Key Feature Notes & Specifications:

(A) Existing portions of chain-link fence presently serving to restrict access to the subject site shall be utilized to the greatest extent possible to restrict access to the subject site during construction. The Contractor may have to supplement these minimum security devices for the protection of project materials. Subsequent to the substantial completion of the project, the existing fencing shall be removed and shall be replaced with new fencing as outlined in "F" below.

(B) Existing portions of chain-link fence presently serving to restrict access to the subject site shall be utilized to the greatest extent possible to restrict access to the subject site during construction. The Contractor may have to supplement these minimum security devices for the protection of project materials. Subsequent to the substantial completion of the project, the existing fencing shall be removed and shall be replaced with new fencing as outlined in "F" below.

(C) Existing concrete structure in this area to remain undisturbed. Proposed membrane to be placed around and as close as possible to this structure utilizing anchor trench details as outlined on Sheet 2 of 3. Topographic data indicated in this area may differ from that indicated. Final grading to be directed away from the structure.

(D) Existing concrete structure in this area to remain undisturbed. Proposed membrane to be placed around and as close as possible to this structure utilizing anchor trench details as outlined on Sheet 2 of 3. Existing topographic data is slightly distorted in this area due to the scale of the drawing. Final grading to be directed away from the structure.

(E) Existing subject site boundary as depicted has been taken from existing mapping as prepared by others and has not been verified by the Designer. Prior to ANY site distrubance, the entire site shall be the subject of a minimum CLASS II boundary survey as adopted by the Rhode Island Board of Registration for Professional Land Surveyors. In the event that the results of that survey indicate that any aspect of the closure specifications are outside the depicted boundaries of the subject site, both the Town and RIDEM (Air & Hazardous Materials Section) shall be notified and corrective action implemented. It is recommended that this activity be performed as soon as possible to ensure that all proposed and approved events are within the site boundaries and to ensure that adequate time is allowed in the event that revisions must be submitted for regulatory approval.

(F) Upon substantial completion of the project (or after the greatest potential for damage to access fencing has passed) approximately 655 linear feet of chain-link fencing shall be installed in the approximate location depicted hereon. Fencing to be a minimum of 6 feet in (installed) height and shall have a corrosion-resistant finish. Provide locking gates at the two (2) access location depicted hereon. As this site is relatively remote, there is no existing vehicular access from the west, east or south.

(G) Existing groundwater monitoring wells depicted hereon have been taken from mapping as prepared by others and have not been field verified by Designer. These monitoring wells shall remain undisturbed during the closure phase and shall be adequately protected in the event that closure construction is conducted in the proximity of these wells.

(H) Proposed access roadway is for the purposes of project construction and post-closure inspection and maintenance. Roadway stationing is approximate and may be subject to revisions based upon actual location and construction. Proposed roadway grades to be determined in the field during layout and construction. The design intention is for the existing topsoil, subsoil and unsuitable materials to be removed from the area under the proposed roadway and replaced with suitable gravel materials. In those instances where solid waste must be removed for the placement of the access roadway, this removal should be minimal and the solid waste is to be incorporated into the closed portion of the site and adequately covered. The proposed grade of the roadway shall be as close to existing grade as possible to minimize the outward limits of disturbance.

(I) DESIGN INTENTION FOR EXISTING/INTERMEDIATE/FINAL GRADING. The topographic information depicted hereon represents the existing elevations as of approximately January 1994. The represented contour interval is two (2) feet. Proposed INTERMEDIATE elevations are depicted in only several areas, most notably at the southeasterly corner of the site. Intermediate grading is for the purpose of accomplishing the required maximum slope of 3:1 prior to the placement of the 12 inch grading layer.

This represents the extend of grading which must be accomplished prior to the placement of any portion of the final cross-sectional cover materials.
To arrive at the elevation required to be placed on or before July 19, 1994, add 12 inches to each contour line depicted.
To arrive at the elevations required to be placed on or before July 19, 1995, add approximately 30 inches (2.5 feet) to each contour line depicted.
The approximate total area subject to FINAL grading is 10.32 acres (area of proposed membrane), more or less.

(J) Final grading shall be maintained with appropriate soil erosion and sedimentation control measures to ensure minimum loss of topsoil and seeding materials (i.e. application of straw or fiber mulch as per Sheet 3 of 3. On steep slopes or areas subject to disturbance, straw applications should be secured by 'peg and twine' or 'brush anchor' methods. "Steep slopes" are defined herein as slopes between 3:1 and 4:1.

Subsequent to the final seeding of the site, there should be weekly inspections for damages and to ensure adequate germination in all areas of the seeding. Any damaged areas shall be promptly repaired. For the first 3 to 5 years the final cover shall be inspected twice per year, once during the minimum growth period and once during the maximum growth period. Between 5 and 30 years, the final cover shall be inspected once per year during the minimum growther period. Special attention will be given at all times to the protection of the surface from burrowing animals and the growth of vegetation which would invade the final cover materials so as to damage the synthetic membrane. (i.e. trees and vegetation with deep root structures).
During all inspections, the condition of the passive gas vents and the surrounding areas shall be noted and any damages will be promptly repaired.

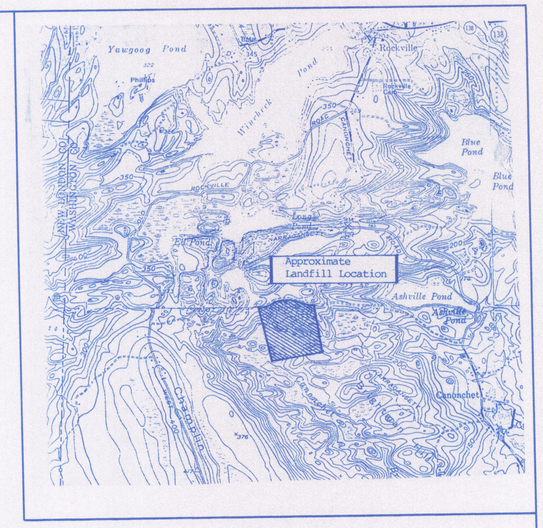
Select control points for the information represented hereon:

Control Point #10 – drill hole in boulder	N 9901.08	E 9747.92
Control Point #20 – drill hole in boulder	N10000.00	E10000.00
Control Point #30 – iron rod	N 9932.17	E10392.29

Subarea Sedimentation Basins. Reference is hereby made to "Engineer's Narrative And Soil Erosion & Sediment Calculations For Hopkinton Landfill Closure, dated 02-22-1994. Also see Sheet 2 of 3 for approximate basin locations, basin lengths and basin design volumes. Contractor may reasonably modify the configuration of the basins provided that the design volume is satisfied or exceeded. Typically, the outlet pipe from the basin is a 40 foot length of pipe at a slope of 0.03 with a Q(max)=6 cfs.

(K) Ensure that all subarea basins are regularly inspected and cleaned of trapped sediment. Sediment removed from "subarea basins shall be either transported to a protected stockpile location on the site, and/or removed from the site to be utilized by the Town in other locations.
As these basins will be constructed early in the construction process, adequate care shall be taken to minimize damage to these basins.
Until final seeding and germination, basins shall be inspected a minimum of one time per week and repaired and cleaned as may be required. Subsequent to seed germination and until final vegetation is adequately established, basins shall be inspected a minimum of one time per two weeks and repaired and cleaned as may be required. After final vegetation has become thoroughly established, basins shall be inspected a minimum of two times per year and repaired and cleaned as may be required.
As these basins will not be permanently fenced, final sloping for basin sidewalls to be maintained to facilitate ready access by both humans and animals.

(L) There are several existing sheds in this general area which are not specifically depicted hereon. These sheds are to be removed from the area by the Constractor subsequent to approval by the Town.



Location Map

General Design Statements:

1. Excluding infiltration from the existing landfill conditions on the site, which are outside of the design intention, the groundwater and surface water in the proximity of the closed area will be substantially protected by the installation of the synthetic membrance materials and by the growth of vegetation proposed to cover the site. Continuous groundwater monitoring will allow for contaminant detection.
2. Gas emissions from the proposed passive gas vents are not anticipated to present a significant issue.
3. Access to the site shall be restricted to authorized personnel upon substantial completion of the project (Police/Fire/Town/RIDEM/Contractor/Designer, etc.). This restriction shall be accomplished by the installation of fencing as depicted hereon. Additional importation of solid waste shall be prohibited unless prior approval is granted by RIDEM. The Town of Hopkinton, RI currently works with the Town of Westerly, RI in transferring solid waste to another landfill site. The local police shall ensure that solid waste is not transported to or deposited at this site.
4. Grading of the site with the specified 12 INCH GRADING LAYER to occur on or before July 19, 1994.
5. In the event that the project is PHASED and the activity in item #4 above is left in place for a period of more than fifteen days, stabilization methods outlined on Sheet 3 of 3, or equivalent, shall be implemented to ensure that the grading layer remains in place and substantially undisturbed until the remainder of the project is initiated.
6. Placement of membrane and placement of final cover cross-sectional materials including seeding to occur on or before July 19, 1995.
7. Nothing shall prevent the Town from placing composted sludge in place of and/or in addition to the specified TOPSOIL LAYER.
8. The design intention regarding the placement and coverage of the synthetic membrane is that all areas containing solid waste shall be covered, excluding the areas of the proposed subarea basins. The membrane should extend to the subarea basins. Any areas which do not contain solid waste need not be covered with membrane, but would be covered with PROTECTIVE AND TOPSOIL layers as specified. The calculation identified in KEY NOTE "I" above presumes that the entire area bounded by the interior edge of the access roadway and the northerly boundary of the site (excluding basin areas) is to be covered by the full cross-sectional materials specified.
   The final limits of membrane coverage shall be subject to changes based upon actual test hole excavations to be conducted for the purposes of confirming the presence of solid waste.
9. Reference is hereby made to that document entitled: "Town of Hopkinton, Rhode Island, Project Description Narrative and Post-Closure Groundwater Monitoring Plan and Construction Quality Assurance and Quality Control Plan To Accompany Construction Plans and Specifications For The Closure of The Municipal Landfill Site, Stubtown Road, Hopkinton, Rhode Island, Dated 02-24-1994" and by said reference is incorporated herein.

Reference Notes:

1. Reference is hereby made to "Operating Manual For Hopkinton Sanitary Landfill", dated July 1987 as prepared by Applied Environmental Technologies Corporation.
2. Reference is hereby made to the following existing mapping by others and made available by the Town of Hopkinton, Rhode Island:
   A. "Existing Conditions At The Town of Hopkinton Sanitary Landfill For Review Only, Hopkinton, Rhode Island, Scale:1"=100', Dated August 1, 1984, BSC Engineering, Sheet 1 of 4"
   B. "Revised Site Plan For The Town of Hopkinton Sanitary Landfill For Review Only, Hopkinton, Rhode Island, Scale: 1"=100', Dated August 1, 1984, BSC Engineering, Sheet 2 of 4"
   C. "Radius Plan, Sanitary Landfill, Hopkinton, RI, Scale: 1"=200', Dated: 7-10-81, Anderson-Nichols, Sheet 1 of 4"
   D. "Site Plan, Sanitary Landfill, Hopkinton, Rhode Island, Scale: 1"=100', Dated 7-10-81, Anderson-Nichols, Sheet 2 of 4"
   E. "Town of Hopkinton, Stub Town Road, Map of Land Located In The Town of Hopkinton, Washington County - State of Rhode Island, Scale: 1"=100', Dated 3-19-1970, Sheet 1 of 1"
   F. "Site Plan, Sanitary Landfill, Hopkinton, RI, Scale: 1"=100', Dated August 1976, Revised March 1980, Prepared By: Lee Pare & Associates, Inc., Sheet 2 of 3"
   G. "Plan of Existing Conditions As Of 9-20-1990, Municipal Landfill Site, Prepared For the Town of Hopkinton, Rhode Island, Assessor's Plat 13 Portion of Parcel 27, Stubtown Road, Hopkinton, Rhode Island, Scale: 1"=100', November, 1990, Alfred W. DiOrio, RLS, Inc., Surveyors-Consultants, Ashaway, Rhode Island, Revised: January 1991, Sheets 1,2,3, and 4 of 4".
3. Flagging of freshwater wetland features by Applied Bio-Systems, Inc. in July 1990. Freshwater wetland flaggings were royal blue and numbered "CL" for stream centerline and "WL" for wetland edge. Check flaggings were pink and were placed by Alfred W. DiOrio, RLS, Inc. at time of location.
4. On-site observations of stream centerline and wetland limits made in July and August 1990 by "transit and stadia" methods (CLASS IV survey standard) by Alfred W. DiOrio, RLS, Inc.
5. Additional flagging of freshwater wetland limits by Applied Bio-Systems, Inc. in November 1990. Freshwater wetland flaggings were royal blue and number "WL" for wetland edge. Check flaggings were pink and were placed by Alfred W. DiOrio, RLS, Inc. at time of location.
6. Existing topographic conditions depicted hereon from site observations made in October 1993 with additional observations made in January 1994. Observations made by "transit and stadia" methods (CLASS IV survey standard). Contouring from interpolation of on-site observations.
7. Reference is hereby made to FRESHWATER WETLANDS APPLICABILITY DETERMINATION #90-0709D, dated 11-15-1990 for the wetland features depicted on the easterly portion of the site. The proposed site improvements represented hereon may be subject to further review by the RIDEM - Freshwater Wetlands Section and an application to this effect is recommended prior to the implementation of any improvements.

This Plan/Report is substantially correct in accordance with a CLASS IV Standard as adopted by the Rhode Island Board of Registration for Professional Land Surveyors. This plan is not to be construed as an accurate boundary survey and is subject to such changes as an accurate boundary survey may disclose.

WILLIAM D. DOWDELL
NO. 4217
REGISTERED PROFESSIONAL ENGINEER
3/1/97

William D. Dowdell, PE RI #4217

A valid reproduction of this plan contains BOTH an inked stamp impression and an embossed seal impression of RI Professional Land Surveyor #1752

ALFRED W. DiORIO
No. 1752
PROFESSIONAL LAND SURVEYOR

This survey and plan substantially conform to a CLASS IV Standard for both horizontal and vertical surveys as adopted by the Rhode Island Board of Registration for Professional Land Surveyors.

By:

Alfred W. DiOrio, PLS RI #1752
Alfred W. DiOrio, RLS, Inc.
PO Box 999, Ashaway, Rhode Island 02804
Tel 401/377-8124 FAX401/377-4863

Town of Hopkinton, Rhode Island
Municipal Landfill Closure Project
Final Grading and Site Improvement Plan
Assessor's Plat 13 Portion Parcel 27
Stubtown Road
Hopkinton, Rhode Island
Scale: 1" = 100'
June 3, 1996

Alfred W. DiOrio, RLS, Inc.
Professional Land Surveyors - Land Use Consultants
Certified Professional Erosion Control Specialists - National
Licensed ISDS Installers - State of Rhode Island
Hopkinton, Rhode Island

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Sheet 1 of 4

Plan No. 5440
File: HLF7.dwg

- L E G E N D -

P_	Referenced Plan Measurement	Set	Survey Monumentation Placed by Alfred W. DiOrio, RLS, Inc.	M/L	More or Less
C=	Calculated Measurement	Exist.	Survey Monumentation Recovered and Utilized by Alfred W. DiOrio, RLS, Inc.	N/F	Now or Formerly
M=	Measured Direct		Stone Wall	100	Existing Contour
S=	Scaled Measurement	℄	Property Line	100	Proposed Contour
D_	Referenced Deed Measurement	AWD	Alfred W. DiOrio, RLS, Inc.	spot 100.00	Existing Spot Location
AG	Above Grade	PC	Point of Curvature	Monitor W-1	Existing Groundwater Monitoring Well From Mapping By Others
BG	Below Grade	PT	Point of Tangency		Approximate Location of Proposed (Passive) Gas Vents
IP	Iron Pipe	AP	Assessor's Plat Reference	B-18	Proposed Subarea Sedimentation Basin w/Identification Number and Outlet pipe (see Engineer's Narrative Dated 02-22-1994)
IR	Iron Rod		Wetland Feature		Estimated Limits of Solid Waste and Proposed Extent of Membrane Placement
DH	Drill Hole	PWTV	Preliminary Water Table Verification Reference		
TH-1	Test Hole				
WL 15	Wetland Flag				
acs.	Acres				
LE Vol	Land Evidence Volume				
Pg	Page				
911 / 35	Emergency 911 Numbering				

In the Context of Curves:
A= Central Angle
R= Radius
T= Tangent
L= Arc Length
C= Long Chord

Plan Scale:

1 inch = 100 feet

0 50 100

Meters = Feet x 0.3048006096

Revision Number	Change Order Number	Description	Date	Chk'd By
3	N/A	Boundary Lines	3/3/97	AWD
2	N/A	Test Holes	2/11/97	JPA
1	N/A	Paved Sections	1/6/97	AWD