRUCTION. SEEDBED PREPARATION, SEEDING, FERTILIZING, AND MULCHING SHOULD COMPLY WITH TEMPORARY VEGETATION AND PERMANENT VEGETATION PRACTICES DESCRIBED IN THIS MANUAL.
- IF THE SOILS OR WINTER CONDITIONS PRECLUDE THE USE OF VEGETATION AND PROTECTION IS NEEDED, NONVEGETATIVE MEANS, SUCH AS EROSION CONTROL MATS OR A GRADED STONE LINING MAY BE USED.
- EACH DIVERSION MUST HAVE AN ADEQUATE OUTLET. THE OUTLET MUST CONVEY RUNOFF TO A POINT WHERE OUTFLOW WILL NOT CAUSE DAMAGE. THE OUTLET SHOULD BE INSTALLED AND STABILIZED BEFORE THE CONSTRUCTION OF THE DIVERSION.

DIVERSION CHANNEL SPECIFICATIONS

DESIGN PARAMETER	CRITERIA
LOCATION	THE CONDITION OF THE OUTLET AREA, SITE TOPOGRAPHY, GROUND COVER, SOIL TYPE, AND LENGTH OF SLOPE SHOULD DETERMINE THE LOCATION OF THE DIVERSION.
DRAINAGE AREA	< 5 ACRES
CAPACITY	2-YEAR, 24 HOUR DESIGN STORM CONVEYANCE CAPACITY
DESIGN VELOCITY	2.5 TO 4.5 FEET/SEC, DEPENDING ON CHANNEL LINING
BERM/CHANNEL SIDE SLOPE	2:1 OR FLATTER
BERM TOP WIDTH	2 FEET, MINIMUM
TOTAL DEPTH TOP OF BERM TO BOTTOM OF CHANNEL	1.5 FEET MAXIMUM, EXCEPT FOR BERM OVERFILL OF APPROXIMATELY 10% OF BERM HEIGHT TO ALLOW FOR SETTLEMENT.
FREEBOARD	0.5 FEET MINIMUM
CHANNEL SHAPE	PARABOLIC OR TRAPEZOIDAL
STABILIZATION	VEGETATION OR RIPRAP
GRADIENT (ALONG FOW PATH)	POSITIVE GRADE TO OUTLET. CHANNELS < 2% DO NOT REQUIRE STABILIZATION UNLESS EXCESSIVE EROSION IS OBSERVED DURING ROUTINE INSPECTION. CHANNELS > 2% SHOULD BE STABILIZED.
OUTLET	SEDIMENT LADEN WATER MUST BE DIVERTED INTO SEDIMENT TRAP OR SEDIMENT BASIN. RUNOFF FROM UNDISTURBED AREAS MUST DISCHARGE AT EITHER A NATURALLY STABLE OUTLET, OR A STABILIZED LEVEL SPREADER, APRON OR OTHER SUITABLE STRUCTURE.

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NO.	DATE	DESCRIPTION	BY

OWNER:
Andrew Gardent & Krista Vincent
10 Edwards Street
Wilton, N.H. 03086
Book 9209 / Page 1674

EROSION CONTROLS 2
Gardent Property
Tax Map 3 / Lot 12
North River Road – Milford, N.H.

DATE: 1-21-21

DWG: 2014-BASE

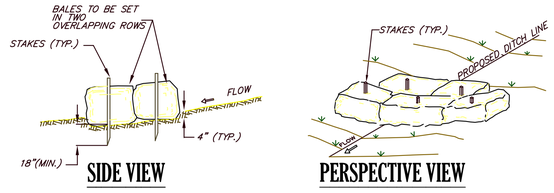
BALE INSTALLATION

SHEET FLOW APPLICATIONS

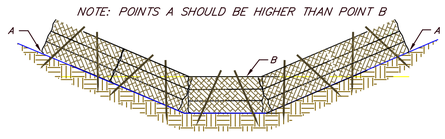
1. EXCAVATE A 4 INCH DEEP TRENCH THE WIDTH OF A BALE AND THE LENGTH OF THE PROPOSED BARRIER. THE BARRIER SHOULD FOLLOW THE SLOPE CONTOUR. IF THE BARRIER IS AT THE TOE OF A SLOPE, PLACE IT 5 TO 6 FEET AWAY FROM THE SLOPE, IF POSSIBLE. THIS PLACEMENT WILL PROVIDE ACCESS FOR MAINTENANCE AND ALLOW COARSE SEDIMENT TO DROP OUT OF SUSPENSION BEFORE IT REACHES THE BARRIER.
2. PLACE BALES IN THE TRENCH WITH THEIR ENDS TIGHTLY ABUTTING. CORNER ABUTMENT IS NOT ACCEPTABLE. A TIGHT FIT IS IMPORTANT TO PREVENT SEDIMENT FROM ESCAPING THROUGH THE SPACES BETWEEN THE BALES.
3. ALL BALES MUST BE EITHER WIRE-BOUND OR STRING-TIED. INSTALL BALES SO THAT BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. IF THE BINDING IS PLACED IN CONTACT WITH THE SOIL, IT WILL SOON DISINTEGRATE AND CAUSE THE BALE TO FALL APART. NOTE: STRAW BALES SHOULD BE USED, NOT HAY BALES.
4. SECURELY ANCHOR EACH BALE BY DRIVING AT LEAST TWO STAKES THROUGH THE BALE. DRIVE THE FIRST STAKE IN EACH BALE TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. DRIVE THE STAKES AT LEAST 1 1/2 FEET INTO THE GROUND. WOOD STAKES, 2 BY 2 INCHES BY 4 FEET ARE BEST. REBAR CAN ALSO BE USED AS STAKES, BUT ARE NOT RECOMMENDED BECAUSE THEY CAN POSE HAZARD TO EQUIPMENT WHEN THE BALES DISINTEGRATE.
5. FILL ANY GAPS BETWEEN BALES BY WEDGING LOOSE STRAW BETWEEN THE BALES. LOOSE STRAW SCATTERED OVER THE AREA IMMEDIATELY UPHILL FROM A STRAW BALE BARRIER TENDS TO INCREASE BARRIER EFFICIENCY, AS IT IS PICKED UP BY RUNOFF AND TRANSPORTED TO HOLES IN THE BARRIER, WHICH IT TENDS TO SEAL.
6. BACKFILL THE TRENCH WITH THE EXCAVATED SOIL AND COMPACT IT. THE BACKFILL SOIL SHOULD CONFORM TO THE GROUND LEVEL ON THE DOWNHILL SIDE OF THE BARRIER AND SHOULD BE BUILT UP TO 4 INCHES ABOVE THE GROUND ON THE UPHILL SIDE OF THE BALES.
7. INSPECT AND REPAIR OR REPLACE DAMAGED BALES PROMPTLY. STRAW BALES TYPICALLY DETERIORATE WITHIN THREE MONTHS WHEN WET. REMOVE THE STRAW BALES WHEN THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.

CHANNEL FLOW APPLICATIONS

1. EXCAVATE A 4 INCH DEEP TRENCH THE WIDTH OF A BALE AND THE LENGTH OF THE PROPOSED BARRIER. PLACE BALES IN A SINGLE ROW, LENGTHWISE, ORIENTED PERPENDICULAR TO THE FLOW, AND WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.
2. PLACE BALES IN THE TRENCH WITH THEIR ENDS TIGHTLY ABUTTING. CORNER ABUTMENT IS NOT ACCEPTABLE. A TIGHT FIT IS IMPORTANT TO PREVENT SEDIMENT FROM ESCAPING THROUGH THE SPACES BETWEEN THE BALES. EXTEND THE BARRIER TO SUCH A LENGTH THAT THE BOTTOM OF THE END BALES ARE AT A HIGHER ELEVATION THAN THE TOP OF THE LOWEST MIDDLE BALE TO ASSURE THAT SEDIMENT-LADEN RUN-OFF WILL FLOW EITHER THROUGH OR OVER THE BARRIER BUT NOT AROUND IT. ROCK PLACED BELOW THE MIDDLE BALE WILL DISSIPATE THE ENERGY OF THE FALLING WATER AND REDUCE DOWNSTREAM EROSION.
3. ALL BALES MUST BE EITHER WIRE-BOUND OR STRING-TIED. INSTALL BALES SO THAT BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. IF THE BINDING IS PLACED IN CONTACT WITH THE SOIL, IT WILL SOON DISINTEGRATE AND CAUSE THE BALE TO FALL APART.
   NOTE: STRAW BALES SHOULD BE USED, NOT HAY BALES.
4. SECURELY ANCHOR EACH BALE BY DRIVING AT LEAST TWO STAKES THROUGH THE BALE. DRIVE THE FIRST STAKE IN EACH BALE TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. DRIVE THE STAKES AT LEAST 1 1/2 FEET INTO THE GROUND. WOOD STAKES, 2 BY 2 INCHES BY 4 FEET ARE BEST. REBARS CAN ALSO BE USED AS STAKES, BUT ARE NOT RECOMMENDED BECAUSE THEY CAN POSE HAZARD TO EQUIPMENT WHEN THE BALES DISINTIGRATE.
5. FILL ANY GAPS BETWEEN BALES BY WEDGING LOOSE STRAW BETWEEN THE BALES. LOOSE STRAW SCATTERED OVER THE AREA IMMEDIATELY UPHILL FROM A STRAW BALE BARRIER TENDS TO INCREASE BARRIER EFFICIENCY, IT IS PICKED UP BY RUNOFF AND TRANSPORTED TO HOLES IN THE BARRIER, WHICH IT TENDS TO SEAL.
6. BACKFILL THE TRENCH WITH THE EXCAVATED SOIL AND COMPACT IT. THE BACKFILL SOIL SHOULD CONFORM TO THE GROUND LEVEL ON THE DOWNHILL SIDE OF THE BARRIER AND SHOULD BE BUILT UP TO 4 INCHES ABOVE THE GROUND ON THE UPHILL SIDE OF THE BALES. ROCK PLACED BELOW THE MIDDLE BALE WILL DISSIPATE THE ENERGY OF THE FALLING WATER AND REDUCE DOWNSTREAM EROSION.
7. INSPECT AND REPAIR OR REPLACE DAMAGED BALES PROMPTLY. STRAW BALES TYPICALLY DETERIORATE WITHIN THREE MONTHS WHEN WET. REMOVE THE STRAW BALES WHEN THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.



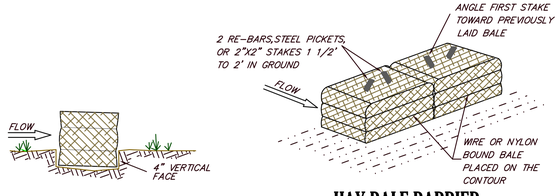
SIDE VIEW — PERSPECTIVE VIEW



PLACE HAYBALES EVERY 150' IN ROADSIDE DITCHES AND EVERY 100' IN DRAINAGE OUTLET DITCHES

DETAIL OF BALE CHANNEL BARRIER

NOT TO SCALE



EMBEDDING DETAIL — HAY BALE BARRIER ANCHORING DETAIL

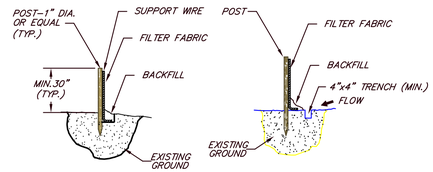
NOT TO SCALE

SILT FENCE CONSTRUCTION SPECIFICATIONS

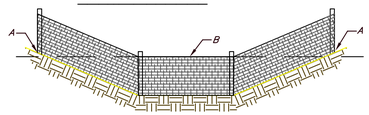
1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID SECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVELAPPED BY 6 INCHES, FOLDED, AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMU CROSS SECTIONAL AREA OF 3.0 SQUAER INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED TO PREVENT BULGES IN THE SILT FENCE DUE TO DEPOSITION OF SEDIMENT.

MAINTENANCE

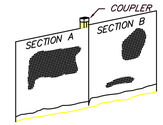
1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.



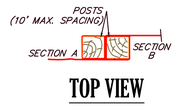
TOE-IN METHODS



NOTE: POINTS A SHOULD BE HIGHER THAN POINT B SILT FENCE THROUGH SMALL SWALE



JOINING SECTIONS



TOP VIEW

SILT FENCE DETAILS

NOT TO SCALE

STONE FILL SPECIFICATIONS

1. THIS WORK SHALL CONSIST OF FURNISHING AND PLACING A DENSE STONE FILL AT THE LOCATIONS SHOWN THE PLANS OR ORDERED.
2. STONE FOR STONE FILL SHALL BE APPROVED QUARRY STONE, OR BROKEN OF A HARD, SOUND, & DURABLE QUALITY. THE STONES & SPALLS SHALL BESO GRADED AS TO PRODUCE A DENSE FILL WITH A MINIMUM OF VOIDS.
3. CLASS A STONE SHALL BE IRREGULAR IN SHAPE WITH APPROXIMATELY 50% OF THE MASS HAVING A MINIMUM VOLUME OF 12 CF, APPROXIMATELY 30% OF THE MASS RANGING BETWEEN 3 & 12 CF, APPROXIMATELY 10% OF THE MASS RANGING BETWEEN 1 & 3 CF, AND THE REMAINDER OF THE MASS COMPOSED OF SPALLS.
4. CLASS B STONE SHALL BE IRREGULAR IN SHAPE WITH APPROXIMATELY 50% OF THE MASS HAVING A MINIMUM VOLUME OF 3 CF, APPROXIMATELY 40% OF THE MASS RANGING BETWEEN 1 & 3 CF, AND THE REMAINDER OF THE MASS COMPOSED OF SPALLS.
5. CLASS C STONE SHALL CONSIST OF CLEAN, DURABLE FRAGMENTS OF LEDGE ROCK OF UNIFORM QUALITY, REASONABLY FREE FROM THIN OR ELONGATED PIECES. THE STONE SHALL BE MADE FROM ROCK WHICH IS FREE FROM TOPSOIL AND OTHER ORGANIC MATERIAL. THE STONES SHALL BE GRADED AS FOLLOWS:

SIEVE SIZE	% PASSING BY WEIGHT
12 INCH	100
4 INCH	50-90
1-1/2 INCH	0-30
3/4 INCH	0-10

6. CLASS D STONE SHALL CONFORM TO 520.2.2.3, TABLE 3 - COARSE AGGREGATE, STANDARD STONE SIZE NO. 467.
7. SPALLS FOR FILLING VOIDS SHALL BE STONES OR BROKEN ROCK RANGING FROM A MAXIMUM SIZE OF 1 CF.
8. GRAVEL BLANKET MATERIAL SHALL CONFORM TO 209.2.1.2.
9. GEOTEXTILE SHALL CONFORM TO 593.
10. STONES AND SPALLS FOR STONE FILL SHALL BE DEPOSITED AND GRADED TO ELIMINATE VOIDS AND OBTAIN A DENSE MASS THROUGHOUT THE COURSE. THE SPALLS SHALL BE TAMPED INTO PLACE USING AN EQUIPMENT BUCKET OR OTHER APPROVED METHOD.
11. WHEN STONE FILL IS PLACED ON A SLOPE, THE STONES SHALL BE DEPOSITED IN SUCH A MANNER AS TO NOT UNNECESSARILY DISLODGE THE UNDERLYING MATERIAL.
12. WHEN GRAVEL BLANKET IS SHOWN, THE GRAVEL SHALL BE PLACED IN LAYERS NOT EXCEEDING 12" IN DEPTH UNLESS OTHERWISE ORDERED.
13. THE COMPLETED SURFACE SHALL APPROXIMATE THE LINES AND GRADES SHOWN OR ORDERED. WHEN ORDERED, STONE PLACED OVER 1 FT OUTSIDE OR ABOVE SUCH LINES AND GRADES SHALL BE REMOVED.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED POST DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGHOUT THE WINTER SEASON, SHALL BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.

CONSTRUCTION PHASING

CONSIDERATIONS

- CONSTRUCTION PHASING OF LAND GRADING ACTIVITIES MUST BE CAREFULLY PLANNED AND CARRIED OUT TO PREVENT EROSION AND SEDIMENTATION.
- PLAN EARTH DISTURBANCE AND GRADING ACTIVITIES TO MINIMIZE THE AREA OF SOIL EXPOSED AT ONE TIME, AS WELL AS THE LENGTH OF TIME BETWEEN INITIAL SOIL EXPOSURE AND FINAL GRADING.
- PROTECT EXISTING VEGETATION AND NATURAL FOREST COVER, DESIGNATED TO REMAIN ON THE SITE.
- PRESERVE AND MAINTAIN BUFFER STRIPS OF UNDISTURBED VEGETATION BETWEEN CONSTRUCTION AREAS AND ENVIRONMENTALLY VULNERABLE AREAS SUCH AS WATERCOURSES, PONDS, AND WETLANDS.
- DIVERT CLEAN WATER AWAY FROM THE IMMEDIATE CONSTRUCTION AREA TO REDUCE THE THREAT OF EROSION
- DISPERSE CLEAN STORMWATER TO UNDISTURBED, VEGETATED, FLAT OR MODERATE-SLOPED, SURFACES WHEREVER POSSIBLE, RATHER THAN CONCENTRATE IT INTO CHANNELS.
- FALL AND WINTER EROSION CONTROL MEASURES MUST BE UPGRADED AND REFINED TO PROTECT THE SITE FROM SPRING RUNOFF AND SNOWMELT

MAINTENANCE REQUIREMENTS

- ANY SIGN OF RILL OR GULLY EROSION SHOULD BE IMMEDIATELY INVESTIGATED AND REPAIRED AS NEEDED.
- TEMPORARY STABILIZATION MEASURES SHOULD BE INSPECTED AT LEAST ONCE PER WEEK DURING THE CONSTRUCTION PERIOD, OR AS STIPULATED BY THE APPLICABLE PERMITS, UNTIL ALL EXPOSED SOILS HAVE BEEN PERMANENTLY STABILIZED.
- IN ADDITION TO REGULAR INSPECTIONS, THE PROJECT SITE SHOULD BE INSPECTED DURING OR WITHIN 24 HOURS OF ANY RAIN EVENT IN WHICH ½ INCH OF PRECIPITATION OR MORE FALLS WITHIN A 24-HOUR PERIOD.
- INSPECTIONS SHOULD BE DOCUMENTED IN A REPORT.

SPECIFICATIONS

- *TEMPORARY STABILIZATION:* ALL AREAS OF EXPOSED OR DISTURBED SOIL SHOULD BE TEMPORARILY STABILIZED AS SOON AS PRACTICABLE BUT NO LATER THAN 45 DAYS FROM THE TIME OF INITIAL DISTURBANCE, UNLESS A SHORTER TIME IS SPECIFIED BY LOCAL AUTHORITIES, THE CONSTRUCTION SEQUENCE APPROVED AS PART OF THE ISSUED PERMIT, OR AN INDEPENDENT MONITOR.
- *PERMANENT STABILIZATION:* ALL AREAS OF EXPOSED OR DISTURBED SOIL SHOULD BE PERMANENTLY STABILIZED AS SOON AS PRACTICABLE BUT NO LATER THAN 3 DAYS FOLLOWING FINAL GRADING.
- *MAXIMUM AREA OF DISTURBANCE:* THE AREA OF UNSTABILIZED SOIL SHOULD NOT EXCEED 5 ACRES AT ANY TIME UNLESS PROJECT PERMITS SPECIFICALLY PROVIDE FOR A GREATER AREA OF DISTURBANCE. ANY SUCH GREATER AREA OF DISTURBANCE REQUIRES, AS PART OF THE PERMITTING PROCESS:
  - DOCUMENTATION THAT THE REQUIRED AREAS OF EARTH CUTS AND FILLS ARE SUCH THAT AN AREA OF DISTURBANCE OF 5 ACRES OR LESS WOULD UNREASONABLY LIMIT THE CONSTRUCTION SCHEDULE;
  - AN APPROVED CONSTRUCTION SEQUENCE PLAN, DEVELOPED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF NEW HAMPSHIRE OR A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL AS CERTIFIED BY THE CPESC COUNCIL OF ENVIROCERT INTERNATIONAL, INC.; AND
  - EMPLOYMENT OR RETAINMENT OF A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF NEW HAMPSHIRE OR A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL AS CERTIFIED BY THE CPESC COUNCIL OF ENVIROCERT INTERNATIONAL, INC. TO SERVE AS AN ENVIRONMENTAL MONITOR DURING CONSTRUCTION.
- ONLY DISTURB, CLEAR, OR GRADE AREAS NECESSARY FOR CONSTRUCTION. FLAG OR OTHERWISE DELINEATE AREAS NOT TO BE DISTURBED. EXCLUDE VEHICLES AND CONSTRUCTION EQUIPMENT FROM THESE AREAS TO PRESERVE NATURAL VEGETATION.
- ALL GRADED OR DISTURBED AREAS INCLUDING SLOPES SHOULD BE PROTECTED DURING CLEARING AND CONSTRUCTION IN ACCORDANCE WITH AN APPROVED EROSION AND SEDIMENT CONTROL PLAN UNTIL THEY ARE PERMANENTLY STABILIZED.
- ALL EROSION AND SEDIMENT CONTROL PRACTICES AND MEASURES SHOULD BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHOULD BE STOCKPILED IN THE AMOUNT NECESSARY TO COMPLETE FINISHED GRADING AND PROTECTED FROM EROSION.
- STOCKPILES, BORROW AREAS AND SPOILS SHOULD BE STABILIZED AS DESCRIBED UNDER "SOIL STOCKPILE PRACTICES."
- SLOPES SHOULD NOT BE CREATED SO CLOSE TO PROPERTY LINES AS TO ENDANGER ADJOINING PROPERTIES WITHOUT ADEQUATE PROTECTION AGAINST SEDIMENTATION, EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED DAMAGES.
- AREAS TO BE FILLED SHOULD BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIALS.
- AREAS SHOULD BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL. TOPSOIL SHOULD BE PLACED WITHOUT SIGNIFICANT COMPACTION TO PROVIDE A LOOSE BEDDING FOR PLACEMENT OF SEED.
- ALL FILLS SHOULD BE COMPACTED IN ACCORDANCE WITH PROJECT SPECIFICATIONS TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES, SITE UTILITIES, CONDUITS, AND OTHER FACILITIES, SHOULD BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
- IN GENERAL, FILLS SHOULD BE PLACED AND COMPACTED IN LAYERS RANGING FROM 6 TO 24 INCHES IN THICKNESS. THE CONTRACTOR SHOULD REVIEW THE PROJECT GEOTECHNICAL REPORT FOR SPECIFIC GUIDANCE. FILL MATERIAL SHOULD BE FREE OF BRUSH, RUBBISH, ROCKS, LOGS, STUMPS, BUILDING DEBRIS, FROZEN MATERIAL AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY LIFTS.
- FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS ARE SUSCEPTIBLE TO ACCELERATED SETTLEMENT AND POTENTIAL ACCELERATED EROSION. WORK IN THESE MATERIALS SHOULD BE PERFORMED UNDER THE DIRECTION OF A PROFESSIONAL ENGINEER.
- THE OUTER FACE OF THE FILL SLOPE SHOULD BE ALLOWED TO STAY LOOSE, NOT ROLLED, COMPACTED, OR BLADED SMOOTH. A BULLDOZER MAY RUN UP AND DOWN THE FILL SLOPE SO THE DOZER TREADS (CLEAT TRACKS) CREATE GROOVES PERPENDICULAR TO THE SLOPE. IF THE SOIL IS NOT TOO MOIST, EXCESSIVE COMPACTION WILL NOT OCCUR. SEE "SURFACE ROUGHENING."
- ROUGHEN THE SURFACE OF ALL SLOPES DURING THE CONSTRUCTION OPERATION TO RETAIN WATER, INCREASE INFILTRATION, AND FACILITATE VEGETATION ESTABLISHMENT.
- USE SLOPE BREAKS, SUCH AS DIVERSIONS, BENCHES, OR CONTOUR FURROWS AS APPROPRIATE, TO REDUCE THE LENGTH OF CUT-AND-FILL SLOPES TO LIMIT SHEET AND RILL EROSION AND PREVENT GULLY EROSION. ALL BENCHES SHOULD BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT.
- SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHOULD BE EVALUATED BY A PROFESSIONAL ENGINEER TO DETERMINE IF THE PROPOSED DESIGN SHOULD BE REVISED TO PROPERLY MANAGE THE CONDITION.
- STABILIZE ALL GRADED AREAS WITH VEGETATION, CRUSHED STONE, COMPOST BLANKET, OR OTHER GROUND COVER AS SOON AS GRADING IS COMPLETED OR IF WORK IS INTERRUPTED FOR 21 WORKING DAYS OR MORE. USE MULCH OR OTHER APPROVED METHODS TO STABILIZE AREAS TEMPORARILY WHERE FINAL GRADING MUST BE DELAYED.
- ALL GRADED AREAS SHOULD BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

CONSTRUCTION SEQUENCE

1. CUT AND CLEAR TREES ONLY TO LIMITS OF CUT/FILL SLOPES.
2. CONSTRUCT TEMPORARY SEDIMENT AND EROSION CONTROL FACILITIES. PERIMETER SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS. REMOVE AND STOCKPILE LOAM ON-SITE FOR RE-USE ON-SITE. SEED AND MULCH STOCKPILE. SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUN OFF INTO THEM.
3. CLEAR, CUT AND DISPOSE OF DEBRIS, DISPOSAL OF DEBRIS SHALL MEET LOCAL, STATE AND FEDERAL REQUIREMENTS.
4. CONSTRUCT PONDS, SWALES AND DRAINAGE SYSTEMS.
5. CONSTRUCT BUILDING PAD AND PARKING AREAS. ROAD AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINAL GRADE.
6. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE LOAMED, SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINAL GRADE.
7. CONSTRUCT TEMPORARY DIVERSION CHANNELS, AS REQUIRED.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DITCHES, SILT FENCES SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.
9. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENTATION MEASURES WEEKLY AND WITHIN 24 HOURS OF 0.5" OF RAINFALL.
10. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
11. REMOVE TEMPORARY EROSION CONTROL MEASURES.

* NO DISTURBED AREAS ARE TO BE LEFT UNSTABILIZED FOR LONGER THAN 21 DAYS
* ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE
* THE MAXIMUM AREA THAT MAY BE DISTURBED AND UNSTABILIZED IS 5 ACRES
* AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
  A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
  B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
  C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
  D) EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

**"THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

STATE OF NEW HAMPSHIRE — ANTHONY T. COSTELLO No. 10020 LICENSED PROFESSIONAL ENGINEER

A.C.Engineering & Consulting
Civil Engineering & Land Planning
43 Bear Hill Road
East Washington, N.H. 03280
Phone: (603) 325-5114
acengineer@comcast.net

NO.	DATE	DESCRIPTION	BY

OWNER: Andrew Gardent & Krista Vincent, 10 Edwards Street, Wilton, N.H. 03086, Book 9209 / Page 1674

EROSION CONTROLS 1
Gardent Property
Tax Map 3 / Lot 12
North River Road ~ Milford, N.H.

DATE: 1-21-21

DWG: 2014-BASE

PROFILE

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

ANTHONY T. COSTELLO No. 10020 LICENSED PROFESSIONAL ENGINEER — STATE OF NEW HAMPSHIRE

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43 Rear Hill Road
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NO.	DATE	DESCRIPTION	BY

OWNER:
Andrew Gardent &
Krista Vincent
10 Edwards Street
Wilton, N.H. 03086
Book 9209 / Page 1674

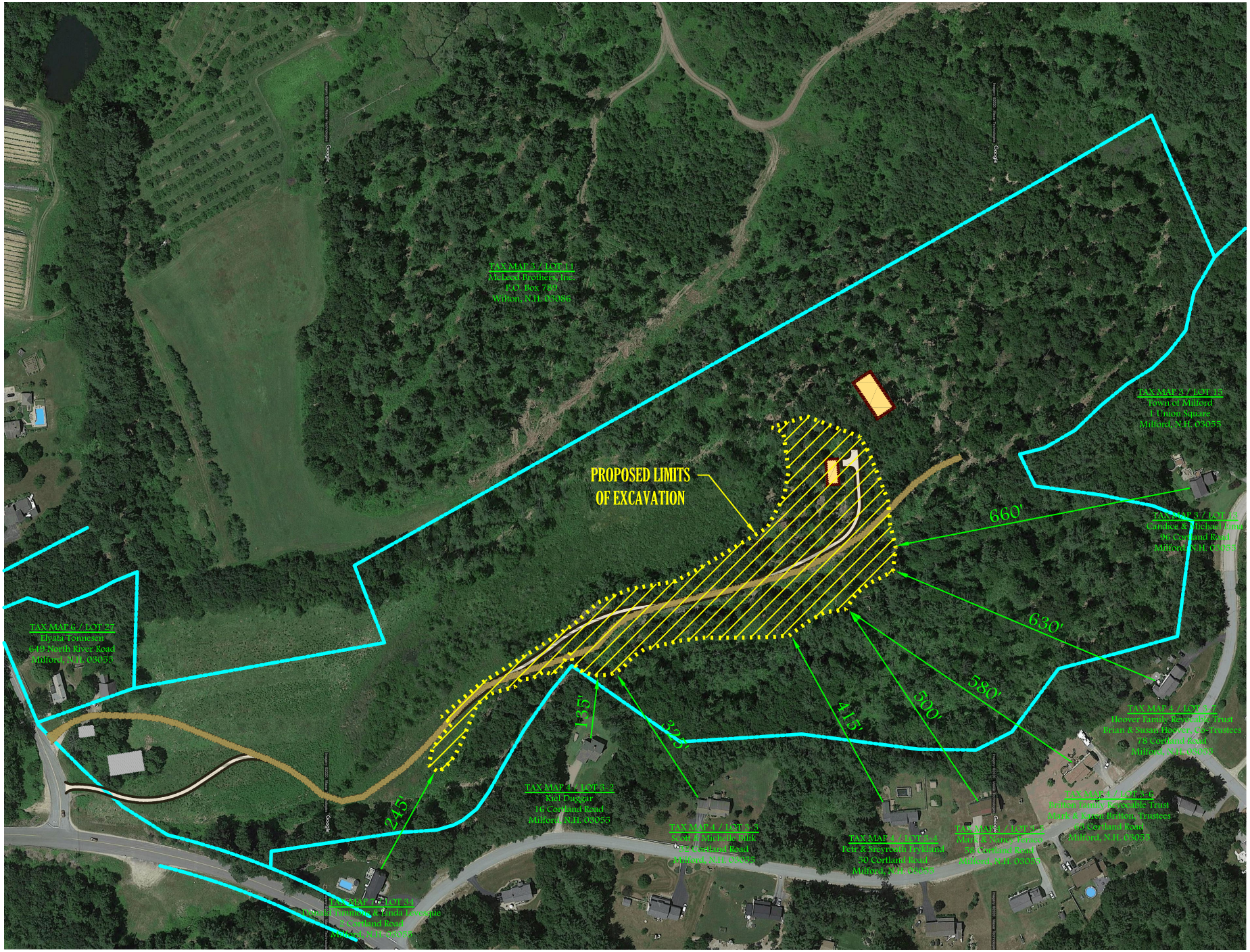
DRIVEWAY PROFILE

Gardent Property
Tax Map 3 / Lot 12
North River Road ~ Milford, N.H.

50 0 25 50
SCALE: 1" = 50 ft.

DATE: 3-16-21

DWG: 2014-BASE


TAX MAP 5 / LOT 3-1
McLeod Brothers Inc.
P.O. Box 780
Wilton, N.H. 03086
PROPOSED LIMITS
OF EXCAVATION
TAX MAP 8 / LOT 15
Town of Milford
1 Union Square
Milford, N.H. 03055
660'
TAX MAP 8 / LOT 37
Elyati Tonnesen
649 North River Road
Milford, N.H. 03055
630'
580'
500'
415'
325'
135'
245'
TAX MAP 14 / LOT 3-2
Kiel Duggar
16 Cortland Road
Milford, N.H. 03055
TAX MAP 14 / LOT 3-3
Scott & Michelle Pilik
24 Overland Road
Milford, N.H. 03055
TAX MAP 14 / LOT 3-4
Peter & Stacy Rich Hyland
30 Cortland Road
Milford, N.H. 03055
TAX MAP 14 / LOT 3-5
Robert Family Revocable Trust
Lloyd & Karen Bratton, Trustees
46 Cortland Road
Milford, N.H. 03055
TAX MAP 14 / LOT 3-7
Hoover Family Revocable Trust
Brian & Susan Hoover, Co-Trustees
78 Cortland Road
Milford, N.H. 03055
TAX MAP 14 / LOT 34
Daniel Tremblay & Tanda Levesque
72 Cortland Road
Milford, N.H. 03055

YOUR TRIP TO:

412 Elm St, Milford, NH 03055-4305

Scan this QR code for directions on your mobile device:

2 MIN | 1.0 MI

Est. fuel cost: $0.11

Trip time based on traffic conditions as of 9:01 AM on March 26, 2021. Current Traffic: Light

Print a full health report of your car with HUM vehicle diagnostics **(800) 906-2501**

1. Start out going **east** on N River Rd.

Then 0.02 miles — 0.02 total miles

2. Turn **right** to stay on N River Rd.

Then 0.11 miles — 0.13 total miles

3. Turn **left** onto Elm St/NH-101. Continue to follow Elm St.

If you reach Phelan Rd you've gone about 0.1 miles too far.

Then 0.90 miles — 1.03 total miles

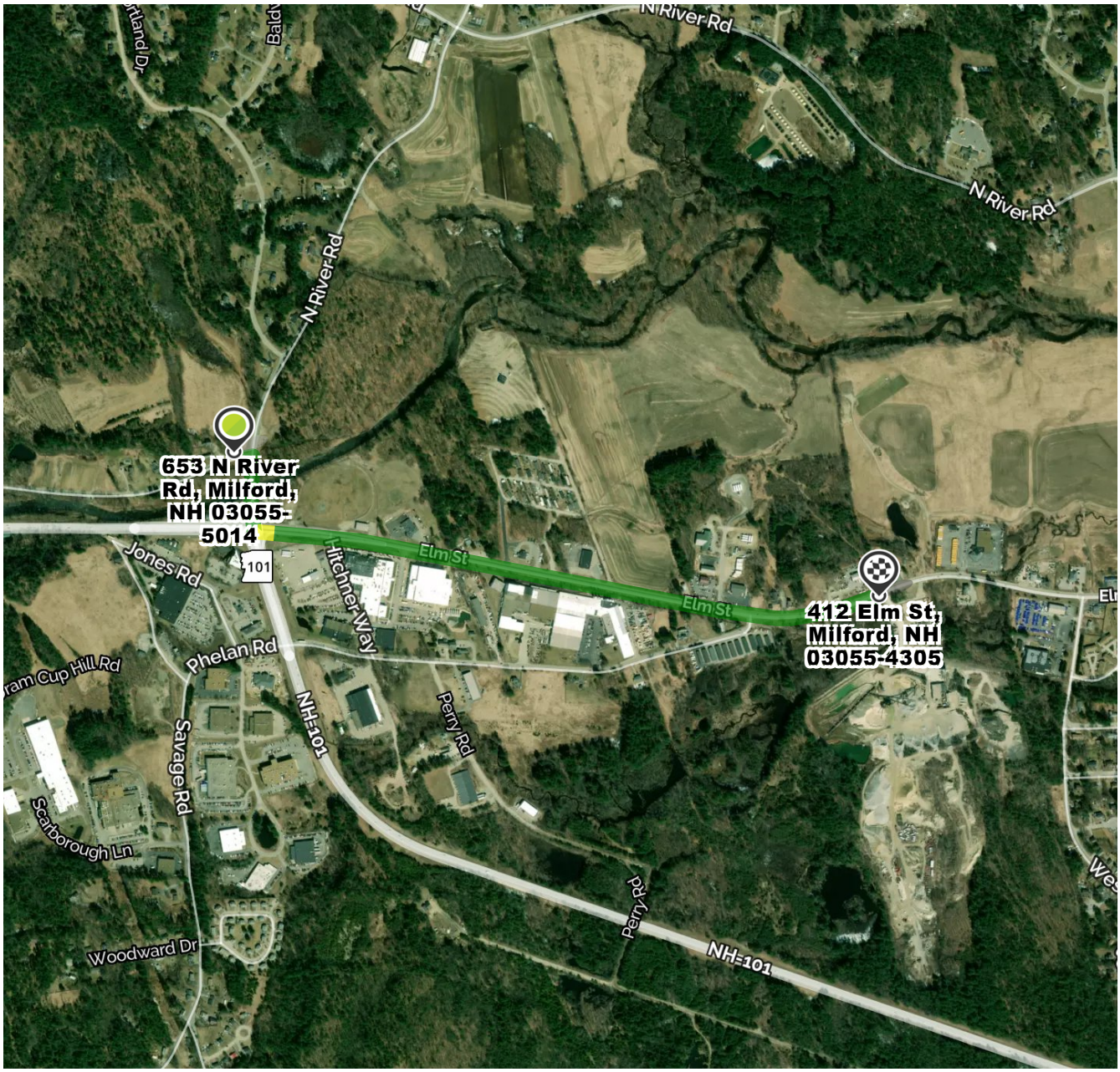
4. 412 Elm St, Milford, NH 03055-4305, 412 ELM ST is on the **right**.

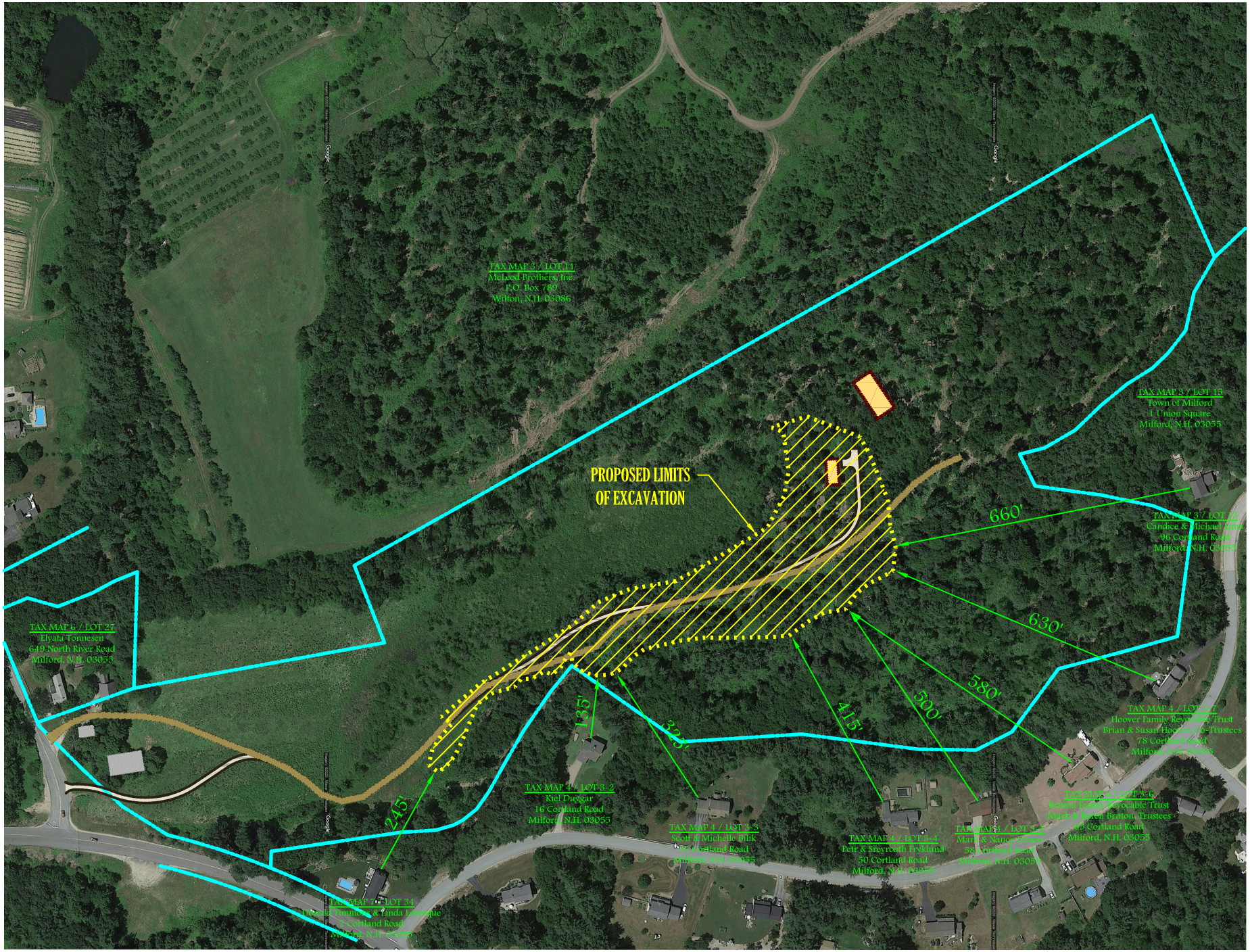
Your destination is 0.1 miles past Old Wilton Rd.

If you reach Westchester Dr you've gone about 0.2 miles too far.

Save to My Maps

Use of directions and maps is subject to our Terms of Use. We don't guarantee accuracy, route conditions or usability. You assume all risk of use.


N River Rd
N River Rd
N River Rd
653 N River Rd, Milford, NH 03055-5014
Elm St
Elm St
412 Elm St, Milford, NH 03055-4305
Jones Rd
101
Hitchner Way
Phelan Rd
Perry Rd
NH-101
Savage Rd
Scarborough Ln
Woodward Dr
Perry Rd
NH-101


TAX MAP 5 / LOT 3-1
McLeod Brothers Inc.
P.O. Box 780
Wilton, N.H. 03086
PROPOSED LIMITS
OF EXCAVATION
TAX MAP 8 / LOT 15
Town of Milford
1 Union Square
Milford, N.H. 03055
660'
TAX MAP 8 / LOT 37
Elyati Tonnesen
649 North River Road
Milford, N.H. 03055
630'
580'
500'
415'
325'
135'
245'
TAX MAP 14 / LOT 3-2
Kiel Duggar
16 Cortland Road
Milford, N.H. 03055
TAX MAP 14 / LOT 3-3
Scott & Michelle Pilik
24 Overland Road
Milford, N.H. 03055
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78 Cortland Road
Milford, N.H. 03055
TAX MAP 14 / LOT 34
Daniel Tremblay & Tanda Levesque
72 Cortland Road
Milford, N.H. 03055

ak Hill Environmental Services 1
7370 Oak Hill Road
Loudon, NH 03307
603-226-0420

March 30, 2021

Melissa Doperalski
NH Fish and Game Department
11 Hazen Drive
Concord, NH 03301

RE: Andrew Gardent Property
Map 3, Lot 12
North River Road
Milford, NH
Wildlife Assessment

PART 1: SUMMARY AND FINDINGS

Daniel H. Geiger	NHB File No. NHB20-2208
Oak Hill Environmental Services	Gardent Single Family Home with Driveway
603 226 0420	North River Road Map 3, Lot 12
7370 Oak Hill Road – Loudon, NH 03307	Applicant. A.C, Engineering & Consulting **Owner: Andrew Gardent**
dgeiger017@comcast.net	AOT #

Proposed Project

At the request of A.C. Engineering & Consulting, Oak Hill Environmental Services was requested to conduct a wildlife assessment on the subject property located off North River Road in Milford, NH. and identified as Tax Map 3, Lot 10. The proposed project is construction of a single-family residential house with driveway on a 31-acre parcel and includes an agricultural barn and establishing agricultural fields. The current dirt and gravel drive was for logging access and will be upgraded to town standards for driveways. The drive currently crosses an intermittent stream in the southern section of the property. The existing culvert will be replaced with a 30-inch RCP culvert.

PHASE I Threatened and Endangered Wildlife and Habitat Assessment Findings:

No threatened and/or endangered wildlife and habitat present, no threatened or endangered wildlife, habitat, or wildlife corridors likely to be impacted by project activities.

X Threatened and endangered wildlife and habitat present; HOWEVER, NO threatened or endangered wildlife, habitat, or wildlife corridors likely to be impacted by project activities. Conservation measures are proposed.

Threatened and endangered wildlife and habitat present or wildlife corridors present. Proposed actions have the potential for impacts. Conservation measures project or incorporated into the proposed project design.

Species of Concern, Threatened

A NH Natural Heritage Bureau search (NHB20-2208) also (NHB Past File ID: NHB19-3990,) revealed a recorded occurrence of the following sensitive species in the vicinity of the project area.
Spotted Turtle *Clemmys guttata* T, Wood Turtle *Glyptemys insculpta* SC, Bald Eagle *Haliaeetus leucocephalus* SC, Banded Sunfish *Enneacanthus obesus* SC, and Swamp Darter *Etheostoma fusiforme* SC. The intent of this study is to record and evaluate the existing wildlife habitat conditions present on the ground within the property boundaries and observe conditions in the adjacent properties to consider which wildlife species may be utilizing this property. During the field survey no wildlife or plant species or natural communities/systems ranked as threatened or endangered were observed. The subject property does contain quality wildlife habitat elements within its' boundaries and abutting properties to the north and northwest. The Souhegan River lies a short distance (400ft) to the south from the south end of the property. No impacts to adjacent habitat will occur with implementation of this project and no impact to these species if present is likely. No Vernal pools are present on this property.

Proposed Conservation Measures

Conservation measures to be conducted involve:

- Placement of erosion control measures around the project site with environmentally sensitive products.
- Stormwater design plan will maintain water quality.
- Replace existing culvert with a larger culvert sized to convey intermittent stream crossing and embedding in the stream channel 12 inches to provide a natural substrate bottom.

PHASEITHREATENEDANDENDANGEREDWILDLIFEANDHABITATASSESSMENTOutline
And Template
Version 1.0 09/25/2020- NHFG

PART 1: SUMMARY AND FTNDINGS

NHB20-2208, NHB19-3990
[PROJECT NAME) Gardent, Single Family House
[PROJECT ADDRESS] North River Road Milford, NH
[APPLICANT] A.C. Engineering & Consulting
[AOT APPLICATION#] (if known)

Printed name, date and signature of Individual that conducted the Phase I Threatened and Endangered Wildlife and Habitat Assessment. Note: By signing this document, the qualified wildlife biologist (Env.Wq.1503.l 9(h)) is assuming responsibility for the wildlife assessment. Credentials need to be included in Part 4: Appendices.

Daniel H. Geiger — Name – printed

4-1-21 — Date

Signature

Check Applicable Requested Action

Request for NHFG Concurrence with Findings in compliance with Env. Wq. 1503.19(h)(l)a

X Request for NHFG Concurrence with Findings and Proposed Conservation Measures in compliance with Env. Wq. 1503.19(h)(l)b*

Requests further coordination with NHFG to discuss proposed conservation measures and/or, potential focused survey needs (Phase II)*

*New Hampshire Fish and Game' s review and recommendations are based on the information provided in this assessment. Changes to project scope may affect NHFG and/or NHDES determination on potential impacts and whether conservation measures and project design modifications proposed are still applicable or sufficient.

Part 2: NHB Datacheck Letter, Figures, Site Photographs

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Anthony Costello, A.C.Engineering & Consulting
43 Bear Hill Road
Washington, NH 03280

From: Amy Lamb, NH Natural Heritage Bureau
Date: 8/4/2020 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB20-2208 Town: Milford Location: Tax Maps: Map 3 / Lot 12
Description: New construction of 1800 sf house, 5000 sf barn, leach field, driveway, clearing of approximately 3.5 acres for agricultural use and 3.5 acres for gravel removal.
cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: The following records are included for Alteration of Terrain permitting requirements relative to potential rare species impacts.

Please contact the NH Fish & Game Department to address wildlife concerns.

Vertebrate species	State[1]	Federal	Notes
Bald Eagle (*Haliaeetus leucocephalus*)	SC	T	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).
Banded Sunfish (*Enneacanthus obesus*)	SC	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).
Swamp Darter (*Etheostoma fusiforme*)	SC	--	Contact the NH Fish & Game Dept (see below).
Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

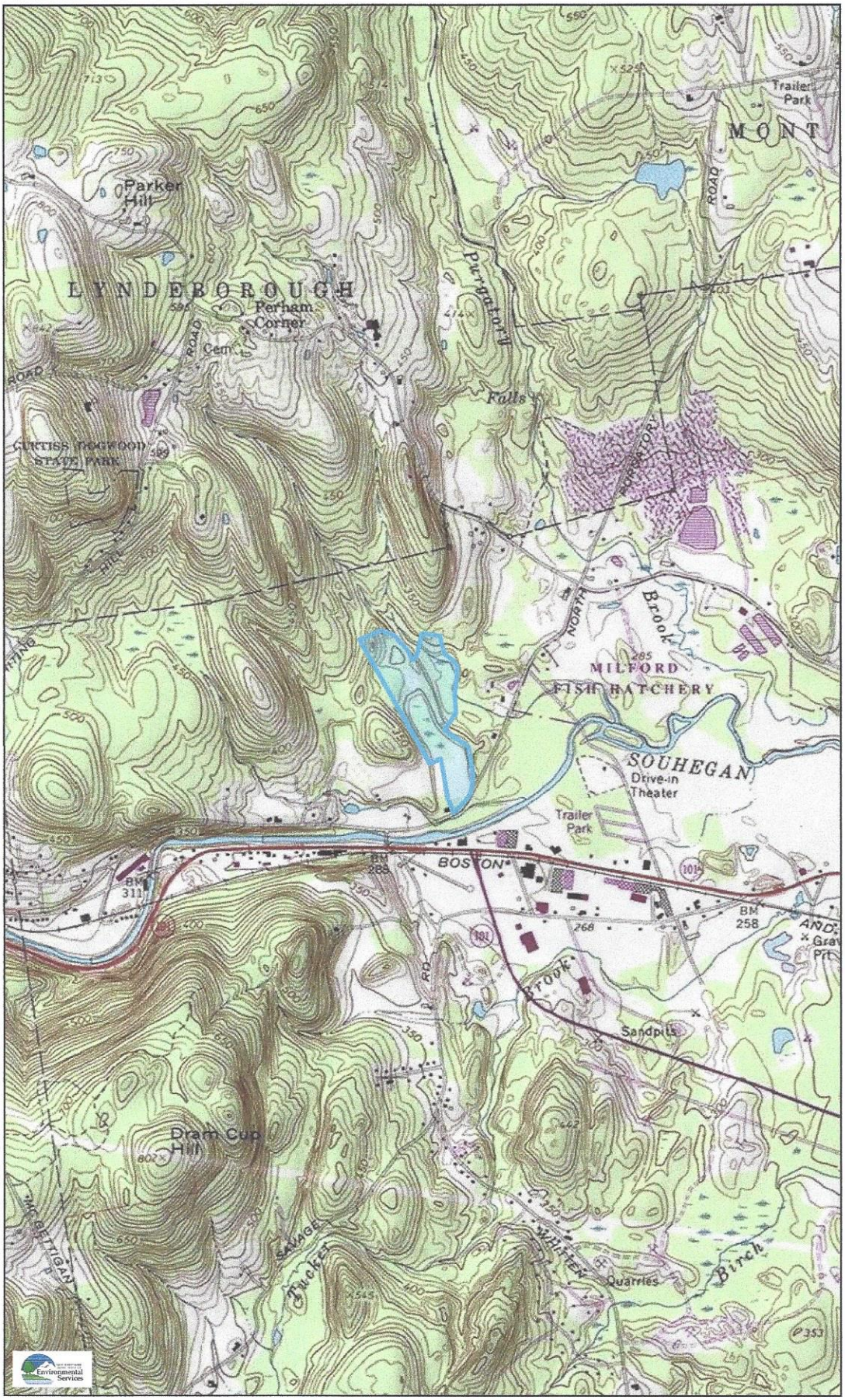
Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

USGS



Legend

Map Scale

1: 24,000

© NH DES, http://des.nh.gov

Map Generated: 8/17/2020

Notes

Aerial

Legend

Map Scale

1: 24,000

© NH DES, http://des.nh.gov

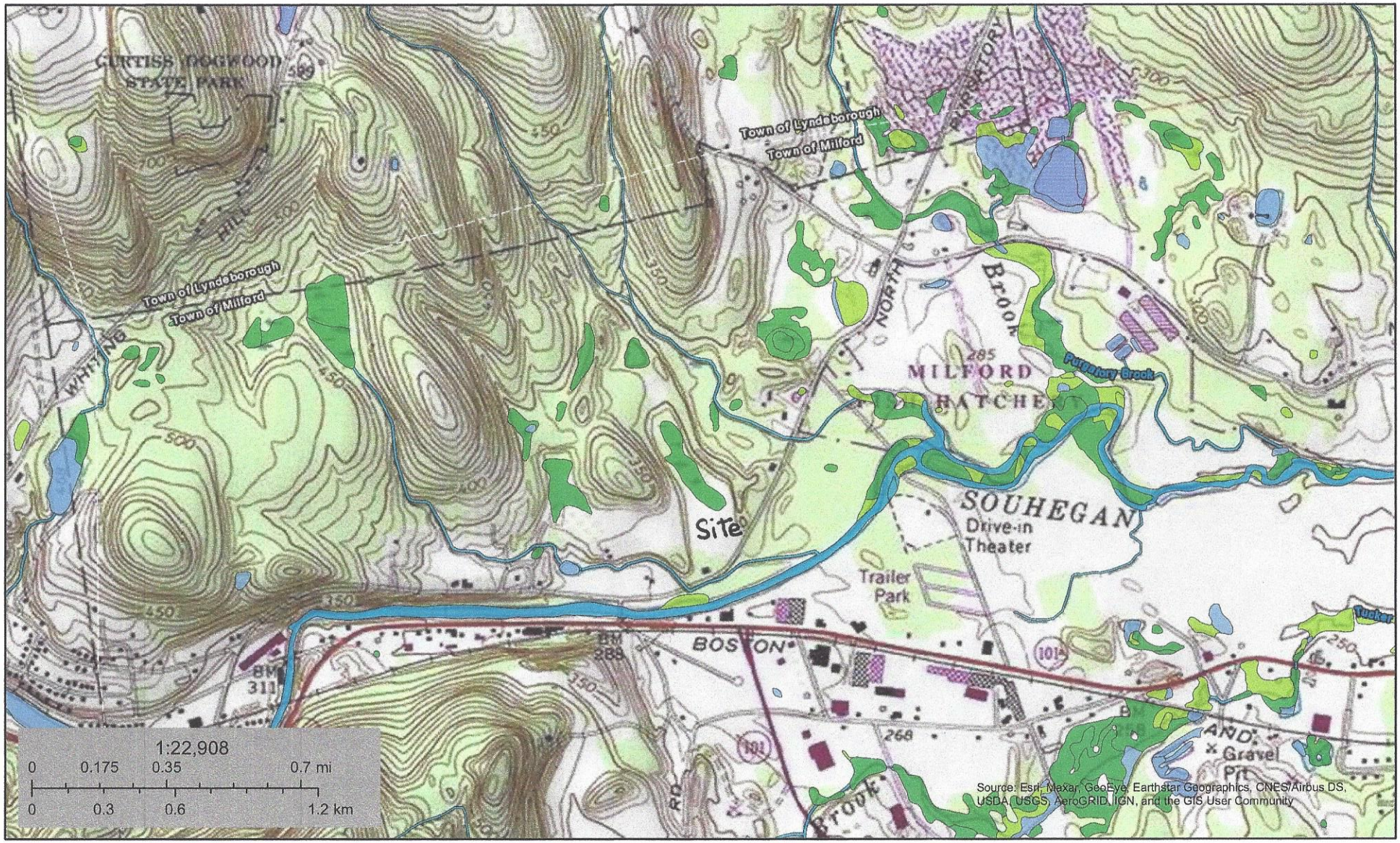
Map Generated: 8/17/2020

Notes

U.S. Fish and Wildlife Service

National Wetlands Inventory

Milford, Gardent



April 6, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Custom Soil Resource Report
Soil Map

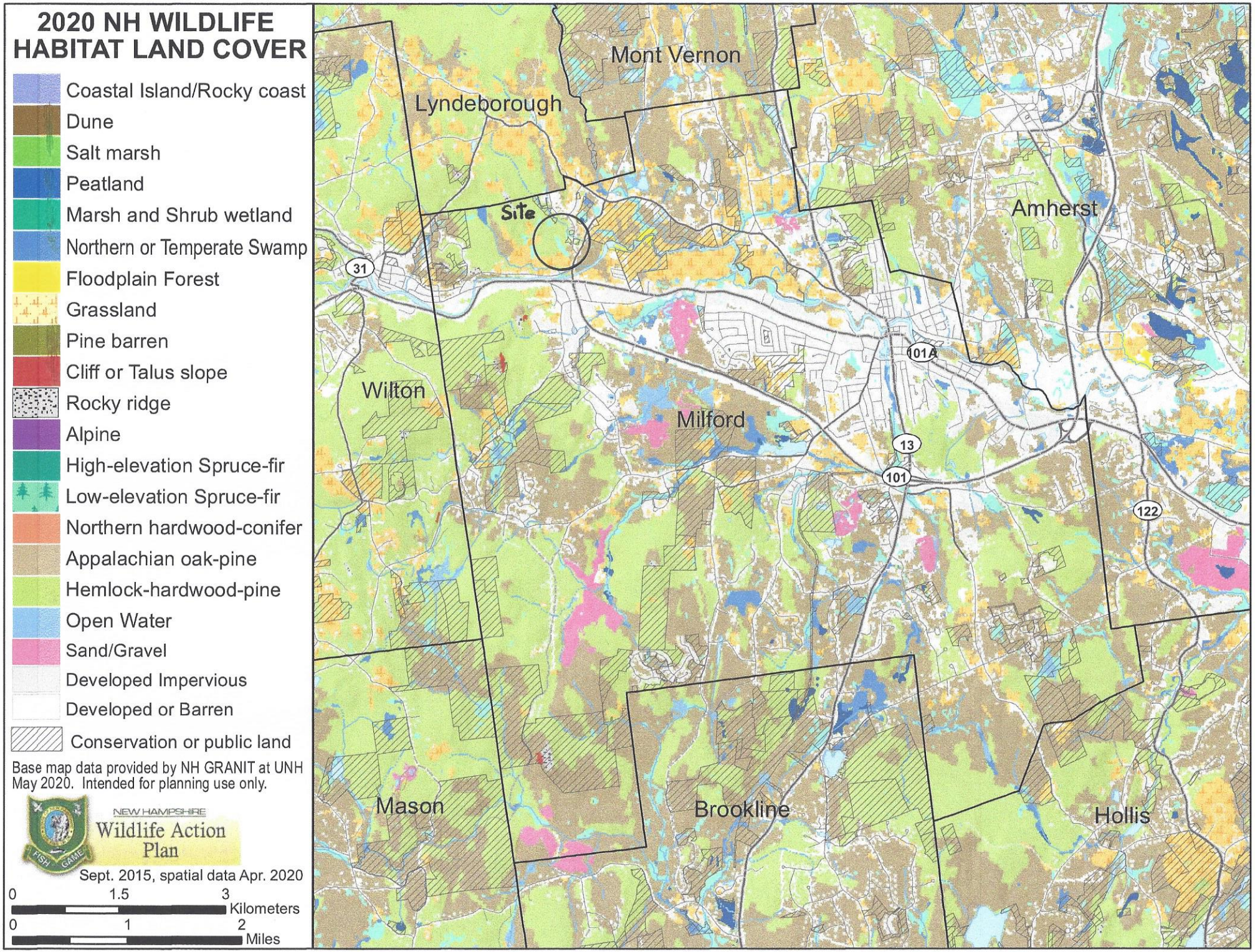
Map Scale: 1:4,960 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

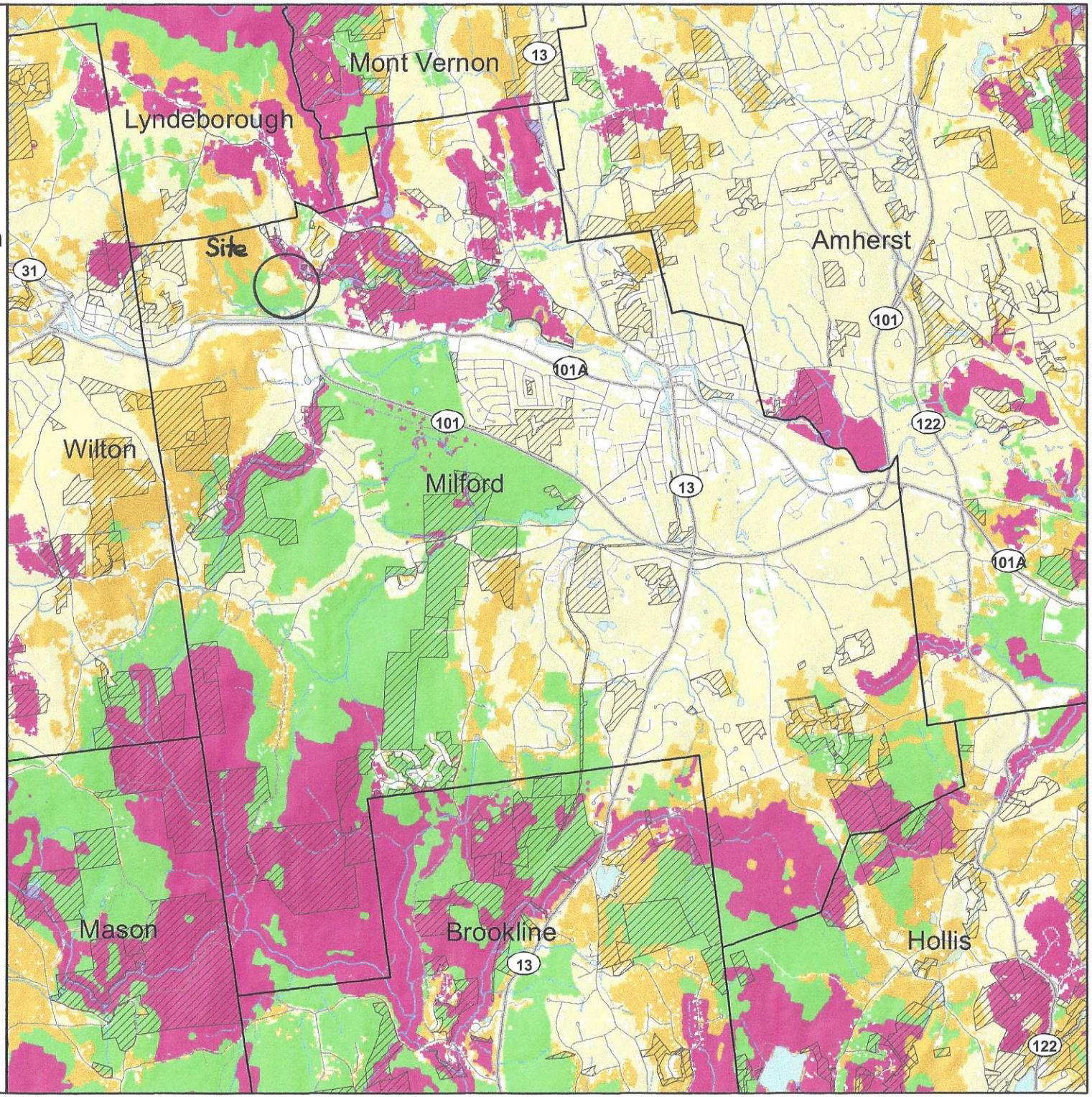

2020 NH WILDLIFE HABITAT LAND COVER
Coastal Island/Rocky coast
Dune
Salt marsh
Peatland
Marsh and Shrub wetland
Northern or Temperate Swamp
Floodplain Forest
Grassland
Pine barren
Cliff or Talus slope
Rocky ridge
Alpine
High-elevation Spruce-fir
Low-elevation Spruce-fir
Northern hardwood-conifer
Appalachian oak-pine
Hemlock-hardwood-pine
Open Water
Sand/Gravel
Developed Impervious
Developed or Barren
Conservation or public land
Base map data provided by NH GRANIT at UNH May 2020. Intended for planning use only.
NEW HAMPSHIRE Wildlife Action Plan
Sept. 2015, spatial data Apr. 2020
0 1.5 3 Kilometers
0 1 2 Miles
Mont Vernon
Lyndeborough
Site
Amherst
31
Wilton
101A
Milford
13
101
122
Mason
Brookline
Hollis

2020 HIGHEST RANKED WILDLIFE HABITAT BY ECOLOGICAL CONDITION

- Highest Ranked Habitat in New Hampshire
- Highest Ranked Habitat in the Biological Region

Biological region = TNC ecoregional subsection for terrestrial habitats or Aquatic Resource Mitigation region for wetlands and floodplain forest.

- Supporting Landscapes
- Conservation or public



Base map data provided by NH GRANIT at UNH May 2020. Intended for planning use only.

NEW HAMPSHIRE Wildlife Action Plan

Sept. 2015, spatial data Apr. 2020

0 1.5 3 Kilometers

0 1 2 Miles

From: Wittig, Thomas W
To: acengineer@gsinet.net
Cc: Tur, Maria
Subject: Bald eagle planning guidance for proposed construction activities in Milford, NH
Date: Wednesday, September 23, 2020 9:49:57 AM

Hello Mr. Costello,

I serve as the U.S. Fish and Wildlife Service's (Service) regional eagle coordinator. My colleagues at our New England Field Office shared your August 19, 2020 email in which your requested guidance on bald eagles for a proposed construction project in Milford, New Hampshire. According to your provided Natural Heritage Bureau (NHB) report, winter bald eagles are "regularly observed at this location."

While bald eagles are no longer listed under the Endangered Species Act, they continue to receive federal protection under the Bald and Golden Eagle Protection Act. This law protects eagles from a wide range of adverse human impacts, including any disturbance severe enough to affect their survival or breeding productivity.

In conferring with the New Hampshire Fish and Game Department, I determined that the observations of eagles referenced in the NHB report are associated with a bald eagle roost site located over 0.5 miles from the proposed project area.

Given the nature of the proposed project and the significant distance separating it from the known roost location, I do not believe that your proposed activities are likely to impact the roosting eagles in a prohibited manner. Consequently, I do not recommend that you seek a Federal eagle incidental take permit at this time.

In the event that project plans or eagle activity in the area change in any manner that raises new potential for prohibited impacts, please contact the Service for further consultation.

Thank you for coordinating with the Service on this matter. If you have any questions or concerns, please do not hesitate to follow up.

Best,
Tom

- - -

Tom Wittig
Eagle Coordinator | North Atlantic-Appalachian Region
Division of Migratory Birds | U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Photo Locations

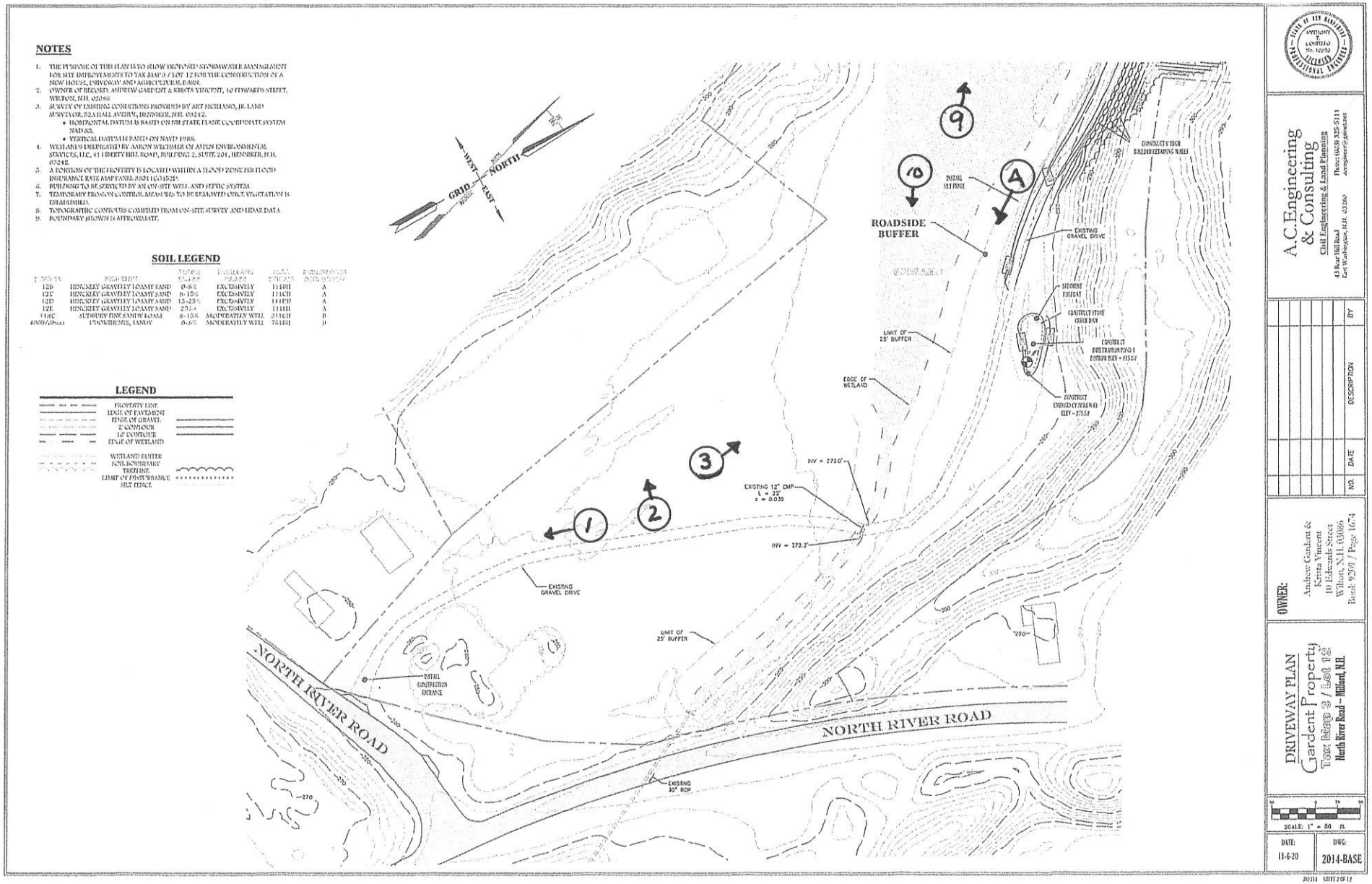
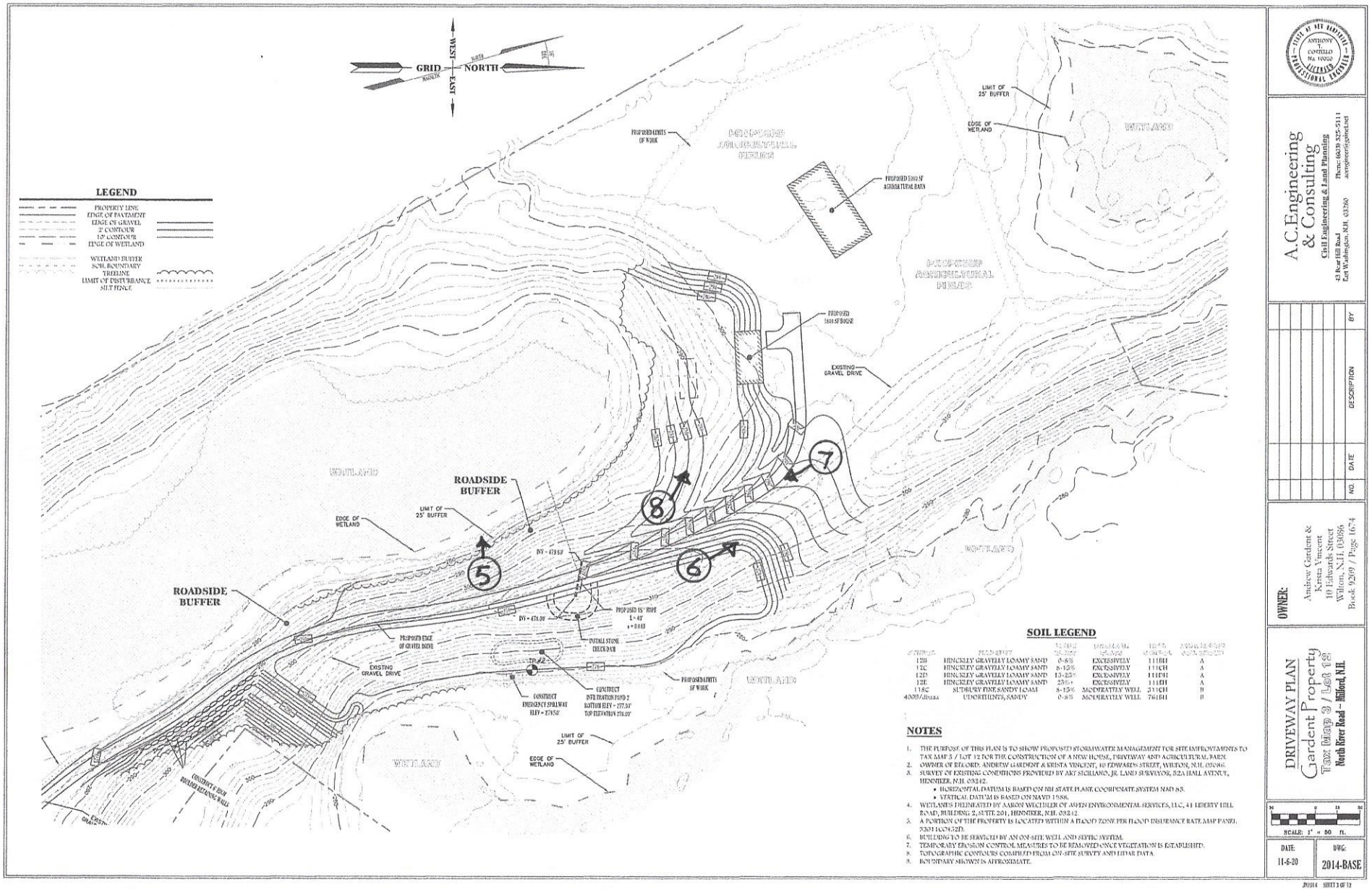


Photo Locations



SOIL LEGEND

SYMBOL	SOIL SERIES	SLOPE	DRAINAGE CLASS	HSG	ANNUAL GROUP SOIL GROUP
12B	HINCKLEY GRAVELLY LOAMY SAND	0-8%	EXCESSIVELY	111BH	A
12C	HINCKLEY GRAVELLY LOAMY SAND	8-15%	EXCESSIVELY	111CH	A
12D	HINCKLEY GRAVELLY LOAMY SAND	15-25%	EXCESSIVELY	111DH	A
12E	HINCKLEY GRAVELLY LOAMY SAND	25%+	EXCESSIVELY	111EH	A
118C	SUDBURY FINE SANDY LOAM	8-15%	MODERATELY WELL	331CH	B
4000/Ahrens	UDORTHENTS, SANDY	0-8%	MODERATELY WELL	761BH	B

NOTES

1. THE PURPOSE OF THIS PLAN IS TO SHOW PROPOSED STORMWATER MANAGEMENT FOR SITE IMPROVEMENTS TO TAX MAP 3 / LOT 12 FOR THE CONSTRUCTION OF A NEW HOUSE, DRIVEWAY AND AGRICULTURAL BARN.
2. OWNER OF RECORD: ANDREW GARDENT & KRISTA VINCENT, 10 EDWARDS STREET, WILTON, NH. 03086.
3. SURVEY OF EXISTING CONDITIONS PROVIDED BY AKT SICILIANO, JR. LAND SURVEYOR, 52A HALL AVENUE, HENNIKER, N.H. 03242.
   - HORIZONTAL DATUM IS BASED ON NH STATE PLANE COORDINATE SYSTEM NAD 83.
   - VERTICAL DATUM IS BASED ON NAVD 1988.
4. WETLANDS DELINEATED BY AARON WECHSLER OF ASHTEN ENVIRONMENTAL SERVICES, LLC, 41 LIBERTY HILL ROAD, BUILDING 2, SUITE 201, HENNIKER, N.H. 03242.
5. A PORTION OF THE PROPERTY IS LOCATED WITHIN A FLOOD ZONE PER FLOOD INSURANCE RATE MAP PANEL 33011C0432D.
6. BUILDING TO BE SERVICED BY AN ON-SITE WELL AND SEPTIC SYSTEM.
7. TEMPORARY EROSION CONTROL MEASURES TO BE REMOVED ONCE VEGETATION IS ESTABLISHED.
8. TOPOGRAPHIC CONTOURS COMPILED FROM ON-SITE SURVEY AND LIDAR DATA.
9. BOUNDARY SHOWN IS APPROXIMATE.

ANTHONY J. COSTELLO No. 10020 — STATE OF NEW HAMPSHIRE — PROFESSIONAL ENGINEER

A.C. Engineering & Consulting
Civil Engineering & Land Planning
43 Bear Hill Road
East Wilton, N.H. 03086
Phone: (603) 525-5111
acengineering@me.com

NO.	DATE	DESCRIPTION	BY

OWNER:
Andrew Gardent & Krista Vincent
10 Edwards Street
Wilton, N.H. 03086
Book 9209 / Page 1674

DRIVEWAY PLAN
Gardent Property
Tax Map 3 / Lot 12
North River Road – Milford, NH

SCALE: 1" = 50 ft.

DATE: 11-6-20
DWG: 2014-BASE

JN2014 SHEET 3 OF 12

Milford, North River Road, Map 3, Lot 12

View South, entrance to property south end. #1

View West, south section of property from drive #2

Milford, North River Road, Map 3, Lot 12

View North, south section of property, wetland area PSS1E in distance #3

View South, center of property, PSS1E on right. #4

Milford, North River Road, Map 3, Lot 12

View West, PSS1E north end, center of property #5

View North, center of property #6

Milford, North River Road, Map 3, Lot 12

View South, center of property #7

View North, northern section of property #8

Milford, North River Road, Map 3, Lot 12

View North in center of wetland area PSS1E, southern section. #9

View South in southern section of PSS1E, Maleberry Dominant Shrub #10

Part 3: Detailed Evaluation

Proposed Project

The subject property is located off North River Road in Milford, NH. and identified as Tax Map 3, Lot 12. The proposed project is construction of a single-family residential house with driveway on a 31-acre parcel. The current dirt and gravel drive was constructed for logging access and will be upgraded to town standards requiring excavation of sand and gravel materials. The drive crosses an intermittent stream in the southern section of the property. The existing culvert will be replaced with a 30-inch RCP culvert placed embedded 12-inches in the stream bottom. An agricultural barn will be constructed and agricultural fields established.

Threatened and Endangered Wildlife and Habitat Evaluation

Study Methodology

Research of resource maps of the study area was conducted including NWI, Soils, USGS Topographic, Aerial photos, *NH F&G Wildlife Action Plan Maps for Highest Ranked Wildlife Habitat by Ecological Condition* and *NH Wildlife Habitat Land Cover* to provide baseline information on the quality of the wildlife habitat present in the vicinity of the subject property. Specific wildlife species habitat requirement references utilized include *New England Wildlife- Habitat, Natural History, and Distribution* by Degraaf and Yamasaki, and the *NH Wildlife Action Plan*.

There are distinct environmental factors to consider in assessing specific wildlife habitat, food sources, water resources, cover/physical structure elements and their spatial distribution in conjunction with specific requirements needed for individual animal species. Evaluating the diversity of wildlife habitat conditions that are present helps determine what species are currently utilizing this study area and what potential wildlife species may occur in the study area. Wildlife presence was evaluated within the existing property boundaries and via aerial photos, resource maps and existing conditions. Wetlands and uplands within the broader landscape were assessed to determine wildlife travel corridors and where the highest wildlife use areas may be located in the vicinity of this property.

Dan Geiger, a wetland scientist and biologist, visited the Milford property on March 6, 2021. Weather conditions were sunny and 21F. There was approximately 3 inches of snow cover in most places. The property was traversed thoroughly, boundaries walked and abutting properties observed for a total of 8-hours.

Species of Concern, Threatened

A NH Natural Heritage database search (NHB 20-2208, NHB19-) revealed the following sensitive species have been recorded in the vicinity of the subject property:

Spotted Turtle *Clemmys guttata* T, Wood Turtle *Glyptemys insculpta* SC, Bald Eagle *Haliaeetus leucocephalus* SC, Banded Sunfish *Enneacanthus obesus* SC, and Swamp Darter *Etheostoma fusiforme* SC.

No threatened or endangered wildlife, habitat, or wildlife corridors are likely to be significantly impacted by project activities.

The subject property does contain some specific wildlife habitat elements to support the State Threatened, Spotted Turtle and State Species of Concern, Wood Turtle.

Spotted Turtle *Clemmys guttata* T, Special Habitat Requirements are unpolluted shallow water such as brooks, emergent marshes, wet sedge meadow, fresh water bogs, vernal pools, woodland streams located adjacent to upland forest with well drained loamy or sandy soils present nearby. The southern wetland area PSS1E does contain some habitat features they may utilize however, the perennial stream corridors to the east and west of the subject property provide more wildlife habitat elements to support the Spotted Turtle.

The Wood Turtle *Glyptemys insculpta*, Special Habitat Requirements are Wooded Banks of Sandy bottom streams with adjacent meadows and open nesting areas. They frequent slow moving meandering streams with sandy bottom and overhanging riparian vegetation. Due to the close proximity to the Souhegan River and the two perennial stream corridors to the east and west, there is a potential that the Wood Turtle would utilize this property when in movement during summer between these stream corridors.

Bald Eagle *Haliaeetus leucocephalus* SC, Special Habitat Requirements are large bodies of water containing abundant fish resources, large trees for nesting, perching and roosting, and minimal human disturbance. There are no preferred water resources present on this property for the Bald Eagle, but the Souhegan River to the south and east does provide the special habitat needed to support this species. The US Fish and Wildlife Service have reviewed the proposal and commented "Given the nature of the proposed project and the significant distance separating it from the known roost location, I do not believe that your proposed activities are likely to impact the roosting eagles in a prohibited manner." (see attached letter, Tom Wittig, 9-23-2020).

Banded Sunfish *Enneacanthus obesus* SC, prefer vegetated areas of ponds, lakes, and the backwaters of lowland streams. There are no water resources present on the subject property that provides habitat suitable for this species. Within the no-name perennial stream corridors to the east and west of the subject property there appears that suitable habitat is present to support this species.

Swamp Darter *Etheostoma fusiforme* SC, inhabits lakes and ponds in shallow areas with soft muddy substrate, dense vegetation, and accumulated detritus. Stream habitats include both swift and slow-moving water with patches of vegetation which they are dependent on for spawning. These water resource habitats required for the Swamp Darter are not present within the subject property boundaries.

Project Site and Surrounding Land Use Description

Detailed Findings: Natural Communities/Animals Present

The NH Wildlife Habitat Land Cover includes a large portion of this property as Hemlock-hardwood pine with a small block of area defined as Appalachian oak pine. White Pine *Pinus strobus*, Eastern Hemlock *Tsuga canadensis*, and Red Oak *Quercus rubra* are co-dominant with American Beech present. The property has been logged and these species represent remaining forest stands and the bordering expansive forested covered properties. The southern PSS1E wetland consists of Maleberry and Highbush blueberry as dominant shrubs with Winterberry Holly present. Red Maple grows has a shrub and occasional mature trees. No vernal pools are present on site. Wildlife usage and corridors are more likely to the west turning north and east to northeast where Highest Ranked Habitat in New Hampshire along perennial streams and the Souhegan River are designated. The wildlife movement is significantly obstructed by NH Rte. 101 and development to the south.

No Animals were observed within the property boundaries during the winter survey.

Animal Species Potentially Present;

The subject property is bordered by undisturbed land to the north and northwest that includes wetlands, perennial streams and ponds. Highest Ranked Wildlife Habitat in Biological Region and conservation lands are present. As a result of logging activities and proposed agricultural use of the property, vegetation will change to an upland mixed forest to a grass meadow bordered by a mixed forest which will provide wildlife habitat for a variety of species dependent on the successional vegetation change and the new transitional edge habitat that it provides. The following species have the potential to be utilizing adjacent properties and the subject property.

White Tail deer *Odocoileus v.*
Red Squirrel *Tamiasciurus hudsonicus*,
Raccoon *Procyon lotor*
Red Fox *Vulpes v.*
Woodchuck *Marmota monax*
Ruffed Grouse *Banasa umbellus*
Raptors- Hawks and Owls

Potential Impacts and Proposed Conservation Measures

Erosion control measures to protect wetlands and are recommended by the NHF&G to be ecologically sensitive.

NEW HAMPSHIRE FISH AND GAME THREATENED AND ENDANGERED WILDLIFE CONDITIONS (PER DES AOT 503.19(H)).

- **If required welded plastic or "biodegradable plastic" netting or thread (e.g., polypropylene) in erosion control matting shall not be used. The use of erosion control berm, white Filtrexx Bio-Degradable Woven Silt Sock or woven organic materials (e.g., coco or jute matting such as North American Green SC150BN) shall be used. See Erosion Control Plan-Sheet for details.** ***Please specify type in the plans if applicable.***
- **Construct larger culvert at intermittent stream crossing to meet hydrologic standards and state requirements. The new culvert will be embedded 12 inches into the stream bottom to provide a natural stream bottom to better convey amphibians and reptile's movement.**
- **Pictures- Posting of State Threatened Spotted Turtle and State Species of Concern, Wood Turtle, on the property and educating contractors to be aware and follow contact guidance and procedures if either species is observed.**

Respectfully Submitted,

Daniel H. Geiger, CWS 076, Biologist
Oak Hill Environmental Services