

Planning

DURHAM LANDFILL CLOSURE



DEPARTMENT OF ENVIRONMENTAL SERVICES (DES)
WETLANDS BUREAU
6 Hazen Drive
Post Office Box 95
Concord, NH 03302-0095
603-271-2147 FAX 603-271-6588



STANDARD DREDGE AND FILL APPLICATION

Application for filling, dredging, or constructing structures under RSA 482-A and RSA 485-A:17

GENERAL INSTRUCTIONS: Type or print clearly; missing information may delay your application!

1. NAME OF OWNER: Town of Durham
Last, First, Middle

MAILING ADDRESS: 15 Newmarket Road, Durham, New Hampshire 03824
Street/Road/Box # Town/City State Zip code

TELEPHONE: (603) 868 - 5577 FAX: (603) 868 - 8033

2. LOCATION OF PROPOSED CONSTRUCTION:

a. Durham Point Road, Durham
Street/road/highway Town/City

TAX MAP #s 16 LOT #s 1-3 BLOCK#s

3. Obtain Name of Waterbody from U.S. Geological Survey Map. If Waterbody is Unnamed, place an "X" in the appropriate box.
IN, OR ADJACENT TO, Horsehide Brook (name of waterbody)

() Unnamed tributary to:
() Unnamed Pond () Unnamed stream () Unnamed wetland () Tidal Buffer Zone

4. Mark appropriate box(es) to indicate landform type(s): () Salt Marsh; () Tidal water; () Sand dune; () Bog; (X) Freshwater marsh; () Swamp; () Wet meadow; () River; () Perennial stream; () Seasonal stream; () Lake; () Upland (tidal buffer zone only);
() Other:

5. Provide a description of your proposed project. The project is a municipal landfill closure, which includes bank stabilization and stormwater drainage controls. Proposed project plans are attached.

6. Explain the need for the proposed project and why your approach has less environmental impact on the DES Wetlands Bureau's jurisdiction than other reasonable alternatives (use separate sheet if necessary). See attached sheet.

7. Desired Starting Date: August 14, 2002 Estimated Completion Date: May 14, 2003

8. AUTHORIZED " CONTRACTOR OR " AGENT (Optional): Underwood Engineers, Inc.

MAILING ADDRESS: 25 Vaughan Mall Unit 1, Portsmouth, New Hampshire 03801
Street/Road/Box # Town/City State Zip code

TELEPHONE: (603) 436 - 6192 FAX: (603) 431 - 4733

FOR DES OFFICE USE ONLY:

Fee received: check # amount init. date FILE #

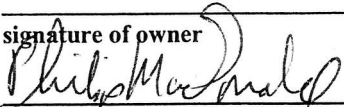
9. Area and/or linear impact of proposed work within DES Wetlands Bureau jurisdiction (e.g., lakes, ponds, streams, wetlands, sand dunes, tidal buffer zone, etc.).
- a. Estimated area to be dredged: 200 sq.ft.
 - b. Volume of material to be removed from public waters: 7.5 cu.yds.
 - c. Is proposed disposal site in wetlands (yes/no)? No
 - d. Estimated area to be filled: 2680 sq.ft.
 - e. Estimated total area (in DES Wetlands Bureau jurisdiction) of all proposed work: 2680 sq.ft.
 - f. Estimated excavation and/or filling within the upland portion of the Tidal Buffer Zone: N/A sq.ft.
 - g. If a channel is to be constructed, or a culvert or a bridge is to be installed, give the distance the flow of water is to be impacted: N/A ft.
 - h. If the project involves shoreline, indicate the average length of shoreline frontage: 0 ft.
 - i. If dock or similar structure: length: N/A ft.; width: N/A ft.; total area of impact: N/A sq.ft.
 - j. If wall, rip-rap, beach, or similar project, indicate the proposed shoreline impact in: linear feet 0, square feet 0.

10. **FILING FEE:** A check or money order made out to the DES Wetlands Bureau shall accompany the application. The minimum fee is \$50. MINOR and MAJOR PROJECTS are charged at the rate of: \$0.04 per square foot of requested impact (if less than \$50, the minimum fee applies); and/or \$100 per requested boat slip. **The fee is based on the requested impact, not the approved impact.** If an applicant is unsure of the correct fee, the application may be submitted with a \$50 minimum fee and the balance will be billed. The application will not be reviewed until the fee is paid in full.

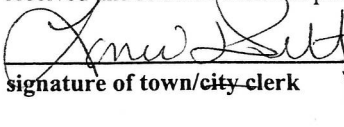
The following are examples of projects that would qualify as minimum impact. A comprehensive definition of minimum impact is found in Wt 303.04 of the New Hampshire Administrative Code.

1. A seasonal pier not to exceed 6' in width, or 30' in length (4' X 20' in lakes less than 1000 acres) provided it is the only structure on the frontage.
2. Repair or replacement of an existing structure with no change in size, location, or configuration.
3. Most driveway crossings of small streams (less than 10 feet wide bank to bank) or narrow freshwater wetlands (less than 50 feet wide; not in bogs or marshes) to access an isolated piece of property.
4. Maintenance dredging within original bounds of a legally constructed project.

APPLICANT SIGNATURE. SIGNATURE BELOW CERTIFIES THAT: 1.) all abutters have been identified in accordance with the definition given in the general instructions sheet; 2.) those abutters have been sent notice by CERTIFIED MAIL; 3.) the applicant has read, and provided, the REQUIRED INFORMATION outlined in rule Wt 302.04 and listed on the "Checklist for Preparing an NHDES Wetlands Bureau Application"; 4.) The applicant has read, and understands, Rule Wt 302.03 and has chosen the least impacting alternative; 5) The applicant(s) has reviewed the information to be submitted and that the information is, to their knowledge true and accurate; 6) The applicant understands that the willful submission of falsified or misrepresentative information to the New Hampshire Department of Environmental Services is a criminal act which may result in fines or imprisonment.

signature of owner	print name	date
	<u>PHILIP D. MACDONALD</u>	<u>6/11/02</u>
signature of authorized agent (if applicable)	print name <u>C/O UNDERWOOD ENGINEERS, INC.</u>	date

TOWN CLERK SIGNATURE. I hereby certify that the applicant has filed five applications, five detailed plans, and five U.S.G.S. location maps with the town/city of: Durham as required by Chapter 482-A:3 (amended 1991), and I have received and retained certified postal receipts (or copies) for all abutters identified by the applicant.

signature of town/city clerk	date
 Deputy	<u>6/12/02</u>

**NARRATIVE STATEMENT
DURHAM LANDFILL CLOSURE
DURHAM, NEW HAMPSHIRE**

PURPOSE

The purpose of this project is to provide final closure of an existing municipal landfill. The closure process is intended to fulfill state requirements that include groundwater, waste management, and erosion control rules of NHDES.

The landfill, which has not received refuse since the 1980's, is located off Durham Point Road. The site occupies a hill located above and to the east of Horsehide Brook. The landfill is unlined and consists of a primary refuse area and a secondary refuse area. The primary refuse area is approximately 3 acres and is characterized by a 700 feet wide slope that reaches a maximum height of 70 feet. The secondary refuse area, which lies northeast of the primary refuse area, is approximately 1.8 acre. Both refuse areas contain predominantly ash from an on-site incinerator. The project includes placing riprap at the outlet of three drainage swales to stabilize the bank and prevent erosion. The swales impact 2680 square feet of wetland area. No shoreline of navigable waters is impacted.

Water quality monitoring began at the site in 1992. Sampling results indicate that the primary refuse area has caused minimal water quality impact to a single down gradient well, and essentially no impact from the secondary refuse area.

The final closure design will involve construction of a combination of cover systems; impermeable and low permeable cover systems on the top portion of the primary refuse area, a low permeable asphalt cover over the secondary refuse area, and soil amendments and slope stabilization on the side-slopes. The landfill cover (a.k.a. cap) system is designed to limit rainfall from percolating through the landfill refuse to mix with groundwater. Stormwater controls are included to direct drainage off the landfill. Improvements to groundwater quality are anticipated to result from this approach by preventing stormwater from infiltrating through the refuse and mixing with ground water. The incinerator at the site, which ceased operation in the 1980's, is expected to be dismantled and removed from the site. Transfer station activities at the site are expected to continue.

No negative impacts on area wildlife are anticipated from this project. Temporary disturbance of sediments by placement of riprap and fill will occur during construction only. The landfill, once closed, will not impact recreational or historic sites in the area.

ALTERNATIVE ANALYSIS

Three reasonable alternatives were considered for this project.

1. **Removal of Refuse:** Excavating and removing all of the refuse material to other permitted facilities will heighten construction related issues such as trucking waste through the Town, erosion problems, and stabilizing holes left from excavation. Health and safety issues are also involved. This alternative is expected to cost several orders of magnitude over the recommended alternative.
2. **Relocate Refuse and Construct a Low Permeability Soil Cover:** This alternative involves regrading landfill side slopes to a slope of 3H:1V and relocating 25,000 cubic yards of refuse from the primary refuse area to the secondary refuse area and/or an off-site solid waste landfill. This alternative requires an extensive amount of earthwork and disturbance of a large quantity of refuse and lack of available volume to redeposit material within existing landfill footprints. The cost for this alternative is expected to exceed twice the cost of the preferred alternative.
3. **Recommended Closure Alternative:** This alternative incorporates a combination of impermeable cover, low permeable cover, and steep slope stabilization that provides the least amount of disturbance to the landfill primary refuse. This is the most cost effective alternative.

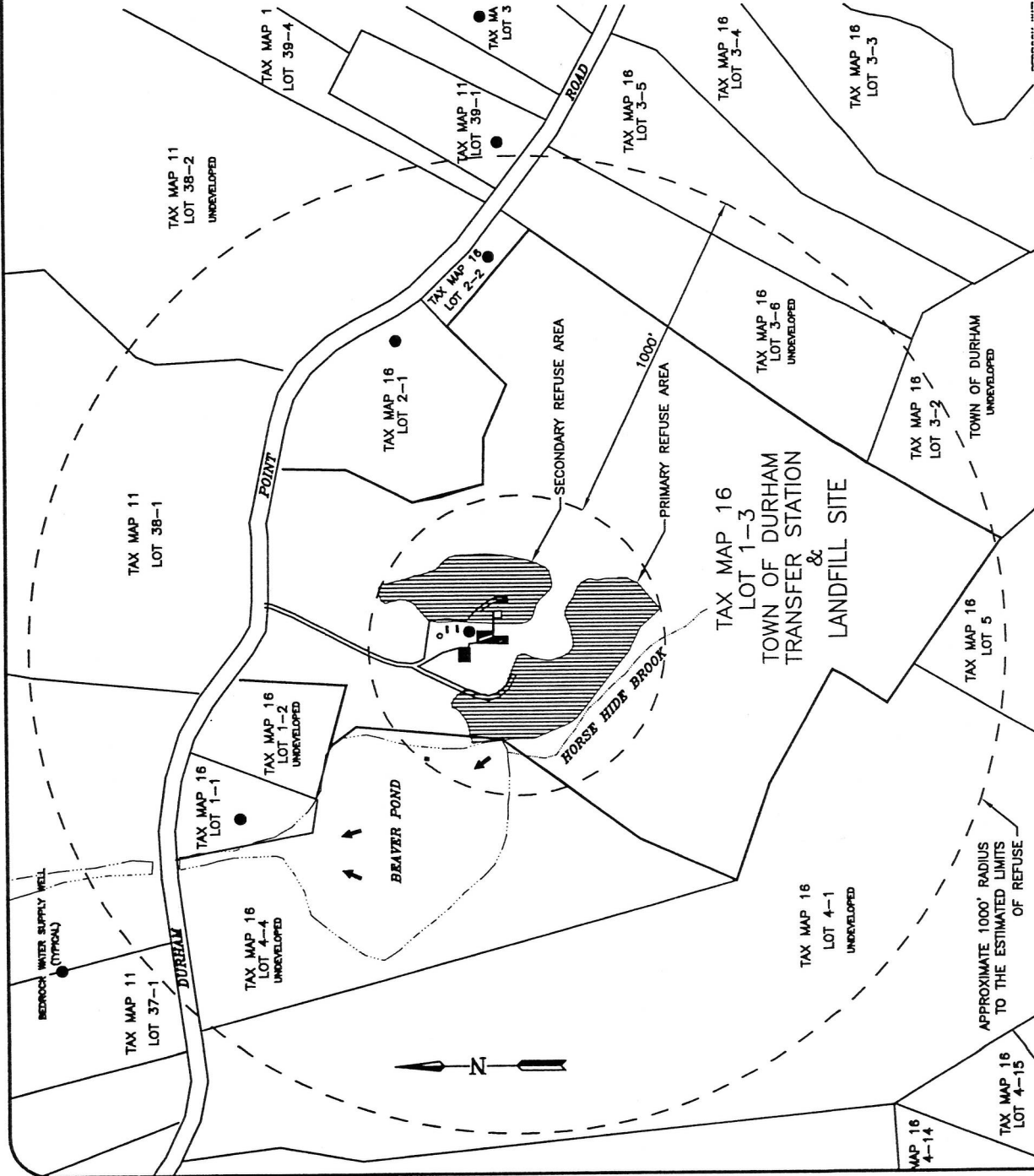
CONCLUSION

The purpose of the proposed construction is to secure the unlined landfill and to minimize future contamination of the groundwater. The need to close the landfill was introduced by State regulations as well as local parties due to concerns for ambient ground water quality. The proposed closure alternative utilizes a landfill closure design that minimizes disturbance to the existing refuse pile and provides groundwater management and erosion control.

ABUTTERS LIST
LOT 1-3 TOWN OF DURHAM

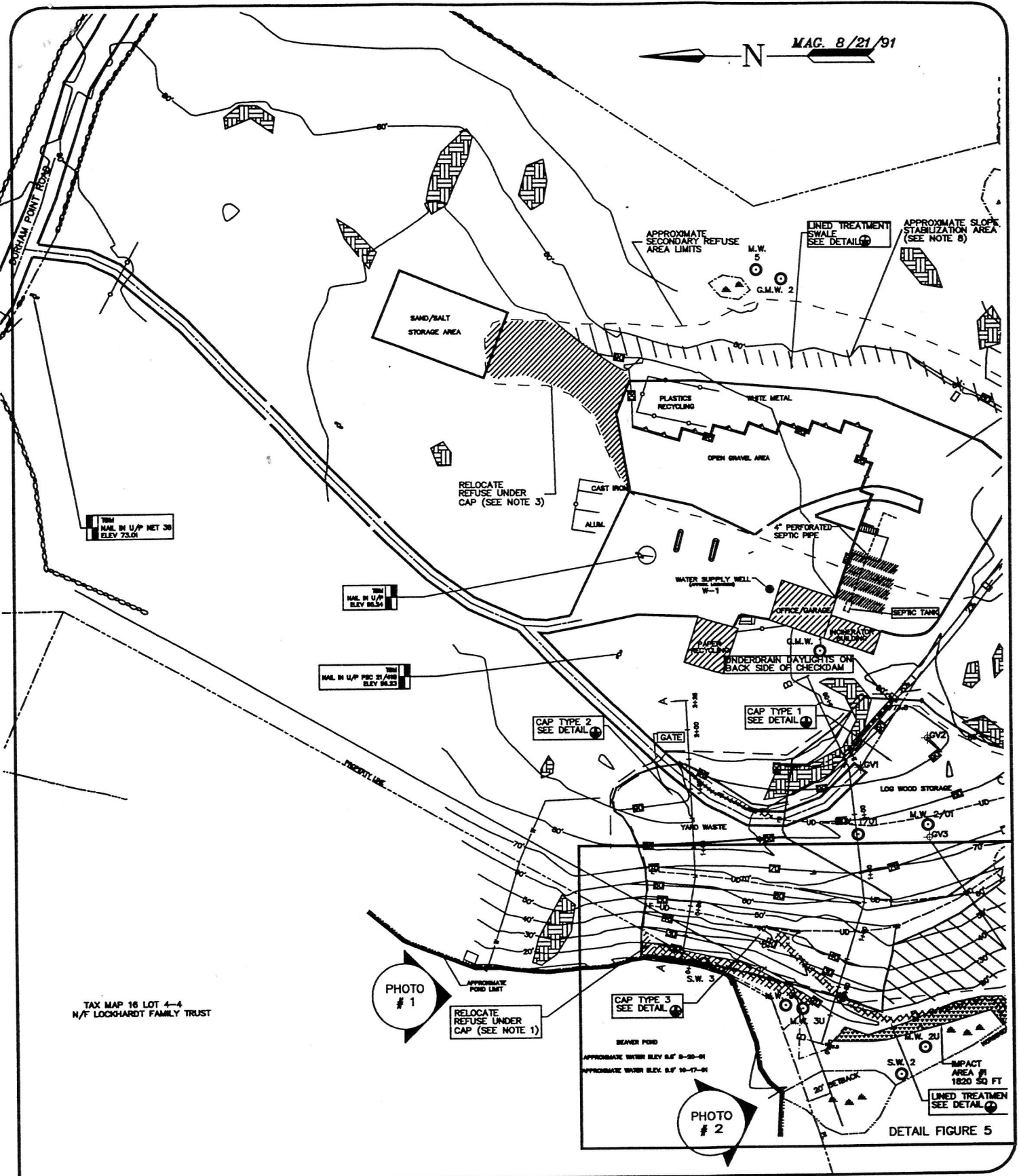
MAP BLOCK	LOT	NAME AND ADDRESS
11	38 - 1	McNITT, BARBARA & ROBERT P.O. BOX 577 DURHAM, N.H. 03824
16	1 - 2	DEVITO, FELIX A. & SUSAN 34.5 STATE ROAD ELIOT, ME. 03903
16	2 - 1	SEYMOUR, CRAIG R & SUSAN 110 DURHAM POINT ROAD DURHAM, N.H. 03824
16	2 - 2	COSTA, REV. TRUST, FRANCIS R. 120 DURHAM POINT ROAD DURHAM, N.H. 03824
16	3 - 2	TOWN OF DURHAM
16	3 - 6	MANN TRUST, JUDITH WELSH P.O. BOX 4512 PORTSMOUTH, NH 03801
16	4 - 1	LOCKHARDT FAMILY TRUST MADELINE LOCKHARDT TRUSTEE 73 DURHAM POINT ROAD DURHAM, N.H. 03824
16	4 - 4	SAME AS ABOVE
16	5 - 0	KITFIELD, CORNELIA 125 LONGMARSH ROAD DURHAM, N.H. 03824

- NOTES:
- LOCATIONS OF WATER SUPPLY WELLS ARE BASED ON FIELD OBSERVATIONS MADE ON NOVEMBER 4, 1991 BY NOBIS ENGINEERING INC. AND INFORMATION OBTAINED FROM THE DURHAM ASSESSOR'S OFFICE.
 - THE PROPERTIES WITH WATER SUPPLY WELLS ALSO HAVE PRIVATE SEPTIC SYSTEMS.
 - NO UNDERGROUND STORAGE TANKS WERE IDENTIFIED WITHIN THE APPROXIMATE 1,000 FOOT RADIUS.
 - ALL OF THE PROPERTY LINE INFORMATION SHOWN IS APPROXIMATE AND IS BASED ON THE TOWN OF DURHAM TAX MAPS. REVISED JUNE 2000



DATE	05/20/02
PROJECT	895
Underwood Engineers, Inc.	
TAX MAP PLAN	FIGURE
DURHAM LANDFILL CLOSURE	2
DURHAM, NH	

NOT TO SCALE



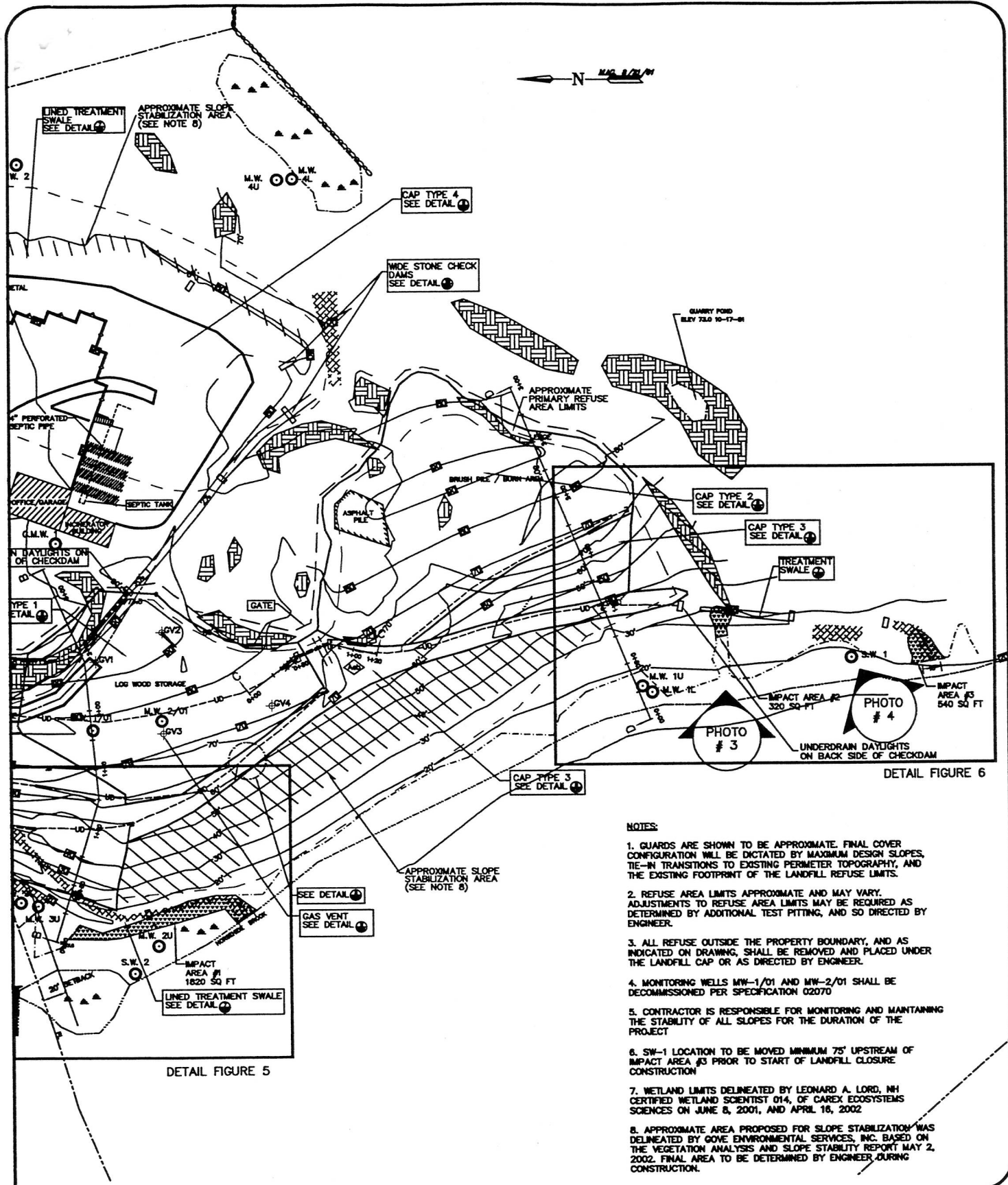
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DATE
6/12/02
PROJECT
895

**Underwood
Engineers, Inc.**

SITE PLAN, NORTH PORTION
DURHAM LANDFILL CLOSURE
TOWN OF DURHAM,
NEW HAMPSHIRE

FIGURE
3A



DETAIL FIGURE 5

DETAIL FIGURE 6

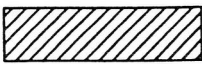
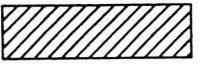



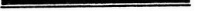












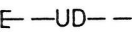

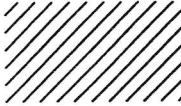

NOTES:


1. GUARDS ARE SHOWN TO BE APPROXIMATE FINAL COVER CONFIGURATION WILL BE DICTATED BY MAXIMUM DESIGN SLOPES, TIE-IN TRANSITIONS TO EXISTING PERIMETER TOPOGRAPHY, AND THE EXISTING FOOTPRINT OF THE LANDFILL REFUSE LIMITS.
2. REFUSE AREA LIMITS APPROXIMATE AND MAY VARY. ADJUSTMENTS TO REFUSE AREA LIMITS MAY BE REQUIRED AS DETERMINED BY ADDITIONAL TEST PITTING, AND SO DIRECTED BY ENGINEER.
3. ALL REFUSE OUTSIDE THE PROPERTY BOUNDARY, AND AS INDICATED ON DRAWING, SHALL BE REMOVED AND PLACED UNDER THE LANDFILL CAP OR AS DIRECTED BY ENGINEER.
4. MONITORING WELLS MW-1/01 AND MW-2/01 SHALL BE DECOMMISSIONED PER SPECIFICATION 02070
5. CONTRACTOR IS RESPONSIBLE FOR MONITORING AND MAINTAINING THE STABILITY OF ALL SLOPES FOR THE DURATION OF THE PROJECT
6. SW-1 LOCATION TO BE MOVED MINIMUM 75' UPSTREAM OF IMPACT AREA #3 PRIOR TO START OF LANDFILL CLOSURE CONSTRUCTION
7. WETLAND LIMITS DELINEATED BY LEONARD A. LORD, NH CERTIFIED WETLAND SCIENTIST 014, OF CAREX ECOSYSTEMS SCIENCES ON JUNE 8, 2001, AND APRIL 16, 2002
8. APPROXIMATE AREA PROPOSED FOR SLOPE STABILIZATION WAS DELINEATED BY COVE ENVIRONMENTAL SERVICES, INC. BASED ON THE VEGETATION ANALYSIS AND SLOPE STABILITY REPORT MAY 2, 2002. FINAL AREA TO BE DETERMINED BY ENGINEER DURING CONSTRUCTION.

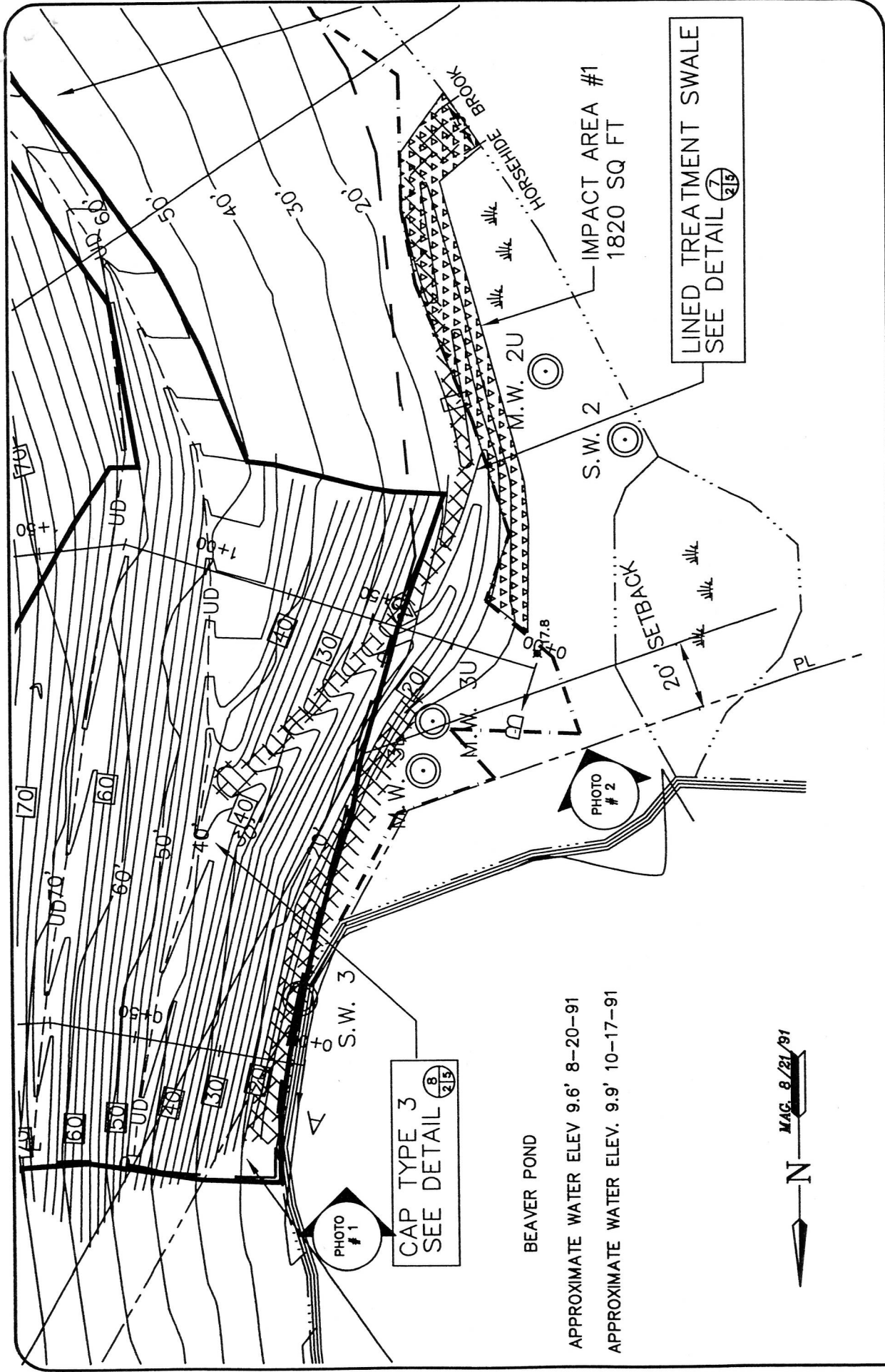
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DATE 6/12/02	Underwood Engineers, Inc.	SITE PLAN, SOUTH PORTION DURHAM LANDFILL CLOSURE TOWN OF DURHAM, NEW HAMPSHIRE	FIGURE 3B
PROJECT 895			

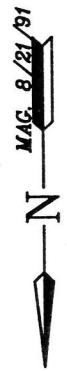
LEGEND:

EXISTING	PROPOSED	
		STRUCTURES/BUILDINGS
- - - - -	- - - - -	APPROXIMATE PROPERTY LINE
- - - 130 - - -	- [126] - - -	2' CONTOUR ELEVATION
126 _x	- [130] - - -	10' CONTOUR ELEVATION
126 _x	126 _x	SPOT ELEVATION
- - - - -	- - - - -	CHAINLINK FENCE
		STONEWALL
		RETAINING WALL
- - - W - - -	- - - W - - -	EDGE OF PAVEMENT
		WATER PIPE
- - - - -	- - - - -	WETLAND
		WETLAND LIMITS
		APPROXIMATE POND LIMITS
- - - - -	- - - - -	CENTERLINE BROOK
- - - - -	- - - - -	APPROXIMATE REFUSE AREA LIMITS
M.W. 2U 		MONITOR WELL
S.W. 2 		SURFACE WATER SAMPLING LOCATION
G.M.W. 1 		GAS MONITORING WELLS
		LEDGE
	GV3 	GAS VENT
		RIPRAP
	E--UD-- 	UNDERDRAIN PIPING
		STONE CHECK DAM
		REFUSE RELOCATION AREA
		WETLAND IMPACT AREA

DATE 6/12/02		LEGEND DURHAM LANDFILL CLOSURE TOWN OF DURHAM, NEW HAMPSHIRE	FIGURE 4
PROJECT 895			



BEAVER POND
 APPROXIMATE WATER ELEV. 9.6' 8-20-91
 APPROXIMATE WATER ELEV. 9.9' 10-17-91



DATE
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 PROJECT
 895

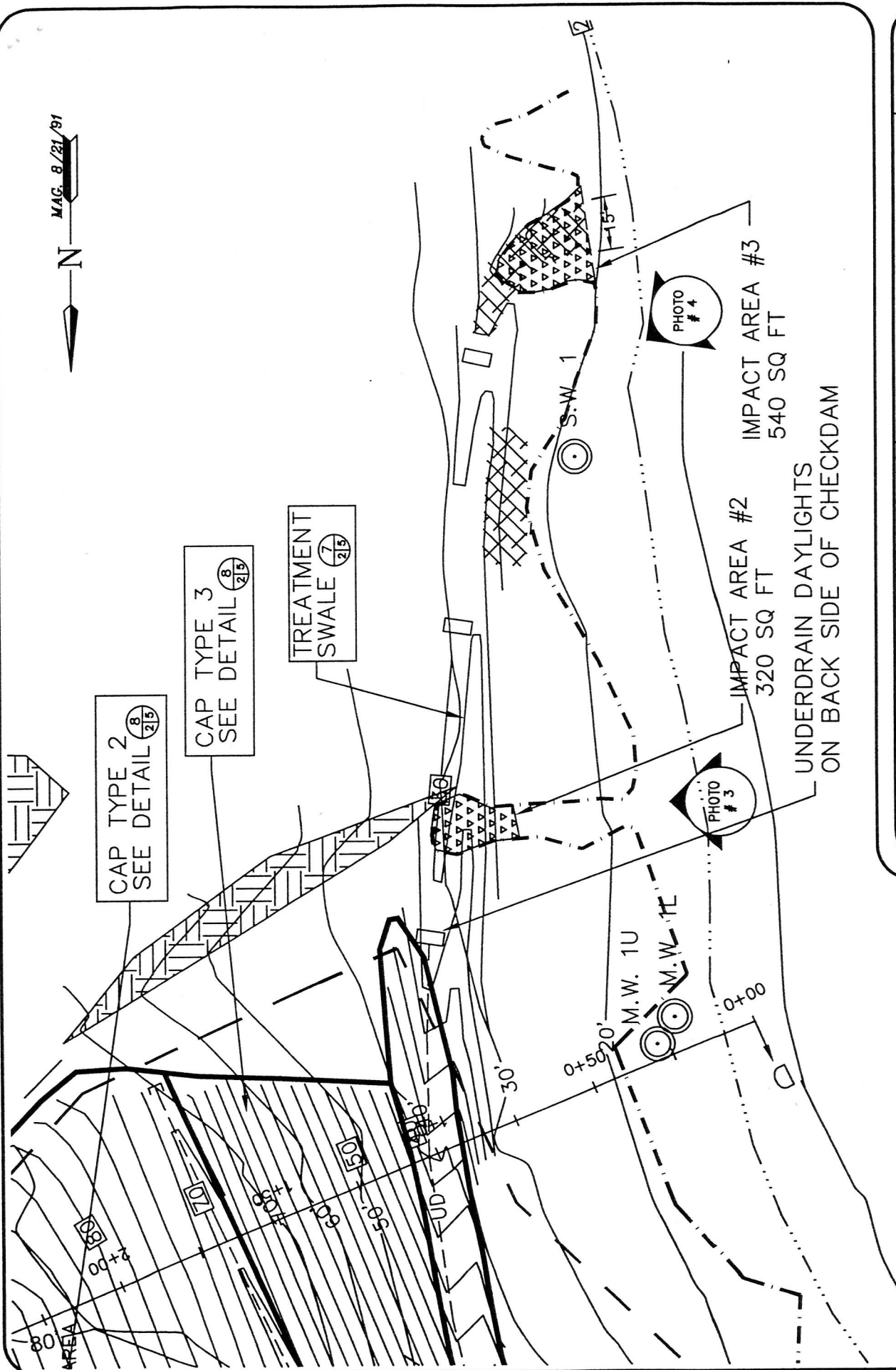
**Underwood
 Engineers, Inc.**

IMPACT AREA #1
 DURHAM LANDFILL CLOSURE
 TOWN OF DURHAM,
 NEW HAMPSHIRE

FIGURE
 5

M.A.C. 8/21/91

N



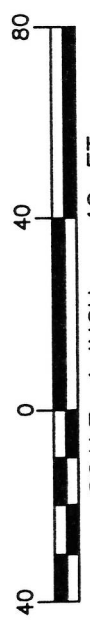
FIGURE

6

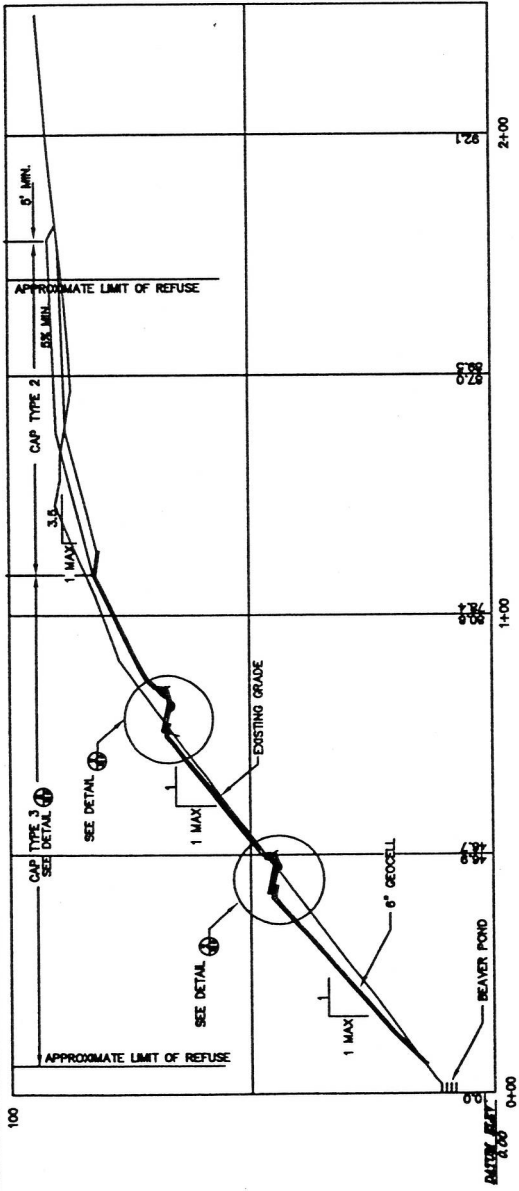
IMPACT AREAS #2 AND #3
DURHAM LANDFILL CLOSURE
TOWN OF DURHAM
NEW HAMPSHIRE

**Underwood
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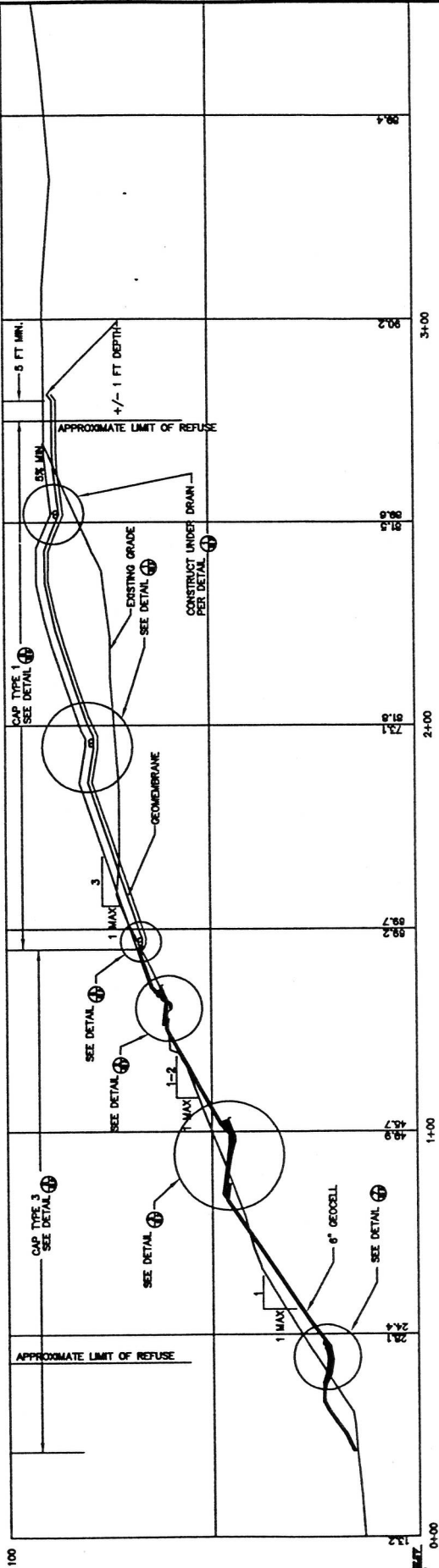
DATE	5/20/02
PROJECT	895



SCALE: 1 INCH = 40 FT.



SECTION A



SECTION B



DATE
6/12/02

PROJECT
895

**Underwood
Engineers, Inc.**

SECTIONS,
DURHAM LANDFILL CLOSURE
TOWN OF DURHAM,
NEW HAMPSHIRE

FIGURE

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