DUNLOP TIRE CORPORATION
TONAWANDA, NEW YORK

CLOSURE OF
INACTIVE WASTE SITE NO's 915018 A, B & C

- **QUALITY ASSURANCE/QUALITY CONTROL PLAN**
- **PROJECT CONTINGENCY PLAN**
- **OPERATION & MAINTENACE PLAN**
- **LONG TERM MONITORING PLAN**

Submitted to:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
270 Michigan Avenue
Buffalo, New York 14203

Prepared By:

URS Consultants, Inc.
282 Delaware Avenue
Buffalo, New York 14202

G1583

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TONAWANDA, NEW YORK

QUALITY ASSURANCE/ QUALITY CONTROL PLAN

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MARCH 1993

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G1583A

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York, 14203-2999

Thomas C. Jorling
Commissioner

July 29, 1993

Mr. Daniel J. Pyanowski
Environmental and Services Engineer
Dunlop Tire Corporation
P.O. Box 1109
Buffalo, New York 14240

Dear Mr. Pyanowski:

Permeability Testing

The Department is in receipt of your letter dated July 27, 1993 concerning revised compaction and permeability testing protocols. These revisions were facilitated by permeability failures of Shelby tube samples, which were collected from a test pad constructed on July 16, 1993. These revised protocols are consistent with our discussions of July 23, 1993; therefore, this letter transmits Department approval of these protocols.

This letter, along with your July 27 letter, will be appended to the Detailed Closure Plans and become a part of the administrative record.

Please contact me at 851-7220 if you have any comments or questions.

Sincerely yours,

Glenn M. May

Glenn M. May
Engineering Geologist I

GMM:vm

cc: Mr. E. Joseph Sciascia

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York, 14203-2999

Thomas C. Jorling
Commissioner

July 29, 1993

Mr. Daniel J. Pyanowski
Environmental and Services Engineer
Dunlop Tire Corporation
P.O. Box 1109
Buffalo, New York 14240

Dear Mr. Pyanowski:

Cover Thickness Investigation
Southeast Area A

The Department is in receipt of your letter dated July 20, 1993 concerning the subject investigation. The need for this investigation was recognized just prior to the signing of the Record of Decision.

The investigation report attached to your letter reveals an area of approximately 100 feet by 150 feet (0.33 acres) that does not contain the required 18 inches of low permeability clay cover. This area, however, contains many hardwood trees that Dunlop wishes to preserve as a "Green Space" area. Dunlop proposes to spread additional topsoil over this area and establish turf.

Based upon the small acreage of this area, the Department, by way of this letter, approves the proposed plan. Grading and topsoil placement in this area should be conducted in a manner to prevent ponding of surface water. In addition, sufficient material should be placed to eliminate direct contact exposures. Monitoring well OMW-A5, which will be sampled during implementation of the long-term monitoring plan, will furnish additional information regarding this area.

This letter, along with your July 20 letter and attachment, will be appended to the Detailed Closure Plans and become a part of the administrative record.

Please contact me if you have any comments or questions.

Sincerely yours,

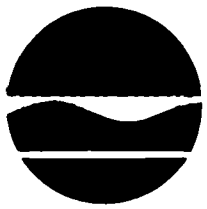
Glenn M. May

Glenn M. May
Engineering Geologist I

GMM:vm

cc: Mr. E. Joseph Sciascia

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York, 14203-2999



Thomas C. Jorling
Commissioner

MEMORANDUM

TO: Mr. E. Joseph Sciascia
FROM: Mr. Glenn M. May
SUBJECT: Dunlop Tire, Site Nos. 915018A,B,C

DATE: July 29, 1993

The clay test pad at southern Area B was constructed on July 16, 1993. Four in-place density (IPD) tests were conducted, while two Shelby tube samples were obtained for lab permeability testing. Information concerning these tests are attached.

Results of the permeability tests indicate that one sample passed and one sample failed the permeability requirements. Because the Shelby tubes were not pushed in areas where IPD's were measured, it was difficult to evaluate the correlation between field measurements and lab permeabilities. The lab, however, indicated that the failed sample appeared to be less compacted and moist than the passing sample. Because the Shelby tubes were pushed with a backhoe bucket, where side-to-side movement can occur during sample collection, and knowing that the tube ends were not sealed with wax, it was suspected that the sample was adversely affected during transport to the lab.

Following discussions with Dunlop, URS, and Dames & Moore, it was decided that, based upon the sample collection and preparation method, additional compaction prior to retesting would not be required. On July 21, 1993 five additional IPD's were measured on the pad and one additional Shelby tube sample was collected. One of the IPD measurements was made in the vicinity of the failed Shelby tube sample, with the remainder randomly distributed across the test pad. As per my suggestion the Shelby tube sample was collected in the area of the lowest IPD measurement, which was 96.4% compaction. Information concerning these tests are attached.

This Shelby tube sample again failed the permeability requirement, with a permeability of 1.17×10^{-7} cm/sec. A review of the grain size data (attached) indicates, however, that the upper three feet of material in the borrow pit is high in silt, with clay contents only ranging from 27.1 to 31.8%. This factor probably explains both the permeability failures and the less compacted and moist character of the Shelby tube samples.

I discussed this issue with Mr. Alan Zylinski who has been extensively involved in capping and testing operations. Department regulations do not specify a minimum clay content for landfill caps, however, experience indicates that minimum clay contents of

35-40% are typically required to obtain the permeabilities desired. The less compacted and moist character of the failed samples can be attributed to the high silt/low clay content of the cap material. As permeabilities of this soil are in the 10^{-8} cm/sec range, indicating that the required permeabilities can be obtained, Mr. Zylinski suggested that in lieu of rejecting the soil, compacting this material 3-4% wet of optimum should produce the required permeabilities. The passing Shelby tube sample, in fact, did have a higher moisture content that the two failing samples.

Discussions with URS, Dunlop and Dames & Moore were conducted on July 22 and 23, 1993 to resolve this issue. One aspect of this problem concerns the definition of the "average permeability" as stated in the approved conceptual plan. URS believes the "average permeability" to be that permeability obtained form the center of the Shelby tube sample. I stated that the Department's initial concern with the proposal to place a single 18 inch lift of clay was the ability to properly compact the entire thickness. The IPD measurements are only representative of the upper 12 inches of the cap, as this is the maximum depth obtainable by the equipment. The permeability tests, however, are only representative of the lower 6 inches of cap, as this in the portion of the sample tested. Either test, therefore, is not able to completely evaluate the entire thickness of the cap. Both tests combined, however, do evaluate the entire thickness, which provides a higher level of confidence that a single 18 inch lift can be adequately compacted.

A timely resolution of this issue is required as the project is already weeks behind schedule. As the permeability failures were marginal, and it is strongly believed that the desired permeabilities can be achieved by compacting the material 3-4% wet of optimum, the following compaction and testing protocols will be followed:

1) Compact clay from the affected zones, i.e. all of zone 1 and a part of zone 2, at 3-4% wet of optimum.

2) Conduct 9 IPD measurements per acre as required in the QA/QC plan and collect one Shelby tube sample per acre of the entire cap thickness. The sample location will be selected by Dames & Moore with the concurrence of URS and the NYSDEC field representatives.

3) The lab permeability test will be conducted on the bottom 6 inches of the Shelby tube sample. In the event of sample failure, and providing that the failure is marginal, a retest will be conducted on the midpoint of the original sample. This result be will considered the "average permeability" of that section of the cap. This definition for "average permeability" was subsequently found in the QA/QC plan approved by the Department. If the retested sample fails the permeability requirement, the area of soil represented by the failed sample will be scarified, moisture adjusted, recompacted, and retested as specified in the QA/QC plan.

cc: Mr. Alan Zylinski, DHSR

URS
AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION

FIELD IN-PLACE DENSITY TEST REPORT

PROJECT: Closure of Inactive Waste Sites
CLIENT: Dunlop Tire Corp.
CONTRACTOR: Dames & Moore

REPORT NO. _____
DATE: 16 JULY '93
JOB NO.: 35246.05

TEST NO.	ELEV.	DEPTH	DC	MC	WD	DD	M	%M	% COMP	PROCT. CODE	Pass Fail	LOCATION AND REMARKS	RPT. No. RETEST / DATE
1			3014	704		107.1		12.8	95.9	ZONE #1	P		
2						112.2		14.8	99.8				
3						111.4		14.8	99.2				
4			"	"		112.0		13.7	99.7	"	"		

PROCT CODE	MAX DENSITY (pcf)	OPTM. MOISTURE (%)	MATERIAL TYPE AND SOURCE
ZONE #1	112.4	15.3	ON-SITE CLAY

PROCT CODE	MAX DENSITY (pcf)	OPTM. MOISTURE (%)	MATERIAL TYPE AND SOURCE

METHOD: NUCLEAR DENSITY/MOISTURE GAUGE (TROXLER)

REMARKS: _____

OPERATOR: TIM NICHOLS / EMPIRE SOILS REVIEWED BY: _____

URS
AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION

FIELD IN-PLACE DENSITY TEST REPORT

PROJECT: Closure of Inactive Waste Sites
CLIENT: Dunlop Tire Corp.
CONTRACTOR: Dames & Moore

REPORT NO. E
DATE: 21 JULY 93
JOB NO.: 35246.05

TEST NO.	ELEV.	DEPTH	DC	MC	WD	DD	M	%M	% COMP	PROCT. CODE	Pass Fail	LOCATION AND REMARKS	RPT. No. RETEST EARLIER DATE.
5		10.0" BFG	824	217	129.0	111.5	17.5	15.7	99.2	ZONE 1-A	P		
6		12.0" BFG	455	223	129.1	111.0	18.1	16.3	98.5				
7			472	194	128.1	112.4	15.5	13.8	100.0				
8			503	200	126.2	110.2	16.0	14.6	98.0				
9			506	218	125.9	108.3	17.6	16.3	96.9				

PROCT CODE	MAX DENSITY (pcf)	OPTM. MOISTURE (%)	MATERIAL TYPE AND SOURCE
ZONE 1-A	112.9	15.3	RED CLAY; ZONE 1-A

PROCT CODE	MAX DENSITY (pcf)	OPTM. MOISTURE (%)	MATERIAL TYPE AND SOURCE

METHOD: NUCLEAR DENSITY/MOISTURE GAUGE (TROXLER)

REMARKS:

OPERATOR: TIM NICHOLS / EMPIRE SOILS REVIEWED BY:

IPD 5

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 8.27
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 101.0
Moisture Before Test (%): 16.4
Moisture After Test (%): 19.5
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 95.0
Test Pressure (psi): 85.1
Back Pressure (psi): 79.7
Diff. Head (psi): 5.4
Flow Rate (cc/sec): 3.02 x 10^-4
Perm. (cm/sec): 2.07 x 10^-7

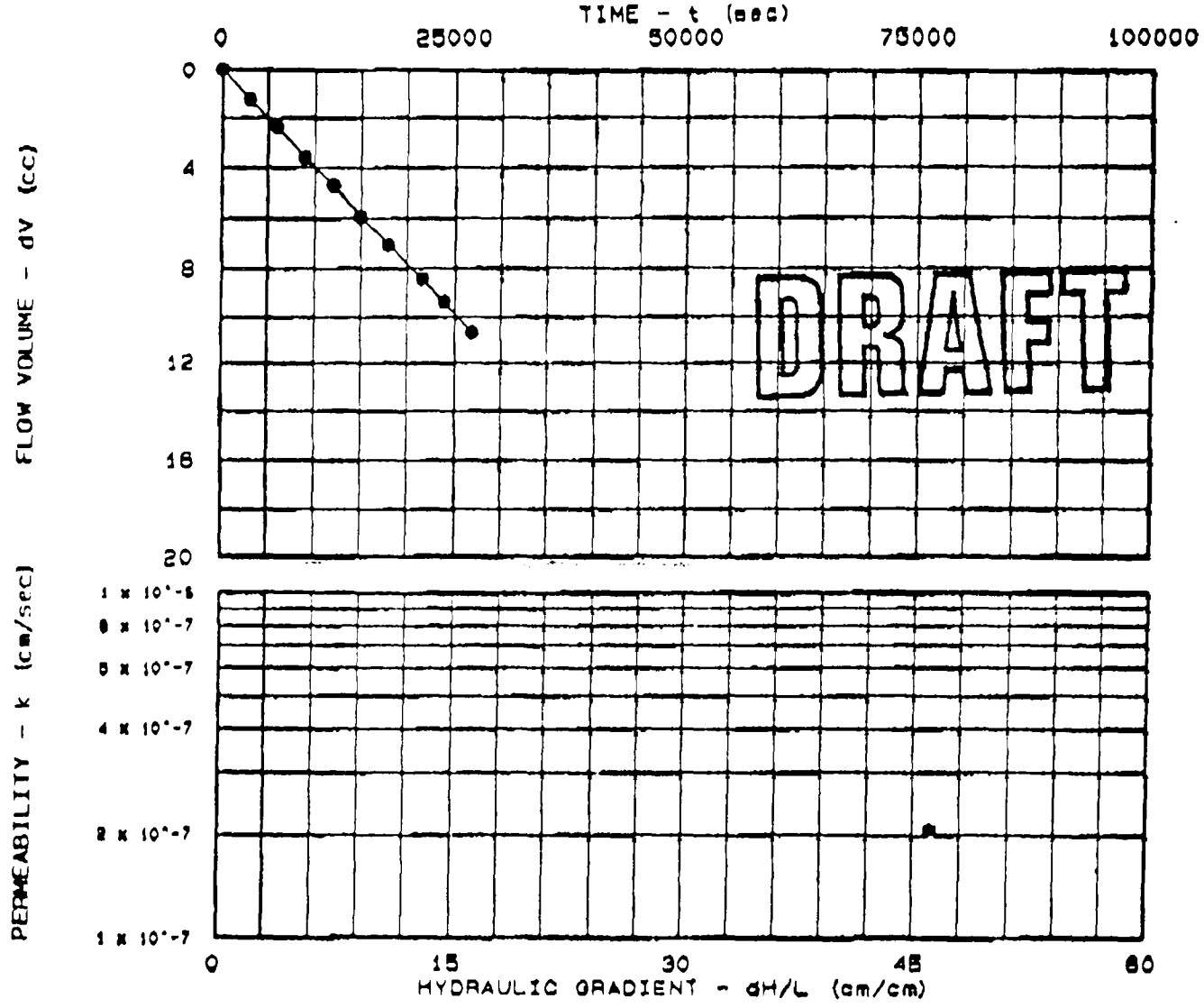
SAMPLE DATA:

Sample Identification: SAMPLE #1

Visual Description: BROWN CLAY, trace gravel
Remarks:

Maximum Dry Density (pcf):
Optimum Moisture Content (%):

Percent Compaction:
Permeameter type: FLEXIBLE WALL
Sample type: UNDISTURBED



Project: DUNLOP INACTIVE WASTE SITE CLOSURE
Location: GRAND ISLAND, NEW YORK
Date: JULY 1993

Project No.:
File No.: 6008.014
Lab No.: 1885.001
Tested by: KJC
Checked by: JFC

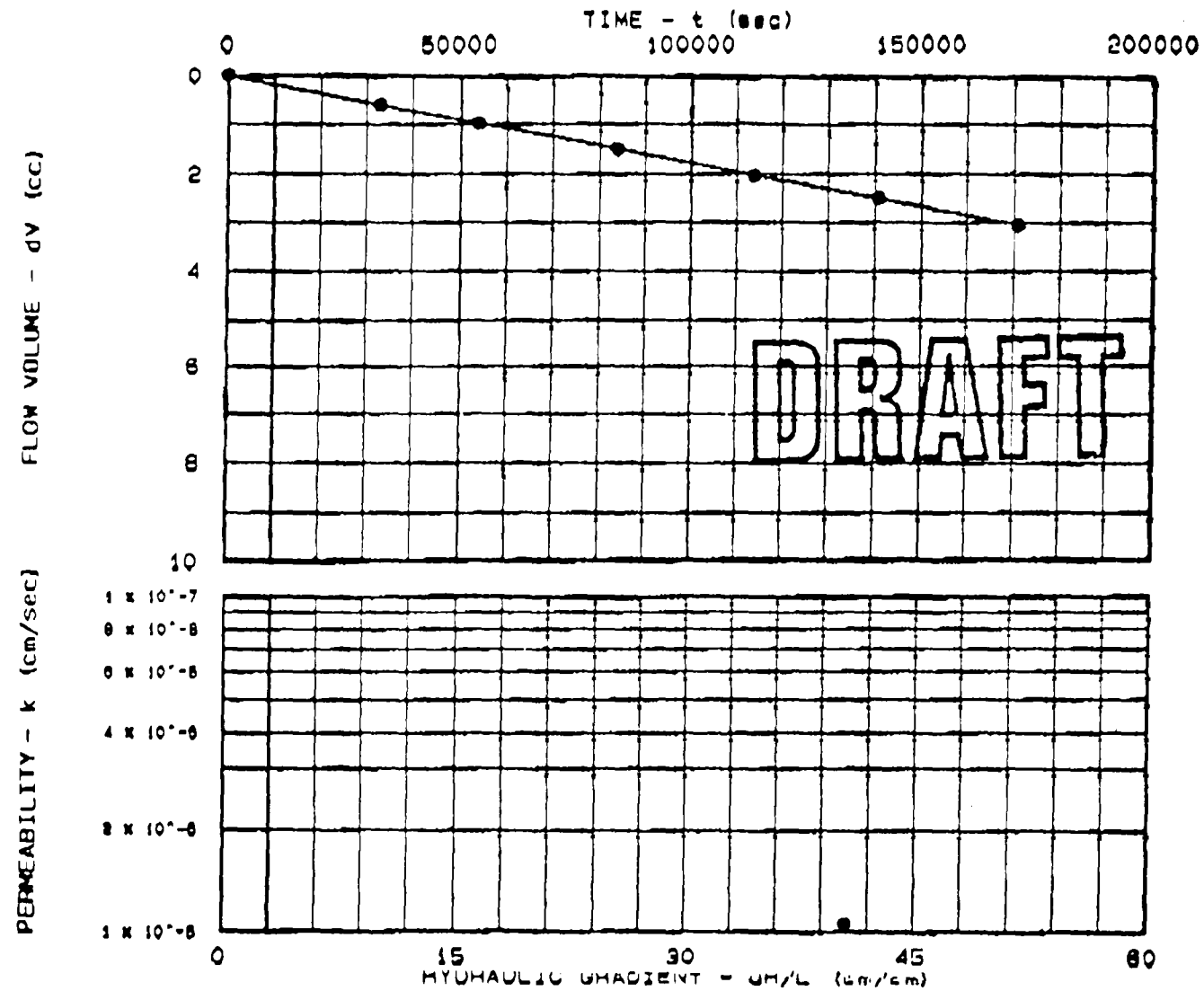
PERMEABILITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

IPD 1

PERMEABILITY TEST REPORT

TEST DATA:			SAMPLE DATA:	
Specimen Height (cm):	9.16		Sample Identification:	SAMPLE #2
Specimen Diameter (cm):	7.22			
Dry Unit Weight (pcf):	101.1		Visual Description:	BROWN CLAY
Moisture Before Test (%):	18.7			
Moisture After Test (%):	20.5		Remarks:	
Run Number:	1 ■	2 ▲		
Cell Pressure (psi):	95.0		Maximum Dry Density (pcf):	
Test Pressure (psi):	84.9		Optimum Moisture Content (%):	
Back Pressure (psi):	79.8			
Diff. Head (psi):	5.3		Percent Compaction:	
Flow Rate (cc/sec):	1.77 x 10^-8		Permeameter type:	FLEXIBLE WALL
Perm. (cm/sec):	1.06 x 10^-8		Sample type:	UNDISTURBED



Project: DUNLOP INACTIVE WASTE SITE CLOSURE Location: GRAND ISLAND, NEW YORK Date: JULY 1993	Project No.: File No.: 0008.014 Lab No.: 1885.002 Tested by: KJC Checked by: JFC

PERMEABILITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

IPD 9

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 8.23
Specimen Diameter (cm): 7.20
Dry Unit Weight (pcf): 101.1
Moisture Before Test (%): 16.8
Moisture After Test (%): 20.1

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	95.0	
Test Pressure (psi):	84.8	
Back Pressure (psi):	79.7	
Diff. Head (psi):	5.1	
Flow Rate (cc/sec):	1.97 x 10^-4	
Perm. (cm/sec):	1.16 x 10^-7	

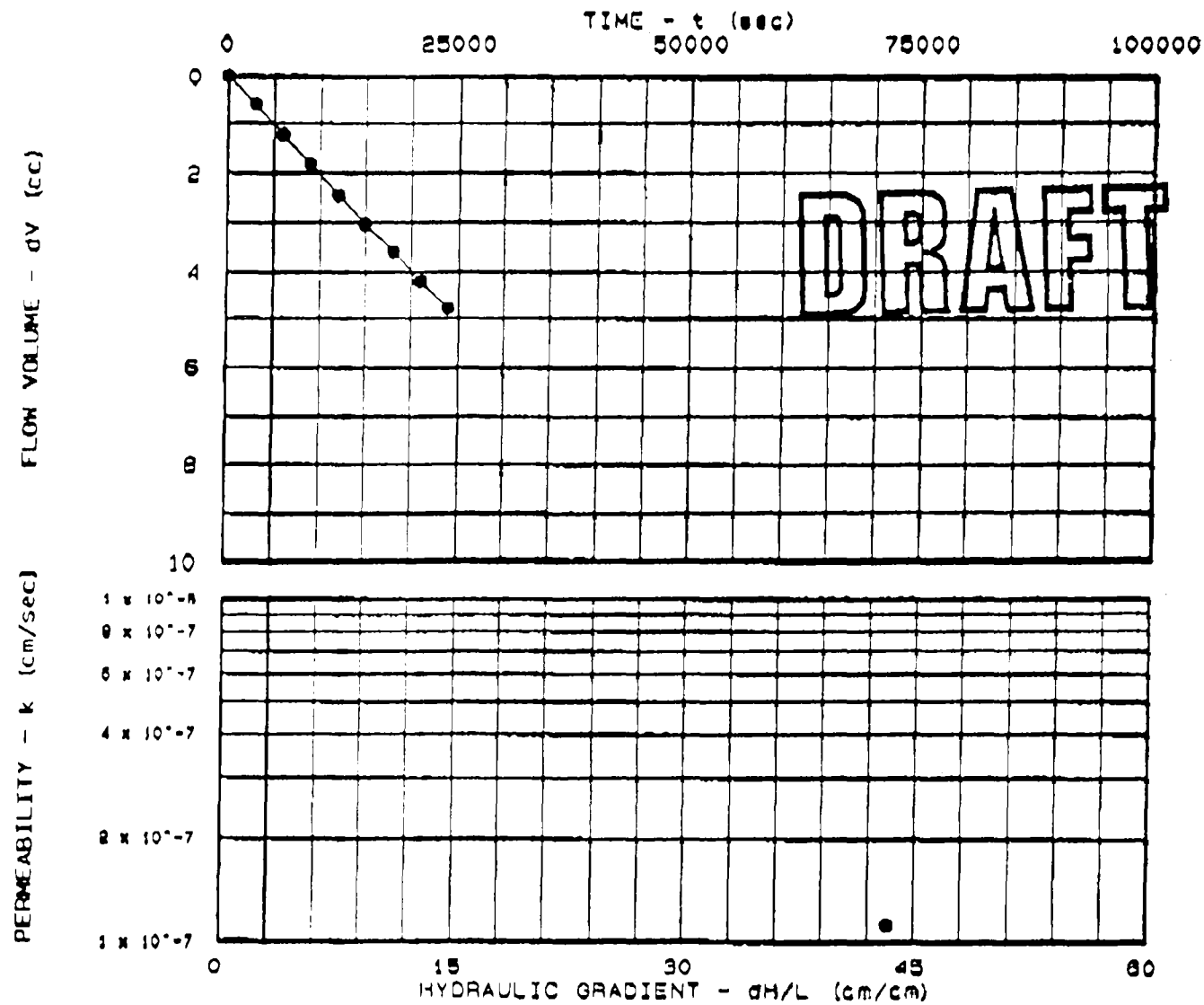
SAMPLE DATA:

Sample Identification: SAMPLE #3

Visual Description: BROWN CLAY, trace gravel
Remarks:

Maximum Dry Density (pcf):
Optimum Moisture Content (%):

Percent Compaction:
Permeameter type: FLEXIBLE WALL
Sample type: UNDISTURBED



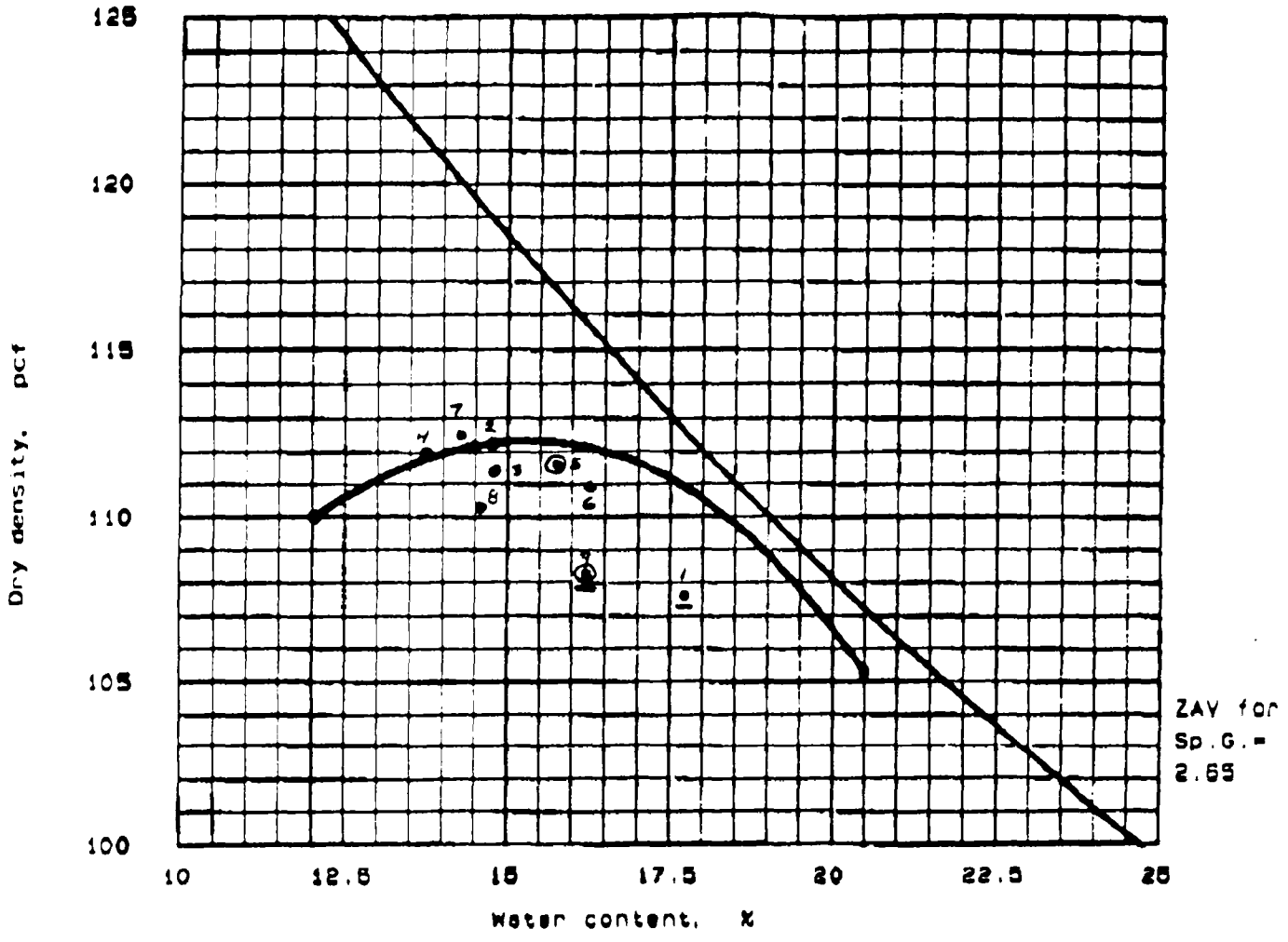
Project: DUNLOP INACTIVE WASTE SITE CLOSURE
Location: GRAND ISLAND, NEW YORK
Date: JULY 1993

PERMEABILITY TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC.

Project No.:
File No.: G008.014
Lab No.: 1691.001
Tested by: KJC
Checked by: JFC

PROCTOR TEST REPORT



"Standard" Proctor, ASTM D 698, Method A

Elev/ Depth	Classification USCS	Classification AASHTO	Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
				2.85				

TEST RESULTS	MATERIAL DESCRIPTION
Optimum moisture = 15.3 % Maximum dry density = 112.4 pcf	Clay & Silt Zone 1-A
Project No.: G008.014 Project: Dunlop Landfill Location: Grand Island, New York Date: 7-07-1993	Remarks: Sampled By Empire Soils on 7/1/93. ESI Sample No. 1-A
PROCTOR TEST REPORT **EMPIRE SOILS INVESTIGATIONS, INC.**	Figure No. 1-A

- ● IPD Measurements
- ◉ Failed permeability - 12"-18" depth
- ● Passing permeability - 12"-18" depth
- ◉ Failed permeability - 12"-18" depth, passing permeability - 9 @ 2.5" depth

Material Used for Test Pad

Zone 1:

$K = 7.25 \times 10^{-8}$

Grain Size:

Zone 1-A:	27.1% clay	49.9% silt
Zone 1-B:	27.9% clay	48.3% silt
Zone 1-C:	31.8% clay	47.1% silt

Water Content:

Sample A:	18.9%
Sample B:	22.1%
Sample C:	16.9%
Sample D:	16.2%
Sample E:	15.1%
Sample G:	15.0%
Sample H:	17.7%
Sample K:	20.3%

Proctor Test Data:

Optimum Moisture: 15.3%

Maximum Dry Density: 112.4 pcf

DUNLOP TIRE CORPORATION

TONAWANDA, NEW YORK

QUALITY ASSURANCE/QUALITY CONTROL PLAN

FOR THE CLOSURE OF

INACTIVE WASTE SITE NOs. 915018 A, B AND C

SUBMITTED TO

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

270 MICHIGAN AVENUE

BUFFALO, NEW YORK 14203

MARCH 1993

PREPARED BY:

URS CONSULTANTS, INC.

282 DELAWARE AVENUE

BUFFALO, NEW YORK 14202

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1.0 INTRODUCTION

Pursuant to a Consent Order with the New York State Department of Environmental Conservation (NYSDEC), Dunlop Tire Corporation is proceeding with the closure of three inactive waste sites at its Tonawanda, New York, facility. A Conceptual Remedial Action Closure Plan dated November 1992 has been approved by NYSDEC for these sites (which are designated Nos. 915018 A, B & C) and issuance of a Record of Decision (ROD) is forthcoming.

The closure plan, in summary, consists of capping the sites with an 18-inch soil cover having a maximum permeability value of 1×10^{-7} cm/s and then protecting that cover with a 6-inch overlying soil layer that will support a vegetative cover. The Quality Assurance/Quality Control (QA/QC) Plan presented here will serve as a means of ensuring in the successful implementation of that plan. The plan defines requirements and responsibilities for design, construction, inspection, testing, documentation, certification, and final acceptance of the closures, thereby specifying the QA/QC process for the project.

2.0 PROJECT MANAGEMENT ORGANIZATION

The site closures will involve the participation and services of the following:

- o NYSDEC
- o Dunlop
- o URS
- o Contractor
- o Geotechnical Laboratory

Figure 1 presents an organization chart of the principal QA/QC personnel for the project. The duties and responsibilities of each project participant and of that participant's QA/QC staff is discussed in the following subsections.

2.1 Regulatory Agency

These sites are being closed under the direction of NYSDEC. Upon completion, Dunlop must obtain approval from NYSDEC that the work was completed in conformance with the approved design. The Project Manager for NYSDEC, Glenn May, will be the agency's representative for day to day operations and Dunlop's contact for obtaining final approval following submittal and review of the Construction Monitoring Report and Record Drawings.

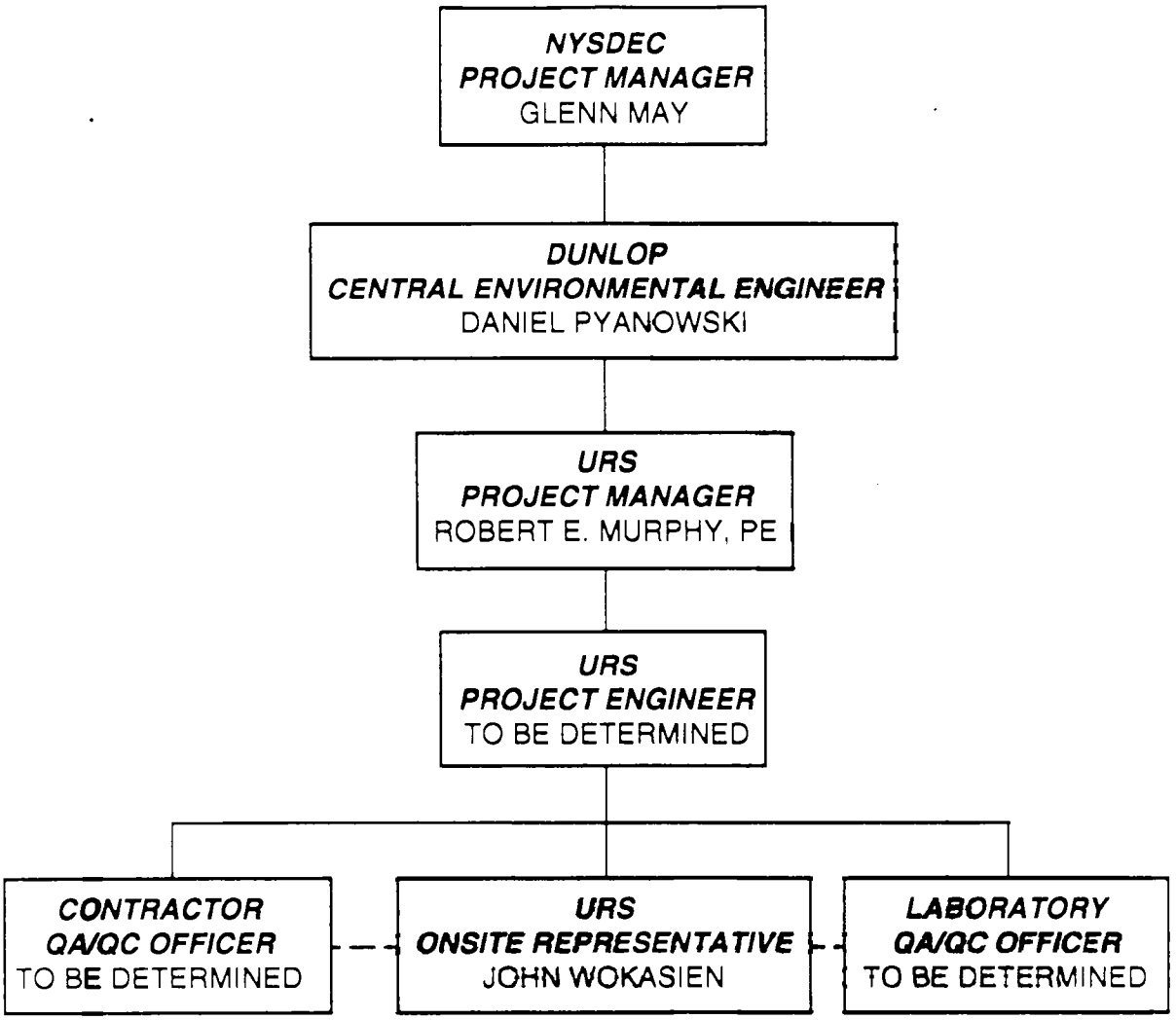
2.2 Owner

Dunlop Tire Corporation, as the Owner, is performing the site closures as directed by NYSDEC. Dunlop's Central Environmental Engineer, Mr. Daniel Pyanowski, will represent Dunlop in administration of the closures. He will be NYSDEC's contact. In addition, he will directly oversee the activities of URS, the Contractor, and the geotechnical laboratory retained by Dunlop to perform the work.

DUNLOP

QA/QC ORGANIZATION CHART

CLOSURE OF SITES No. 915018 A, B, C



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URS CONSULTANTS, INC.

FIGURE 1

2.3 Engineer

Dunlop has retained the services of URS Consultants, Inc., a New York State licensed professional engineering firm with extensive experience with solid and hazardous waste and with inactive site closures in particular. URS will provide both design and construction administration services on this project and will be responsible for implementation of the QA/QC Plan. The QA/QC duties and responsibilities of key engineering personnel are presented below:

URS Project Manager - In general, the Project Manager will be responsible for implementation of the QA/QC plan through his subordinates. He will act as the interface with Dunlop and, through Dunlop, with NYSDEC. This individual will be a licensed New York State Professional Engineer with a minimum of ten years experience, including solid waste and hazardous waste landfill closure experience.

Specific responsibilities of the Project Manager will include:

- Reviewing design criteria, plans, and specifications for clarity and completeness of QA/QC requirements.
- Supporting Dunlop in meetings with NYSDEC, as necessary.
- Consulting with the Project Engineer on field problems and corrective measures.
- Periodic review of required documentation of construction activities.
- Review of Record Drawings and Construction Monitoring Report.

URS Project Engineer - The Project Engineer, who will be the technical lead on design, will oversee the construction administration activities. In these capacities, he will be responsible for enforcing the requirements of this QA/QC Plan. Upon completion of construction, the Project Engineer will be primarily responsible for developing the Construction Certification Report and Record Drawings to be submitted to NYSDEC as documentation that construction was performed in conformance with this QA/QC Plan. The Project Engineer will be responsible to the URS Project Manager. He will be URS's main interface with the construction contractor and the geotechnical laboratory. The Project Engineer will also be responsible for the performance

of his subordinates. He will be a licensed New York State Professional Engineer with a minimum of five years experience, which includes previous landfill construction projects.

Specific responsibilities of the Project Engineer will include:

- o Development of plans and specifications.
- o Review and approval of Contractor's Submittals.
- o Providing technical support as necessary to the Onsite Representative.
- o Work with the Contractor to have deficiencies satisfactorily corrected.
- o Making periodic site visits to review adequacy of construction methods
- o Inspecting QA/QC related methods, procedures and documentation.
- o Reviewing the project documentation.
- o Maintaining project files.
- o Review of daily construction reports prepared by URS's Onsite Representative
- o Prepare monthly progress reports summarizing status of project to date
- o Writing the Construction Monitoring Report.
- o Preparing Record Drawings from the Contractor's marked-up drawings

URS Onsite Representative - URS will provide a civil engineering technician who has experience in related construction projects to act as the Engineer's Onsite Representative. This individual will be under the direction of the Project Engineer. He will be responsible for inspecting construction activities to ascertain conformance with plans, specifications, and approved submittals. He will also be responsible for obtaining, organizing and achieving the field QA/QC data.

The Onsite Representative will be certified in nuclear densitometer moisture density testing, and will perform same. He will also collect shelby tube and other soil samples for analysis by the geotechnical laboratory and be responsible for properly maintaining samples until timely shipment.

The Onsite Representative will inform the Project Engineer of any deficiencies and will document corrective action taken.

2.4 Contractor

Dunlop will award the construction contract to an experienced waste remediation contractor. Experience in related low-permeability soil placement projects and the capacity to deal with hazardous waste will be requirement of the selected firm. The Contractor will be responsible for constructing the work in accordance with the design plans and specifications, and will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor will be responsible for furnishing all labor, materials, equipment, tools, and other facilities and incidentals necessary for completion of the work. QA/QC requirements affecting the Contractor's work will be included in the contract documents (namely, the plans and specifications). The Contractor will be required to coordinate his activities with the Project Engineer.

2.5 Laboratory

Dunlop will retain an independent testing laboratory to perform the geotechnical analysis specified in this QA/QC Plan. The Laboratory Project Manager, who will be the laboratory, representative with regard to the project will be responsible for certifying the accuracy of reported results. He will respond to inquiries, directions, and requests of the Project Engineer. Tracking of samples and test results to maintain prompt analysis and reporting response times will be the Laboratory Project Manager's responsibility. It will be required that this individual have five years of experience in related testing methods.

3.0 CONSTRUCTION REQUIREMENTS

The Closure Plan for these sites consists of an 18-inch low permeability ($1x10^{-7}$ cm/s) barrier cover overlain by 6 inches of soil suitable for vegetative growth. This section presents the source of these materials, the construction methods to be followed, the inspection procedures to be employed, and the testing requirements during construction.

3.1 Low-Permeability Barrier Soil Cover

Source - As stated in the Closure Plan, onsite material will be used for this layer. The material will be obtained primarily from an onsite borrow pit, but will be supplemented by an existing stockpile in Area A. In addition other suitable material obtained during site grading operations will also be used; provided, however, that such material when tested prior to placement can readily achieve a permeability of $1x10^{-7}$cm/s or lower. In the event onsite material quantities are insufficient, off site sources of material may have to be used. This material will be suitably tested and NYSDEC approval obtained prior to use.

Construction Method - The 18-inch layer will be placed in one lift. This approach was demonstrated to be feasible through the construction of a test pad, as documented in the Closure Plan. The information from the construction of the test pad will be made available to the Contractor to assist him in sizing his equipment and developing his procedures.

In areas where compaction must be performed by smaller, walk-behind equipment, placement in two or three lifts may be required.

It will be the Contractor's responsibility to maintain the borrow material's moisture content within the range allowable for placement. Drying or moistening will be performed in a manner acceptable to both Dunlop and NYSDEC.

Inspection Procedures - The barrier soil layer will be inspected visually with respect to composition, gradation, consistency, and moisture content. During compaction, the number of

passes, overlapping, and compactor speed will be observed and recorded to determine the typical compaction effort, which will provide the necessary in-place results.

The Contractor will be required to provide documentation suitable to URS that the required 18-inch placement depth was achieved. It is anticipated that this documentation will be a comparison of a top-of-subgrade survey with a top-of-barrier-soil survey. This survey will be performed on a 50-foot grid with all appropriate intermediate top and bottom of slope points included. It is possible, however, that such a survey may prove inaccurate either due to induced settlement of the subgrade, or due to the "pumping" action of either the subgrade or in-place material during compaction. The Onsite Representative will be looking for either condition and will notify the Project Engineer if they are observed. At that time, an alternate method of confirming depth of placement will be proposed for acceptance by all parties.

Testing Requirements - Table 1 presents the minimum testing frequency for the source material and for borrow material once in place. Additional testing will be conducted whenever deemed necessary by the Onsite Representative.

Figure 2 presents the moisture/density/permeability relationship developed for the borrow material during preparation of the Closure Plan. These data will be employed in conjunction with the data to be generated during construction in order to determine the controlling moisture and density requirements during placement necessary to achieve an average permeability of 1×10^{-7} cm/s or less.

If after placement the low permeability barrier soil does not meet the moisture-density requirements the material will be scarified, wetted or dried as required, recompacted and retested.

If the laboratory permeability tests on undisturbed soil samples indicate the low permeability barrier soil fails to meet the in-place permeability requirements (1×10^{-7} cm/sec or less) the lot of low permeability soil represented by the failed laboratory test will be scarified, moisture adjusted, recompacted, and retested. If the material again fails to meet the required in-place permeability, that lot of low permeability soil will be removed and replaced with satisfactory material.

TABLE 1

CERTIFICATION QA/QC TESTING REQUIREMENTS
BORROW SOURCE AND CAP CONSTRUCTION

	PARAMETER	FREQUENCY	TEST METHOD
(A) Source Testing	Grain Size	1 Test per 2,500 cy	ASTM D-422
	Moisture Content	1 Test per 1,000 cy	ASTM D-2216
	Atterberg Limits	1 Test per 1,000 cy	ASTM D-4318
	Moisture - Density	1 Test per 5,000 cy or change in material	ASTM D-698
	Lab Permeability	1 Test per Proctor	EM 1110-2 1906 or ASTM D-5084
(B) Construction Testing*	Density	9 Tests/Acre	ASTM D-2922
	Moisture Content	9 Tests/Acre	ASTM D-3017
	Undisturbed Permeability**	1 Test/Acre	EM 1110-2 1906 or ASTM D-5084

* Field test results will be compared to, and evaluated against, quality control testing and demonstration test pad confirmation results.

** Test to be performed on representative specimen from mid-section of Shelby tube core.

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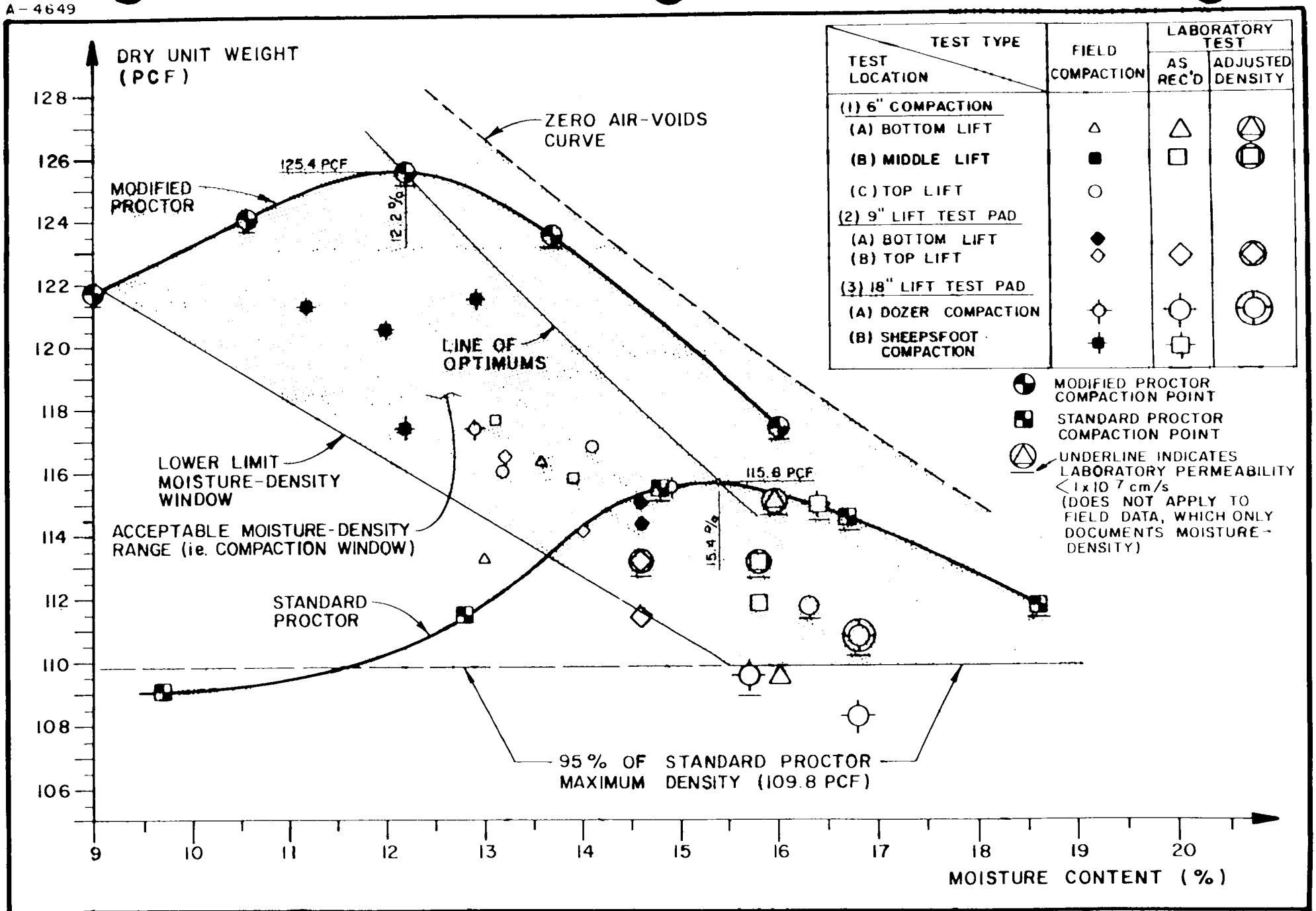

URS CONSULTANTS, INC	MOISTURE - DENSITY COMPACTION WINDOW / ONSITE CLAY BORROW	FIGURE 2

3.2 Soil Suitable for Vegetative Growth

Source - The areas to be capped are currently vegetated. Following clearing, the supporting soil layer will be grubbed and stockpiled for reuse after placement of the barrier soil cover. Additional suitable soil material is currently stockpiled on site from a recently completed paving project. This material may also be utilized.

Construction Method - The placement method for this material, and subsequent seeding, will be left to the Contractor's discretion, but will be subject to approval by the Engineer. It is anticipated that the material will be spread with a bulldozer and then suitably prepared for seeding. Compaction of this supporting soil layer is not appropriate.

Inspection Procedures - Visual inspection will be considered sufficient for inspection of unsuitable material. Periodic inspection of the vegetative cover to identify any areas needing corrective work will be performed.

3.3 Post-Closure Maintenance

In accordance with the approved Operations and Maintenance Plan, post-closure monitoring will be performed. The following signs of deteriorating performance of the cover system will be monitored:

- Desiccation cracking
- Differential settlement cracking
- Erosion
- Freeze/thaw damage
- Presence of seeps or leachate breakout

When one or more of the above signs are detected, the following corrective action will be taken:

- Vegetative soil will be removed

- Low permeability soil will be
  - scarified
  - moisture adjusted
  - recompacted
- Recompacted low permeability soil will be tested in accordance with the construction testing requirements shown on Table 1

- Vegetative soil will be replaced, and if necessary, reseeded

It is not anticipated that replacement of any low permeability material will be necessary because all inplace material would have already been shown to be suitable during the original closure operation.

4.0 DOCUMENTATION AND RECORDKEEPING

The Project Engineer is responsible for maintaining comprehensive project files in order to support the preparation of a Construction Monitoring Report (CMR) at the completion of the project. The necessary project files and documentation are summarized in the following sections.

4.1 Daily Construction Reports

Daily construction and QA/QC activities will be recorded by the Onsite Representative on preprinted forms at the end of each working day. The originals of these records will be submitted to the Project Engineer, and one copy will be kept at the site.

As a minimum, the daily reports will address the following:

- Construction crew size, general and unusual weather conditions, equipment used, visitors to the site, and subcontractors.
- Description of construction activities
- Daily soils documentation, to include the volume of fill placed, and location and approximate surface area on which fill was placed.
- Documentation, including sketches, as necessary, of work performed on structures
- Identification and fate of all samples collected for quality control testing at the QA/QC laboratory, including sample number, location, and testing to be performed.
- Number, type, and results of field tests.
- Any failing test, the location of the test, and action implemented to correct the deficiency.

4.2 Project Diary

Supplementing daily construction reports, the Onsite Representative will maintain a daily project diary. He will describe in the diary relevant events and observations which occur during

construction, including discussions, decisions, or recommendations involving Dunlop NYSDEC, URS, the Contractor or the Laboratory.

4.3 Monthly Progress Reports

The Project Engineer will prepare monthly progress reports describing actions taken with regard to the project over the previous month. This report will describe activities scheduled for the next month, discuss plans of action regarding any unresolved delays encountered or anticipated, document any approved modifications of the Closure Work Plan and identify and attach drawings or reports generated in the previous month.

4.4 Correspondence Files

The Project Engineer will maintain project files containing at a minimum, correspondence between URS, Dunlop, NYSDEC, Contractor, and Laboratory, as well as reports, submittals, survey notes, sketches, and record drawing information generated during the project.

4.5 Record Drawings

The Contractor will maintain a revision "redline" set of approved construction drawings. The redline set will be revised as applicable to include construction which differs from the approved drawings. The Contractor will incorporate survey information, inspector's input, and all other relevant changes. Upon project completion, this information will be incorporated into Record Drawings by URS. Record drawings will include final elevation contours and will be stamped by a New York State Licensed Engineer.

In addition, to illustrate that the required testing frequencies are being observed, a set of plans depicting all test locations will be maintained in the URS's field office.

4.6 Construction Photographs

Photographs will be taken of major activities throughout construction. A log will be kept of photograph numbers, dates, and descriptions.

4.7 Construction Monitoring Report

Following completion of the project, the documentation collected throughout construction will be presented in a comprehensive report. This report will include narratives of activities, results of QA/QC testing, including failing tests and descriptions of remedial actions, record drawings, and any other documentation necessary to support the certification process.

4.8 Post-Closure Corrective Action

A construction monitoring report will be prepared for each maintenance event requiring corrective action to the low permeability soil. The requirements of this report will be similar to those discussed in the previous section.

DUNLOP TIRE CORPORATION
TONAWANDA, NEW YORK

PROJECT CONTINGENCY PLAN

FOR THE CLOSURE OF INACTIVE WASTE SITE NO's 915018 A, B & C

Submitted to:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
270 Michigan Avenue
Buffalo, New York 14203

MARCH 1993

Prepared By:

URS Consultants, Inc.
282 Delaware Avenue
Buffalo, New York 14202

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DUNLOP TIRE CORPORATION

TONAWANDA, NEW YORK

PROJECT CONTINGENCY PLAN

FOR THE CLOSURE OF

INACTIVE WASTE SITE NOs. 915018 A, B AND C

SUBMITTED TO

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

270 MICHIGAN AVENUE

BUFFALO, NEW YORK 14203

MARCH 1993

PREPARED BY:

URS CONSULTANTS, INC.

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1.0 INTRODUCTION

Pursuant to a Consent Order with the New York State Department of Environmental Conservation (NYSDEC), Dunlop Tire Corporation is proceeding with the closure of three inactive waste sites at its Tonawanda, New York, facility. A Conceptual Remedial Action Closure Plan dated November 1992 has been approved by NYSDEC for these sites (which are designated Nos. 915018 A, B & C) and issuance of a Record of Decision (ROD) is forthcoming.

The closure plan, in summary, consists of capping the sites, although some amount of site grubbing, grading, waste consolidation, and ancillary activities will also take place. This work may well disturb and expose waste materials which include construction and demolition debris, silt, ash, slag, carbon black, asphalt, coal and rubber tires. Tires which are disturbed or exposed will be removed for offsite disposal during this closure.

Although not anticipated, it is possible that during intrusive work waste of a potentially hazardous nature may be encountered; for example, drummed or other containerized waste, or zones of significantly contaminated soils. This Contingency Plan sets forth the general procedures to be followed in the event of such an occurrences.

Section 2.0 of this Contingency Plan outlines the duties and responsibilities of involved parties. Presented in Section 3.0 are the procedures to be followed in handling and disposing of unanticipated wastes. Section 4.0 presents the emergency response requirements necessary to minimize hazards to human health and the environment, in compliance with OSHA standards for Hazardous Waste Operation and Emergency Response; Final Rule (29 CFR 1910.120).

2.0 PROJECT MANAGEMENT ORGANIZATION

Implementation of this Contingency Plan will involve the participation of the following:

- o NYSDEC
- o NYSDOH
- o Dunlop
- o URS
- o Contractor

Figure 1 presents an organization chart of the principal personnel responsible for implementation of this plan. The duties and responsibilities of each project participant is discussed in the following subsections.

2.1 Regulatory Agency

These sites are being closed under a closure plan approved by NYSDEC. The Project Manager, Glenn May, will be NYSDEC's representative concerning implementation of contingency actions. When contingency actions have a potential health and safety impact to the surrounding community the New York State Department of Health will also be advised. Dunlop will be responsible for notifying NYSDEC of contingency conditions and actions, and NYSDEC will be responsible for notifying NYSDOH.

2.2 Owner

Dunlop Tire Corporation, as the Owner, is performing the site closures. Dunlop's Central Environmental Engineer, Mr. Daniel Pyanowski, will represent Dunlop in implementation of the plan. He will be NYSDEC's contact. URS and the Contractor will report to Mr. Pyanowski.

Should it become necessary to remove unanticipated waste from the work area, although the Contractor will be responsible for handling and staging, Dunlop will be responsible for proper characterization, storage and disposal.

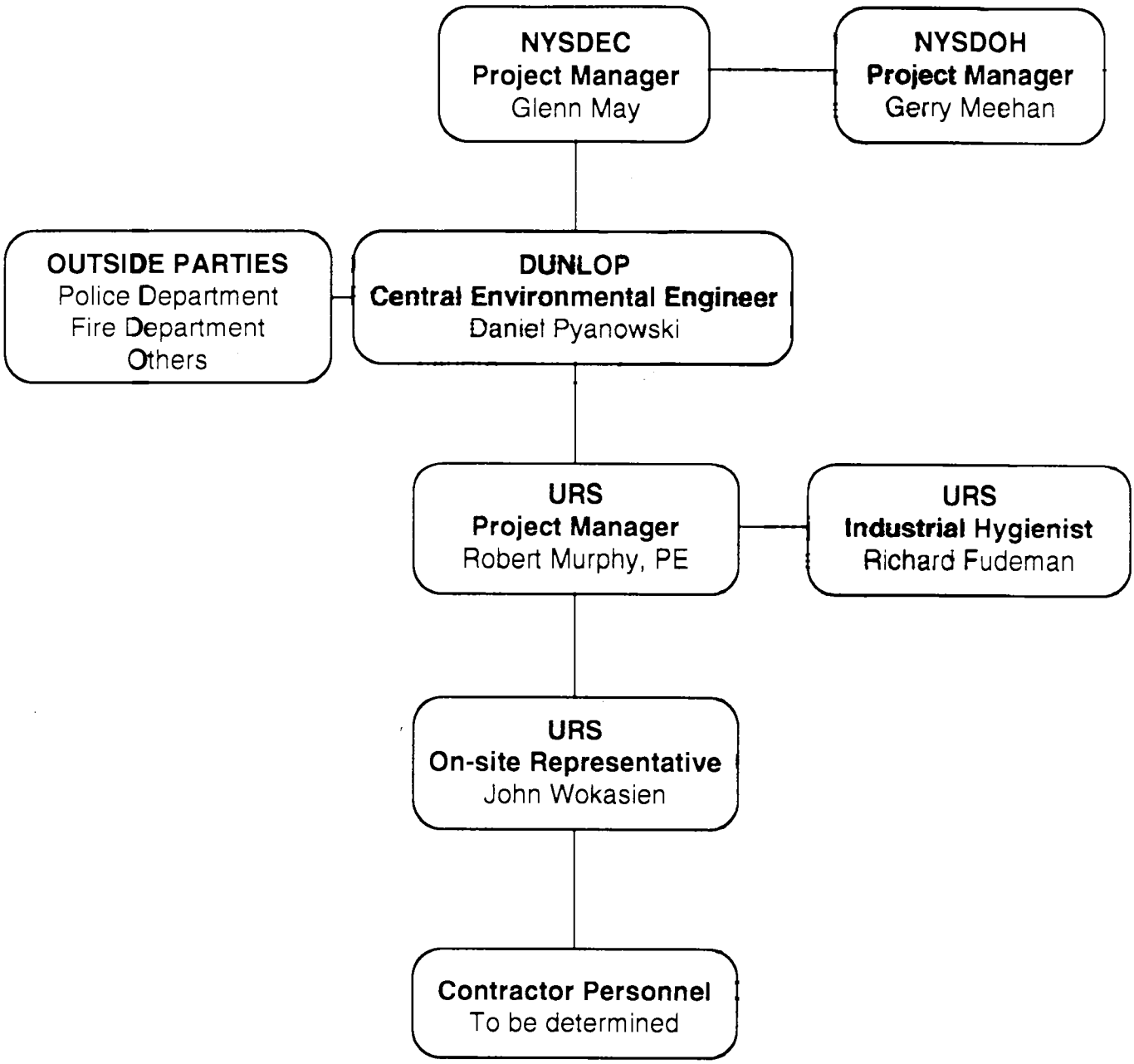

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FIGURE 1

In the event of implementation of emergency response procedures, Dunlop will be responsible for notifying the appropriate outside parties which are identified in Section 4.0. Dunlop will also be responsible for the emergency response actions of plant personnel.

2.3 Engineer

Dunlop has retained the services of URS Consultants, Inc., to provide construction administration services on this project. As discussed in the Project Quality Assurance/Quality Control Plan (QA/QC), URS will be responsible for reviewing Contractor's submittals and for documentation of site activities. In those capacities, URS will be responsible for review of the Contractor's Contingency Plan to be submitted prior to start of construction and will provide onsite inspection of construction activities as Dunlop's representative.

Should unanticipated waste be encountered, URS will be responsible for notifying Dunlop (primarily Mr. Pyanowski), reviewing the Event Specific Waste Handling Plan to be developed by the Contractor, and advising Dunlop of any concerns with that plan, observing the Contractor's removal actions and documenting activities.

2.4 Contractor

It will be the Contractor's responsibility to handle unanticipated waste and monitor the removal and staging action. It is necessary, therefore, for the Contractor to develop the methods and procedures for doing so. A requirement of the Contract Specifications will be that the Contractor submit for approval a Contingency Plan. This plan shall address the following issues:

- Duties, responsibilities and level of authority for Contractor's personnel involved in implementation of the Plan.
- General waste handling procedures.
- Emergency response procedures.

An overview of specific topics which the Contractor's Contingency Plan must address for waste handling and emergency response is presented in Sections 3.0 and 4.0 respectively.

3.0 WASTE HANDLING PROCEDURES

Extensive subsurface investigations of the disposal sites have not encountered waste other than that previously discussed in Section 1.0. Therefore, the nature and extent of waste which may implement this plan are unknown. For that reason a specific waste handling plan cannot be developed at this time. Rather, it is intended that operations be temporarily halted if unanticipated waste is encountered. The Contractor will then prepare an Event Specific Waste Handling Plan.

The Contractor's Contingency Plan must, however, include the following:

- An outline of general methods, equipment, materials and procedures to be utilized in handling the most likely types of problem wastes, such as drums or highly contaminated soils containing industrial or petroleum wastes with a low flashpoint, or chlorinated solvents.

- A health and safety plan that defines in advance the criteria for upgrade of personal protective equipment and itemizes equipment which must be onsite and ready for immediate use in case of such an event.

- Drum inspection procedures and checklist.

- Drum handling procedures.

- Contaminated soils handling procedures.

- A detail of a waste staging pad capable of temporarily storing drums or highly contaminated soils containing industrial or petroleum waste with a low flashpoint, or chlorinated solvents.

- A perimeter air monitoring plan with established action levels for volatile organic compounds and dust which would initiate a Community Air Monitoring Plan in

accordance with NYSDOH guidelines. Those guidelines are presented as Exhibit 1 of this document.

4.0 EMERGENCY RESPONSE PROCEDURES

In the event of a fire, explosion, spill or other release involving a combustible, toxic or other hazardous substance or material, action must be taken to minimize hazards to human health and the environment. The Contract Specifications will require that a Contractor include in his Contingency Plan a section on emergency response procedures. Those issues which, at a minimum, need to be discussed are presented below:

- o Pre-Emergency Plan including:
  - A list of prioritized emergency contacts.
  - Requirement to notify involved parties of scheduled activities. This will include coordination with Dunlop so that outside parties such as the local police department, fire department, health department and emergency response departments will have been notified.
  - Confirmation that contingency health and safety equipment is on-site.
  - Site-specific health and safety training in accordance with the Contractor's Health and Safety Plan must have been completed before the start of work.
- o Duties, responsibilities and authority of Contractor's personnel.
- o Health and safety requirements for contingency work.
- o Security related duties.
- o Evacuation signals, routes and procedures.

- Implementation of a Community Air Monitoring Plan in accordance with NYSDOH guidelines (Exhibit 1).

- Requirements for a critique of the response, and follow-up action based upon this critique.

EXHIBIT 1

NYSDOH/NYSDEC
GUIDELINES FOR COMMUNITY AIR MONITORING PLAN

Community Air Monitoring Plan

Real-time air monitoring, for volatile compounds and particulate levels at the perimeter of the work area is necessary. The plan must include the following:

- Volatile organic compounds must be monitored at the downwind perimeter of the work area on a continuous basis. If total organic vapor levels exceed 5 ppm above background, work activities must be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings must be recorded and be available for State (DEC & DOH) personnel to review.
- Particulates should be continuously monitored upwind, downwind and within the work area at temporary particulate monitoring stations. If the downwind particulate level is 150 $\mu g/m^3$ greater than the upwind particulate level, then dust suppression techniques must be employed. All readings must be recorded and be available for State (DEC & DOH) personnel to review.

Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- the organic vapor level 200 ft. downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background, and
- more frequent intervals of monitoring, as directed by the Safety Officer, are conducted.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

Community Air Monitoring Plan

Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts to abate the emission source are unsuccessful and if any of the following levels persist for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect if organic vapor levels are approaching 5 ppm above background.

However, the Major Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels are greater than 10 ppm above background.

Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in the Health and Safety Plan of the Work Plan will go into effect.
2. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.
3. Frequent air monitoring will be conducted at 30 minutes intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

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DUNLOP TIRE CORPORATION
TONAWANDA, NEW YORK

OPERATION & MAINTENANCE PLAN

FOR THE CLOSURE OF INACTIVE WASTE SITE NO's 915018 A, B & C

Submitted to:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
270 Michigan Avenue
Buffalo, New York 14203

MARCH 1993

Prepared By:

URS Consultants, Inc.
282 Delaware Avenue
Buffalo, New York 14202

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DUNLOP TIRE CORPORATION
TONAWANDA, NEW YORK

OPERATION AND MAINTENANCE PLAN

FOR THE CLOSURE OF

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SUBMITTED TO
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
270 MICHIGAN AVENUE
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PREPARED BY:
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BUFFALO, NEW YORK 14202

1.0 GENERAL

Pursuant to a Consent Order with the New York State Department of Environmental Conservation (NYSDEC), Dunlop Tire Corporation is proceeding with the closure of three inactive waste sites at its Tonawanda, New York, facility. A Conceptual Remedial Action Closure Plan dated November 1992 has been approved by NYSDEC for these sites (which are designated Nos. 915018 A, B & C) and issuance of a Record of Decision (ROD) is forthcoming.

The major components of the site closure which will require long term maintenance are the asphalt and soil caps. No components require operation. In addition maintenance is anticipated to be minimal for the following reasons.

- o The waste layer is not putrescible, and therefore, little to no settlement is anticipated.

- o Erosion is anticipated to be minimal because:

  - The majority of the cap will have gentle slopes (3% to 10%)

  - Runoff distances will be short (less than 300 feet).

  - Associated runoff volumes will be small because the drainage areas are relatively small (less than 4 acres).

  - Velocities in drainage swales will be minimal because of gentle slopes (1%-2%) and the relatively short distances of these channels.

The specifics of the proposed cap maintenance plan are presented in the following section.

2.0 TASK 1 - CAP MAINTENANCE

Quarterly inspections of the cap will be performed by a qualified environmental engineer. This will entail a complete site walkover and include the preparation of a report which will document the findings. This report will be submitted to NYSDEC. The inspection will evaluate the following items and will ascertain the need for corrective action:

- Soil cover system - The presence of desiccation cracks, freeze/thaw damage and the presence of seeps or leachate breakouts will be noted.

- Asphalt - The quality of the pavement will be assessed. Cracking or other deterioration will be noted.

- Landscaping - The vigor and density of the vegetative cover both on the cap and in grasslined drainage ways will be assessed. Bare, sparse and undernourished areas will be noted.

- Erosion - The presence of any erosion will be noted.

- Settlement - Visual evidence of differential settlement will be noted and its impact on either the cap integrity or required drainage patterns will be assessed.

- Drainage Features - Ditches, culverts, piping and structures will be inspected for siltation, ponding or erosion damage.

- Ancillary Features - The integrity other remedial action features such as fences and access roads will be inspected. Any items in need of repair will be noted.

Dunlop will retain the services of a landscape contractor to perform routine maintenance. This will include:

- Cutting of the vegetative cover three times a year (late Spring, mid-Summer and late Autumn)

- Maintenance which will involve: cleaning of drainage structures, regrading and reseeding areas of erosion or settlement, and repair of fences and the like, as required.

- In the unlikely event that damage to the low permeability soil barrier is observed, corrective action to repair the damaged area will be promptly performed. NYSDEC will be notified prior to initiation of the corrective action so that it may provide its input to the decision making process.

When necessary, the services of a paving contractor will be retained to repair asphalt.

DUNLOP TIRE CORPORATION
TONAWANDA, NEW YORK

LONG TERM MONITORING PLAN

FOR THE CLOSURE OF INACTIVE WASTE SITE NO's 915018 A, B & C

(To Be Developed)

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