Y/WM-320
Rev. 0

Y-12

OAK RIDGE
Y-12
PLANT

LOCKHEED MARTIN

FINAL CONSTRUCTION QUALITY ASSURANCE REPORT

FOR THE

Y-12 INDUSTRIAL LANDFILL V, AREA 2

OAK RIDGE, TENNESSEE

NOVEMBER 1996

Prepared by

WILLIAM H. BESSOM, CM, PE
MARTIN MARIETTA ENERGY SYSTEMS, INC.

MANAGED BY
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

UCN-13672 (28 6-95)

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PART I - SUMMARY / CERTIFICATION STATEMENT

Lockheed Martin Energy Systems (LMES) has finished construction of Area 2 of the Y-12 Plant Industrial Landfill V (ILF-V), classified as a Class II Landfill. This final Construction Quality Assurance (CQA) Report provides documentation that Area 2 was constructed in substantial compliance with the Tennessee Department of Environment and Conservation (TDEC) approved design, as indicated and specified in the permit drawings, approved changes, and specifications.

TDEC issued Permit Nos. IDL 01-103-0083, dated April 26, 1993, and IDL 01-103-0083 MOD, dated September 28, 1993 to allow construction and operation of the landfill. The permits were issued based on TDEC's review of the permit application, drawings, operations manual, CQA manual, and hydrogeologic study. ILF-V is located in Anderson County, on Clear Spring Road, on the south side of Chestnut Ridge, approximately 0.5 miles south of the Y-12 Plant in Oak Ridge, Tennessee. On December 20, 1995, TDEC approved the design modification for ILF-V as presented in "Industrial Landfill V Permit Application Modifications", (Document No. Y/TS-1395/R1), dated November 1995.

This report applies specifically to the Area 2 excavation, compacted clay soil liner, geomembrane liner, granular leachate collection layer, protective soil cover, and the leachate collection system. An "As-Built" survey was performed and is included. The drawings provide horizontal and vertical information for Area 2, the anchor trench, the leachate collection pipe, the temporary access road, and cross-sections of Area 2.

This report provides documentation of the following items:

- The excavation activities of Area 2.
- The maximum recompacted coefficient of hydraulic conductivity or permeability of the soil is less than 1×10^{-7} centimeters per second (cm/sec).
- The total thickness of the compacted clay soil liner equals a minimum of 2 feet.
- A 40 mil impermeable geomembrane (polypropylene) flexible membrane liner (FML) and 16oz. geotextile fabric was placed in direct contact with the compacted clay soil liner.
- A 12 inch granular leachate collection layer was installed and covered with a 8 oz. geotextile separation fabric.
- The installation of the leachate collection piping.
- The two foot protective clay soil cover.

LMES Construction Support Engineering provided Construction Quality Assurance (CQA) services as the QA Officer, which included observing the construction activities related to Area 2, and preparing this report. Geotek Engineering provided field testing of the compacted clay soil liner, backfill, geomembrane liner, protective clay soil cover, and the leachate stone. Adams, Craft, Herz, and Walker provided independent "As-Built" survey information.

Area 2 of ILF-V, including the leachate collection system, is now complete and ready for permanent operation.

William H. Bessom, CM, PE

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REGISTERED ENGINEER
AGRICULTURE
COMMERCE
No. 015499
STATE OF TENNESSEE
11-14-96

PART II - PROJECT DESCRIPTION / INSPECTION / DOCUMENTATION

GENERAL

The landfill site is located between Old Bethel Valley Road and Chestnut Ridge on the south side of the Y-12 Plant in Oak Ridge, Tennessee. An overall site plan is included in Appendix A of this report.

Area 2 is approximately 200 feet wide by 1400 feet long. The floor slopes from west to east at a rate of approximately 4.44 percent. The north edge of the area floor slopes toward the center at a rate of 2.9 percent while the south slopes at a rate of 5 percent. The side slopes on the east, and west are inclined at a slope of approximately three and one half horizontal to one vertical (3.5H:1V). The north face interfaces with the existing Area 1 with a 10 feet transition. The south slope was excavated on a 3.5H:1V, beginning 40 feet south of Area 2 on the future Area 3.

An all-weather east-west temporary access road has been constructed, entering Area 2 in the southeast corner and extending along the south edge. The compacted clay soil liner, geomembrane liner, geotextile fabric, and granular leachate collection layer installed for Area 2 were extended 10 feet into the future Area 3 to facilitate the future tie-in of the Area 3 liner.

The approved drawings show a coordinate grid system, contours, and elevations for horizontal and vertical control. The contour lines indicated are the top of the subgrade (bottom of compacted clay soil liner) in the area itself and the top of the finished surface elsewhere. In general the contour interval is 1 foot.

The Construction Quality Assurance Plan for the Industrial Landfill V (Y/WM-093/R2) was approved by TDEC and was adhered during the construction of Area 2 of ILF-V. The CQA Plan provides details for determining appropriate material for the construction of a compacted clay soil liner. It also provides methods and procedures to be used in monitoring the installation of the compacted clay soil liner, geomembrane liner and leachate collection system.

During the construction of ILF-V, Area 2, certain modifications of the permitted documents were authorized by TDEC. Correspondence relating to these modifications are included in Appendix F.

Construction of Area 2 was performed by LMES Operations Personnel with excavation beginning during the month of March, 1996. The compacted clay soil liner pre-construction meeting was held on June 3, 1996 with representatives of Geotek, Adams Craft Herz and Walker, DOE, and LMES at the site. The compacted clay soil liner construction began on June 4, 1996 and was essentially completed on July 22, 1996 with minor maintenance work performed over the next week. Placement of the geomembrane liner and protective geotextile fabric began on July 23, 1996 and was completed on July 29, 1996. The leachate collection system construction began on July 30, 1996 and was completed on September 4, 1996. Placement of the separator geotextile fabric and the protective soil cover began on September 5, 1996 and was completed on October 1, 1996. The leachate sewer system was completed October 16, 1996 and is ready to be placed into operation upon receipt of TDEC approval.

COMPACTED CLAY SOIL LINER

The compacted clay soil liner consists of soil excavated from the landfill area. Material properties, compaction characteristics, and hydraulic conductivity (permeability) of the proposed borrow soil were evaluated during the geological investigation for the landfill as part of the services provided by Dr. David E. Daniel. The following report was prepared by Dr. Daniel:

- "Results of Hydraulic Conductivity Tests and Recommended Water Content-Dry Density Criteria for Potential Borrow Soils," prepared for Martin Marietta Energy Systems, Inc. by David E. Daniel, October 12, 1992.

Prior to placement of the compacted clay soil liner, the subgrade was proof rolled to ensure there were not any spongy or unacceptable areas. A few small areas had defective subgrade materials that were excavated one to two feet deep, removed, and replaced with acceptable compacted material. Excavation elevations of Area 2 were verified by a registered land surveyor, licensed to practice in the state of Tennessee.

The acceptable placement range (moisture content and dry density) for Type A materials was utilized in the construction of the compacted soil liner in Area 2. Due to the extensive testing conducted for both studies and the similarities in materials at the sites investigated, the Table I requirements for material testing in the CQA manual were considered to be satisfied. The QA Officer and his representatives provided continuous visual observation of borrow excavation and clay soil liner material placement in order to verify proper placement of acceptable materials and to exclude material that did not satisfy the required material properties.

The compacted clay soil liner was constructed of compacted lifts or layers which were a maximum of 6 inches thick and was accomplished by a minimum of six passes per lift with a CAT CP563 vibratory sheepsfoot roller. The underlying compacted layer was scarified prior to the placement of the overlying loose lift. Lift and total liner thicknesses were controlled and monitored through the use of grade flagging inserted into the subgrade or previously compacted lift.

Tests for moisture and density were performed using a nuclear density gauge per ASTM D3017 and D2922. Every fifth test required a verification test for moisture and density by other means. Verification tests for density were performed using the sand cone method per ASTM D1556 and for moisture by using the oven drying method per ASTM D2216. Grab samples were obtained for laboratory grain size analysis (ASTM D422 and D1140), Atterberg Limits (ASTM D4318), and standard Proctor compaction (ASTM D698).

The location of each field moisture content and dry density test in each lift was randomly selected by the Geotek technician, such that the total liner thickness was effectively tested. All holes made in the soil liner for testing purposes were backfilled with bentonite material and tamped in place. The QA Officer worked closely with the Geotek technician to ensure that the proper testing requirements were satisfied.

The moisture content was adjusted as permitted by the construction specifications. Excess moisture was removed by scarifying the surface and allowing the soil to dry. Moisture was added on numerous occasions by scarifying the in-place compacted liner material and applying water using a water truck equipped with a spreader bar or spray nozzle.

An abundance of borrow material was available for use as compacted clay soil liner on this project. The majority of the material was clay removed from Area 2 during excavation activities to reach the subgrade. While most underlying soils found on the site were suitable for liner material, certain pockets or seams of material contained more chert fragments than normal or acceptable. When these seams or pockets were encountered, they were visually disqualified and removed. Stone or rock fragments larger than 2" in diameter were removed. Following compaction, each lift was rechecked for stone or rock fragments greater than 2" in diameter. The same procedure was used on the side slopes with scarification between each lift.

At the end of each day, the surface of the installed liner was smooth drum rolled to shed water in the event of rain and to resist drying and desiccation of the surface. At the beginning of the next work period, the surface was scarified before placing the next lift. The final surface was fine graded and sealed. The

compacted clay soil liner was constructed a minimum of 2 feet thick measured vertically. It extends over the landfill floor and side slopes.

The anchor trench was excavated following completion of the compacted clay soil liner and the inside top edge was rounded to preclude damage to the geomembrane liner.

Test reports and other documentation are included in Appendix B.

GEOMEMBRANE LINER

An inspection of the finished surface of the compacted clay soil liner was accomplished by the QA Officer, Geotek technician, and the geomembrane installer. Minor washouts or voids in the compacted clay soil liner were filled with bentonite to ensure an acceptable smooth bearing surface. There was no evidence of desiccation. A 40 mil polypropylene liner was placed in direct contact with the compacted clay soil liner. Rolls measuring 22'-6" wide and 780' long were spread and heat seamed by the hot wedge welding method. The liner was inspected to ensure it was free of unacceptable wrinkles and that any underlying foreign items were identified for removal, removed, and the resulting holes were patched. The seams were non-destructively tested by pressurized air channel test per Geosynthetics Research Institute (GRI) Test Method GM6 by the installer and witnessed by the Geotek liner inspector.

Test patches were cut at the seams and bones or coupons cut from each patch. Field tests, consisting of shear and peel tests per ASTM D4437 were performed on the bones and samples were sent to an independent lab for verification. Each test sample, repair, and corner of panel seams, were patched using liner material and heat gun, vacuum tested per ASTM D4437, and extrusion welded.

A boot was placed over the leachate pipe as it penetrated the east end geomembrane, sealing with banding straps around the pipe. A sacrificial layer of geomembrane was placed over the leading edge of the FML on the south side at Area 2 / Area 3 interface to facilitate future tie-in of the adjacent area. The Area 1 / Area 2 interface on the north side consisted of a 10 feet transition as shown on the cross-sections in Appendix E.

A layer of 16 oz. nonwoven geotextile polyester fabric (protective geotextile fabric) was placed over the geomembrane liner to protect the liner from the overlying granular drainage rock. The fabric was furnished in rolls, approximately 20 feet wide. The seams of the fabric were sewn and the panels inspected to ensure there were no unacceptable wrinkles.

Test reports and other documentation are included in Appendix C.

LEACHATE COLLECTION SYSTEM AND PROTECTIVE SOIL COVER

The leachate collection system consists of a 6" perforated PVC collection pipe system placed in a 12-inch thick granular drainage layer and a 6" PVC leachate sewer system with precast concrete manholes. The new leachate sewer system was connected to the existing leachate sewer system

The granular leachate collection layer consists of ASTM C33 #4 Stone and was placed on the 16 oz. protective geotextile fabric. A three feet (minimum 24") granular bed was placed down the center of Area 2 to allow truck movement for closer placement of the granular material. Delivery trucks drove only on the top of the granular layer with a Dresser TD-15 dozer (on the road only) and a CAT D4H LGP wide track dozer pushing the rock ahead. The base held up well during placement operations. Spreading of the #4 Stone was accomplished using only a CAT D4H LGP wide track dozer. The depth was checked manually during placement and verified by the surveyors.

The granular leachate collection layer was placed on the 3.5H:1V side slopes using a CAT D4H LGP wide track dozer. The material was pushed up from the toe of the slope. Depth of the drainage layer on the slopes was checked manually and verified by the surveyors.

The installation of the 6" perforated PVC leachate collection line in the granular leachate collection layer consisted of placing 3 inches of #4 Stone between the underside of the pipe and the top of the 16 oz. protective geotextile fabric.

Extra care and attention was given to the location where the leachate collection pipe penetrated the compacted soil liner on the east end of Area 2. The trench was excavated and the pipe bedded in bentonite for approximately the first 7 feet from the liner to assure a positive seal between the pipe and compacted clay soil liner. Compaction in the immediate vicinity of the pipe was accomplished using a hand operated tamper. Conventional equipment was used once adequate cover over the pipe had been placed.

After completion of the granular leachate collection system, a layer of 8 oz. nonwoven polyester fabric (separator geotextile fabric) was installed, with a minimum overlap of 18 inches. The fabric was followed by a protective soil cover a minimum of 2 feet thick. The purpose of this soil cover is to protect the compacted clay soil liner, geomembrane liner, and granular leachate collection system from damage due to weather, trucks and landfill equipment. The protective soil cover sheds rainwater from areas not actively being landfilled, thereby reducing the volume of storm runoff entering the leachate collection system and requiring treatment as leachate, and prevents migration of fines into the drainage layer.

Construction equipment was not permitted to operate directly on either the surface of the granular leachate collection layer or the overlying geotextile fabric. A CAT D4H LGP dozer pushed the protective soil out over the granular leachate collection layer and fabric. No specific compaction requirements were specified for the first lift, with smooth drum roller compaction performed on the subsequent lifts. The final lift required compaction with a CAT CP563 sheepsfoot roller. The 3.5H:1V side slope protective soil cover was installed by pushing it up the slope with a dozer. The surface of the protective soil cover was fine graded and sealed with a smooth steel drum roller.

The anchor trench was properly backfilled and compacted using hand-held vibratory compactors, taking care not to damage the geomembrane liner.

Problems encountered during various tests were appropriately resolved and corrective actions implemented. Various test reports, inspection reports, and certifications are included in Appendix B.

CONSTRUCTION QUALITY ASSURANCE RESPONSIBILITIES

Full time construction quality assurance was provided by Geotek soils and geosynthetic liner inspection personnel, and monitored by the LMES QA Officer. Responsibilities included:

- Observe proofrolling of the subgrade;
- Observe the compacted clay soil liner placement;
- Observe field testing of the compacted clay soil liner to verify placement was in accordance with the approved documents;
- Maintain records documenting the construction of the compacted clay soil liner;
- Observe placement of the geomembrane liner and geotextile fabric;
- Daily communication to aid completion of the work in a timely manner.;
- Observation of construction and installation of the leachate collection system including granular leachate collection layer, perforated collection pipe, separator geotextile fabric, protective soil cover, manholes and associated piping and valves.

It was impractical for the QA Officer to be continuously present at the site, however, the QA Officer made numerous site visits to check and verify specified procedures and methods were being followed. The QA Officer relied on the Geotek personnel that were continuously on site during the construction activities. In addition, regular contact with LMES and DOE was maintained and daily progress reports completed.

Any clay liner test results that did not plot within the acceptable placement range were immediately reported to the QA Officer and corrective actions were taken to address the area of the liner that did not meet the placement criteria. These included one or more of the following actions:

- Additional compactive effort
- Moisture content adjusted per specification
- Removal and replacement of failed material

Following the corrective actions, the material was retested to verify that the corrected material met the specification requirements. Copies of all the test results were available to the QA Officer daily.

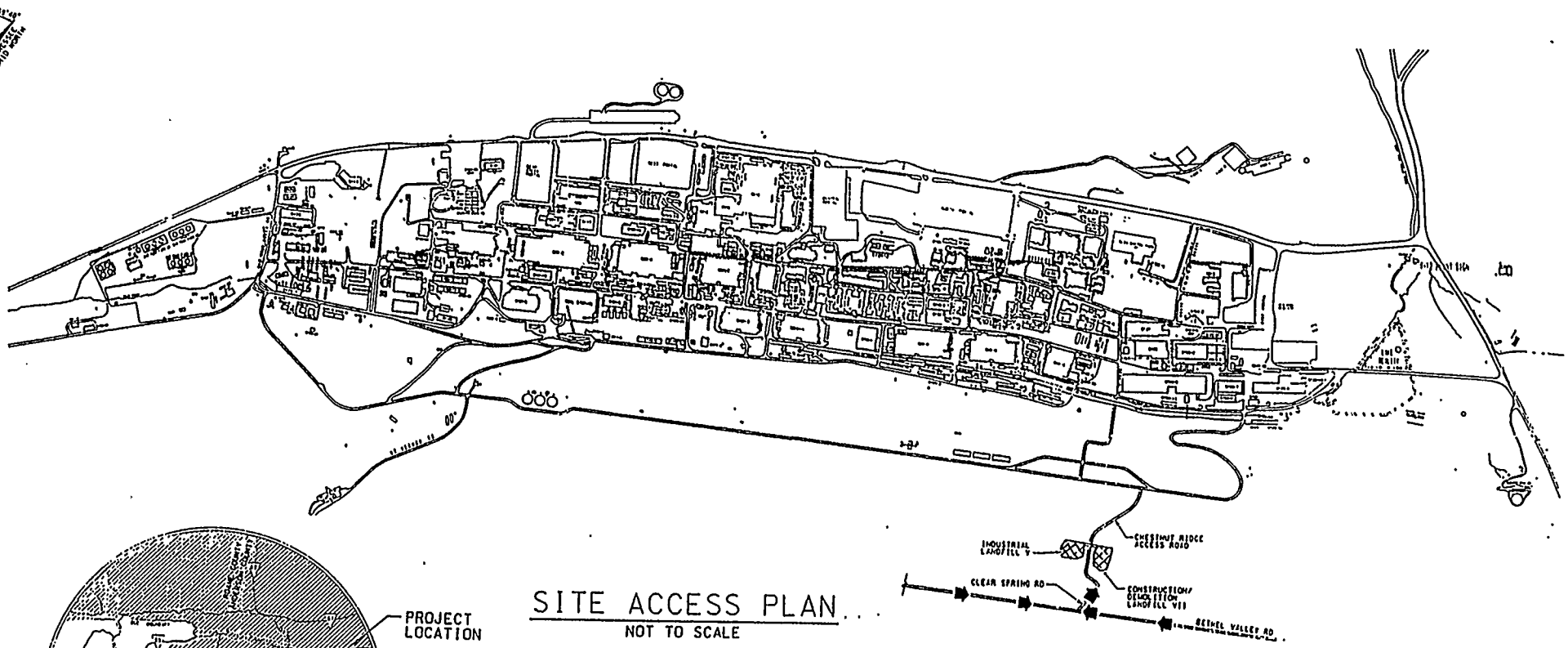
NOTE: On August 6, 1996, a load of granular material ordered as #4 Stone was visibly out of specification with excessive fines. A trip to the quarry corrected the problem. Further samples were taken and the questionable material was removed from Area 2.

AS-BUILT SURVEYS

As-built survey information is provided from Adams, Craft, Herz and Walker showing the elevations (contours) at the top of the subgrade (the bottom of the compacted clay soil liner) and the top of the protective soil cover. The location and elevation of the leachate collection pipe and cross-sections are also provided. Besides the drawings, data is provided identifying point elevation data (PED). The PED provides numbered horizontal stations within the Area 2 boundaries, cross referenced to the drawings. Elevations on the PED identify the elevations for the bottom and top of the compacted clay soil liner, top of the granular leachate collection layer, and top of the protective soil cover. The drawings provide horizontal and vertical information for Area 2, the anchor trench, the leachate collection pipe, the temporary maintenance road, and cross-sections of Area 2.

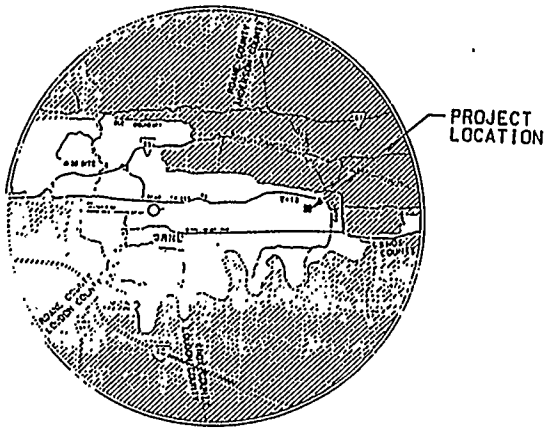
APPENDIX A

SITE PLAN



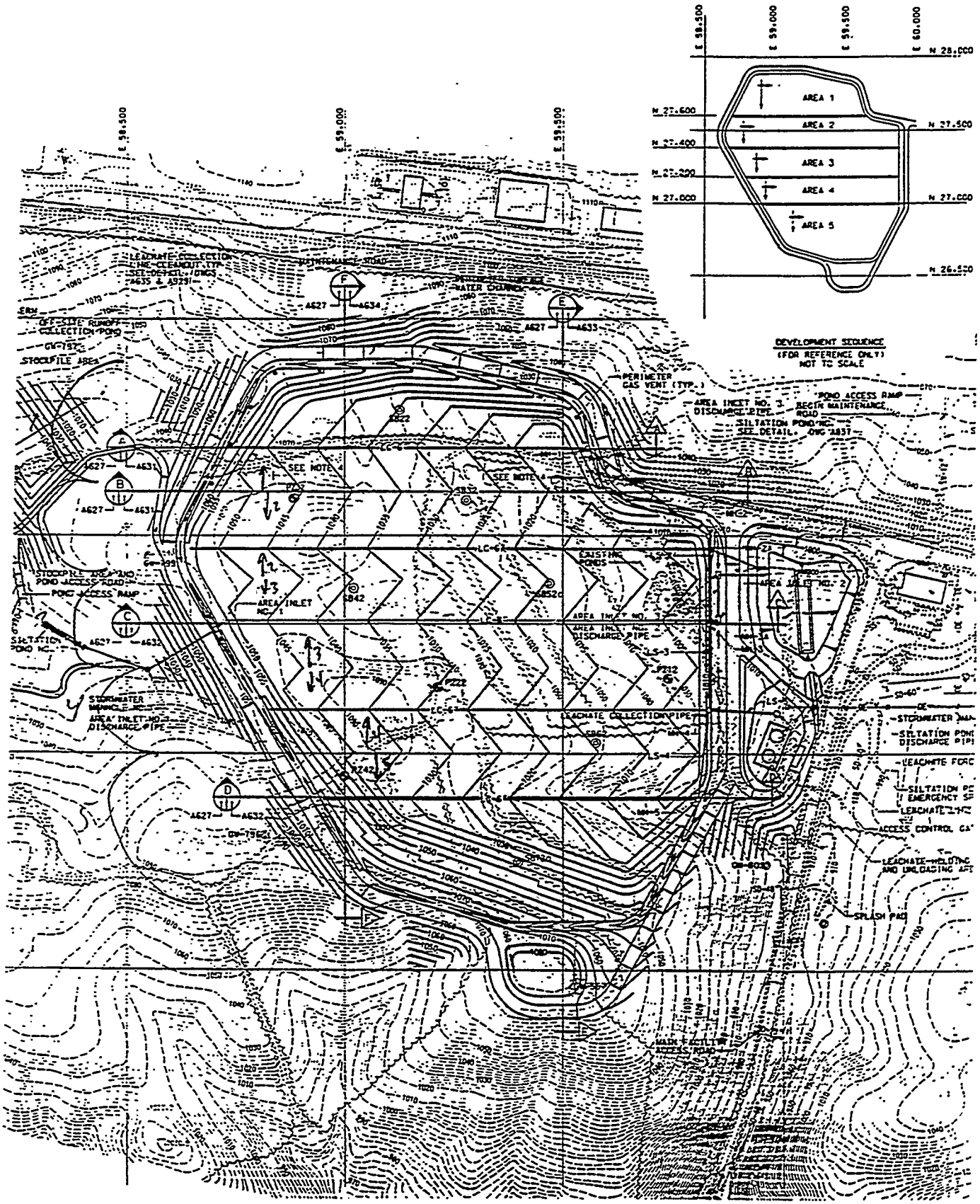
SITE ACCESS PLAN

NOT TO SCALE



LOCATION PLAN

NOT TO SCALE


E 58.500
E 59.000
E 59.500
E 60.000
N 28.000
N 27.600
N 27.500
N 27.400
N 27.200
N 27.000
N 26.500
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
DEVELOPMENT SEQUENCE
(FOR REFERENCE ONLY)
NOT TO SCALE
LEACHATE COLLECTION LINE CLEANOUT TYP. SEE DETAIL, DWGS A635 & A929
MAINTENANCE ROAD
DEDICATED SURFACE WATER CHANNEL
A627
A634
A633
A631
A632
OFF-SITE RUNOFF COLLECTION POND
GW-797
STOCKPILE AREA
PERIMETER GAS VENT (TYP.)
AREA INLET NO. 3 DISCHARGE PIPE
BEGIN MAINTENANCE ROAD
POND ACCESS RAMP
SILTATION POND NO. SEE DETAIL, DWG A837
SEE NOTE 4
LC-6
LC-6
LC-6
LC-6
EXISTING PONDS
SB22
SB32
SB42
SB52
PZ22
PZ12
PZ42
SB62
SB72
AREA INLET NO. 1
AREA INLET NO. 2
AREA INLET NO. 3
AREA INLET NO. 3 DISCHARGE PIPE
LS-3
LS-4
LS-5
LEACHATE COLLECTION PIPE
STOCKPILE AREA AND POND ACCESS ROAD
POND ACCESS RAMP
GW-799
SILTATION POND NO.
STORMWATER MANHOLE NO.
AREA INLET NO. 2 DISCHARGE PIPE
GW-796
GW-803
STORMWATER MAN
SILTATION POND DISCHARGE PIP
LEACHATE FORC
SILTATION P EMERGENCY S
LEACHATE LINE
ACCESS CONTROL GA
LEACHATE HOLDING AND UNLOADING AR
SPLASH PAD
SD-40
SD-60
MAIN FACILITY ACCESS ROAD
A
B
C
D
E
F
1
2
3
4
5
1100
1090
1080
1070
1060
1050
1040
1030
1020
1010
1000
990
970
1110

APPENDIX B

CLAY LINER AND MISCELLANEOUS SOIL COMPACTION TEST REPORTS

LOG OF SOIL SAMPLES
TABLE 1 TESTING
INDUSTRIAL LANDFILL V, AREA II

Sample #	Date	Grid Location	Natural Moisture	Sieve Analysis	Atterberg Limits	Standard Proctor
1-1	6-4-96	20' N of GP 710 (Row 1)	22.0			
1-2	6-4-96	25' NE of GP 731 (Row 1)	22.8			
1-3	6-4-96	30' NE of GP 758 (Row 1)	21.8			
1-4	6-4-96	15' N of GP 794 (Row 1)	22.4			
1-5	6-4-96	25' N of GP 711 (Row 2)	✓	✓	✓	
1-6	6-4-96	10' NE of GP 735 (Row 2)	21.7			
1-7	6-4-96	25' NE of GP 771 (Row 2)	22.6			
1-8	6-5-96	30' N of GP 802 (Row 2)	17.6			
1-9	6-5-96	10' N of GP 719 (Row 1)	21.0			
1-10	6-5-96	20' NE of GP 734 (Row 1)	20.2			
1-11	6-5-96	25' NE of GP 767 (Row 1)	22.2			
1-12	6-5-96	5' N of GP 803 (Row 1)	✓	✓	✓	
1-13	6-6-96	30' NE of GP 706 (Row 2)	21.8			
1-14	6-6-96	25' NE of GP 735 (Row 2)	18.5			
1-15	6-6-96	25' N of GP 766 (Row 2)	22.1			
1-16	6-6-96	20' N of GP 802 (Row 2)	23.6			
1-17	6-6-96	10' N of GP 722 (Row 1)	✓	✓	✓	
1-18	6-6-96	15' N of GP 755 (Row 1)	19.1			
1-19	6-6-96	5' N of GP 794 (Row 1)	19.8			
1-20	6-7-96	15' NE of GP 748 (Row 3)	21.7			
1-21	6-7-96	25' N of GP 772 (Row 3)	✓	✓	✓	
1-22	6-7-96	20' N of GP 718 (Row 2)	21.5			
1-23	6-7-96	25' N of GP 747 (Row 2)	21.7			
1-24	6-7-96	20' N of GP 783 (Row 2)	20.1			
1-25	6-7-96	15' NE of GP 710 (Row 1)	✓	✓	✓	✓
1-26	6-10-96	20' NE of GP 770 (Row 1)	23.2			
1-27	6-10-96	15' NE of GP 705 (Row 3)	25.6			
1-28	6-10-96	25' NE of GP 729 (Row 3)	24.9			
1-29	6-10-96	15' N of GP 760 (Row 3)	23.3			

LOG OF SOIL SAMPLES
TABLE 1 TESTING
INDUSTRIAL LANDFILL V, AREA II

Sample #	Date	Grid Location	Natural Moisture	Sieve Analysis	Atterberg Limits	Standard Proctor
1-30	6-10-96	40' N of GP 796 (Row 3)	✓	✓	✓	
1-31	6-14-96	25' N of GP 713 (Row 4)	25.0			
1-32	6-14-96	20' N of GP 737 (Row 4)	22.6			
1-33	6-14-96	10' N of GP 764 (Row 4)	24.6			
1-34	6-14-96	20' N of GP 800 (Row 4)	24.8			
1-35	6-14-96	20' NW of GP 827 (Row 4)	✓	✓	✓	
1-36	6-14-96	25' NE of GP 735 (Row 2)	23.0			
1-37	6-15-96	15' NE of GP 766 (Row 2)	23.4			
1-38	6-15-96	25' NE of GP 802 (Row 2)	22.7			
1-39	6-15-96	15' NE of GP 710 (Row 1)	23.0			
1-40	6-15-96	20' NE of GP 731 (Row 1)	✓	✓	✓	
1-41	6-15-96	25' N of GP 755 (Row 1)	25.7			
1-42	6-15-96	10' N of GP 794 (Row 1)	24.8			
1-43	6-15-96	20' N of GP 806 (Row 1)	25.0			
1-44	6-17-96	20' N of GP 729 (Row 3)	25.8			
1-45	6-17-96	25' NE of GP 753 (Row 3)	✓	✓	✓	
1-46	6-17-96	35' N of GP 777 (Row 3)	24.6			
1-47	6-17-96	10' N of GP 801 (Row 3)	25.2			
1-48	6-17-96	20' NE of GP 823 (Row 3)	26.1			
1-49	6-17-96	10' NE of GP 725 (Row 4)	25.0			
1-50	6-17-96	40' N of GP 749 (Row 4)	✓	✓	✓	✓
1-51	6-17-96	20' NW of GP 776 (Row 4)	22.6			
1-52	6-17-96	25' N of GP 800 (Row 4)	23.5			
1-53	6-17-96	15' NE of GP 822 (Row 4)	24.8			
1-54	6-18-96	20' N of GP 711 (Row 2)	20.7			
1-55	6-18-96	35' N of GP 723 (Row 2)	✓	✓	✓	
1-56	6-18-96	10' N of GP 747 (Row 2)	20.6			
1-57	6-18-96	15' NE of GP 766 (Row 2)	21.8			
1-58	6-18-96	15' N of GP 783 (Row 2)	21.6			

LOG OF SOIL SAMPLES
TABLE 1 TESTING
INDUSTRIAL LANDFILL V, AREA II

Sample #	Date	Grid Location	Natural Moisture	Sieve Analysis	Atterberg Limits	Standard Proctor
1-59	6-18-96	25' NE of GP 802 (Row 2)	22.4			
1-60	6-18-96	20' NE of GP 705 (Row 3)	✓	✓	✓	
1-61	6-18-96	40' N of GP 724 (Row 3)	20.0			
1-62	6-18-96	15' NE of GP 748 (Row 3)	22.0			
1-63	6-18-96	10' N of GP 772 (Row 3)	23.5			
1-64	6-18-96	35' N of GP 796 (Row 3)	22.8			
1-65	6-18-96	15' NE of GP 823 (Row 3)	✓	✓	✓	
1-66	6-18-96	25' NE of GP 716 (Row 4)	24.4			
1-67	6-18-96	10' N of GP 740 (Row 4)	23.4			
1-68	6-18-96	25' NE of GP 761 (Row 4)	24.6			
1-69	6-18-96	5' N of GP 788 (Row 4)	25.2			
1-70	6-19-96	10' N of GP 809 (Row 4)	✓	✓	✓	
1-71	6-19-96	30' N of GP 819 (Row 4)	26.7			
1-72	6-19-96	10' NW of GP 827 (Row 4)	25.2			
1-73	6-20-96	30' NE of GP 705 (Row 3)	24.8			
1-74	6-20-96	15' N of GP 729 (Row 3)	26.2			
1-75	6-20-96	25' N of GP 748 (Row 3)	✓	✓	✓	✓
1-76	6-20-96	20' NE of GP 765 (Row 3)	22.9			
1-77	6-20-96	5' N of GP 789 (Row 3)	23.7			
1-78	6-20-96	40' N of GP 808 (Row 3)	22.4			
1-79	6-20-96	15' NW of GP 826 (Row 3)	24.2			
*1-80	6-20-96	10' N of GP 704 (Row 4)	✓	✓	✓	
1-81	6-20-96	5' S of GP 716 (Row 5)	23.2			
1-82	6-20-96	25' N of GP 728 (Row 4)	20.5			
1-83	6-20-96	5' S of GP 740 (Row 5)	24.3			
1-84	6-20-96	40' NE of GP 752 (Row 4)	25.1			
*1-85	6-20-96	5' S of GP 764 (Row 5)	✓	✓	✓	
1-86	6-24-96	20' N of GP 785 (Row 4)	19.7			
1-87	6-24-96	5' S of GP 812 (Row 5)	18.1			

* Note: sample collected & archived w/o laboratory testing.

LOG OF SOIL SAMPLES
TABLE 1 TESTING
INDUSTRIAL LANDFILL V, AREA II

Sample #	Date	Grid Location	Natural Moisture	Sieve Analysis	Atterberg Limits	Standard Proctor
1-88	6-25-96	10' N of GP 605 (West Slope)	25.6			
1-89	6-26-96	10' N of GP 704 (Row 4)	25.8			
*1-90	6-26-96	5' S of GP 728 (Row 5)	✓	✓	✓	
1-91	6-26-96	25' NE of GP 749 (Row 4)	24.9			
1-92	6-26-96	5' S of GP 764 (Row 5)	23.1			
1-93	6-26-96	20' N of GP 785 (Row 4)	22.7			
1-94	6-26-96	5' S of GP 800 (Row 5)	26.2			
*1-95	6-26-96	25' NE of GP 819 (Row 4)	✓	✓	✓	
1-96	6-26-96	10' NE of GP 602 (West Slope)	24.8			
1-97	6-27-96	5' S of GP 812 (Row 5)	24.3			
1-98	6-28-96	5' S of GP 773 (Row 5)	24.6			
1-99	6-28-96	5' W of GP 607 (West Slope)	23.7			
1-100	7-1-96	5' S of GP 733 (Row 1)	✓	✓	✓	✓
1-101	7-1-96	5' S of GP 793 (Row 1)	23.8			
1-102	7-1-96	45' N of GP 783 (Row 2)	24.5			
1-103	7-2-96	20' NE of GP 826 (East 2nd)	23.7			
1-104	7-2-96	5' S of GP 785 (Row 5)	23.8			
*1-105	7-3-96	20' E of GP 826 (East 2nd)	✓	✓	✓	
1-106	7-9-96	5' N of GP 825 (N. East Slope)	23.2			
1-107	7-10-96	20' NE of GP 644 (N. East Slope)	24.3			
1-108	7-10-96	25' SW of GP 651 (N. East Slope)	23.9			
1-109	7-10-96	10' W of GP 638 (East 2nd)	22.8			
*1-110	7-10-96	30' SE of GP 654 (N. East Slope)	✓	✓	✓	
1-111	7-10-96	80' E of GP 658 (road cut area)	23.7			
1-112	7-11-96	20' NW of GP 830 (East End)	24.2			
1-113	7-11-96	10' N of GP 825 (N. East Slope)	22.8			
1-114	7-11-96	20' N of GP 638 (N. East Slope)	23.9			
*1-115	7-11-96	30' E of M.H. 2-A (road cut area)	✓	✓	✓	
1-116	7-11-96	N @ M.H. 2-A (East Berm)	24.8			

*Note: sample collected & archived w/o laboratory testing.

LOG OF SOIL SAMPLES
TABLE 1 TESTING
INDUSTRIAL LANDFILL V, AREA II

Sample #	Date	Grid Location	Natural Moisture	Sieve Analysis	Atterberg Limits	Standard Proctor
1-117	7-12-96	30' S of M.H. 2-A (East bank)	24.8			
1-118	7-13-96	@ M.H. 2-A (East bank)	23.6			
1-119	7-13-96	60' E of M.H. 2-A (road cut grade)	24.2			
*1-120	7-16-96	20' S of GP 650 (East bank)	✓	✓	✓	
1-121	7-16-96	50' E of M.H. 2-A (road cut grade)	27.8			
1-122	7-17-96	25' E of M.H. 2-A (road cut grade)	27.2			
1-123	7-18-96	@ G.P. 653 (N.East side)	25.8			
1-124	7-18-96	10' NW of M.H. 2-A (East bank)	25.2			
1-125	7-18-96	70' E of M.H. 2-A (road cut grade)	✓	✓	✓	✓

* Note: Sample collected & archived w/o laboratory testing.

LOG OF SOIL SAMPLES
TABLE 2 TESTING
INDUSTRIAL LANDFILL V, AREA II

Sample #	Date	Test #	Moisture Content
2-1	6-4-96	1	✓
2-2	6-5-96	1	✓
2-3	6-6-96	1	✓
2-4	6-6-96	6	✓
2-5	6-6-96	11	✓
2-6	6-7-96	1	✓
2-7	6-7-96	6	✓
2-8	6-7-96	11	✓
2-9	6-10-96	1	✓
2-10	6-10-96	6	✓
2-11	6-14-96	1	✓
2-12	6-14-96	6	✓
2-13	6-15-96	1	✓
2-14	6-15-96	6	✓
2-15	6-15-96	11	✓
2-16	6-17-96	1	✓
2-17	6-17-96	6	✓
2-18	6-17-96	11	✓
2-19	6-17-96	16	✓
2-20	6-18-96	1	✓
2-21	6-18-96	6	✓
2-22	6-19-96	1	✓
2-23	6-19-96	6	✓
2-24	6-19-96	11	✓
2-25	6-19-96	16	✓
2-26	6-20-96	1	✓
2-27	6-20-96	6	✓
2-28	6-21-96	1	✓
2-29	6-25-96	1	✓

LOG OF SOIL SAMPLES
TABLE 2 TESTING
INDUSTRIAL LANDFILL V, AREA II

Sample #	Date	Test #	Moisture Content
2 - 30	6-25-96	6	✓
2 - 31	6-25-96	11	✓
2 - 32	6-26-96	1	✓
2 - 33	6-27-96	1	✓
2 - 34	6-27-96	6	✓
2 - 35	6-28-96	1	✓
2 - 36	6-28-96	6	✓
2 - 37	6-28-96	11	✓
2 - 38	7-1-96	1	✓
2 - 39	7-2-96	1	✓
2 - 40	7-3-96	1	✓
2 - 41	7-3-96	6	✓
2 - 42	7-8-96	1	✓
2 - 43	7-9-96	1	✓
2 - 44	7-9-96	6	✓
2 - 45	7-10-96	1	✓
2 - 46	7-10-96	6	✓
2 - 47	7-11-96	1	✓
2 - 48	7-11-96	6	✓
2 - 49	7-11-96	11	✓
2 - 50	7-12-96	1	✓
2 - 51	7-13-96	1	✓
2 - 52	7-13-96	6	✓
2 - 53	7-16-96	1	✓
2 - 54	7-16-96	6	✓
2 - 55	7-17-96	1	✓
2 - 56	7-17-96	6	✓
2 - 57	7-17-96	11	✓
2 - 58	7-18-96	1	✓

LOG OF SOIL SAMPLES
TABLE 2 TESTING
INDUSTRIAL LANDFILL V, AREA II

Sample #	Date	Test #	Moisture Content
2-59	7-18-96	6	✓
2-60	7-18-96	11	✓

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET LOG

IDS	PICM	DSR	COMMENTS
—	—	#1 6-3-96	Pre-Construction Meeting
#1 6-4-96	—	#2 6-4-96	Proofrolling of site; fill production along Rows 1 & 2 for clay liner
#2 6-5-96	—	#3 6-5-96	CLAY liner; fill production along Rows 1 & 2
#3 6-6-96	—	#4 6-6-96	CLAY LINER; fill production along Rows 1 & 2
#4 6-7-96	—	#5 6-7-96	CLAY LINER; fill production along Rows 1, 2, & 3
#5 6-10-96	—	#6 6-10-96	CLAY LINER; fill production along Rows 1, 2 & 3
—	—	#7 6-11-96	CLAY LINER; reported on-site; no fill production; rained out
—	—	#8 6-13-96	CLAY LINER; reported on-site; no fill production; rained out
#6 6-14-96	—	#9 6-14-96	CLAY LINER; fill production along Rows 1-4
#7 6-15-96	—	#10 6-15-96	CLAY LINER; fill production along Rows 1-4
#8 6-17-96	—	#11 6-17-96	CLAY LINER; fill production along Rows 1-4
#9 6-18-96	—	#12 6-18-96	CLAY LINER; fill production along Rows 2, 3, & 4
#10 6-19-96	—	#13 6-19-96	CLAY LINER; fill production along Rows 2, 3, & 4
#11 6-20-96	—	#14 6-20-96	CLAY LINER; fill production along Rows 3, 4, & 5
#12 6-21-96	—	#15 6-21-96	CLAY LINER; fill production along Rows 3, 4, & 5
—	—	#16 6-24-96	CLAY LINER; fill production along Rows 4 & 5
#13 6-25-96		#17 6-25-96	CLAY LINER; production along Rows 4 & 5; fill production along west slope
#14 6-26-96	—	#18 6-26-96	CLAY LINER; fill production along Rows 4 & 5 and west slope
#15 6-27-96	—	#19 6-27-96	CLAY LINER; production along Row 4, fill production along Row 5 & west slope
#16 6-28-96	—	#20 6-28-96	CLAY LINER; production along Row 4, fill production along Row 5 & west slope
#17 7-1-96	—	#21 7-1-96	CLAY LINER; production for final subgrade of clay liner, Rows 1-3 & west slope; compacted fill; east embankment
#18 7-2-96	—	#22 7-2-96	CLAY LINER; production for final subgrade of clay liner, Rows 1-5; fill production, east end
#19 7-3-96	—	#23 7-3-96	CLAY LINER; production for final subgrade of clay liner, Rows 4 & 5; fill production, east end
#20 7-8-96	—	#24 7-8-96	CLAY LINER; production for final subgrade of clay liner; fill production, east end

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET LOG

IDS	PICM	DSR	COMMENTS
#21 7-9-96	—	#25 7-9-96	CLAY LINER; production for final subgrade; initial subgrade NE slope; fill production East End
#22 7-10-96	—	#26 7-10-96	CLAY LINER; production for final subgrade; fill production East End & NE slope
#23 7-11-96	—	#27 7-11-96	Production on final subgrade for clay liner; compacted fill production, E. berm & road
#24 7-12-96	—	#28 7-12-96	Production on final subgrade for clay liner; compacted fill production for initial subgrade, E. berm
#25 7-13-96	—	#29 7-13-96	Production on final subgrade for clay liner; compacted fill production, E. berm & road
#26 7-16-96	—	#30 7-16-96	Final subgrade for clay liner, NE slope & east berm; compacted fill production, road
#27 7-17-96	—	#31 7-17-96	Final subgrade for clay liner, fill production along E. berm; compacted fill, road altered
#28 7-18-96	—	#32 7-18-96	CLAY LINER, finishing gradework for NE slope & E. berm; finish compacted fill for road
—	—	#33 7-19-96	FINAL SUBGRADE check of clay liner surveyed; finish gravel and drainage work for road
—	—	#34 7-22-96	Delivery of PP FML; inspection of clay liner subgrade after heavy rains
—	—	#35 7-23-96	Deployment & seaming of FML; inspection of clay liner subgrade
—	—	#36 7-24-96	Deployment & seaming & inspection of FML; final inspection of clay liner subgrade
—	—	#37 7-25-96	Seaming & inspection of FML
—	—	#38 7-26-96	seaming, inspection, & testing of FML; deployment of protective fabric
—	—	#39 7-27-96	deployment, seaming, & inspection of protective fabric
—	—	#40 7-28-96	deployment, seaming, & inspection of protective fabric
—	—	#41 7-29-96	FINAL inspection of protective geotextile fabric & PP FML; obtain samples of leachate collection layer aggregate & soil
—	—	#42 7-30-96	LEACHATE COLLECTION LAYER; beginning of placement to allow truck access to liner
—	—	#43 7-31-96	LEACHATE COLLECTION LAYER; placement of truck access road along south of W. slope
—	—	#44 8-1-96	LEACHATE COLLECTION LAYER; graded placement on W. slope; placement of truck access road W. end of Row 3
—	—	#45 8-2-96	LEACHATE COLLECTION LAYER; graded placement, Rows 1 & 2; access road, Row 3
—	—	#46 8-3-96	LEACHATE COLLECTION LAYER; graded placement, Rows 1 & 2; access road, Row 3
—	—	#47 8-5-96	LEACHATE COLLECTION LAYER; graded placement, Rows 1 & 2; access road, Row 3
—	—	#48 8-6-96	LEACHATE COLLECTION LAYER; graded placement, Rows 1 & 2; access road, Row 3

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET LOG

IDS	PICM	DSR	COMMENTS
—	—	#49 8-7-96	LEACHATE COLLECTION LAYER; fine tuning of grade along Rows 1 & 2
—	—	#50 8-8-96	LEACHATE COLLECTION LAYER; fine tuning of grade along Rows 1 & 2
—	—	#51 8-9-96	LEACHATE COLLECTION LAYER; surveyed grade obtained for aggregate placement on west slope & along Rows 1 & 2 where placed
—	—	#52 8-12-96	LEACHATE COLLECTION LAYER; graded placement, Rows 1 & 2; access road, Row 3
—	—	#53 8-13-96	LEACHATE COLLECTION LAYER; graded placement Row 1 to junction w/ NE slope; extension of graded placement Row 2 & access road, Row 3
—	—	#54 8-14-96	LEACHATE COLLECTION LAYER; graded placement Row 2 & NNE part of NE slope, extension of access road, Row 3
—	—	#55 8-15-96	LEACHATE COLLECTION LAYER; graded placement Row 2 & ENE part of NE slope; extension of access road, Row 3, toward E. berm
—	—	#56 8-16-96	LEACHATE COLLECTION LAYER: finish grade of Row 2 & NE slope to junction w/ east berm; finish placement of road access, Row 3
—	—	#57 8-17-96	LEACHATE COLLECTION PIPING INSTALLATION
—	—	#58 8-19-96	LEACHATE COLLECTION LAYER; graded placement along E. berm
—	—	#59 8-20-96	LEACHATE COLLECTION LAYER; graded placement access pipeline Row 3 & Rows 4 & 5
—	—	#60 8-22-96	LEACHATE COLLECTION LAYER; graded placement across pipeline Row 3 & Rows 4 & 5
—	—	#61 8-23-96	LEACHATE COLLECTION LAYER; graded placement across pipeline Row 3 & Rows 4 & 5
—	—	#62 8-26-96	LEACHATE COLLECTION LAYER; graded placement across pipeline Row 3 & Rows 4 & 5
—	—	#63 8-27-96	LEACHATE COLLECTION LAYER; finish of loads; continue taking out road, Rows 4 & 5
—	—	#64 9-3-96	GEOTEXTILE SEPARATOR fabric; placement from NW corner along Rows 1 & 2; take out road; on leachate layer
—	—	#65 9-4-96	LEACHATE COLLECTION LAYER; finish taking out road; GEOTEXTILE placement Rows 2 & 3 & E. berm
—	—	#66 9-5-96	GEOTEXTILE SEPATOR fabric placement; cover soil placement, 1st 12" lift
—	—	#67 9-6-96	Finish geotextile separator fabric placement; cover soil placement, 1st 12" lift
—	—	#68 9-7-96	Cover soil placement, 1st 12" lift
—	—	#69 9-9-96	Cover soil placement, 1st 12" lift
—	—	#70 9-10-96	Cover soil placement, 1st 12" lift
#29 9-11-96	—	#71 9-11-96	Cover soil placement, 1st 12" lift; anchor trench compaction & testing
#30 9-12-96	—	#72 9-12-96	Cover soil placement, 1st 12" lift; anchor trench fill & compaction

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET LOG

IDS	PICM	DSR	COMMENTS
#31 9-13-96	—	#73 9-13-96	Finish cover soil placement for 1st 12" lift, finish anchor trench backfill & compaction
—	—	#74 9-14-96	Cover soil placement, 2nd 8" lift
—	—	#75 9-18-96	Cover soil placement, 2nd 8" lift
—	—	#76 9-19-96	Cover soil placement 2nd 8" lift
#32 9-20-96	—	#77 9-20-96	Cover soil placement, 3rd 8" lift / Density testing of East End of Cell.
—	—	#78 9-21-96	Cover soil placement, 3rd 8" lift
#33 9-23-96	—	#79 9-23-96	Cover soil placement - 3rd lift - Density testing
#34 9-24-96	—	#80 9-24-96	cover soil placement - 3rd lift - Density testing
#35 9-25-96	—	#81 9-25-96	Cover soil placement - 3rd lift - Density testing - Extension of leachate pipe set over pipe towards leachate tanks.
#36 9-26-96	—	#82 9-26-96	Cover soil placement - 3rd lift - Density testing
—	—	#83 9-27-96	Cover soil placement - 3rd lift - Rain Delay
#37 9-30-96	—	#84 9-30-96	Cover soil placement - 3rd lift - Density test
#38 10-1-96	—	#85 - 10-1-96	COMPLETE 3rd lift - Density test
—	—	#86 - 10-3-96	Observe leachate pipe placement (south of cell)
—	—	#87 10-7-96	Observe leachate pipe placement & trench
—	—	#88 10-8-96	Observe excavation of leachatie pipe trench
—	—	#89 10-9-96	Observe excavation activities (leachate)
—	—	#90 10-10-96	Observe connection to man hole and pipe placement
#39 10-11-96	—	#91 10-11-96	Backfill trench (partial) Density test; Lift #2
#40 10-14-96	—	#92 10-14-96	Backfill trench; Lift Nos. 3-5; Density tests
#41 10-15-96	—	#93 10-15-96	Backfill trench; Lift Nos. 6 & 7; Density tests
#42 10-16-96	—	#94 10-16-96	Backfill trench; Lift No. 8; Density test
#43 10-17-96	—	#95 10-17-96	Backfill trench; Lift No. 9; Density test
#44 10-21-96	—	#96 10-21-96	Backfill trench; Lift No. 10; Density test

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET LOG

IDS	PICM	DSR	COMMENTS
#45 10-22-96	—	#97 10-22-96	completion of compacted backfill for trench; Lift No. 11; density testing
—	—	#98 10-23-96	vegetative topsoil placement for backfill of trench area; grading of adjacent slope
~~#46 10-28-96~~ J.D.	—	#99 10-28-96	observed & monitored Fabric/stone haul road construction at N. Cell edge
—	—	#100 10-30-96	observed placement, spreading and compaction of second lift of Haul road

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 1

PROJECT NO.: 94-3832, FY96-07

DATE: 6-3-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod (accompanying Ken McCurdy, PE, GEOTEK

WEATHER CONDITIONS: N/A

MEETINGS & RESULTS: Attended pre-construction meeting w/ Paul Waldschlager moderating. Questions of concern to GEOTEK were addressed concerning frequency and type of testing for both the uncompacted borrow material and the in-place compacted material.

DESCRIPTION OF WORK DONE: N/A

DESCRIPTION OF OFF SITE MATERIAL: N/A

ADDITIONAL COMMENTS: N/A

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 2

PROJECT NO.: 94-3832, FY96-07

DATE: 6-4-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: CLEAR & MILD; temperature range - mid 70's to low 80's.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Proof rolled entire site @ existing subgrade. No pumping or deflection observed. Fill production along Row 1, lift 1 & Row 2 from west end of site to approx. G.P. Nos. 778, 779.

Lift 1, Row 1, prepared for compaction & compacted w/ passing tests from west end to GP Nos. 743, 744. Material placed on Row 2, lift 1 was sealed @ end of production day, along w/ Row 1.

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from stockpile on hillside south of site. Field moisture condition of borrow material was monitored per 200 yd³ of loose lift placement by nuclear density method (ASTM D 3017) and ranged from 22% to 23%.

ADDITIONAL COMMENTS: Production for the day was 66 pan loads, yielding a total, uncompacted fill placement of approx. 1,320 yd³. Ave. round trip time per pan load was minimal due to short haul distance.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 3

PROJECT NO.: 94-3832, FY96-07

DATE: 6-5-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: CLEAR; temperature - mid 70's to high 80's. Drying conditions favorable.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Lift 1, Row 1, prepared for compaction & compacted w/ passing tests from GP Nos. 743, 744 to east end of row. Completion of Lift 1, Row 1.

Fill production along Row 2, Lift 1, was placed from GP 802, 803 to east end of row, completing fill placement for lift 1 of this row.

Row 2, lift 1 was rock-picked, scarified, moistured & prepared for compaction. Lift 2, Row 1 was placed from west end of row to approx. GP. Nos. 769, 770 w/o prep. for compaction. Rows 1 & 2 were sealed w/ rubber tire pan @ end of production day.

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from stockpile on hillside south of site. Field moisture condition of borrow material was monitored per 200 yd³ of loose lift placement by nuclear density method (ASTM D 3017) and ranged from 17.6% to 22.2% w/ an ave. of 20.3%, approx. 2% less than previous production day.

ADDITIONAL COMMENTS: Production for the day was 40 pan loads, yielding a total, uncompacted fill placement of approx. 800 yd³. Ave. round trip time per pan load was minimal due to short haul distance.

R. Sherrod / B. Roberts

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V. Area II

REPORT NO.: 4

PROJECT NO.: 94-3832. FY96-07

DATE: 6-6-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: CLEAR; temperature range - mid 70's to low 90s. Drying conditions good.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Lift 1, Row 2, was compacted w/ passing tests from west to east end of row. Completion of Lift 1, Row 2. Placement of Lift 2, Row 1 was completed, from G.P. Nos. 769, 770 to east end of row. Continuation of lift 2 placement on Row 2 throughout entire row. Lift 2, Row 1 was scarified, moisturized, & rock-picked in preparation for compaction. Lift 2, Row 1 was compacted w/ passing tests. Completion of Lift 2, Row 1. Fill placement of Lift 3 on Row 1 while Lift 2, Row 2 was prepared for compaction. Lift 2, Row 2 was compacted w/ passing tests from west end to G.P. Nos. 742, 743. Rows 1 & 2 were sealed w/ rubber tire pan @ end of production day.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from stockpile on hillside south of site. Field moisture condition of borrow material was monitored per 200 yd³ of loose lift placement by nuclear density method (ASTM D 3017) and ranged from 18.5% to 23.6% w/ an avg. of 21.0%.

ADDITIONAL COMMENTS: Drying conditions were very favorable during the afternoon, requiring moisturization of the scarified lift material prior to compaction. Production for the day was 81 pan loads, yielding a total, uncompacted fill placement of approx. 1,620 yd³.

R. Sherrod / Ben Roberts

SIGNATURE(S)

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DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 5

PROJECT NO.: 94-3832, FY96-07

DATE: 6-7-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: FAIR to partly cloudy w/ AM lows in mid 70's & PM highs in high 80's. Brief, late afternoon shower w/ no significant precipitation.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Lift 2, Row 2 was compacted w/ passing tests from G.P. Nos. 742, 743 to east end of row, completing lift 2, Row 2, Subgrade of Row 3 scarified & moisturized in preparation for lift 1. Lift 1, Row 3 placed while Lift 3, Row 1 was prepared for compaction. Lift 3, Row 1 was compacted w/ passing tests across entire row. Lift 3, Row 2 was placed w/o preparation for compaction while Lift 1, Row 3 was prepared for compaction. Lift 1, Row 3 was compacted w/ passing tests from west end of row to GP Nos. 759, 760. Beginning of lift 4 placement on Row 1. Rows 1, 2, & 3 were sealed w/ rubber tire pan @ end of production day.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from stockpile on hillside South of site. Field moisture of borrow material was monitored per 200 yd³ of loose lift placement by nuclear density method (ASTM D 3017) and ranged from 19.7% to 23.9% w/ ave. of 21.4%. Moisturization brought the average moisture of the compacted fill material up to 24.0%. Extensive moisturization was required to maintain moisture of lift material during preparation for compaction process.

ADDITIONAL COMMENTS: Ingersoll-Rand smooth roller machine brought on-site to produce smooth lift surface of compacted lift prior to testing, thus eliminating the need to fill in voids w/ sand. Production for the day was 66 pan loads, yielding a total, uncompacted fill placement of approx. 1,320 yd³.

R. Sherrod / B. Roberts

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 6

PROJECT NO.: 94-3832, FY96-07

DATE: 6-10-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: Partly Cloudy to Cloudy w/ evening showers; temp. mid to high 70's; drying conditions - fair

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Arrived on-site @ 12:30 pm due to rain. Lift 3, Row 2 was rockpicked & prepared for compaction. Lift 2, Row 3 was compacted w/ passing tests from G.P. Nos. 759, 760 to 825, 826. The area on the east end consisting of G.P. Nos. 825, 827 to 830, 832 (flat area) & including any portions of compacted slopes on east end to be tested will be treated as a separate test section. This area is temporarily serving as drainage for the site. By EOB, Lift 3, Row 2 was compacted w/ passing tests across entire row. Scarification of Row 1 w/ placement of Lift 4 followed by prep. for compaction. Lift 4, Row 1 was compacted by EOB but not tested due to onset of rain @ 6:30 pm. Lift 2, Row 3 was placed & sealed w/o prep. for compaction by EOB.

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from stockpile on hillside south of site. Two loads of clay mixed w/ topsoil were accidently placed but immediately remediated by removal w/ scraper pan. Field moisture of borrow material was monitored per 200 yd^3 of loose lift placement and ranged from 23.2% to 26.6% w/ ave. of 24.7%. No significant moisturization of material required due to previous rain & fair drying conditions.

ADDITIONAL COMMENTS:

Production for the day was 57 loads, yielding a total, uncompacted fill placement of 1,140 yd^3. Overall, it is now estimated that at least one equivalent (6") lift of compacted & passed fill material exists in situ on the site.

R. Sherrod / Ben Roberts

SIGNATURE(S)

Original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 7

PROJECT NO.: 94-3832, FY96-07

DATE: 6-11-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / Brian Roberts

WEATHER CONDITIONS: Cloudy w/ afternoon thundershowers; temp. mid-70's; drying conditions - poor; threat of rain

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: On-site @ 12:30 pm @ request of client awaiting favourable enough drying conditions for lift placement. Observed scarification of Row 4 in preparation for placement of Lift 1. Fill placement did not occur due to abrupt afternoon thundershower. Drying conditions did not improve enough to allow testing of compacted Lift 4, Row 1 from previous production day. Picked up green-tagged soil samples & delivered sand cone apparatus to site for alternative density testing of 1st equivalent compacted lift of material placed on site.

DESCRIPTION OF OFF SITE MATERIAL:

N/A

observation:

ADDITIONAL COMMENTS: Mechanical rock-picking w/ Harley rock rake & Dagelman rock picker is hindered by too much moisture in scarified lift material, increasing the need for hand-labor picking of rocks under wet conditions.

R. Sherrod / Brian Roberts

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 8

PROJECT NO.: 94-3832, FY96-07

DATE: 6-13-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / Brian Roberts

WEATHER CONDITIONS: cloudy w/ afternoon thundershowers; temp. mid-70's; drying conditions - poor; threat of rain

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Arrived on-site @ request of client to perform testing awaiting sufficient drying out of site. Drying conditions improved for approx. 1hr but then afternoon thundershower moved in. No testing performed. No fill placed.

DESCRIPTION OF OFF SITE MATERIAL: N/A

ADDITIONAL COMMENTS: N/A

R. Sherrod / B. Roberts

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 9

PROJECT NO.: 94-3832. FY96-07

DATE: 6-14-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: Clear, warm & humid; temp. range mid to high 80's; drying conditions fair to favorable by evening.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Arrived on-site @ 12:30 pm @ request of client to allow for morning drying time. Surface of Lift 4, Row 1 was smoothed w/ I-R smooth cylinder roller prior to compaction testing. (Lift 4, Row 1 was compacted on 6-10-96.) Lift 4, Row 1 passed completely on the density/moisture curve. Duplicate of Test #1, Lift 4, Row 1 was taken using the sand-cone method (ASTM D 1556) for comparison w/ the nuclear density gage method. Lift ~~#~~ 1, Row 4 placed w/o prep. for compaction; Lift 2, Row 3, placed & sealed on 6-10-96, was scarified, rock-picked, prepared for compaction, & compacted w/ passing tests from west end to G.P. Nos. 759, 760. Lift 3, Row 2 scarified & moisturized in prep. for Lift 4 placement. Approx. 1/2 of Lift 4, Row 2, from west end to mid-way of row, had been placed by EOB. Site ~~sealed w/ rubber-tire roller @ EOB.~~

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from stockpile on hillside south of site. Field moisture of borrow material was monitored per 200 yd^3 of loose lift placement & ranged from 23.0% to 26.0% w/ ave. of 24.3%. Little moisturization of material required due to near optimal field moisture.

ADDITIONAL COMMENTS: Drying conditions were not favorable until late afternoon

Production for the day was 66 pan loads, yielding a total, uncompacted fill placement for the day of ~1,320 yd^3. Total, uncompacted fill placement since production began is now estimated to be in the range of 7,000 yd^3 - 7,500 yd^3.

R. Sherrod / Ben Roberts

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 10

PROJECT NO.: 94-3832. FY96-07

DATE: 6-15-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: Clear, warm & humid; temp. range mid 70's to high 80's; dry conditions fair to favorable by afternoon.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Make-up day for production days lost due to rain from 6-11-96 through 6-13-96. Lift 2, Row 3, prepared for compaction on 6-14-96; was compacted w/ passing tests from G.P. Nos. 759, 760 to 825, 826, completing compaction testing for Lift 2, Row 3. Lift 4, Row 2 placement was finished. Lift 1, Row 4 was scarified, rock-picked, prepared for compaction, & compacted w/ passing tests from west end to GP. Nos. 826, 827, completing compaction testing for Lift 1, Row 4. [As in the case of Row 3, a small section @ the east end of Row 4 will be treated as part of a separate testing zone (GP Nos. 825, 827 to 830, 832).] By EOB, Lift 2, Row 3 was left sealed w/ no new lift placement. Lift 4, Row 2 had been rock-raked & sealed around winnowing rows. (This row was hand rock-picked to approx. 150' from west end.) Lift 1, Row 4 was left sealed w/ smooth roller surface. Lift 5, Row 1 was placed w/o prep. for compaction & sealed w/ rubber-tire roller.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from stockpile on hillside south of site. Field moisture of borrow material was monitored per 200 yd^3 of loose lift placement & ranged from 22.7% to 25.7% w/ ave. of 23.9%.

ADDITIONAL COMMENTS: Surface of site was conditioned w/ moisturization by tanker truck after sealing @ EOB. Surface condition of site will be maintained by moisturization on 6-16-96.

Production for the day was 60 pan loads, yielding a total, uncompacted fill placement for the day of approx. 1,200 yd^3, w/ an estimated grand total to date of ~8,500 yd^3.

R. Sherrod / Brian Roberts

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 11

PROJECT NO.: 94-3832, FY96-07

DATE: 6-17-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear & warm w/ light steady breeze in afternoon; temp. range, mid 70's to high 80's. Drying conditions good.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Lift 4, Row 2 was prepared for compaction & compacted w/ passing tests across entire row. Lift 3, Row 3 was placed during prep. & compaction phase of Lift 4, Row 2. Lift 5, Row 1 was scarified, rock-picked, moisturized, & compacted w/ passing tests across entire row. Lift 3, Row 3 was prepared for compaction & compacted while Lift 2, Row 4 was placed w/o preparation for compaction. By EOB, Lift 3, Row 3 had passing tests across entire row (excluding separate test zone @ east end). Surface of site was moisturized & sealed w/ rubber-tired pans.

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from stock pile on hillside south of site. Field moisture of borrow material (monitored per 200 yd3) ranged from 22.6% to 26.5% w/ ave. of 24.8%. Moisturization of scarified lift material was necessary by late afternoon due to temp. & favorable drying conditions.

ADDITIONAL COMMENTS:

Production was high w/ 107 pan loads, yielding a total, uncompacted fill placement for the day of approx. 2,150 yd3 w/ an estimated grand total to date of ~10,750 yd3.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 12

PROJECT NO.: 94-3832, FY96-07

DATE: 6-18-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: Fair to partly cloudy w/ light breeze in afternoon; temp. range high 70s (AM) to high 80s/low 90s (PM). Drying conditions favorable to excellent by late afternoon.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Production on Row 1 was idle, awaiting surveying of elevations. Lift 5, Row 2 was placed while Lift 2, Row 4 was scarified, rock-picked, & prep. for compaction. Lift 2, Row 4 was compacted w/ passing tests from west end to GP Nos. 826, 827, completing compaction testing for Lift 2 of this row as defined (i.e., excluding separate test zone @ east end). Lift 4, Row 3 was placed w/o prep. for compaction while Lift 5, Row 2 was prepared for compaction. By EOB, Lift 5, Row 2 was partially compacted w/approx. 2 passes across entire row while Lift 3, Row 1 was placed approx. 3/4 of the way. Site was sealed @ EOB w/ rubber-tire pans.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from stockpile on hillside south of site. Pans moved over to begin scraping new surface area of drier material to open up wider excavation area. The drier material required extensive moisturization of scarified lift material prior to compaction. Field moisture of borrow material ranged from 20.0% to 25.2% w/ave. of 22.4%.

ADDITIONAL COMMENTS: Highest production day thus far in terms of total (uncompacted, un-prepped) material placed. Production for the day was 154 pan loads, yielding a daily total of uncompacted fill placement of approx. 3,100 yd³ w/ an estimated grand total to date of ~ 14,000 yd³.

R. Sherrod / Ryan Roberts

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V. Area II

REPORT NO.: 13

PROJECT NO.: 94-3832, FY96-07

DATE: 6-19-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: CLEAR & MILD; temp. range mid 70's (AM) to upper 80's (PM); drying conditions favorable.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Surface condition of Row 1 maintained w/ moisturization. Surveying of elevations indicates Row 1 will require a thin 6th lift in most areas w/ two small areas indicating cut. Finished placement of Lift 3, Row 4. Compaction was completed on Lift 5, Row 2 while Lift 4, Row 3 was prepared for compaction. Lift 5, Row 2 passed the density/moisture curve tests across entire row. Lift 4, Row 3 was compacted w/ passing tests from west end to G.P. Nos. 825, 826, completing compaction testing for lift 4 of this row as defined (i.e., excluding separate test zone @ east end). Lift 3, Row 4 was prepared for compaction and compacted w/ passing tests from west end up to G.P. Nos. 760, 761.

DESCRIPTION OF OFF SITE MATERIAL: Site was moisturized & sealed @ EOB w/ rubber tire pass.

Type A CLAY from stockpile. Field moisture of borrow material ranged from 24.7% to 26.7% w/ ave. of 25.5%. However, most of the borrow material being worked for compaction had already been placed and had to be moisturized due to favorable drying conditions

ADDITIONAL COMMENTS: Production for the day consisted primarily of preparing & compacting lifts that were placed on previous production day (6-18-96). Finishing placement of Lift 3, Row 4 resulted in 32 pan loads placed, yielding a daily total of approx. 650 yd³ of uncompacted fill placement w/ a grand total to date of approx. 14,500 yd³.

R. Sherrod / B. Roberts

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 14

PROJECT NO.: 94-3832, FY96-07

DATE: 6-20-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: CLEAR & WARM; humid in AM; temp. range upper 70's to low 90s; drying conditions favorable.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Lift 5, Row 3 was placed while Lift 3, Row 4 was finished w/ prep. for compaction. Lift 3, Row 4 was compacted w/ passing tests from G.P. Nos. 760, 761 to east end of row (excluding separate test zone @ east end beyond G.P. Nos. 826, 827). Lift 5, Row 3 was prepared for compaction and compacted through west end to G.P. Nos. 759, 760. During this process, borrow material placement focused on using pans & roller grader to place Lift 4, Row 4 while alternating w/ use of tandem trucks & D-8 high track dozer to place Lift 1, Row 5, an approx. 10' wide strip adjacent to southern markers of Row 4. By EOB, Lift 5, Row 3 passed compaction testing from west end to G.P. Nos. 759, 760. Lift 4, Row 4 & Lift 1, Row 5 placed to G.P. Nos. 772, 774. Site moisturized & sealed w/ rubber tire pans to prevent moisture loss.

DESCRIPTION OF OFF SITE MATERIAL: Type A CLAY from stock pile on hillside south of site. Field moisture of borrow material ranged from 20.5% to 26.2% w/ ave. of 23.5%. Moisturization of scarified lift material required to maintain moisture.

ADDITIONAL COMMENTS: Additional loads required to tie in placement of Lift 1, Row 5 w/ Lift 4, Row 4 to begin establishing berm & drainage ditch running east-west along southern boundary of Area II. 87 pan loads & 48 truck loads of loose borrow material were placed w/ an estimated production total of 2,500 yd³ for the day and a grand total to date of 17,000 yd³.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 15

PROJECT NO.: 94-3832, FY96-07

DATE: 6-21-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: CLEAR & WARM w/ humid conditions in AM. Temp. range from upper 70's to low 90's; drying conditions favorable.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Short production day. An additional 8 pan loads of borrow material were placed alternately on Lift 1, Row 5 & Lift 4, Row 4 moving the placement (from west to east) in this area up to GP Nos. 775, 777 (from 772, 774 on 6-20-96). Preparation for compaction was finished for Lift 5, Row 3. By EOB, Lift 5, Row 3 was compacted w/ passing tests from G.P. Nos. 759, 760 to east end of row as defined (i.e., excluding separate test zone @ east end). Site was moisturized & sealed @ EOB w/ rubber tire pans. Surface of site will be conditioned w/ moisture over weekend, in absence of rain, to prevent drying & cracking.

DESCRIPTION OF OFF SITE MATERIAL: Type A1 CLAY from stockpile.

Not enough borrow material placed to reach 1st 200 yd³ mark for field moisture test.

ADDITIONAL COMMENTS: N/A

R. Sherrod / Ron Rinns

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 16

PROJECT NO.: 94-3832, FY96-07

DATE: 6-24-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: Partly cloudy, hot & humid; temperature range upper 70's (am) to mid 90's (pm); afternoon thundershower

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: An additional 18 pan loads of borrow material were placed alternately on Lift 4, Row 4 & Lift 1, Row 5 to finish single lift placement along these rows. Material along rows 4 & 5 was graded to establish slope and fall adjacent to boundary of Area III. Lift material along Rows 4 & 5 was rock-raked but not hand-picked due to production day cut short by thunderstorm in late afternoon. Observed removal of topsoil from embankment on west end in preparation for lift placement on western slope of site. Observed completion of excavation through roadway on east end for drainage of site into pond.

DESCRIPTION OF OFF SITE MATERIAL:

Type A CLAY from stockpile on hillside south of site.

ADDITIONAL COMMENTS: Surface of site was conditioned w/ approx. 50,000 gal of water over weekend (6-22 & 6-23). No dessication was observed. Grand total of borrow material placed is now approx. 17,500 yd3 to date.

R. Sherrod / Barn Roberts

SIGNATURE(S)

DAILY SUMMARY REPORT

original

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 17

PROJECT NO.: 94-3832, FY96-07

DATE: 6-25-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: Partly cloudy & humid in am; clear & warm w/ light breeze & drier air in pm hrs; temp. range mid-70's to upper 80's.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Preparation for compaction & compaction of Lift 4, Row 4 & Lift 1, Row 5. Density/moisture curve tests were passing for both rows. Placement, preparation, & compaction w/ passing tests for Lift 1, west slope. Site was moisturized and sealed @ EOB.

DESCRIPTION OF OFF SITE MATERIAL: Type A CLAY from stockpile on hillside south of site. Borrow material was rock-raked & mechanically rock-picked @ borrow area prior to hauling. Material was rock picked by hand after loose placement & grading on slope.

ADDITIONAL COMMENTS: Approx. 220 yd³ of loose borrow placed in single lift on west slope and flat area adjacent to tow of slope. Placement was by 14 tandem truck loads. Pans did not run for lift placement.

R. Sherrod / B. Roberts

SIGNATURE(S)

Original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 18

PROJECT NO.: 94-3832, FY96-07

DATE: 6-26-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear & mild w/ slight cooling trend & light breeze. Temp. range low 70's to upper 80's by late afternoon. Drying conditions excellent.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Lift 2, west slope, placed, prepared, & compacted w/ passing tests. Placement of Lift 5, Row 4 & Lift 2, Row 5. Lift 2, Row 5 was prepared & compacted w/ passing tests. By EOB, Lift 5, Row 4 was prepared & partially compacted from west end to G.P. Nos. 772, 773. Substantial moisturization of scarified lift material was required by late afternoon due to light breeze & excellent drying conditions. Lift 3, west slope, was placed w/o prep. for compaction by EOB. Graded lift material left uncompacted this production day was moisturized but not sealed due to no threat of rain in forcast.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from hill side south of site. Borrow material hauled by truck for placement on west slope was rock-raked & mechanically rock-picked @ borrow site prior to loading & hauling.

ADDITIONAL COMMENTS: Production for the day was high w/ 6.3 pan loads and 13 tandem truck loads, yielding an estimated daily total of 1,480 yd3 of uncompacted fill placement and a grand total to date of approx. 19,000 yd3.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 19

PROJECT NO.: 94-3832, FY96-07

DATE: 6-27-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear & warm w/ light breeze; temp. range, low 70's to upper 80's, low 90's by late afternoon; drying conditions excellent,

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Placement, preparation, & compaction of Lift 3, Row 5 w/ passing tests. Finish preparation for compaction of Lift 5, Row 4 while placing Lift 3, west slope w/ borrow material hauled by trucks. Preparation & compaction of Lift 3, west slope w/ passing tests. Lift 4, Row 5 and Lift 4, west slope w/ replaced while finishing prep. for compaction of Lift 5, Row 4. By EOB, Lift 5, Row 4 was compacted w/ passing tests from west end through G.P. Nos. 760; 761. Surface of site was moisturized & sealed.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from hillside south of site (Area III). Borrow material hauled by truck was mechanically rock picked @ borrow site prior to placement on west slope and then hand rock-picked. By late afternoon, extensive moisturization of scarified lift material for Lift 5, Row 4 was required @ east end due to excellent drying conditions.

ADDITIONAL COMMENTS:

Production for the day was 9 pan loads & 12 truck loads, yielding approx. 280 yd³ of uncompacted fill placement for a grand total of ~19,500 yd³ to date.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 20

PROJECT NO.: 94-3832. FY96-07

DATE: 6-28-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear & warm w/ hazy conditions in early am; temp range upper 70s to low 90s; drying conditions favorable.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Completion of compaction of Lift 5, Row 4 w/passing tests while finishing preparation of Lift 4, Row 5 and Lift 4, west slope. Lift 4, Row 5 and west slope were compacted w/ passing tests. Placement of Lift 5, Row 5 and Lift 5, west slope. Preparation and compaction of Lift 5, Row 5 while preparing Lift 5, west slope. Lift 5, Row 5 and west slope were compacted w/ passing tests. Except for east end berm & adjacent flat area (G.P. Nos. 825, 827 to 830, 832), site is now essentially @ final subgrade w/ mainly cut of approx. 0.4 ft on southern half (Rows 3 & 4) and fill of approx. 0.1 - 0.2 ft on northern half (Rows 1 & 2).

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from hillside south of site (Area III).

ADDITIONAL COMMENTS: An additional 15 pan loads, or approx. 300 yd³ of loose borrow material, was hauled from hillside to complete Lift 5 along Row 5 and west slope. Grand total of borrow material placed to date is approx. 20,000 yd³. Site will be moisturized over weekend (6-29 & 6-30) to maintain surface condition.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 21

PROJECT NO.: 94-3832, FY96-07

DATE: 7-1-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod / B. Roberts

WEATHER CONDITIONS: Warm & humid w/ haze in am; hot & sticky pm; Temp. range upper 70's to mid 90's; drying conditions favorable in pm.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Beginning phase for obtaining final subgrade of clay liner over main flat area of site. Thin lift 6 placed along west slope (approx. 0.2 to 0.5 ft); prepared for compaction, & compacted w/ passing tests. Thin lift 6 (approx. 0.2 - 0.4 ft) placed along an approx. 10 ft. wide strip of Row 1 adjacent to north-side tie-in w/ Area I (G.P. 708 to 805). Very thin fill placement (< 2 in., too thin to test; essentially retest of Lift 5) along an approx. 10' wide strip adjoining Rows 1 & 2 (G.P. 707 to 770) and Rows 2 & 3 (GP 706 to 723; 730 to 747). In addition, compacted fill was placed in excavated area of east end embankment near manhole 2-A, to protect manhole (not yet firmly set) from being moved by flooding from sudden thunderstorm. Area of compacted fill placement approx. 10 ft x 10 ft. Fill placed and compacted per lift in five approx. 6 inch lifts, compacting overall to approx. 2 ft. of berm thickness. Compacted fill was tested for % compaction using trench test specification. Site was moisturized & sealed @ EOB.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from hillside south of site (Area III).

ADDITIONAL COMMENTS: An additional 35 pan loads, or approx. 700 yd³ of borrow material was required for the work described, most of this being used in the Lift 6 placement on west slope & along Row 1 adjacent to Area I tie-in. Grand total to-date approx 20,500 yd³.

R. Sherrod / Ben Roberts

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 22

PROJECT NO.: 94-3832, FY96-07

DATE: 7-2-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Hot & humid, upper 70's to mid 90's. Drying conditions fair in am hours, favorable by late afternoon.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Continuation of obtaining final subgrade of clay liner. Preparation for compaction & compaction of Lift 6, Row 1 along an approx. 10 ft. wide strip adjoining Area I tie-in to toe of slope. Three density/moisture curve tests were run along this strip w/ passing tests. Placement of Lift 1, east end, a small section from GP Nos. 825, 827 to toe of slope, on north side and embankments on east side (i.e., flat area only, not including slopes). Lift 1, east end was prepared for compaction & compacted w/ passing tests by EOB. Thin Lift 6 placement along an approx. 10' wide strip of Row 4 adjoining Row 5 and an approx. 8' wide strip of Row 5, with fill requirements ranging from approx. 0.1 ft to 0.4 ft, but mostly in the range of 0.2 ft. According to survey elevation markers, Row 3 needs no more fill. Placement of east end pipeline, 6 inch pipe, running N -> S, east of east-end embankment and connecting manhole south from drainage ditch tie-in of Area III to manhole 2-A, which will drain site into leachate collection system. Observed that bedding of pipe was approx. 18 inches of #57 washed stone. Placement specifications for pipe were not.

DESCRIPTION OF OFF SITE MATERIAL:

ADDITIONAL COMMENTS: Material Type A clay from hillside south of site (Area III). Pan loads = 18, approx. 360 yd³, to date; grand total of approx. 20,850 yd³. Observed excavation through east compacted berm on south side of manhole 2-A and placement of 18" pipe as temporary measure to drain site around manhole until firmly set.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 23

PROJECT NO.: 94-3832, FY96-07

DATE: 7-3-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear w/ light breeze and cooler, drier air in afternoon; temp. range mid 70's to upper 80's; drying conditions favorable to excellent in afternoon hours.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continuation of work toward final subgrade of clay liner. Preparation for compaction & compaction of Lift 6, placed on 7-2-96 along thin strips adjoining Rows 4 & 5. Six density/moisture curve tests taken, 3 in each row, w/ passing tests. Placement of Lift 2, East end, w/o prep. for compaction. Approx. 6,000 gal. of water used to moisturize site to prevent dessication in afternoon hours due to excellent drying conditions aided by breeze. Site was sealed @ EOR and will be continously monitored and moisturized over long holiday weekend (7-4 through 7-7-96) to maintain surface condition. [Note: Logs of gals. of water used and dates are available @ Landfill V office.]

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from hillside south of site (Area III).

ADDITIONAL COMMENTS: Pans did not run. 9 tandem truck loads, or approx. 140 yd^3 of loose borrow material, were hauled to place lift 2 @ east end. Grand total of borrow material placed to date is now approx. 21,000 yd^3.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 24

PROJECT NO.: 94-3832, FY96-07

DATE: 7-8-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Cloudy; overcast w/ rain in forcast; light breeze; drying conditions, poor. Temp., upper 70's to low 80s.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continuation of work toward final subgrade of clay liner. Surface of site was maintained w/ moisturization over long weekend holiday, w/ no signs of dessication evident. Roller grader operator working w/ surveyors to obtain final subgrade of clay liner, flat areas, within specified tolerance. Rock pickers hand picking gravel out of tie-in ~~area~~ zone w/ Area I, up to town ~~offsite~~ north. Preparation for compaction & compaction of Lift 2, east end w/ passing tests. [Note: east end area covers only about 5,000 ft^2; thus, only 2 tests taken per lift.] Rained out @ ~11:15 am. Production halted for the day.

DESCRIPTION OF OFF SITE MATERIAL:

N/A

ADDITIONAL COMMENTS: Rained out before loads could be hauled. No additional borrow material placed. Grand total for site remains to date approx. 21,000 yd^3 of loose borrow material placed.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 25

PROJECT NO.: 94-3832, FY96-07

DATE: 7-9-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Partly cloudy & mild w/ light breeze; temp. range, low 70's to mid 80's; drying conditions favorable by afternoon.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Site received more than one inch of rain for the 24 hr period beginning w/ the downpour ~ 11:00 am, 7-8-96. Site was allowed adequate drying time w/ production beginning about 1:00 pm, this date. Surveying measurements of main flat area of site continue w/ roller grader fine clipping to establish smooth surface. Lift 3, east end, placed. Surveying establishes that a section of the NE slope, from approx. G.P. Nos. 644, 655 to 639, 618 requires about 1 ft. of compacted fill to attain initial subgrade prior to lift placements for clay liner in this area. This material was placed in two approx. 6 inch lifts & compacted w/ passing tests based on 95.0% compaction and field testing spec. (min. 1 compaction test per 250 linear feet). Lift 1, NE slope, for clay liner was then placed, prepared for compaction, & compacted w/ passing tests.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from hillside south of site (Area III).

ADDITIONAL COMMENTS: An additional 17 per loads, or approx. 340 yd3 of loose borrow material was placed, yielding a grand total to date of approx. 21,350 yd3.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 26

PROJECT NO.: 94-3832, FY96-07

DATE: 7-10-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear & mild w/ light breeze & low humidity; cool front has moved in; temp. range: low 70's to low 80's; drying conditions excellent.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Continuation of roller grader fine clipping main flat area of site w/ hand gravel picking & slick rolling (i.e., moisturization of surface followed by I-R smooth roller). Main portion of site is now @ final subgrade for clay liner, excluding small flat area @ far east end & associated NE slope, extending east from Area I tie-in, & east berm. East berm requires extensive build-up to reach initial subgrade for clay liner due to excavation of trenches for laying of 6" drainage pipe. Lift 3, east end, placed on 7-9-96, was prepared for compaction & compacted w/ passing tests. Lift Nos. 2 & 3, NE slope, were placed, prepared for compaction, & compacted w/ passing tests per lift. Lift 4, east end, placed, prep. for compaction, & compacted w/ passing tests. Drainage pipe laid in east berm & thru road was covered w/ approx. 12 inches of #67 washed gravel & thin layer of Type A soil material to protect pipe from heavy equipment during compacted lift placements to fill in excavated areas.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from hillside south of site (Area III).

ADDITIONAL COMMENTS: A total of 38 pan loads & 8 tandem truck loads, or approx. 860 yd³ of loose borrow material was placed, yielding a grand total to date of approx. 22,260 yd³.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 27

PROJECT NO.: 94-3832. FY96-07

DATE: 7-11-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Overcast (am), changing to partly cloudy (pm) w/ mild breeze; temp. range low 70s to mid 80s - drying conditions fair to favorable by late afternoon.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continuation of gravel picking & slick rolling main portion of site @ final subgrade for clay liner. Excavation of trench along top of west slope in preparation of beginning area for tie down of plastic liner, due to arrive next week. Continuation of fill production @ east end. Lift 4, NE slope placed, prep. for compaction, & compacted w/ passing tests for clay liner production. Simultaneous subgrade lift placements w/ compaction per lift to fill in trench excavated in east berm & road for pipeline installation. By EOB, 3 subgrade lifts had been placed & compacted w/ passing tests (for 90 compaction) in east berm & road excavated areas. For clay liner, Lift 5, NE slope & Lift 5, east end flat area were placed, prepped, & compacted w/ passing tests by EOB.

DESCRIPTION OF OFF SITE MATERIAL: ⇓ Type A clay from hillside south of site (Area III).

ADDITIONAL COMMENTS: A total of 30 pan loads & 26 tandem truck loads, or approx. 1,000 yd³ of loose borrow material was placed, yielding a grand total to date of approx. 23,200 yd³.

K. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 28

PROJECT NO.: 94-3832, FY96-07

DATE: 7-12-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Partly cloudy & mild w/ light breeze; temp. range lows 70's to upper 80's; drying conditions good.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continuation of gravel picking & slick rolling main portion of site. Surveying shows final subgrade has been reached for clay liner @ eastend in flat areas, w/ most areas cut & one area fill in SE corner near toe of east berm. This area will be filled once initial subgrade of east berm has been finalized by surveying for start of clay liner lift placements on berm. Work continues to fill in excavated trenches for pipeline installation in east berm & road. By EOB, two lifts (Lift Nos. 4 & 5) had been placed and compacted w/ passing tests (for % compaction) in these trench areas. Northeast slope is now mostly @ final subgrade for clay liner except @ top of slope, which will require approx. 0.7 to 1.2 ft more material in places. Work was deferred on N.E. slope @ top due to multiplicity of tasks & limited no. of operators. Installation of pipeline running west from manhole 2-A to just beyond toe of clay liner for east berm. Specification calls for pipeline to be bedded in & covered w/ gravel to within 3 ft of initial subgrade toe for E. berm. This specification was met by EOB.

~~DESCRIPTION OF OFF SITE MATERIAL:~~

ADDITIONAL COMMENTS: Type A clay from hillside south of site. 12 truckloads, or approx. 200 yd³ of material was hauled for placement in east berm & road trenches. Grand total of material to date is approx. 23,400 yd³.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 29

PROJECT NO.: 94-3832, FY96-07

DATE: 7-13-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Cloudy, warm & humid w/ periods of light drizzle; temp. range mid 70's to upper 80's; drying conditions poor to fair; short rain event in afternoon toward end of shift.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Extension of pipeline running west from manhole 2-A (w/ lip extending just beyond toe of clay liner for east berm) was bedded in & covered w/ compacted clay from 3 to 4 ft back from initial subgrade toe of east berm, in agreement w/ specifications. Compaction was performed by hand w/ hand-held compaction tamper. Remaining excavation line was then filled by machine w/ loose approx. 6 inch lifts compacted w/ CAT CP-563 vibratory compactor. Flat area @ east end was graded w/ roller grader to obtain cut within specified tolerance. More fill was placed & compacted on the excavation trench of the E. Berm running N → S. The excavated areas of the east berm are now almost back to the original grade of the berm but not yet to the elevations required for placement of the clay liner.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from hillside south of site (Area III).

ADDITIONAL COMMENTS: Short rain event in afternoon demonstrated pipe running west from manhole would conduct water from the site. An additional trench was excavated on the south side (connection w/ area III) through the east berm in case of a large rain event. An additional 26 (small) tandem truck loads were hauled for fill placement in the excavated pipeline trench areas.

R. Sherrod

SIGNATURE(S)

Grand total of borrow material placed to date, approx. 23,800 yd^3.

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

PROJECT NO.: 94-3832, FY96-07

CLIENT: L.M.E.S.

REPORT NO.: 30

DATE: 7-16-96

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: (am) overcast w/ low clouds & high humidity; changing to hazy, hot & humid w/ fair drying conditions in pm hours; temp. range in upper 70's to upper 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Some silting of site surface due to rain events on 7-14 & 7-15-96. [Note: production rained out on 7-15-96.] Pumps worked in conjunction w/ drainage system @ east end to keep ponding in east basin minimized. Approx. 1 tandem truckload of silt accumulation @ east end removed by Liebherr & truck & hauled away. Site slick rolled & gravel picked in all areas of clay liner meeting final survey approval. Continuation of compacted lift production (for % compaction testing) on east berm to attain finitial subgrade for clay liner placement. Clay liner placement, lift 1, east berm & lift 6, northeast slope. These lifts were prepared & compacted w/ passing tests for density/moisture permeability specification by EOA. Continued compacted lift production (through lift 9) to fill in roadway excavation for drainage pipe.

DESCRIPTION OF OFF SITE MATERIAL: Type A clay from hillside south of site (Area III). Borrow material running about 2 to 3% higher in moisture than normal due to rain events on previous day. Little moisturization required until late afternoon.

ADDITIONAL COMMENTS:

A total of 30 tandem truckloads, or approx. 500 yd3 of borrow material was hauled to accomplish the work described. Grand total to date is approx. 24,300 yd3.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 31

PROJECT NO.: 94-3832. FY96-07

DATE: 7-17-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Partly cloudy, hazy, mild & humid w/ light breeze; temp. range upper 70's to low 90's; drying conditions fair.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continuation of clay liner lift placements (lifts 2-5) for east berm & tie-in w/ NE slope. Continuation of compacted lift placements (w/ % compaction testing) to fill in excavation for drainage pipe through road. By EOB, compacted fill material had been placed & passed through lift No. 13 in road cut area. Clay liner lift placements, Lift Nos. 2-5, E. berm, were prepared, compacted & tested per lift w/ passing tests. East end, flat area, underwent final grading for surveying approval. Much of the cut material was used in lift placements on the east berm. Remainder of

DESCRIPTION OF OFF SITE MATERIAL: site was slick-rolled throughout the day.

Type A clay from hillside south of site (Area III). Borrow material continues to run approx 2% higher than normal in moisture due to rain events on Sunday & Monday (7-14 & 7-15-96) and only fair drying conditions w/ high rel. humidity.

ADDITIONAL COMMENTS:

A total of 9 truckloads & 3 pan loads of base borrow material, or approx. 200 yd³, were delivered to the site for the work described. Borrow material placement now stands to-date @ 24,500 yd³ grand total.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V. Area II

PROJECT NO.: 94-3832. FY96-07

CLIENT: L.M.E.S.

REPORT NO.: 32

DATE: 7-18-96

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Fair w/ light breeze; temp. range upper 70's to high 80's (low 90's w/ heat index); drying conditions favorable.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continuation of compacted lift placements in road excavation area. Final subgrade for fabric & gravel placement reached @ Lift No. 16. Clay liner lift production for Lift No. 6, east berm to obtain required surveyed elevation markers. Lift #7, NE slope placed mainly @ tow & top to meet required elevations for clay liner, w/ thin cut along grade of slope in some areas. Placement of landscaping material to establish correct shoulder of road on east side sloping down toward holding pond. Observed excavation and installation of approx. 7 to 8 ft of bentonite collar around pipe extending west from M.H. 2-A into drainage line zone of site @ east end. ~~DESCRIPTION OF OFF SITE MATERIAL:~~ Bentonite collar was placed from tow of subgrade, east berm, to tow of clay liner for east berm, w/ approx. 3 to 4 ft of clear pipe extension. Specifications were observed to be followed for bentonite collar installation. By EOB, all tests were passing for compacted lift placements, both clay liner & % compaction testing.

ADDITIONAL COMMENTS: Borrow material was Type A from hillside south of site (Area III). 26 tandem truck loads were delivered to the site. Grand total of placement row stands @ approx. 25,000 yd^3, within errors of estimation. One last proctor sample (5,000 yd^3 sampling) collected to satisfy laboratory testing requirements.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 33

PROJECT NO.: 94-3832, FY96-07

DATE: 7-19-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Fair & mild w/ light breeze & lower humidity; temps. range upper 70's to high 80's; drying conditions favorable.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Final surveying verification of elevations for clay liner @ all grid pts., within specified tolerance. Observed placement of fabric on compacted clay subgrade of road back-fill area, followed by 2 layers of gravel base & crusher run (approx. 18 inches total thickness to final grade). Gravel layers compacted w/ I-R smooth roller. Installation of 18" metal-flange type storm drain pipe in ditch running along west side of road by southern. Storm drain pipe was placed from point approx. in-line w/ M.H. 2-A to drain tile running beneath road to pond. Storm drain covered w/ cobbles (rip-rap) & then approx. 2" stone. Eventually will ~~DESCRIPTION OF OFF SITE MATERIAL:~~ be covered w/ gravel base to a level even w/ road to allow access @ east end into site for trucks hauling waste. Plastic liner scheduled for start of installation on Mon., 7-22-96, weather permitting.

ADDITIONAL COMMENTS: N/A

R. Sherrod

SIGNATURE(S)

Set 2 of 2

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 41

PROJECT NO.: 94-3832. FY96-07

DATE: 7-29-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari / Ron Sherrod

WEATHER CONDITIONS: Partly cloudy & mild; temp. range mid-70's to low 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Final inspection & testing of geotextile fabric & geomembrane liner.

Sample of crushed aggregate material for use in leachate collection layer obtained @ the source (Rogers Group Quarry, Oak Ridge, TN) for laboratory testing of grain sizes.

Placement of aggregate layer is scheduled to begin 7-30-96, provided grain size analysis conforms to construction specifications.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed & washed limestone gravel w/ grain size spec. limits designed for leachate collection layer.

ADDITIONAL COMMENTS: Laboratory testing performed on sample of leachate collection aggregate obtained @ the stockpile source to confirm specified grain size limits per ASTM D 422.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 42

PROJECT NO.: 94-3832. FY96-07

DATE: 7-30-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Cloudy & cool w/ periods of intermittent light rain; temp range, low to mid-70s.

MEETINGS & RESULTS: Phone call placed to Paul Waldschlager to confirm that laboratory testing of leachate collection layer aggregate conformed to construction spec. limits for grain sizes (ASTM D 422) for sample collected @ the stockpiled source.

DESCRIPTION OF WORK DONE:

Beginning of placement of leachate collection layer aggregate, starting @ entrance to site in SW corner. Observed that aggregate material was spread w/ low ground pressure, wide-track CAT D4H dozer.

A minimum of 2 ft of aggregate was placed on top of the geomembrane to provide spec. road access for dump trucks to back in and dump their loads. Observed that loads were dumped on the road access & then spread by dozer, thereby minimizing stress on geomembrane liner.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed & washed limestone gravel w/ grain size spec. limits designed to meet the construction spec. limits for the leachate collection layer.

ADDITIONAL COMMENTS: The loads come in @ approx. 18.5 loose yd^3 per load & after spreading & consolidation, reduce to approx. 16 effective yd^3 of spread per load. A total of 4 loads were delivered by EOB, yielding approx. 64 yd^3 of placement.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 43

PROJECT NO.: 94-3832, FY96-07

DATE: 7-31-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Cloudy & cool w/ light ±, steady rain; temp. range: high 60's to low 70's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Building of access road w/ leachate collection layer aggregate, headed north along toe of west slope, approx. 20 ft away from toe, toward NW corner.

Observed spreading & grading of aggregate was performed w/ wide-track CAT D4h LGP dozer, in conformance w/ specifications.

Observed that 2 ft thickness min. of road access was maintained for dump trucks to dump their loads and that loads were dumped on the road prior to spreading, in conformance w/ specifications.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed & washed limestone gravel from source stockpile @ quarry. Observed visually that material appeared the same as that collected @ the source for laboratory testing.

ADDITIONAL COMMENTS:

A total of 40 loads of aggregate material were delivered, yielding approx. 640 yd^3 of placement for the day, and a grand total to date of ~704 yd^3.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 44

PROJECT NO.: 94-3832, FY96-07

DATE: 8-1-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: overcast & mild w/ dense fog in am hours, clearing by 11:00am; partly cloudy in pm hours w/ light breeze; temp. range upper 60's to low 80's.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Placement of 1 ft of aggregate material by wide-track CAT D4H LGP dozer along west slope, working from road access north along toe of slope. Observed that material was worked upslope, from top to bottom. Operator did not shove or crowd material and did not blade into material in conformance w/ specifications. Placement of road access (2 ft thickness, minimum) turns east, running along Row 3, approx. 30 ft wide strip running parallel to drainage line and approx. 3 to 5 ft from drainage line on the north side of line. A additional Small, low ground pressure dozer brought in to build road while other grading operator uses D4H, LGP wide-track to distribute material to 1 ft thickness along Rows 1 & 2. Observed that other dozer remained on road @ all times, as did trucks dumping their loads.

~~DESCRIPTION OF OFF SITE MATERIAL:~~

ADDITIONAL COMMENTS: Description of off-site material: crushed & washed limestone gravel w/ designed mix. spec. grain sizes from source stockpile @ quarry. A total of 40 loads were delivered, yielding approx. 640 yd³ of placement for the day and approx. 1,344 yd³ to date.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 45

PROJECT NO.: 94-3832. FY96-07

DATE: 8-2-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): B. Roberts

WEATHER CONDITIONS: overcast & mild w/ fog in am; partly cloudy in afternoon; temp. range low 70's to mid 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continued placement of approx. 25' to 30' wide road (2 ft thickness minimum) running east along Row 3, approx. parallel & 3 to 5 ft north of drainage line. Road placement by small, low ground pressure dozer which remains on road. Trucks observed to stay on road and dump on road. Spreading to 1 ft thickness observed to be performed by special CAT D4 h LGP wide-track dozer. Distribution of aggregate to 1 ft thickness is along Rows 1 & 2, parallel to road. Grading was observed to be accomplished w/o crowding or blading into aggregate.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone gravel from source stockpile @ quarry, w/ spec. limits on grain size designed to meet construction specifications for leachate collection layer.

ADDITIONAL COMMENTS: By EOB, a total of 158 loads had been delivered to the site, yielding a total, consolidated placement of approx. 2,528 yd^3 for the day, and a grand total to date of approx. 3,872 yd^3. First (2,500 yd^3) field sample collected for testing in the laboratory per ASTM D 422.

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

PROJECT NO.: 94-3832, FY96-07

CLIENT: L.M.E.S.

REPORT NO.: 46

DATE: 8-3-96

FIELD TECHNICIAN(S): R. Sherrard

WEATHER CONDITIONS: Clear & mild w/ light breeze; temp. range upper 60's to mid 80's by afternoon.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Continued lift placement of aggregate material north of access road (Row 3) along Rows 1 & 2. Distribution of lift aggregate thickness by D4h GP tracks dozer, per specifications. Placement of (2 ft thickness minimum) road access continues along Row 3, parallel to & approx 3 to 5 ft north of E-W drainage line. Placement of road access is by low-ground pressure small dozer, which is observed to always stay on road. Observed that dump trucks stay on road and dump their loads on road for spreading by dozer.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed & washed limestone gravel @ quarry (source stockpile). Material appeared visually to conform to grain sizes per construction specs.

ADDITIONAL COMMENTS:

By E&B, a total of 60 loads has been delivered to the site, yielding a total placement for the day of approx. 960 yd³, and a grand total to date of approx. 4,832 yd³ (based on ave. of 16 yd³ consolidated per load). R. Sherrard

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 47

PROJECT NO.: 94-3832. FY96-07

DATE: 8-5-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Mild, hazy, & humid, am; hot & sticky in pm; temp. range, mid 70's to upper 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continuing placement of access road along Row 3 w/ 2ft minimum thickness maintained for trucks. Placement of road by small, low-ground pressure dozer. Trucks were observed to stay on road at all times and to dump their loads on road. Distribution of material to 1 ft spec. thickness continues along Rows 1 & 2, from west to east, parallel to road. Grading of material performed by D4H LGP wide-track dozer. No violations of grading specifications were observed to occur. By EOB, placement of road along Row 3 and placement of 1 ft thick aggregate along Rows 1 & 2 was done to within ~200 ft of Area I tie-in w/ NE slope. Truck drivers complained that occasionally they were slipping & sliding coming out along access road. This was remediated by using smooth roller w/o vibratory action to smooth & compress road surface.

~~DESCRIPTION OF OFF SITE MATERIAL:~~

ADDITIONAL COMMENTS: Material description: crushed & washed limestone gravel from quarry stockpile w/ spec. design grain sizes. By EOB, 38 loads, or ~608 yd³ had been placed for the day; yielding of grand total of approx. 5,440 yd³ to date. Second (~5,000 yd³) field sample collected for laboratory testing per ASTM D 422. R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 48

PROJECT NO.: 94-3832, FY96-07

DATE: 8-6-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrard

WEATHER CONDITIONS: Mild, hazy & humid, am; hot & sticky in afternoon w/ chance of pm thunderstorm; temp range, upper 70's to high 80's.

MEETINGS & RESULTS: Site engineers meet w/ quarry representatives to discuss discovery of too much fine aggregate in a few loads delivered to the site. (See below). By afternoon, situation was remediated by loading from the sides of the pile in the bins.

DESCRIPTION OF WORK DONE: Continued road placement along Row 3, from west to east w/ graded placement of leachate collection layer aggregate (1 ft thick) along Rows 1 & 2. Use of heavy equipment & movement of dump trucks was observed to conform to specifications. After about the 2nd load, observed 3 loads dumped that appeared visually to contain too many fines (of the crusher run type). Engineers visited quarry and determined that quarry had run out of stockpiles, and that conveyor belt from crushing machine was leaving a strip of fine material down center of pile in the bins. Delivery was halted until corrective measures could be taken @ the quarry. The incorrect loads were removed from the site by back-hoe & Liebherr, which stayed on the road. Later in the afternoon, it was determined that clean material could be obtained from the side of the pile in the bins, and delivery resumed.

~~DESCRIPTION OF OFF SITE MATERIAL:~~

ADDITIONAL COMMENTS:

Material description: crushed & washed limestone gravel from quarry bins as manufactured by rock-crushing machine. Material w/ too many fines was removed from the site. By EOB, 9 loads had been delivered, yielding a grand total to date of approx. 5,584 yd³ of placement.

R. Sherrard

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 49

PROJECT NO.: 94-3832, FY96-07

DATE: 8-7-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Partly cloudy & humid w/ fog in am; hot & sticky in pm w/ chance of afternoon thundershowers; temp range, upper 70's to low 90's.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Situation w/ fines in quarry bins has been remediated @ the quarry. Observed no more appreciable fines occurring in loads delivered. Load delivery rate reduced to allow quarry time to create larger pile in bin. Loads brought in were dumped various places along road (Row 3) to allow operator of D4H LGP wide track dozer to meet grade for surveyed elevations along Rows 1 & 2 (to ft specified thickness). No further extension of the road along Row 3 occurred on this production day. Observed no spec. violations during grading operations.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone gravel aggregate from quarry bins, designed to meet construction specs. for grain size distribution of leachate collection aggregate layer.

ADDITIONAL COMMENTS: By EOB, 19 loads had been delivered from bins @ quarry, as produced by rock crushing machine. This yields a total placement for the day of approx. 304 yd^3 w/ a grand total to date of approx. 5,888 yd^3.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 50

PROJECT NO.: 94-3832, FY96-07

DATE: 8-8-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Hazy & humid w/ fog in a.m.; hot & humid in pm w/ chance of afternoon thunderstorms.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continuation of grading out of north side of road along Row 3 to obtain grade. along Rows 1 & 2 for 1 ft increase in elevation. Work performed by D4H LGP wide-track dozer. A few small loads were moved and dumped in spots along Rows 1 & 2 by low ground pressure, rubber tire backhoe, to be distributed by wide-track dozer. Road was filled in along Row 3 by additional loads from trucks as material was removed. Trucks were observed to stay on minimum of 2 ft. thickness of aggregate at all times. Short rain event occurred in afternoon toward end of shift.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone aggregate from quarry bins w/ grain size distribution designed to meet construction specs. for leachate collection layer.

ADDITIONAL COMMENTS: By E&B, 33 loads had been delivered to the site for a daily total of approx. 528 yd^3 and a grand total to date of approx. 6,416 yd^3. Total truck loads to date: 401.

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 51

PROJECT NO.: 94-3832, FY96-07

DATE: 8-9-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Approx. 1/3 inch rain recorded from short rain event on 8-8-96; today, cloudy & mild, am; w/ less humidity; pm, partly cloudy, mild w/ light breeze; temp. range low: 70's to mid 80s

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Surveyed grade established for leachate collection layer along Rows 1 & 2 down to within approx. 100 ft west of east end of Area I tie-in w/ NE slope of Area II. Road along Row 3 extended by approx. same amount. No violations of grading specifications were observed to occur. Trucks staged on road (minimum thickness of gravel, 2 ft) @ all times. Smooth roller w/o vibratory action was used to flatten & compress road surface to reduce slippage of truck tires upon exit. By EOR, surveyed grade had been finalized along west slope from approx. GP 606, 690 to 601, 603 and along Rows 1 & 2 from approx. GP 706, 708 to 793, 795.

DESCRIPTION OF OFF SITE MATERIAL: No production scheduled for 8-10-96 to allow quarry time to replenish some stockpiles.

Crushed & washed limestone aggregate from quarry bins w/ grain size distribution designed to satisfy specification for leachate collection layer.

ADDITIONAL COMMENTS:

By EOB 29 loads had been delivered to the site for a daily total of approx. 464 yd3 and a grand total to date of approx. 6,880 yd3. Total truck loads to date: 430.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 52

PROJECT NO.: 94-3832, FY96-07

DATE: 8-12-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Approx. 2 in. of rain recorded @ on-site rain guage over weekend; today, overcast w/ steady rain & light breeze; intermittent periods of heavy downpour; temp range low to high 70's.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Leachate collection layer:

Extension of road access along Row 3 to about 50 ft flag marker west of east end of Area I tie-in w/ NE slope of Area II. No violations of grading specifications were observed to occur. Wide track D4h-LGP dozer used to distribute aggregate to grade specifications. Around lunch time, belt broke @ quarry. Last load delivered @ approx. 11:30 am.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed & washed limestone aggregate from quarry bins w/ grain size distribution designed to satisfy specification for leachate collection layer.

ADDITIONAL COMMENTS:

By EOB, ~~29~~ 11 loads had been delivered to the site for a daily total of approx. 176 yd3 and a grand total to date of approx. 7,056 yd3. Total truck loads to date: 441.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 53

PROJECT NO.: 94-3832, FY96-07

DATE: 8-13-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Overcast, cool & humid in am; pm, partly cloudy & mild; temp range high 60s to low 80s.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Placement of aggregate, leachate collection layer:

Extension of road (Row 3) and graded area, Rows 1 & 2, to the junction of NE slope, Area II, w/ east end boundary of Area I tie-in.

Trucks were observed to stay on road, along w/ other narrow track equipment. Grading was performed w/ D4H-LGP wide-track dozer. No grading violations of specs. were observed to occur.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone aggregate w/ grain size distribution designed to satisfy specification for leachate collection layer. Third (7,500 yd^3) sample collected in-field for laboratory testing of grain size distribution.

ADDITIONAL COMMENTS:

By EOB, 38 tandem truck loads had been delivered to the site for a daily estimated total of ~ 608 yd^3 and a grand total to date of approx. 7,664 yd^3. Total truck loads to date: 479.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 54

PROJECT NO.: 94-3832. FY96-07

DATE: 8-14-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Clear & mild; light fog in am; temp. range mid 70's to mid 80s.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Placement of stone in north-northeast section of cell and along NE slope. Stone was graded up-slope. Widetrack D4h-LGP dozer used to distribute stone. Trucks were observed to stay on road (minimum thickness of 2ft.) @ all times. Smooth roller w/o vibratory action used to smooth & compress road surface. During work performed, no violations of grading specifications were observed to occur.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone aggregate from quarry bins w/ grain size design distribution as specified for leachate collection layer.

ADDITIONAL COMMENTS: By EOB, 11 loads of stone had been delivered & placed for a daily total of 176 yd^3 and a grand total to date of approx. 7,840 yd^3. Total truck loads to date: 490.

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 55

PROJECT NO.: 94-3832, FY96-07

DATE: 8-15-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Clear & warm; heavy fog am; temp. range, upper 60's to upper 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Placement of stone in east-northeast section of cell w/ concentration on finishing road toward east end of cell in vicinity of pipe extension through east berm. No violations of grading specifications were observed to occur. Trucks were observed to stay on road (minimum 2 ft. thickness) @ all times. Grading was performed with widetrack D4H-LGP dozer. Stone appeared visually to be consistent w/ specified grain sizes and contained only minimal limestone dust & fines.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone aggregate from quarry bins w/ grain size design distribution as specified for leachate collection layer.

ADDITIONAL COMMENTS: By EOB, 20 loads of stone had been delivered & placed for a daily total of 320 yd³ and a grand total to date of approx 8,160 yd³. Total truck loads to date: 510.

Thomas B McGill Jr.

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 56

PROJECT NO.: 94-3832, FY96-07

DATE: 8-16-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Sunny, warm & humid w/ fog in am; temp. range mid 70s to high 80s.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Placement of stone in east-end section of cell along Rows 1-3 w/ concentration on finishing road extension to east berm, approx. 3 to 5 ft north and parallel w/ pipeline drainage line. Finish grade work on NE slope up to approx. junction line w/ east berm. [Note: this area of gradework not survey finalized yet.] No violations of grading specs. observed. Trucks stayed on road (min. 2 ft thickness) @ all times. Grading was performed w/ widetrack D4H-LGP dozer.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone aggregate from quarry bins w/ grain size, design distribution as specified for leachate collection layer. Stone appeared visually to be consistent w/ specified grain sizes and contained only minimal limestone dust & fines.

ADDITIONAL COMMENTS:

By EOB, 20 loads of stone had been delivered & placed for a daily total of 320 yd³ and a grand total to date of approx. 8,480 yd³. Total truck loads to date: 530.

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 57

PROJECT NO.: 94-3832, FY96-07

DATE: 8-17-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Sunny, hot & humid w/ fog in am, lifting about 10:00 am; temp. range mid-70's to near 90° by afternoon.

MEETINGS & RESULTS: // Leachate Collection Piping

N/A // Prior to placement of leachate collection piping, it was observed that the pipe sections were delivered in strapped bundles to the site in a clean & protected condition. Equipment used to unstrap & move the piping did not damage it. Care was exercised in handling & installation & end seals were removed only as necessary for installation.

DESCRIPTION OF WORK DONE: Laying of pipeline, starting @ east end w/ exposed joint connection of pipe through east berm and continuing in 20 ft sections along surveyed drainage line in mid-Bay 3 to termination marker @ top of west slope, west end. No loads of leachate aggregate were delivered this date as work concentration was on finishing pipeline installation. It was observed that specifications were followed w/ proper placement of pipeline w/ regard to surveyed grade. Grade and depth of pipe sections were continuously checked for conformance w/ specifications. A minimum of 3 to 4 inches of leachate collection aggregate bedding was placed beneath each pipe section prior to joint compression & sealing. It was observed that the perforations were oriented at the bottom of the pipe for each section of installation. It was verified that the perforated collection piping was not installed outside the waste boundary areas.

~~DESCRIPTION OF OFF SITE MATERIAL:~~

ADDITIONAL COMMENTS: Pipe was checked per 20' section for correct ASTM insignia, proper material, diameter, wall thickness, & perforations. All were as specified. After placement of piping, each segment was checked for breaks, cracks, improper fittings, & voids beneath piping. None were observed.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 58

PROJECT NO.: 94-3832, FY96-07

DATE: 8-19-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): D. Stolfo

WEATHER CONDITIONS: Warm & humid w/ fog in am. Temps. range mid 70's to high 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Placement of leachate collection layer aggregate & grading across pipeline, Row 3 and along east berm. Material fingered out by widetrack D4H-LGP dozer. No violations of grading specs. observed. Trucks stayed on road @ all times. Road taken out as grading work proceeded westward.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone aggregate from quarry w/ specified grain sy's distribution for leachate collection layer.

ADDITIONAL COMMENTS:

By EOB, 20 loads of stone had been delivered & placed for a daily total of 320 yd³ and a grand total to date of approx. 8,800 yd³. Total truck loads to date: 559.

D. Stolfo

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 59

PROJECT NO.: 94-3832. FY96-07

DATE: 8-20-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Clear & warm w/ fog in am. Temps. range: low mid 70's; high upper 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Placement of leachate collection layer aggregate. Grading in Row 3 across pipeline. Road removal by fingering & grading Rows 4 & 5 proceeding from east to west. Road removed as section of groundwork completed. Grading specifications were observed w/ D4H-LGP dozer performing groundwork. Trucks stayed on road @ all times.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone aggregate from quarry w/ grain size distribution as specified for leachate collection

ADDITIONAL COMMENTS:

By EOB, 28 loads of stone had been delivered & placed for a daily total of 448 yd^3 and a grand total to date of approx. 9,248 yd^3. Total truck loads to date: 578.

Thomas B McGill

SIGNATURE(S)

Original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 60

PROJECT NO.: 94-3832, FY96-07

DATE: 8-22-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): K. Brown

WEATHER CONDITIONS: Mostly sunny & warm; temp: range mid-70s to low 90's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Placement of leachate collection layer aggregate. Fingering out from road. Grading across pipeline, Row 3 and placement and grading of Rows 4 & 5 w/ road removed from east to westward as sections of grading completed: All grading specs: were observed w/ widetrack D4H-LGP dozer performing gradework (1 ft thickness of stone) and trucks observed to stay on road (2 ft thickness of stone) @ all times.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed & washed limestone aggregate from quarry bins w/ grain size distribution as specified for leachate collection layer.

ADDITIONAL COMMENTS:

By EOB, 19 loads of stone had been delivered & placed for a daily total of 304 yd^3 and a grand total to date of approx. 9,552 yd^3. Total truck loads to date: 5/97.

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 61

PROJECT NO.: 94-3832. FY96-07

DATE: 8-23-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari

WEATHER CONDITIONS: Hazy, hot

MEETINGS & RESULTS: met w/ Martin rep. Paul Waldschlager. on-site to test FML.

DESCRIPTION OF WORK DONE: Vaccum-box tested polypropylene FML, small area near leachate collection PVC drainage pipe. No. leak was observed.

DESCRIPTION OF OFF SITE MATERIAL:

ADDITIONAL COMMENTS:

Alan Khonsari

SIGNATURE(S)

Report No: 61

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 8-23-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
28,33	—	N33' W. of Panel 33	Patch	8-23-96	AK	

Comments Area was vaccum-box tested. No leak observed.

P: 3 of 3

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 61

PROJECT NO.: 94-3832, FY96-07

DATE: 8-23-96 [FR.]

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): K. Brown

WEATHER CONDITIONS: Partly cloudy & warm; high of 89 °F,

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Placement of leachate collection layer aggregate w/ grading across pipeline, Row 3 and spreading of loads into Rows 4 & 5. Gradework proceeding from westward to eastward w/ road removed as grading sections completed, trucks were observed to stay on road @ all times. Grading specs. were observed to be followed w/ use of low ground pressure D4H wide track dozer for gradework.

DESCRIPTION OF OFF SITE MATERIAL: Crushed & washed limestone aggregate from quarry w/ specified grain size distribution for leachate collection layer.

ADDITIONAL COMMENTS:

By EOB, 38 loads of stone had been delivered & placed for a daily total of 608 yd^3 and a grand total to date of approx. 10,160 yd^3. Total truck loads to date: 635.

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 62

PROJECT NO.: 94-3832, FY96-07

DATE: 8-26-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Fog in am; Fair; low: 70's + high 80's.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE:

Placement of stone and grading across pipeline in Row 2 and extending to Rows 4 & 5. Gradework & removal of road proceeding on southern half of cell from east to west toward entrance in southwest corner of landfill. Grading specifications were observed to be met w/ D4H-LGP dozer performing gradework, & trucks maintained to stay on road @ all times.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed & washed aggregate from Roger's Group Quarry. Distribution of grain sizes designed to meet specifications for leachate collection layer.

ADDITIONAL COMMENTS:

By EOB, 40 loads of stone had been delivered & placed for a daily total of 640 yd^3 and a grand total of 10,800 yd^3. Total truck loads to date: 675.

Thomas R McGill

SIGNATURE(S)

Original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 63

PROJECT NO.: 94-3832, FY96-07

DATE: 8-27-96 (Tue.)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): A. Khonsari, GEOTEK Engineering Manager

WEATHER CONDITIONS: Fair, clear & warm; temp. range mid 70's to upper 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Last loads of leachate collection layer aggregate delivered. Work continues to grade in Row 3 across pipeline and finger road w/ grading of Rows 4 & 5. Gradework proceeds from east to west toward southwest intrance way w/ road removed as section of gradework completed. Heavy equipment & trucks stay on road. Grading was w/ D4H-LGP dozer. All grading specifications were satisfied.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed & washed limestone aggregates from quarry w/ specified grain size distribution for leachate collection layer. Last sample collected, representing 10,000 yd³ sampling, for laboratory test of grain size per ASTM D 422.

ADDITIONAL COMMENTS:

By EOB, 2 loads were delivered: 32 yd³ // grand total to date: 10,832 yd³ // total of trucks: 677. Loads were stopped when it was apparent enough material was present on-site to complete leachate collection layer.

Ahsan Khonsari

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 64

PROJECT NO.: 94-3832. FY96-07

DATE: 8-3-96 (Tue.)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): J. Dunning

WEATHER CONDITIONS: Partly cloudy; warm & humid; high of 92°F,

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Grading of gravel road into Rows 3, 4, & 5 to a depth of 1 ft. D4 H-LGP dozer used. Grading speed observed. No more loads of gravel needed to finish gradework.

Start of placement of geotextile separator fabric, 15 ft wide rolls, in Northwest edge placing west to east Row 1. Checked to ensure min. of 18" overlap between rolls. Measurements were taken @ approx 50' increments, and overlaps averaged 18" to 22". By EOB, approx. 1/4 of landfill area was covered w/ fabric.

DESCRIPTION OF OFF SITE MATERIAL:

N/A

ADDITIONAL COMMENTS: sand bags were used for temporary securing of seam overlaps.

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 65

PROJECT NO.: 94-3832, FY96-07

DATE: 9-4-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Partly cloudy warm & humid; temp. range upper 70's to low 90's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Finish grading of leachate collection layer gravel and taking out of road @ SW entrance. Grading followed specifications.

Placement of GEOTEXTILE separator fabric along Rows 2 & 3 and across East end to cover SE corner of Rows 4 & 5. New entrance made in SE corner by placement of drain pipe & cover soil. Will allow trucks to move down from hillside for placement of 1st 12" layer of cover soil across site.

DESCRIPTION OF OFF SITE MATERIAL:

N/A

ADDITIONAL COMMENTS: Observed that minimal overlap of fabric between rolls was 18"; checked @ approx. 50' intervals. Sand bags were used to temporarily secure fabric in-place @ overlap of seams.

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 66

PROJECT NO.: 94-3832, FY96-07

DATE: 9-5-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): K. Brown

WEATHER CONDITIONS: fair, temperature range upper 60's to mid 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Cover soil being placed in the east section of cell from east to west. The loose thickness was maintained at approximately 12". Construction equipmino did not come into contact or damage seperator fabric Fill material was placed in a manner that maintained a minimum of 8" of fill beteveen the construction equipment and seperator fabric.

Verified placement of geoxtextile separtator fabic maintained 18" seam overlap. Sand bags were used for temporary securing of seam overlap.

DESCRIPTION OF OFF SITE MATERIAL:

TYPE A Clay from hillside south of site

ADDITIONAL COMMENTS:

daily 12 loads 180 yd^3 cum 12 load 180 yd^3

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 67

PROJECT NO.: 94-3832, FY96-07

DATE: 9-6-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: foggy in a.m., fair, temperature range mid 60's to mid 80's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Finished placement of seperator geotextile fabric. verified minimum overlap of seam at 18". Sand bags were used for temperary securing of seam overlap.

The lift of cover soil was being placed with a loose thickness of approximately 12". Construction equipment did not in contact with or damage the sepierator fabric. Fill material was placed in a manner that maintained a a minimum of 8" of fill between the construction equipment and seperator fabric. Cover was being place in the southeast section of the cell.

DESCRIPTION OF OFF SITE MATERIAL: Type A Clay from hillside south of the site

ADDITIONAL COMMENTS:

daily 84 loads 1,260 yd³ cum. 96 1,440 yd³

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 68

PROJECT NO.: 94-3832, FY96-07

DATE: 9-7-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): A. Bice

WEATHER CONDITIONS: foggy a.m., fair, temperature range upper 60's to upper 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: First lift of cover soil being placed at mid east section of cell. The loose thickness was approximately 12". Construction equipment did not contact seperator fabric or damage same. 8" of fill material was maintained between equipment and seperator fabric

DESCRIPTION OF OFF SITE MATERIAL:

TYPE A Clay from hillside south of the site

ADDITIONAL COMMENTS:

daily 91 loads 1,365 yd³ cum 187 loads 2,805 yd³

Noelie Bice

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 69

PROJECT NO.: 94-3832, FY96-07

DATE: 9-9-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): K. Brown

WEATHER CONDITIONS: Mostly sunny, fair, temperature range low 70's upper 80's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Cover soil placed mid section of cell from east to west. The loose thickness was maintained at approximately 12". Construction equipment did not come in contact with or damage seperator fabric. Fill material was in a manner that maintained a minimum of 8" of fill between equipment and seperator fabric.

DESCRIPTION OF OFF SITE MATERIAL:

TYPE A Clay from hillside south of site

ADDITIONAL COMMENTS:

daily 94 loads 1,410 yd3 cum 281 loads 4,215 yd^3

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 70

PROJECT NO.: 94-3832, FY96-07

DATE: 9-10-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: a.m. fog, fair, temp. range low 70's to upper 80's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Cover soil placed in mid west section of cell. The loose thickness was maintained at approximately 12". Construction equipment did not come in contact with or damage seperator fabric. A minimum of 8" of fill was maintained between equipment and seperator fabric at all times

DESCRIPTION OF OFF SITE MATERIAL:

TYPE A Clay from hillside south of site

ADDITIONAL COMMENTS:

daily 92 loads 16 pans 1,732 yd^3 cum 373 loads 16 pans 5,947 yd^3

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 71

PROJECT NO.: 94-3832. FY96-07

DATE: 9-11-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: a.m. fog, fair, temperature range lower 70's to upper 80's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Cover soil being placed in weestern section of cell. 12" of loose thickness maintained. Construction equipment did not damage or come in contact with seperator fabric. A minimum of 8" of fill was maintained between equipment and serperator fabric.

The anchor trench was being backfilled and compacted to the same moisture-density requirements as the compacted clay soil liner. (Daniel's Curve) No damage was observed on the ~~geotextile~~ geomembrane. A hand-held compactor was used to obtain required compaction. Soil from hillside south of site was utilized as backfill material

DESCRIPTION OF OFF SITE MATERIAL:

TYPE A Clay from hillside south of site

ADDITIONAL COMMENTS:

daily 140 loads 2,240 ydr^3 cum. 513 loads 16 pans 8,187 yd^3

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 72

PROJECT NO.: 94-3832, FY96-07

DATE: 9-12-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: a.m. fog clear till 2:00pm. rain @ 6:00pm

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Backfilled and compacted anchor trench to the same moisture-density requirements as the compacted clay liner (Daniel's curve). Compaction was conducted with a hand-held compacter in a manner to prevent damage to geomembrane. Soil from hillside south of the site was utilized as backfill material for trench.

Cover soil being placed in western section of cell. 12" loose thickness maintained. Construction equipment did not contact or damage seperation fabic. A minimum of 8" of fill was maintained between equipment and seperator fabric.

DESCRIPTION OF OFF SITE MATERIAL:

TYPE A Clay from hill side south of site

ADDITIONAL COMMENTS:

daily 136 loads 6 pans 2472 yd³ cum 699 loads 22 pans 10,359

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 73

PROJECT NO.: 94-3832, FY96-07

DATE: 9-13-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: clear, cool, fair temp range upper 50's mid 70's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Completed backfill and compaction of anchor trench. Moisture-density requirements were same as compacted clay liner (Daniel's Curve) Compaction was conducted utilizing hand-held compactor in a manner to prevent damag to the geomembrane liner. Soil from hillside south of site was used to backfill trench

Completed cover soil placement. 12" loose thickness maintained Construction equipment did not contact or damage seperation fabric. A minimum of 8" of fill material was maintained between equipment and seperation fabric at all times.

DESCRIPTION OF OFF SITE MATERIAL:

TYPE A Clay from hillside south of site

ADDITIONAL COMMENTS:

daily 150 loads 2,250 yd³ | cum 799 loads 22 pans — total for 1st 1 ft | 12,609 yd³

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 74

PROJECT NO.: 94-3832, FY96-07

DATE: 9-14-96 (SAT)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Kevin Brown

WEATHER CONDITIONS: Partly Sunny, Cool

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE:

Observed Placement of 112 truck loads and 9 Caterpillar pan 627 loads of engineered fill onto landfill cell.

Also observed hydro-seeding of a 150 yard area along the North wall of the Cell.

Observed compaction of lift with smooth drum roller with vibratory action turned on.

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from hillside South of site.

ADDITIONAL COMMENTS: Start of 2nd lift.

Daily total - 1878 yards^3

Cumulative - 1878 yards^3

SIGNATURE(S)

ORIGINAL

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 75

PROJECT NO.: 94-3832, FY96-07

DATE: 9-18-96 (WED)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Kwin Brown

WEATHER CONDITIONS: Sunny, Cool

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: observed placement of 155 truck loads and 53 Caterpillar pan 627 loads of engineered fill onto cell.

observed compaction of lift with smooth, drum roller with vibratory action turned on.

Lifts were placed at 6"-8".

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from hillside South of Site.

ADDITIONAL COMMENTS: Middle of 2nd lift.

Loads: Daily total - 3,491 yds^3

Cumulative - 5,369 yds^3

Kwin A. Brown

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 76

PROJECT NO.: 94-3832, FY96-07

DATE: 9-19-96 (Thur)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Tom McGill

WEATHER CONDITIONS: Sunny, temp mid 50's a.m. to mid 70's p.m.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Observed completion of 2nd lift. Loose thickness was maintained between 6 to 10 inches. It was then compacted with steel drum roller

Began placement of final lift. loose material placed but not compacted

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from hillside south of site

ADDITIONAL COMMENTS:

2nd lift loads Daily 130 loads 1950 yd^{3}s

cum. 7349 yd^{3}s

final lift Loads Daily 13 loads 195 yd^{3}s cum same

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 77

PROJECT NO.: 94-3832, FY96-07

DATE: 9-20-96 (FRI)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Kevin Brown

WEATHER CONDITIONS: Partly Sunny, Cool

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: observed placement of 30 truck loads of engineered fill onto east end of cell.

Observed compaction of fill with a footed roller and with vibratory action turned on.

Lifts were placed at 6"-8".

Also conducted 4 nuclear density tests at east end of cell. See Inspection data sheet for Results.

DESCRIPTION OF OFF SITE MATERIAL:

Type A Clay from hillside South of Site.

ADDITIONAL COMMENTS: Beginning of 3rd lift.

Loads: Daily total - 450 yds^3

Cumulative - 450 yds^3

Kevin Brown

SIGNATURE(S)

DC & AFL

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 78

PROJECT NO.: 94-3832, FY96-07

DATE: 9-21-96 (SAT)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Kevin Brown

WEATHER CONDITIONS: Sunny, mild

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Arrived on site to monitor placement and compaction of engineered fill being placed onto cell.
Tractor operator NEVER arrived on site and no work was performed.

DESCRIPTION OF OFF SITE MATERIAL: N/A

ADDITIONAL COMMENTS:

Loads: Daily total - 0

Cumulative - 450 yds^3

Kevin A. Br

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 79

PROJECT NO.: 94-3832, FY96-07

DATE: 9-23-96 (mon)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Kevin Brown, Tom McGill

WEATHER CONDITIONS: Partly Cloudy, cool

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: observed placement of 10 truck loads of Type A engineered fill material onto east end of cell. Material was spread and then compacted with a footed Roller with vibratory action. The lower, east end of the cell was extremely wet due to heavy week-end rainfall and was plowed open at end of day to aid airation for drying.

The southeast corner of the cell was sufficiently dry enough to allow density testing (nuclear). See IDS for Results.

DESCRIPTION OF OFF SITE MATERIAL:

Type A soil from hillside South of Site.

ADDITIONAL COMMENTS:

Loads: Daily total - 150 yds^3

Cumulative - 600 yds^3

Kevin A. Brown / Thomas B. McGill Jr.

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 80

PROJECT NO.: 94-3832, FY96-07

DATE: 9-24-96 (Tuesday)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Tom McGill

WEATHER CONDITIONS: light fog a.m. Partly cloudy p.m.
temp. range low 60's to mid 70's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Observed placement of soil for compacted layer on east end of cell. Soil was spread and compacted with foot rolled Step were taken to dry area in northeast end of cell After approximately 24 hours the area was recompacted Density test revealed area within compaction range. (see IDS report)

DESCRIPTION OF OFF SITE MATERIAL:

Type A soil from hillside south of site

ADDITIONAL COMMENTS:

Soil Daily total 150 yds^3
cumlaytive 750 yds^3

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 81

PROJECT NO.: 94-3832, FY96-07

DATE: 9-25-96 (WED)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Kevin Brown

WEATHER CONDITIONS: Mostly Sunny, warm

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE:

Monitored placement and compaction of 37 dump truck loads of engineered Type A fill material from hillside South of site onto landfill cell (part of 3rd lift). Material was then compacted with a footed compactor with vibratory action.

* Note: Most of the soil placed on the cell was used to even up low spots and that a majority of the fill material constituting the 3rd lift had already been in place for 4 to 5 days before being compacted. As a result, 3 to 4 percent of the soils natural moisture has been lost.

Also monitored extension of leachate pipe from SE corner of cell towards leachate collection tanks. Placement of pipe is proceeding according to specifications.

DESCRIPTION OF OFF SITE MATERIAL:

Type A soil from hillside South of site.

ADDITIONAL COMMENTS:

Soil loads placed on Cell: Daily total – 555 yds^3.
Cumulative – 1305 yds^3

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 82

PROJECT NO.: 94-3832, FY96-07

DATE: 9-26-96 (Thur)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Kevin Brown

WEATHER CONDITIONS: Partly cloudy, warm

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE:

Monitored placement and compaction of 15 dump truck loads of engineered type A fill material from hillside south of site onto landfill cell (part of 3rd lift). Material was then compacted with a footed compactor with vibratory action. Once again, the soil placed on the cell today was used to even out low spots in the cell.

Also monitored continuation of leachate pipe extension from SE corner of site towards leachate collection tanks. Placement is proceeding according to specifications.

DESCRIPTION OF OFF SITE MATERIAL:

Type A from hillside South of Site.

ADDITIONAL COMMENTS:

Soil loads placed on cell: Daily total - 225 yds^3.
Cumulative - 1550 yds^3

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 83

PROJECT NO.: 94-3832, FY96-07

DATE: 9-27-96 (Friday)

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: cloudy / overcast / rain @ 9:30 am.
temp upper 60's lower 70's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Soil was placed and spredd in small ares in the southeast section of cell
Rain shut down work @ ~10:00 am.

DESCRIPTION OF OFF SITE MATERIAL:

Type A soil from hillside south of site

ADDITIONAL COMMENTS:

daily 30 yds^3
cumulative 1560 yds^3

Thomas R McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 84

PROJECT NO.: 94-3832, FY96-07

DATE: 9-30-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Partly cloudy and mild
temp. range: low 60's to mid 70's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Soil was placed in the mid-southern portion of the cell. Soil was compacted with a footed roller to a thickness of approximately 6 to 8 inches. Density test results revealed compaction within 95% of Standard Proctor #3 (ASTM 698). Density test results are presented in IDS report #37.

Observed excavation and gravel and pipe placement for the leachate drain line located southeast of the cell. A minimum of 6 inches of crushed limestone was placed under the pipe. Gravel was placed above the pipe to a thickness of approximately 2 feet. No soil backfill has been placed

DESCRIPTION OF OFF SITE MATERIAL:

Type A Soil taken from hill side south of cell

ADDITIONAL COMMENTS:

daily: 19 loads 285 yd^{3}s
cum: 1845 yd^{3}s

Thomas B Mitchell

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 85

PROJECT NO.: 94-3832, FY96-07

DATE: 10-1-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Cloudy mild
temp. range mid 60's to upper 70's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Completed placement of compacted layer. Soil was compacted with a footed roller to a thickness of approximately 6 to 8 inches. Density test results revealed compaction within 95% of Standard Proctor #3 (ASTM 698). Density test results are presented in IDS report # 38.

Observed gravel and pipe placement for the leachate drain line located southeast of the cell. A minimum of 6 inches of crushed limestone was placed beneath the pipe. Approximately 2 feet of stone was placed over the pipe. No soil backfill has been placed

DESCRIPTION OF OFF SITE MATERIAL:

Type A soil taken from hillside south of cell

ADDITIONAL COMMENTS:

daily : 6 loads 90 yd^{3}s
cum : 1935 yd^{3}s

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 86

PROJECT NO.: 94-3832, FY96-07

DATE: 10-3-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Clear and mild
temp range mid 60's to upper 60's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Observed excavation of trench and placement of gravel and pipe for the leachate drain line located southeast of the cell. A minimum of 6 inches of stone was placed under the pipe. Approximate 2 feet of stone was placed over the pipe. No soil backfill was placed

DESCRIPTION OF OFF SITE MATERIAL:

N/A

ADDITIONAL COMMENTS:

Thomas B McGill

SIGNATURE(S)

Original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 87

PROJECT NO.: 94-3832, FY96-07

DATE: 10-7-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Cloudy and cool temp lower 50's to mid 60's.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Observed trench excavation and PVC leachate drain pipe placement. A minimum of 6 inches of crushed limestone was maintained under the pipe. Approximately 2 feet of crushed limestone was placed over the pipe. No soil backfill was placed. The pipe is located to the south of the cell, running north-south from the cell to a collection basin located west of the leachate tanks.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed stone stockpiled on site

Stone purchased from Rogers

ADDITIONAL COMMENTS:

Thomas B McGill

SIGNATURE(S)

Original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 88

PROJECT NO.: 94-3832, FY96-07

DATE: 10-8-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: Mostly sunny, mild, temp range mid 50's to upper 60's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Observed trench excavation for leachate drain located south of cell. No pipe was placed and no soil backfill was placed

DESCRIPTION OF OFF SITE MATERIAL:

Crushed stone stockpiled west of cell
Stone was purchased from Rogers

ADDITIONAL COMMENTS:

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 89

PROJECT NO.: 94-3832, FY96-07

DATE: 10-9-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill Jr

WEATHER CONDITIONS: Partly cloudy and mild temp low 60's to low 70's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Observed excavation of leachate drain pipe trench. No pipe or backfill placed.

DESCRIPTION OF OFF SITE MATERIAL:

Crushed stone stockpiled west of cell
Stone purchased from Rogers

ADDITIONAL COMMENTS:

Thomas B McGill Jr

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 90

PROJECT NO.: 94-3832, FY96-07

DATE: 10-10-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: mostly cloudy and cool
temp low 50's to upper 60's

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:
Observed excavation of trench completion. Pipe was placed and connected to manhole. Connection was grouted and crushed stone placed beneath pipe at a minimum thickness of 12 inches. Approximately 2 feet of stone was placed above the pipe. No soil backfill was placed

DESCRIPTION OF OFF SITE MATERIAL:
Crushed stone stockpiled west of cell
Stone purchased from Rogers

ADDITIONAL COMMENTS:

Thomas B McGill

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 98

PROJECT NO.: 94-3832, FY96-07

DATE: 10-11-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): T. McGill

WEATHER CONDITIONS: fog a.m. cool partly cloudy

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE:

Completed stone cover placement. Approximately 2 feet of stone was placed over the drain pipe. Soil backfill was placed in 8" thick lifts and compacted with a 563 CAT compactor with footed roller. Compaction test result revealed compaction within 95% of Standard Proctor #3. Two lifts have been placed

DESCRIPTION OF OFF SITE MATERIAL:

Type A Soil from Hillside south of cell

ADDITIONAL COMMENTS:

Thomas B McGill

SIGNATURE(S)

Attach C

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 92

PROJECT NO.: 94-3832, FY96-07

DATE: 10-14-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear; mid to upper 60's; fog in early am, clearing by 10:00 am.

MEETINGS & RESULTS:

N/A

DESCRIPTION OF WORK DONE: Continuation of trench backfill for drain pipe excavation south of M.H. 3-A. Soil was placed in 8" loose lifts and compacted w/ CAT CP 563 vibratory sheepsfoot roller. Specified compaction was obtained within 95% of STD Proctor #3 and moisture of material was within 2% of optimum. By EOB, three lifts were placed and compacted.

DESCRIPTION OF OFF SITE MATERIAL: Type A soil from hillside south of cell.

ADDITIONAL COMMENTS: N/A

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 93

PROJECT NO.: 94-3832, FY96-07

DATE: 10-15-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear; low to upper 60's w/ fog in am, clearing by 9:30 am.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Continuation of trench backfill for drainpipe excavation south of M, H, 3-A. Soil placed in approx. 8" loose lifts and compacted w/ CAT CP 563 vibratory sheepsfoot roller. Specified compaction was obtained within 95% of STD Proctor #3 (ASTM D698) and moisture of material was within 2% of optimum. By EOB, two lifts were placed & compacted.

Observed clipping & bluetopping of main cell areas w/ roller grader to satisfy final elevation requirements. Surveyors present to assist during clipping process.

DESCRIPTION OF OFF SITE MATERIAL: Type A soil from hillside south of cell.

ADDITIONAL COMMENTS: N/A

R. Sherrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 94

PROJECT NO.: 94-3832, FY96-07

DATE: 10-16-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear; mid 60's to low 70's w/ fog in early am, clearing by 9:00 am.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Continuation of trench backfill for drainpipe excavation south of M.H. 3-A. Soil placed in approx. 8" loose lifts and compacted w/ CAT CP 563 vibratory sheepsfoot roller. Specified compaction was obtained within 95% of STD Proctor #3 (ASTM D698). Moisture of material within 2% of optimum. By EOB, one lift had been placed, compacted (Lift #8) and tested w/ passing test. Lift #9 was partially placed and will be finished placing, compacted & tested next production day.

Observed continuation of chipping & blacktopping of main cell areas w/ surveyors present to assist in satisfying final elevation requirements for cell.

DESCRIPTION OF OFF SITE MATERIAL: Type A soil from hillside south of cell C.

ADDITIONAL COMMENTS: N/A

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 95

PROJECT NO.: 94-3832, FY96-07

DATE: 10-17-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Cloudy w/ rain throughout; rain setting in around 11:00 am.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: continuation of trench backfill for drain pipe excavation south of M.H. 3-A. One lift was finished placed, compacted, & tested w/ passing test before onset of rain. Soil placed in approx. 8" loose lift and compacted w/ CAT CP 563 vibratory sheepsfoot roller. Specified compaction obtained within 95% of STD Proctor #3 (ASTM D698). Moisture of material within 2% of optimum.

Observed continuation of clipping & bluetopping of main cell areas w/ surveyors present. Bluetopping of cell almost complete.

DESCRIPTION OF OFF SITE MATERIAL:

Type A soil from hillside south of cell.

ADDITIONAL COMMENTS: N/A

R. Sherrod

SIGNATURE(S)

Original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 96

PROJECT NO.: 94-3832, FY96-07

DATE: 10-21-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: overcast & cool w/ light breeze; temp. range mid to upper 60's.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Continuation of trench backfill from drainpipe excavation south of M.H. 3-A. One lift, Lift #10, was placed, compacted and tested w/ passing test by EOB. Soil placed in approx. 8" loose lift and compacted w/ CAT CP 563 vibratory sheepsfoot roller. Specified compaction obtained within 95% of STD Proctor #3 (ASTM D698). Moisture of material within 2% of optimum.

Blustopping of cell has been completed w/ surveyed elevations finalized & meeting specifications.

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from hillside south of cell.

ADDITIONAL COMMENTS: N/A

R. Sherrod

SIGNATURE(S)

Original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 97

PROJECT NO.: 94-3832, FY96-07

DATE: 10-22-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Sherrod

WEATHER CONDITIONS: Clear & mild w/ light breeze; temp. range mid 60's to low 70s.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Completion of trench backfill for drainpipe excavation south of M.H. 3-A, Final compacted lift, Lift # 11, required to reach final subgrade for topsoil placement & vegetative cover was placed, compacted, and tested w/ passing test.

Soil was placed in approx. 8" loose lift and compacted w/ CAT CP 563 vibratory sheepsfoot roller. Specified compaction obtained within 95% of STD Proctor # 3 (ASTM D698). Moisture of material within 2% of optimum.

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from hillside south of cell.

ADDITIONAL COMMENTS: N/A

R. Sherrod

SIGNATURE(S)

original

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 98

PROJECT NO.: 94-3832, FY96-07

DATE: 10-23-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): R. Shorrod

WEATHER CONDITIONS: Clear & cool, breezy; temp. range upper 50's to low 60's.

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Grading of slope adjacent west to trench backfill section south of M.H. 3-A. Placement of topsoil / Type A clay mix on backfilled trench area in preparation for seeding of backfilled & adjacent slope.

Soil material used is sufficient to sustain vegetative growth. No large roots or rock fragments were observed on the surface area that would present a mowing hazard.

DESCRIPTION OF OFF SITE MATERIAL: Topsoil / Type A clay (CL) mix. Material deemed suitable to support vegetative growth.

ADDITIONAL COMMENTS: N/A

R. Shorrod

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 99

PROJECT NO.: 94-3832, FY96-07

DATE: 10-28-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Jerry Dunning

WEATHER CONDITIONS: Overcast / Light sprinkles

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Haul Road Construction. Two 12' Geosynthetic fabric rolls were unrolled over clay base east to west at South edge of cell. These rolls were overlaped appx. 2' at the edges making a 22' road base. 8" (Lift #1 of 2) of crusher run was placed east to west over fabric. Stone was delivered by tandem axel dump trucks. After dumping the stone a rubber tired backhoe tractor with front end loader spread and graded stone in place. Appx. 750' of progress was made on this date.

DESCRIPTION OF OFF SITE MATERIAL:

*Crusher run from stockpile on site

* Limestone

ADDITIONAL COMMENTS: N/A

Jerry Dunning

SIGNATURE(S)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 100

PROJECT NO.: 94-3832, FY96-07

DATE: 10-30-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Jerry Dunning

WEATHER CONDITIONS: Windy/Clear

MEETINGS & RESULTS: N/A

DESCRIPTION OF WORK DONE: Second lift 6"-8" crusher run was placed over road bed constructed on 10-28-96 & 10-29-96. This stone was placed West To East using Tandem axle dump Trucks. After dumping of stone a road grader spread an even lift over surface area, after spreading procedure a vibatory drum roller compacted area for completion.

DESCRIPTION OF OFF SITE MATERIAL: Crusher run (Limestone) from stockpile on site

ADDITIONAL COMMENTS: N/A

Jerry Dunning

SIGNATURE(S)

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 1
SHEET NO.: 1 of 1
DATE: 6-4-96

JOB NAME ILF V, AREA II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY Density / moisture curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY Rows 1 & 2

OBSERVATION Testing of Lift 1, Row 1 from GP Nos. 707, 708 to 743, 744.
Scarification of subgrade w/ disc & moisturization prior to lift placement.
thickness of uncompacted lift approx. 6 inches.
Rock removal criterion met.
Density / moisture specification met by nuclear gage testing.

EQUIPMENT Dozers, Pans, Tandem axle trucks, roller grader, disc, water wagon, Dagelman rock picker, vibratory compactor

REMEDIATION IDENTIFIED → None

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	22.7		99.5	6	25' NE of GP 710 (Row 1)	Sample taken for ASTM D 2216
2	A	22.8		99.1	6	20' N of GP 734 (Row 1)	

a:lmes.tab., #168

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 2
SHEET NO.: 1 of 1
DATE: 6-5-96

JOB NAME ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod
INSPECTION ACTIVITY Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY Rows 1 & 2

OBSERVATION Testing of Lift 1, Row 1 from GP Nos. 743, 744 to east end of row. Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density / moisture specification met by nuclear gage testing.

EQUIPMENT Vibratory sheepsfoot compactor; rubber-tired pans.
REMEDIATION IDENTIFIED // None

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	26.6		93.4	6	40'N of GP 746 (Row 1)	Sample taken for ASTM D 2216
2	A	23.4		98.2	6	25'NE of GP 758 (Row 1)	
3	A	26.6		93.5	6	25'NE of GP 782 (Row 1)	
4	A	19.6		102.8	6	15'N of GP 806 (Row 1)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 3
SHEET NO.: 1 of 2
DATE: 6-6-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 1 & 2

OBSERVATION: Testing of Lift 1, Row 2 & Lift 2, Row 1. Testing of Lift 2, Row 2 from GP Nos. 706, 707 to 742, 743. Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density/moisture specification met by nuclear gage testing.

EQUIPMENT: Dozers, Pans, Tanker truck, roller grader, disc, water wagons, rock pickes, vibratory compactor

REMEDIATION IDENTIFIED: // None

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	22.9		98.0	8	25'N of GP 713 (Row 2)	Sample taken for ASTM D2216
2	A	26.1		96.2	8	25'N of GP 730 (Row 2)	
3	A	23.2		99.1	6	25'NE of GP 742 (Row 2)	
4	A	23.7		97.9	6	25'NE of GP 766 (Row 2)	
5	A	23.0		98.3	12	25'NE of GP 790 (Row 2)	
6	A	23.7		98.4	12	10'N of GP 807 (Row 2)	Sample taken for ASTM D2216
7	A	27.1		94.6	6	25'NE of GP 719 (Row 1)	
8	A	25.5		94.7	6	20'N of GP 731 (Row 1)	
9	A	24.2		96.4	6	25'NE of GP 746 (Row 1)	
10	A	26.0		94.9	6	25'NE of GP 767 (Row 1)	
11	A	24.6		98.3	6	5'NE of GP 779 (Row 1)	Sample taken for ASTM D2216
12	A	27.9		92.3	6	30'N of GP 803 (Row 1)	

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original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 3
SHEET NO.: 2 of 2
DATE: 6-6-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Shorrod

INSPECTION ACTIVITY: Density / Moisture Curve CHECKED BY: R. Shorrod

LOCATION OF ACTIVITY: Rows 1 & 2

OBSERVATION: See p. 1 of 2. Testing of Lift 2, Row 2 from GP Nos. 706, 707 to 742, 743.

EQUIPMENT: See p. 1 of 2.

REMEDIATION IDENTIFIED: // None

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
13	A	27.6		94.8	6	30' N of GP 711 (Row 2)	
14	A	26.9		94.4	6	10' NE of GP 735 (Row 2)	

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original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 4
SHEET NO.: 1 of 2
DATE: 6-7-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 1, 2 & 3. Testing of Lift 2, Row 2 from G.P. Nos. 742, 743 to east end of row. Testing of Lift 3, Row 1 across entire row. (See also p. 2 of 2.)

OBSERVATION: Thickness of uncompacted lift approx. 6 inches.
Rock removal criterion met.
Density/Moisture specification met by nuclear gage testing.
Soil type of borrow material consistently Type A.
No. of passes of vibratory sheepsfoot compactor equaled or exceeded 6 passes

EQUIPMENT: D-8 High track Dozer, CAT 627 scraper pans, CAT CP-563 vibratory sheepsfoot compactor, tanker truck & tractor-pulled water wagons, tractor-pulled disc, roller grader, rock rake & Dagelman rock picker, I-R smooth roller, landscaper

REMEDIATION IDENTIFIED: // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	22.4		99.0	8	15' N of GP 754 (Row 2)	Sample taken for ASTM D2216
2	A	22.0		101.2	8	10' NW of GP 766 (Row 2)	
3	A	26.2		95.5	6	20' NW of GP 790 (Row 2)	
4	A	24.3		97.7	6	10' SE of GP 794 (Row 2)	
5	A	26.1		96.7	8	25' NE of GP 707 (Row 1)	
6	A	23.9		97.5	8	25' NE of GP 722 (Row 1)	Sample taken for ASTM D2216
7	A	23.0		98.2	8	10' NE of GP 755 (Row 1)	
8	A	24.4		99.6	6	15' NW of GP 779 (Row 1)	
9	A	25.2		96.0	6	5' N of GP 791 (Row 1)	
10	A	26.3		95.2	6	25' NE of GP 794 (Row 1)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 4
SHEET NO.: 2 of 2
DATE: 6-7-96

JOB NAME ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY Rows 1, 2, & 3. Testing of Lift 1, Row 3 from west end to G.P. Nos. 759, 760.

OBSERVATION See p. 1 of 2.

EQUIPMENT See p. 1 of 2.

REMEDIATION IDENTIFIED // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
11	A	21.9		102.6	6	25' NE of GP 705 (Row 3)	Sample taken for ASTM D2216
12	A	24.9		96.5	6	5' NE of GP 729 (Row 3)	
13	A	22.1		101.8	6	10' SE of GP 747 (Row 3)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 5
SHEET NO.: 1 of 1
DATE: 6-10-96

JOB NAME ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY Density/Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY Rows 2 & 3. Testing of Lift 1, Row 3 from G.P. Nos. 759, 760 to GP Nos. 825, 826. Testing of Lift 3, Row 2 across entire row.

OBSERVATION Thickness of uncompacted lift approx. 6 inches.
Rock removal criterion met.
Density / Moisture specification met by nuclear gage testing.
Soil type of borrow material consistently Type A.
No. of passes of vibratory sheepsfoot compactor equaled or exceeded 6 passes

EQUIPMENT CAT 627 scraper pans, CAT CP-563 vibratory sheepsfoot compactor, tractor pulled disc, roller grader, I-R smooth paving roller

REMEDIATION IDENTIFIED // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	23.2		98.1	8	5' N of GP 772 (Row 3)	Sample taken for ASTM D2216
2	A	28.2		91.3	8	5' SE of GP 790 (Row 3)	
3	A	28.1		94.0	8	25' NE of GP 801 (Row 3)	
4	A	26.4		94.1	8	25' NE of GP 813 (Row 3)	
5	A	24.5		97.6	6	25' NE of GP 706 (Row 2)	
6	A	23.1		98.4	6	10' NW of GP 730 (Row 2)	Sample taken for ASTM D2216
7	A	27.0		94.3	6	10' N of GP 747 (Row 2)	
8	A	26.5		96.2	6	15' NE of GP 771 (Row 2)	
9	A	27.7		92.1	6	25' NE of GP 778 (Row 2)	
10	A	26.5		95.7	6	25' N of GP 802 (Row 2)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 6
SHEET NO.: 1 of 1
DATE: 6-14-96

JOB NAME ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrard

INSPECTION ACTIVITY Density/Moisture Curve CHECKED BY: R. Sherrard

LOCATION OF ACTIVITY Rows 1 & 3. Testing of Lift 4, Row 1 across entire row. Testing of Lift 2, Row 3 from west end to G.P. Nos. 759, 760.

OBSERVATION Thickness of uncompacted lift approx. 6 inches.
Rock removal criterion met.
Density / Moisture specification met by nuclear gage testing.
Soil type of borrow material consistently Type A.
No. of passes of vibratory sheeps foot compactor equaled or exceeded 6.

EQUIPMENT REMEDIATION IDENTIFIED CAT 627 scraper pans, D-8 Dozer, Cat CP-563 compactor, tractor-pulled disc, roller grader, IR smooth paving roller, water wagons, Harley rock rake, Dagelman rock picker
//NONE//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT D-3017	MOISTURE CONTENT D-2216	DENSITY D-2922	PASSES	LOCATION	REMARKS
1	A	25.2		96.2	10	40' NE of GP 719 (Row 1)	Sample collected for ASTM D2216
*1-d	A		(hot-plated) 21.2	D-1556 108.1	10	42' NE of GP 719 (Row 1)	Alternate density testing per equivalent compacted lift
2	A	27.0		94.7	10	25' NE of GP 731 (Row 1)	
3	A	24.3		97.6	10	25' NE of GP 743 (Row 1)	
4	A	27.2		94.4	8	20' N of GP 770 (Row 1)	
5	A	27.3		93.8	8	25' NE of GP 791 (Row 1)	
6	A	24.6		96.6	8	15' NE of GP 803 (Row 1)	Sample collected for ASTM D2216
7	A	24.8		97.0	6	25' NE of GP 712 (Row 3)	
8	A	25.9		96.0	6	25' NE of GP 729 (Row 3)	
9	A	25.3		97.2	6	10' NE of GP 753 (Row 3)	

a:lmes.tab., #168 * Duplicate in-field testing of Test. No. 1 using Sand Cone method (ASTM D 155

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 7
SHEET NO.: 1 of 1
DATE: 6-15-96

JOB NAME ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY Rows 3 & 4. Testing of Lift 2, Row 3 from G.P. Nos. 759, 760 to east end of row (G.P. Nos. 825, 826). Testing of Lift 1, Row 4 across entire row (defined as G.P. Nos. 704, 705 to 826, 8

OBSERVATION Thickness of uncompacted lift graded to approx. 6 inches. Rock removal criterion met by machine & hand-rock picking of large rocks. Density / Moisture specification met by nuclear gage testing. Soil type of borrow material consistently Type A. No. of passes of vibratory sheeps foot compactor equaled or exceeded 6.

EQUIPMENT REMEDIATION IDENTIFIED CAT 627 scraper pans, D-8 Dozer, CAT CP-563 compactor, dozer-pulled disc, roller grader, I-R smooth paving roller, water wagon, water tanker semi-tractor trailer, Harley rock rake, Bagelman rock pick // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	25.8		95.0	10	15' NE of GP 765 (Row 3)	Sample collected for ASTM D 2216
2	A	25.3		96.7	10	10' NE of GP 784 (Row 3)	
3	A	26.9		95.2	10	16' NE of GP 796 (Row 3)	
4	A	28.0		91.7	10	40' NE of GP 818 (Row 3)	
5	A	24.1		99.2	8	30' NE of GP 794 (Row 4)	
6	A	23.8		99.4	8	5' N of GP 737 (Row 4)	Sample collected for ASTM D 2216
7	A	25.2		97.2	8	35' NW of GP 752 (Row 4)	
8	A	24.8		98.0	8	25' NE of GP 764 (Row 4)	
9	A	26.4		95.6	8	20' N of GP 785 (Row 4)	
10	A	22.0		99.1	8	30' NE of GP 797 (Row 4)	
11	A	26.5		94.0	8	25' NE of GP 819 (Row 4)	Sample collected for ASTM D 2216

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 8
SHEET NO.: 1 of 2
DATE: 6-17-96

JOB NAME: ILFV, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 1, 2, & 3. Testing of Lift 4, Row 2 across entire row. Testing of Lift 5, Row 1 across entire row.

OBSERVATION: Thickness of uncompacted lift graded to approx. 5 inches. Rock removal criterion met by machine raking & hand picking. Density / Moisture specification met by nuclear gage testing. Soil type of borrow material consistently type A. No. of passes of vibratory sheeps foot compactor equaled or exceeded 6.

EQUIPMENT: CAT 627 scraper pans, D-8 high track Dozer, CAT CP-563 compactor, dozer-pulled disc, roller grader, I-R smooth paving roller, water wagons, water tanker (semi tractor-trailer), Harley rock rake, Bagelman rock picks

REMEDIATION IDENTIFIED: //None//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	25.8		96.2	6	25' NE of GP 711 (Row 2)	Sample collected for ASTM D 2216
2	A	24.5		100.3	6	20' N of GP 730 (Row 2)	
3	A	25.4		97.8	6	25' NE of GP 754 (Row 2)	
4	A	23.0		99.9	8	30' N of GP 771 (Row 2)	
5	A	27.9		92.4	8	25' N of GP 782 (Row 2)	
6	A	23.6		98.8	8	30' NE of GP 807 (Row 2)	Sample collected for ASTM D 2216
7	A	23.5		100.9	10	30' N of GP 719 (Row 1)	
8	A	23.3		100.3	10	25' NE of GP 734 (Row 1)	
9	A	26.5		96.0	10	40' N of GP 755 (Row 1)	
10	A	26.3		96.6	10	10' N of GP 767 (Row 1)	
11	A	26.2		95.7	10	25' N of GP 782 (Row 1)	Sample collected for ASTM D 2216
12	A	25.0		97.3	10	10' NW of GP 806 (Row 1)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 8
SHEET NO.: 2 of 2
DATE: 6-17-96

JOB NAME: ILFV, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 1, 2, & 3. Testing of Lift 3, Row 3 across entire row (defined as G.P. Nos. 705, 706 to 825, 826).

OBSERVATION: See p. 1 of 2.

EQUIPMENT: See p. 1 of 2.

REMEDIATION IDENTIFIED: //None//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
13	A	24.4		99.3	6	15' NE of GP 717 (Row 3)	
14	A	24.2		98.2	6	25' NE of GP 724 (Row 3)	
15	A	22.9		99.8	6	35' NE of GP 741 (Row 3)	
16	A	26.4		97.5	8	40' N of GP 765 (Row 3)	Sample collected for ASTM D 2216
17	A	26.0		96.4	8	5' N of GP 789 (Row 3)	
18	A	29.5		90.6	8	10' NE of GP 808 (Row 3)	
19	A	21.5		100.9	8	25' NE of GP 823 (Row 3)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 9
SHEET NO.: 1 of 1
DATE: 6-18-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Row 4. Testing of Lift 2, Row 4 across entire row (defined as G.P. Nos. 704, 705 to 826, 827).

OBSERVATION: Thickness of uncompacted lift graded to approx. 6 inches. Rock removal criterion met by machine raking/picking & manual picking. Density / Moisture specification met by nuclear gage testing. Soil type of borrow material consistently Type A. No. of passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT: CAT 627 scraper pans, D-8 high track Dozer, CAT CP-563 compactor, disc, roller grader, I-R smooth paving roller, water wagons, water tanker truck, Harley rock rake, Dagelman picker

REMEDIATION IDENTIFIED: // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	22.3		101.3	6	10' N of GP 716 (Row 4)	Sample collected for ASTM D 2216
2	A	25.1		96.6	6	40' NE of GP 725 (Row 4)	
3	A	23.4		98.0	6	25' NE of GP 752 (Row 4)	
4	A	28.5		96.1	10	10' NE of GP 773 (Row 4)	
5	A	24.0		99.6	10	25' N of GP 788 (Row 4)	
6	A	24.5		97.1	10	25' NE of GP 800 (Row 4)	Sample collected for ASTM D 2216
7	A	26.8		95.5	10	15' NW of GP 827 (Row 4)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 10
SHEET NO.: 1 of 2
DATE: 6-19-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 2, 3, & 4. Testing of Lift 5, Row 2 across entire row.

OBSERVATION: Thickness of uncompacted lift approx. 6 inches.
Rock removal criterion met.
Density / Moisture specification met by nuclear density testing.
Soil type of borrow material consistently Type A.
No. passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT REMEDIATION IDENTIFIED: CAT 627 scraper pans, D-8 high track Dozer, CAT CP-563 compactor dozer-pulled disc, roller grader, I-R smooth cylinder roller, water wagons, water tanker, hydro-seed sprayer, Harley rock rake, Degelman rock picker. // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	26.2		95.0	6	25' NE of GP 718 (Row 2)	Sample collected for ASTM D 2216
*1-d	A		hot-plating 21.9	D-1556 100.7	6	23' NE of GP 718 (Row 2)	alternate density testing per D-1556
2	A	24.9		97.7	6	25' NE of GP 735 (Row 2)	
3	A	24.8		98.4	6	25' NE of GP 747 (Row 2)	
4	A	22.8		100.0	8	10' NE of GP 759 (Row 2)	
5	A	27.5		94.5	8	40' N of GP 790 (Row 2)	
6	A	25.3		95.4	8	15' NE of GP 802 (Row 2)	Sample collected for ASTM D 2216

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* Duplicate of Test No. 1 using the sand cone method (ASTM D 1556 in-field w/ moisture hot-plated.

original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 10
SHEET NO.: 2 of 2
DATE: 6-19-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 2, 3, & 4. Testing of Lift 4, Row 3 across entire row (defined as G.P. Nos. 705, 706 to 825, 826). Testing of Lift 3, Row 4 from westend (GP Nos. 704, 705) to GP Nos. ~~827~~ 826 760, 761

OBSERVATION: See p. 1 of 2.

EQUIPMENT: See p. 1 of 2.

REMEDIATION IDENTIFIED: // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT D-3017	MOISTURE CONTENT D-2216	DENSITY D-2922	PASSES	LOCATION	REMARKS
7	A	22.5		101.4	10	40' N of GP 712 (Row 3)	
8	A	22.4		99.8	10	10' N of GP 736 (Row 3)	
9	A	28.2		92.3	10	20' N of GP 748 (Row 3)	
10	A	26.6		96.5	10	25' NE of GP 760 (Row 3)	
11	A	23.2		102.0	10	40' NE of GP 777 (Row 3)	Sample collected for ASTM D 2216
12	A	23.8		98.1	10	35' N of GP 808 (Row 3)	
13	A	24.0		96.5	10	10' N of GP 818 (Row 3)	
14	A	26.6		95.2	6	20' NE of GP 713 (Row 4)	
15	A	28.5		93.8	6	10' N of GP 728 (Row 4)	
16	A	24.0		98.1	6	15' N of GP 752 (Row 4)	Sample collected for ASTM D 2216
*16-d	A		hot-plating 25.7	D-1556 97.3	6	17' N of GP 752 (Row 4)	alternate density testing per D-1556

a:lmes.tab., #168

* Duplicate of Test. No. 16 using the sand cone method (ASTM D 1556) in-field w/ moisture hot-plated.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 11
SHEET NO.: 1 of 1
DATE: 6-20-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 3 & 4. Testing of Lift 3, Row 4 from G.P. Nos. ~~52~~ 760, 761 to east end of row (defined as GP Nos. 826, 827). Testing of Lift 5, Row 3 from west end (G.P. Nos. 705, 706) to GP. Nos. 759, 761

OBSERVATION: Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density/Moisture specification met by nuclear density testing. Soil type of borrow material consistently Type A. No. passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT: CAT 627 scraper pans, D-8 high track Dozer, CAT CP-563 compactor, dozer-pulled disc, roller grader, I-R smooth cylinder roller, water wagons, water tanker, hydro sprayer, Harley rock rake, Degelman rock picker, tandem dump trucks

REMEDIATION IDENTIFIED: // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT D-3017	MOISTURE CONTENT D-2216	DENSITY D-2922	PASSES	LOCATION	REMARKS
1	A	27.1		94.9	8	20' N of GP 764 (Row 4)	Sample collected for ASTM D 2216
2	A	21.9		103.4	8	40' NE of GP 776 (Row 4)	
3	A	22.9		100.5	8	25' N of GP 809 (Row 4)	
4	A	22.2		100.9	8	15' N of GP 822 (Row 4)	
5	A	24.3		98.0	6	30' NW of GP 705 (Row 3)	
6	A	25.5		96.9	6	25' N of GP 736 (Row 3)	Sample collected for ASTM D 2216
*6-d	A		hot-plating 25.9	D-1556 97.1	6	25' N, 2' E of GP 736 (Row 3)	Alternate density testing per D 1556
7	A	26.7		95.4	6	30' N of GP 753 (Row 3)	

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* Duplicate of Test No. 6 using the sand cone method (ASTM D 1556) in-field w/ moisture hot-plated.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 12
SHEET NO.: 1 of 1
DATE: 6-21-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve. CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Row 3. Completion of testing of Lift 5, Row 3 from G.P. Nos. 759, 760 to east end of row (defined as G.P. Nos. 825, 826).

OBSERVATION: Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density/Moisture specification met by nuclear density testing. Soil type of borrow material consistently Type A. No. passes of vibratory sheepsfoot compactor ≥ 6.

EQUIPMENT: CAT 627 scraper pan, D-8 high track Dozer, CAT CP-563 compactor, dozer-pulled disc, roller grader, I-R smooth roller, water wagon, hydro sprayer, Harley rock rake, Degelman rock picke

REMEDIATION IDENTIFIED: // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	27.0		95.7	6	40' N of GP 772 (Row 3)	Sample collected for ASTM D 2216
2	A	29.2		93.3	6	25' NE of GP 784 (Row 3)	
3	A	22.1		99.5	6	30' N of GP 801 (Row 3)	
4	A	24.0		97.5	6	30' N of GP 823 (Row 3)	

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original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 13
SHEET NO.: 1 of 1
DATE: 6-25-96

JOB NAME ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY Rows 4 & 5; & West Slope. Testing of Lift 4, Row 4 & Lift 1, Row 5. Testing of Lift 1, west slope.

OBSERVATION Thickness of uncompacted lift approx. 6 inches.
Rock removal criterion met.
Density / Moisture specification met by nuclear density testing.
Soil type of borrow material consistently Type A.
No. passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT REMEDIATION IDENTIFIED CAT 627 scraper pans, D-8 high track dozer, CAT CP-563 compactor, dozer-pulled disc, roller grader, I-R smooth cylinder roller, // None // water wagons, hydro sprayer, Harley rockrake, Degelman rock picker

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	26.3		95.3	8	25' NE of GP 716 (Row 4)	Sample collected for ASTM D 2216
2	A	21.1		101.8	8	30' NE of GP 728 (Row 4)	
3	A	24.5		97.4	8	10' NE of GP 740 (Row 4)	
4	A	24.1		99.4	8	40' NE of GP 761 (Row 4)	
5	A	25.9		95.4	8	25' NE of GP 788 (Row 4)	
6	A	21.1		102.6	10	40' NE of GP 809 (Row 4)	Sample collected for ASTM D 2216
7	A	26.3		95.7	10	25' NE of GP 812 (Row 4)	
8	A	22.8		101.1	6	5' S of GP 737 (Row 5)	
9	A	24.0		97.8	6	5' SE of GP 800 (Row 5)	
10	A	21.6		101.9	6	15' E of GP 615 (west slope)	
11	A	26.0		94.7	6	20' S of GP 629 (west slope)	Sample collected for ASTM D 2216

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 14
SHEET NO.: 1 of 1
DATE: 6-26-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: West Slope & Row 5. [Note: Row 5 is 10' wide strip adjacent to southern boundary of Row 4.] Testing of Lift 2, west slope & Lift 2, Row 5.

OBSERVATION: Thickness of uncompacted lift approx. 6 inches.
Rock removal criterion met.
Density / Moisture specification met by nuclear density testing.
Soil type of borrow material consistently Type A.
No. passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT: CAT 627 scraper pans, D-8 high track dozer, CAT CP-563 compactor, disc, roller grader, I-R smooth cylinder roller, water wagon, hydro sprayer, Harley rock rake, Degelman rock picker

REMEDIATION IDENTIFIED: // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	26.1		96.2	6	25' SE of GP 615 (west slope)	Sample collected for ASTM D 2216
2	A	24.8		99.3	6	10' S of GP 630 (west slope)	
3	A	24.3		97.9	8	5' S of GP 716 (Row 5)	
4	A	23.5		100.1	8	5' S of GP 819 (Row 5)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 15
SHEET NO.: 1 of 1
DATE: 6-27-96

JOB NAME: ILFV, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 4 & 5 and west slope. Testing of Lift 3, Row 5 & Lift 3, west slope. Testing of Lift 5, Row 4 from west end to G.P. Nos. 760, 761.

OBSERVATION: Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density/Moisture specification met by nuclear density testing. Soil type of borrow material consistently Type A. No. passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT: CAT 627 scraper pans, D-8 high track dozer, CAT CP-563 compactor, disc, roller grader, I-R smooth cylinder roller, water wagons, hydro-sprayer, Harley rock rake, Degelman rock picker.

REMEDIATION IDENTIFIED: //None//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	25.1		98.3	6	25'E 5'S of GP 725 (Row5)	Sample collected for ASTM D 2216
*1-d	A		not plate 25.4	D-1556 97.9	6	27'E 5'S of GP 725 (Row5)	Alternate density testing per D-1556
2	A	25.9		94.8	6	20'E 5'S of GP 788 (Row5)	
3	A	26.4		94.2	6	15'E of GP 604 (west slope)	
4	A	24.3		98.1	6	15'N of GP 631 (west slope)	
5	A	24.5		98.5	8	20'N of GP 704 (Row4)	
6	A	25.7		97.2	8	25'NE of GP 737 (Row4)	Sample collected for ASTM D 2216
7	A	23.6		99.3	8	15'N of GP 749 (Row4)	

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* Duplicate of Test No. 1 using the sand cone method (ASTM D 1556); in-field testing w/ moisture hot-plated.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 16
SHEET NO.: 1 of 1
DATE: 6-28-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 4 & 5 and west slope. Testing of Lift 5, Row 4 from G.P. Nos. 760, 761 to east end of row (G.P. Nos. 826, 827). Testing of Lift 4, Row 5 and Lift 4, west slope. Testing of Lift 5 Row 5 and Lift 5, west slope.

OBSERVATION: Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met by hand picking. Density / Moisture specification met by nuclear density testing. Soil type of borrow material consistently Type A. No. passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT: CAT 627 scraper pans, CAT CP-563 compactor, dozer, disc, roller grader, I-R smooth roller, water wagon, hydro sprayer

REMEDIATION IDENTIFIED: //None//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT D-3017	MOISTURE CONTENT D-2216	DENSITY D-2922	PASSES	LOCATION	REMARKS
1	A	26.3		97.0	6	35' NE of GP 773 (Row 4)	Sample collected for ASTM D 2216
2	A	25.7		99.6	6	35' NE of GP 785 (Row 4)	
3	A	26.9		95.3	6	25' N of GP 806 (Row 4)	
4	A	26.4		97.2	6	40' N of GP 819 (Row 4)	
5	A	27.1		95.6	8	25' E 5' S of GP 749 (Row 5)	
6	A	24.8		97.3	8	5' S of GP 776 (Row 5)	Sample collected for ASTM D 2216
7	A	24.2		98.2	8	10' S of GP 708 (west slope)	
8	A	23.9		98.5	8	10' W of GP 605 (west slope)	
9	A	23.3		100.5	6	5' S of GP 704 (Row 5)	
10	A	23.7		99.8	6	5' S of GP 764 (Row 5)	
11	A	23.5		98.2	6	10' S of GP 629 (west slope)	Sample collected for ASTM D 2216
12	A	24.8		97.6	6	20' W 10' S of GP 707 (west slope)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 17
SHEET NO.: 1 of 1
DATE: 7-1-96

JOB NAME: ILF V, Area II JOB NO.: F196-07 INSPECTED BY: R. Sherred

INSPECTION ACTIVITY: Density/Moisture Curve; % Compaction CHECKED BY: R. Sherred

LOCATION OF ACTIVITY: West slope & east end berm near manhole 2-A (M.H. 2-A).

OBSERVATION: Density/moisture curve testing of Lift 6, west slope. Percent compaction testing of engineered fill berm-buildup near manhole 2-A. One test per approx. 8 inch build-up of compacted fill, using 8 inch probe depth of nuclear density gage. Total thickness of compacted fill, approx. 2 ft. Total area of compacted fill placement approx. 100 ft 2. Thickness of uncompacted lift approx. 4 to 6 inches. Rock removal criterion met by machine-raking & hand-picking. Density/Moisture specification and % compaction specification met by nuclear density testing. Soil Type A. No. passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT: CAT 627 scraper pans, CAT CP-563 compactor, D-8 high track dozer, disc, roller grader, Z-R smooth roller, water wagon, water tanker, hydrosprayer, 4 arley rock rake, Degelman rock picker.

REMEDIATION IDENTIFIED: //None//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	26.2		95.9	6	10' E of GP 604 (west slope)	Sample collected for ASTM D 2216
2	A	21.8		104.1	6	@ GP 630 (west slope)	
3 *	A	23.2		94.6	6	10' W of M.H. 2-A (east bank)	passed; percent compaction = 97.3
4 *	A	24.6		98.8	6	15' W of M.H. 2-A (east bank)	passed; percent compaction = 101.6
5 *	A	24.8		96.7	6	20' W of M.H. 2-A (east bank)	passed; percent compaction = 99.5

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* Specified compaction: ≥ 95.0%; % compaction calculated from STD. Proctor Curve (ASTM D698) for laboratory tested borrow sample #1-75, with maximum dry density = 97.2 pcf & optimum moisture = 25.0%. Choice of this Proctor curve was based on agreement w/ 1 point Proctor ran in-field from sample collected @ test location.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 18
SHEET NO.: 1 of 1
DATE: 7-2-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Row 1 and East End. Testing of Lift 6, Row 1 and Lift 1, east end.

OBSERVATION: Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met by machine and hand picking. Density / Moisture specification met by nuclear density testing. Soil type of borrow material consistently Type A. No. passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT REMEDIATION IDENTIFIED: CAT 627 scraper pans, CAT CP-563 compactor, dozer, disc, roller, grader, I-R smooth roller, water wagon, hydro sprayer, Harley rock rake, Degelman rock picker // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	25.0		96.5	6	40' N of GP 710 (Row 1)	Sample collected for ASTM D 2216
2	A	24.4		97.2	6	40' N of GP 753 (Row 1)	
3	A	24.3		98.1	6	40' N of GP 794 (Row 1)	
4	A	29.1		93.5	6	25' NE of GP 827 (east end)	
5	A	27.6		95.4	6	25' NE of GP 826 (east end)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 19
SHEET NO.: 1 of 1
DATE: 7-3-96

JOB NAME: ILFV, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Rows 4 & 5. Testing of approx. 15' wide strip overlapping crown adjoining Rows 4 & 5, Lift 6.

OBSERVATION: Thickness of uncompacted lift approx. 3.5 to 6 inches. Rock removal criterion met by hand picking. Density / Moisture specification met by nuclear density testing. Soil type of borrow material consistently Type A. No. passes of vibratory sheepsfoot compactor ≥ 6.

EQUIPMENT: Tandem trucks, dozer, disc, roller grader, CAT CP-563 compactor, I-R smooth roller, water wagon, hydro sprayer.

REMEDIATION IDENTIFIED: //None//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	23.5		99.3	6	5'N of GP 713 (Row 4)	Sample collected for ASTM D 2216
2	A	24.1		98.8	6	5'N of GP 761 (Row 4)	
3	A	25.8		95.9	6	5'N of GP 812 (Row 4)	
4	A	23.8		100.2	6	5'S of GP 725 (Row 5)	
5	A	24.7		97.1	6	5'S of GP 773 (Row 5)	
6	A	25.6		96.5	6	5'S of GP 822 (Row 5)	Sample collected for ASTM D 2216

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 20
SHEET NO.: 1 of 1
DATE: 7-8-96

JOB NAME ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY Density / Moisture Curve CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY East End, testing of Lift 2, east end.

OBSERVATION Thickness of uncompacted lift approx. 6 inches.
Rock removal criterion met.
Density / Moisture specification met by nuclear density testing.
Soil type of borrow material consistently Type A.
No. passes of vibratory sheeps foot compactor 7, 6.

EQUIPMENT Disc, roller grader, CAT CP-563 compactor, I-R smooth
REMEDIATION roller, Harley rock rake, Degelman rock picker
IDENTIFIED N/A N/A

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	24.6		97.8	6	10' E of GP 826 (east end)	Sample collected for ASTM D 2216
2	A	28.2		92.3	6	10' NW of GP 830 (east end)	

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 21
SHEET NO.: 1 of 1
DATE: 7-9-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Shorrod

INSPECTION ACTIVITY: Density/Moisture Curve; % Compaction CHECKED BY: R. Shorrod

LOCATION OF ACTIVITY: Northeast slope.

OBSERVATION: Percent compaction testing of engineered fill required to build up slope to initial subgrade for placement of clay liner. Two tests per lift (Lift 1, Test Nos. 1 & 2; Lift 2, Test Nos. 3 & 4). Total thickness of compacted fill, approx. 0.8 ft. Total area of compacted fill placement approx. 6,000 ft². Density/Moisture curve testing of Lift 1, NE slope, for clay liner (Test Nos. 5-7).

Thickness of uncompacted lift approx. 6 inches. Rockremoval criterion met. Density/Moisture & % Compaction specifications met by nuclear density testing. Soil Type A. No. passes of vibratory sheepsfoot compactor ≥ 6.

EQUIPMENT: CAT 627 scraper pans, CAT CP-563 compactor, dozer, disc, roller grader, I-R smooth roller, water wagons, hydro sprayer, Harley rockrake, Degelman picker.

REMEDIATION IDENTIFIED: //None//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1*	A	24.2	Sample ✓ Collected	96.9	6	15' N of GP 641 (N. East slope)	passed; percent compaction = 99.7
2*	A	23.6		96.2	6	25' SW of GP 653 (N. East slope)	passed; percent compaction = 99.0
3*	A	25.3		97.0	6	20' N of GP 640 (N. East slope)	passed; percent compaction = 99.8
4*	A	26.3		95.2	6	25' NW of GP 639 (N. East slope)	passed; percent compaction = 97.9
5	A	28.3		91.8	8	5' N of GP 815 (N. East slope)	
6	A	26.5	✓	95.0	8	25' N of GP 817 (N. East slope)	Sample collected for ASTM D 2216
7	A	25.1		96.3	8	15' NE of GP 824 (N. East slope)	

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* Specified compaction: ≥ 95.0%; max. dry density = 97.2 pcf; optimum moisture = 25.0%. Compaction testing based on STD. Proctor Curve Report (ASTM D 698) for laboratory tested borrow sample # 1-75.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 22
SHEET NO.: 1 of 1
DATE: 7-10-96

JOB NAME: ILF II, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrard

INSPECTION ACTIVITY: Density/Moisture Curve CHECKED BY: R. Sherrard

LOCATION OF ACTIVITY: East End & Northeast slope. Testing of Lift 3, East End (Test Nos. 1 & 2). Testing of Lift 2, NE slope (Test Nos. 3-5). Testing of Lift 3, NE slope (Test Nos. 6-8). Testing of Lift 4 east end (Test Nos. 9 & 10). All testing, this date, was for the density/moisture specification of the clay liner material.

OBSERVATION: Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density/moisture specification met by nuclear density testing. Soil Type of borrow, Type A. No. of passes of vibratory sheepsfoot compactor ≥ 6.

EQUIPMENT: CAT 627 scraper pans, CAT CP-563 compactor, tandem dump trucks, D-8 high track & D-8N dozers, track hoe, back hoe, disc, roller

REMEDIATION IDENTIFIED: // None // grader, water wagon, I-R smooth roller, rock hound, hydro-seeder, Harley rock rake, Degelman rock picker

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	26.5	✓	95.1	6	20' NW of GP 831 (East End)	Sample collected for ASTM D 2216
2	A	25.9		96.3	6	10' NE of GP 827 (East End)	
3	A	24.7		96.4	8	40' NE of GP 814 (N. East slope)	
4	A	25.8		95.2	8	20' N of GP 824 (N. East slope)	
5	A	26.3		94.8	8	10' E of GP 825 (N. East slope)	
6	A	26.6	✓	95.3	10	30' NE of GP 806 (N. East slope)	Sample collected for ASTM D 2216
7	A	25.7		96.2	10	25' NE of GP 817 (N. East slope)	
8	A	24.5		97.0	10	10' W of GP 832 (N. East slope)	
9	A	23.9		99.2	8	5' E 30' N of GP 826 (East End)	
10	A	24.2		98.7	8	10' N of GP 830 (East End)	

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original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 23
SHEET NO.: 1 of 2
DATE: 7-11-96

JOB NAME ILFV, Area II JOB NO.: FY96-07 INSPECTED BY: R. Showard

INSPECTION ACTIVITY Density/Moisture Curve; % Compaction CHECKED BY: R. Showard

LOCATION OF ACTIVITY Percent compaction testing; east berm excavated area & road cut area for installation of pipeline; tests are for compacted fill placements to attain initial subgrade for clay liner placement; 2 tests per lift or 1 test per 250 linear ft of lift placement (minimal requirement for trench testing); Density/Moisture Curve Testing for clay liner lift placements: Lift Nos. 4 & 5, NE slope (Test Nos. 3-5 & 9-11); Lift 5, east end flat area (Test Nos. 12 & 13).

OBSERVATION Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density/Moisture & % compaction specifications met by nuclear density testing. Soil Type of borrow material, Type A. No. of passes of vibratory sheepsfoot compactor ≥ 6.

EQUIPMENT REMEDIATION IDENTIFIED CAT 627 scraper pans, CAT CP-563 compactor, tandem dump trucks, D-8 high track & D-8N dozers, track hoe, back hoe, disc, roller // None // grader, water wagons, I-R smooth roller, rock hound, hydro-sprayer, Harley rock rake, Dagelman rock picker

RECORD OF TEST DATA [‡Note: Lift No./Passes added under column for passes in Record of Test Data to facilitate tracking extensive no. of lifts required for east berm.]

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	‡Lift No./ PASSES	LOCATION	REMARKS
		D-3017	D-2216**	D-2922			
1*	A	25.5	✓	96.7	1/6	5'E of GP 649 (east berm)	passed; percent compaction = 99.5
2*	A	23.2		98.1	1/6	10'NE of GP 646 (east berm)	passed; percent compaction = 100.9
3	A	25.0		96.8	4/8	40'NE of GP 806 (N. east slope)	
4	A	23.9		98.3	4/8	15'NE of GP 817 (N. east slope)	
5	A	26.1		94.2	4/8	20'N of GP 825 (N. east slope)	
6*	A	25.6	✓	96.1	2/6	5'E 20'S of GP 649 (east berm)	passed; percent compaction = 98.9
7*	A	24.3		96.8	1/6	25'E of M.H. 2-A (road cut area)	passed; percent compaction = 99.6
8*	A	23.9		97.6	2/6	40'E of M.H. 2-A (road cut area)	passed; percent compaction = 100.4
9	A	27.1		93.4	5/10	40'N of GP 814 (N. east slope)	
10	A	24.7		97.1	5/10	15'NW of GP 824 (N. east slope)	
11	A	25.8	✓	95.9	5/10	15'S of GP 652 (N. east slope)	

a:lmes.tab., #168

* Denotes % compaction testing; specified compaction: ≥ 95.0%.
Max. dry density = 97.2 pcf; optimum moisture = 25.0%.
(Note: values from ASTM D 698 for borrow sample # 1-75.)

** ✓ denotes sample collected for oven-dry moisture (ASTM D 2216).

original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 23
SHEET NO.: 2 of 2
DATE: 7-11-96

JOB NAME ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY Density/Moisture Curve; % Compaction CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY See p. 1 of 2.

OBSERVATION See p. 1 of 2.

EQUIPMENT See p. 1 of 2.

REMEDIATION IDENTIFIED "None".

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	‡Lift No./ PASSES	LOCATION	REMARKS
		D-3017	D-2216**	D-2922			
12	A	23.7		99.6	5/8	35' NE of GP 827 (east end)	
13	A	26.5		94.7	5/8	15' NE of GP 826 (east end)	
14*	A	24.6		97.3	3/6	15' NE of GP 647 (east basin)	passed; percent compaction = 100.1
15*	A	23.9		98.8	3/6	50' E of M.H. 2-A (roadcut area)	passed; percent compaction = 101.6

a:lmes.tab., #168

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 24
SHEET NO.: 1 of 1
DATE: 7-12-96

JOB NAME ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY % Compaction CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY East berm excavated area & roadcut area

% compaction testing only for compacted fill placement to attain initial subgrade for clay liner placement

OBSERVATION

Thickness of uncompacted lift approx. 6 inches; % compaction specification met by nuclear density testing.

EQUIPMENT REMEDIATION IDENTIFIED CAT SP-563 compactor, tandem dump trucks, dozer, track hoe, back hoe, 1-R smooth roller

"None"

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT D-3017	MOISTURE CONTENT D-2216*	DENSITY D-2922	Lift No./ PASSES	LOCATION	REMARKS ‡
1	A	24.7	✓	96.5	4/6	40' E of GP 636 (E. Berm)	passed; percent compaction = 99.3
2	A	26.0		95.6	4/6	70' E of M.H. 2-A (road cut)	passed; percent compaction = 98.4
3	A	24.9		97.5	5/6	25' E of GP 830 (E. Berm)	passed; percent compaction = 100.3
4	A	24.2		98.4	5/6	30' E of M.H. 2-A (road cut)	passed; percent compaction = 101.2

a:lmes.tab., #168

*✓ denotes sample collected for oven-dry moisture.
‡ specified compaction ≥ 95.0%; max. dry density = 97.2 pcf; optimum moisture = 25.0%; values from ASTM D 698 for borrow sample # 1-75.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 25
SHEET NO.: 1 of 1
DATE: 7-13-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: % Compaction CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: East berm excavated areas & road cut area. % Compaction testing only for compacted fill placement to attain initial subgrade for clay liner placement. Test Nos. 4 - 9 are for compacted fill placement covering excavation for laying of pipeline west from manhole 2-A into main drainage line area of site.

OBSERVATION: Thickness of uncompacted lift approx. 6 inches. % compaction specification met by nuclear density testing.

EQUIPMENT: CAT CP-563 compactor, tandem dump truck, dozer, roller grader, track hoe, back hoe, T-R smooth roller

REMEDIATION IDENTIFIED: // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT D-3017	MOISTURE CONTENT D-2216*	DENSITY D-2922	Lift No./ PASSES	LOCATION	REMARKS ‡
1	A	24.3	✓	97.9	6/6	75'S of M.H. 2-A (East Berm)	passed; percent compaction = 100.7
2	A	23.7		96.8	6/6	60'E of M.H. 2-A (Cut)	passed; percent compaction = 99.6
3	A	22.8		98.0	7/6	25'SE of GP 830 (E. Berm)	passed; percent compaction = 100.8
4	A	23.0		96.1	1/**	10'E of GP 637 (E. Berm)	passed; percent compaction = 98.9
5	A	24.5		97.0	2/6	25'W of M.H. 2-A (E. Berm)	passed; percent compaction = 99.8
6	A	23.2	✓	96.3	3/6	30'W of M.H. 2-A (E. Berm)	passed; percent compaction = 99.1
7	A	22.8		95.7	4/6	10'W of M.H. 2-A (E. Berm)	passed; percent compaction = 98.5
8	A	23.6		96.0	5/6	15'W of M.H. 2-A (E. Berm)	passed; percent compaction = 98.8
9	A	22.5		95.2	6/6	5'W of M.H. 2-A (E. Berm)	passed; percent compaction = 97.9
10	A	24.2		97.1	8/6	@ M.H. 2-A (E. Berm)	passed; percent compaction = 99.9

a:lmes.tab., #168

*✓ denotes sample collected for oven-dry moisture.
** hard-compacted material w/ mechanical rammer
‡ spec. compaction ≥ 95.0%; max. dry density = 97.2 pcf; opt. moist. = 25.0%

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 26
SHEET NO.: 1 of 1
DATE: 7-16-96

JOB NAME ILFV, Area II JOB NO.: FY96-67 INSPECTED BY: R. Sherred

INSPECTION ACTIVITY Density/Moisture Curve; % Compaction CHECKED BY: R. Sherred

LOCATION OF ACTIVITY Percent compaction testing; east berm initial subgrade & road cut area. Density/moisture curve testing for clay liner: Lift 1, east berm (test Nos. 4 & 5); Lift 6, northeast slope (Test Nos. 8-10).

OBSERVATION Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density/moisture & % compaction specifications met by nuclear density testing. Sc'l Type of borrow material, Type A, No. of passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT REMEDIATION IDENTIFIED Tandem dump trucks, CAT CP-563 compactor, I-R Smooth roller, D-8 high track & D-8N dozers, track hoe (Liebherr), disc, roller, grader, water wagon, hydroseeder, Herley rock rake, Dugolmen rock picker >//None//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT D-3017	MOISTURE CONTENT D-2216**	DENSITY D-2922	Lift No./ PASSES	LOCATION	REMARKS
1*	A	27.2	✓	95.4	9/6	20' N of GP 646 (east berm)	passed; percent compaction = 98.1
2*	A	27.9		94.1	7/6	35' E of M.H. 2-A (road cut area)	passed; percent compaction = 96.8
3*	A	27.4		95.7	10/6	30' N of GP 649 (east berm)	passed; percent compaction = 98.5
4	A	26.1		96.5	1/8	25' N of GP 831 (east berm)	
5	A	26.8		95.9	1/8	35' N of GP 830 (east berm)	
6*	A	27.5	✓	94.3	8/12	45' E of M.H. 2-A (road cut area)	passed; percent compaction = 97.0
7*	A	28.1		93.5	9/10	65' E of M.H. 2-A (road cut area)	passed; percent compaction = 96.2
8	A	28.3		92.7	6/8	25' E of GP 805 (N. east slope)	
9	A	27.6		94.0	6/8	40' E of GP 815 (N. east slope)	
10	A	26.9		94.5	6/8	40' NE of GP 824 (N. east slope)	

a:lmes.tab., #168

* Denotes % compaction testing. Specified compaction: ≥ 95.0%, Max. dry density = 97.2 pcf; optimum moisture = 25.0%, (Note: values from ASTM D698 for borrow sample # 1-75.)

** ✓ denotes sample collected for oven-dry moisture.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 27
SHEET NO.: 1 of 1
DATE: 7-17-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve; % Compaction CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Percent compaction testing; road cut area (Test Nos. 1, 8, 11, & 12). Density/moisture curve testing for clay liner: Lifts 2 – 5; east berm (Test Nos. 2 – 7 & Test Nos. 9 & 10).

OBSERVATION: Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density/moisture & % compaction specifications met by nuclear density testing. Soil type of borrow material, Type A. No. passes of vibratory sheepsfoot compactor 7, 6.

EQUIPMENT REMEDIATION IDENTIFIED: CAT 627 scraper pans, tandem dump trucks, CAT CP-563 compactor, dozers, track hoe (Liebherr), roller grader, disc, water wagon, // None // hydro spreader, Harley rock rake, Bagelmen rock picker, landscaping rock-hound.

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT D-3017	MOISTURE CONTENT D-2216**	DENSITY D-2922	Lift No./ PASSES	LOCATION	REMARKS
1*	A	28.5	✓	93.6	10/16	85' E of M.H. 2-A (road cut area)	passed; percent compaction = 96.3
2	A	27.3		94.2	2/8	10' N of GP 648 (east berm)	
3	A	28.1		93.8	2/8	10' E of GP 831 (east berm)	
4	A	26.9		94.0	3/10	@ GP 832 (east berm)	
5	A	27.5		94.8	3/10	15' N of GP 831 (east berm)	
6	A	26.4	✓	96.4	4/6	15' SE of GP 832 (east berm)	
7	A	27.0		94.6	4/6	15' S of GP 831 (east berm)	
8*	A	26.8		94.2	11/12	35' E of M.H. 2-A (road cut area)	passed; percent compaction = 96.9
9	A	28.3		93.1	5/8	20' N of GP 646 (east berm)	
10	A	26.7		95.0	5/8	25' N of GP 649 (east berm)	
11*	A	27.8	✓	95.3	12/10	65' E of M.H. 2-A (road cut area)	passed; percent compaction = 98.0
12*	A	27.5		94.6	13/10	40' E of M.H. 2-A (road cut area)	passed; percent compaction = 97.3

a:lmes.tab., #168

* Denotes % compaction testing. Specified compaction: ≥ 95.0%. Max. dry density = 97.2 pcf; optimum moisture = 25.0%. [Note: values from ASTM D698 for borrow sample # 1-75.]

** ✓ denotes sample collected for oven-dry moisture.

original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 28
SHEET NO.: 1 of 1
DATE: 7-18-96

JOB NAME: ILF V, Area II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod

INSPECTION ACTIVITY: Density/Moisture Curve; % Compaction CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: Percent compaction testing; road cut area (Test Nos. 3, 7, & 8). Density/Moisture Curve testing for clay liner; final surveying Lift No. 6, east berm (Test Nos. 1 & 2); final surveying Lift No. 7, toe & top of NE slope (Test Nos. 4-6 & 9-11).

OBSERVATION: Thickness of uncompacted lift approx. 6 inches. Rock removal criterion met. Density/moisture & % compaction specifications met by nuclear density testing. S: 1 type of borrow material; Type A. No. passes of vibratory sheeps foot compactor ≥ 6.

EQUIPMENT: Tandem dump trucks; CAT CP-563 compactor, D-8 dozers, Liebherr track hoe, water wagons, hydrosprayer, rock-hound.

REMEDIATION IDENTIFIED: // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT D-3017	MOISTURE CONTENT D-2216**	DENSITY D-2922	Lift No./ PASSES	LOCATION	REMARKS
1	A	24.0	✓	98.8	6/16	20' NE of GP 638 (east berm)	
2	A	24.7		97.3	6/16	5' E of GP 637 (east berm)	
3 *	A	24.5		96.7	14/8	55' E of M.H. 2-A (road cut)	passed; percent compaction = 99.5
4	A	26.3		95.3	7/10	@ GP 655 (top NE slope)	
5	A	25.9		96.2	7/10	25' E of GP 816 (top NE slope)	
6	A	24.4	✓	98.5	7/10	@ GP 652 (top NE slope)	
7 *	A	23.8		95.9	15/6	25' E of M.H. 2-A (road cut)	passed; percent compaction = 98.7
8 *	A	24.3		96.3	16/6	50' E of M.H. 2-A (road cut)	passed; percent compaction = 99.1
9	A	25.9		96.2	7/8	@ GP toe of 644 (NE slope)	
10	A	26.5		95.8	7/8	@ GP toe of 824 (NE slope)	
11	A	25.8	✓	96.5	7/8	@ GP toe of 638 (NE slope)	

a:lmes.tab., #168

* Denotes % compaction testing. Specified compaction: ≥ 95.0 %. Max. dry density = 97.2 pcf; optimum moisture = 25.0 %. [Note: values from ASTM D 698 for borrow sample # 1-75.]

** ✓ denotes sample collected for oven-dry moisture.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 29
SHEET NO.: 1 of 1
DATE: 9/11/96

JOB NAME ILF V - A2 JOB NO.: FY96-07 INSPECTED BY: T. McGill

INSPECTION ACTIVITY Anchor trench backfill CHECKED BY: T. McGill

LOCATION OF ACTIVITY Anchor trench east

OBSERVATION density - moisture specification met as per clay liner (Daniels curve)

EQUIPMENT hand held vibratory compactor

REMEDIATION → none

IDENTIFIED → none

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
#1	A	29.32		89.08	N/A	east anchor trench northern slope east bang	lift #1
#2	A	27.50		92.06	N/A	east anchor trench northern slope east trend	lift #3

a:lmes.tab., #168

Original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 30
SHEET NO.: 1 of 1
DATE: 9/12/96

JOB NAME ILF V-A2 JOB NO.: F96-07 INSPECTED BY: T. McGill

INSPECTION ACTIVITY Anchor trench backfill CHECKED BY: T. McGill

LOCATION OF ACTIVITY Anchor trench east and west

OBSERVATION density - moisture specifications met as per clay liner (Daniel's curve)

EQUIPMENT Hand-held vibratory compactor

REMEDIATION none

IDENTIFIED none

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
#1	A	26.40		93.65	NA	east anchor trench north east slope	Lift #2
#2	A	24.10		97.10	N/A	west anchor trench west slope	Lift #3
#3	A	27.29		93.43	N/A	west anchor trench west slope	Lift #2

a:lmes.tab., #168

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 31
SHEET NO.: 1 of 1
DATE: 9/13/96

JOB NAME: ILF II-A2 JOB NO.: F96-07 INSPECTED BY: T. McGill

INSPECTION ACTIVITY: Anchor trench backfill CHECKED BY: T. McGill

LOCATION OF ACTIVITY: Anchor trench west and east

OBSERVATION: Desity-moisture specification met as per clay liner (Denid'sc

EQUIPMENT: hand-held vibratory compactor

REMEDIATION: none

IDENTIFIED: none

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
#1	A	27.50		92.05	N/A	west anchor trench west slope	Lift #3
#2	A	27.20		91.77	N/A	east anchor trench ~~North~~ east slope	Lift #1

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INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 32
SHEET NO.: 1 of 1
DATE: 9-20-96

JOB NAME: ILF V - A2 JOB NO.: F996-07 INSPECTED BY: K. Brown

INSPECTION ACTIVITY: Nuclear Density Testing CHECKED BY: K. Brown

LOCATION OF ACTIVITY: East End of cell.

OBSERVATION: density-moisture specifications met as per proctor of Type A Soil.

EQUIPMENT: Tandem Dumptrucks, Cat. 627 pan, D-8 dozier, Cat 563 compactor

REMEDIATION: None

IDENTIFIED: None

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	21.55		102.8	3	Center of grid sq. (Row 3, 4)(Stake 818, 818)	pass
2	A	23.66		96.96	3	Center of grid sq. (Row 2, 3)(Stake 824, 825)	pass
3	A	23.28		98.88	3	Center of grid sq. (Row 2, 3)(Stake 807, 814)	pass
4	A	26.83		95.4	3	Center of grid sq. (Row 1, 2)(Stake 803, 806)	pass

a:lmes.tab., #168

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 33
SHEET NO.:
DATE: 9-23-96 (m

JOB NAME ILF V - AII JOB NO.: F496-07 INSPECTED BY: K. Brown / T. McGill
INSPECTION ACTIVITY CHECKED BY: K. Brown / T. McGill

LOCATION OF ACTIVITY East End of Cell

OBSERVATION Density - moisture specifications met as per daniel's curve.

EQUIPMENT Tandem dump trucks, D5 dozer, Cat 563 Compactor
REMEDIATION None
IDENTIFIED None

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
5	A	23.53		101.3	2	center of wind row (4.5) (stake 822, 827)	pass

a:lmes.tab., #168

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 34
SHEET NO.: 1 of 1
DATE: 9-24-96

JOB NAME: ILF V - AII JOB NO.: F196-07 INSPECTED BY: Tom McGill

INSPECTION ACTIVITY: CHECKED BY: Tom McGill

LOCATION OF ACTIVITY: Northeast end of cell

OBSERVATION: Density and moisture within 95% of Standard Proctor #3 97.2 Dry Density at 25% moisture +-3%

EQUIPMENT: D-6 dozer and footed roller (Cat-563)

REMEDIATION IDENTIFIED:

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
#6	A	22.60		94.95	1	center grid row 3.5 stake 638	Pass

a:lmes.tab., #168

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 35
SHEET NO.: 1 of 1
DATE: 9-25-96 (wed)

JOB NAME ILV - AII JOB NO.: F96-07 INSPECTED BY: K. Brown

INSPECTION ACTIVITY In-place Density Testing CHECKED BY: K. Brown

LOCATION OF ACTIVITY All of 3rd lift between Rows 1 & 4

OBSERVATION Density testing specifications Met as per Type A soil.

EQUIPMENT Tandem dump trucks, D8 dozer, Cat 563 compactor, Liebherr backhoe

REMEDIATION IDENTIFIED None

None

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION Center of Grid Square	REMARKS
		D-3017	D-2216	D-2922			
7	Type A	20.17		96.46	6	Row (2,3) stake (790,795)	Pass
8	A	18.99		100.6	6	Row (1,2) stake (782,791)	pass
9	A	19.97		97.97	6	Row (3,4) stake (777,784)	pass
10	A	19.16		102.7	6	Row (2,3) stake (771,778)	pass
11	A	18.41		104.9	6	Row (1,2) stake (767,770)	pass
12	A	19.8		95.53	6	Row (3,4) stake (760,765)	pass

a:lmes.tab., #168

* Pass is 95% of Proctor for Type A soil.
Optimum Density is 97.4 pcf (100%) for type A soil.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 36
SHEET NO.: 1 of 1
DATE: 9-26-96 (Thur)

JOB NAME: ILF V - A II JOB NO.: FY-9607 INSPECTED BY: K. Brown

INSPECTION ACTIVITY: In-Place Density testing CHECKED BY: K. Brown

LOCATION OF ACTIVITY: All along cell between Rows 1 & 4

OBSERVATION: Density Specifications met as per Type A soil

EQUIPMENT: Tandem dump truck, D8 dozier, cat 563 compactor

REMEDIATION IDENTIFIED: N/A

N/A

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION Center of grid square	REMARKS
		D-3017	D-2216	D-2922			
13	Type A	17.12		93.57	6	Row (2, 3) Stake (754, 759)	Pass
14	A	21.61		96.94	6	Row (1, 2) Stake (746, 755)	pass
15	A	19.73		95.42	6	Row (3, 4) Stake (741, 748)	pass
16	A	19.86		94.67	6	Row (2, 3) Stake (735, 742)	pass
17	A	19.28		96.43	6	Row (1, 2) Stake (731, 734)	pass
18	A	20.40		94.46	6	Row (3, 4) Stake (724, 729)	pass
19	A	22.64		97.60	6	Row (2, 3) Stake (718, 723)	pass
20	A	22.48		95.73	8	Row (1, 2) Stake (711, 719)	pass
21	A	20.88		94.36	8	Row (3, 4) Stake (705, 712)	pass
22	A	21.06		93.88	8	Row (2, 3) Stake (629, 706)	pass.

a:lmes.tab., #168

% Pass is 95% of optimum density for type A soil.

Optimum Density is 97.4 pcf (100%) for type A soil.

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 37
SHEET NO.: 1 of 1
DATE: 8-30-96 PM

JOB NAME: Inf V - A II JOB NO.: FY96-07 INSPECTED BY: T. M'Gill

INSPECTION ACTIVITY: Compacted Cover Final lift CHECKED BY: T. M'Gill

LOCATION OF ACTIVITY: South length of cell Row 4 & 5

OBSERVATION: Soil placed and compacted as per spec.

EQUIPMENT: D-6 dozer Cat 563 compactor

REMEDIATION IDENTIFIED:

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
#26	A	22.24%		95.15	1	south length Row 4 stake 760	Proctor #3
#27	A	21.60%		94.63	1	south length Row 4 stake 777	Proctor #3
#28	A	19.93%		103.6	1	Row 4 stake 787	Proctor #3
#29	A	21.93%		97.49	1	Row 4 stake 809	Proctor #3
#25	A	22.10%		95.26	1	Row 4 stake 73[illegible]	Proctor #3

a:lmes.tab., #168

original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 42
SHEET NO.: 1 of 1
DATE: 10-16-96

94-3832

JOB NAME: ILF V - A2 JOB NO.: FY96-07 INSPECTED BY: R. Sherrod (GEOTEK)

INSPECTION ACTIVITY: Backfill for leachate drainpipe trench CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY: South of east end of cell, in line w/ manhole 3-A.

OBSERVATION: Soil placed and compacted in leachate drain pipe trench. Loose lift thickness approx. 8 inches. Material Type A. Minimum No. of passes of footed roller = 6. Compacted w/ vibratory sheepsfoot compactor.

EQUIPMENT: D-8N Dozer, CAT CP 563 compactor, tandem dump truck

REMEDIATION IDENTIFIED: // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	Lift No./ PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	23.7		98.4	8/6	110' S of M.H. 3-A	Passed

a:lmes.tab., #168

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 43
SHEET NO.: 1 of 1
DATE: 10-17-96

94-3832

JOB NAME ILFV - A 2 JOB NO.: FY96-07 INSPECTED BY: R. Sherrod (GEOTEK)

INSPECTION ACTIVITY Backfill for leachate drainpipe trench CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY South of east end of cell, in line w/ manhole 3-A.

OBSERVATION Soil placed and compacted in leachate drain pipe trench. Loose lift thickness approx. 8 inches. Material Type A. Minimum No. of passes of footed roller = 6. Compacted w/ vibratory sheepsfoot compactor.

EQUIPMENT D-8N Dozer, CAT CP 563 compactor, tandem dump truck

REMEDIATION IDENTIFIED // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	Lift No./ PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	24.9		96.6	9/6	150' S of MH, 3-A	Passed

a:lmes.tab., #168

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 44
SHEET NO.: 1 of 1
DATE: 10-21-96

94-3832

JOB NAME ILF V - A II JOB NO.: FY96-07 INSPECTED BY: R. Sherrod (GEOTEK)

INSPECTION ACTIVITY Compaction of Backfill for leachate trench drainpipe excavation CHECKED BY: R. Sherrod

LOCATION OF ACTIVITY South of east end of cell, in line w/ manhole 3-A,

OBSERVATION Soil placed and compacted in leachate drainpipe trench. Loose lift thickness approx. 8 inches. Material type A. ~~Minimum No. of passes of footed roller = 6.~~ Compacted w/ vibratory sheepsfoot compactor.

EQUIPMENT D-8N Dozer, CAT CP 563 compactor, tandem dump truck.

REMEDIATION IDENTIFIED //None//

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	Lift No./ PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	23.2		98.3	10/6	85' S of Mh. 3-A	Passed

a:lmes.tab., #168

Original

INDUSTRIAL LANDFILL V, AREA II
CONSTRUCTION QUALITY ASSURANCE
INSPECTION DATA SHEET

REPORT NO.: 45
SHEET NO.: 1 of 1
DATE: 10-22-96

94-3832

JOB NAME ILFV – AII JOB NO.: FY96-07 INSPECTED BY: R. Sherred (GEOTEK)

INSPECTION ACTIVITY Compaction of backfill for leachate drainpipe trench CHECKED BY: R. Sherred

LOCATION OF ACTIVITY South of east end of cell, in line w/ manhole 3-A.

OBSERVATION Soil placed and compacted in leachate drainpipe trench. Loose lift thickness approx. 8 inches. Material type A. Minimum No. of passes of footed roller = 6. Compacted w/ vibratory sheepsfoot compactor.

EQUIPMENT D-8N Dozer, CAT CP 563 compactor, tandem dump truck.

REMEDIATION IDENTIFIED // None //

RECORD OF TEST DATA

TEST NUMBER	SOIL TYPE	MOISTURE CONTENT		DENSITY	*Lift No/ PASSES	LOCATION	REMARKS
		D-3017	D-2216	D-2922			
1	A	24.5		98.4	11/6	100'S of Mh. 3-A	Passed

a:lmes.tab., #168 * Note: final lift for compacted trench backfill.

Laboratory Data

Project Name: ILFV-A2-Y12
Date: 06/14/96

Date Sampled: 06/05/96 Job # 94-3832
DateTested: 06/13/96 Lab # 96-4300

Sample Number	Natural Moisture	Dry Density at in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-12	22.2	N/A	N/A	58.5	27.1	SILTY CLAY w/ fine sand, chert, ferrous oxide nodules, red brown.

Location: 5' N of GP 803 (Row 1) Lift#2, 2000 cubic-yrd sampling Nuclear Density N/A Nuclear Moisture N/A

Date Sampled: 06/04/96 Job # 94-3832
DateTested: 06/13/96 Lab # 96-4300

Sample Number	Natural Moisture	Dry Density at in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-5	21.4	N/A	N/A	55.6	25.5	CHERTY CLAY w/ silt, and fine sand, ferrous oxide nodules,yellow red brown.

Location: 25'N of GP 711 (Row 2), Lift #1, 1000 cubic-yrd sampling Nuclear Density N/A Nuclear Moisture 22.3

Date Sampled: 06/05/96 Job # 94-3832
DateTested: 06/13/96 Lab # 96-4300

Sample Number	Natural Moisture	Dry Density at in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-17	25.0	N/A	N/A	57.6	24.4	SILTY CLAY w/ fine sand, chert, ferrous oxide nodules yellow red.

Location: 10' Nof GP 722 (Row 1) Lift #3, 3000 cubic-yrd sampling Nuclear Density N/A Nuclear Moisture 23.5

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/27/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/07/96
DateTested 06/25/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-21	27.0	N/A	N/A	59.1	27.4	CLAY w/ silt, fine sand , chert, yellow red brown

Location 25' N of GP 772 (ROW 3) lift# 1, 4000yrd sampling **Nuclear Density** N/A **Nuclear Moisture** 23.9
ASTMD698 Density **Optimum moisture**

Date Sampled 06/07/96
DateTested 06/25/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-25	27.0	N/A	N/A	66.4	32.3	CLAY w/ silt, fine sand , chert, yellow red brown

Location 25' N of GP 772 (ROW 3) lift# 1, 4000yrd sampling **Nuclear Density** N/A **Nuclear Moisture** 23.9
ASTMD698 Density 97.9 **Optimum moisture** 24.0

Date Sampled 06/10/96
DateTested 06/25/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-30	26.8	N/A	N/A	53.8	22.7	CLAY w/ fine sand, silt, chert, yellow red brown.

Location 40' N of GP 796 (ROW 3), lift#2, 5000yrd sampling **Nuclear Density** N/A **Nuclear Moisture** 26.6
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name	ILFV-A2-Y12
Date	06/28/96
Job #	94-3832
Lab #	96-4300

Date Sampled 06/14/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-35	29.1	N/A	N/A	55	25.1	CLAY w/ fine sand, silt, and chert, yellow red tan.

Location 20' NW of GP 827(ROW 4) lift#1, 7000 yrd samplin **Nuclear Density** N/A **Nuclear Moisture** 26.0
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/15/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-40	28.0	N/A	N/A	57.1	27.2	CLAY w/ fine sand, silt and chert, yellow red tan.

Location 20' NE of GP 731(ROW 1) lift#5, 8000 yrd sampling **Nuclear Density** N/A **Nuclear Moisture** 22.8
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/17/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-45	29.5	N/A	N/A	61.1	31.9	CLAY w/ chert, sand and silt, yellow red tan.

Location 25' NE of GP 753 (ROW 3) lift#3, 9000yrd sampling **Nuclear Density** N/A **Nuclear Moisture** 26.5
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/17/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-50	22.4	N/A	N/A	54.2	23.8	CLAY w/ silt, sand and chert, yellow red tan.

Location 40' N of GP 749(ROW 4) lift#2, 10,000yrd sampling

Nuclear Density N/A **Nuclear Moisture** 23.7
ASTMD698 Density 98.4 **Optimum moisture** 23.5

Date Sampled 06/18/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-55	22.4	N/A	N/A	53.8	23.0	CLAY w/ silt, sand and chert, yellow red tan.

Location 35' N of GP 723(ROW 2) lift#5, 11,000yrd sampling

Nuclear Density N/A **Nuclear Moisture** 20.9
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
		N/A	N/A	N/A	N/A	

Location _____

Nuclear Density N/A **Nuclear Moisture** N/A
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/18/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-60	20.9	N/A	N/A	52.5	24.3	CLAY w/ silt, fine sand and chert, yellow brown & red tan.

Location 20' NE of GP 705 (ROW 3) lift#412,000yrd samplin **Nuclear Density** N/A **Nuclear Moisture** 22.3
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/18/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-65	23.1	N/A	N/A	53.3	25.3	CLAY w/ sand, chert and silt, yellow brown & red tan.

Location 15' NE of GP 823 (ROW 3) lift#4,13,000yrd samplin **Nuclear Density** N/A **Nuclear Moisture** 22.4
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/19/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-70	26.2	N/A	N/A	57.3	27.9	CLAY w/ sand, chert and silt, yellow brown & red tan.

Location 10' N of GP 809(ROW 4)lift#3, 14,000yrd sampling **Nuclear Density** N/A **Nuclear Moisture** 24.7
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/20/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-75	23.3	N/A	N/A	56.0	26.3	CLAY w/ chert, fine sand and silt, yellow brown & red tan.

Location 25' N of GP 748(ROW 3)lift#5, 15,000yrd sampling

Nuclear Density N/A **Nuclear Moisture** 23.5
ASTMD698 Density 97.2 **Optimum moisture** 25.0

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
		N/A	N/A	N/A	N/A	

Location _____

Nuclear Density N/A **Nuclear Moisture** N/A
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
		N/A	N/A	N/A	N/A	

Location _____

Nuclear Density N/A **Nuclear Moisture** N/A
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name	ILFV-A2-Y12
Date	07/16/96
Job #	94-3832
Lab #	96-4300
Date Sampled	07/01/96
DateTested	07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
1-100	23.9	N/A	N/A	57.7	23.5	CLAY w/ silt, fine sand, chert, yellow red brown.

Location 5' S of GP 733 (Row 1)lift #6, 20,000yrd sampling.

Nuclear Density N/A **Nuclear Moisture** 24.3

ASTMD698 Density 98.1 **Optimum moisture** 24.1

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description

Location _____

Nuclear Density _____ **Nuclear Moisture** _____

ASTMD698 Density **Optimum moisture**

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description

Location _____

Nuclear Density _____ **Nuclear Moisture** _____

ASTMD698 Density _____ **Optimum moisture** _____

Laboratory Data

Project Name ILFV-A2-Y12
Date 07/30/96
Job # 94-3832
Lab # 96-4300

Date Sampled 07/18/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
1-125	23.9	94.9	51	25	CLAY w/ SILT, chert, fine sand traces, yellow tan brown.

Location 40' E of M.H. 2-A (Road Cut Area)

Nuclear Density N/A **Nuclear Moisture** 24.7
ASTMD698 Density 96.6 **Optimum moisture** 25.0

Date Sampled 07/12/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-50	24.7	N/A	N/A	N/A	CLAY w/ SILT, chert, fine sand traces, yellow tan brown.

Location 40' E of GP 636 (East Berm)

Nuclear Density 96.5 **Nuclear Moisture** 24.7
ASTMD698 Density N/A **Optimum moisture** N/A

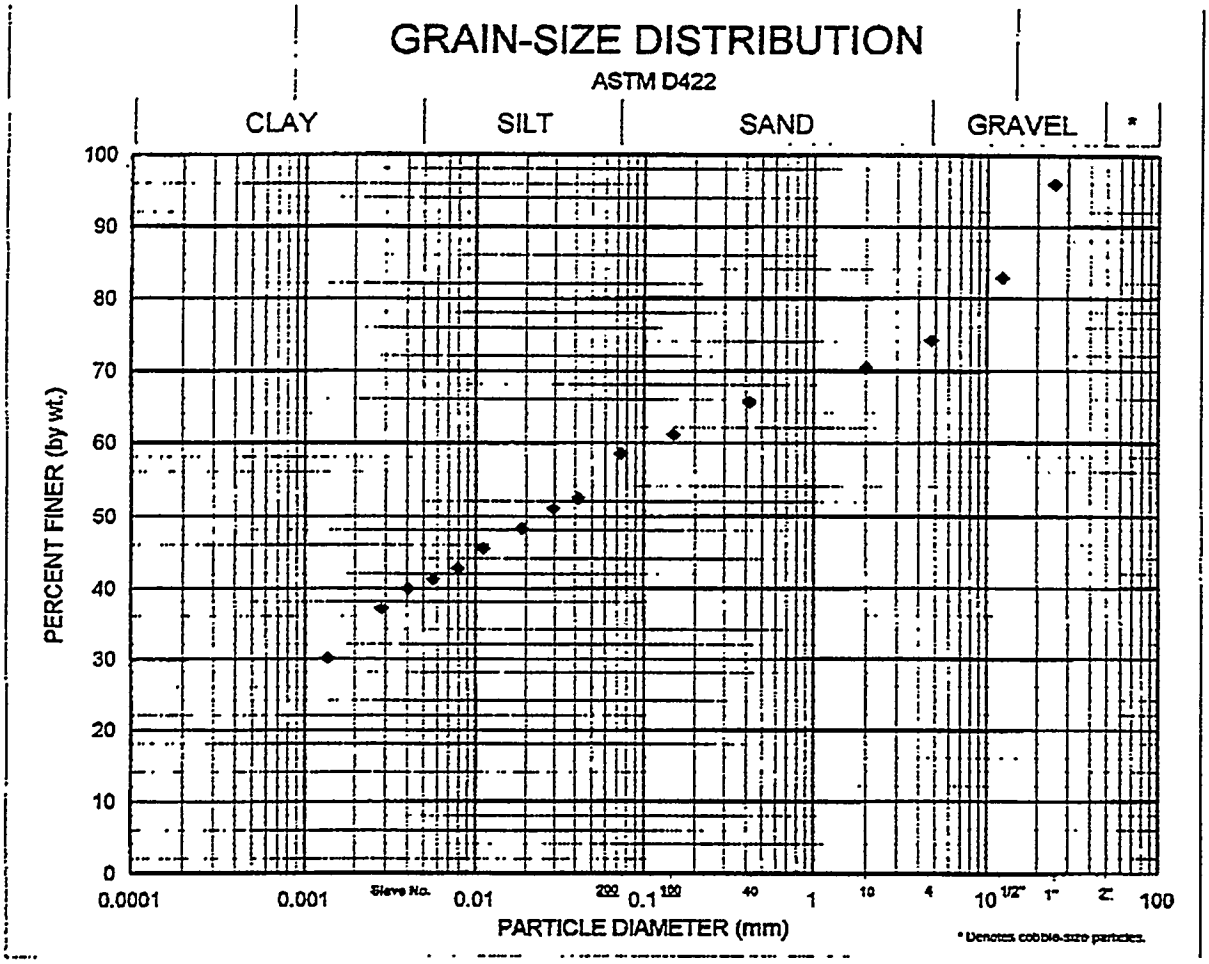
Date Sampled 07/13/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-51	25.4	N/A	N/A	N/A	CLAY w/ SILT, chert, ferrous oxide nodules, yellow red brown.

Location 75' S of M.H. 2-A (East Berm)

Nuclear Density 97.9 **Nuclear Moisture** 24.3
ASTMD698 Density N/A **Optimum moisture** N/A

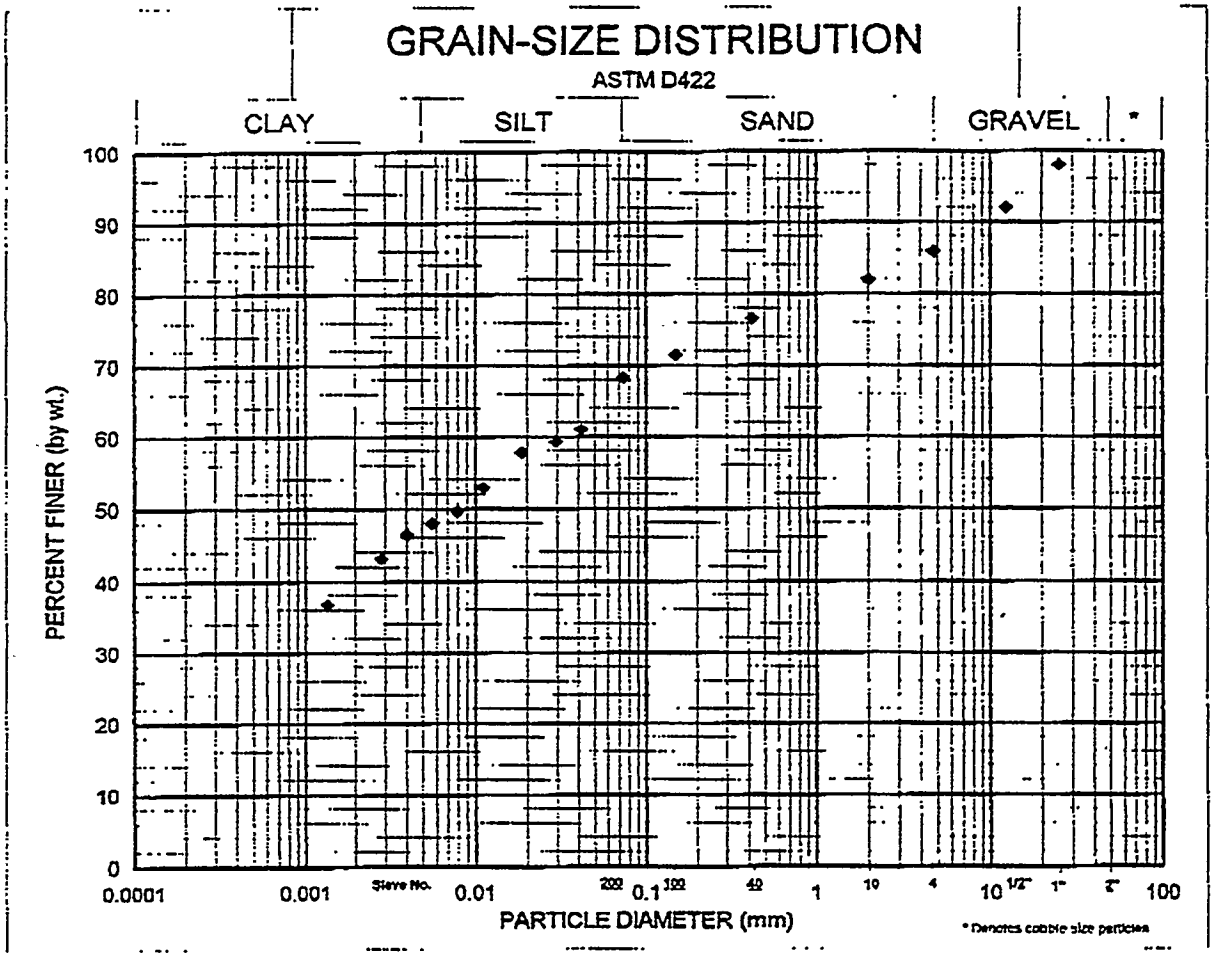
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/14/96
Client:	Martin Marietta
Sample I.D.:	1-5
Depth (ft.):	N/A
Description:	CHERTY CLAY w/ silt and fine sand, ferrous oxide nodules, yellow red brown.

% GRAVEL-SIZE:	26
% SAND-SIZE	16
% SILT-SIZE	18
% CLAY-SIZE	41

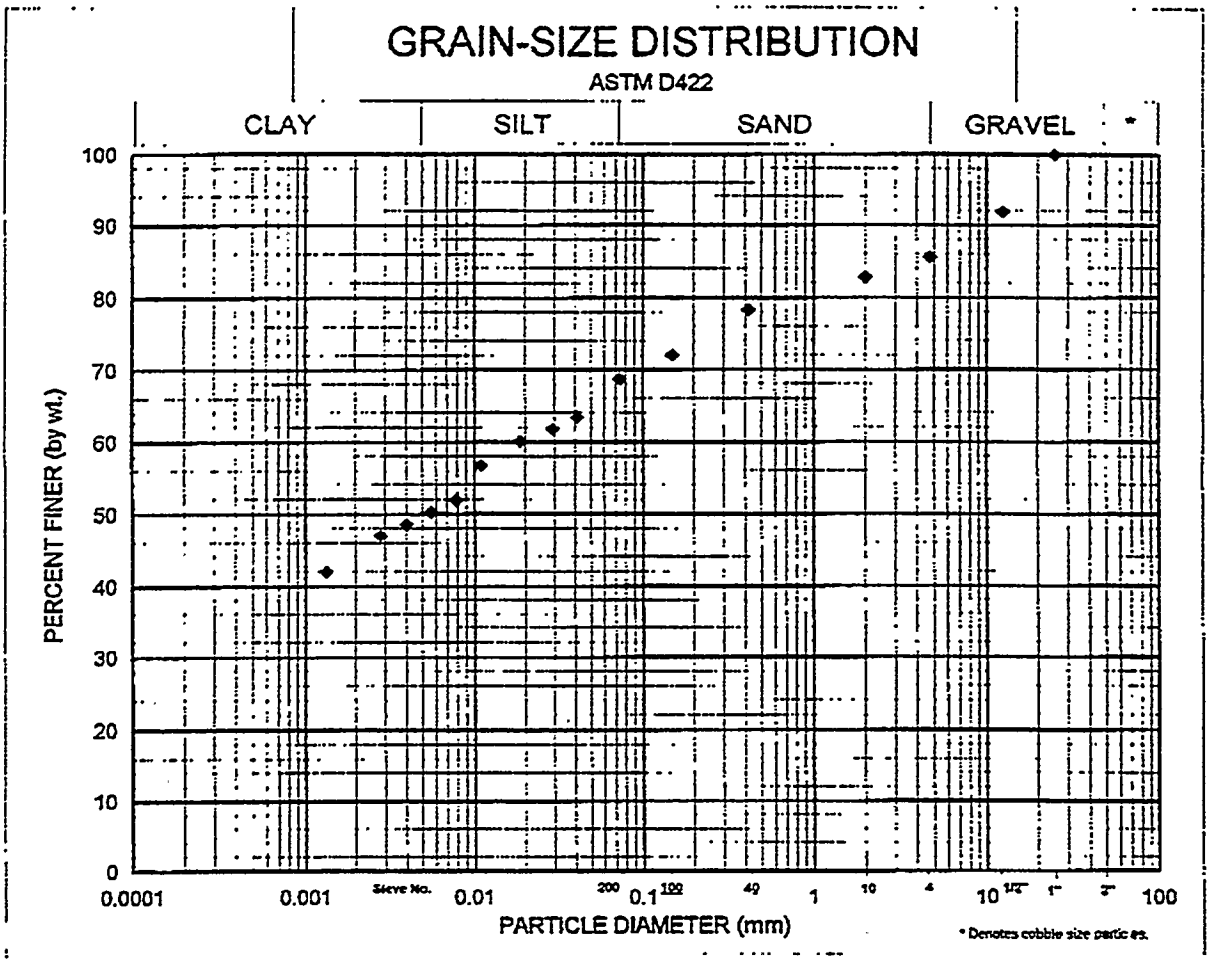
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/14/96
Client:	Martin Marietta
Sample I.D.:	1-12
Depth (ft.):	N/A
Description:	SILTY CLAY w/ fine sand, chert, ferrous oxide nodules, red brown.

% GRAVEL-SIZE:	14
% SAND-SIZE	18
% SILT-SIZE	21
% CLAY-SIZE	47

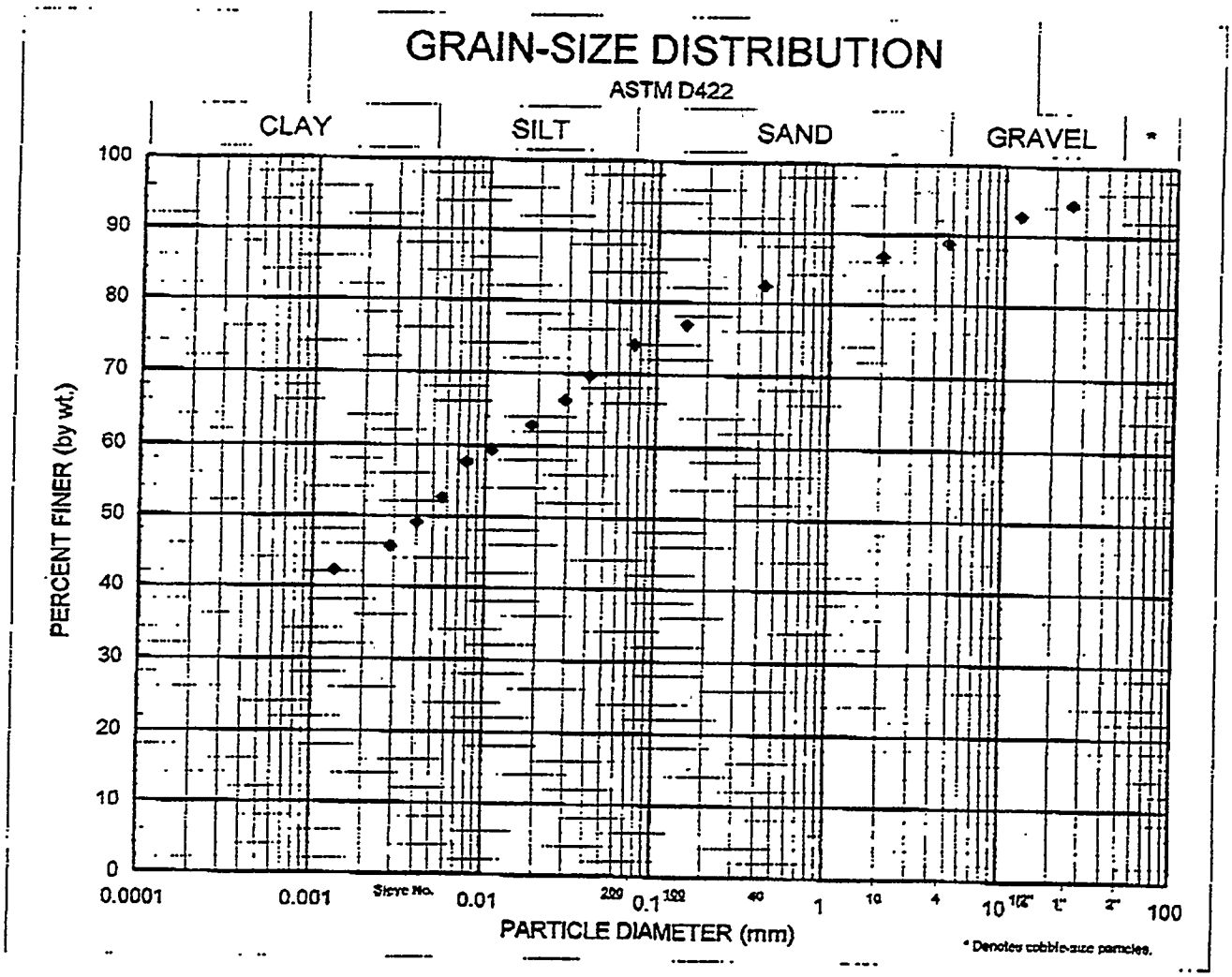
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/14/96
Client:	Martin Marietta
Sample I.D.:	1-17
Depth (ft.):	N/A
Description:	SILTY CLAY w/ fine sand, chert, ferrous oxide nodules, yellow red.

% GRAVEL-SIZE:	14
% SAND-SIZE	17
% SILT-SIZE	19
% CLAY-SIZE	49

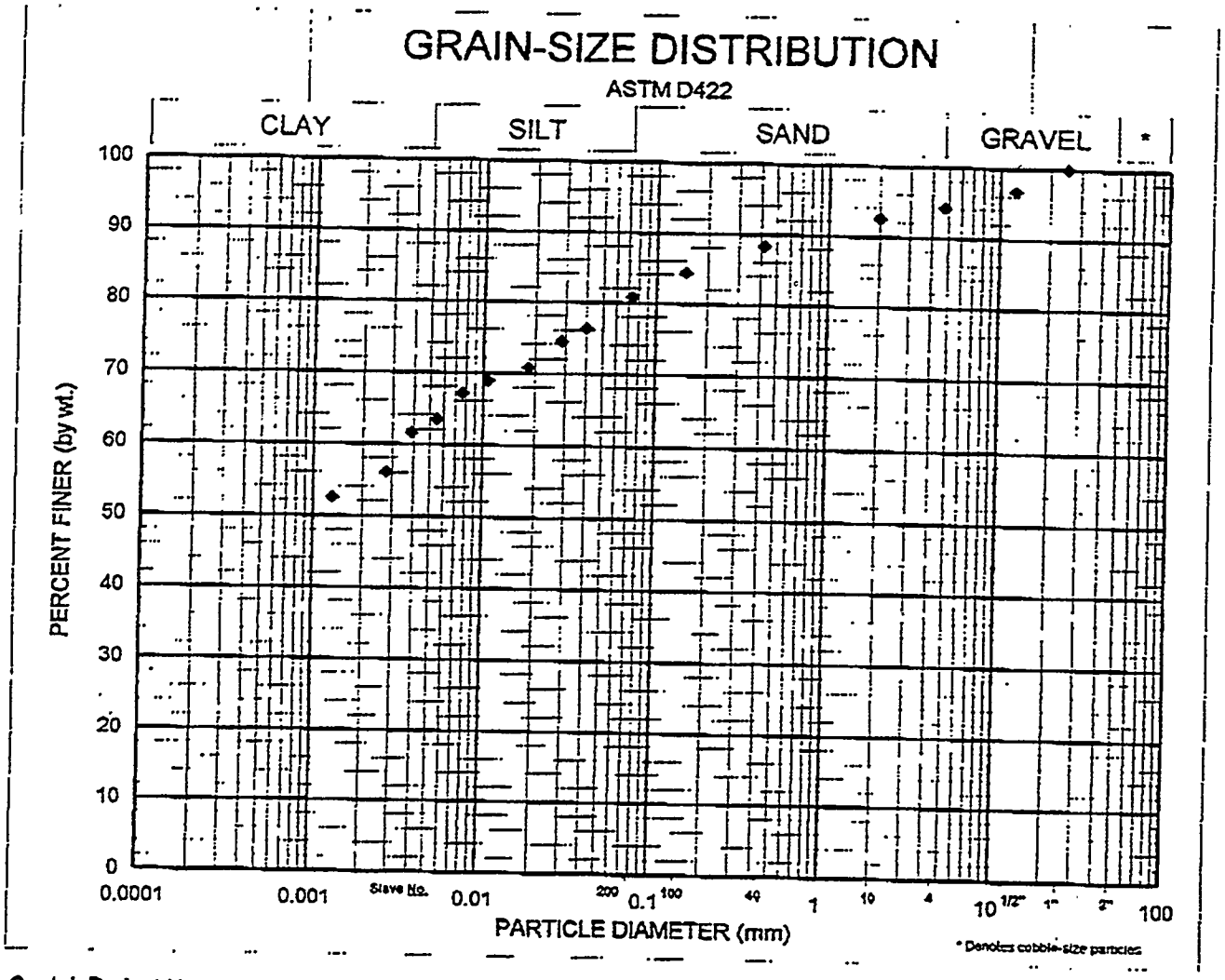
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/26/96
Client:	Martin Marietta
Sample I.D.:	1-21
Depth (ft.):	N/A
Description:	CLAY w/ silt, fine sand , and chert, yellow red brown.

% GRAVEL-SIZE	11.2
% SAND-SIZE	14.8
% SILT-SIZE	23.2
% CLAY-SIZE	50.8

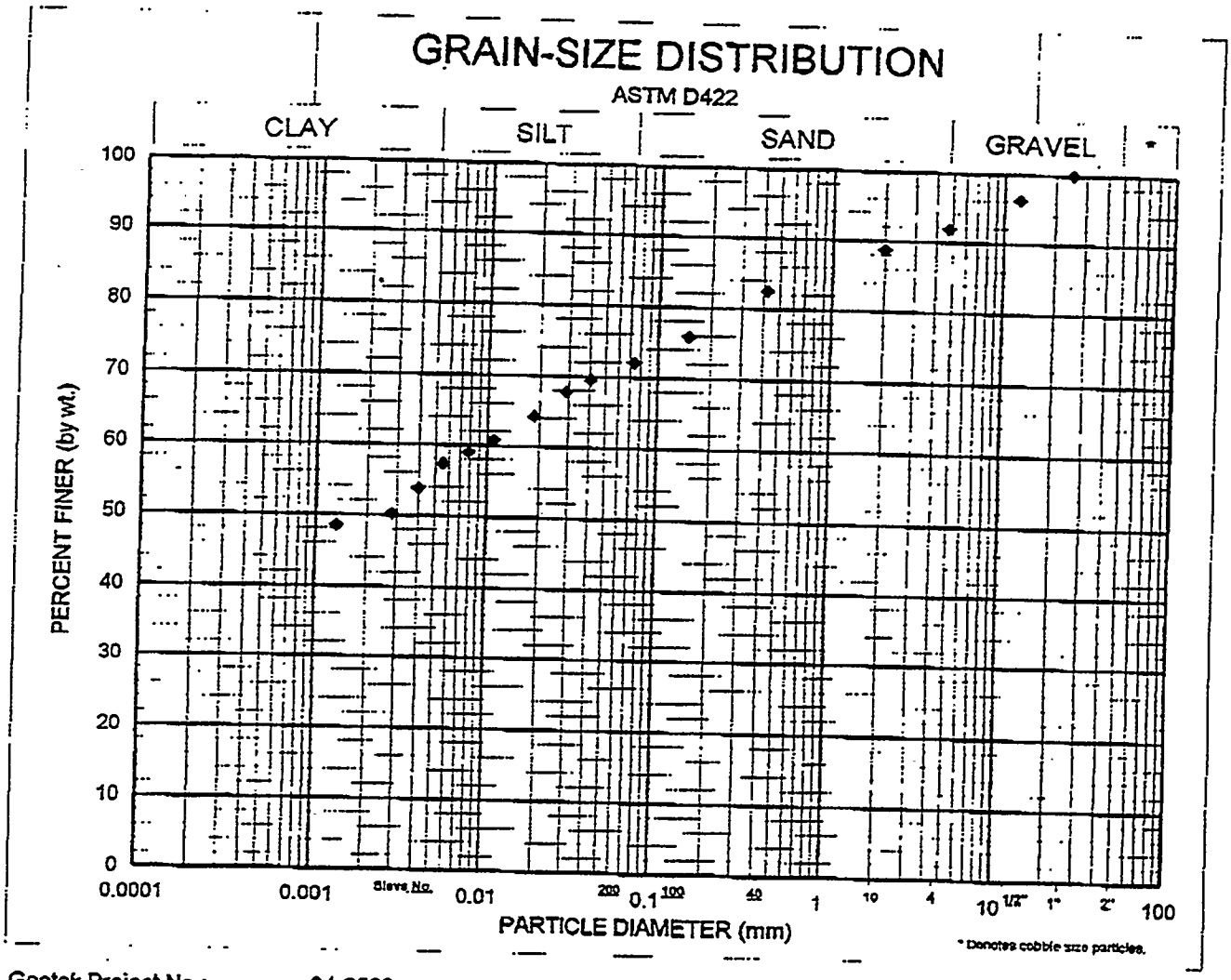
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/26/96
Client:	Martin Marietta
Sample I.D.:	1-25
Depth (ft.):	N/A
Description:	CLAY w/ silt, fine sand traces, and chert, yellow tan red.

% GRAVEL-SIZE	5.8
% SAND-SIZE	13.4
% SILT-SIZE	18.3
% CLAY-SIZE	62.5

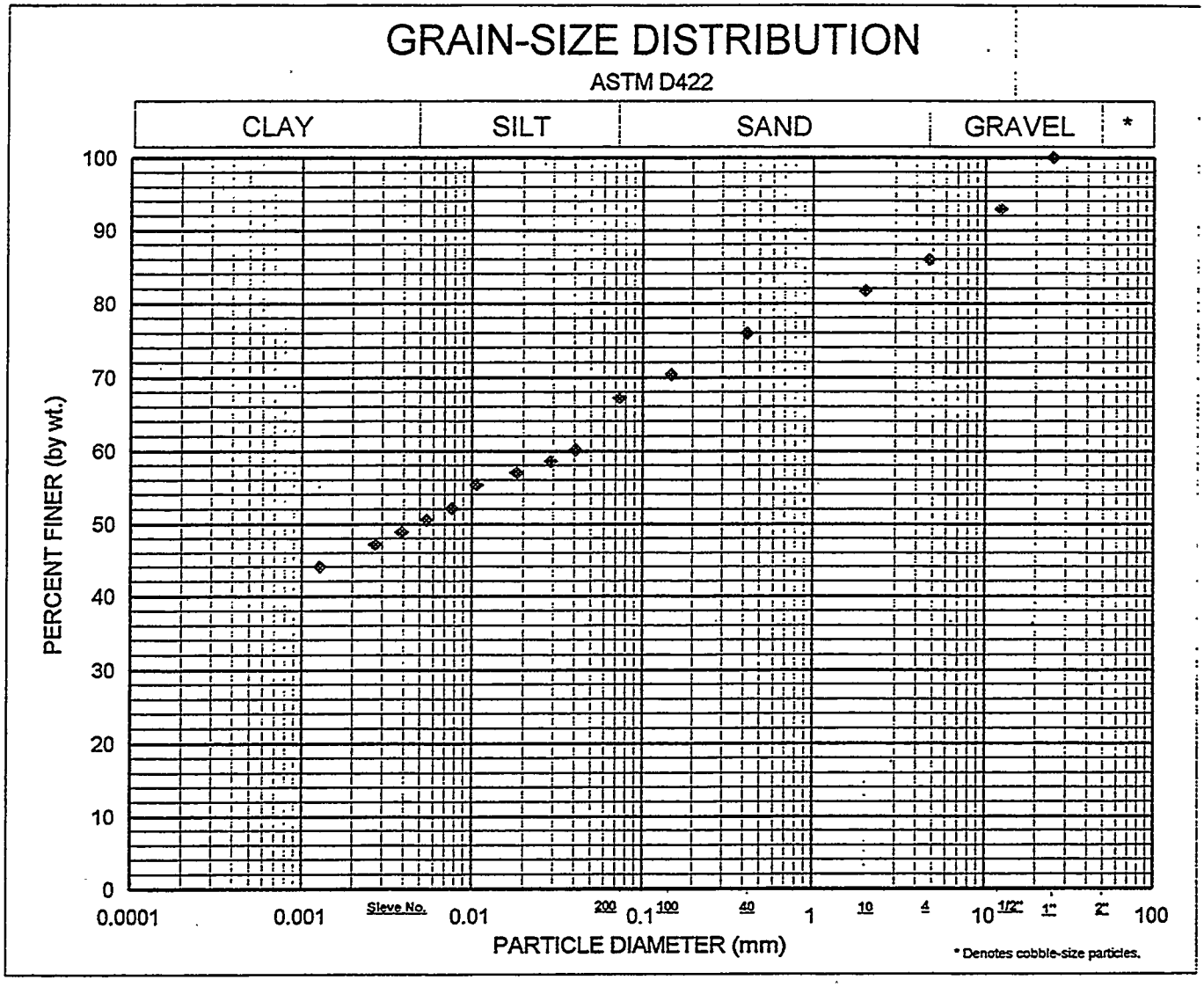
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/26/96
Client:	Martin Marietta
Sample I.D.:	1-30
Depth (ft.):	N/A
Description:	CLAY w/ fine sand, silt, and chert, yellow red brown.

% GRAVEL-SIZE	8.3
% SAND-SIZE	19.8
% SILT-SIZE	16.5
% CLAY-SIZE	55.5

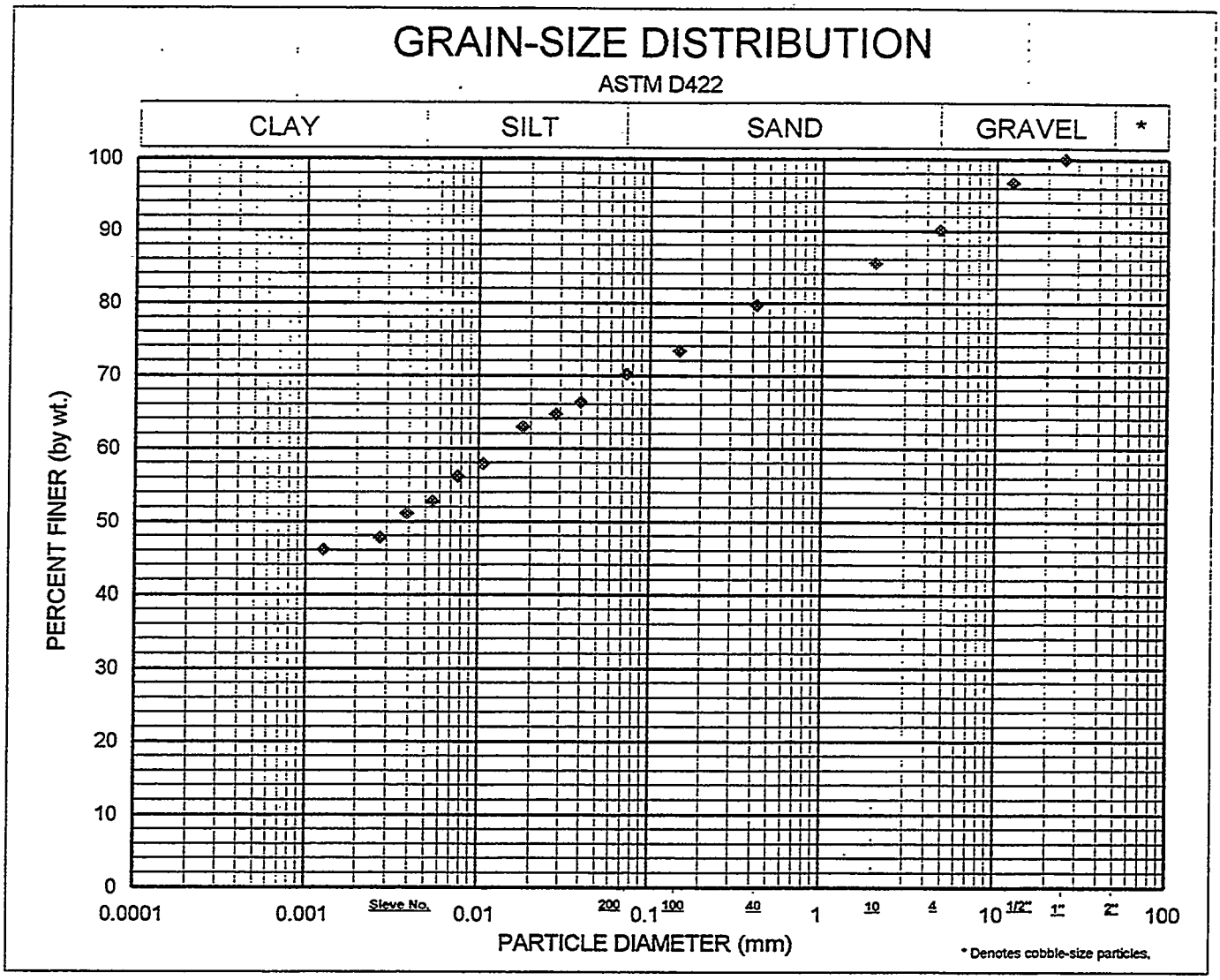
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/28/96
Client:	Martin Marietta
Sample I.D.:	1-35
Depth (ft.):	N/A
Description:	CLAY w/ fine sand, silt, and chert, yellow red tan.

% GRAVEL-SIZE	14.1
% SAND-SIZE	18.8
% SILT-SIZE	17.5
% CLAY-SIZE	49.7

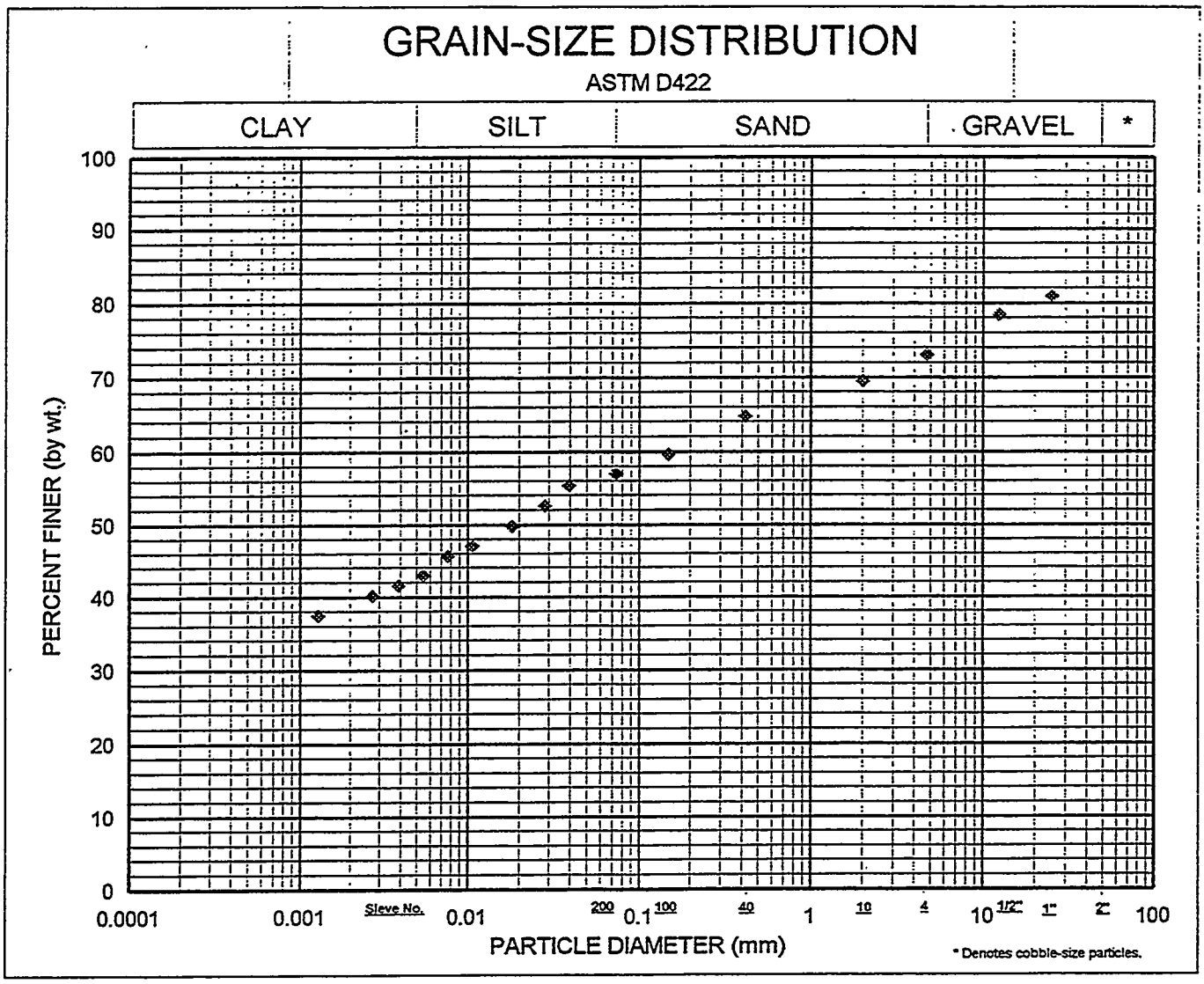
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/28/96
Client:	Martin Marietta
Sample I.D.:	1-40
Depth (ft.):	N/A
Description:	CLAY w/ fine sand, silt, and chert, yellow red tan.

% GRAVEL-SIZE	10.0
% SAND-SIZE	19.9
% SILT-SIZE	18.2
% CLAY-SIZE	51.9

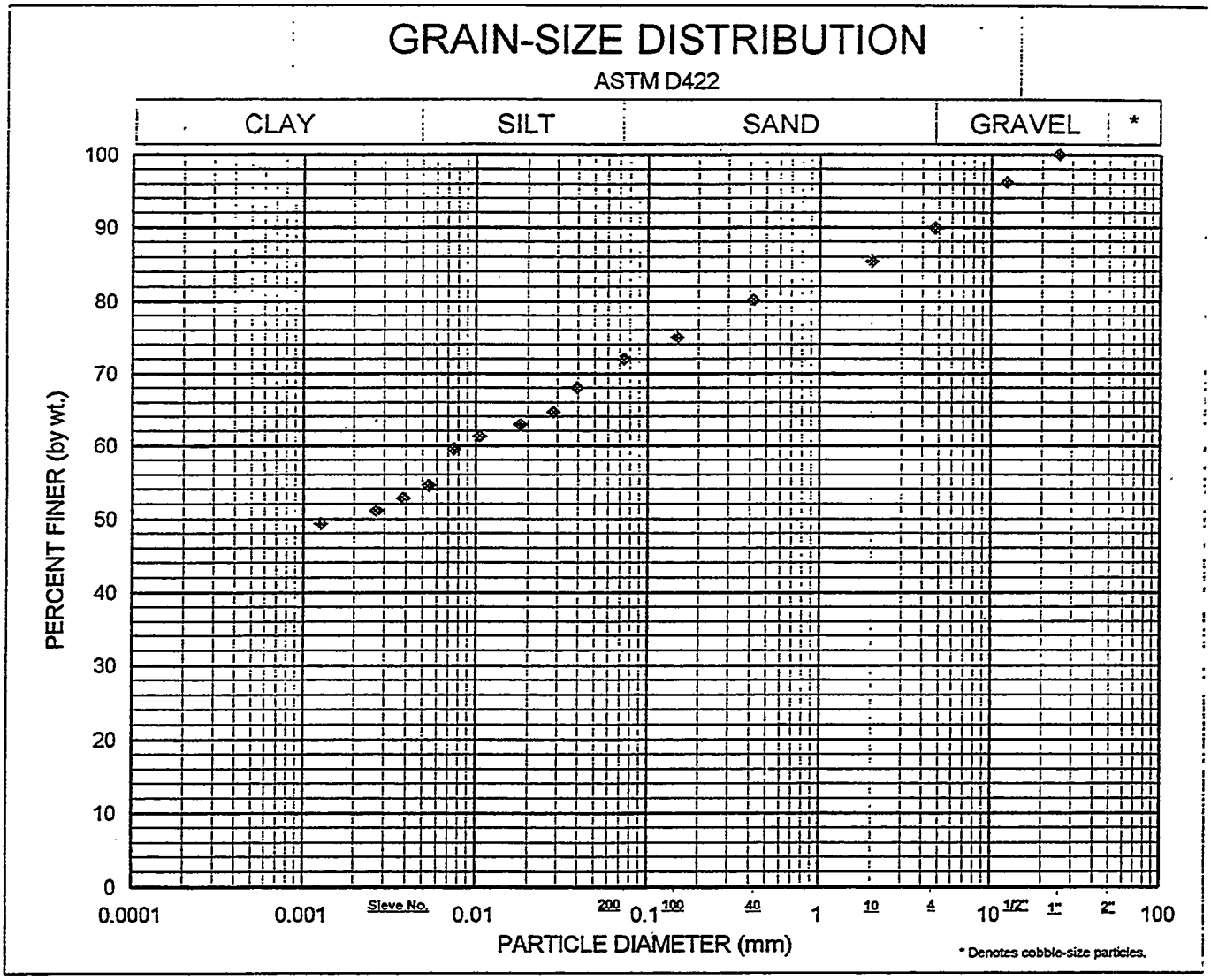
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/28/96
Client:	Martin Marietta
Sample I.D.:	1-45
Depth (ft.):	N/A
Description:	CLAY w/ chert, sand, and silt, yellow red tan.

% GRAVEL-SIZE	27.0
% SAND-SIZE	16.1
% SILT-SIZE	14.8
% CLAY-SIZE	42.2

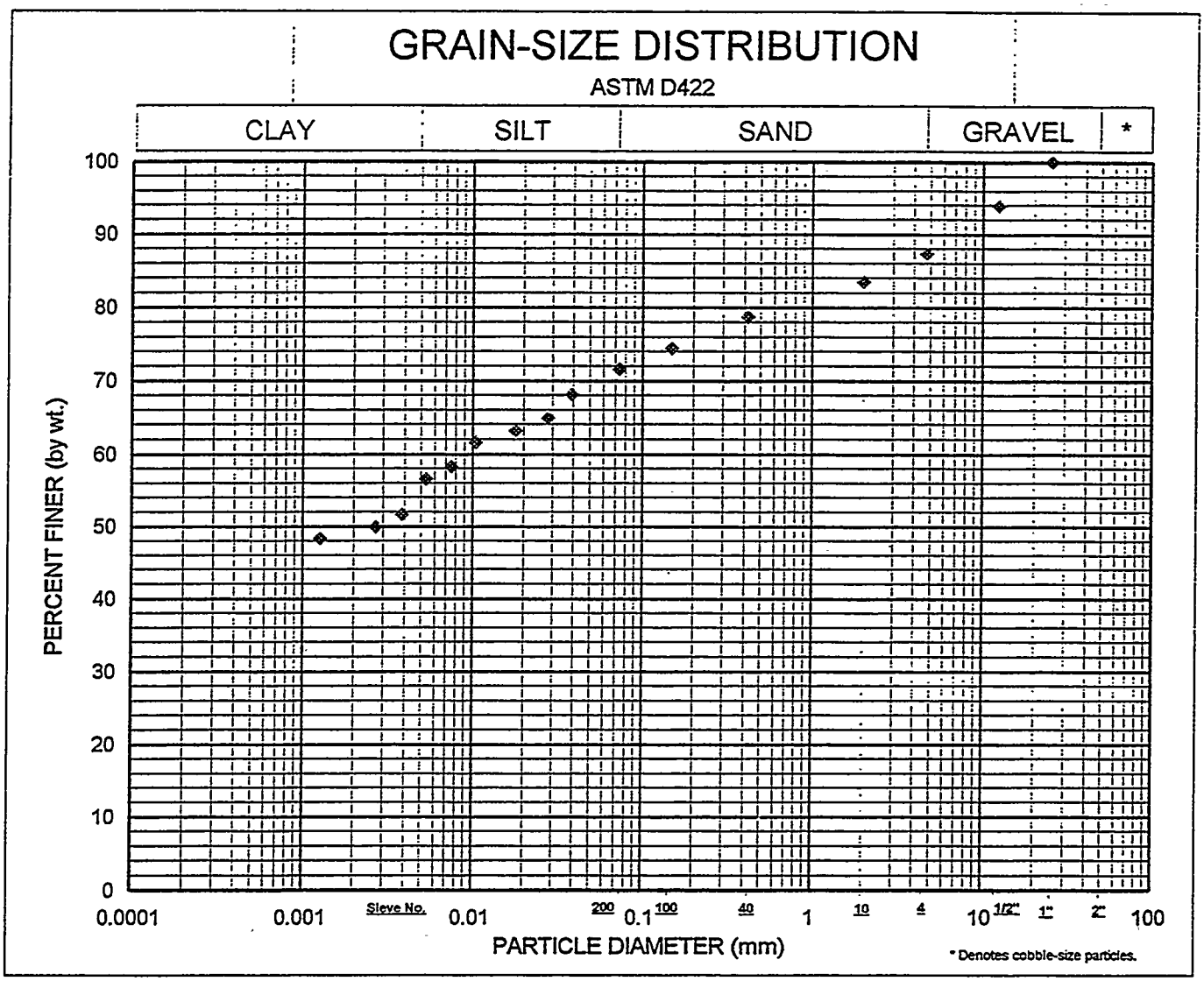
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/28/96
Client:	Martin Marietta
Sample I.D.:	1-50
Depth (ft.):	N/A
Description:	CLAY w/ silt, sand, and chert, yellow red tan.

% GRAVEL-SIZE	10.1
% SAND-SIZE	17.9
% SILT-SIZE	18.4
% CLAY-SIZE	53.6

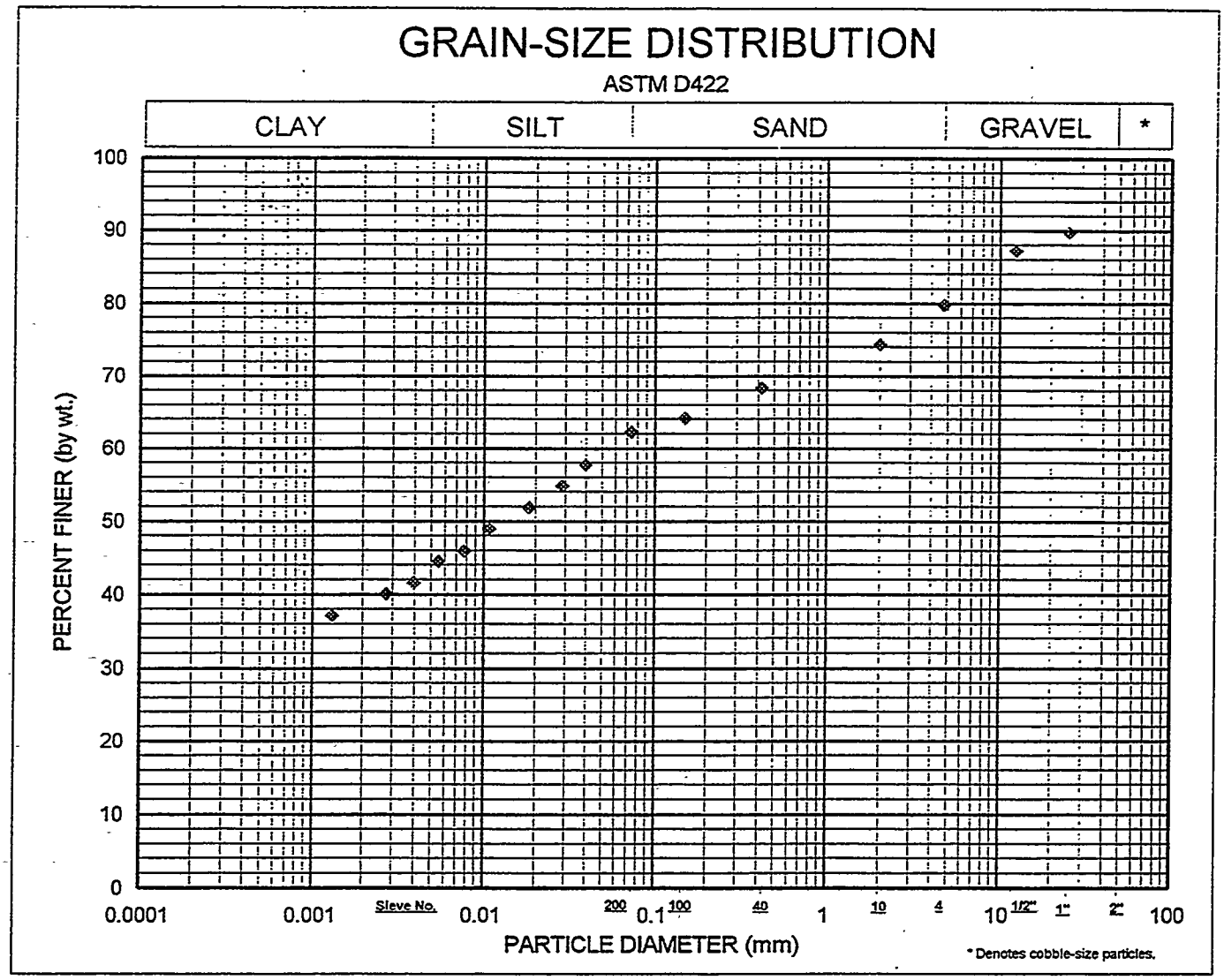
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/28/96
Client:	Martin Marietta
Sample I.D.:	1-55
Depth (ft.):	N/A
Description:	CLAY w/ silt, sand, and chert, yellow red tan.

% GRAVEL-SIZE	12.7
% SAND-SIZE	15.8
% SILT-SIZE	17.5
% CLAY-SIZE	54.1

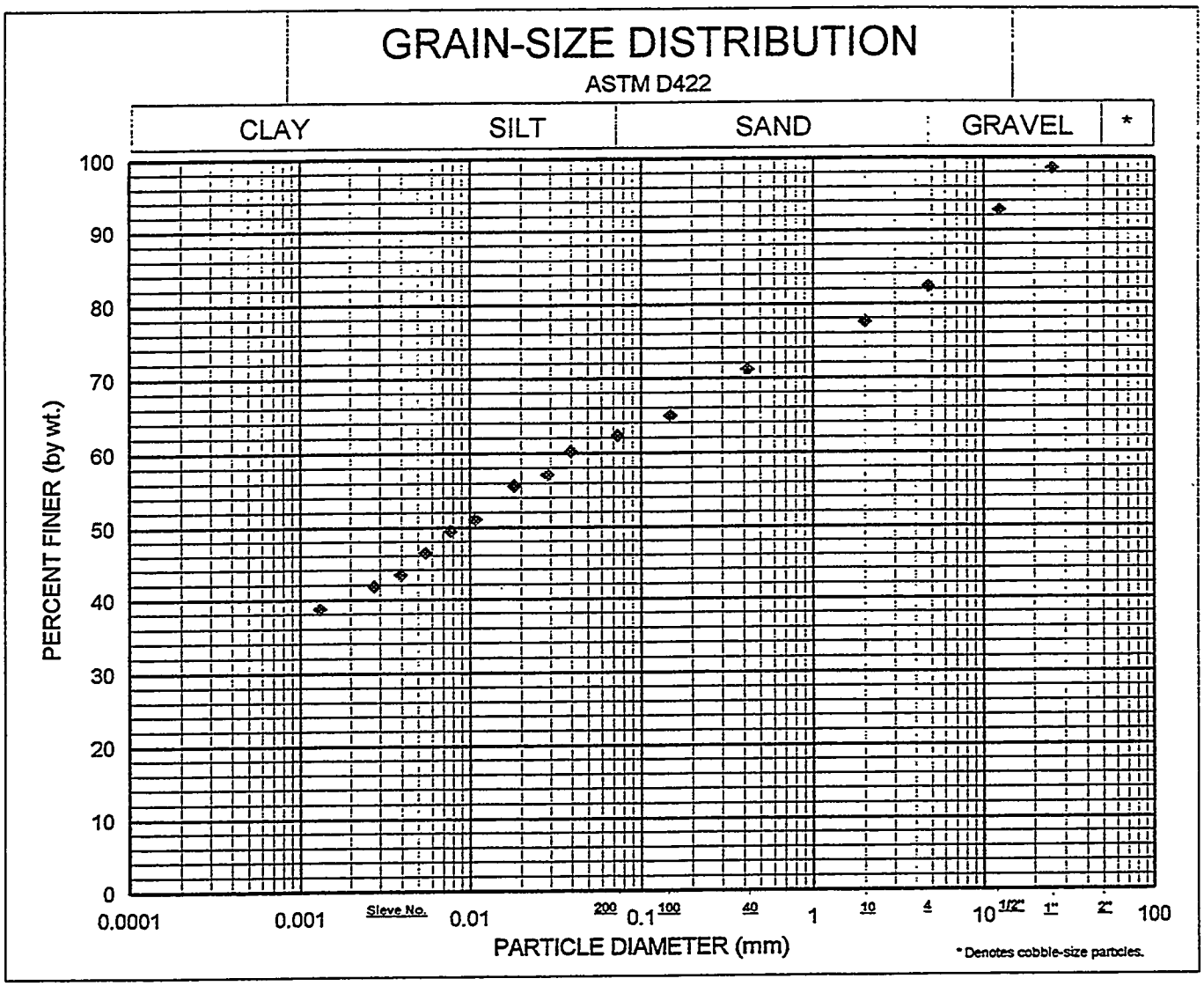
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/28/96
Client:	Martin Marietta
Sample I.D.:	1-60
Depth (ft.):	N/A
Description:	CLAY w/ silt, sand, and chert, yellow brown & red tan.

% GRAVEL-SIZE	20.3
% SAND-SIZE	17.5
% SILT-SIZE	19.2
% CLAY-SIZE	43.0

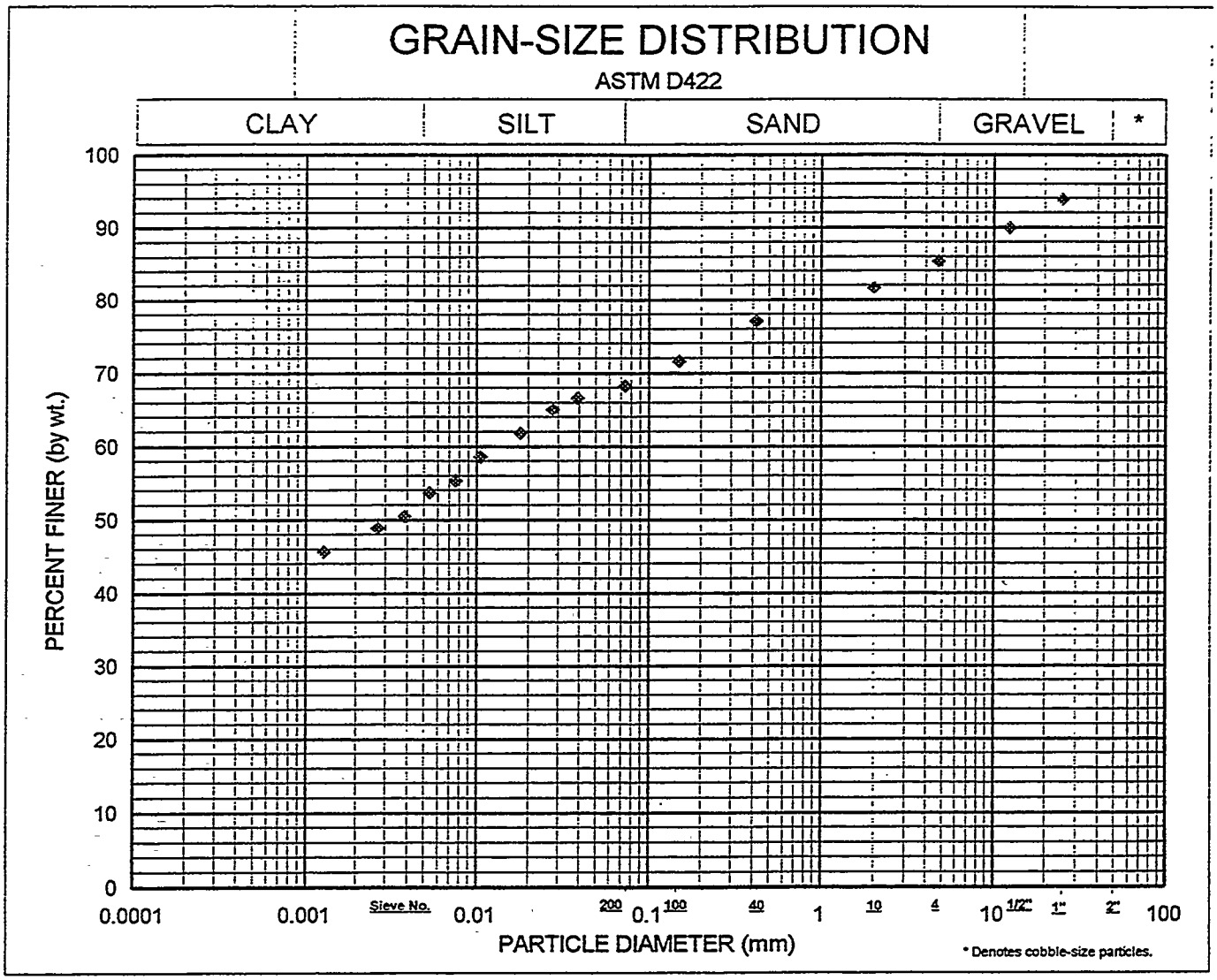
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/28/96
Client:	Martin Marietta
Sample I.D.:	1-65
Depth (ft.):	N/A
Description:	CLAY w/ sand, chert and silt, yellow brown & red tan.

% GRAVEL-SIZE	17.7
% SAND-SIZE	20.0
% SILT-SIZE	17.4
% CLAY-SIZE	44.8

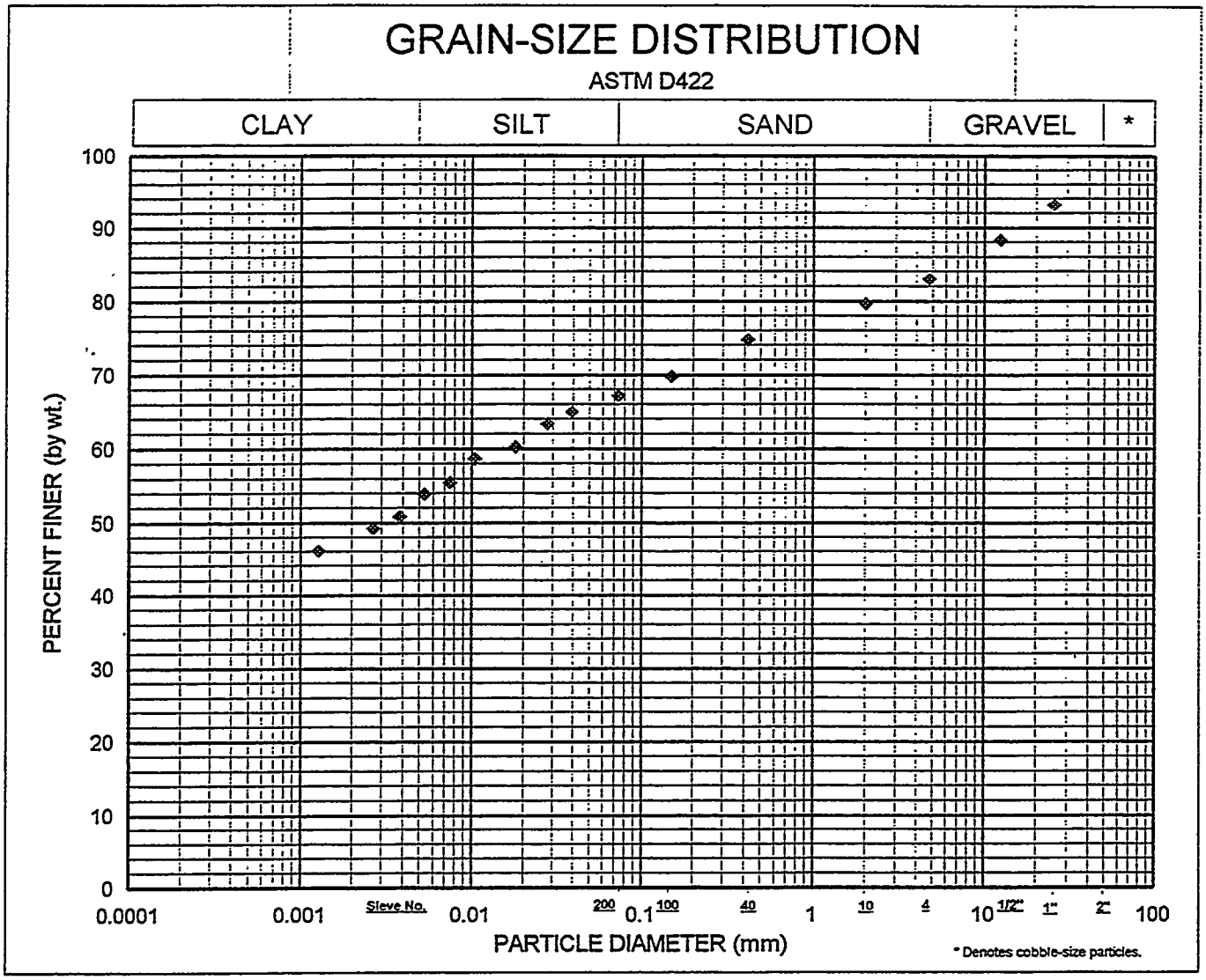
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/28/96
Client:	Martin Marietta
Sample I.D.:	1-70
Depth (ft.):	N/A
Description:	CLAY w/ sand, silt and chert, yellow brown & red tan.

% GRAVEL-SIZE	14.7
% SAND-SIZE	17.1
% SILT-SIZE	16.2
% CLAY-SIZE	52.0

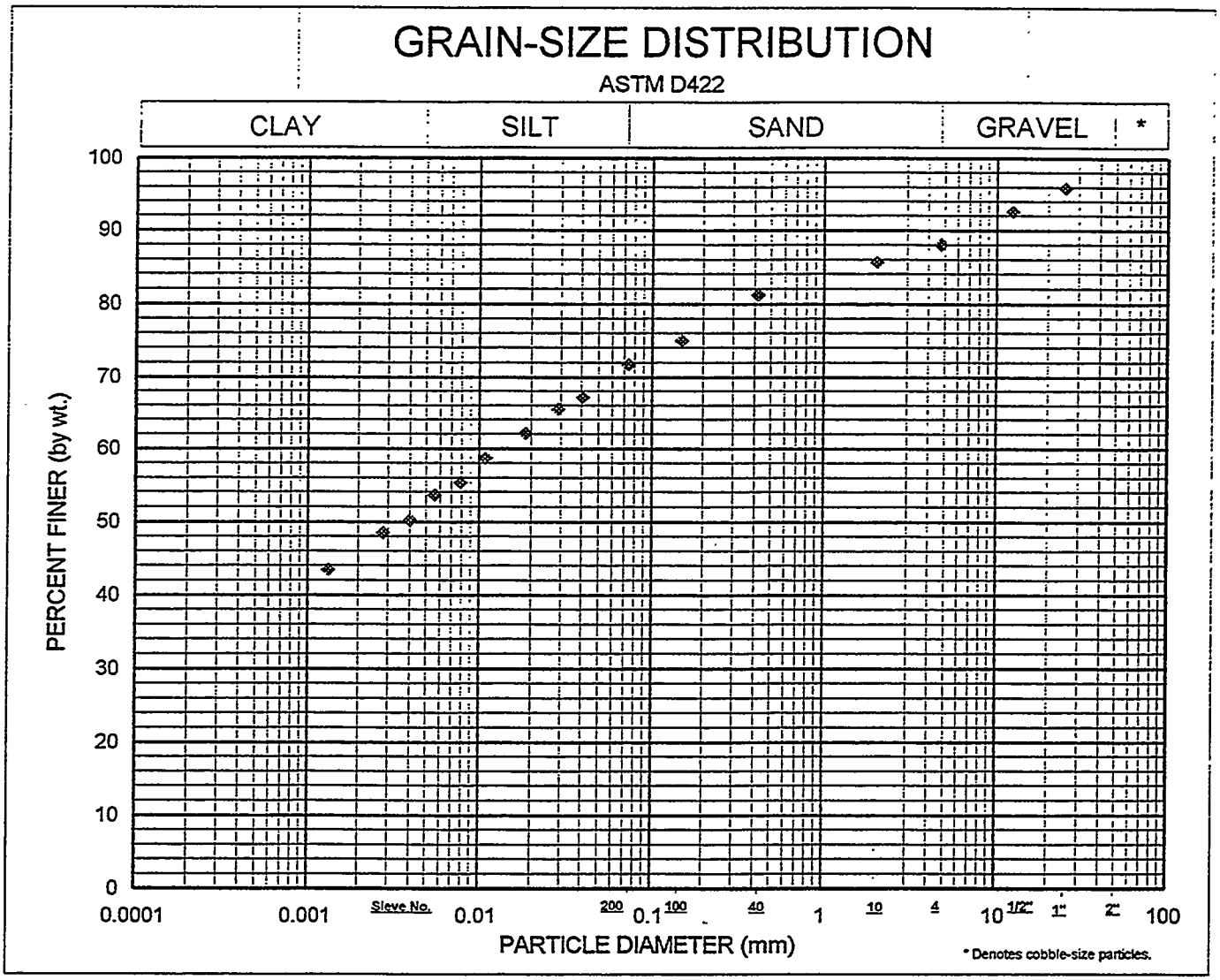
GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	06/28/96
Client:	Martin Marietta
Sample I.D.:	1-75
Depth (ft.):	N/A
Description:	CLAY w/ chert, fine sand and silt, yellow brown & red tan.

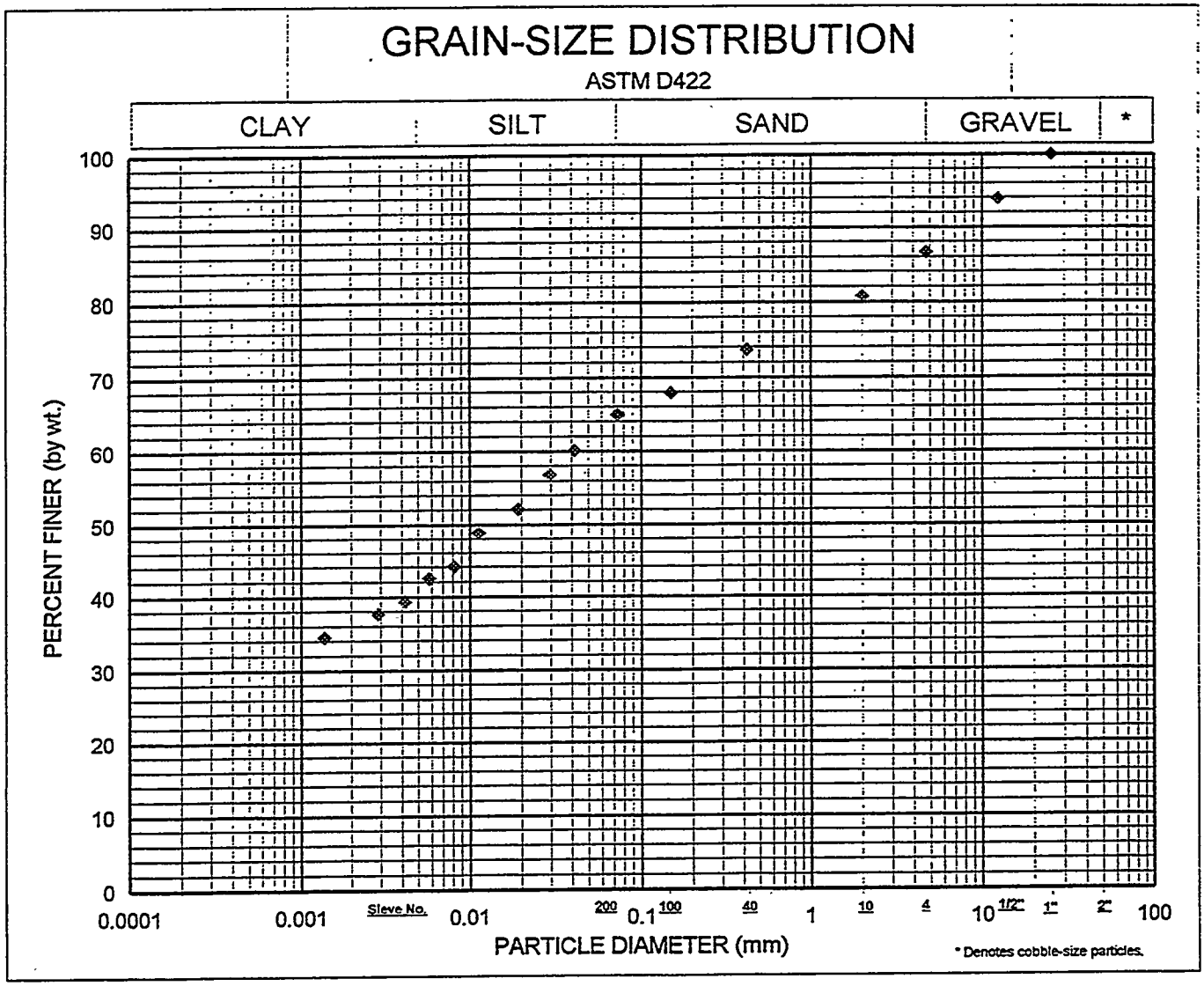
% GRAVEL-SIZE	17.1
% SAND-SIZE	15.8
% SILT-SIZE	14.8
% CLAY-SIZE	52.3

GEOTEK



Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	07/16/96
Client:	Geotek Drilling
Sample I.D.:	1-100
Depth (ft.):	N/A
Description:	CLAY w/ silt, fine sand, chert, yellow red brown.

GEOTEK

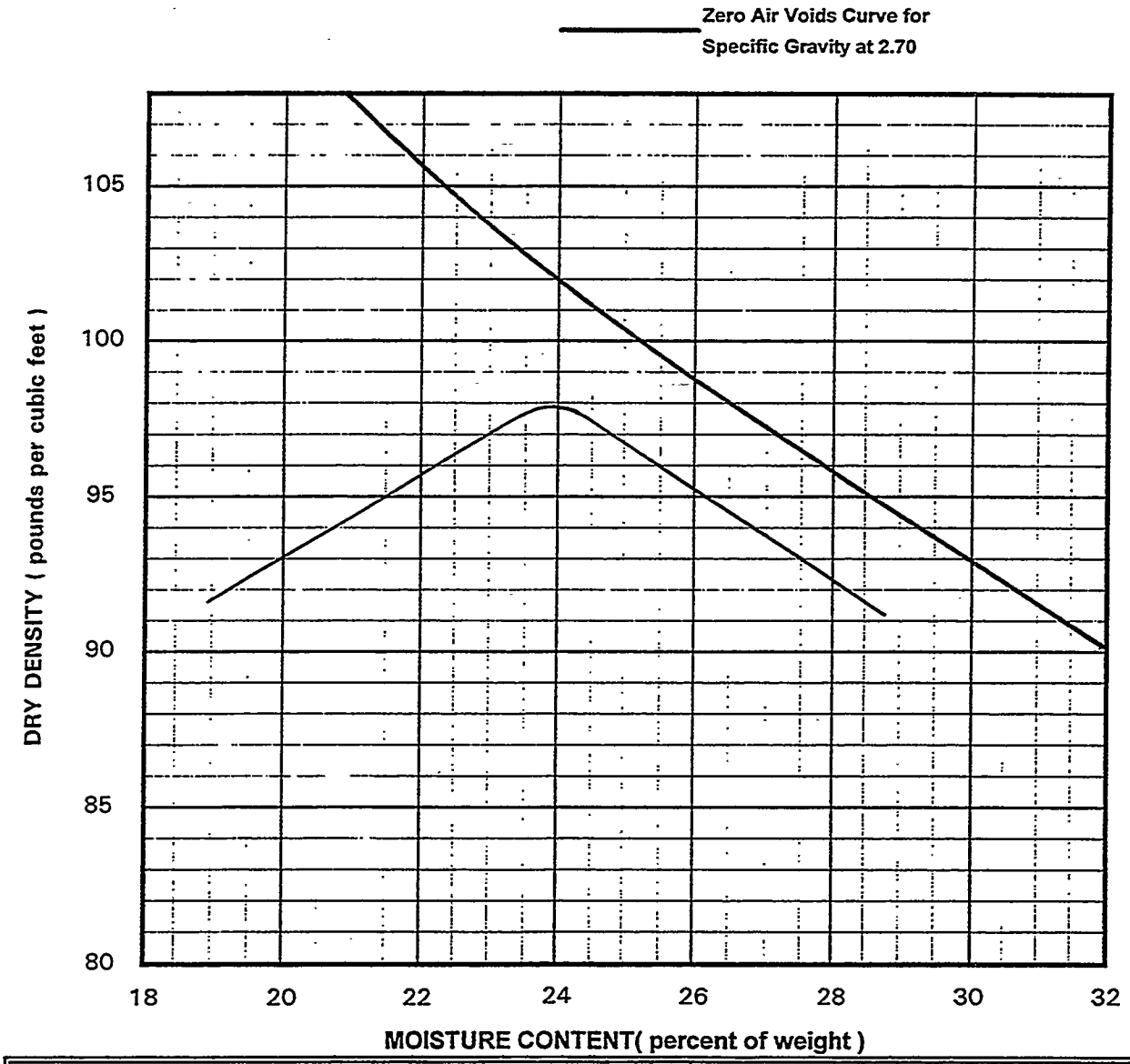


Geotek Project No.:	94-3832
Project Name:	ILFV-A2-Y12
Date:	07/30/96
Client:	Geotek Drilling
Sample I.D.:	1-125
Depth (ft.):	N/A
Description:	CLAY w/ silt, fine sand traces, little chert, yellow tan brown.

GEOTEK

MOISTURE/DENSITY RELATIONSHIP TEST

PROJECT NO.:	94-3832 (FY 96-07)
PROJECT/CLIENT:	Industrial Landfill V, Area 2, Y12/ Lockheed Martin Energy Systems
SAMPLE DESCRIPTION:	CLAY w/ silt, fine sand traces & chert, yellow tan red (LL=66.4, PI=32.3)
SAMPLE LOCATION:	1-25
NATURAL MOISTURE CONTENT:	N/A
TEST METHOD:	ASTM D698 BY: M. Grimes

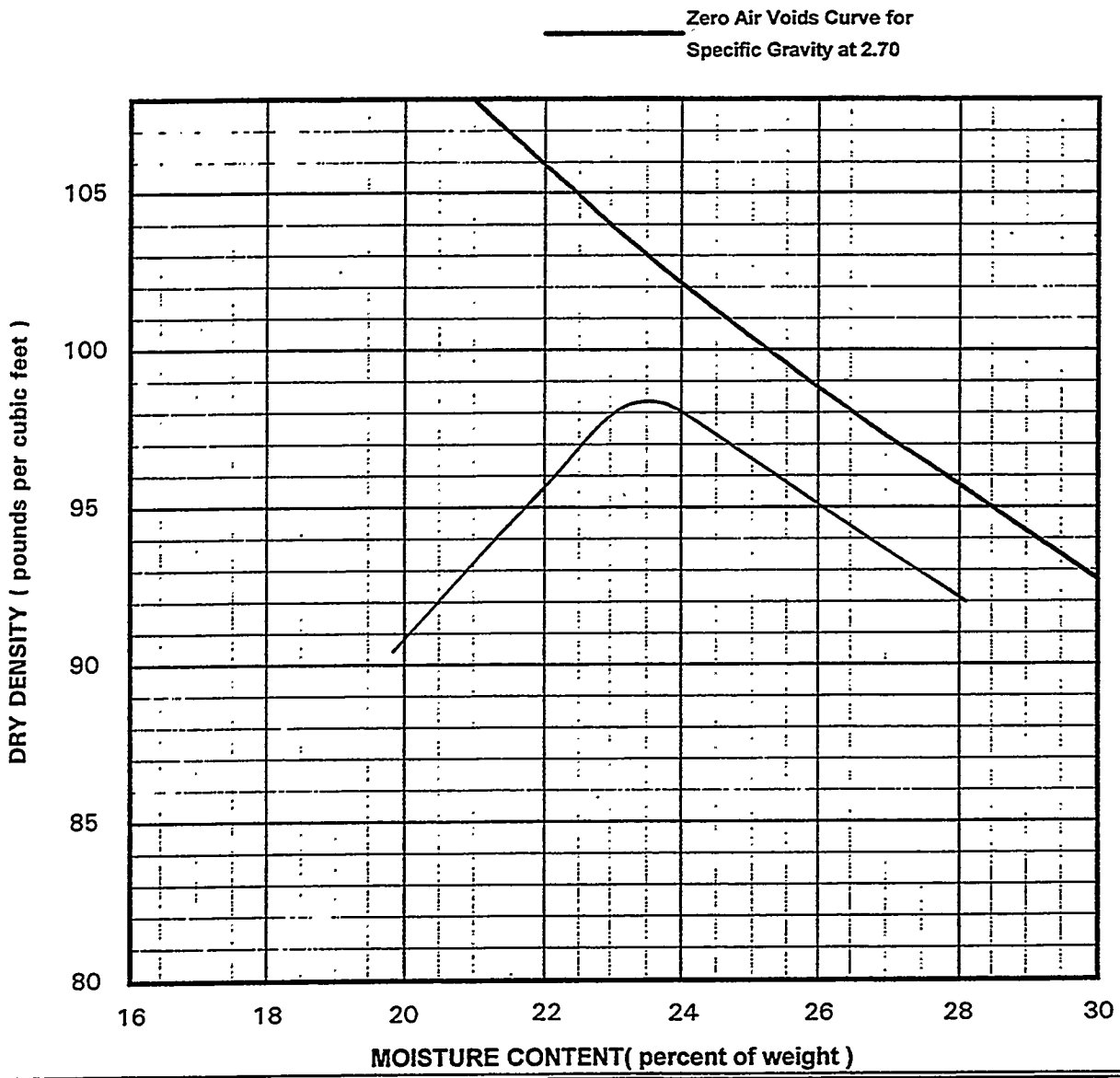


MAXIMUM DRY DENSITY:	97.9 pcf	OPTIMUM MOISTURE:	24.0 %

GEOTEK

MOISTURE/DENSITY RELATIONSHIP TEST

PROJECT NO.:	94-3832 (FY 96-07)
PROJECT/CLIENT:	Industrial Landfill V, Area 2, Y12/ Lockheed Martin Energy Systems
SAMPLE DESCRIPTION:	CLAY w/ silt, sand and chert, yellow red tan (LL=54.2, PI=23.8)
SAMPLE LOCATION:	1-50
NATURAL MOISTURE CONTENT:	N/A
TEST METHOD:	ASTM D698 BY: M. Grimes

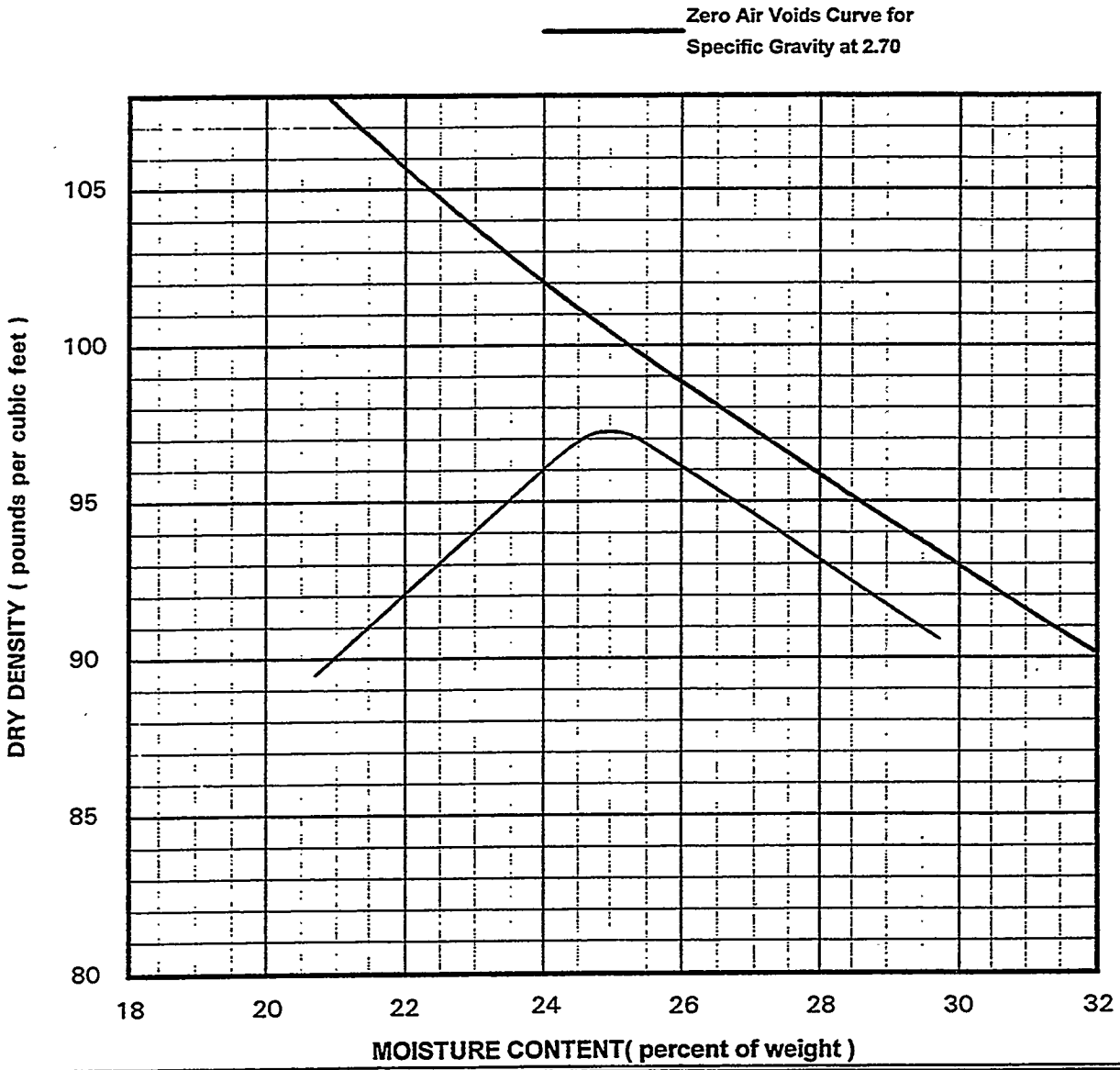


MAXIMUM DRY DENSITY: 98.4 pcf	OPTIMUM MOISTURE: 23.5 %

GEOTEK

MOISTURE/DENSITY RELATIONSHIP TEST

PROJECT NO.:	94-3832 (FY 96-07)
PROJECT/CLIENT:	Industrial Landfill V, Area 2, Y12/ Lockheed Martin Energy Systems
SAMPLE DESCRIPTION:	CLAY w/ chert, fine sand & silt, yellow brown & red tan (LL=56, PI=26.3)
SAMPLE LOCATION:	1-75
NATURAL MOISTURE CONTENT:	N/A
TEST METHOD:	ASTM D698 BY: M. Grimes

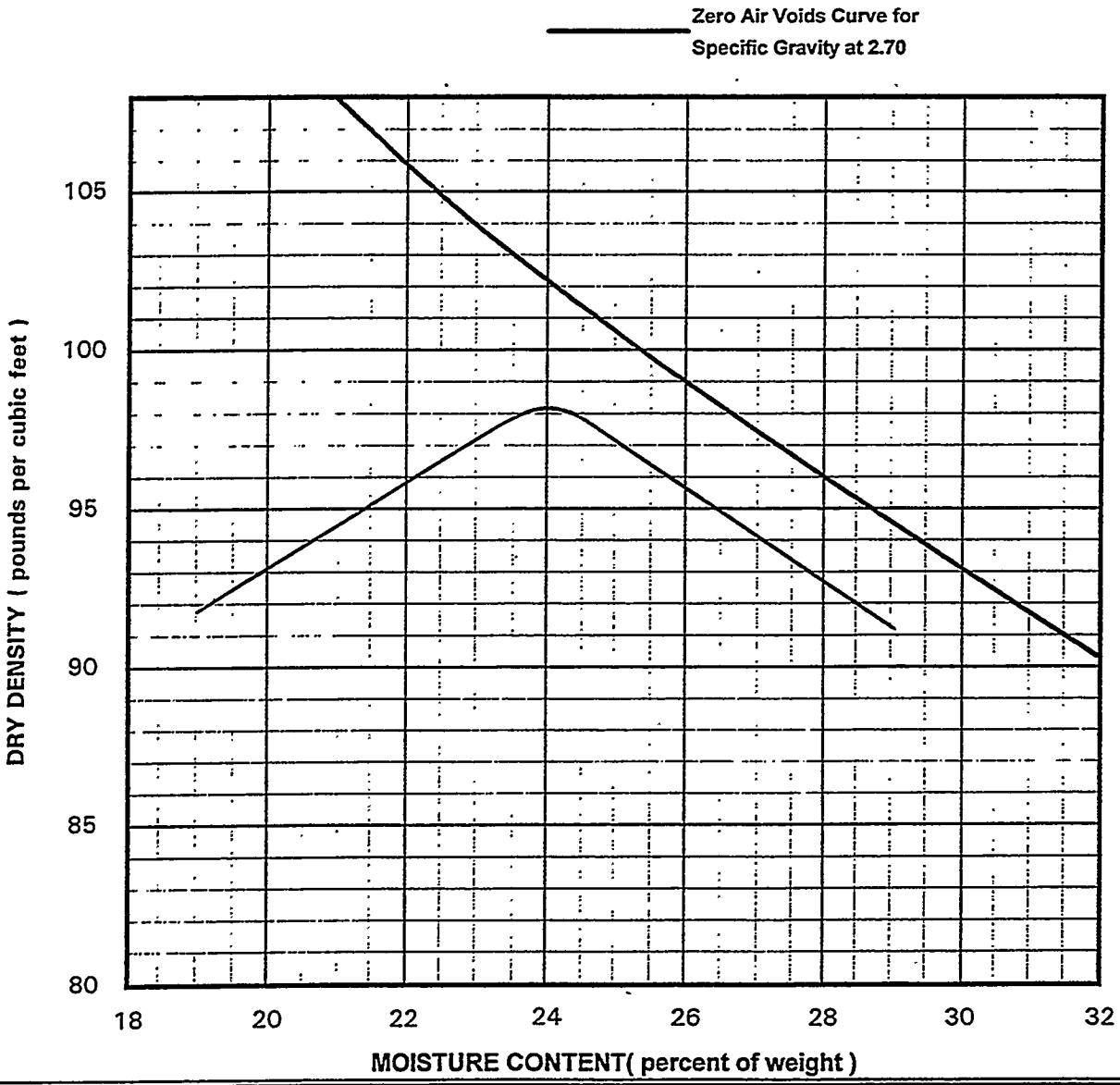


MAXIMUM DRY DENSITY: 97.2 pcf	OPTIMUM MOISTURE: 25.0 %

GEOTEK

MOISTURE/DENSITY RELATIONSHIP TEST

PROJECT NO.:	94-3832 (FY 96-07)
PROJECT/CLIENT:	Industrial Landfill V, Area 2, Y12/ Lockheed Martin Energy Systems
SAMPLE DESCRIPTION:	CLAY w/ silt, fine sand & chert, yellow red brown (LL=58, PI=24)
SAMPLE LOCATION:	1-100
NATURAL MOISTURE CONTENT:	N/A
TEST METHOD:	ASTM D698 BY: M. Grimes

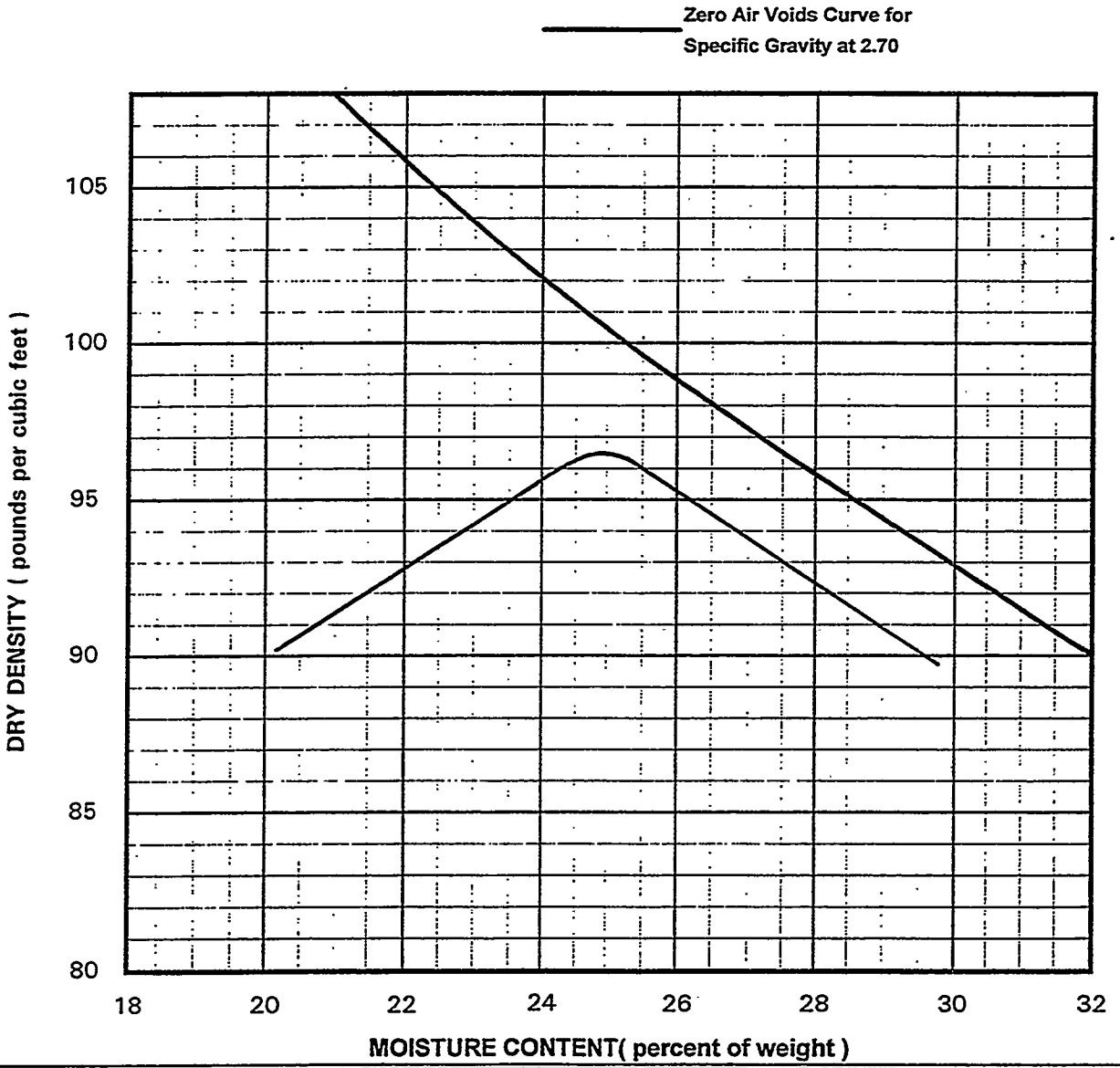


MAXIMUM DRY DENSITY: 98.1 pcf		OPTIMUM MOISTURE: 24.1 %	

GEOTEK

MOISTURE/DENSITY RELATIONSHIP TEST

PROJECT NO.:	94-3832 (FY 96-07)
PROJECT/CLIENT:	Industrial Landfill V, Area 2, Y12/ Lockheed Martin Energy Systems
SAMPLE DESCRIPTION:	CLAY w/ silt, fine sand traces, little chert, yellow tan brown (LL=51, PI=25)
SAMPLE LOCATION:	1-125
NATURAL MOISTURE CONTENT:	N/A
TEST METHOD:	ASTM D698 BY: M. Grimes



MAXIMUM DRY DENSITY: 96.6 pcf		OPTIMUM MOISTURE: 25.0 %	

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/14/96

Date Sampled 06/04/96 Job # 94-3832
DateTested 06/13/96 Lab # 96-4300

Sample Number	Natural Moisture	Dry Density at in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-1	27.1	N/A	N/A	N/A	N/A	SILTY CLAY w/ chert, ferrous oxide nodules, yellow grey and dusky red.

Location 25'N of GP 710 (Row 1) Lift #1, Test #1 Nuclear Density 99.5 Nuclear Moisture 22.7

Date Sampled 06/05/96 Job # 94-3832
DateTested 06/13/96 Lab # 96-4300

Sample Number	Natural Moisture	Dry Density at in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-2	33.0	N/A	N/A	N/A	N/A	SILTY CLAY w/chert, ferrous oxide nodules, yellow red.

Location 40'Nof GP 746 (Row 1) Lift#1, Test # 1 Nuclear Density 98.4 Nuclear Moisture 26.6

Date Sampled 06/06/96 Job # 94-3832
DateTested 06/13/96 Lab # 96-4300

Sample Number	Natural Moisture	Dry Density at in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-3	27	N/A	N/A	N/A	N/A	SILTY CLAY w/chert, ferrous oxide nodules, red yellow brown

Location 25'N of GP 718 (Row 1) Lift #1, Test # 1 Nuclear Density 98.0 Nuclear Moisture 22.9

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/14/96

Date Sampled 06/06/96 Job # 94-3832
DateTested 06/13/96 Lab # 96-4300

Sample Number	Natural Moisture	Dry Density at in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-4	27.7	N/A	N/A	N/A	N/A	SILTY CLAY w/ chert, ferrous oxide nodules, strong brown.

Location 10'N of GP 807 (Row 2) Lift # 1, Test # 1 Nuclear Density 98.4 Nuclear Moisture 23.7

Date Sampled 06/06/96 Job # 94-3832
DateTested 06/13/96 Lab # 96-4300

Sample Number	Natural Moisture	Dry Density at in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-5	27.3	N/A	N/A	N/A	N/A	SILTY CLAY w/ chert, ferrous oxide nodules, red and yellow grey brown.

Location 5'N of GP 779 (Row 1) Lift #2, Test # 11 Nuclear Density 98.3 Nuclear Moisture 24.6

Date Sampled Job #
DateTested Lab #

Sample Number	Natural Moisture	Dry Density at in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description

Location Nuclear Density Nuclear Moisture

Laboratory Data

Projectame ILFV-A2-Y12
Date 06/27/96
Job # 94-3832
Lab # 96-4300

Date Sapled 06/07/96
DateTeed 06/25/96

Sample Numbe	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-6	24.4	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand , chert, yellow red brown

Locatio 15' N of GP 754 (ROW 2) lift# 2,test # 1

Nuclear Density 99.0 Nuclear Moisture 22.4
ASTMD698 Density N/A Optimum moisture N/A

Date Sapled 06/07/96
DateTeed 06/25/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-7	26.6	N/A	N/A	N/A	N/A	CLAY w/ silt, chert, fine sand traces, yelow red tan.

Locatio 25' NE of GP 722 (ROW 1) lift # 3, test # 6

Nuclear Density 97.5 Nuclear Moisture 23.9
ASTMD698 Density N/A Optimum moisture N/A

Date Sapled 06/07/96
DateTeed 06/25/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-8	25.3	N/A	N/A	N/A	N/A	CLAY w/ fine sand, silt, chert, yellow red brown.

Locatio 25' NE of GP 705 (ROW 3), lift#1,test 11

Nuclear Density 102.6 Nuclear Moisture 21.9
ASTMD698 Density N/A Optimum moisture N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/27/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/10/96
DateTested 06/25/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-9	28.7	N/A	N/A	N/A	N/A	CLAY w/ silt, chert, fine sand traces, yellow red tan.

Location 5' N of GP 772 (ROW 3) lift#1, test#1

Nuclear Density 98.1 Nuclear Moisture 23.2
ASTMD698 Density N/A Optimum moisture N/A

Date Sampled 06/10/96
DateTested 06/25/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-10	28.7	N/A	N/A	N/A	N/A	CLAY w/ silt, chert, fine sand traces, yellow red brown.

Location 10' NW of GP 730 (ROW 2) lift#3, test# 6

Nuclear Density 98.4 Nuclear Moisture 23.1
ASTMD698 Density N/A Optimum moisture N/A

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
		N/A	N/A	N/A	N/A	

Location

Nuclear Density N/A Nuclear Moisture N/A
ASTMD698 Density N/A Optimum moisture N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/14/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-11	26.1	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow red tan.

Location 40' NE of GP 719 (ROW 1) lift#4, test# 1

Nuclear Density 96.2 **Nuclear Moisture** 25.2
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/14/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-12	25.7	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow red tan.

Location 15' NE of GP 803 (ROW 1) lift# 4, test # 6.

Nuclear Density 96.6 **Nuclear Moisture** 24.6
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/15/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-13	34.8	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow red tan.

Location 15' NE of GP 765 (ROW 3) lift # 2, test # 1

Nuclear Density 95.0 **Nuclear Moisture** 25.8
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/15/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-14	19.4	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow red tan.

Location 5' N of GP 737 (ROW 4) lift#1, test# 6.

Nuclear Density 99.4 **Nuclear Moisture** 23.8
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/15/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-15	29.2	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow red tan.

Location 25' NE of GP 819 (ROW 4) lift# 1, test # 11.

Nuclear Density 94.0 **Nuclear Moisture** 26.5
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/17/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-16	23.4	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow red tan.

Location 25' NE of GP 711 (ROW 2) lift # 4, test # 1

Nuclear Density 96.2 **Nuclear Moisture** 25.8
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/17/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-17	27.1	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow red tan.

Location 30' NE of GP 807 (ROW 2) lift#4, test# 6.
Nuclear Density 98.8 **Nuclear Moisture** 23.6
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/17/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-18	26.3	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow red tan.

Location 25' N of GP 782 (ROW 1) lift# 5, test # 11.
Nuclear Density 95.7 **Nuclear Moisture** 26.2
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/17/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-19	25.7	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow red tan.

Location 40' N of GP 765 (ROW 3) lift # 3, test # 16.
Nuclear Density 97.5 **Nuclear Moisture** 26.4
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/18/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-20	22.2	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 100' N of GP 716 (ROW 4) lift#2, test# 1.

Nuclear Density 101.3 **Nuclear Moisture** 22.3
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/18/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-21	26.7	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 25' NE of GP 800 (ROW 4) lift# 2, test # 6.

Nuclear Density 97.1 **Nuclear Moisture** 24.5
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/19/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-22	25.3	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 25' NE of GP 718 (ROW 2) lift # 5, test # 1.

Nuclear Density 95.0 **Nuclear Moisture** 26.2
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name	ILFV-A2-Y12
Date	06/28/96
Job #	94-3832
Lab #	96-4300

Date Sampled 06/19/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-23	31.7	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 15' NE of GP 802 (ROW 2) lift#5, test# 6.

Nuclear Density 95.4 **Nuclear Moisture** 25.3
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/19/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-24	23.7	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 40' NW of GP 777 (ROW 3) lift# 4, test # 11.

Nuclear Density 102.0 **Nuclear Moisture** 23.2
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/19/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-25	27.1	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 15' N of GP 752 (ROW 4) lift # 3, test # 16.

Nuclear Density 98.1 **Nuclear Moisture** 24.0
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/20/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2.26	22.7	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 20' N of GP 764 (ROW 4) lift#3, test# 1.

Nuclear Density 94.9 **Nuclear Moisture** 27.1
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/20/96
DateTested 06/27/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-27	26.2	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 25' N of GP 736 (ROW 3) lift# 5, test # 6.

Nuclear Density 96.9 **Nuclear Moisture** 25.5
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
		N/A	N/A	N/A	N/A	

Location

Nuclear Density **Nuclear Moisture**
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/21/96
DateTested 06/26/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-28	28.6	N/A	N/A	N/A	N/A	CLAY w/ silt, chert, fine sand traces, ferrous oxide nodules reddish brown and strong brown.

Location 40' N of GP 772 (ROW 3) lift# 5, test # 1.

Nuclear Density 95.7 **Nuclear Moisture** 27.0
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
		N/A	N/A	N/A	N/A	

Location

Nuclear Density N/A **Nuclear Moisture** N/A
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
		N/A	N/A	N/A	N/A	

Location

Nuclear Density N/A **Nuclear Moisture** N/A
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 06/28/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/25/96
DateTested 06/28/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-29	29.7	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 25' NE of GP 716 (ROW 4) lift#4, test# 1.

Nuclear Density 95.3 **Nuclear Moisture** 26.3
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/25/96
DateTested 06/28/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-30	27.0	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 40' NE of GP 809 (ROW 4) lift# 4, test # 6.

Nuclear Density 102.6 **Nuclear Moisture** 21.1
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/25/96
DateTested 06/28/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-31	23.9	N/A	N/A	N/A	N/A	CLAY w/ silt, fine sand, chert, yellow brown & red tan.

Location 20' S of GP 629 (west slope) lift # 1, test # 11.

Nuclear Density 94.7 **Nuclear Moisture** 26.0
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 07/11/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/26/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-32	21.5	N/A	N/A	N/A	N/A	CLAY w/ silt chert, yellow brown tan.

Location 25' SE of GP 615 (west slope) lift#2, test#1

Nuclear Density 96.2 **Nuclear Moisture** 26.1
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/27/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-33	21.9	N/A	N/A	N/A	N/A	CLAY w/ silt, chert, yellow tan red.

Location 25' E 5' S of GP 725(Row 5) lift # 3, test #1.

Nuclear Density 98.3 **Nuclear Moisture** 25.1
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/27/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-34	20.4	N/A	N/A	N/A	N/A	CLAY w/ silt, chert, yellow tan red.

Location 25' NE of GP 737(Row 4) lift # 5, test # 6.

Nuclear Density 97.2 **Nuclear Moisture** 25.7
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 07/11/96
Job # 94-3832
Lab # 96-4300

Date Sampled 06/28/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-35	26.7	N/A	N/A	N/A	N/A	CLAY w/ silt chert, yellow red tan.

Location 35' NE of GP 773 (Row 4) lift#5, test#1

Nuclear Density 97.0 **Nuclear Moisture** 26.3
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/28/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-36	28.5	N/A	N/A	N/A	N/A	CLAY w/ silt chert, yellow red tan.

Location 5' S of GP 776 (Row 5) lift #4, test # 6.

Nuclear Density 97.3 **Nuclear Moisture** 24.8
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 06/28/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-37	21.4	N/A	N/A	N/A	N/A	CLAY w/ silt chert, yellow red tan.

Location 10' S of GP 629 (west Slope) lift# 5, test # 11.

Nuclear Density 98.2 **Nuclear Moisture** 23.5
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 07/11/96
Job # 94-3832
Lab # 96-4300

Date Sampled 07/01/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-38	27.3	N/A	N/A	N/A	N/A	CLAY w/ silt chert, yellow red tan.

Location 10' E of GP 604 (west slope) lift #, test # 1

Nuclear Density 95.9 **Nuclear Moisture** 26.2
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 07/02/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-39	21.1	N/A	N/A	N/A	N/A	CLAY w/ silt, chert, fine sand traces, yellow brown tan.

Location 40' N of GP 710 (Row 1) lift #6, test # 1.

Nuclear Density 96.5 **Nuclear Moisture** 25.0
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 07/03/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-40	23.8	N/A	N/A	N/A	N/A	CLAY w/ silt, chert, fine sand traces, yellow brown tan.

Location 5' N of GP 713 (Row 4) lift # 6, test # 1.

Nuclear Density 99.3 **Nuclear Moisture** 23.5
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 07/11/96
Job # 94-3832
Lab # 96-4300

Date Sampled 07/03/96
DateTested 07/09/96

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description
2-41	25.8	N/A	N/A	N/A	N/A	CLAY w/ silt, chert, yellow brown tan.

Location 5' S of GP 822 (Row 5) lift # 6, test # 6
Nuclear Density 96.5 **Nuclear Moisture** 25.6
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description

Location _____
Nuclear Density _____ **Nuclear Moisture** _____
ASTMD698 Density **Optimum moisture**

Date Sampled
DateTested

Sample Number	Natural Moisture	Dry Density @ in-situ Moisture	In-situ Moisture	Liquid Limit	Plasticity Index	Description

Location _____
Nuclear Density _____ **Nuclear Moisture** _____
ASTMD698 Density _____ **Optimum moisture** _____

Laboratory Data

Project Name ILFV-A2-Y12
Date 08/05/96
Job # 94-3832
Lab # 96-4300

Date Sampled 07/08/96
DateTested 07/26/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-42	24	N/A	N/A	N/A	CLAY w/ SILT, chert, yellow red tan.

Location 10' E. of GP 826 (East End)

Nuclear Density 97.8 Nuclear Moisture 24.6
ASTMD698 Density N/A Optimum moisture N/A

Date Sampled 07/09/96
DateTested 07/26/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-43	22	N/A	N/A	N/A	CLAY w/ SILT, chert, yellow red tan.

Location 15' N. of GP 641 (NE Slope)

Nuclear Density 96.9 Nuclear Moisture 24.2
ASTMD698 Density N/A Optimum moisture N/A

Date Sampled 07/09/96
DateTested 07/26/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-44	26.2	N/A	N/A	N/A	CLAY w/ SILT, chert, yellow red tan.

Location 25' N. of GP 817 (NE Slope)

Nuclear Density 95 Nuclear Moisture 26.5
ASTMD698 Density N/A Optimum moisture N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 08/05/96
Job # 94-3832
Lab # 96-4300

Date Sampled 07/10/96
DateTested 07/26/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-45	23.7	N/A	N/A	N/A	CLAY w/ SILT, chert, yellow red tan.

Location 20' NW of GP 831 (East End)

Nuclear Density 95.1 Nuclear Moisture 26.5
ASTMD698 Density N/A Optimum moisture N/A

Date Sampled 07/10/96
DateTested 07/26/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-46	25.8	N/A	N/A	N/A	CLAY w/ SILT, chert, yellow red tan.

Location 30' NE of GP 806 (NE Slope)

Nuclear Density 95.3 Nuclear Moisture 26.6
ASTMD698 Density N/A Optimum moisture N/A

Date Sampled 07/11/96
DateTested 07/26/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-47	21.9	N/A	N/A	N/A	CLAY w/ SILT, chert, yellow red tan.

Location 5' E of GP 649 (East of Berm)

Nuclear Density 96.7 Nuclear Moisture 25.5
ASTMD698 Density N/A Optimum moisture N/A

Laboratory Data

Project Name	ILFV-A2-Y12
Date	08/05/96
Job #	94-3832
Lab #	96-4300
Date Sampled	07/10/96
DateTested	07/26/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-48	23.8	N/A	N/A	N/A	CLAY w/ SILT, chert, yellow red tan.

Location 5' NE 20' S of GP 649 (East Berm)

Nuclear Density 96.1 Nuclear Moisture 25.6
ASTMD698 Density N/A Optimum moisture N/A

Date Sampled	07/11/96
DateTested	07/26/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-48	23.8	N/A	N/A	N/A	CLAY w/ SILT, chert, yellow red tan.

Location 15' S of GP 652 (NE Slope)

Nuclear Density 95.9 Nuclear Moisture 25.8
ASTMD698 Density N/A Optimum moisture N/A

Date Sampled	07/11/96
DateTested	07/26/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description

Location N/A

Nuclear Density Nuclear Moisture
ASTMD698 Density N/A Optimum moisture N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 07/30/96
Job # 94-3832
Lab # 96-4300

Date Sampled 07/18/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
1-125	23.9	94.9	51	25	CLAY w/ SILT, chert, fine sand traces, yellow tan brown.

Location 40' E of M.H. 2-A (Road Cut Area)

Nuclear Density N/A **Nuclear Moisture** 24.7
ASTMD698 Density 96.6 **Optimum moisture** 25.0

Date Sampled 07/12/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-50	24.7	N/A	N/A	N/A	CLAY w/ SILT, chert, fine sand traces, yellow tan brown.

Location 40' E of GP 636 (East Berm)

Nuclear Density 96.5 **Nuclear Moisture** 24.7
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 07/13/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-51	25.4	N/A	N/A	N/A	CLAY w/ SILT, chert, ferrous oxide nodules, yellow red brown.

Location 75' S of M.H. 2-A (East Berm)

Nuclear Density 97.9 **Nuclear Moisture** 24.3
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 07/30/96
Job # 94-3832
Lab # 96-4300

Date Sampled 07/13/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-52	26.3	96.3	N/A	N/A	CLAY w/ SILT, chert, yellow tan brown.

Location 30' W of M.H. 2-A (East Berm)

Nuclear Density 97.9 **Nuclear Moisture** 24.3
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 07/16/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-53	27.2	95.4	N/A	N/A	CLAY w/ SILT, chert, ferrous oxide nodules, yellow red brown.

Location 20' N of GP 646 (East Berm Near Tap)

Nuclear Density 95.4 **Nuclear Moisture** 27.2
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 07/16/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-54	27.8	94.3	N/A	N/A	CLAY w/ SILT, chert, ferrous oxide nodules, yellow brown.

Location 45' E of M.H. 2-A (Road Cut Area)

Nuclear Density 94.3 **Nuclear Moisture** 27.5
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 07/30/96
Job # 94-3832
Lab # 96-4300

Date Sampled 07/17/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-55	27.4	93.6	N/A	N/A	CLAY w/ SILT, chert, yellow brown.

Location 80' E of M.H. 2-A (Road Cut Area)

Nuclear Density 93.6 **Nuclear Moisture** 28.5
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 07/17/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-56	25.8	96.4	N/A	N/A	CLAY w/ SILT, chert, yellow red brown.

Location 15' SE of GP 832 (E. Berm Slope)

Nuclear Density 96.4 **Nuclear Moisture** 26.4
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 07/17/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-57	25.2	95.3	N/A	N/A	CLAY w/ SILT, chert, ferrous oxide nodules, yellow brown.

Location 65' E. of M.H. 2-A (Road Cut Area)

Nuclear Density 95.3 **Nuclear Moisture** 27.8
ASTMD698 Density N/A **Optimum moisture** N/A

Laboratory Data

Project Name ILFV-A2-Y12
Date 07/30/96
Job # 94-3832
Lab # 96-4300

Date Sampled 07/18/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-58	24.5	98.8	N/A	N/A	CLAY w/ SILT, chert, ferrous oxide nodules, yellow brown.

Location 20' NE of GP 638 (East Berm Conn. w/ NE Slope)

Nuclear Density 98.8 **Nuclear Moisture** 24.0
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 07/18/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-59	24.5	98.5	N/A	N/A	CLAY w/ SILT, chert, ferrous oxide nodules, yellow brown.

Location @ G.P. 652 (Top of NE Slope)

Nuclear Density 98.5 **Nuclear Moisture** 24.4
ASTMD698 Density N/A **Optimum moisture** N/A

Date Sampled 07/18/96
DateTested 07/23/96

Sample Number	Natural Moisture	Dry Density @ Natural Moisture	Liquid Limit	Plasticity Index	Description
2-60	24.3	96.5	N/A	N/A	CLAY w/ SILT, chert, yellow red brown.

Location @G.P. 638 (Top of NE Slope)

Nuclear Density 96.5 **Nuclear Moisture** 25.8
ASTMD698 Density N/A **Optimum moisture** N/A

PROJECT: Industrial Landfill V, Area II
PROJECT NO: 94-3834 (FY96-07)
DATE: 07-30-96
LOCATION: Rogers Group Quarry - Source
TYPE MATERIAL: Crushed Limestone Aggregate

GRAIN SIZE ANALYSIS TABLE
for
LEACHATE COLLECTION LAYER

SIEVE SIZE	% PASSING	SPECIFICATION LIMITS
2"	100.0	100
1-1/2"	94.3	90 - 100
1"	51.8	20 - 55
3/4"	7.4	0 - 10
No. 4	0.8	0 - 5

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PROJECT: Industrial Landfill V, Area II
PROJECT NO: 94-3834 (FY96-07)
DATE: 08-07-96
LOCATION: Field Sample #1 (@ approx. 2500 cy)
TYPE MATERIAL: Crushed Limestone Aggregate

GRAIN SIZE ANALYSIS TABLE
for
LEACHATE COLLECTION LAYER

SIEVE SIZE	% PASSING	SPECIFICATION LIMITS
2"	100	100
1-1/2"	90.1	90 - 100
1"	44.9	20 - 55
3/4"	5.8	0 - 10
No. 4	0.3	0 - 5

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PROJECT: Industrial Landfill V, Area II
PROJECT NO: 94-3834 (FY96-07)
DATE: 08-07-96
LOCATION: Field Sample #2 (@ approx. 5000 cy)
TYPE MATERIAL: Crushed Limestone Aggregate

GRAIN SIZE ANALYSIS TABLE
for
LEACHATE COLLECTION LAYER

SIEVE SIZE	% PASSING	SPECIFICATION LIMITS
2"	100	100
1-1/2"	92.6	90 - 100
1"	49.7	20 - 55
3/4"	10.5	0 - 10
No. 4	0.5	0 - 5

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PROJECT: Industrial Landfill V, Area II
PROJECT NO: 94-3834 (FY96-07)
DATE: 08-13-96
LOCATION: Field Sample #3 (@ approx. 7500 cy)
TYPE MATERIAL: Crushed Limestone Aggregate

GRAIN SIZE ANALYSIS TABLE
for
LEACHATE COLLECTION LAYER

SIEVE SIZE	% PASSING	SPECIFICATION LIMITS
2"	100.0	100
1-1/2"	94.3	90 - 100
1"	51.6	20 - 55
3/4"	7.2	0 - 10
No. 4	3.7	0 - 5

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PROJECT: Industrial Landfill V, Area II
PROJECT NO: 94-3834 (FY96-07)
DATE: 08-28-96
LOCATION: Field Sample #4 (@ approx. 10,000 cy)
TYPE MATERIAL: Crushed Limestone Aggregate

GRAIN SIZE ANALYSIS TABLE
for
LEACHATE COLLECTION LAYER

SIEVE SIZE	% PASSING	SPECIFICATION LIMITS
2"	100.0	100
1-1/2"	96.3	90 - 100
1"	49.1	20 - 55
3/4"	6.3	0 - 10
No. 4	0.5	0 - 5

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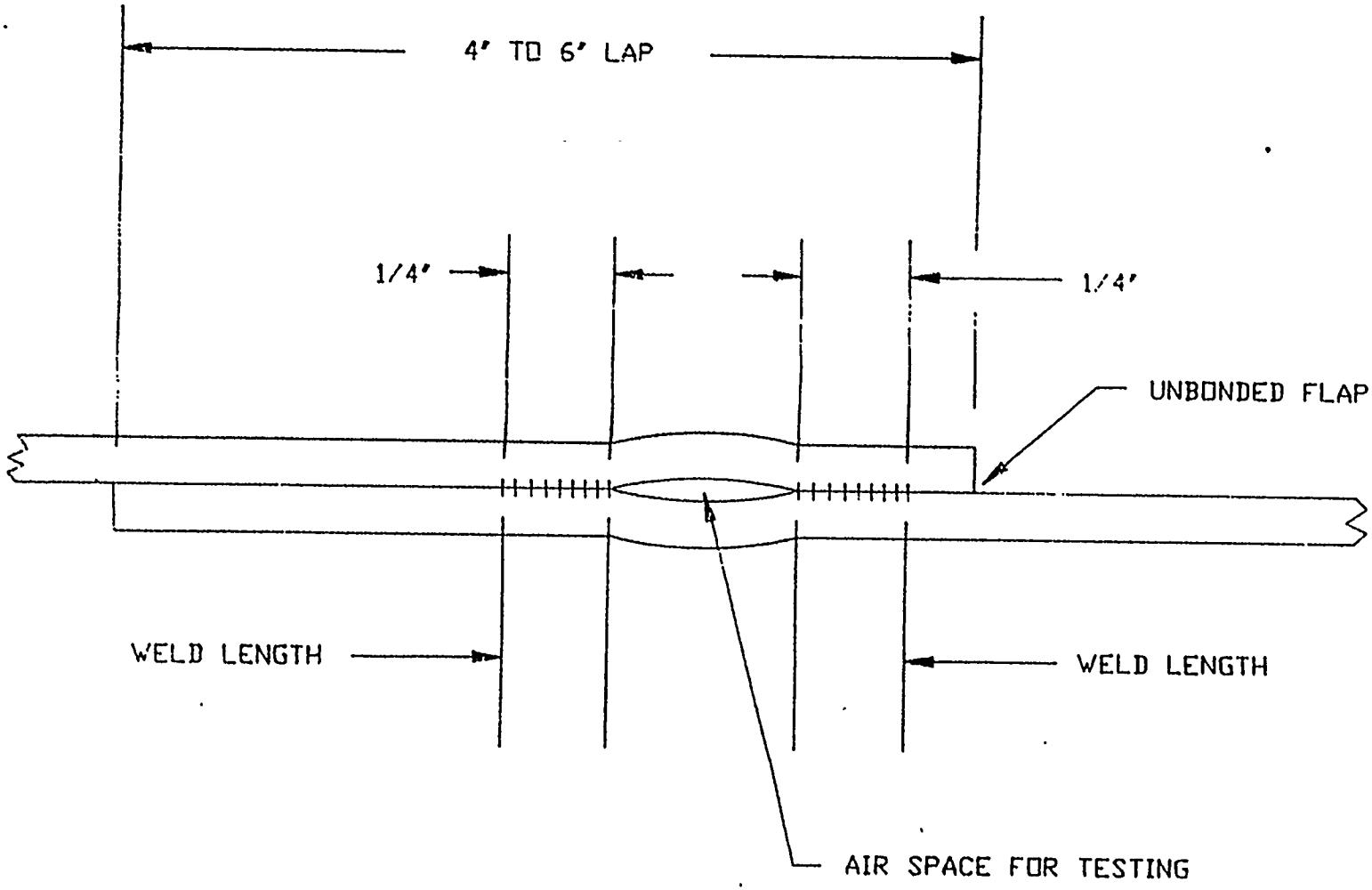
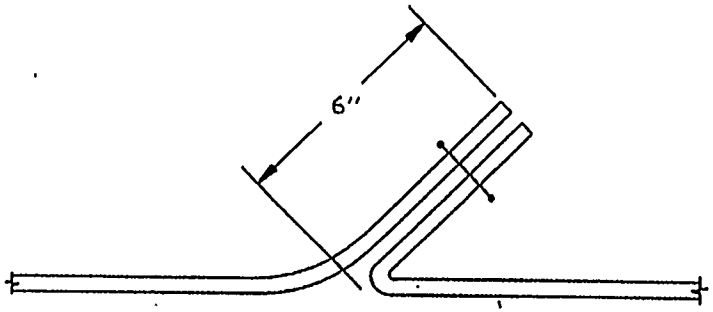
APPENDIX C

GEOMEMBRANE LINER TEST REPORTS

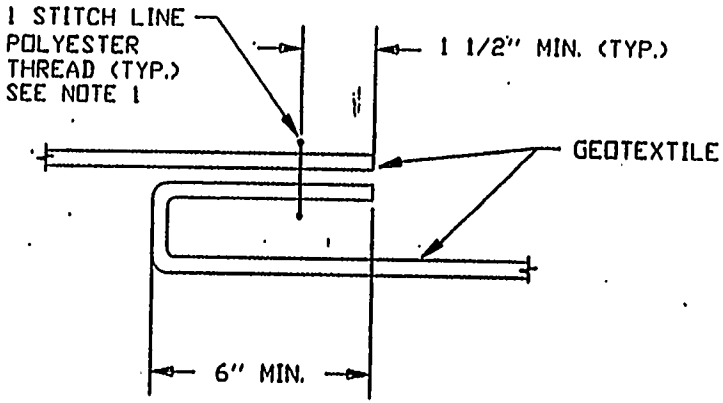


FUSION WELD
(HOT WEDGE METHOD)



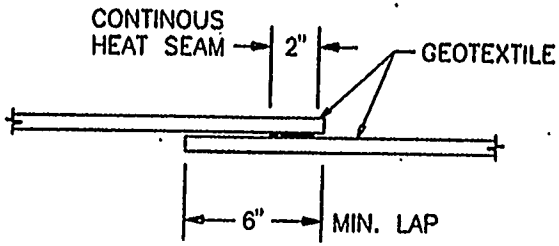
POSITION FOR SEWING

NOTE: 1. THREAD TO BE TERAPOLY TEX 210 MFG. BY ATLANTIC THREAD AND SUPPLY INC.



FINAL POSITION

GEOTEXTILE - SEWN FIELD SEAM



GEOTEXTILE - HEAT FIELD SEAM

DATE: 11/5/93	CUST:	SERROT CORPORATION	GEOTEXTILE FIELD SEAMS
SCALE: NTS	AP'VD BY:		
FILE #: SD121	REV'D: DR: RCS		DWG: SD121 REV

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

July 18, 1996

Mr. Tom Sparks
Serrot Corporation
125 Cassia Way
Henderson, Nevada 89014-4601

Subject: Test Results for Interface Friction Testing (TRI log #: E2038-23-10)

Dear Mr. Sparks:

This letter summarizes the final results for large scale interface friction testing performed in support of the Lockheed Martin project. Included are data developed for normal compressive loads of 1000, 3000 and 5000 psf. All testing work was performed in general accordance with ASTM D5321, *Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method.*

TESTING EQUIPMENT AND PROCEDURES

Test Apparatus

TRI/Environmental, Inc.'s (TRI's) large scale direct shear box is a Brainard Kilman model LG-115 measuring 12" x 12" x 8". The lower box is 16" in length to afford a full 12" x 12" interface during testing. The lower box is mounted on low friction rollers and attached to a hydraulic piston which applies the shearing force and subsequent displacement relative to the upper stationary box. The normal compressive loads were applied via air bladder.

Test Materials and Interfaces

The following materials and interfaces were evaluated.

Test #	Interface (Upper / Lower)	# Runs
1	40 mil Smooth Polypropylene Geomembrane / Synthetic Industries 1751 Nonwoven Cushion Geotextile	1/load

Preparation of the Interface Friction Test Specimens

Each test was configured to maximize test integrity and assure correct specimen handling. The exact configuration employed for a given test may be found in the Appendix of Results. The following sections describe test specimen mounting and preparation.

9063 Bee Caves Road • Austin, TX 78733-6201 • (512) 263-2101 • FAX 263-2558 • 1-800-880-T-E-S-T

Geotextile Attached to Lower Shear Box. The geosynthetic test specimens were trimmed in such a way to fit the lower box dimensions. The geosynthetic test specimens were then attached to the large scale direct shear box for testing. The leading travel edge of the geosynthetic was clamped to the lower shear box using a full width bolted bar clamp. This clamp was located outside the test region and penetrated the full thickness of the geosynthetic. Below the geosynthetic test specimen was a system of stacked steel plates which provided rigid support, with the top plate serrated. The serrated steel plate provided resistance to localized slippage during testing.

Geomembrane Attachment to Upper Shear Box. The geosynthetic test specimens were mounted to the lower portion of the upper shear box. A rigid serrated steel platen was placed upon the geosynthetics and the load was applied as described previously.

Interface Conditioning. Once constructed, all specimen interface configurations were loaded to the specified normal compressive load, and soaked under the applied load for 1 hour prior to shear.

Shear Testing

As shown in the Table above, all interface friction testing was performed using one test replicate (or shear run) per interface per normal compressive load. The geomembrane vs. geotextile interfaces were sheared at a constant rate of displacement of 0.2 inches per minute. Shearing continued until a minimum of four inches of displacement had been achieved.

RESULTS

Appendix A includes results of all interface friction testing conducted for this testing program. The graph of the interface plots the stress strain curve generated at each of the three normal compressive loads.

Using linear regression analysis of peak and residual data derived from the average stress strain curves, a best-fit line for three normal loads was determined. Each failure envelope was characterized by a least squares fit. The linearity of the failure envelope was described by an r^2 value. r^2 is a statistical factor that varies from 0, for randomly scattered data, to 1 for perfect linear correlation. This analysis is included in the individual test reports. Please note that all reported friction angles are specific over the normal compressive load range specified (1.5 to 2.0 psi), and may not be descriptive of the frictional characteristics at other load ranges or conditions.

CONCLUSION

TRI is pleased to present this final report. Please feel free to call if I can answer any questions or provide any additional information.

Sincerely,

Martin D. Nelson

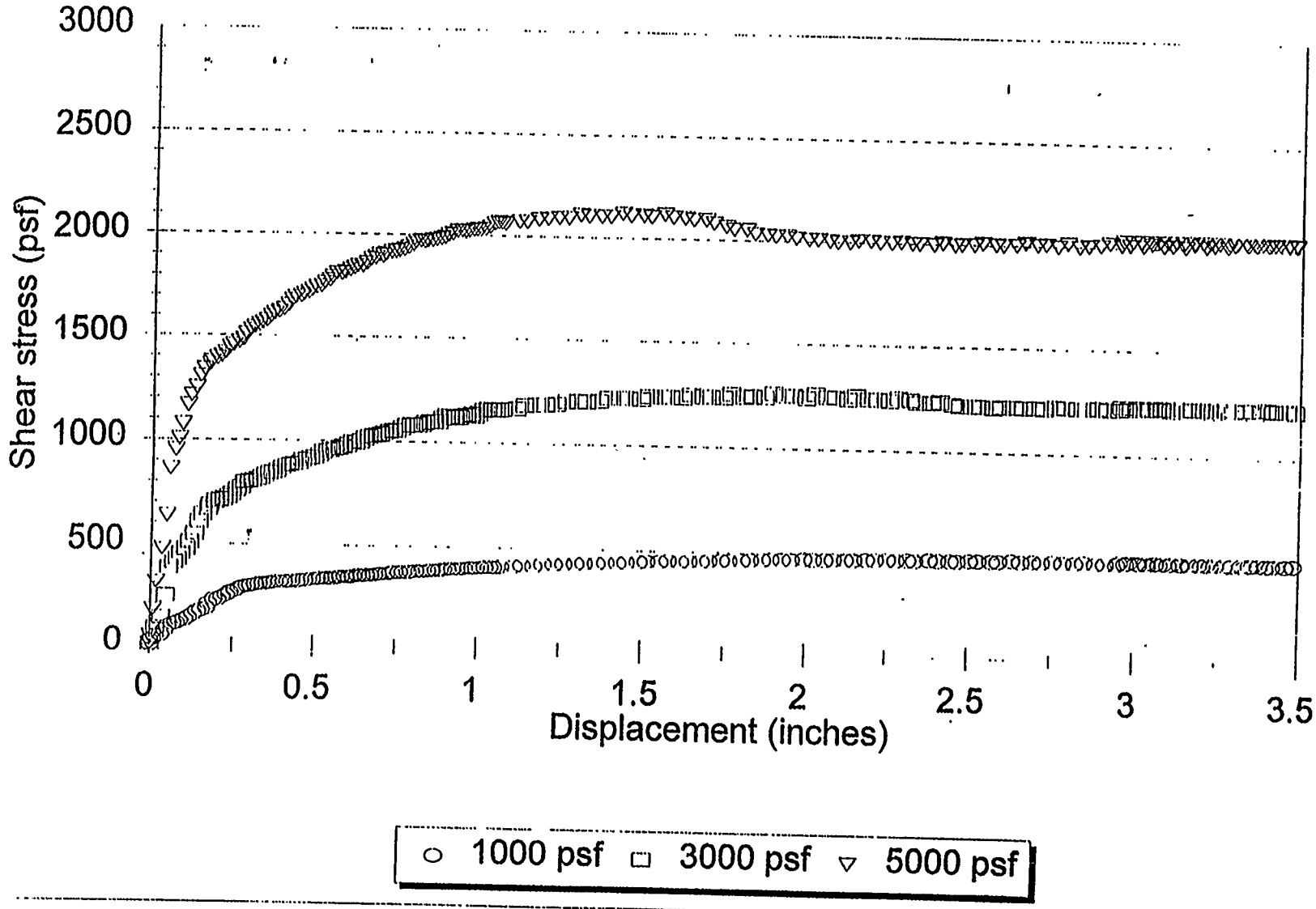
Martin D. Nelson
Project Manager: Geosynthetics Testing Technologies

TRI/Environmental, Inc.

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

SERROT CORP. INTERFACE FRICTION TEST

40 mil PPE GM vs Nonwoven Cushion GT



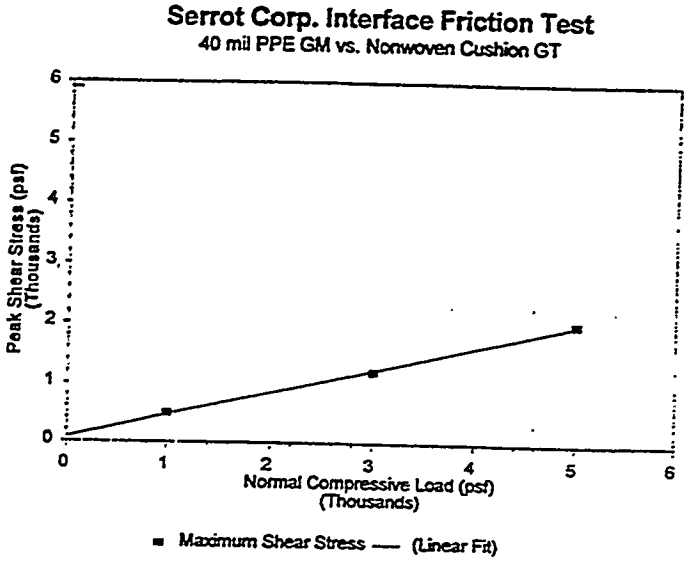
TRI Log No.: E2038-23-10, Client: Serrot

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client:	Serrot Corporation	TRI Log#:	E2038-23-10
Project:	Lockheed Martin, P.O. #: 21765	Test Method:	ASTM D 5321
Test Date:	07-17-96		

Tested Interface: 40 mil Smooth Polypropylene GM vs Synthetic Industries 1751 Nonwoven Cushion Geotextile



Upper Box: 40 mil Polypropylene GM

Lower Box: Synthetic Industiries 1751 Nonwoven Cushion Geotextile

Conditioning: Interface soaked for 1 hour under load prior to shear.

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	20.0	60.0	100.0
Normal Load (psf)	1000	3000	5000
Maximum Shear Load (lbs)	498	1264	2124
Corrected Shear Stress (psf)	478	1204	2024
Friction Angle (maximum; degrees)	25.5	21.9	22.0

RESULTS: Peak Shear Stress				
Regression Line:	Y=	0.386	* X +	76
Regression Coefficient (r squared)		0.999		
Regression Friction Angle (degrees)		21.1		
Y-intercept (psf)		76		

MDN 07-18-96
Quality Review/Date

The testing listed herein is based upon accepted industry practice as well as the test method listed. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.

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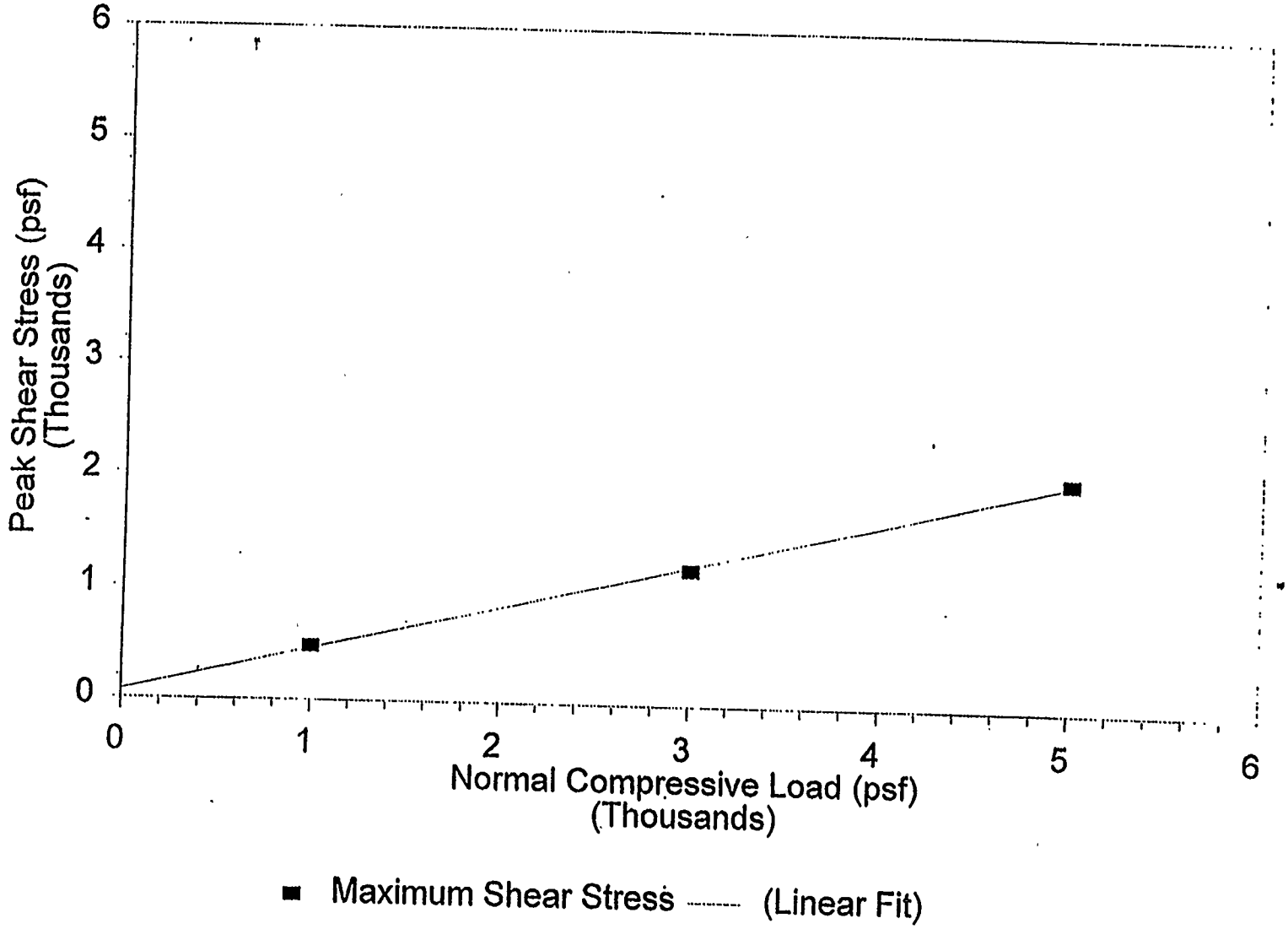
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

Serrot Corp. Interface Friction Test

40 mil PPE GM vs. Nonwoven Cushion GT



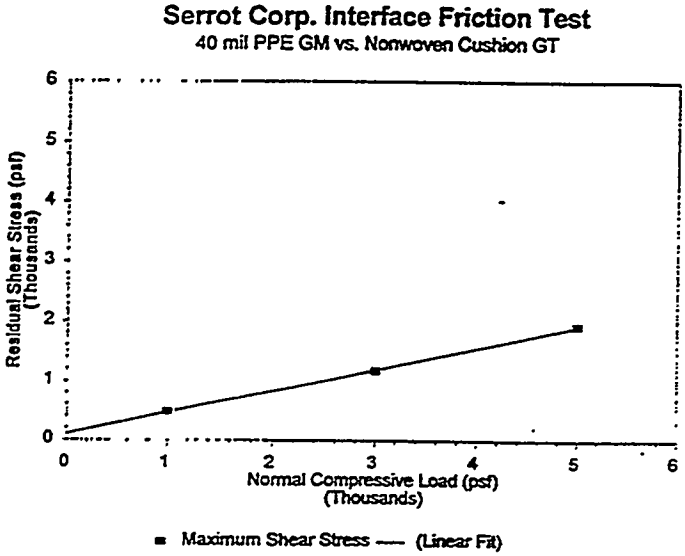
TRI Log No: E2038-23-10, Client: Serrot

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client:	Serrot Corporation	TRI Log#:	E2038-23-10
Project:	Lockheed Martin, P.O. #: 21765	Test Method:	ASTM D 5321
Test Date:	07-17-96		

Tested Interface: 40 mil Smooth Polypropylene GM vs Synthetic Industries 1751 Nonwoven Cushion Geotextile



Upper Box: 40 mil Polypropylene GM

Lower Box: Synthetic Industiries 1751 Nonwoven Cushion Geotextile

Conditioning: Interface soaked for 1 hour under load prior to shear.

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	20.0	60.0	100.0
Normal Load (psf)	1000	3000	5000
Residual Shear Load (lbs)	494	1234	2036
Corrected Shear Stress (psf)	474	1174	1936
Friction Angle (maximum; degrees)	25.4	21.4	21.2

RESULTS: Residual Shear Stress				
Regression Line:	Y=	0.365	*X +	98
Regression Coefficient (r squared)		0.999		
Regression Friction Angle (degrees)		**20.1**		
Y-intercept (psf)		98		

MDN 07-18-96
Quality Review/Date

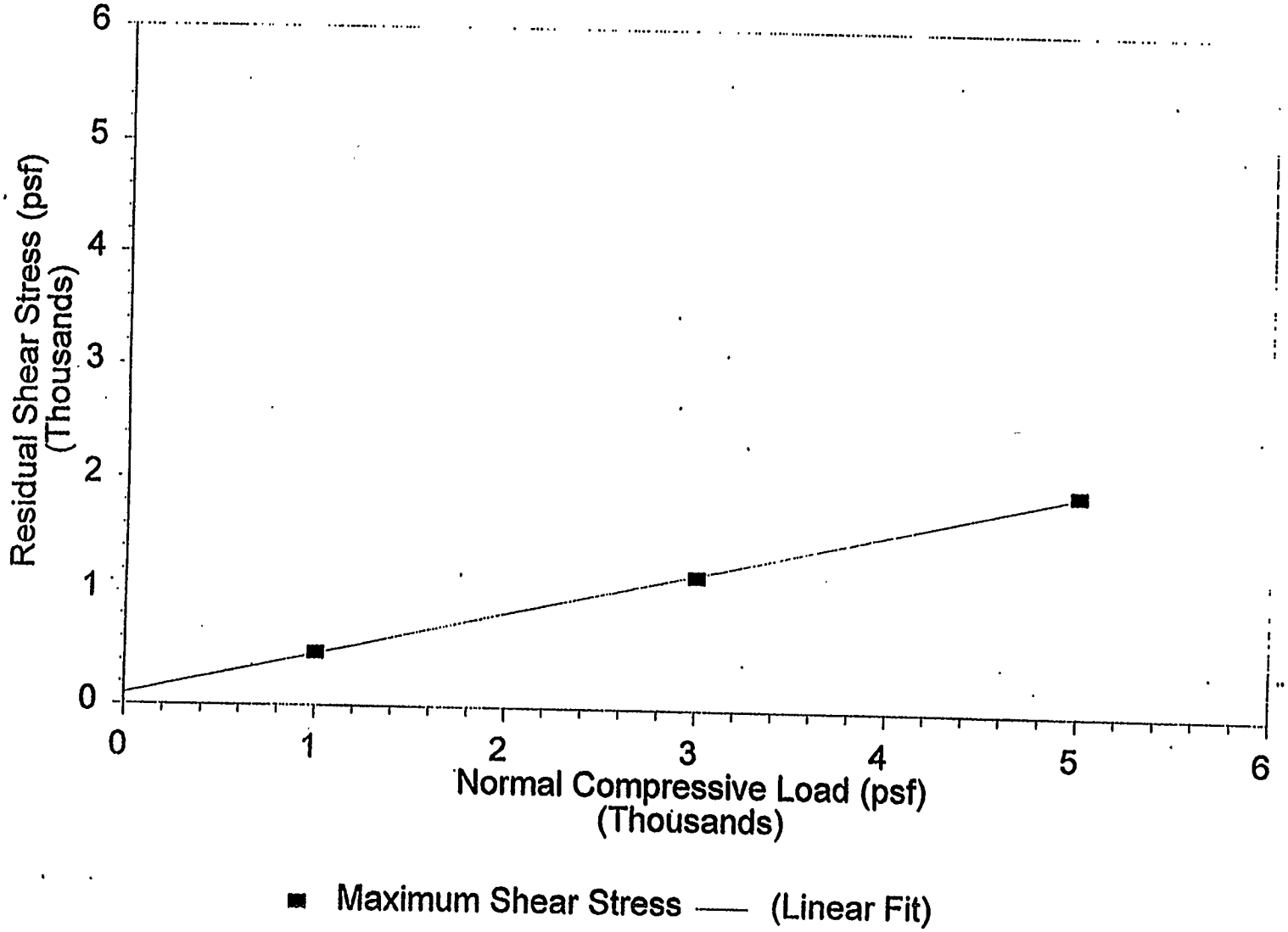
The testing listed herein is based upon accepted industry practice as well as the test method listed. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.

9063 Bee Caves Road • Austin, TX 78733-6201 • (512) 263-2101 • FAX 263-2558 • 1-800-880-T-E-S-T

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

Serrot Corp. Interface Friction Test

40 mil PPE GM vs. Nonwoven Cushion GT



TRI Log No: E2038-23-10, Client: Serrot

GAI-LAP LABORATORY ACCREDITATION

SYNTHETIC INDUSTRIES

Geosynthetic Products Division

July 25, 1996

Serrot Corporation
Tom Sparks
125 Cassia Way
Henderson NV 89014-2708
BoL: 617243, 617249, PO 23106
Lockheed Martin Energy Systems
Serrot Job # 6296

This is to certify that Product 1751, a nonwoven polypropylene geotextile produced by Synthetic Industries will meet the following certifiable minimum average roll values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously inspected for the presence of needles and none were detected.

PHYSICAL PROPERTY	TEST METHOD	U.S. UNITS	S.I. UNITS
Weight	ASTM D-5261	16.6 oz/yd^2	560 g/m^2
Thickness	ASTM D-5199	175 mils	4.4 mm
Tensile Strength	ASTM D-4632	390 lbs	1735 N
Elongation	ASTM D-4632	50 %	50 %
Trapezoidal Tear	ASTM D-4533	150 lbs	665 N
Mullen Burst	ASTM D-3786	875 psi	6030 Kpa
Puncture Strength	ASTM D-4833	260 lbs	1155 N
AOS	ASTM D-4751	100 US Standard Sieve	0.150 mm
Permittivity	ASTM D-4491	0.7 sec^{-1}	0.7 sec^{-1}
Permeability	ASTM D-4491	0.27 cm/sec	0.27 cm/sec
Flow Rate	ASTM D-4491	50 gpm/ft	2035 lpm/m^2
U V Resistance	ASTM D-4355	70 %	70 %

Strength Retained after 500 hours exposure in Xenon Arc Weatherometer

Sincerely,

Kent A. Snyder

Kent A. Snyder
Technical Superintendent
Performance Nonwovens Division

Synthetic Industries, Inc.
4019 Industry Drive • Chattanooga, Tennessee • 37416 • USA
Telephone • 423-899-0444 • Fax • 423-899-7619 • 1-800-621-0444

07/25/96 12:44 Page 1

Synthetic Industries
Individual Roll Data
Bill of Lading:617243

Roll Number	Style	Mass/ Unit Oay D5261	Lab Thick mils D5199	Tensile (MD) lbs D4632	Tensile (XMD) lbs D4632	Elongation (MD) % D4632	Elongation (XMD) % D4632	Trap Tear (MD) lbs D4533	Trap Tear (XMD) lbs D4533	Mullen Burst psi D3786	Punct Resist lbs D4833
4054334A	1751	19.0	206	464		94		218			
4054350A	1751	19.2	215	465	924	93	73	229	401	1010	351
4057169A	1751	18.8	210	481	864	98	78	202	390	905	317
4057205A	1751	18.4	188	422	860	105	77	198	393	915	300

Keith A Snyder

12:44 Page 1

Synthetic Industries
Individual Roll Data
Bill of Lading:617249

Roll Number	Style	Mass/ Unit Oay D5261	Lab Thick mils D5199	Tensile (MD) lbs D4632	Tensile (XMD) lbs D4632	Elongation (MD) % D4632	Elongation (XMD) % D4632	Trap Tear (MD) lbs D4533	Trap Tear (XMD) lbs D4533	Mullen Burst psi D3786	Punct Resist lbs D4833
4057220A	1751	18.2	197	432	821	106	75	203	397	925	304
4057225A	1751	19.1	193	437	817	106	77	199	360	945	309
4057250A	1751	18.1	204	432	816	108	76	176	362	890	302

Kent A Smith

COLUMBIA GEOSYSTEMS
A WHOLLY OWNED SUBSIDIARY OF NATIONAL SEAL COMPANY

POLYPROPYLENE CERTIFICATE OF ANALYSIS

Project : 141-96-01

Customer : SERROT CORPORATION
Project Name : LOCKHEED MARTIN ENERGY SYSTEMS
Resin Type: NOVA CHEMICAL

Columbia Ref : 141-96-01

We hereby certify that the polypropylene resin for the above identified shipment, meets or exceeds Columbia Geosystem's specifications, below. Testing was performed on each resin batch.

Melt flow index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, pigment content was determined according to ASTM D 1603. The average test results are listed in the table below.

RESIN SPECIFICATIONS

Melt flow index 1.0 g/10 minutes Maximum
Density 0.91 g/cc Maximum

Lot Number	Columbia Batch #	Melt Flow Index g/10	Density g/cc	Pigment Content %	OIT Min.
3A92511	016	0.301	0.876	N/A	N/A

Q.C. TECHNICIAN

July 22/96
DATE

Columbia Geosystems Ltd. .- 1415 - 28 St. N.E., Calgary, Alberta T2A 2P6 Tel. (403) 273-5152 Fax. (403) 235-6864

COLUMBIA GEOSYSTEMS
A WHOLLY OWNED SUBSIDIARY OF NATIONAL SEAL COMPANY

GEOMEMBRANE CERTIFICATE OF ANALYSIS

Customer : SERROT CORPORATION

Project Name : LOCKHEED MARTIN ENERGY SYSTEMS

Columbia Ref.# : 141-96-01

We hereby certify that the polypropylene geomembrane for the above identified shipment meets or exceeds Columbia Geosystem's specifications below. Testing was performed at the frequency indicated.

The raw polymeric material is first quality polypropylene resin containing no more than two percent clean reworked plastic by weight. Thickness was measured according to ASTM D 5199. Tensile properties were determined in accordance with ASTM D 638, NSF modified, using type IV dumbbell specimenand a strain rate of twenty inches per minute. Pigment dispersions slides were prepared according to ASTM D 3015, NSF modified, and rated according to the ASTM D 2663 dispersion classification chart under 100X magnification. Puncture resistance was determined according to FTMS 101, 2065 and ASTM D 4833. Where appropriate, pigment content was determined according to ASTM D 1603. Tear resistance was tested according to ASTM D 1004.

GEOMEMBRANE SPECIFICATIONS

Thickness	40 mil Minimum (av)	at least every 53,820 ft^2
Stress at break	2100 psi Minimum	at least every 53,820 ft^2
Strain at break	700 % Minimum	at least every 53,820 ft^2
Pigment dispersion	A1 or A2	at least every 53,820 ft^2
Pigment content	2 % to 3 %	at least every 53,820 ft^2
Dimensional Stability	+/- 2 %	at least every 53,820 ft^2
Tear resistance	350 ppi thickness	at least once per shift
Puncture resistance ASTM	900 ppi thickness	
Puncture resistance FTMS	950 ppi thickness	

Columbia Geosystems

B. Hallan

Quality Control Technician

July 22/96
Date

Columbia Geosystems Ltd. .- 1415 - 28 St. N.E., Calgary. Alberta T2A 2P6 Tel. (403) 273-5152 Fax. (403) 235-6864

COLUMBIA GEOSYSTEMS
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GEOMEMBRANE STANDARD TESTING CERTIFICATION

PROJECT # 141-96-01

Roll Number	Thick Min mil	Thick Ave mil	Density g/cc	Melt Index min	Pigment Cont. %	Pigment Disp.	Stress Break MD psi
016B96-26604	38.0	40.8	0.891	0.343	2.25	A-1	2761
016A96-26606	37.0	41.3	0.893	0.427	2.55	A-1	2352
016A96-26617	37.0	41.0	0.895	0.381	2.50	A-1	2646
016B96-26620_	40.0	42.8	0.894	0.351	2.61	A-1	2568
016D96-26623	38.0	41.7	0.893	0.403	2.61	A-1	2664
016D96-26626	38.0	41.2	0.896	0.456	2.58	A-1	2708
016C96-26628	38.0	41.0	0.894	0.399	2.54	A-1	2422

Page 1.1 Cont...

COLUMBIA GEOSYSTEMS
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GEOMEMBRANE STANDARD TESTING CERTIFICATION

PROJECT # 141-96-01

Roll Number	Stress Break TD psi	Strain Break MD %	Strain Break TD %	Dimen Stabili MD %	Dimen Stabili TD %	Tear Resist MD ppi	Tear Resist TD ppi
016B96-26604	2473	859	1016	-0.31	-0.23	390	399
016A96-26606	2375	750	873	-0.38	-0.29	375	386
016A96-26617	2178	861	919	-0.33	-0.30	371	397
016B96-26620	2253	798	907	-0.18	-0.18	378	414
016D96-26623	2398	832	1025	-0.32	-0.29	372	394
016D96-26626	2547	849	1086	-0.31	-0.27	391	401
016C96-26628	2301	759	933	-0.11	-0.05	377	418

Page 1.2 Cont...

COLUMBIA GEOSYSTEMS
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GEOMEMBRANE STANDARD TESTING CERTIFICATION

PROJECT # 141-96-01

Roll Number	Punct Resist ASTM ppi	Punct Resist FTMS ppi
016B96-26604	1153	1210
016A96-26606	1045	1034
016A96-26617	1070	1200
016B96-26620	1013	1095
016D96-26623	981	951
016D96-26626	947	971
016C96-26628	1180	1262

Q.C. TECHNICIAN

July 22/96
DATE

Columbia Geosystems Ltd. 1415 - 28 St. N.E., Calgary, Alberta T2A 2P6 Tel. (403) 273-5152 Fax. (403) 235-6864

NSC

September 23, 1996

Critical Cone Height Test of 40 Mil Polypropylene Geomembrane
(NSC 96103)

Introduction

The critical cone height of Columbia Geosystem's 40 mil polypropylene geomembrane was determined according to the Geosynthetic Research Institute's Test Method GM3, *Large Scale Hydrostatic Puncture Test.* The critical cone height of the 40 mil polypropylene was 8 cm.

Test Procedure

The tests were carried out in a 24 inch diameter pressure vessel. In the bottom portion of the vessel three truncated cones were placed in a triangular pattern centered in the vessel with a 10 inch separation between the cones. The angled cut off portion of all three of the cones faced towards the center of the vessel and the height of the cones was varied by putting in a layer of sand. The sand was packed in at a uniform height and the height of the cones was measured by placing a metal plate on the tips of the three cones and measuring the distance from the top of the sand to the bottom of the plate. The test specimens were cut in 36 inch diameter circles and before testing the thickness was measured at eight spots around the circumference of each specimen. Then the specimen was put on the flange of the pressure vessel and upper portion of the vessel was put on and clamped in place forming a seal at the membrane. Water was put in the upper portion of the pressure vessel and then air pressure was added to the upper portion of the pressure vessel at a rate of 1 psi per minute thus forcing the geomembrane down upon the cones. The pressure was increased until the geomembrane failed or the upper limit of the system was reached.

Test Results

One test was done with a cone height of 7 cm and three tests at a cone height of 7.5 without the membrane failing in any of the tests. Two tests were performed at a cone height of 8 cm and in one of these tests the membrane failed at one of the cones at a pressure of 5.4 psi. In the other test run with a cone height of 8 cm no failure was detected during the test but when the specimen was examined after the test there was a pinhole in the membrane at one of the cones. Therefore the critical cone height at which the specimens began to fail was 8 cm. The test data for each specimen tested in summarized in table #1

Don Cunningham

Don Cunningham
Research Technician
National Seal Company

Table #1 - Critical Cone Height Test of 40 Mil Polypropylene (NSC #96103S)

Average Thickness (Mils)	Cone Height (cm)	Maximum Pressure (psi)	Results
39.0 SD 1.1	7.0	92.9	No Break
39.2 SD 0.8	7.5	87.7	No Break
38.8 SD 0.8	7.5	98.4	No Break
39.2 SD 0.6	7.5	91.2	No Break
39.6 SD 1.3	8.0	5.4	Break at One Cone
39.2 SD 0.9	8.0	91.8	Pinhole at One Cone

COLUMBIA GEOSYSTEMS
A WHOLLY OWNED SUBSIDIARY OF NATIONAL SEAL COMPANY

To : Tom Sparks
Serrot Corporation

From : Bruce Wallace

Date : September 12,1996

Subject : Multi-axial Tensile

Reference : Lockheed Martin Energy Systems
Oakridge, Tennessee
P.O.# 23109

Columbia Geosystems certifies that the 40 mil Polypropylene produced for the above referenced project will meet or exceed the Multi-axial Burst Extension as tested to GRI's test method GM-4.

B Wallace

Bruce Wallace
Quality Control Supervisor

c.c. Project File 141-96-01

SERROT CORPORATION

PROJECT COMPLETION REPORT

Sold To: LOCKHEED MARTIN
Y-12 P.O. Box 2009
OAK RIDGE, TN 37831

Project Name: OAK Ridge LF (Lock Hee (LANDFILL 5, AREA 2)
Project Number: 6296
Date Complete: 7-29-96

FINAL QUANTITIES

ITEM	DESCRIPTION	QUANTITY	NOTES
	40 Mil PPU	236,969	SQ FT
	40 Mil PPU Rub Sheet	4,650	SQ FT
	16 oz GeoTextile	236,969	SQ FT

SERROT MATERIALS LEFT ON SITE

DESCRIPTION	QUANTITY	NOTES
PPU 40 Mil 6'x300'	1	
GeoTexTile 1 Roll 15'x300'	1	

LIST ALL ROLL NUMBERS SEPERATELY AND ATTACH LIST TO THIS REPORT

Notes:

The Project has been left in a clean orderly fashion acceptable to the customer. (INITIALS) DATE 7-29-96

THE WORK IS COMPLETE, SATISFACTORY, QUANTITIES AGREED TO AND ACCEPTED BY:

SERROT SUPERINTENDENT SIGNATURE

AUTHORIZED SIGNATURE 7-2

7-29-96
DATE

PE (TITLE III)
TITLE CQA

LOCKHEED MARTIN
COMPANY NAME GEOTEK ENG.

7-29-96
DATE 7-29-96

COLUMBIA GEOSYSTEMS
A WHOLLY OWNED SUBSIDIARY OF NATIONAL SEAL COMPANY

6296

Date : 18/07/96

Shipping / Packing List

Page : 1

CUSTOMER: 141-96-01

Bill of Lading: C96281

DESTINATION: OAKRIDGE, TENN

	Roll Number	Weight (LBS)	Square Feet	Dimensions (FT)	QC
1	040 722 26625	3,610	17,940.00	23.00 x 780.00	✓
2	040 722 26627	3,576	17,940.00	23.00 x 780.00	✓
	TOTAL	7,186	35,880.00		

COLUMBIA GEOSYSTEMS
Adolf Car
July 19/96
Q.C. DEPARTMENT

Columbia Geosystems Ltd. 1415 - 28 St. N.E., Calgary, Alberta T2A 2P6 Tel. (403) 273-5152 Fax (403) 235-

RECEIVED
JUL 22

COLUMBIA GEOSYSTEMS
A WHOLLY OWNED SUBSIDIARY OF NATIONAL SEAL COMPANY

Date : 16/07/96

Shipping / Packing List

Page : 1

CUSTOMER: 141-96-01

Bill of Lading: C96269

DESTINATION: OAKRIDGE, TENN

	Roll Number	Weight (LBS)	Square Feet	Dimensions (FT)	QC
1	040 722 26602	3,439	17,940.00	23.00 x 780.00	✓
2	040 722 26603	3,431	17,940.00	23.00 x 780.00	✓
3	040 722 26604	3,438	17,940.00	23.00 x 780.00	✓
4	040 722 26605	3,444	17,940.00	23.00 x 780.00	✓
5	040 722 26615	3,568	17,940.00	23.00 x 780.00	✓
6	040 722 26617	3,564	17,940.00	23.00 x 780.00	✓
7	040 722 26619	3,727	17,940.00	23.00 x 780.00	✓
8	040 722 26620	3,709	17,940.00	23.00 x 780.00	✓
9	040 722 26621	3,674	17,940.00	23.00 x 780.00	✓
10	040 722 26622	3,638	17,940.00	23.00 x 780.00	✓
11	040 722 26623	3,665	17,940.00	23.00 x 780.00	✓
12	040 722 26626	3,554	17,940.00	23.00 x 780.00	✓
	TOTAL	42,851	215,280.00		

COLUMBIA GEOSYSTEMS
Adolf Vas
July 16/96
Q.C. DEPARTMENT

Form 4

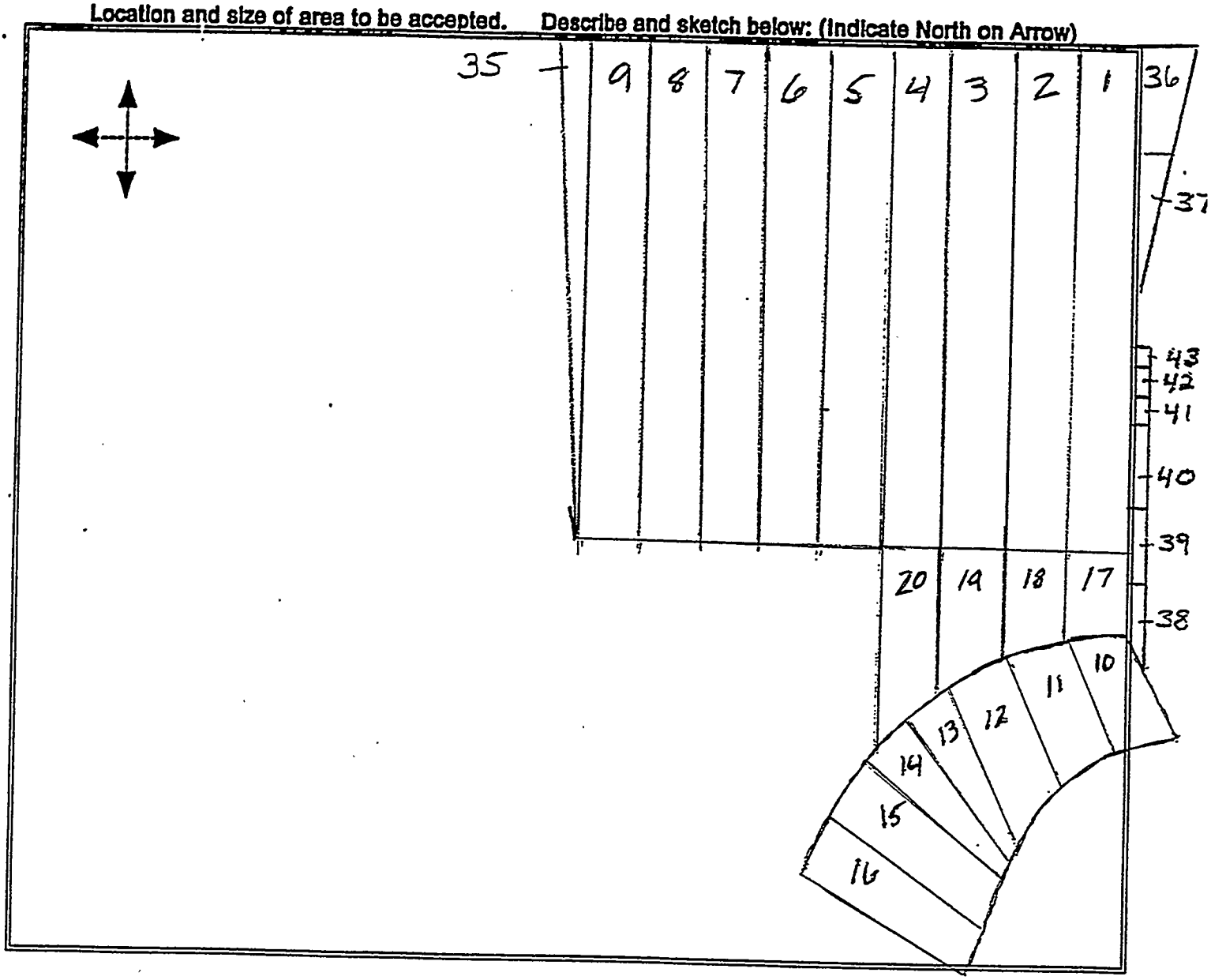
SERROT CORPORATION
SUBGRADE ACCEPTANCE FORM

Date: 7-23

Project Name : Oak Ridge LF (Lockheed) Project Number : 6296

Superintendent: Vince Martinez Project Manager: Graydon R.

Location and size of area to be accepted. Describe and sketch below: (Indicate North on Arrow)



I the undersigned, an authorized representative or SERROT CORPORATION, accept the above described subgrade area as suitable to be lined.

Name (Print)	Signature	Title	Date
Vince Martinez	Vince Martinez	Superintendent	7-23-96

I the undersigned, an authorized representative of AK 7-29-96 [illegible] (GEOTEK ENG. CO.) the Inspecting Engineers, approve of the subgrade as being constructed to the specifications.

Form 4

SERROT CORPORATION

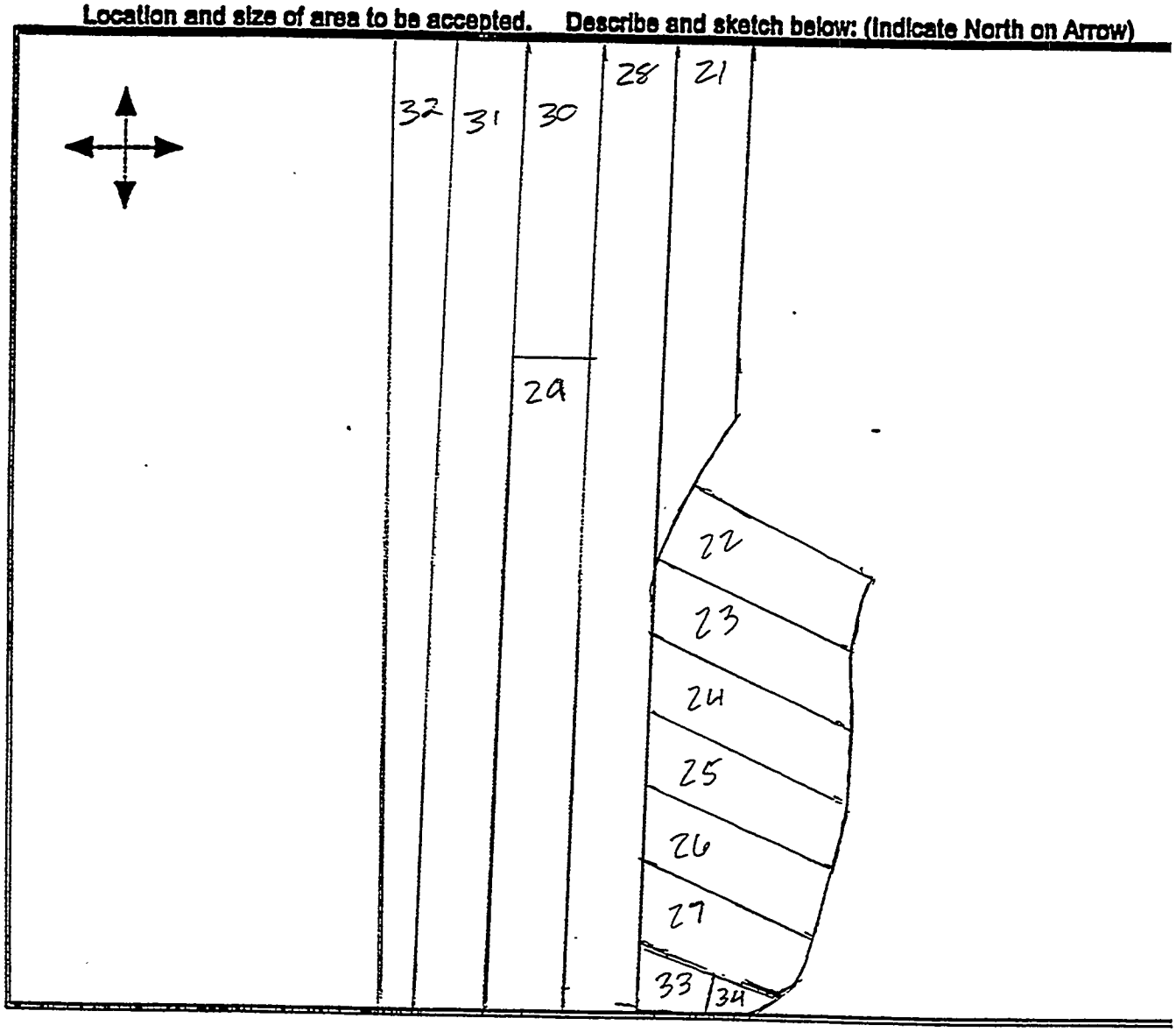
SUBGRADE ACCEPTANCE FORM

Date: 7-24-9

Project Name : Oak Ridge I.F (Lockheed) Project Number : 6296

Superintendent: Vince Martinez Project Manager: Graydon R.

Location and size of area to be accepted. Describe and sketch below: (Indicate North on Arrow)



I the undersigned, an authorized representative or SERROT CORPORATION, accept the abov described subgrade area as suitable to be lined.

Name (Print)	Signature	Title	Date
Vince Martinez	Vince Martinez	Supercintendent	7-24-

A-L- 7-29-96

I the undersigned, an authorized representative of Alan Rhyndlan (GEOTEK EN the Inspecting Engineers, approve of the subgrade as being constructed to the specifications.

orm 2

Page_____

SERROT CORPORATION
DAILY PANEL PLACEMENT

roject Name: LOCK Heed Land fill No. 6296 Material: 40 Mil PolyPro.

upervisor: Vince Martinez Location: LANDFILL/AREA 2 [X] Primary [ ] Secondary [ ] Other

Deploy Date	Panel No.	Roll No.	Initial Length	Final Length Side "A"	Side "B"	Average	Width Average	Notes
7-23	1	26617	771'	753'4"	761'11"	757'8"	22'6"	
	2	26605	786	761'11"	772'2"	767'	22'6	
	3	26604	788	772'2"	782'1"	777'2"	22'7"	
	4	26603	787'	773'11"	781'4"	777'8"	22'9"	
	5	26602	786'	774'7"	782'5"	778'6"	22'9"	
	6	26621	786'	782'5"	783'	782'9"	22'7"	
	7	26626	779'	778'6"	780'1"	774'3"	22'6"	
	8	26620	784	770'1"	771'4"	770'9"	22'7"	
	9	26615	782	771'4"	765'6"	768'5"	22'7"	
	10	26627	45'	39'6"	40'9"	40'2"	22'7"	
	11	26627	51	40'9"	47'5"	44'1"	22'8"	
	12	26627	62'	47'5"	54'9"	51'1"	22'6"	
	13	26627	71-11	54'9"	56'1"	55'5"	9'4"	
	14	26627	71-11	56'1"	59'1"	57'7"	12'4	
	15	26627	65'	59'1"	58'10"	59'	22'7"	
	16	26627	65'	58'10"	60'8"	59'9"	22'7"	
	17	26627	122'	106'9"	120'4"	113'6"	22'7"	
	18	26627	136'	120'4"	133'5"	126'11"	22'6"	
	19	26627	142	133'5"	153'8"	143'7"	22'7"	
	20	26623	200	162'	212'9"	187'4"	22'7"	
~~7227~~ 8008	Total Linear Feet ~~[illegible]~~ 184,184			Total Linear Feet				

xm 2
~~545~~
167
~~229~~

SERROT CORPORATION
DAILY PANEL PLACEMENT

Page_____

Project Name: Lock Heed Land fill No. 6296 Material: Poly P 40

Supervisor: Vince Martinez Location: Oak Ridge [X]Primary [ ]Secondary [ ]Other

Deploy Date	Panel No.	Roll No.	Initial Length	Final Length Side "A"	Side "B"	Average	Width Average	Notes
7-24	21	26623	261'	212'9"	289'3"	251'	22'8"	
	22	26623	70'	60'8"	64'2"	62'5"	22'7"	
	23	26623	74'	64'2"	67'8"	65'11"	22'7"	
	24	26623	76'	67'8"	68'	67'10"	22'4"	
	25	26623	75'	68'	63'1"	65'6"	22'7"	
	26	26623	71'	63'1"	57'9"	60'5"	22'8"	
	27	26619	64	57'9"	46'4"	52'1"	22'6"	
	28	26619	411	395'8"	395'5"	395'6"	22'7"	
	29	26619	235	228'4"	228'2"	228'3"	22'8"	
	30	26622	180'	167'2"	173	170'1"	22'6"	
	31	26622	409' ~~409'~~	395'8"	396'7"	396'2"	22'7"	
	32	26625	404	396'7"	393'1"	394'10"	17'2"	
	33	26622	30'	18'8"	27'10"	23'3"	22'7"	
	34	26622	21-20' ~~20~~	22'3"	18'8"	20'5"	21'1"	
	35	26622	~~5~~75-4	572'1"	572'2"	572'2"	4'6"	
	36	26622	52-18	45'11"	47'4"	46'8"	17'6"	
	37	26622	47-5'	47'10"	46'8"	47'3" ~~46'8"~~	4'8"	
	38	26622	100-9' ~~52-18'~~	92'5"	92'8"	95'	8'11"	
	39	26622	100-7'	97'11"	97'8"	97'10"	6'9"	
	40	26622	100-6	97'8"	97'6"	97'7"	5'8"	
	41	26625	29-8'	28'4"	28'2"	28'3"	7'5"	
	42	26625	29-8	28'5"	28'2"	28'3"	7'4"	
	43	26625	29-7'	28'6"	28'7"	28'7" 28'4"	7'3"	

Total Linear Feet _____ Total Linear Feet

Form 2 Rev 1/30/96

SERROT CORPORATION
DAILY PANEL PLACEMENT

Deployment Date 7-23

Project Name Lock Heed Land fill Job # 6296 Supt. Vince Martinez

Material: 40 Mil Poly Pro Primary [X] Secondary [ ] Pond # — Cell # — Pad # — Other: LFS / AREA 2

Panel # 1	Roll # 26617	Panel # 2	Roll # 26605	Panel # 3	Roll # 26604
771'		786'		788	
753'4"		761'11"		772'2"	
22'6" 757'8"	22'6"	22'6" 22'6" 767'	22'6"	22'6" 22'7" 777'2"	22'7"
761'11"		772'2"		782'1"	
771'		786'		788	
Initial SF 17424	Lineal Feet Trench	Initial SF 17685	Lineal Feet Trench	Initial SF 17730	Lineal Feet Trench
Final SF 17097.5	69 SF	Final SF 17257.5	69 SF	Final SF 17553.0	69 SF

Panel # 4	Roll # 26603	Panel # 5	Roll # 26602	Panel # 6	Roll # 26621
787'		786		786'	
773'11"		774'7"		782'5"	
22'9" 777'8"	22'9"	22'6" 22'9" 778'6"	22'9"	22'6" 22'7" 782'9"	22'7"
781'4"		782'5"		783'	
787'		786		786'	
Initial SF 17707	Lineal Feet Trench	Initial SF 17685	Lineal Feet Trench	Initial SF 17685	Lineal Feet Trench
Final SF 17691.9	69 SF	Final SF 17710.8	69 SF	Final SF 17679.1	69 SF

Panel # 7	Roll # 26626	Panel # 8	Roll # 26620
779		784	
778'6"		770'1"	
22'6" 774'3"	22'6"	22'6" 22'7" 770'9"	22'7"
770'1"		771'4"	
Initial SF 17527	Lineal Feet Trench	Initial SF 17640	Lineal Feet Trench
Final SF 17472.2	69'	Final SF 17908.1	69' SF

Total Initial SF This Page	141083	SF
Total Final SF This Page	139,768.5	SF
Anchor Trench		
Total Lineal feet trench	3	LF
X		
Depth and width allowed in trench	3-23	LF
= Total SF in Trench	552'	SF
Total Pay Area This Page	139,768.5	SF
Total Previous Pages	—	SF
Total Pay Area to Date	139,768.5	SF

Form 2 Rev 1/30/96

SERROT CORPORATION
DAILY PANEL PLACEMENT

Deployment Date 7-23

Project Name LOCK Heed Land fill Job # 6296 Supt. Vince Martinez

ial: 40 Mil PolyPro Primary [X] Secondary [ ] Pond # — Cell # — Pad # — Other: LF5/AREA2

Panel # 9	Roll # 26615
782	
771'4"	
26" 22'7" 768'5" 22'7" 22	
765'6"	
782	
Initial SF 17595	Lineal Feet Trench
Final SF 17355.4	69' SF

Panel # 10	Roll # 26627
45	
39'6"	
26" 22'7" 40'2" 22'7" 22	
40'9"	
45	
Initial SF 1012	Lineal Feet Trench
Final SF 907.1	69'

Panel # 11	Roll # 26627
51	
40'9"	
26" 22'8" 44'1" 22	
47'5"	
51	
Initial SF 1147	Lineal Feet Trer
Final SF 999.1	69 SF

Panel # 12	Roll # 26627
62	
47'5"	
22'6" 51'1" 22'6"	
54'9"	
62	
Initial SF 1401	Lineal Feet Trench
Final SF 1149.2	69 SF

Panel # 13	Roll # 26627
71	
11'4'8" 54'9" 55'5" 56'1" 16'5"	
Initial SF 781	Lineal Feet Trench
Final SF	14 SF

Panel # 14	Roll # 26627
71	
19'6" 59'8" 74'	
Initial SF 781	Lineal Feet Tren
Final SF	22 SF

Panel # 15	Roll # 26627
65	
59'1"	
26 22'7" 59' 22'7" 2	
58'10"	
Initial SF 1462	Lineal Feet Trench
Final SF 1349.3	69'

Panel # 16	Roll # 26627
65	
58'10"	
26" 22'7" 59'9" 22'7"	
60'8"	
Initial SF 1462	Lineal Feet Trench
Final SF 1349.5	69' SF

Total Initial SF This Page	25641
Total Final SF This Page	21943.6
Anchor Trench	
Total Lineal feet trench	
X	
Depth and width allowed in trench	
= Total SF in Trench	450"
Total Pay Area This Page	21943.6
Total Previous Pages	139,768.5 S
Total Pay Area to Date	161712.1

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SERROT CORPORATION
DAILY PANEL PLACEMENT

Deployment Date 7-23

Project Name Lock Heed Land fill Job # 6296 Supt. Vince Martinez

ial: 40 Mil Polyeno Primary [X] Secondary [ ] Pond # — Cell # — Pad # — Other: LFS/AREA 2

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
17	26627	18	26627	19	26627
122		136		142	
106'9"		126'4"		133'5"	
'6" 22'7" 113'6" 22'7" 2		2'6" 22'6" 126'11" 22'6" 2		2'6" 22'7" 143'7" 22'7"	
126'4"		133'5"		153'8"	
Initial SF 2745	Lineal Feet Trench	Initial SF 3060	Lineal Feet Trench	Initial SF 3195	Lineal Feet Trench
nal SF 2563.5		Final SF 2855.6		Final SF 3243.0	

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
20	26623				
200					
162'					
," 22'7" 187'4" 22'7"					
212'9"					
tial SF 4500	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
nal SF 4231.1		Final SF		Final SF	

Panel #	Roll #	Panel #	Roll #
ial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
nal SF		Final SF	

Total Initial SF This Page	135,000 SF
Total Final SF This Page	12893.2 SF
Anchor Trench	
Total Lineal feet trench	LF
X	
Depth and width allowed in trench	LF
= Total SF in Trench	SF
Total Pay Area This Page	12893.2 SF
Total Previous Pages	161712.1 SF
Total Pay Area to Date	174605.3 ~~17605~~ SF

Form 2 Rev 1/30/96

SERROT CORPORATION
DAILY PANEL PLACEMENT

Page _____ of _____

Deployment Date 7-24

Project Name Lock Head Land Fill Job # 6296 Supt. Vince Martinez

Material: 40 Mil PolyPro. Primary [X] Secondary [ ] Pond # — Cell # — Pad # — Other: AREA 20-LFS

Panel # 21	Roll # 26623
261	
212'9"	
22'8" 251 22'8"	
289'3"	
261	
Initial SF 5872.	Lineal Feet Trench
Final SF 5689.1	

Panel # 22	Roll # 26623
70	
60'8"	
22'7" 62'5" 22'7"	
64'2"	
70	
Initial SF 1575	Lineal Feet Trench
Final SF 1409.7	69 SF

Panel # 23	Roll # 26623
74	
64'2"	
22'7" 65'11" 22'7"	
67'8"	
74	
Initial SF 1665	Lineal Feet Trenc
Final SF 1488.7	69 SF

Panel # 24	Roll # 26623
76	
67'8"	
22'6" 67'10" 22'6"	
68'	
76	
Initial SF 1710	Lineal Feet Trench
Final SF 1526.1	69 SF

Panel # 25	Roll # 26623
75	
68	
22'7" 65'6" 22'7"	
63'1"	
75	
Initial SF 1687	Lineal Feet Trench
Final SF 1479.3	69 SF

Panel # 26	Roll # 26623
71	
63'1"	
22'8" 60'5" 22'8"	
57'9"	
71	
Initial SF 1597	Lineal Feet Trenc
Final SF 1369.3	69 SF

Panel # 27	Roll # 26619
64	
57'9"	
22'6" 52'1" 22'6"	
46'4"	
64	
Initial SF 1440	Lineal Feet Trench
Final SF 1171.9	69 SF

Panel # 28	Roll # 26619
411	
395'8"	
22'7" 395'6" 22'7"	
395'5"	
411	
Initial SF 9247	Lineal Feet Trench
Final SF 8932.7	69 SF

Total Initial SF This Page: 24793 S

Total Final SF This Page: 23066.7 S

Anchor Trench

Total Lineal feet trench _____ L

X

Depth and width allowed in trench _____ L

= Total SF in Trench 483 S

Total Pay Area This Page: 23066.7 S

Total Previous Pages: 174605.3 SF

Total Pay Area to Date: 197672 S

Form 2 Rev 1/30/96

SERRO CORPORATION
DAILY PANEL PLACEMENT

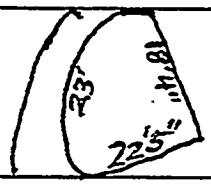
Page _____ of _____

Deployment Date 7-24

Project Name Lock Heed Land Fill Job # 6296 Supt. Vince Martinez

ial: 40 MIL POLY PRO Primary [X] Secondary [ ] Pond # — Cell # — Pad # — Other: LF5 / AREA 2

Panel # 29	Roll # 26619	Panel # 30	Roll # 26622	Panel # 31	Roll # 26622
235		180'		409	
228'4		167'2"		395'8"	
22'8" 228'3" 22'8"		22'6" 22'6" 170'1" 22'6"		22'6" 22'7" 396'2" 22'7"	
228'2"		173		396'7"	
235		180'		409	
itial SF 5311	Lineal Feet Trench	Initial SF 4050	Lineal Feet Trench	Initial SF 9202	Lineal Feet Trench
nal SF 5173.5	69 SF	Final SF 3826.8		Final SF 8947.8	69 SF

anel # 32	Roll # 26622	Panel # 33	Roll # 26622	Panel # 34	Roll # 26622
404		30'		24	
396'7"		18'8"			
6" 17'3" 394'10" 17'2"		22'6" 22'7" 23'3" 22'7"		28'	
393'1"		27'10"			
404		30'		24	
lial SF 9090	Lineal Feet Trench	Initial SF 675	Lineal Feet Trench	Initial SF 552	Lineal Feet Trench
ial SF 6777.6	69 SF	Final SF 525.1	69'	Final SF 515.5	69

nel # 35	Roll # 26622	Panel # 36	Roll # 26622
575		52	
9" 572'9" 572'2"		45'11" 22'8" 46'6" 6'4" 18'	
575		47'4"	
		52	
ial SF 5462.5	Lineal Feet Trench	Initial SF 936	Lineal Feet Trench
al SF 1366	69 SF	Final SF 681.5	69 SF

Total Initial SF This Page	35,278 SF
Total Final SF This Page	31597.4 SF
Anchor Trench	
Total Lineal feet trench	LF
X	
Depth and width allowed in trench	LF
= Total SF in Trench	3381 SF
Total Pay Area This Page	31597.4 SF
Total Previous Pages	197672 SF
Total Pay Area to Date	229269.4 SF

orm 2 Rev 1/30/96

SERRO CORPORATION
DAILY PANEL PLACEMENT

Page ____ of ____

Deployment Date 7-24

Project Name Lock Heed Land Fill Job # 6296 Supt. Vince Martinez

Material: Poly P. 40mil Primary [X] Secondary [ ] Pond # — Cell # — Pad # — Other: LF-5/AREA 2

Panel #	Roll #	Initial SF	Final SF	Lineal Feet Trench
37	26622	164	149.6	
38	26622	900'	847	
39	26622	700'	660.3	
40	26622	600'	552.9	
41	26625	232	209.5	
42	26625	232	207.1	
43	26625	203	207.2	

Panel # 37
47
6'4" 47'10" 46'8" 47'3"
47

Panel # 38
100
97'5"
9' 8'11" 9'5" 8'11" 9'
92'8"
100

Panel # 39
100
97'11"
7' 6'9" 97'10" 6'9"
97'8"
100

Panel # 40
100
97'8"
6" 5'8" 97'7" 5'8" 6"
97'6"
100

Panel # 41
29
28'4"
8" 7'5" 28'3" 7'5" 8"
28'2"
29

Panel # 42
29
28'5"
8' 7'4" 28'3" 7'4"
28'2"
29

Panel # 43
29
28'6"
7' 7'3" 28'7" 7'3" 7'
28'7"
29

Panel # Roll #
Initial SF Final SF Lineal Feet Trench

Total Initial SF This Page 3031 S
Total Final SF This Page 2833.6 S
Anchor Trench
Total Lineal feet trench L
X
Depth and width allowed in trench L
= Total SF in Trench S
Total Pay Area This Page 2833.6 S
Total Previous Pages 229,269.4 SF
Total Pay Area to Date 232,103 SF

Form F

SERROT CORPORATION

SEAM CONTROL

Project Name Lock Heed Land Fill No. 6296 Material Poly P 40mil Supt. Vince Martinez

Report By [illegible] Location Oak Ridge Tenn. (Primary) Secondary Other

WELDING DATA									TEST DATA					
Weld Date	Seam No.	Seam Length	Time am pm	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time IN	Time Out	Test Results	D. S. Number ...(NOTES)
7-23	1-2	768	(am) pm	M.Garcia	122	320	6.0		7-23	AT	110	115	(P) F	
			(am) pm	M.Garcia	122	320	6.0		7-24	AT	7:30	7:35	(P) F	
			(am) pm	M.Garcia	122	320	6.0		7-24	AT	8:00	805	(P) F	
			(am) pm	M.Garcia	122	320	6.0		7-24	AT	804	811	(P) F	
			(am) pm	M.Garcia	122	320	6.0		7-24	AT	814	826	(P) F	
	2-3	773	(am) pm	A.Varela	163	350	5.5		7-24	AT	834	8:39	(P) F	
			(am) pm	A.Varela	163	350	5.5		7-24	AT	840	848	(P) F	
	3-4	775	(am) pm	M.P	144	320	5.5		7-24	AT	904	909	(P) F	
			(am) pm	M.P	144	320	5.5		7-24	AT	911	916	(P) F	
	4-5	775	(am) pm	C.Colin	100	300	5.3		7-24	AT	917	922	(P) F	
			(am) pm	C.Colin	100	300	5.3		7-24	AT	945	950	(P) F	
			(am) pm	C.Colin	100	300	5.3		7-24	AT	950	955	(P) F	
			(am) pm	C.Colin	100	300	5.3		7-24	AT	958	1003	(P) F	
			(am) pm	C.Colin	100	300	5.3		7-24	AT	1010	1015	(P) F	
			(am) pm	C.Colin	100	300	5.3		7-24	AT	1019	1024	(P) F	
			(am) pm	C.Colin	100	300	5.3		7-24	AT	1021	1026	(P) F	
			(am) pm	C.Colin	100	300	5.3		7-24	AT	1031	1036	(P) F	
			(am) pm	C.Colin	100	300	5.3		7-24	AT	1040	1045	(P) F	
			(am) pm	C.Colin	100	300	5.3		7-24	AT	1059	1104	(P) F	
	Total =													

Air Test 20 psi for 2 minutes 4 psi loss allowed Tested by SERROT

SERROT CORPORATION
SEAMCONTROL

Project Name Lock Heed Land Fill No. 6296 Material Poly P 40mil Supt. Vince Martinez

Report By [illegible] Location OAK RIDGE, TN (Primary) Secondary Other

WELDING DATA

Weld Date	Seam No.	Seam Length	Time am pm	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp
7-23	4-5	775	(am) pm	C. Colin	100	300	5.3	
			(am) pm	C. Colin	100	300	5.3	
	5-6	783	am (pm)	M. Garcia	122	320	6.0	
			am (pm)	M. Garcia	122	320	6.0	
			am (pm)	M. Garcia	122	320	6.0	
			am (pm)	M. Garcia	122	320	6.0	
	6-7	779	am (pm)	C. Colin	100	300	7.0	
			am (pm)	C. Colin	100	300	7.0	
			am (pm)	C. Colin	100	300	7.0	
			am (pm)	C. Colin	100	300	7.0	
	7-8	771	am (pm)	M. P	144	300	6.5	
	8-9	772	am (pm)	A. Varela	163	350	5.8	
7-24	9-32	22	am (pm)	M. Garcia	122	320	7.0	
	8-31	22	am (pm)	M. Garcia	122	320	7.0	
	7-30	22	am (pm)	M. Garcia	122	320	7.0	
	6-28	22	am (pm)	M. Garcia	122	320	7.0	
	5-21	22	am (pm)	M. Garcia	122	320	7.0	
	4-20	22	am (pm)	M. Garcia	122	320	7.0	
	3 19	22	am (pm)	M. Garcia	122	320	7.0	
	Total =		Air Test	20				

TEST DATA

Test Date	Test Type	Time IN	Time Out	Test Results	D. S. Number (NOTES)
7-24	AT	1103	1108	(P) F	
7-24	AT	1105	1110	(P) F	
7-24	AT	1135	1140	(P) F	
7-24	AT	1130	1135	(P) F	
7-24	AT	1124	1129	(P) F	
7-24	AT	1117	1122	(P) F	
7-24	AT	135	140	(P) F	
7-24	AT	130	135	(P) F	
7-24	AT	110	115	(P) F	
7-24	AT	125	130	(P) F	
7-24	AT	200	205	(P) F	
7-24	AT	145	150	(P) F	
7-24	AT	346	350	(P) F	
7-24	AT	345	350	(P) F	
7-24	AT	340	345	(P) F	
7-24	AT	329	334	(P) F	
7-24	AT	313	315	(P) F	
7-24	AT	310	312	(P) F	
7-24	AT	305	307	(P) F	

SERROT CORPORATION

SEAM CONTROL

Project Name Lock Heed Land Fill No. 6296 Material Poly P 40mil Supt. Vince Martinez

Report By [illegible] Location OAKRIDGE, TN (Primary) Secondary Other

WELDING DATA

Weld Date	Seam No.	Seam Length	Time am pm	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp
7-24	2-18	22'	am (pm)	M. Garcia	122	310	7.0	
	1-17	22	am (pm)	M. Garcia	122	310	7.0	
	17-18	121	am (pm)	C. Colin	100	300	7.0	
	18-19	134	am (pm)	A. Varela	163	350	5.8	
	19-20	154	am (pm)	M.P	144	300	6.5	
	20-21	213	(am) pm	C.C.	100	300	7.0	
	21-28	290	(am) pm	M. Garcia	122	310	7.0	
			(am) pm	M. Garcia	122	310	7.0	
			(am) pm	M. Garcia	122	310	7.0	
			(am) pm	M. Garcia	122	310	7.0	
			(am) pm	M. Garcia	122	310	7.0	
	28-29	229	(am) pm	MP C. Colin	100	300	7.0	
	29-30	22	(am) pm	MP.	144	300	6.5	
	28-30	168	(am) pm	C. Colin	100	300	7.0	
	29-31	229	(am) pm	A. Varela	163	350	5.8	
	30-31	174	(am) pm	A. Varela	163	350	5.8	
	31-32	397	(am) pm	A. Varela	163	350	5.8	
	28-29	29'	(am) pm	C. Colin	100	300	7.0	
			(am) pm	C. Colin	100	300	7.0	
	Total =							

TEST DATA

Test Date	Test Type	Time IN	Time Out	Test Results	D. S. Number ...(NOTES)
7-24	AT	300	302	(P) F	
7-24	AT	245	250	(P) F	
7-24	AT	255	257	(P) F	
7-24	AT	304	306	(P) F	
7-24	AT	309	311	(P) F	DS 14
7-24	AT	327	329	(P) F	
7-24	AT	337	339	(P) F	
7-24	AT	400	402	(P) F	
7-24	AT	406	408	(P) F	
7-24	AT	405	407	(P) F	
7-24	AT	415	417	(P) F	
7-25	AT	946	948	(P) F	
7-24	AT	423	425	(P) F	
7-25	AT	940	942	(P) F	
7-24	AT	10:00 430	10:02 432	(P) F	wld
7-25	AT	938	940	(P) F	
7-25	AT	931	933	(P) F	
7-25	AT	1119	1121	(P) F	
7-25	AT	1114	1120	(P) F	wld

Air Test 20 psi for 2 minutes - 4 psi loss allowed Tested by SERROT

SERROT CORPORATION

SEAM CONTROL

Project Name Lock Heed Land Fill No. ~~6269~~ 6296 Material Poly P 40 Mil Supt. Vince Martine

Report By [illegible] Location Oak Ridge Primary Secondary Other

WELDING DATA

Weld Date	Seam No.	Seam Length	Time am pm	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp
7-24	27-34	23'	am pm	C.Colin	100	300	7.0	
	-		am pm		100	300	7.0	
	33-34	20'	am pm	C.Colin	100	300	7.0	
	34-27	22	am pm	C.Colin	100	300	7.0	
	27-28	22	am pm	C.Colin	100	300	7.0	
	26-27	62	(am) pm	C.Colin	100	300	7.0	
	26-28	22	am pm	C.Colin	100	300	7.0	
	25-26	68	(am) pm		100	300	7.0	
	25-28	22	am pm	C.Colin	100	300	7.0	
	24-25	70	(am) pm		100	300	7.0	
	24-28	22	am pm	C.Colin	100	300	7.0	
	23-24	68'	(am) pm	H.Varela	163	350	5.8	
			am pm		163	350	5.8	
			am pm		163	350	5.8	
	23-21	22	am pm	C.Colin	100	300	7.0	
	22-23	65	(am) pm	M.Palacios	144	300	6.5	
	22-21	22	am pm	C.Colin	100	300	7.0	
	16-21	22	am pm	C.Colin	100	300	7.0	
	16-22	61	(am) pm	M.Garcia	122	320	7.0	
	Total =							

TEST DATA

Test Date	Test Type	Time IN	Time Out	Test Results	D. S. Number (NOTES)
7-25	AT	1012	1014	(P) F	
7-25	AT	1013	1015	(P) F	
7-25	AT	1015	1017	(P) F	
7-25	AT	1019	1021	(P) F	
7-25	AT	1022	1024	(P) F	
7-25	AT	1023	1025	(P) F	
7-25	AT	1022	1024	(P) F	
7-25	AT	1052	1053	(P) F	
7-25	AT	1128	1130	(P) F	PS 16
7-25	AT	1133	1135	(P) F	
7-25	AT	1130	1132	(P) F	
7-25	AT	1145	1147	(P) F	
7-25	AT	1157	1159	(P) F	
7-25	AT	1200	1202	(P) F	
7-25	AT	1135	1139	(P) F	
7-26	AT	825	827	(P) F	
7-26	AT	825	827	(P) F	
7-26	AT	820	822	(P) F	
7-26	AT	819	821	(P) F	

Air Test 20 psi for 2 minutes: 4

SEAM CONTROL

Project Name Lock Heed Land Fill No. 6296 Material Poly P. 40 mil Supt. Vince Martin

Report By [illegible] Location Oak Ridge Primary Secondary Other

WELDING DATA

Weld Date	Seam No.	Seam Length	Time am pm	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp
7-23	15-16	65'	(am) pm	M.Garcia	122	320	7.0	
7-24	15-20	22	am (pm)	C.Colin	100	300	7.0	
7-23	15-14	65	(am) pm	M.Garcia	122	320	7.0	
7-24	14-20	22	am (pm)	C.Colin	100	300	7.0	
7-24	13-20	22	am (pm)	C.Colin	100	300	7.0	
7-23	13-14	60	(am) pm	M.Palacios	144	300	6.5	
7-23	12-13	62	(am) pm	MGarcia	122	320	7.0	
7-24	12-19	22	am (pm)	C.Colin	100	300	7.0	
7-23	11-12	51	(am) pm	M.Palacios	144	300	6.5	
7-24	11-18	22	am (pm)	C.Colin	100	300	7.0	
7-23	10-11	45	(am) pm	M.Garcia	122	320	7.0	
7-24	10-17	22	am (pm)	C.Colin	100	300	7.0	
7-24	17-38	98	am pm	A.Varela	163	350	5.8	
7-24	17-39	12'	am pm	A.Varela	163	350	5.8	
7-24	1-39	85'	am pm	A.Varela	163	350	5.8	
			am pm	A.Varela	163	350	5.8	
			am pm	A.Varela	163	350	5.8	
	40-1	98'	am pm	A.Varela	163	350	5.8	
	41-1	29	am pm	A.Varela	163	350	5.8	
	Total =							

TEST DATA

Test Date	Test Type	Time IN	Time Out	Test Results	D. S. Number (NOTES)
7-26	AT	817	819	(P) F	
7-26	AT	816	818	(P) F	
7-26	AT	802	804	(P) F	
7-26	AT	804	806	(P) F	
7-26	AT	800	802	(P) F	
2-26	AT	800	802	(P) F	
7-26	AT	755	757	(P) F	
7-26	AT	756	758	(P) F	
7-26	AT	752	755	(P) F	
7-26	AT	751	753	(P) F	
7-26	AT	725	727	(P) F	
7-26	AT	744	746	(P) F	
7-26	AT	741	743	(P) F	
7-26	AT	739	741	(P) F	
7-26	AT	735	737	(P) F	
7-26	AT	733	735	(P) F	
7-26	AT	730	732	(P) F	
7-26	AT	720	722	(P) F	
7-26	AT			*P (F)	**PASSED PER GEOTEK REPORT DATED 7-26-94. (WM)

Air Test 20 psi for 2 minutes 4 psi loss allowed Tested by SERROT

SEAM CONTROL

Project Name: Lock Hard Land Fill No. 6296 Material: Poly P 40 mil Supt. Vince Martinez

Report By: [illegible] Location: Oak Ridge Primary Secondary Other

WELDING DATA

Weld Date	Seam No.	Seam Length	Time am pm	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp
7-25	42-1	29	am (pm)	A.Vargela	163	350	5.8	
	43-1	29	am (pm)	A.Vargela	163	350	5.8	
	1-37-36	50'	am (pm)	M.Garcia	122	320	7.0	
	9-35	575'	am (pm)	M.Garcia	122	320	7.0	
			am pm					
			am pm					
			am pm					
			am pm					
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			am pm					
			am pm					
Total =								

TEST DATA

Test Date	Test Type	Time IN	Time Out	Test Results	D. S. Number (NOTES)
7-26	AT	706	708	(P) F	
7-26	AT	704	706	(P) F	
7-26	AT	658	700	(P) F	
7-26	AT	857	859	(P) F	
7-26	AT	855	857	(P) F	
7-26	AT	840	842	(P) F	
7-26	AT	835	837	(P) F	
7-26	AT	830	832	(P) F	
7-26	AT	908	910	(P) F	
7-26	AT	915	917	(P) F	
7-26	AT	910	912	(P) F	
				P F	
				P F	
				P F	
				P F	
				P F	
				P F	
				P F	
				P F	

Air Test 2.0

Form 9

REV 6/28/94

SERROT CORPORATION
PRE-WELD / DESTRUCTIVE SAMPLE FIELD TEST

Project Name: Lock Heed Land fill No. 6296 Material: POLY PROPYLENE 40 MIL (Primary) Secondary Other

Report By: [illegible]

[X] Preweld Test [ ] Destructive Sample Test

PEEL TEST min 25 psi SHEAR TEST min 3.5 psi

D.S. No.	Seam No.	Weld Time	Weld Date	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp	Coupon 1 A / B	Coupon 2 A / B	Coupon 3 A / B	Coupon 4 A / B	Coupon 5 A / B	Coupon 1 Shear	Coupon 2 Shear	Coupon 3 Shear	Coupon 4 Shear	Coupon 5 Shear
N/A	N/A	6:55	7-23	M.Garcia	122	320	6.0	70	36/36	39/36	35/35	/	/	39				
		7:00	7-23	C.Colin	100	300	5.3	70	36/36	37/38	36/36	/	/	40				
		7:00	7-23	M.P	144	320	6.5	70	36/35	38/37	36/37	/	/	41				
		7:00	7-23	A.L	163	350	5.5	71	36/37	37/36	36/35	/	/	42				
		12:00	7-23	M.Garcia	122	320	7.0	89	33/31	31/32	31/31	/	/	40				
		12:30	7-23	A.V.	~~163~~	~~350~~	~~6.0~~	~~89~~	36/38	34/	/	/	/					
		1:00	7-23	C.Colin	100	320	7.0	89	33/33	32/32	33/31	/	/	40				
		1:00	7-23	M.P	144	300	6.5	89	32/32	31/32	32/32	/	/	37				
		1:00	7-23	A.V	163	350	5.8	89	33/32	33/31	31/30	/	/	38				
		6:40	7-24	C.colin	100	300	70	70	44/40	38/41	42/39	/	/	50				
		6:45	7-24	M.P	144	300	6.5	70	41/39	43/43	41/40	/	/	49				
		6:45	7-24	A.V.	163	350	5.8	70	41/42	43/42	42/41	/	/	51				
		6:45	7-24	M.Garcia	122	310	7.0	70	45/41	43/41	43/42	/	/	50				
		1:00	7-24	C.Colin	100	300	7.0	90	31/33	31/31	32/31	/	/	37				
		1:30	7-24	A.Varela	163	350	5.8	90	30/30	32/31	30/30	/	/	38				
		1:30	7-24	M.Garcia	122	310	7.0	90	30/30	31/30	31/30	/	/	36				
		7:30	7-25	C.colin	37	246	P.H 6	71	35/36	36/	/	/	/	41				
		7:30	7-25	M.Garcia	12			71	32/31	32/	/	/	/	40				
		6:55	7-26	C.Colin	37	240	P.H 6	63	34/33	38/	/	/	/	46				
		7:10	7-26	M.Garcia	12	[illegible]	P.H	[illegible]	34/[illegible]	30/	/	/	/					

REV 4/20/01

SERROT CORPORATION
PRE-WELD / DESTRUCTIVE SAMPLE FIELD TEST

Project Name LOCK Heed Land Fill No. 6296 Material Poly P. 40 mil [✓ Primary] Secondary Other

Report By Gy Mating

☒ Preweld Test ☐ Destructive Sample Test

PEEL TEST min 25 psi SHEAR TEST min 35 psi

WELDING DATA

D. S. No.	Seam No.	Weld Time	Weld Date	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp	Coupon 1 A / B	Coupon 2 A / B	Coupon 3 A / B	Coupon 4 A / B	Coupon 5 A / B	Coupon 1 Shear	Coupon 2 Shear	Coupon 3 Shear	Coupon 4 Shear	Coupon Shear
N/A	N/A	1250	7-26	C. Colin	37	240	PH 6		27/26	29/	/	/	/	36				
N/A	N/A	7:30	7-27	C. Colin	37	240	PH 6		30/30	32/	/	/	/	38				
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REV 02/09/94

PRE-WELD / DESTRUCTIVE SAMPLE FIELD TEST

Project Name OAK Ridge LF (Lockheed) No 6296 Material 40 mil poly prope (Primary) Secondary Other

Report By [signature]

[ ] Preweld Test [X] Destructive Sample Test

PEEL TEST min 2.5 psi SHEAR TEST min 35 psi

WELDING DATA

D. S. No.	Seam No.	Weld Time	Weld Date	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp	Coupon 1 A / B	Coupon 2 A / B	Coupon 3 A / B	Coupon 4 A / B	Coupon 5 A / B	Coupon 1 Shear	Coupon 2 Shear	Coupon 3 Shear	Coupon 4 Shear	Coupon 5 Shear
1	1-2	AM	7-23	M.Garcia	122	320	6.0	70	28/27	27/27	27/28	/	/	38				
2	2-3	AM	7-23	A.Varela	163	350	5.5	70	27/26	27/26	27/26	/	/	37				
3	2-3	AM	7-23	A.Varela	163	350	5.5	70	27/29	28/28	28/27	/	/	35				
4	3-4	AM	7-23	M.P	144	320	5.5	70	29/27	27/27	27/27	/	/	35				
5	4-5	AM	7-23	C.Colin	100	300	5.3	70	27/27	27/26	27/27	/	/	38				
6	4-5	AM	7-23	C.Colin	100	300	5.3	70	28/27	27/28	29/27	/	/	35				
7	5-6	PM	7-23	M.Garcia	122	320	6.0	89	29/28	29/28	28/29	/	/	40				
8	6-7	PM	7-23	C.Colin	100	300	7.0	89	28/28	28/29	28/28	/	/	37				
9	6-7	PM	7-23	C.Colin	100	300	7.0	89	29/28	29/28	29/28	/	/	35				
10	7-8	PM	7-23	M.P	144	300	6.5	89	27/27	27/27	27/27	/	/	49				
11	8-9	PM	7-23	A.Varela	163	350	5.8	89	28/29	29/28	28/29	/	/	36				
12	8-9	PM	7-23	A.Varela	163	350	5.8	89	28/28	27/28	27/27	/	/	35				
13	14-15	PM	7-23	M.Garcia	122	320	7.0	89	27/28	27/27	26/27	/	/	35				
14	19-20	PM	7-23	M.P	144	300	6.5	89	28/29	27/27	27/26	/	/	35				
15	16-22	AM	7-24	M.Garcia	122	320	7.0	70	28/27	27/27	26/27	/	/	35				
16	25-28	AM	7-24	C.Colin	100	300	7.0	70	28/28	27/29	28/30	/	/	41				
17	28-29	AM	7-24	C.Colin	100	300	7.0	70	31/30	25/30	30/30	/	/	37				
18	29-31	AM	7-24	A.Varela	163	350	5.8	70	32/28	27/28	28/28	/	/	37				
19	31-32	AM	7-24	A.Varela	163	350	5.8	70	27/27	28/30	27/29	/	/	35				
									/	/	/	/	/					

SERROT CORPORATION

PRE-WELD / DESTRUCTIVE SAMPLE FIELD TEST

REV 4/2/04

Project Name OAK Ridge LF (Lock Heed) No. 6296 Material 40 mil poly prope (Primary) Secondary Other

Report By [signature]

[ ] Preweld Test [X] Destructive Sample Test

PEEL TEST min 25 psi SHEAR TEST min 35 psi

WELDING DATA

D. S. No.	Seam No.	Weld Time	Weld Date	Operator Name	Mach No.	Mach Temp	Mach Speed	Amb Temp	Coupon 1 A / B	Coupon 2 A / B	Coupon 3 A / B	Coupon 4 A / B	Coupon 5 A / B	Coupon 1 Shear	Coupon 2 Shear	Coupon 3 Shear	Coupon 4 Shear	Coupon 5 Shear
20	9-35	AM	7-24	M. Garcia	122	320	7.0	90	27/27	28/27	27/26	/	/	38				
21	1-37	PM	7-24	M. Garcia	122	320	7.0	90	30/31	28/28	30/	/	/	36				
22	17-38	PM	7-24	A. Varela	163	350	5.8	90	26/27	28/28	27/	/	/	40				
23	4-20	PM	7-24	M. Garcia	122	320	7.0	90	32/33	35/34	33/32	/	/	43				
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Form 5

SERROT CORPORATION
REPAIR REPORT

Page 1

Job Name Lock Haven Landfill No. 6296 Supt. U. Martinez Material Poly P. 40 mil

(Primary) Secondary Other

VT = Vacuum Test AT = Air Test ST = Spark Test

Panel Number	Seam Number	Failure /Damage Description / Location	Date Repaired	Testing Data Date	Type	Results
1-2	1-2	CS P73' 92 DS#9 270' 344 368 726 431 758	7-24 mw 7-26-96	7-26-96	AT (VT) ST	(P) F
2-3	2-3	ANC 2' 9' DS#3 47' DS#2 549 705		7-26-96	AT (VT) ST	(P) F
3-4	3-4	CS 13' 67' DS#4 340 756 762 779		7-26-96	AT (VT) ST	(P) F
4-5	4-5	ANC 3' 25' 37' 44' DS#6 128 211 301 465 477		7-26-96	AT (VT) ST	(P) F
4-5	~~5-6~~ 4-5	ANC 502 556 DS#5 627 663 682 702		7-26-96	AT (VT) ST	(P) F
5-6	~~6-7~~ 5-6	ANC 2' 96' 99' 112' 116' 272 DS#3 349 574		7-26-96	AT (VT) ST	(P) F
6-7	~~7-8~~ 6-7	CS DS#8 78' 161 170 178 DS#9 576 722 758 715 753 773		7-26-96	AT (VT) ST	(P) F
7-8	~~8-9~~ 7-8	ANC 5' 14' DS#6 246'		7-26-96	AT (VT) ST	(P) F
8-9	8-9	CS DS#11 2' DS#12 499' 651 765		7-26-96	AT (VT) ST	(P) F
9-35	9-35	ANC 1' 14' 129' 155' 393' 446' 490 521' DS#20 412 506'		7-26-96	AT (VT) ST	(P) F
17-18	17-18	None		7-26-96	AT (VT) ST	(P) F
18-19	18-19	None		7-26-96	AT (VT) ST	(P) F
19-20	19-20	DS#14 113'		7-26-96	AT (VT) ST	(P) F
20-21	20-21	None		7-26-96	AT (VT) ST	(P) F
21-28	21-28	CS 110' 162' 184' 194'		7-26-96	AT (VT) ST	(P) F
28-29	28-29	ANC 52 DS17 58'		7-26-96	AT (VT) ST	(P) F
28-30	28-30	CS 48'		7-26-96	AT (VT) ST	(P) F
29-30	29-30	none		7-26-96	AT (VT) ST	(P) F
29-31	29-31	ANC 20' 52' DS#18 145'		7-26-96	AT (VT) ST	(P) F
30-31	30-31	none		7-26-96	AT (VT) ST	(P) F
31-32	31-32	CS DS#19 44' 395'		7-26-96	AT (VT) ST	(P) F
10-11	10-11	AC 20'		7-26-96	AT (VT) ST	(P) F
11-12	11-12	None		7-26-96	AT (VT) ST	(P) F
12-13	12-13	None		7-26-96	AT (VT) ST	(P) F
13-14	13-14	ANC 4'		7-26-96	AT (VT) ST	(P) F

Report by [illegible]

Testing by SERROT

Form 5

SERROT CORPORATION
REPAIR REPORT

Job Name Lock Heed Land Fill No. 6296 Supt. Vince Material Poly P 40 mil

Primary Secondary Other VT = Vacuum Test AT = Air Test ST = Spark Test

Panel Number	Seam Number	Failure /Damage Description / Location	Date Repaired	Testing Data Date	Type	Result
14-15	14-15	CS DS#13 46'	7-24 mw 7-26-96	7-26-96	AT (VT) ST	(P) F
15-16	15-16	None		7-26-96	AT (VT) ST	(P) F
16-22	16-22	Anc 2 DS#15 18'		7-26-96	AT (VT) ST	(P) F
22-23	22-23	2'		7-26-96	AT (VT) ST	(P) F
23-24	23-24	CS 32' 49 62		7-26-96	AT (VT) ST	(P) F
24-25	24-25	CS None		7-26-96	AT (VT) ST	(P) F
25-26	25-26	Anc 2' EXT 35' P36' P42'		7-26-96	AT (VT) ST	(P) F
26-27	26-27	None		7-26-96	AT (VT) ST	(P) F
27-34	27-34	Anc 2'		7-26-96	AT (VT) ST	(P) F
34-33	34-33	None		7-26-96	AT (VT) ST	(P) F
33-28	33-28	Anc ~~8'~~ 22'		7-26-96	AT (VT) ST	(P) F
25-28	25-28	DS 16		7-26-96	AT (VT) ST	(P) F
9-35	9-35	DS-20		7-26-96	AT (VT) ST	(P) F
1-37	1-37	DS-21		7-26-96	AT (VT) ST	(P) F
17-38	17-38	DS#22 24'		7-26-96	AT (VT) ST	(P) F
4-20	4-20	D-23		7-26-96	AT (VT) ST	(P) F
39-1	39-1	45' 58' 89' ~~EXT seam~~		7-26-96	AT (VT) ST	(P) F
40-1	40-1	71'		7-26-96	AT (VT) ST	(P) F
41-1	41-1	EXT Seam		7-26-96	AT (VT) ST	(P) F
42-1	42-1	None		7-26-96	AT (VT) ST	(P) F
43-1	43-1	None		7-26-96	AT (VT) ST	(P) F
37-1	37-1	CS ~~8'~~ DS#21 2'		7-26-96	AT (VT) ST	(P) F
36-1	36-1	Anc 2'		7-26-96	AT (VT) ST	(P) F
					AT (VT) ST	P F
					AT (VT) ST	P F

Report by [signature] Testing by SERROT

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 34

PROJECT NO.: 94-3832, FY96-07

DATE: 7-22-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari / Ron Sherrod

WEATHER CONDITIONS: Partly Cloudy and hot

MEETINGS & RESULTS: Met w/ Serrot representative Vince Martinez. Walked site and evaluated subgrade. East half of cell too wet for FML Placement, due to recent rains. West half dry enough for final smooth drum rolling.

DESCRIPTION OF WORK DONE: Observed delivery and unloading of Polypropylene rolls. Total of 12 rolls delivered. Cores appeared intact. Recorded supplied information for each roll. Observed trial seam testing (Peel and shear) for entire lot upon unloading of rolls. Test results attached. Copies of bill of lading for material delivered and calibration of installer's tensiometer are also attached.

CLAY LINER - Site received approx. 3 inches of rain over weekend. Approx. 2 tandem truckloads of silt removed from east end drainage basin w/ slight amount of more to be removed near pipe @ east end. Observed drainage trench erosion down middle of site, exposing some sharp gravel traps. Beginning of remediation process by slick rolling w/ I-R smooth roller.

DESCRIPTION OF OFF SITE MATERIAL:

Type A clay from hillside south of site

ADDITIONAL COMMENTS: Clay liner subgrade will be monitored prior to placement of PP FML per section. At present, hand rock picking followed by remediation w/ I-R smooth roller is needed in the drainage trench-line area of the site.

SIGNATURE(S)

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-22-96

TRIAL WELD LOG

Sample No.	Test	Test Method	Results	QA Officer	CM Initials
163	P	ASTM D4437	30/29 lbs/inch	AK	WCD
163	S	ASTM D4437	37 lbs/inch	AK	WCD
122	P	ASTM D4437	28/28 lbs/inch	AK	WCD
122	S	ASTM D4437	35 lbs/inch	AK	WCD
100	P	ASTM D4437	31/29 lbs/inch	AK	WCD
100	S	ASTM D4437	35 lbs/inch	AK	WCD
144	P	ASTM D4437	28/30 lbs/inch	AK	WCD
144	S	ASTM D4437	35 lbs/inch	AK	WCD

Comments Above results do not represent trial weld test results for actual production day. Results were obtained by trial welding random pieces of material not delivered to site and upon unloading rolls of FML. Note: Welding iron temp. set at 350°F speed at 5.5

MATEK GEO PRODUCTS

Calibration Report

Is.. ot Corporatio. Date: July 8, 1996

125 Cassia Way

Henderson, NV 89014

37

Calibrate	Portable Tensi meter	Model	Tekometer
Mfg:	Matek Geo Pro ucts	Serial #:	96
Ifg:	Artech	Serial #:	14171
ter Mfg:	Laurel	Serial #:	2608

LOAD

	Display Reading	Deviation % Error	Calibration Equipment Data	
			Equip. Mfg.	Sensotec
50	50	0	Load Cell Mfg. / Interface	Serial # B94756
100	100	0	Calibration Date	02/13/96
200	200	0	Date Due	02/13/97
300	300	0	Accuracy	0.1%
400	400	0	Calibrated By	Micro Precision
500	500	0	N.I.S.T.	737/3096,3772

Lo In	-.00003	Hi In	.02980
Lo Rd	00000	Hi Rd	01000

Ambient Temperatur 68 - 70 F

SPEED

Rate:in/mi	2					
Time.	Travel Inches	Deviation % Error	Travel Inches	Deviation % Error	Travel Inches	Deviation % Error
1 min	2.00	0.0				

Date Calibrated: July 8, 1996

Matek Geo Products certifies that this instrument was calibrated against standards traceable to N.I.S.T. per MIL-STD-45662A

Quality Control Technician

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V. Area II

REPORT NO.: 35

PROJECT NO.: 94-3832. FY96-07

DATE: 7-23-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari / Ron Sherrod

WEATHER CONDITIONS: Clear and hot

MEETINGS & RESULTS: Met w/ Serrot rep. Vince Martinez. Discussed daily activity. Serrot to begin Panel placement upon smoothrolling of soil subgrade.

DESCRIPTION OF WORK DONE: Observed Peel and shear testing of trial welds for today's production. All tests Passed. Observed placement of geomembrane Panels 1 thru. 20. Welding of Panels also underway. Panels measured as geomembrane deployed and welded. See attached logs.

CLAY LINER – Trench line erosion down middle of site along drainage line remediated by hand rock picking & spreading of clean clay mixed w/ bentonite powder. Mixture was smooth rolled, and small sharp chert frags were removed by hand.

DESCRIPTION OF OFF SITE MATERIAL: 40 mil Polypropylene

CLAY LINER –

Type A clay from hillside south of site / bentonite powder

ADDITIONAL COMMENTS:

Alan Khonsari / R. Sherrod

SIGNATURE(S)

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-23-96

TRIAL WELD LOG

Sample No.	Test	Test Method	Results	QA Officer	CM Initials
122	P	ASTM D4437	35/35 lbs/inch	AK	WD
122	S	ASTM D4437	39 lbs/inch	AK	WD
100	P	ASTM D4437	36/36 lbs/inch	AK	WD
100	S	ASTM D4437	40 lbs/inch	AK	WD
144	P	ASTM D4437	36/37 lbs/inch	AK	WD
144	S	ASTM D4437	41 lbs/inch	AK	WD
163	P	ASTM D4437	37/36 lbs/inch	AK	WD
163	S	ASTM D4437	42 lbs/inch	AK	WD
			N/A WD		

Comments Tests Performed approx. 6:55 AM Ambient Temp. Approx. 72°F

Machine	Temp.	Speed
# 122	320°	6.0
# 100	300°	5.3
# 144	320°	5.5
# 163	350°	5.5

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-23-96

TRIAL WELD LOG

Sample No.	Test	Test Method	Results	QA Officer	CM Initials
122	P	ASTM D4437	33/31 lbs/inch	AK	[illegible]
122	S	ASTM D4437	40 lbs/inch	AK	[illegible]
100	P	ASTM D4437	33/33 lbs/inch	AK	[illegible]
100	S	ASTM D4437	40 lbs/inch	AK	[illegible]
144	P	ASTM D4437	31/32 lbs/inch	AK	[illegible]
144	S	ASTM D4437	37 lbs/inch	AK	[illegible]
163	P	ASTM D4437	33/32 lbs/inch	AK	[illegible]
163	S	ASTM D4437	38 lbs/inch	AK	[illegible]

N/A

Comments: Tests Performed approx. 12:10 P.M. Ambient Temp. Approx. 91°F

Machine # 122	Temp. 320°	Speed	7.0
~~#100~~	~~320°~~		~~7.0~~
#144	300°		6.5
#163	350°		5.8

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-23-96

GEOMEMBRANE PLACEMENT LOG

Panel No.	Roll No.	Subgrade Condition	Length	Width	Visual Inspection Pass/Fail	QA Officer Initials	CM* Initials
1	26617	GOOD	759'	23'	PASS	AK	WA
2	26605		770'	23'	PASS	AK	WA
3	26604		779'	23'	PASS	AK	WA
4	26603		780'	23'	PASS	AK	WA
5	26602		780'	23'	PASS	AK	WA
6	26621		782'	23'	PASS	AK	WA
7	26626		777'	23'	PASS	AK	WA
8	26620		774'	23'	PASS	AK	WA
9	26615		766'	23'	PASS	AK	WA
10	26627		44'	23'	PASS	AK	WA
11	26627		47'	23'	PASS	AK	WA
12	26627		53'	23'	PASS	AK	WA

Comments Measurments taken along center of each panel.

* Construction Manager

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-23-96

GEOMEMBRANE PLACEMENT LOG

Panel No.	Roll No.	Subgrade Condition	Length	Width	Visual Inspection Pass/Fail	QA Officer Initials	CM* Initials
13	26627	GOOD	57'	5' T.O.S. 17' B.O.S.	PASS	AK	WD
14	26627		60'	8' T.O.S. 20' B.O.S.	PASS	AK	WD
15	26627		58'	23'	PASS	AK	WD
16	26627		60'	23'	PASS	AK	WD
17	26627		117'	23'	PASS	AK	WD
18	26627		124'	23'	PASS	AK	WD
19	26627		144'	23'	PASS	AK	WD
20	26623		191'	23'	PASS	AK	WD

N/A

Comments Measurements taken along center of each Panel.
T.O.S. = Top of Slope
B.O.S. = Bottom of Slope

* Construction Manager

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-23-96

GEOMEMBRANE SEAMING LOG

Welder M. Garcia

Weld Type Double wedge

Welding Machine No. 122

Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
1/2	O	76	clear, mild			AK	WM
5/6	O	89	clear, hot			AK	WM
10/11	O	86	clear, mild			AK	WM
12/13	O	88	clear, mild			AK	WM
14/15	O	88	clear, mild			AK	WM
15/16	O	89	clear, mild			AK	WM

N/A

Comments No non-destructive or on-site destructive tests performed this day. (SEE LATER REPORTS)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-23-96

GEOMEMBRANE SEAMING LOG

Welder A. Valera Weld Type Double Wedge

Welding Machine No. 163 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
2/3	O	76	clear, mild			AK	WD
8/9	O	93	clear, hot			AK	WD

N/A

Comments no non-destructive or on-site destructive tests performed this day. (SEE LATER REPORT)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-23-96

GEOMEMBRANE SEAMING LOG

Welder C. Colin

Weld Type Double Wedge

Welding Machine No. 1010

Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
4/5	O	83	clear, mild	NA		AK	WL
6/7	O	91	clear, hot			AK	WL

Comments no non-destructive or on-site destructive tests performed this day. (SEE LATER REPORTS)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-23-96

GEOMEMBRANE SEAMING LOG

Welder M. Palacios Weld Type Double Wedge

Welding Machine No. 144 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
3/4	0	76	clear, mild			AK	WD
7/8	0	91	clear, hot			AK	WD
11/12	0	88	clear, hot			AK	WD
13/14	0	88	clear, hot			AK	WD

N/A

Comments No non-destructive or on-site destructive tests performed this day. (SEE LATER REPORTS)

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 36

PROJECT NO.: 94-3832. FY96-07

DATE: 7-24-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari / Ron Sherrod

WEATHER CONDITIONS: clear, hot

MEETINGS & RESULTS: Met w/ Serrot rep. Vince Martinez. Discussed today's activities.

DESCRIPTION OF WORK DONE: Peel and shear test of trial welds for the day. Tests passed. Observed placement of Panels 21 thru. 43. Welding and testing of Panel seams underway. See attached logs.

CLAY LINER – final check of remaining exposed clay as placement of panels proceeds toward NE slope @ junction w/ east berm. In this area, many tiny sharp chert frags & gravel were removed by hand w/ spreading of powdered bentonite due to F/R smooth roller unable to reach this area because of panels already in place along access.

DESCRIPTION OF OFF SITE MATERIAL: 40 mil Polypropylene

CLAY LINER –
Type A clay from hillside south of site / powdered bentonite

ADDITIONAL COMMENTS: Last uncovered section of clay liner was remediated of small sharp gravel. Serrot rep was satisfied that the clay liner met specifications for surface smoothness. This report represents the final inspection of the clay liner before complete coverage by FML.

Alan Khonsari / R. Sherrod

SIGNATURE(S)

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-24-96

TRIAL WELD LOG

Sample No.	Test	Test Method	Results	QA Officer	CM Initials
144	P	ASTM D 4437	41/39 lbs/inch	AK	[illegible]
144	S	ASTM D 4437	49 lbs/inch	AK	[illegible]
163	P	ASTM D 4437	41/42 lbs/inch	AK	[illegible]
163	S	ASTM D 4437	51 lbs/inch	AK	[illegible]
122	P	ASTM D 4437	45/41 lbs/inch	AK	[illegible]
122	S	ASTM D 4437	50 lbs/inch	AK	[illegible]
100	P	ASTM D 4437	44/40 lbs/inch	AK	[illegible]
100	S	ASTM D 4437	50 lbs/inch	AK	[illegible]
			N/A		

Comments Tests performed approx. 6:45 AM Ambient Temp. Approx. 70°
Machine #144 Temp. 300° Speed 6.5
#100 300° 7.0
#122 310° 7.0
#163 350° 5.8

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-24-96

TRIAL WELD LOG

Sample No.	Test	Test Method	Results	QA Officer	CM Initials
100	P	ASTM D 4437	31/33 lbs/inch	AK	[illegible]
100	S	ASTM D 4437	37 lbs/inch	AK	[illegible]
163	P	ASTM D 4437	32/31 lbs/inch	AK	[illegible]
163	S	ASTM D 4437	38 lbs/inch	AK	[illegible]
122	P	ASTM D 4437	31/30 lbs/inch	AK	[illegible]
122	S	ASTM D 4437	36 lbs/inch	AK	[illegible]

Comments Tests Performed approx. 1:00 PM Ambient Temp. Approx. 90°F

Machine # 100	Temp. 300°	Speed 7.0
# 163	350°	5.8
# 122	310°	7.0

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-24-96

GEOMEMBRANE PLACEMENT LOG

Panel No.	Roll No.	Subgrade Condition	Length	Width	Visual Inspection Pass/Fail	QA Officer Initials	CM* Initials
21	26623	GOOD	255'	23'	PASS	AK	WD
22	26623		62'	23'	PASS	AK	WD
23	26623		66'	23'	PASS	AK	WD
24	26623		68'	23'	PASS	AK	WD
25	26623		64'	23'	PASS	AK	WD
26	26623		62'	23'	PASS	AK	WD
27	26619		53'	23'	PASS	AK	WD
28	26619		395'	23'	PASS	AK	WD
29	26619		229'	23'	PASS	AK	WD
30	26622		172'	23'	PASS	AK	WD
31	26622		399'	23'	PASS	AK	WD
32	26625		396'	23'	PASS	AK	WD

Comments Measurements taken along center of each Panel.

* Construction Manager

Project Name ILF V, Area II
Project No. 94-3832 (FY96-DT)
Date 7-24-96

GEOMEMBRANE PLACEMENT LOG

Panel No.	Roll No.	Subgrade Condition	Length	Width	Visual Inspection Pass/Fail	QA Officer Initials	CM* Initials
33	26622	GOOD	26'	23'	PASS	AK	[illegible]
34	26622		19'	20'	PASS	AK	[illegible]
35	26622		572'	5'	PASS	AK	[illegible]
36	26622		46'	20' T.O.S. 6' B.O.S.	PASS	AK	[illegible]
37	26622		46'	5'	PASS	AK	[illegible]
38	26622		92'	9'	PASS	AK	[illegible]
39	26622		98'	7'	PASS	AK	[illegible]
40	26625		97'	6'	PASS	AK	[illegible]
41	26625		28'	7'	PASS	AK	[illegible]
42	26625		28'	7'	PASS	AK	[illegible]
43	26625		28'	7'	PASS	AK	[illegible]

Comments Measurements taken along center of each Panel.

T.O.S. = Top of slope

B.O.S. = Bottom of slope

* Construction Manager

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder M. Garcia Weld Type Double wedge

Welding Machine No. 122 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
7/30	O	90	clear, hot	P	N/A	AK	WD
6/28	O	90	clear, hot	P		AK	WD
9/32	O	95	clear, hot	P		AK	WD
8/31	O	95	clear, hot	P		AK	WD
3/19	O	93	clear, hot	P		AK	WD
5/21	O	93	clear, hot	P		AK	WD
4/20	O	93	clear, hot	P		AK	WD
2/18	O	94	clear, hot	P		AK	WD
1/17	O	93	clear, hot	P		AK	WD
21/28	O	78	clear, mild	P		AK	WD

Comments Non-destructive test indicates pressurized Air channel Test (Minimum 20 PSI w/ dwell time of 2 minutes) Maximum pressure drop of 4 PSI.
No destructive tests performed this day.

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder M. Garcia Weld Type Double Wedge

Welding Machine No. 122 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
16/22	0	80	clear, hot	*	*	AK	WD
			N/A				

Comments * NO TESTING - SEE LATER DATA FOR TESTS

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder A. Varela Weld Type Double Wedge

Welding Machine No. 163 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
29/31	O	79	clear, mild	P	N/A	AK	WD
30/31	O	80	clear, mild	*		AK	WD
31/32	O	80	clear, mild	*		AK	WD
18/19	O	93	clear, hot	P		AK	WD
23/24	O	76	clear, mild	*		AK	WD
17/38	O	69	clear, cool	*		AK	WD
17/39	O	70	clear, cool	*		AK	WD
1/39	O	70	clear, cool	*		AK	WD
1/40	O	73	clear, mild	*		AK	WD
1/41	O	73	clear mild	*		AK	WD

Comments Non-destructive test indicates pressurized Air channel Test: Minimum 20 PSI w/ dwell time of 2 minutes and Maximum pressure drop of 4 PSI.
No destructive tests performed this day.
(* SEE LATER REPORTS)

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder C. Colin Weld Type Double Wedge

Welding Machine No. 100 Liner Thickness 40 mil APU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
28/33	O	77	clear, mild	*	N/A	AK	[illegible]
28/30	O	77	clear, mild	*		AK	[illegible]
28/29	O	79	clear, mild	*		AK	[illegible]
17/18	O	93	clear, hot	P		AK	[illegible]
20/21	O	93	clear, hot	P		AK	[illegible]
21/23	O	77	clear, cool	*		AK	[illegible]
21/22	O	70	clear, cool	*		AK	[illegible]
16/21	O	77	clear, cool	*		AK	[illegible]
24/25	O	77	clear, cool	*		AK	[illegible]
24/28	O	77	clear, cool	*		AK	[illegible]

Comments non-destructive test indicates pressurized Air Channel Test: Minimum 20 psi w/ dwell time of 2 minutes and Maximum pressure drop of 4 psi. No destructive test performed this day. (* See Later Reports)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder C. Colin Weld Type Double Wedge

Welding Machine No. 100 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
25/28	O	77	clear, cool	*	N/A	AK	WS
25/26	O	78	clear, cool	*		AK	WS
26/27	O	78	clear, cool	*		AK	WS
26/28	O	78	clear, cool	*		AK	WS
27/28	O	78	clear, cool	*		AK	WS
27/34	O	80	clear, mild	*		AK	WS
33/34	O	80	clear, mild	*		AK	WS
14/20	O	85	clear, hot	*		AK	WS
15/20	O	85	clear, hot	*		AK	WS
13/20	O	85	clear hot	*		AK	WS

Comments * SEE LATER REPORTS

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder C. Colin

Weld Type Double Wedge

Welding Machine No. 100

Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
12/19	O	87	clear, hot	*	N/A	AK	[illegible]
10/17	O	90	clear, hot	*	↓	AK	[illegible]
11/18	O	90	clear, hot	*	↓	AK	[illegible]
				N/A			

Comments * SEE LATER REPORTS.

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder M. Palacios Weld Type Double Wedge

Welding Machine No. 144 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
22/23	O	71	Clear, Cool	*	N/A	AK	[illegible]
19/20	O	93	clear, hot	P	↓	AK	[illegible]
29/30	O	95	clear, hot	P	↓	AK	[illegible]

N/A

Comments Non-destructive test indicates Pressurized Air Channel Test: Minimum 20 psi w/ dwell time of 2 minutes and Maximum Pressure drop of 4 psi.
No destructive test performed this day.
(* SEE LATER REPORTS)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder M. Garcia Weld Type Double Wedge

Welding Machine No. 122 Liner Thickness 40 mil PU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
1/2	O	77	clear, mild	P	N/A	AK	[illegible]
5/6	O	81	clear, mild	P	N/A	AK	[illegible]
			N/A				

Comments Above seams were welded 7-23-96
non-destructive test indicates Pressurized Air Channel Test
Max. Pressure drop of 4 psi, Min. Pressure 20 psi
dwell time of 2 minutes.
No destructive test performed this day.

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder A. Valera Weld Type Double wedge

Welding Machine No. 163 Liner Thickness 40 mil PPIS

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
2/3	O	74	clear, mild	P	N/A	AK	[illegible]
8/9	O	92	clear, hot	P	N/A	AK	[illegible]

N/A

Comments Above seams were welded 7-23-96
Non-destructive test indicates Pressurized Air Channel Test
Max. Pressure drop of 4 psi, Min. Pressure 20 ps
dwell time of 2 minutes.
No destructive test performed this day.

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder C. Colin Weld Type Double Wedge

Welding Machine No. 100 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
4/5	O	80	clear, mild	P	N/A	AK	WS
6/7	O	91	clear, hot	P	N/A	AK	WS
			N/A				

Comments Above seams were welded 7-23-96
Non-destructive test indicates Pressurized Air Channel Test
Max. pressure drop of 4 psi, Min. Pressure 20 psi
dwell time of 2 minutes
no destructive test performed this day.

Project Name ILF V, Area II
Project No. 94-3832 (FY96-07)
Date 7-24-96

GEOMEMBRANE SEAMING LOG

Welder M. Palacios
Weld Type Double Wedge
Welding Machine No. 144
Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
3/4	O	78	clear, mild	P	N/A	AK	[illegible]
7/8	O	94	clear, hot	P	N/A	AK	[illegible]

N/A

Comments Above seams were welded 7-23-96
Non-destructive test indicates Pressurized Air Channel Test
Max. drop of 4 psi, Min. pressure 20 psi
dwell time of 2 minutes
no destructive test performed this day.

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V. Area II

REPORT NO.: 37

PROJECT NO.: 94-3832, FY96-07

DATE: 7-25-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari

WEATHER CONDITIONS: Cloudy, hot w/ P.M. Showers

MEETINGS & RESULTS: Met w/ Serrot rep. Vince Martinez. Discussed today's activities.

DESCRIPTION OF WORK DONE: observed Peel and shear trial welds for the day. Welding of seams continues. Also non-destructive testing of welded seams underway. See attached daily logs.

DESCRIPTION OF OFF SITE MATERIAL: 40 mil polypropylene

ADDITIONAL COMMENTS:

Alan Khonsari

SIGNATURE(S)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-25-96

TRIAL WELD LOG

Sample No.	Test	Test Method	Results	QA Officer	CM Initials
37	P	ASTM D4437	36 lbs/inch	AK	[illegible]
37	S	ASTM D4437	41 lbs/inch	AK	[illegible]
12	P	ASTM D4437	32 lbs/inch	AK	[illegible]
12	S	ASTM D4437	40 lbs/inch	AK	[illegible]

N/A

Comments Tests Performed approx. 7:00 AM Amb. Temp. Approx. 70
Machine #37 Temp. 240°
#12 240°

Extrusion welders used for these trial welds.

Project Name ILF V, Area II
Project No. 94-3882 (FY 96-07)
Date 7-25-96

GEOMEMBRANE SEAMING LOG

Welder M. Garcia Weld Type Double Wedge

Welding Machine No. 122 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
1/36/37	O	93	cloudy, hot	*	N/A	AK	WS
9/35	O	93	cloudy, hot	*	N/A	AK	WS

N/A

Comments Above seams had already been welded and machines deactivated. No trial weld produced by above welding machine & tested this day.
(* SEE LATER REPORTS)

Project Name ILFV, Area II
Project No. 94-3832 (FY 96-07)
Date 7-25-96

GEOMEMBRANE SEAMING LOG

Welder A. Valera Weld Type Double Wedge

Welding Machine No. 163 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
1/42	D	91	Cloudy, hot	*	N/A	AK	[illegible]
1/43	D	91	Cloudy, hot	*	N/A	AK	[illegible]

N/A

Comments Above seams had already been welded and machines deactivated. No trial weld produced by above welding machine tested this day.

* See later reports

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-25-96

GEOMEMBRANE SEAMING LOG

Welder A. Valera Weld Type Double Wedge

Welding Machine No. 163 Liner Thickness 40 mil APU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
30/31	D	73	Cloudy, mild	P	N/A	AK	[illegible]
31/32	D	73	Cloudy, mild	P	N/A	AK	[illegible]
23/24	D	80	Cloudy, mild	P	N/A	AK	[illegible]

Comments Above seams were welded 7-24-96
Non-destructive test indicates Pressurized Air Channel Test
Min. Pressure 20 psi, dwell time of 2 minutes
Max. Pressure drop of 4 psi
No destructive test performed this day.

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-25-96

GEOMEMBRANE SEAMING LOG

Welder C. Colin Weld Type Double Wedge

Welding Machine No. 100 Liner Thickness 40 mil PPU

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
28/33	O	79	Cloudy, mild	P	N/A	AK	[illegible]
28/30	D	73	Cloudy, mild	P		AK	[illegible]
28/29	D	73	Cloudy, mild	P		AK	[illegible]
21/23	D	80	Cloudy, mild	P		AK	[illegible]
24/25	D	80	Cloudy, mild	P		AK	[illegible]
24/28	D	81	Cloudy, mild	P		AK	[illegible]
25/28	D	81	Cloudy, mild	P		AK	[illegible]
25/26	D	74	Cloudy, mild	P		AK	[illegible]
26/27	D	74	Cloudy, mild	P		AK	[illegible]
26/28	D	74	Cloudy, mild	P		AK	[illegible]

Comments Above seams were welded 7-24-96
Non-destructive test indicates Pressurized Air Channel Test
Min. Pressure 20 psi, dwell time of 2 minutes
Max. pressure drop of 4 psi
No. destructive test performed this day.

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-25-96

GEOMEMBRANE SEAMING LOG

Welder C. Colin Weld Type Double Wedge

Welding Machine No. 1DD Liner Thickness 40 mil PPLL

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
27/28	O	74	cloudy, mild	P	N/A	AK	[illegible]
27/34	O	74	cloudy, mild	P	N/A	AK	[illegible]
33/34	O	74	cloudy, mild	P	N/A	AK	[illegible]

Comments Above seams were welded 7-24-96
non-destructive test indicates pressurized air channel Test
Min. Pressure 20 Psi, dwell time of 2 minutes
Max. Pressure drop of 4 Psi
No destructive test performed this day.

MADE IN CANADA
MATERIAL: POLYPROPYLENE
BATCH #:
REEL #: 4
DATE: Feb 27/96 SHIFT AY
WEIGHT: 20 LBS.
FOOTAGE: 1720

Vive la Revolution

MADE IN CANADA
MATERIAL: POLYPROPYLENE
BATCH #:
REEL #: 16
DATE: FEB 26-96 SHIFT B
WEIGHT: 20 LBS.
FOOTAGE: 1720

MADE IN CANADA
MATERIAL: POLYPROPYLENE
BATCH #:
REEL #: 8
DATE: Feb 26 SHIFT C
WEIGHT: 20 LBS.
FOOTAGE: 1720

MADE IN CANADA
MATERIAL: POLYPROPYLENE
BATCH #:
REEL #: 7
DATE: Feb 27/96 SHIFT AY
WEIGHT: 20 LBS.
FOOTAGE: 1720

MADE IN CANADA
MATERIAL: POLYPROPYLE
BATCH #:
REEL #: 20
DATE: FEB 26 1996 SHIFT B
WEIGHT: 20 LBS
FOOTAGE: 1720

MADE IN CANADA
MATERIAL: POLYPROPYLENE
BATCH #:
REEL #: 15
DATE: Feb 26 SHIFT B
WEIGHT: 20 LBS.
FOOTAGE: 1720

MADE IN CANADA
MATERIAL: POLYPRO
BATCH #:
REEL #: 17
DATE: FEB 26
WEIGHT: 20 LBS.
FOOTAGE: 172

MADE IN
MATERIAL: POLYPROPYLENE
BATCH #:
REEL #: 3
DATE: Feb 27/96 SHIFT AY
WEIGHT: 20 LBS.
FOOTAGE: 1720

C.C.C.P. - Forever

copies of labels affixed to spools of PP welding rods for use w/ extrusion welders

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 38

PROJECT NO.: 94-3832, FY96-07

DATE: 7-26-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari

WEATHER CONDITIONS: Cloudy, drizzle occasionally

MEETINGS & RESULTS:

DESCRIPTION OF WORK DONE: observed daily trial weld testing. non-destructive testing of seams continues. observed on-site destructive tests of Destruct samples (coupons) obtained from completed seams. Also shipped off coupon samples for independent testing by TRI lab. Will receive results next day. Recorded and logged repair locations. Also observed vaccum box testing of extrusion welded seams in repaired areas. contractor also began deploying 16-oz protective geotextile fabric. see attached daily logs.

DESCRIPTION OF OFF SITE MATERIAL: 16-oz protective geotextile fabric.

ADDITIONAL COMMENTS:

Alan Khonsari

SIGNATURE(S)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

TRIAL WELD LOG

Sample No.	Test	Test Method	Results	QA Officer	CM Initials
37	P	ASTM D4437	34 lbs/inch	AK	[illegible]
37	S	↓	46 ↓	AK	[illegible]
12	P	↓	34 ↓	AK	[illegible]
12	S	↓	41 ↓	AK	[illegible]

Comments Tests performed approx. 7:00 a.m. Amb. Temp. Approx. 65
Machine # 37 Temp. 240°
12 240°
Extrusion welders used for trial welds.

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

TRIAL WELD LOG

Sample No.	Test	Test Method	Results	QA Officer	CM Initials
37	P	ASTM D4437	27 lbs/inch	AK	WD
37	S	↓	36 ↓	AK	WD
			N/A		

Comments Tests Performed @ approx 1:00 P.m. Amb. Temp. 89°
Machine #37 Temp. 240°

Extrusion welder used for trial welds.

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

GEOMEMBRANE SEAMING LOG

Welder M. Garcia Weld Type Double Wedge

Welding Machine No. 122 Liner Thickness 40 mil PP

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
10/11	O	70	Cloudy, Cool	P	N/A	AK	WD
12/13	O	71	Cloudy, Cool	P		AK	WD
14/15	O	71	Cloudy, cool	P		AK	WD
15/16	O	71	Cloudy, cool	P		AK	WD
16/22	O	72	Cloudy, Cool	P		AK	WD
1/36/37	O	66	Cloudy, cool	P		AK	WD
9/35	O	72	Cloudy, cool	P		AK	WD
	N/A						
	N/A						

Comments Above seams were welded between 7-23 and 7-25-96
Non-destructive test indicates pressurized Air Channel Test
Min. Pressure 20 psi, dwell time of 2 minutes
Max. pressure drop of 4 psi

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

GEOMEMBRANE SEAMING LOG

Welder A. Valera Weld Type Double Wedge

Welding Machine No. 163 Liner Thickness 40 mil PP

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
17/38	O	72	Cloudy, Cool	P	N/A	AK	[illegible]
17/39	O	72		P		AK	[illegible]
1/39	O	72		P		AK	[illegible]
1/40	O	71		P		AK	[illegible]
1/41	O	71		P		AK	[illegible]
1/42	O	71		P		AK	[illegible]
1/43	O	71		P		AK	[illegible]
	N/A						

Comments Above Seams were welded 7-24 & 7-25-96
Non-destructive test indicates pressurized Air Channel Test
Min. pressure 20 PSI, dwell time 2 minutes
Max. drop of Pressure 4 PSI

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

GEOMEMBRANE SEAMING LOG

Welder C. Colin Weld Type Double Wedge

Welding Machine No. 100 Liner Thickness 40 mil PP

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
	N/A						
21/22	D	74	Cloudy, Cool	P	N/A	AK	WM
16/21	D	74		P		AK	WM
14/20	D	74		P		AK	WM
15/20	D	74		P		AK	WM
13/20	D	73		P		AK	WM
12/19	D	73		P		AK	WM
10/17	D	73		P		AK	WM
11/18	D	73		P		AK	WM

Comments Above seams were molded 7-24-96

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

GEOMEMBRANE SEAMING LOG

Welder M. Palacios Weld Type Double Wedge

Welding Machine No. 144 Liner Thickness 40 mil PP

Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
22/23	D	75	cloudy, cool	P	N/A	[illegible]	[illegible]
11/12	D	71	cloudy, cool	P	N/A	[illegible]	[illegible]
13/14	D	72	cloudy, cool	P	N/A	[illegible]	[illegible]

N/A

Comments Above seams were welded 7-23 & 7-24-96

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

GEOMEMBRANE SEAMING LOG

Welder MG, CC, MP, AV Weld Type Double Wedge

Welding Machine No. 163, 144, 122, 100 Liner Thickness 40 mil PP

	Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
DS#1	1/2	N/A	74	N/A	N/A	P	AK	WD
DS #2	2/3		85			P	AK	WD
DS#3	2/3		70			P	AK	WD
DS #4	3/4		75			P	AK	WD
DS #5	4/5		78			P	AK	WD
DS #6	4/5		66			P	AK	WD
DS #7	5/6		72			P	AK	WD
DS #8	6/7		65			P	AK	WD
DS #9	6/7		70			P	AK	WD
DS #10	7/8		85			P	AK	WD

Comments DS = Destruct Sample (coupon)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

GEOMEMBRANE SEAMING LOG

Welder NG, CC, MP, AV Weld Type Double Wedge

Welding Machine No. 163, 144, 122, 100 Liner Thickness 40 mil PP

	Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
DS#11	8/9	N/A	65	N/A	N/A	P	AK	WD
#12	8/9		80			P	AK	WD
#13	14/15		80			P	AK	WD
#14	19/20		80			P	AK	WD
#15	16/22		78			P	AK	WD
#16	25/28		78			P	AK	WD
#17	28/29		65			P	AK	WD
#18	29/31		78			P	AK	WD
#19	31/32		78			P	AK	WD
#20	9/35		85			P	AK	WD

Comments DS = Destruct sample (coupon)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

GEOMEMBRANE SEAMING LOG

Welder MG, CC, MP, AV Weld Type Double Wedge

Welding Machine No. 163, 144, 122, 100 Liner Thickness 40 mil AP

	Seam ID	Original or Repair	Ambient Temp.	Weather Conditions	Non-Destructive Test Pass/Fail	On-Site Destructive Peel Test Pass/Fail	QA Officer Initials	CM Initials
DS#21	1/37	N/A	72	N/A	N/A	P	AK	WD
DS #22	17/38	↓	80	↓	↓	P	AK	WD
DS #23	4/20	↓	85	↓	↓	P	AK	WD

N/A

Comments DS = Destruct sample (coupon)

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
1,2,17,18	1/2/17/18	760' ⬢	Patch	7-26-96	AK	WAD
17,18,10,11	17/18/10/11	End of Panel 18			AK	WAD
10,11	10/11	22' ▼			AK	WAD
19,11,12,18	11/12/18/19	57' ▼			AK	WAD
10,17	10/17	44' ▼			AK	WAD
2,3,18,19	2/3/18/19	779' ⬢			AK	WAD
2,3	2/3	707' ⬢			AK	WAD
2,3	2/3	543' ⬢	Destruct No. 2		AK	WAD
2,3	2/3	11' ⬢	Patch		AK	WAD
2,3	2/3	2' ⬢			AK	WAD
3,4	3/4	At west anchor trench			AK	WAD
3,4	3/4	18' ⬢			AK	WAD
3,4	3/4	24' ⬢			AK	WAD

Comments All distances measured from edge of anchor trench located inside the cell.
~~All distances measured to the center of Patches~~

LEGEND:
⬢ East of west anchor trench
▼ South of northeast anchor trench
● west of east anchor trench

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
3	—	Middle, 24' ⬢	Patch	7-26-96	AK	WAS
3,4	3/4	228' ⬢	Patch		AK	WAS
3,4	3/4	434' ⬢	Destruct No. 4		AK	WAS
3,4	3/4	715' ⬢	Patch		AK	WAS
2,3	2/3	52' ⬢	Destruct No. 3		AK	WAS
3,4,20	3/4/20	775' ⬢	Patch		AK	WAS
19,20,13	19/20/13	936' ⬢			AK	WAS
13,14,20	13/14/20	56' ▼			AK	WAS
14,15,20	14/15/20	58' ▼			AK	WAS
15,16,21	15/16/21	64' ▼			AK	WAS
16,20,21	16/20/21	62' ▼			AK	WAS
16,21,22	16/21/22	62' ▼			AK	WAS
22,23,21	22/23/21	67' ▼			WAS	WAS

Comments N/A

Project Name ILFV, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
21,23,24	21/23/24	73' ▼	Patch	7-26-96	AK	WS
4,5	4/5	625' ⬢	Destruct No. 5		AK	WS
		212' ⬢	Patch		AK	WS
		44' ⬢			AK	WS
		37' ⬢			AK	WS
		26' ⬢			AK	WS
		At W. anchor trench			AK	WS
5,6	5/6	At W. anchor trench			AK	WS
		106' ⬢			AK	WS
		271' ⬢			AK	WS
		369' ⬢	Destruct No. 7		AK	WS
		573' ⬢	Patch		AK	WS
4,5	4/5	125' ⬢	Destruct No. 6		AK	WS

Comments N/A

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
5,6,21,28	5/6/21/28	782'	Patch	7-26-96	AK	[illegible]
21,28	21/28	895'			AK	[illegible]
		900'			AK	[illegible]
		945'			AK	[illegible]
20,21	20/21	974'			AK	[illegible]
20	—	951' 1' inside Panel			AK	[illegible]
20,21	20/21	778'			AK	[illegible]
4,20,21	4/20/21	769'			AK	[illegible]
5,21	5/21	783'			AK	[illegible]
4,5	4/5	707'			AK	[illegible]
		689'			AK	[illegible]
		669'			AK	[illegible]
		560			[illegible]	[illegible]

Comments N/A

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
4,5	4/5	505'	Patch	7-26-96	AK	[illegible]
		480'			AK	[illegible]
		466'			AK	[illegible]
		302'			AK	[illegible]
9,35	9/35	At w. anchor trench			AK	[illegible]
		14'			AK	[illegible]
		129'			AK	[illegible]
		155'			AK	[illegible]
		393'			AK	[illegible]
		412'	Destruct No. 20		AK	[illegible]
		447'	Patch		AK	[illegible]
		489'			AK	[illegible]
		507'			AK	[illegible]

Comments N/A

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
9,35	9/35	521'	Patch	7-26-96	AK	[illegible]
↓	↓	563'			AK	[illegible]
13,14	13/14	5'			AK	[illegible]
16,22	16/22	At N.E. Anchor trench			AK	[illegible]
16,22	16/22	7'			AK	[illegible]
22,23	22/23	At N.E. Anchor trench			AK	[illegible]
23,24	23/24	4'			AK	[illegible]
		19'			AK	[illegible]
		34'			AK	[illegible]
25,26	25/26	At N.E. Anchor trench			AK	[illegible]
		23'			AK	[illegible]
		36'			AK	[illegible]
		41'			AK	[illegible]

Comments N/A

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage		Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
7,8	7/8	13'	⬢	Patch	7-26-96	AK	WS
↓	↓	104'	⬢	↓	↓	AK	WS
↓	↓	292'	⬢	Destruct No. 10	↓	AK	WS
7,8,30,31	7/8/30/31	771'	⬢	Patch	↓	AK	WS
29,30,31	29/30/31	945'	⬢	↓	↓	AK	WS
29,31	29/31	18'	●	↓	↓	AK	WS
↓	↓	51'	●	↓	↓	AK	WS
↓	↓	145'	●	Destruct No. 18	↓	AK	WS
31,32	31/32	2'	●	Patch	↓	AK	WS
↓	↓	355'	●	Destruct No. 19	↓	AK	WS
8,9,31,32	8/9/31/32	400'	●	Patch	↓	AK	WS
27,34	27/34	1'	▼	↓	↓	AK	WS
27,34	27/34	31'	▼	↓	↓	AK	WS

Comments N/A

Project Name ILF V - Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
8,9	8/9	At W. anchor trench	Patch	7-26-96	AK	WS
		8'			AK	WS
		128'			AK	WS
		768'	Destruct NO. 11		AK	WS
27,33,34	27/33/34	20'	Patch		AK	WS
33,34	33/34	5'			AK	WS
29,28,30	29/28/30	230'			AK	WS
28,30	28/30	371'			AK	WS
28,30,6,7	28/30/6/7	400'			AK	WS
6,7	6/7	623'			AK	WS
		701'	Destruct NO. 8		AK	WS
		72'	Patch		AK	WS
		36'	Patch		AK	WS

Comments N/A

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
6,7	6/7	18'	Patch	7-26-96	AK	WS
6,7	6/7	At W. anchor trench			AK	WS
6,7	6/7	2'			AK	WS
6,7	6/7	5'			AK	WS
6,7	6/7	201'	Destruct NO. 9		AK	WS
7,8	7/8	At W. anchor trench	Patch		AK	WS
7,8	7/8	4'			AK	WS
21,28	21/28	968'			AK	WS
		979'			AK	WS
		1062'			AK	WS
21,24,28	21/24/28	7.5'			AK	WS
24,25,28	24/25/28	75'			AK	WS
25,28	25/28	69'	Destruct NO. 16		AK	WS

Comments N/A

Project Name ILF V, Area II
Project No. 94-38-32 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
25,26,28	25/26/28	69' ▼	Patch	7-26-96	AK	WS
26,27,28	26/27/28	67' ▼			AK	WS
33,28,27	33/28/27	At drainage Pipe			AK	WS
28,27	28/27	37' ●			AK	WS
28,33	28/33	7' ●			AK	WS
		13' ●			AK	WS
		22' ●			AK	WS
43,42,1	43/42/1	539' ●			AK	WS
43,1	43/1	511' ●			AK	WS
37,1	37/1	50' ●	Destruct No. 21		AK	WS
37,1	37/1	109' ●	Patch		AK	WS
36,1	36/1	At W. anchor trench	Patch		AK	WS

Comments N/A

Project Name ILF-V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
1,2	1/2	At w/ anchor trench	Patch	7-26-96	AK	WS
		33'			AK	WS
		329'			AK	WS
		401'			AK	WS
		416'			AK	WS
		500'	Destruct NO. 1		AK	WS
		639'	Patch		AK	WS
		670'			AK	WS
		686'			AK	WS
39,1	39/1	744'			AK	WS
		729'			AK	WS
		700'			AK	WS
17,38	17/38	30' W. of Panel 38	Destruct NO. 22		WS	WS

Comments N/A

Project Name ILF V, Area II
Project No. 94-3832 (FY 96-07)
Date 7-26-96

DAMAGE AND FAILURE LOG

Panel No.	Seam No.	Location of Repair or Damage	Type of Damage	Inspec. Date	QA Officer Initials	CM Initials
40,1	40/1	634'	Patch	7-26-96	AK	[illegible]
40,1	40/1	619'			AK	[illegible]
41,40,1	41/40/1	593'			AK	[illegible]
41,40,1	41/40/1	579'			AK	[illegible]
41,1	41/1	572'			AK	[illegible]
42,41,1	42/41/1	567'			AK	[illegible]
8,9	8/9	268'	Destruct No. 12		AK	[illegible]
14,15	14/15	16'	Destruct No. 13		AK	[illegible]
19,20	19/20	146'	Destruct No. 14		AK	[illegible]
16,22	16/22	17'	Destruct No. 15		AK	[illegible]
28,29	28/29	52'	Destruct No. 17		AK	[illegible]
4,20	4/20	Center	Destruct No. 23		AK	[illegible]

Comments N/A

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 39

PROJECT NO.: 94-3832, FY96-07

DATE: 7-27-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari

WEATHEF. CONDITIONS: Cloudy, occasional rain

MEETINGS & RESULTS: met w/ Vince Martinez of Serrot & discussed today's activities.

DESCRIPTION OF WORK DONE: Received results of lab testing by TRI on 23 Destruct samples. All results satisfactory. Contractor continues deployment and installation of protective (16-02) geotextile fabric. The fabric is being field-joined by sewing w/ nylon thread @ stitch density of approx. 5 stitches per inch and one row of double thread stitches. The fabric is field-joined by minimum of 6-inch overlap. A prayer seam configuration is being used. As the fabric panels are deployed and installed, panels are inspected for defects. Panels are also anchored sufficiently w/ sandbags. Completed seams were observed for integrity of stitches.

DESCRIPTION OF OFF SITE MATERIAL: 16-02 protective geotextile fabric.

ADDITIONAL COMMENTS:

Alan Khonsari

SIGNATURE(S)

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

July 27, 1996

Mr. Alan Khonsari
GEOTEK Engineering Company
8321 Oak Ridge Highway, Ste. B
Knoxville, Tennessee 37931

fax: 423-691-9858

Dear Mr. Khonsari

Thank you for consulting TRI/Environmental, Inc. for your geosynthetics testing needs. TRI/Environmental, Inc. (TRI) is pleased to submit this final report for laboratory testing.

TRI Job Reference Number:		E2038-32-06
Date Received:		07-27-96
Sample ID:	PP seams:	1 through 23

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Sam R. Allen

Sam R. Allen
Program Manager: Geosynthetics Technologies

TRI/Environmental, Inc.

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TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GEOTEK
PROJECT: INDUSTRIAL LANDFILL V
CONTACT: MR. ALAN KHONSARI
DATE REC'D: 27-Jul-96

MATERIAL: PP
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2038-32-06
DATE TESTED: 27-Jul-96

ASTM D 4437/413/3083 NSF Modified
ANALYST: TCS
REVIEW: SRA
REPORT DA 27-Jul-96

		PEEL EVALUATION					SHEAR EVALUATION			
COUPON NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
1	1A	44	<10	SE	FTB	NR	51	BRK	FTB	NR
	1B	35	<10	SE	FTB					
	2A	38	<10	SE	FTB		53	BRK	FTB	
	2B	40	<10	SE	FTB					
	3A	40	<10	SE	FTB		52	BRK	FTB	
	3B	42	<10	SE	FTB					
	4A	39	<10	SE	FTB		51	BRK	FTB	
	4B	37	<10	SE	FTB					
	5A	43	<10	SE	FTB		54	BRK	FTB	
	5B	43	<10	SE	FTB					
	MEAN:	40				MEAN:	52			
2	1A	37	<10	SE	FTB	NR	52	BRK	FTB	NR
	1B	43	<10	SE	FTB					
	2A	38	<10	SE	FTB		52	BRK	FTB	
	2B	44	<10	SE	FTB					
	3A	45	<10	SE	FTB		54	BRK	FTB	
	3B	40	<10	SE	FTB					
	4A	45	<10	SE	FTB		53	BRK	FTB	
	4B	42	<10	SE	FTB					
	5A	42	<10	SE	FTB		52	BRK	FTB	
	5B	42	<10	SE	FTB					
	MEAN:	42				MEAN:	53			

NR: Not Requested

The testing reported herein is based upon industry practice as well as the test method listed
TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.

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GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GEOTEK
PROJECT: INDUSTRIAL LANDFILL V
CONTACT: MR. ALAN KHONSARI
DATE REC'D: 27-Jul-96

MATERIAL: PP
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2038-32-06
DATE TESTED: 27-Jul-96

ASTM D 4437/413/3083 NSF Modified
ANALYST: TCS
REVIEW: SRA
REPORT DA 27-Jul-96

		PEEL EVALUATION					SHEAR EVALUATION			
COUPON NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
3	1A	40	<10	SE	FTB	NR	54	BRK	FTB	NR
	1B	42	<10	SE	FTB					
	2A	41	<10	SE	FTB		53	BRK	FTB	
	2B	45	<10	SE	FTB					
	3A	39	<10	SE	FTB		53	BRK	FTB	
	3B	46	<10	SE	FTB					
	4A	45	<10	SE	FTB		49	BRK	FTB	
	4B	40	<10	SE	FTB					
	5A	38	<10	SE	FTB		52	BRK	FTB	
	5B	43	<10	SE	FTB					
	MEAN:	42				MEAN:	52			
4	1A	36	<10	SE	FTB	NR	52	BRK	FTB	NR
	1B	48	<10	SE	FTB					
	2A	40	<10	SE	FTB		52	BRK	FTB	
	2B	44	<10	SE	FTB					
	3A	36	<10	SE	FTB		50	BRK	FTB	
	3B	45	<10	SE	FTB					
	4A	39	<10	SE	FTB		52	BRK	FTB	
	4B	45	<10	SE	FTB					
	5A	39	<10	SE	FTB		53	BRK	FTB	
	5B	45	<10	SE	FTB					
	MEAN:	42				MEAN:	52			

NR: Not Requested

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CONTACT: MR. ALAN KHONSARI
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REPORT DA 27-Jul-96

COUPON NUMBER	SPECIMEN NUMBER	PEEL EVALUATION					SHEAR EVALUATION			
		MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
5	1A	33	<10	SE	FTB	NR	44	BRK	FTB	NR
	1B	36	<10	SE	FTB					
	2A	37	<10	SE	FTB		46	BRK	FTB	
	2B	39	<10	SE	FTB					
	3A	38	<10	SE	FTB		47	BRK	FTB	
	3B	37	<10	SE	FTB					
	4A	40	<10	SE	FTB		46	BRK	FTB	
	4B	36	<10	SE	FTB					
	5A	36	<10	SE	FTB		46	BRK	FTB	
	5B	37	<10	SE	FTB					
	MEAN:	37				MEAN:	46			
6	1A	36	<10	SE	FTB	NR	44	BRK	FTB	NR
	1B	36	<10	SE	FTB					
	2A	38	<10	SE	FTB		44	BRK	FTB	
	2B	41	<10	SE	FTB					
	3A	37	<10	SE	FTB		44	BRK	FTB	
	3B	38	<10	SE	FTB					
	4A	36	<10	SE	FTB		43	BRK	FTB	
	4B	38	<10	SE	FTB					
	5A	38	<10	SE	FTB		42	BRK	FTB	
	5B	40	<10	SE	FTB					
	MEAN:	38				MEAN:	43			

NR: Not Requested

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GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

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		PEEL EVALUATION					SHEAR EVALUATION			
COUPON NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
	1A	43	<10	SE	FTB	NR	44	BRK	FTB	NR
7	1B	43	<10	SE	FTB					
	2A	47	<10	SE	FTB		44	BRK	FTB	
	2B	41	<10	SE	FTB					
	3A	45	<10	SE	FTB		44	BRK	FTB	
	3B	42	<10	SE	FTB					
	4A	43	<10	SE	FTB		43	BRK	FTB	
	4B	40	<10	SE	FTB					
	5A	46	<10	SE	FTB		42	BRK	FTB	
	5B	41	<10	SE	FTB					
	MEAN:	43				MEAN:	43			
	1A	42	<10	SE	FTB	NR	47	BRK	FTB	NR
8	1B	44	<10	SE	FTB					
	2A	42	<10	SE	FTB		45	BRK	FTB	
	2B	40	<10	SE	FTB					
	3A	42	<10	SE	FTB		42	BRK	FTB	
	3B	40	<10	SE	FTB					
	4A	41	<10	SE	FTB		45	BRK	FTB	
	4B	40	<10	SE	FTB					
	5A	42	<10	SE	FTB		48	BRK	FTB	
	5B	40	<10	SE	FTB					
	MEAN:	41				MEAN:	45			

NR: Not Requested

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CONTACT: MR. ALAN KHONSARI
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MATERIAL: PP
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2038-32-06
DATE TESTED: 27-Jul-96

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ANALYST: TCS
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COUPON NUMBER	SPECIMEN NUMBER	PEEL EVALUATION					SHEAR EVALUATION			
		MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
9	1A	43	<10	SE	FTB	NR	46	BRK	FTB	NR
	1B	42	<10	SE	FTB					
	2A	41	<10	SE	FTB		48	BRK	FTB	
	2B	43	<10	SE	FTB					
	3A	44	<10	SE	FTB		49	BRK	FTB	
	3B	40	<10	SE	FTB					
	4A	42	<10	SE	FTB		49	BRK	FTB	
	4B	42	<10	SE	FTB					
	5A	41	<10	SE	FTB		48	BRK	FTB	
	5B	39	<10	SE	FTB					
	MEAN:	42				MEAN:	48			
10	1A	47	<10	SE	FTB	NR	55	BRK	FTB	NR
	1B	44	<10	SE	FTB					
	2A	47	<10	SE	FTB		53	BRK	FTB	
	2B	48	<10	SE	FTB					
	3A	47	<10	SE	FTB		54	BRK	FTB	
	3B	43	<10	SE	FTB					
	4A	41	<10	SE	FTB		51	BRK	FTB	
	4B	43	<10	SE	FTB					
	5A	48	<10	SE	FTB		54	BRK	FTB	
	5B	46	<10	SE	FTB					
	MEAN:	45				MEAN:	53			

NR: Not Requested

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GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

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CONTACT: MR. ALAN KHONSARI
DATE REC'D: 27-Jul-96

MATERIAL: PP
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REPORT DA 27-Jul-96

COUPON NUMBER	SPECIMEN NUMBER	PEEL EVALUATION					SHEAR EVALUATION			
		MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
11	1A	45	<10	SE	FTB	NR	53	BRK	FTB	NR
	1B	40	<10	SE	FTB					
	2A	47	<10	SE	FTB		52	BRK	FTB	
	2B	49	<10	SE	FTB					
	3A	42	<10	SE	FTB		53	BRK	FTB	
	3B	45	<10	SE	FTB					
	4A	42	<10	SE	FTB		54	BRK	FTB	
	4B	47	<10	SE	FTB					
	5A	42	<10	SE	FTB		55	BRK	FTB	
	5B	47	<10	SE	FTB					
	MEAN:	45				MEAN:	53			
12	1A	43	<10	SE	FTB	NR	51	BRK	FTB	NR
	1B	42	<10	SE	FTB					
	2A	41	<10	SE	FTB		56	BRK	FTB	
	2B	42	<10	SE	FTB					
	3A	43	<10	SE	FTB		53	BRK	FTB	
	3B	44	<10	SE	FTB					
	4A	42	<10	SE	FTB		49	BRK	FTB	
	4B	44	<10	SE	FTB					
	5A	43	<10	SE	FTB		51	BRK	FTB	
	5B	43	<10	SE	FTB					
	MEAN:	43				MEAN:	52			

NR: Not Requested

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GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

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		PEEL EVALUATION					SHEAR EVALUATION			
COUPON NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
13	1A	40	<10	SE	FTB	NR	56	BRK	FTB	NR
	1B	41	<10	SE	FTB					
	2A	48	<10	SE	FTB		51	BRK	FTB	
	2B	45	<10	SE	FTB					
	3A	40	<10	SE	FTB		51	BRK	FTB	
	3B	45	<10	SE	FTB					
	4A	40	<10	SE	FTB		56	BRK	FTB	
	4B	41	<10	SE	FTB					
	5A	38	<10	SE	FTB		50	BRK	FTB	
	5B	41	<10	SE	FTB					
	MEAN:	42				MEAN:	53			
14	1A	46	<10	SE	FTB	NR	53	BRK	FTB	NR
	1B	44	<10	SE	FTB					
	2A	47	<10	SE	FTB		53	BRK	FTB	
	2B	42	<10	SE	FTB					
	3A	45	<10	SE	FTB		53	BRK	FTB	
	3B	40	<10	SE	FTB					
	4A	46	<10	SE	FTB		50	BRK	FTB	
	4B	46	<10	SE	FTB					
	5A	43	<10	SE	FTB		56	BRK	FTB	
	5B	45	<10	SE	FTB					
	MEAN:	44				MEAN:	53			

NR: Not Requested

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GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GEOTEK
PROJECT: INDUSTRIAL LANDFILL V
CONTACT: MR. ALAN KHONSARI
DATE REC'D: 27-Jul-96

MATERIAL: PP
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2038-32-06
DATE TESTED: 27-Jul-96

ASTM D 4437/413/3083 NSF Modified
ANALYST: TCS
REVIEW: BA
REPORT DA 27-Jul-96

COUPON NUMBER	SPECIMEN NUMBER	PEEL EVALUATION					SHEAR EVALUATION			
		MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
15	1A	37	<10	SE	FTB	NR	54	BRK	FTB	NR
	1B	41	<10	SE	FTB					
	2A	36	<10	SE	FTB		61	BRK	FTB	
	2B	41	<10	SE	FTB					
	3A	35	<10	SE	FTB		53	BRK	FTB	
	3B	41	<10	SE	FTB					
	4A	41	<10	SE	FTB		58	BRK	FTB	
	4B	35	<10	SE	FTB					
	5A	35	<10	SE	FTB		54	BRK	FTB	
	5B	42	<10	SE	FTB					
	MEAN:	38				MEAN:	56			
16	1A	42	<10	SE	FTB	NR	47	BRK	FTB	NR
	1B	42	<10	SE	FTB					
	2A	41	<10	SE	FTB		51	BRK	FTB	
	2B	38	<10	SE	FTB					
	3A	42	<10	SE	FTB		54	BRK	FTB	
	3B	38	<10	SE	FTB					
	4A	45	<10	SE	FTB		53	BRK	FTB	
	4B	43	<10	SE	FTB					
	5A	41	<10	SE	FTB		51	BRK	FTB	
	5B	44	<10	SE	FTB					
	MEAN:	42				MEAN:	51			

NR: Not Requested

The testing reported herein is based upon industry practice as well as the test method listed
TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

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TRI LOG #: E2038-32-06
DATE TESTED: 27-Jul-96

ASTM D 4437/413/3083 NSF Modified
ANALYST: TCS
REVIEW: SRA
REPORT DA 27-Jul-96

COUPON NUMBER	SPECIMEN NUMBER	PEEL EVALUATION					SHEAR EVALUATION			
		MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
17	1A	37	<10	SE	FTB	NR	55	BRK	FTB	NR
	1B	42	<10	SE	FTB					
	2A	37	<10	SE	FTB		56	BRK	FTB	
	2B	39	<10	SE	FTB					
	3A	37	<10	SE	FTB		58	BRK	FTB	
	3B	43	<10	SE	FTB					
	4A	36	<10	SE	FTB		55	BRK	FTB	
	4B	40	<10	SE	FTB					
	5A	42	<10	SE	FTB		58	BRK	FTB	
	5B	35	<10	SE	FTB					
	MEAN:	39				MEAN:	56			
18	1A	39	<10	SE	FTB	NR	58	BRK	FTB	NR
	1B	45	<10	SE	FTB					
	2A	42	<10	SE	FTB		57	BRK	FTB	
	2B	39	<10	SE	FTB					
	3A	44	<10	SE	FTB		57	BRK	FTB	
	3B	42	<10	SE	FTB					
	4A	39	<10	SE	FTB		55	BRK	FTB	
	4B	43	<10	SE	FTB					
	5A	44	<10	SE	FTB		58	BRK	FTB	
	5B	43	<10	SE	FTB					
	MEAN:	42				MEAN:	57			

NR: Not Requested

The testing reported herein is based upon industry practice as well as the test method listed
TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.

9063 Bee Caves Road • Austin, Texas 78733-6201 • (512)263-2101 • FAX (512)263-2558

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		PEEL EVALUATION					SHEAR EVALUATION			
COUPON NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
19	1A	42	<10	SE	FTB	NR	54	BRK	FTB	NR
	1B	43	<10	SE	FTB					
	2A	45	<10	SE	FTB		54	BRK	FTB	
	2B	43	<10	SE	FTB					
	3A	48	<10	SE	FTB		55	BRK	FTB	
	3B	39	<10	SE	FTB					
	4A	40	<10	SE	FTB		56	BRK	FTB	
	4B	46	<10	SE	FTB					
	5A	47	<10	SE	FTB		54	BRK	FTB	
	5B	41	<10	SE	FTB					
	MEAN:	43				MEAN:	55			
20	1A	47	<10	SE	FTB	NR	53	BRK	FTB	NR
	1B	42	<10	SE	FTB					
	2A	50	<10	SE	FTB		54	BRK	FTB	
	2B	44	<10	SE	FTB					
	3A	46	<10	SE	FTB		52	BRK	FTB	
	3B	41	<10	SE	FTB					
	4A	45	<10	SE	FTB		54	BRK	FTB	
	4B	43	<10	SE	FTB					
	5A	45	<10	SE	FTB		54	BRK	FTB	
	5B	42	<10	SE	FTB					
	MEAN:	45				MEAN:	53			

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		PEEL EVALUATION					SHEAR EVALUATION			
COUPON NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
21	1A	44	<10	SE	FTB	NR	53	BRK	FTB	NR
	1B	39	<10	SE	FTB					
	2A	39	<10	SE	FTB		53	BRK	FTB	
	2B	40	<10	SE	FTB					
	3A	42	<10	SE	FTB		50	BRK	FTB	
	3B	45	<10	SE	FTB					
	4A	40	<10	SE	FTB		52	BRK	FTB	
	4B	38	<10	SE	FTB					
	5A	43	<10	SE	FTB		53	BRK	FTB	
	5B	45	<10	SE	FTB					
	MEAN:	42				MEAN:	52			
22	1A	45	<10	SE	FTB	NR	50	BRK	FTB	NR
	1B	45	<10	SE	FTB					
	2A	42	<10	SE	FTB		50	BRK	FTB	
	2B	49	<10	SE	FTB					
	3A	45	<10	SE	FTB		49	BRK	FTB	
	3B	50	<10	SE	FTB					
	4A	46	<10	SE	FTB		53	BRK	FTB	
	4B	47	<10	SE	FTB					
	5A	44	<10	SE	FTB		52	BRK	FTB	
	5B	41	<10	SE	FTB					
	MEAN:	45				MEAN:	51			

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COUPON NUMBER	SPECIMEN NUMBER	PEEL EVALUATION					SHEAR EVALUATION			
		MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL	MAXIMUM TENSION (lb/in)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PASS OR FAIL
23	1A	50	<10	SE	FTB	NR	55	BRK	FTB	NR
	1B	49	<10	SE	FTB					
	2A	48	<10	SE	FTB		60	BRK	FTB	
	2B	49	<10	SE	FTB					
	3A	47	<10	SE	FTB		62	BRK	FTB	
	3B	44	<10	SE	FTB					
	4A	42	<10	SE	FTB		58	BRK	FTB	
	4B	46	<10	SE	FTB					
	5A	47	<10	SE	FTB		61	BRK	FTB	
	5B	46	<10	SE	FTB					
	MEAN:	47				MEAN:	59			

NR: Not Requested

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TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.

DAILY SUMMARY REPORT

PROJECT: Industrial Landfill V. Area II

REPORT NO.: 40

PROJECT NO.: 94-3832. FY96-07

DATE: 7-28-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari

WEATHER CONDITIONS: cloudy, occasional rain

MEETINGS & RESULTS: met w/ Vince Martinez of Serrot & discussed today's activities.

DESCRIPTION OF WORK DONE: Contractor was observed to continue deploying and installing 16-oz protective geotextile fabric. The fabric is being field-joined by sewing w/ nylon thread @ a stitch density of approx. 5 stitches per inch and one row of double thread stitches. the fabric is joined by minimum of 6-inch overlap in prayer seam fashion. panels were inspected for defects and found to be free of. panels are also ballasted w/ sand bags. Sewn seams were observed for integrity.

DESCRIPTION OF OFF SITE MATERIAL: 16-oz protective geotextile fabric

ADDITIONAL COMMENTS:

Alan Khonsari

SIGNATURE(S)

DAILY SUMMARY REPORT

Set 1 of 2

PROJECT: Industrial Landfill V, Area II

REPORT NO.: 41

PROJECT NO.: 94-3832. FY96-07

DATE: 7-29-96

CLIENT: L.M.E.S.

FIELD TECHNICIAN(S): Alan Khonsari

WEATHER CONDITIONS: cloudy, occasional drizzle

MEETINGS & RESULTS: met w/ Martin engineer Bill Bessom and Geotek principal engineer Ken McCurdy. FML & geotextile installation is complete. Vince Martinez of Serrot also present.

DESCRIPTION OF WORK DONE: Final walk-through of site was performed by all parties and pertinent papers signed. Contractor also provided parties w/ Serrot daily reports and documentation. (see attached).

DESCRIPTION OF OFF SITE MATERIAL:

ADDITIONAL COMMENTS:

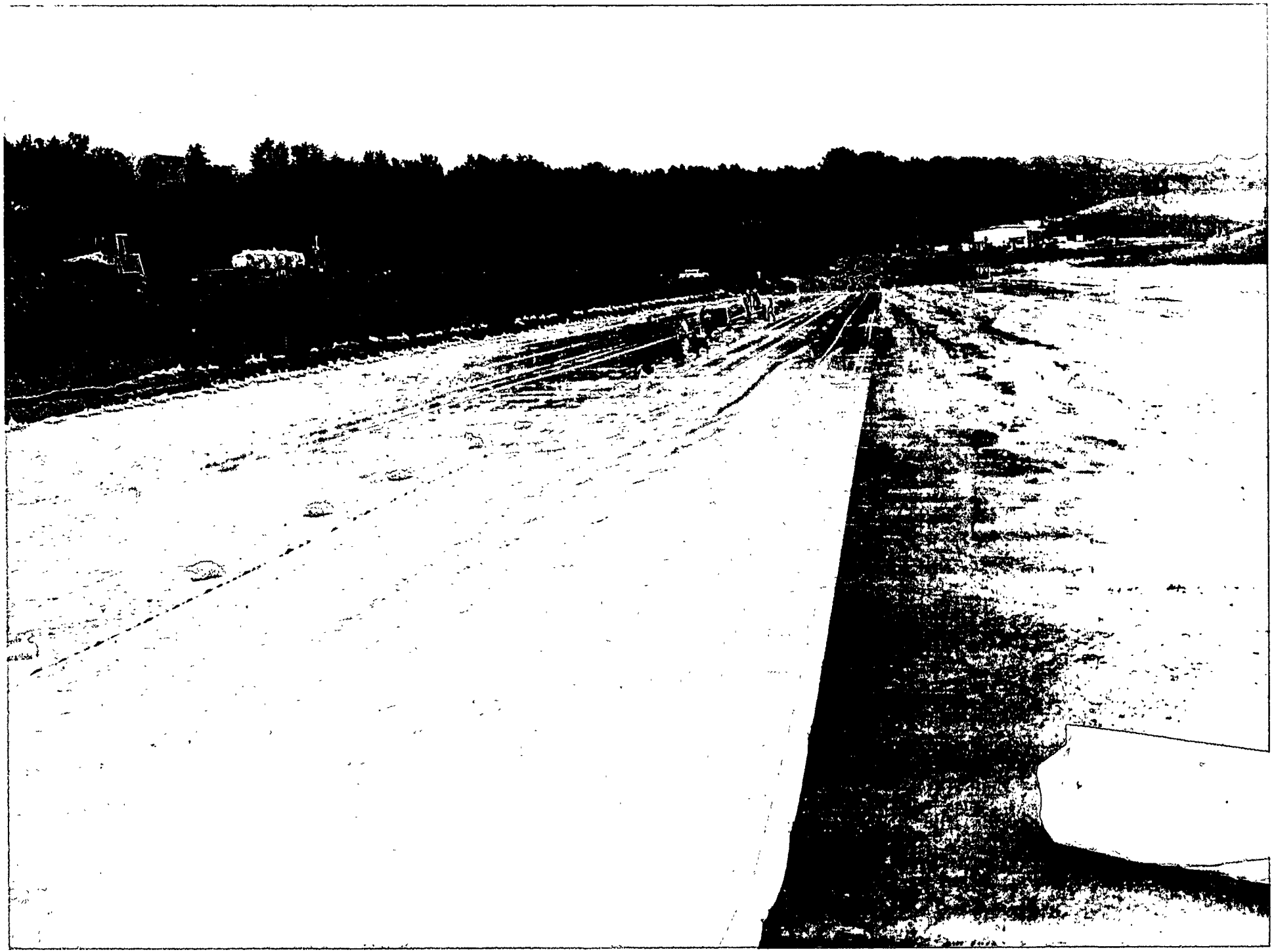
Alan Khonsari

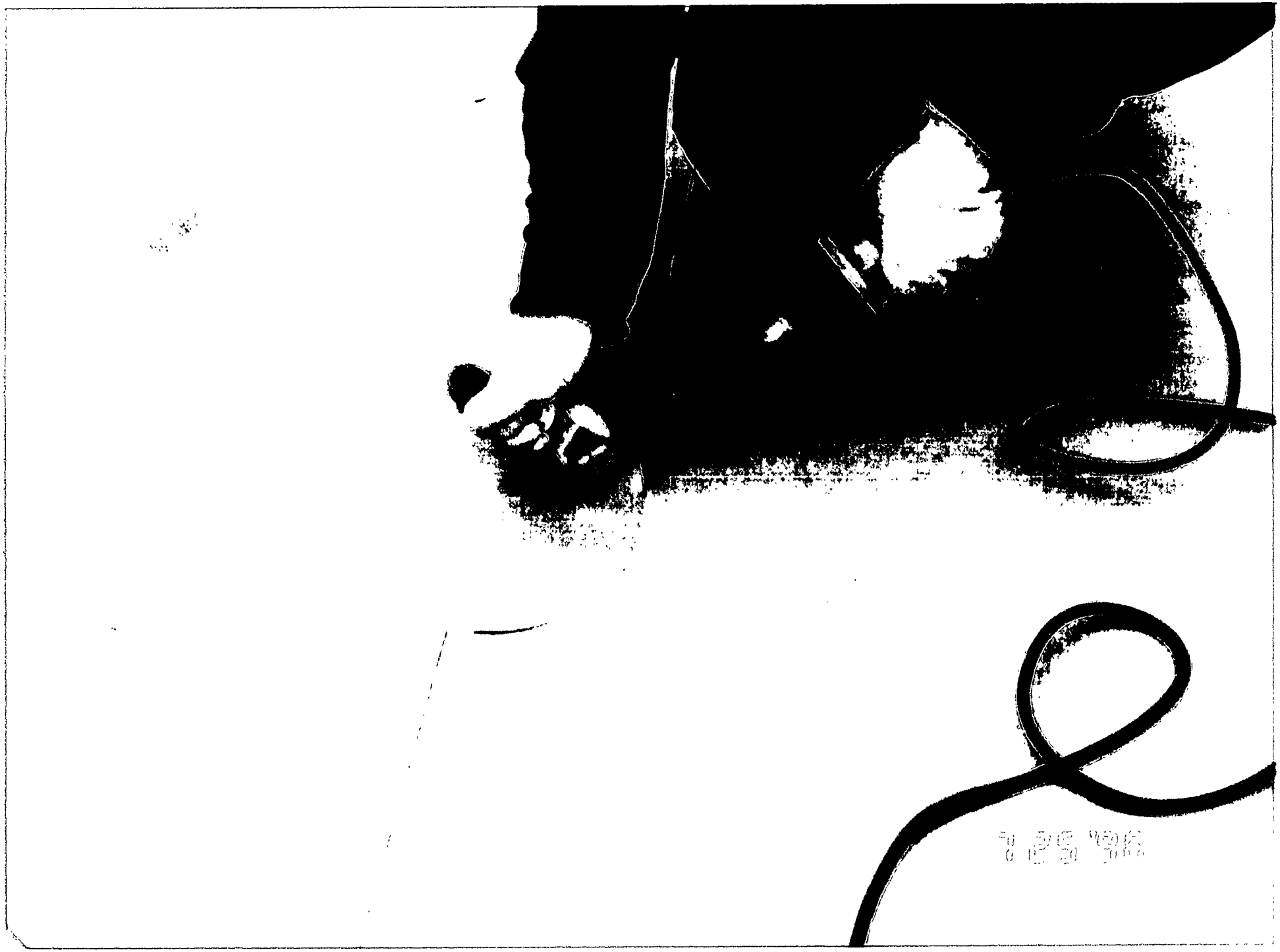
SIGNATURE(S)

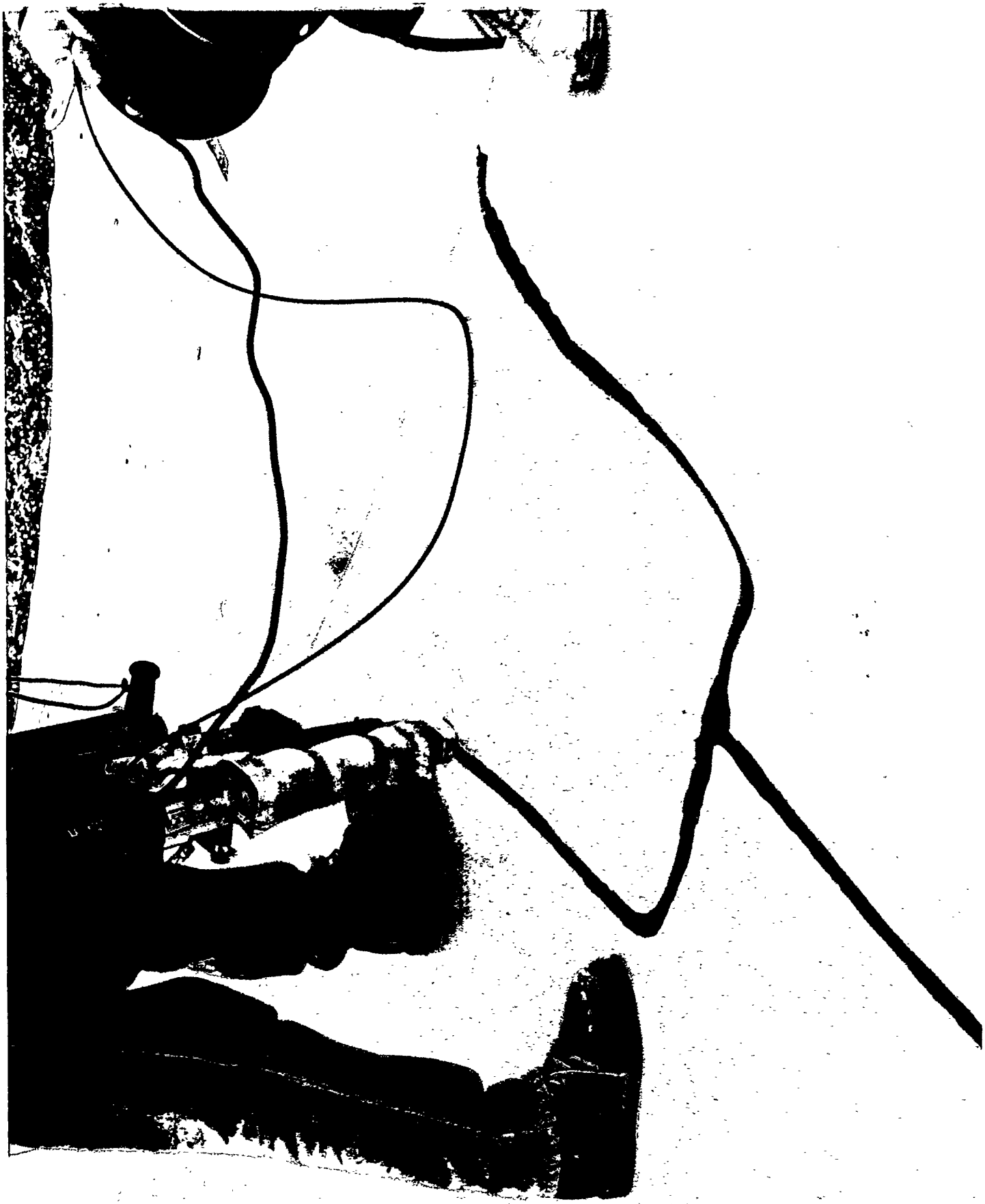
APPENDIX D

PHOTOGRAPHS

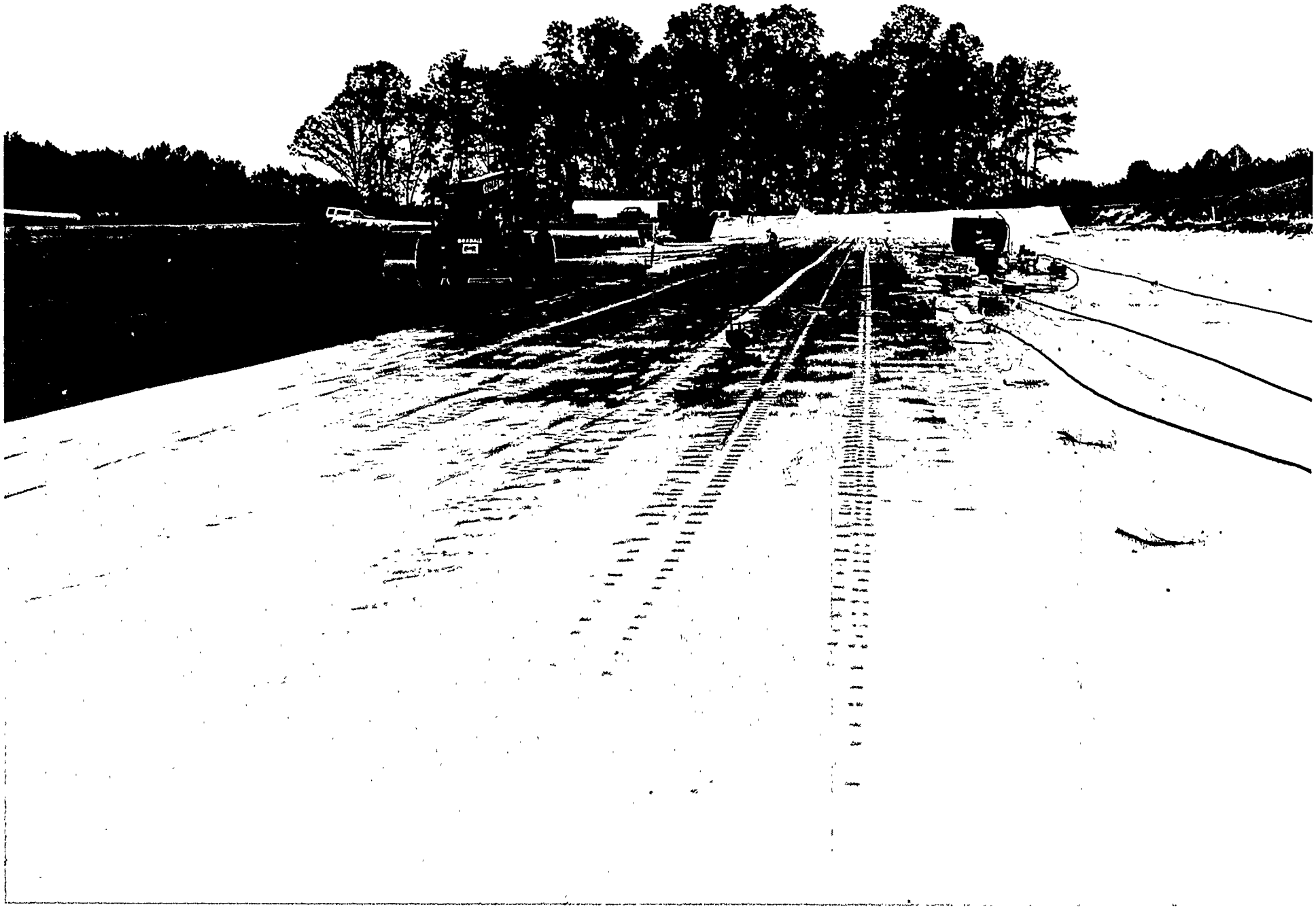

ATHENS



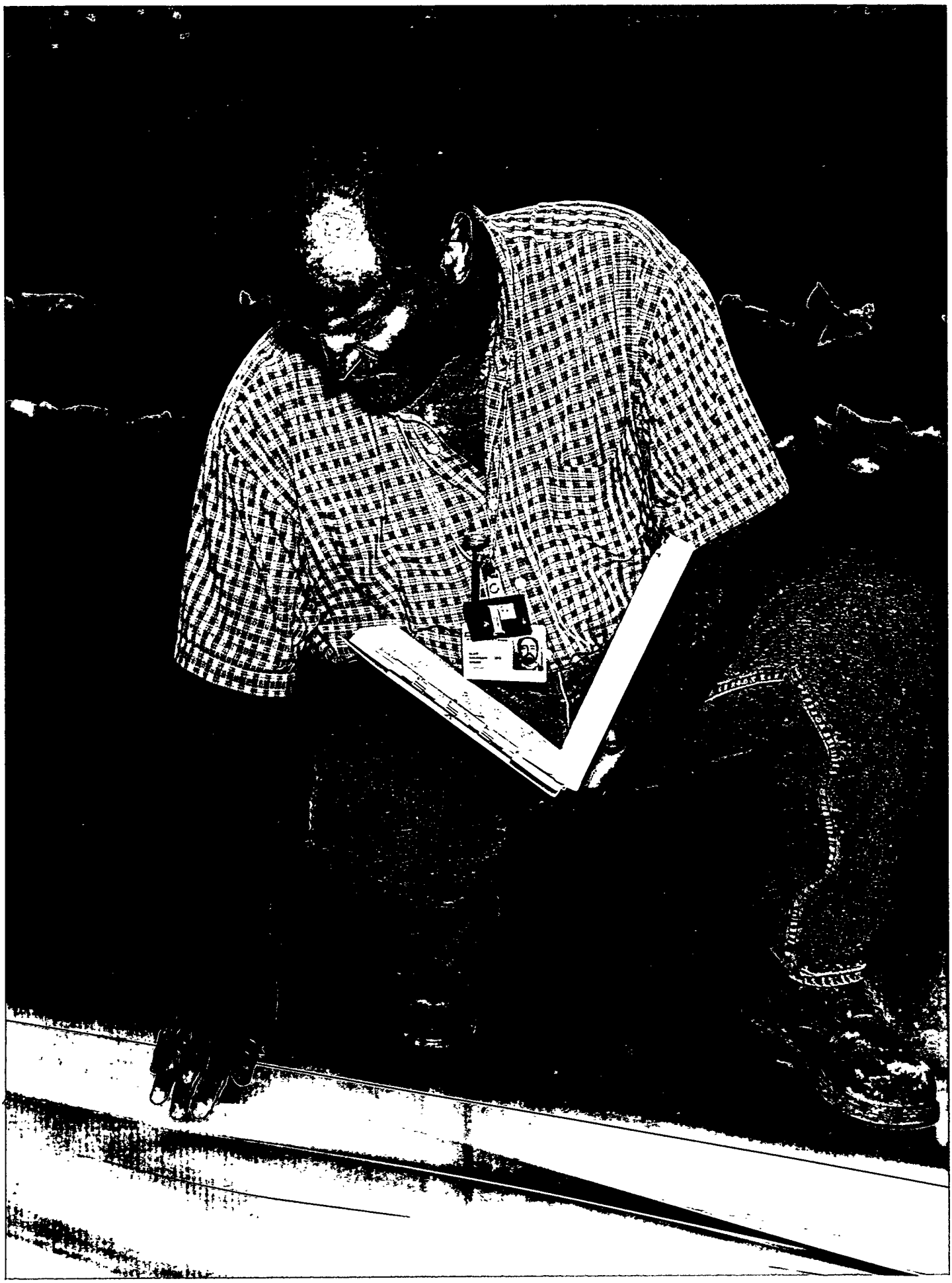





DANGER
TEKOMETER
MATEK GEO PRODUCTS
SLOW
PEAK
RUN
FAST
LOAD
STOP
7 26 '96



BATTLE MOUNTAIN
GOLD COMPANY
ZURICH
T-ME



APPENDIX E

AS-BUILT DRAWINGS AND DATA

POINT ELEVATION DATA
SUBGRADE

.CHW PN #96901
JOB: LF5A2SUB.CR5 TIME: 12:31 DATE: 11-06-1996

Point	Northing	Easting	Elevation	Note
601	27576.234000	58713.359000	1052.720	TOE1052.53F-0.19
602	27550.880000	58703.840000	1052.640	TOE1052.72C-0.08
603	27590.000000	58686.130000	1062.600	TOP1062.67C-0.07
604	27566.050000	58673.970000	1062.000	TOP1062.00F-0.00
605	27499.882000	58672.955000	1053.000	TOE1053.04C-0.04
606	27470.000000	58671.970000	1051.770	TOE1051.88C-0.11
607	27428.661000	58670.605000	1054.000	TOE1054.11C-0.11
608	27399.703000	58680.003000	1055.000	TOE1054.68F-0.32
610	27470.130000	59106.173000	1032.500	BOT1032.44F-0.06
611	27470.130000	59156.273000	1030.270	BOT1029.82F-0.45
612	27470.000000	59206.192000	1028.050	BOT1028.04F-0.01
613	27469.863000	59256.206000	1025.830	BOT1025.53F-0.30
614	27470.000000	58756.192000	1048.030	BOT1047.99F-0.04
615	27549.978000	58668.732000	1061.500	TOP1061.53C-0.03
617	27590.028000	59574.932000	1020.500	SLP1020.41F-0.09
618	27579.569900	59582.337700	1019.820	SLP1019.68F-0.14
619	27565.403500	59594.323200	1019.500	SLP1017.69F-1.81
620	27534.501000	59647.268500	1016.200	SLP1015.59F-0.61
621	27514.174000	59736.147500	1012.000	SLP1011.96F-0.04
622	27470.000000	58806.192000	1045.820	BOT1045.81F-0.01
623	27498.043000	59800.883200	1009.000	SLP1009.10C-0.01
624	27489.795600	59806.458900	1008.250	SLP1007.73F-0.52
627	27470.084000	58856.131000	1043.600	BOT1043.44F-0.16
628	27470.000000	58906.192000	1041.380	BOT1041.30F-0.08
629	27500.063000	58649.291000	1060.350	TOP1060.40C-0.05
630	27449.991000	58647.086000	1059.500	TOP1059.50C-0.00
631	27400.031000	58664.047000	1058.000	TOP1058.09C-0.09
632	27469.945000	58956.205000	1039.160	BOT1039.22C-0.06
633	27469.945000	59006.261000	1036.950	BOT1036.73F-0.22
634	27470.000000	59056.192000	1034.720	BOT1034.60F-0.12
636	27446.047000	59798.862000	1003.000	TOE1002.97F-0.03
637	27470.000000	59791.590000	1002.050	TOE1002.07C-0.02
638	27479.330000	59790.709000	1003.000	TOE1003.08C-0.08
639	27489.674000	59736.145000	1005.000	TOE1005.10C-0.10
640	27513.351000	59638.359000	1010.000	TOE1009.99F-0.01
641	27529.709000	59606.051000	1012.000	TOE1011.76F-0.24
644	27549.942000	59582.359000	1014.000	TOE1013.57F-0.43
646	27400.055000	59824.764000	1010.000	TOP1010.05C-0.05
647	27386.084000	59824.489000	1010.000	TOP1010.03C-0.03
648	27389.097000	59835.181000	1010.000	TOP1009.95F-0.05
649	27450.187000	59825.038000	1010.500	TOP1010.56C-0.06
650	27500.319000	59822.296000	1013.400	TOP1013.32F-0.08
651	27516.755000	59811.057000	1015.000	TOP1015.05C-0.05
652	27528.809000	59783.096000	1017.000	TOP1016.94F-0.06
653	27543.602000	59712.096000	1020.000	TOP1020.03C-0.03
654	27555.651000	59656.178000	1022.400	TOP1022.43C-0.03
655	27580.858000	59606.282000	1025.000	TOP1025.00C-0.00
656	27590.062000	59593.659000	1025.000	TOP1025.01C-0.01
657	27569.070000	59571.000000	1014.640	TOE1014.50F-0.14
658	27469.998000	59806.171000	1006.100	BOTGRID ON SLOPE
659	27470.000000	59506.192000	1014.730	BOT1014.01F-0.72
660	27470.000000	59456.192000	1016.950	BOT1016.79F-0.16
773	27399.984000	59256.206000	1029.420	BOT1029.35F-0.07
774	27371.986000	59256.125000	1028.110	BOT28FT O/S

ACHW PN #96901
JOB: LF5A2SUB.CR5 TIME: 12:31 DATE: 11-06-1996

Point	Northing	Easting	Elevation	Note
661	27470.385000	59756.154000	1003.620	BOT1002.92F-0.70
662	27470.004000	59706.135000	1005.850	BOT1005.83F-0.02
665	27500.003800	59831.324300	1012.844	TOPMH2LEACHATE
666	27298.987600	59831.954900	1010.215	TOPMH3LEACHATE
667	27470.100000	59835.280000	1001.400	INVLEACHATEMH-2A
668	27307.000000	59835.860000	998.950	INVLEACHATEMH-3A
669	27470.004000	59656.116000	1008.070	BOT1008.23C-0.16
670	27470.000000	59356.192000	1021.400	BOT1021.35F-0.05
671	27470.000000	59606.192000	1010.290	BOT1009.89F-0.40
672	27390.010000	59754.120000	1006.930	SLPB1007.06C0.13

ACHW PN #96901
JOB: LF5A2SUB.CR5 TIME: 12:31 DATE: 11-06-1996

Point	Northing	Easting	Elevation	Note
788	27400.020000	59406.002000	1022.750	BOT1022.52F-0.23
789	27450.088000	59406.296000	1020.190	BOT1020.02F-0.17
790	27499.619000	59406.296000	1019.960	BOT1020.02C-0.06
791	27549.686000	59406.296000	1021.320	BOT1021.30F-0.02
792	27589.846000	59406.028000	1022.410	BOT1022.11F-0.30
793	27589.746000	59456.230000	1020.190	BOT1019.88F-0.31
794	27549.992000	59456.192000	1019.110	BOT1018.88F-0.23
795	27499.992000	59456.192000	1017.760	BOT1017.71F-0.05
796	27449.988000	59456.230000	1017.980	BOT1017.97F-0.01
797	27399.970000	59456.287000	1020.530	BOT1020.48F-0.05
798	27371.828000	59456.745000	1019.230	BOT28FT O/S
799	27364.467000	59506.175000	1017.010	BOT36FT O/S
800	27399.808000	59506.175000	1018.320	BOT1018.13F-0.19
801	27449.875000	59506.175000	1015.750	BOT1015.58F-0.17
802	27500.056000	59506.357000	1015.530	BOT1015.41F-0.12
803	27549.853000	59506.062000	1016.890	BOT1017.02C-0.13
804	27589.993000	59506.192000	1017.980	BOT1017.72F-0.26
805	27589.994000	59556.192000	1016.000	BOT1015.98F-0.02
806	27550.356000	59555.879000	1014.680	BOT1014.76C-0.08
807	27499.994000	59556.192000	1013.310	BOT1012.76F-0.56
808	27449.994000	59556.192000	1013.520	BOT1013.46F-0.06
809	27400.000000	59556.192000	1016.100	BOT1015.88F-0.22
810	27371.839000	59556.529000	1014.780	BOT28FT O/S
811	27364.500000	59606.192000	1012.570	BOT36FT O/S
812	27400.000000	59606.192000	1013.860	BOT1013.46F-0.40
813	27449.995000	59606.192000	1011.310	BOT1011.26F-0.05
814	27499.995000	59606.192000	1011.090	BOT1010.94F-0.15
815	27549.995000	59606.192000	1017.170	BOTGRID ON SLOPE
816	27549.997000	59656.192000	1020.900	BOTGRID ON SLOPE
817	27499.997000	59656.192000	1008.860	BOT1008.61F-0.25
818	27450.162000	59656.116000	1009.100	BOT1009.05F-0.05
819	27400.177000	59656.498000	1011.650	BOT1011.30F-0.35
820	27371.966000	59656.382000	1010.350	BOT28FT O/S
821	27364.310000	59706.135000	1008.130	BOT36FT O/S
822	27399.998000	59706.192000	1009.300	BOT1009.25F-0.05
823	27450.162000	59706.517000	1006.860	BOT1006.84F-0.02
824	27499.998000	59706.192000	1007.560	BOTGRID ON SLOPE
825	27499.999000	59756.192000	1008.320	BOTGRID ON SLOPE
826	27450.162000	59756.154000	1004.640	BOT1004.64F-0.00

TOP OF COMPACTED CLAY SOIL LINER

ACHW PN #96901
JOB: LF5A2CLY.CR5 TIME: 11:31 DATE: 11-06-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
601	27576.234000	58713.359000	1054.720	TOE1054.73C-0.01
602	27550.880000	58703.840000	1054.640	TOE1054.65C-0.01
603	27590.000000	58686.130000	1062.600	TOP1062.67C-0.07
604	27566.050000	58673.970000	1062.000	TOP1062.00F-0.00
605	27499.882000	58672.955000	1055.000	TOE1055.01C-0.01
606	27470.000000	58671.970000	1053.770	TOE1053.83C-0.06
607	27428.661000	58670.605000	1056.000	TOE1056.01C-0.01
608	27399.703000	58680.003000	1057.000	TOE1057.02C-0.02
611	27470.130000	59156.273000	1032.270	BOT1032.33C-0.06
613	27469.863000	59256.206000	1027.830	BOT1027.86C-0.03
614	27470.000000	58756.192000	1050.030	BOT1050.13C-0.10
615	27549.978000	58668.732000	1061.500	TOP1061.53C-0.03
617	27590.028012	59574.931969	1022.500	SLP1022.51C-0.01
618	27579.569936	59582.333748	1021.820	SLP1021.90C-0.08
619	27565.403545	59594.323243	1021.500	SLP1021.51C-0.01
620	27534.501016	59647.268507	1018.200	SLP1018.21C-0.01
621	27514.174000	59736.147498	1014.000	SLP1014.01C-0.01
623	27498.042955	59800.883247	1011.000	SLP1011.02C-0.02
624	27489.828756	59806.508906	1010.250	SLP1010.26C-0.01
627	27470.084000	58856.131000	1045.600	BOT1045.65C-0.05
629	27500.063000	58649.291000	1060.350	TOP1060.40C-0.05
630	27449.991000	58647.086000	1059.500	TOP1059.50C-0.00
631	27400.031000	58664.047000	1058.000	TOP1058.09C-0.09
632	27469.945000	58956.205000	1041.160	BOT1041.17C-0.01
634	27470.000000	59056.192000	1036.720	BOT1036.74C-0.02
636	27446.047000	59798.862000	1005.000	TOE1005.07C-0.07
637	27470.000000	59791.590000	1004.050	TOE1004.05C-0.00
638	27479.330000	59790.709000	1005.000	TOE1005.05C-0.05
639	27489.674000	59736.145000	1007.000	TOE1007.07C-0.07
640	27513.351000	59638.359000	1012.000	TOE1012.02C-0.02
641	27529.709000	59606.051000	1014.000	TOE1014.00C-0.00
644	27549.942000	59582.359000	1016.000	TOE1016.03C-0.03
646	27400.055000	59824.764000	1010.000	TOP1010.05C-0.05
647	27386.084000	59824.489000	1010.000	TOP1010.03C-0.03
648	27389.097000	59835.181000	1010.000	TOP1010.04C-0.04
649	27450.187000	59825.038000	1010.500	TOP1010.56C-0.06
650	27500.319000	59822.296000	1013.400	TOP1013.41C-0.01
651	27516.755000	59811.057000	1015.000	TOP1015.05C-0.05
652	27528.809000	59783.096000	1017.000	TOP1017.03C-0.03
653	27543.602000	59712.096000	1020.000	TOP1020.03C-0.03
654	27555.651000	59656.178000	1022.400	TOP1022.43C-0.03
655	27580.858000	59606.282000	1025.000	TOP1025.00C-0.00
656	27590.062000	59593.659000	1025.000	TOP1025.01C-0.01
657	27569.070000	59571.000000	1016.640	TOE1016.64C-0.00
660	27470.000000	59456.192000	1018.950	BOT1019.04C-0.09
661	27470.385000	59756.154000	1005.620	BOT1005.66C-0.04
662	27470.004000	59706.135000	1007.850	BOT1007.85F-0.00
665	27500.003800	59831.324300	1012.844	TOPMH2LEACHATE
666	27298.987600	59831.954900	1010.215	TOPMH3LEACHATE
667	27470.100000	59835.280000	1001.400	INVLEACHATEMH-2A
668	27307.000000	59835.860000	998.950	INVLEACHATEMH-3A
669	27470.004000	59656.116000	1010.070	BOT1010.08C-0.01

ACHW PN #96901
JOB: LF5A2CLY.CR5 TIME: 11:31 DATE: 11-06-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
670	27470.000000	59356.192000	1023.400	BOT1023.42C-0.02
671	27470.000000	59606.192000	1012.290	BOT1012.29F-0.00
672	27390.010000	59754.120000	1008.930	SLPB1008.94C0.01
673	27377.990000	59782.730000	1006.000	SLPB1006.07C0.07
674	27377.860000	59810.310000	1005.810	SLPB1005.82C0.01
675	27390.000000	59805.670000	1006.640	SLPB1006.65C0.01
676	27469.622000	59556.079000	1014.510	BOT1014.53C-0.02
677	27483.099918	59835.233771	1001.400	13-OFFSET
678	27294.000082	59835.906229	998.950	13-OFFSET
682	27399.774933	58676.503739	1058.000	TOP1058.02C-0.02
683	27470.274820	58652.261916	1059.400	TOP1059.41C-0.01
684	27500.025257	58654.225548	1060.350	TOP1060.39C-0.04
685	27562.544553	58680.872288	1062.000	TOP1062.09C-0.09
686	27586.899931	58692.261903	1062.600	TOP1062.62C-0.02
690	27470.369000	58645.508000	1059.400	TOP1059.41C-0.01
692	27538.710000	59736.150000	1019.000	TOP1019.09C-0.09
709	27589.978000	58756.192000	1053.250	*BOT1053.47C0.22
710	27549.872000	58756.254000	1052.190	BOT1052.27C-0.08
711	27499.978000	58756.192000	1050.840	BOT1050.90C-0.06
712	27450.130000	58756.254000	1051.050	BOT1051.10C-0.05
713	27400.000000	58756.192000	1053.590	BOT1053.63C-0.04
721	27589.895000	58856.140000	1048.810	*BOT1049.55C0.74
722	27549.980000	58856.192000	1047.730	BOT1047.74C-0.01
723	27500.023000	58856.629000	1046.370	BOT1046.38C-0.01
724	27449.902000	58856.131000	1046.630	BOT1046.66C-0.03
725	27399.917000	58856.366000	1049.180	BOT1049.20C-0.02
733	27589.982000	58956.192000	1044.380	*BOT1045.12C0.74
734	27549.982000	58956.192000	1043.310	BOT1043.32C-0.01
735	27499.982000	58956.192000	1041.960	BOT1042.06C-0.10
736	27449.982000	58956.192000	1042.170	BOT1042.27C-0.10
737	27399.946000	58956.205000	1044.730	BOT1044.76C-0.03
745	27589.984000	59056.192000	1039.940	*BOT1040.94C1.00
746	27549.984000	59056.192000	1038.850	BOT1038.92C-0.07
747	27499.984000	59056.192000	1037.510	BOT1037.53C-0.02
748	27449.984000	59056.192000	1037.740	BOT1037.76C-0.02
749	27399.984000	59056.192000	1040.290	BOT1040.31C-0.02
757	27589.986000	59156.192000	1035.490	*BOT1036.69C1.20
758	27549.986000	59156.192000	1034.430	BOT1034.48C-0.05
759	27499.986000	59156.192000	1033.080	BOT1033.09C-0.01
760	27449.986000	59156.192000	1033.300	BOT1033.30F-0.00
761	27399.984000	59156.273000	1035.870	BOT1035.93C-0.06
769	27589.988000	59256.192000	1031.070	*BOT1031.82C0.75
770	27549.988000	59256.192000	1029.980	BOT1029.98C-0.00
771	27499.988000	59256.192000	1028.640	BOT1028.65C-0.01
772	27449.988000	59256.192000	1028.860	BOT1028.87C-0.01
773	27399.984000	59256.206000	1031.420	BOT1031.42C-0.00
781	27590.114000	59355.928000	1026.630	*BOT1027.36C0.73
782	27549.954000	59356.196000	1025.520	BOT1025.53C-0.01
783	27499.990000	59356.192000	1024.190	BOT1024.26C-0.07
784	27449.869000	59356.253000	1024.400	BOT1024.41C-0.01
785	27400.070000	59356.253000	1026.990	BOT1027.08C-0.09
793	27589.746000	59456.230000	1022.190	*BOT1023.10C0.91

ACHW PN #96901
JOB: LF5A2CLY.CR5 TIME: 11:31 DATE: 11-06-1996
TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
794	27549.992000	59456.192000	1021.110	BOT1021.20C-0.09
795	27499.992000	59456.192000	1019.760	BOT1019.83C-0.07
796	27449.988000	59456.230000	1019.980	BOT1019.99C-0.01
797	27399.970000	59456.287000	1022.530	BOT1022.53C-0.00
805	27589.994000	59556.192000	1018.000	*BOT1018.39C0.39
806	27550.356000	59555.879000	1016.680	BOT1016.69C-0.01
807	27499.994000	59556.192000	1015.310	BOT1015.39C-0.08
808	27449.994000	59556.192000	1015.520	BOT1015.57C-0.05
809	27400.000000	59556.192000	1018.100	BOT1018.14C-0.04
812	27400.000000	59606.192000	1015.860	BOT1015.88C-0.02
813	27449.995000	59606.192000	1013.310	BOT1013.35C-0.04
814	27499.995000	59606.192000	1013.090	BOT1013.17C-0.08
817	27499.997000	59656.192000	1010.860	BOT1010.87C-0.01
818	27450.162000	59656.116000	1011.100	BOT1011.13C-0.03
819	27400.177000	59656.498000	1013.650	BOT1013.65C-0.00
822	27399.998000	59706.192000	1011.300	BOT1011.37C-0.07
823	27450.162000	59706.517000	1008.860	BOT1008.93C-0.07
826	27450.162000	59756.154000	1006.640	BOT1006.68C-0.04
827	27400.173000	59756.197000	1009.210	BOT1009.27C-0.06
830	27400.000000	59806.274000	1007.000	BOT1007.01C-0.01
846	27462.677674	59835.107861	1002.718	TOP6PVCLEACH
847	27373.938982	59835.721785	1001.834	TOP6PVCLEACH
848	27309.757159	59836.247193	1000.630	TOP6PVCLEACH
850	27590.046851	59585.311952	1025.000	TOP1025.03C-0.03
851	27586.005819	59589.280712	1025.000	TOP1025.02C-0.02
852	27575.210357	59601.911817	1025.000	TOP1025.04C-0.04
853	27548.812988	59653.297467	1022.400	TOP1022.41C-0.01
854	27531.674000	59736.149283	1019.000	TOP1019.01C-0.01
855	27510.518259	59807.666079	1015.000	TOP1015.01C-0.01
856	27496.287401	59816.228721	1013.400	TOP1013.46C-0.06
857	27449.080760	59818.043572	1010.500	TOP1010.50C-0.00
858	27396.294943	59817.623819	1010.000	TOP1010.04C-0.04
859	27448.110644	59811.909815	1008.750	SLP1008.82C-0.07
860	27395.027568	59815.217129	1009.320	SLP1009.35C-0.03
861	27566.398600	59627.918000	1023.860	TOP1023.91C-0.05
862	27548.121500	59617.025000	1019.930	SLP1019.93C-0.00
863	27497.804100	59702.567000	1008.760	TOE1008.76F-0.00
864	27520.703000	59707.331700	1015.380	SLP1015.41C-0.03
865	27467.213144	59839.948439	1002.666	6INPVC LEACHLINE
866	27461.060723	59857.472780	1001.865	6INPVC LEACHLINE
867	27444.153108	59901.608818	1000.446	6INPVC LEACHLINE
868	27417.780065	59971.019561	997.515	END6INPVCLEACHLN
869	27560.378414	59624.447469	1023.860	TOP1023.88C-0.02

TOP OF GRANULAR LEACHATE COLLECTION LAYER

ACHW PN #96901
JOB: LF5A2LCH.CR5 TIME: 11:50 DATE: 11-06-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
601	27576.234000	58713.359000	1055.730	TOE1055.74C-0.01
602	27550.880000	58703.840000	1055.650	TOE1055.69C-0.04
603	27590.000000	58686.130000	1062.600	TOPS1062.67C0.07
604	27566.050000	58673.970000	1062.000	TOPS1062.00F0.00
605	27499.882000	58672.955000	1056.010	TOE1056.07C-0.06
606	27470.000000	58671.970000	1055.330	LTOE1055.88C0.55
607	27428.661000	58670.605000	1057.010	TOE1057.05C-0.04
608	27399.703000	58680.003000	1058.020	TOE1058.05C-0.03
611	27470.130000	59156.273000	1033.830	LCH1033.83C-0.00
613	27469.863000	59256.206000	1029.360	LCH1029.41C-0.05
614	27470.000000	58756.192000	1051.630	LCH1051.71C-0.08
615	27549.978000	58668.732000	1061.500	TOPS1061.53C0.03
617	27590.028012	59574.931969	1023.510	SLP1023.52C-0.01
618	27579.569936	59582.333748	1022.900	SLP1022.90C-0.00
619	27565.403545	59594.323243	1022.510	SLP1022.53C-0.02
620	27534.501016	59647.268507	1019.210	SLP1019.26C-0.05
621	27514.174000	59736.147498	1015.010	SLP1015.03C-0.02
623	27498.042955	59800.883247	1012.020	SLP1012.08C-0.06
624	27489.828756	59806.508906	1011.260	SLP1011.33C-0.07
627	27470.084000	58856.131000	1047.150	LCH1047.17C-0.02
629	27500.063000	58649.291000	1060.350	TOPS1060.40C0.05
630	27449.991000	58647.086000	1059.500	TOPS1059.50C0.00
631	27400.031000	58664.047000	1058.000	TOPS1058.09C0.09
632	27469.945000	58956.205000	1042.670	LCH1042.69C-0.02
634	27470.000000	59056.192000	1038.240	LCH1038.28C-0.04
636	27446.047000	59798.862000	1006.070	TOE1006.13C-0.06
637	27470.000000	59791.590000	1005.550	LTOE1005.56C0.01
638	27479.330000	59790.709000	1006.050	TOE1006.13C-0.08
639	27489.674000	59736.145000	1008.070	TOE1008.14C-0.07
640	27513.351000	59638.359000	1013.020	TOE1013.04C-0.02
641	27529.709000	59606.051000	1015.000	TOE1015.03C-0.03
644	27549.942000	59582.359000	1017.030	TOE1017.05C-0.02
646	27400.055000	59824.764000	1010.000	TOPS1010.05C0.05
647	27386.084000	59824.489000	1010.000	TOPS1010.03C0.03
648	27389.097000	59835.181000	1010.000	TOPS1010.04C0.04
649	27450.187000	59825.038000	1010.500	TOPS1010.56C0.06
650	27500.319000	59822.296000	1013.400	TOPS1013.41C0.01
651	27516.755000	59811.057000	1015.000	TOPS1015.05C0.05
652	27528.809000	59783.096000	1017.000	TOPS1017.03C0.03
653	27543.602000	59712.096000	1020.000	TOPS1020.03C0.03
654	27555.651000	59656.178000	1022.400	TOP1022.43C0.03
655	27580.858000	59606.282000	1025.000	TOPS1025.00C0.00
656	27590.062000	59593.659000	1025.000	TOPS1025.01C0.01
657	27569.070000	59571.000000	1017.640	TOE1017.71C-0.07
660	27470.000000	59456.192000	1020.540	LCH1020.57C-0.03
661	27470.385000	59756.154000	1007.160	LCH1007.19C-0.03
662	27470.004000	59706.135000	1009.350	LCH1009.37C-0.02
665	27500.003800	59831.324300	1012.844	TOPMH2LEACHATE
666	27298.987600	59831.954900	1010.215	TOPMH3LEACHATE
667	27470.100000	59835.280000	1001.400	INVLEACHATEMH-2A
668	27307.000000	59835.860000	998.950	INVLEACHATEMH-3A
669	27470.004000	59656.116000	1011.580	LCH1011.61C-0.03

ACHW PN #96901
JOB: LF5A2LCH.CR5 TIME: 11:50 DATE: 11-06-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
670	27470.000000	59356.192000	1024.920	LCH1024.96C-0.04
671	27470.000000	59606.192000	1013.790	LCH1013.88C-0.09
672	27390.010000	59754.120000	1009.940	SLPBRKLINE
673	27377.990000	59782.730000	1006.000	SLPBRKL/SUBTOE
674	27377.860000	59810.310000	1005.810	SLPBRKL/SUBTOE
675	27390.000000	59805.670000	1007.650	SLPBRKL/LCHTOE
676	27469.622000	59556.079000	1016.030	LCH1016.07C-0.04
677	27483.099918	59835.233771	1001.400	13-OFFSET
678	27294.000082	59835.906229	998.950	13-OFFSET
682	27399.774933	58676.503739	1058.000	TOPC1058.02C0.02
683	27470.274820	58652.261916	1059.400	TOPC1059.41C0.01
684	27500.025257	58654.225548	1060.350	TOPC1060.39C0.04
685	27562.544553	58680.872288	1062.000	TOPC1062.09C0.09
686	27586.899931	58692.261903	1062.600	TOPC1062.62C0.02
690	27470.369000	58645.508000	1059.400	TOPS1059.41C0.01
692	27538.710000	59736.150000	1019.000	TOPS1019.09C0.09
709	27589.978000	58756.192000	1054.470	*TRN1054.52C0.05
710	27549.872000	58756.254000	1053.270	GRID1053.30C0.03
711	27499.978000	58756.192000	1051.900	GRID1051.92C0.02
712	27450.130000	58756.254000	1052.100	GRID1052.12C0.02
713	27400.000000	58756.192000	1054.630	GRID1054.69C0.06
721	27589.895000	58856.140000	1050.550	*TRN1050.64C0.09
722	27549.980000	58856.192000	1048.740	GRID1048.78C0.04
723	27500.023000	58856.629000	1047.380	GRID1047.46C0.08
724	27449.902000	58856.131000	1047.660	GRID1047.75C0.09
725	27399.917000	58856.366000	1050.200	GRID1050.24C0.04
733	27589.982000	58956.192000	1046.120	*TRN1046.16C0.04
734	27549.982000	58956.192000	1044.320	GRID1044.38C0.06
735	27499.982000	58956.192000	1043.060	GRID1043.10C0.04
736	27449.982000	58956.192000	1043.270	GRID1043.31C0.04
737	27399.946000	58956.205000	1045.760	GRID1045.80C0.04
745	27589.984000	59056.192000	1041.940	*TRN1041.96C0.02
746	27549.984000	59056.192000	1039.920	GRID1040.00C0.08
747	27499.984000	59056.192000	1038.530	GRID1038.61C0.08
748	27449.984000	59056.192000	1038.760	GRID1038.77C0.01
749	27399.984000	59056.192000	1041.310	GRID1041.34C0.03
757	27589.986000	59156.192000	1037.690	*TRN1037.72C0.03
758	27549.986000	59156.192000	1035.480	GRID1035.52C0.04
759	27499.986000	59156.192000	1034.090	GRID1034.17C0.08
760	27449.986000	59156.192000	1034.300	GRID1034.32C0.02
761	27399.984000	59156.273000	1036.930	GRID1036.95C0.02
769	27589.988000	59256.192000	1032.820	*TRN1032.86C0.04
770	27549.988000	59256.192000	1030.980	GRID1031.06C0.08
771	27499.988000	59256.192000	1029.650	GRID1029.66C0.01
772	27449.988000	59256.192000	1029.870	GRID1029.94C0.07
773	27399.984000	59256.206000	1032.420	GRID1032.48C0.06
781	27590.114000	59355.928000	1028.360	*TRN1028.39C0.03
782	27549.954000	59356.196000	1026.530	GRID1026.62C0.09
783	27499.990000	59356.192000	1025.260	GRID1025.30C0.04
784	27449.869000	59356.253000	1025.410	GRID1025.43C0.02
785	27400.070000	59356.253000	1028.080	GRID1028.16C0.08
793	27589.746000	59456.230000	1024.100	*TRN1024.14C0.04

ACHW PN #96901
JOB: LF5A2LCH.CR5 TIME: 11:50 DATE: 11-06-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
794	27549.992000	59456.192000	1022.200	GRID1022.29C0.09
795	27499.992000	59456.192000	1020.830	GRID1020.87C0.04
796	27449.988000	59456.230000	1020.990	GRID1021.00C0.01
797	27399.970000	59456.287000	1023.530	GRID1023.54C0.01
805	27589.994000	59556.192000	1019.390	*TRN1019.43C0.04
806	27550.356000	59555.879000	1017.690	GRID1017.70C0.01
807	27499.994000	59556.192000	1016.390	GRID1016.39C0.00
808	27449.994000	59556.192000	1016.570	GRID1016.60C0.03
809	27400.000000	59556.192000	1019.140	GRID1019.21C0.07
812	27400.000000	59606.192000	1016.880	GRID1016.95C0.07
813	27449.995000	59606.192000	1014.350	GRID1014.40C0.05
814	27499.995000	59606.192000	1014.170	GRID1014.18C0.01
817	27499.997000	59656.192000	1011.870	GRID1011.91C0.04
818	27450.162000	59656.116000	1012.130	GRID1012.17C0.04
819	27400.177000	59656.498000	1014.650	GRID1014.67C0.02
822	27399.998000	59706.192000	1012.370	GRID1012.40C0.03
823	27450.162000	59706.517000	1009.930	GRID1009.97C0.04
826	27450.162000	59756.154000	1007.680	GRID1007.72C0.04
827	27400.173000	59756.197000	1010.270	GRID1010.36C0.09
830	27400.000000	59806.274000	1008.010	GRID1008.03C0.02
846	27462.677674	59835.107861	1002.718	TOP6PVCLEACH
847	27373.938982	59835.721785	1001.834	TOP6PVCLEACH
848	27309.757159	59836.247193	1000.630	TOP6PVCLEACH
850	27590.046851	59585.311952	1025.000	TOPC1025.03C0.03
851	27586.005819	59589.280712	1025.000	TOPC1025.02C0.02
852	27575.210357	59601.911817	1025.000	TOPC1025.04C0.04
853	27548.812988	59653.297467	1022.400	TOPC1022.41C0.01
854	27531.674000	59736.149283	1019.000	TOPC1019.01C0.01
855	27510.518259	59807.666079	1015.000	TOPC1015.01C0.01
856	27496.287401	59816.228721	1013.400	TOPC1013.46C0.06
857	27449.080760	59818.043572	1010.500	TOPC1010.50C0.00
858	27396.294943	59817.623819	1010.000	TOPC1010.04C0.04
859	27448.110644	59811.909815	1009.820	SLP1009.85C-0.03
860	27395.027568	59815.217129	1010.350	SLP1010.38C-0.03
861	27566.398600	59627.918000	1023.860	TOPS1023.91C0.05
862	27548.121500	59617.025000	1020.930	SLP1020.97C-0.04
863	27497.804100	59702.567000	1009.760	TOE1009.81C-0.05
864	27520.703000	59707.331700	1016.410	SLP1016.45C-0.04
865	27467.213144	59839.948439	1002.666	6INPVC LEACHLINE
866	27461.060723	59857.472780	1001.865	6INPVC LEACHLINE
867	27444.153108	59901.608818	1000.446	6INPVC LEACHLINE
868	27417.780065	59971.019561	997.515	END6INPVCLEACHLN
869	27560.378414	59624.447469	1023.860	TOPC1023.88C0.02
870	27590.039301	59581.151959	1025.000	TOPL1025.06C0.06
871	27583.973792	59587.087320	1025.000	TOPL1025.05C0.05
872	27572.402761	59599.739282	1025.000	TOPL1025.02C0.02
873	27557.111263	59622.382748	1023.860	TOPL1023.95C0.09
874	27545.403182	59651.861076	1022.400	TOPL1022.44C0.04
875	27533.088434	59709.908481	1020.000	TOPL1020.00C0.00
876	27528.174000	59736.148926	1019.000	TOPL1019.03C0.03
877	27507.399433	59805.970371	1015.000	TOPL1015.01C0.01
878	27494.112382	59812.955467	1013.400	TOPL1013.47C0.07

TOP OF PROTECTIVE SOIL COVER.

ACHW PN #96901
JOB: LF5A2PRO.CR5 TIME: 15:39 DATE: 11-05-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
601	27576.234000	58713.359000	1057.740	TOE1057.66F-0.08
602	27550.880000	58703.840000	1057.690	TOE1057.67F-0.02
603	27590.000000	58686.130000	1062.600	TOPSUB
604	27566.050000	58673.970000	1062.000	TOPSUB
605	27499.882000	58672.955000	1058.070	TOE1058.17C-0.10
606	27470.000000	58671.970000	1057.380	TOE1057.38F-0.00
607	27428.661000	58670.605000	1059.050	TOE1058.98F-0.07
608	27399.703000	58680.003000	1060.050	TOE1060.02F-0.03
611	27470.130000	59156.273000	1035.330	LCH1035.40C-0.07
613	27469.863000	59256.206000	1030.910	LCH1030.88F-0.03
614	27470.000000	58756.192000	1053.210	LCH1053.30C-0.09
615	27549.978000	58668.732000	1061.500	TOPSUB
617	27590.028012	59574.931969	1025.520	SLP1025.49F-0.03
618	27579.569936	59582.333748	1024.900	SLP1024.83F-0.07
619	27565.403545	59594.323243	1024.530	SLP1024.58C-0.05
620	27534.501016	59647.268507	1021.260	SLP1021.33C-0.07
621	27514.174000	59736.147498	1017.030	SLP1016.93F-0.10
623	27498.042955	59800.883247	1014.080	SLP1014.06F-0.02
624	27489.828756	59806.508906	1013.330	SLP1013.24F-0.09
627	27470.084000	58856.131000	1048.670	LCL1048.75C-0.08
629	27500.063000	58649.291000	1060.350	TOPSUB
630	27449.991000	58647.086000	1059.500	TOPSUB
631	27400.031000	58664.047000	1058.000	TOPSUB
632	27469.945000	58956.205000	1044.190	LCH1044.28C-0.09
634	27470.000000	59056.192000	1039.780	LCH1039.84C-0.06
636	27446.047000	59798.862000	1008.130	TOE/INSDE1010.00
637	27470.000000	59791.590000	1007.060	TOE/INSDE1010.00
638	27479.330000	59790.709000	1008.130	TOE/INSDE1010.00
639	27489.674000	59736.145000	1010.140	TOE1010.16C-0.02
640	27513.351000	59638.359000	1015.040	TOE1015.08C-0.04
641	27529.709000	59606.051000	1017.030	TOE1017.05C-0.02
644	27549.942000	59582.359000	1019.050	TOE1018.96F-0.09
646	27400.055000	59824.764000	1010.000	TOPSUB
647	27386.084000	59824.489000	1010.000	TOPSUB
648	27389.097000	59835.181000	1010.000	TOPSUB
649	27450.187000	59825.038000	1010.500	TOPSUB
650	27500.319000	59822.296000	1013.400	TOPSUB
651	27516.755000	59811.057000	1015.000	TOPSUB
652	27528.809000	59783.096000	1017.000	TOPSUB
653	27543.602000	59712.096000	1020.000	TOPSUB
654	27555.651000	59656.178000	1022.400	TOPSUB
655	27580.858000	59606.282000	1025.000	TOPSUB
656	27590.062000	59593.659000	1025.000	TOPSUB
657	27569.070000	59571.000000	1019.710	TOE1019.77C-0.06
660	27470.000000	59456.192000	1022.070	LCH1022.14C-0.07
661	27470.385000	59756.154000	1008.690	LCH/INSDE1010.00
662	27470.004000	59706.135000	1010.870	LCH1010.96C-0.09
665	27500.003800	59831.324300	1012.844	TOPMH2LEACHATE
666	27298.987600	59831.954900	1010.215	TOPMH3LEACHATE
667	27470.100000	59835.280000	1001.400	INVLEACHATEMH-2A
668	27307.000000	59835.860000	998.950	INVLEACHATEMH-3A
669	27470.004000	59656.116000	1013.110	LCH1013.15C-0.04

ACHW PN #96901
JOB: LF5A2PRO.CR5 TIME: 15:39 DATE: 11-05-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
670	27470.000000	59356.192000	1026.460	LCH1026.37F-0.09
671	27470.000000	59606.192000	1015.380	LCH1015.48C-0.10
672	27390.010000	59754.120000	1009.940	SLPBRKL/LCHTOE
673	27377.990000	59782.730000	1006.000	SLPBRKL/SUBTOE
674	27377.860000	59810.310000	1005.810	SLPBRKL/SUBTOE
675	27390.000000	59805.670000	1007.650	SLPBRKL/LCHTOE
676	27469.622000	59556.079000	1017.570	LCH1017.65C-0.08
677	27483.099918	59835.233771	1001.400	13-OFFSET
678	27294.000082	59835.906229	998.950	13-OFFSET
682	27399.774933	58676.503739	1058.000	TOPCLY
683	27470.274820	58652.261916	1059.400	TOPCLY
684	27500.025257	58654.225548	1060.350	TOPCLY
685	27562.544553	58680.872288	1062.000	TOPCLY
686	27586.899931	58692.261903	1062.600	TOPCLY
690	27470.369000	58645.508000	1059.400	TOPSUB
692	27538.710000	59736.150000	1019.000	TOPSUB
709	27589.978000	58756.192000	1056.520	*TRN1056.47F0.05
710	27549.872000	58756.254000	1055.300	BOT1055.29F-0.01
711	27499.978000	58756.192000	1053.920	BOT1054.01C-0.09
712	27450.130000	58756.254000	1054.120	BOT1054.14C-0.02
713	27400.000000	58756.192000	1056.690	BOT1056.60F-0.09
721	27589.895000	58856.140000	1051.640	*TRN1051.72C0.08
722	27549.980000	58856.192000	1050.780	BOT1050.70F-0.08
723	27500.023000	58856.629000	1049.460	BOT1049.47C-0.01
724	27449.902000	58856.131000	1049.750	BOT1049.80C-0.05
725	27399.917000	58856.366000	1052.240	BOT1052.16F-0.08
733	27589.982000	58956.192000	1047.160	*TRN1047.26C0.10
734	27549.982000	58956.192000	1046.380	BOT1046.48C-0.10
735	27499.982000	58956.192000	1045.100	BOT1045.04F-0.06
736	27449.982000	58956.192000	1045.310	BOT1045.23F-0.08
737	27399.946000	58956.205000	1047.800	BOT1047.86C-0.06
745	27589.984000	59056.192000	1042.960	*TRN1043.04C0.08
746	27549.984000	59056.192000	1042.000	BOT1041.91F-0.09
747	27499.984000	59056.192000	1040.610	BOT1040.52F-0.09
748	27449.984000	59056.192000	1040.770	BOT1040.81C-0.04
749	27399.984000	59056.192000	1043.340	BOT1043.25F-0.09
757	27589.986000	59156.192000	1038.720	*TRN1038.80C0.08
758	27549.986000	59156.192000	1037.520	BOT1037.57C-0.05
759	27499.986000	59156.192000	1036.170	BOT1036.11F-0.06
760	27449.986000	59156.192000	1036.320	BOT1036.36C-0.04
761	27399.984000	59156.273000	1038.950	BOT1038.88F-0.07
769	27589.988000	59256.192000	1033.860	*TRN1033.85F0.01
770	27549.988000	59256.192000	1033.060	BOT1032.98F-0.08
771	27499.988000	59256.192000	1031.660	BOT1031.61F-0.05
772	27449.988000	59256.192000	1031.940	BOT1031.88F-0.06
773	27399.984000	59256.206000	1034.480	BOT1034.51C-0.03
781	27590.114000	59355.928000	1029.390	*TRN1029.31F0.08
782	27549.954000	59356.196000	1028.620	BOT1028.59F-0.03
783	27499.990000	59356.192000	1027.300	BOT1027.20F-0.10
784	27449.869000	59356.253000	1027.430	BOT1027.39F-0.04
785	27400.070000	59356.253000	1030.160	BOT1030.09F-0.07
793	27589.746000	59456.230000	1025.140	*TRN1025.18C0.04

ACHW PN #96901
JOB: LF5A2PRO.CR5 TIME: 15:39 DATE: 11-05-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
794	27549.992000	59456.192000	1024.290	BOT1024.19F-0.10
795	27499.992000	59456.192000	1022.870	BOT1022.82F-0.05
796	27449.988000	59456.230000	1023.000	BOT1022.93F-0.07
797	27399.970000	59456.287000	1025.540	BOT1025.51F-0.03
805	27589.994000	59556.192000	1021.430	*TRN1021.47C0.04
806	27550.356000	59555.879000	1019.700	BOT1019.76C-0.06
807	27499.994000	59556.192000	1018.390	BOT1018.36F-0.03
808	27449.994000	59556.192000	1018.600	BOT1018.62C-0.02
809	27400.000000	59556.192000	1021.210	BOT1021.27C-0.06
812	27400.000000	59606.192000	1018.950	BOT1019.03C-0.08
813	27449.995000	59606.192000	1016.400	BOT1016.44C-0.04
814	27499.995000	59606.192000	1016.180	BOT1016.21C-0.03
817	27499.997000	59656.192000	1013.910	BOT1013.92C-0.01
818	27450.162000	59656.116000	1014.170	BOT1014.20C-0.03
819	27400.177000	59656.498000	1016.670	BOT1016.60F-0.07
822	27399.998000	59706.192000	1014.400	BOT1014.32F-0.08
823	27450.162000	59706.517000	1011.970	BOT1011.95F-0.02
826	27450.162000	59756.154000	1009.720	BOT/INSDE1010.00
827	27400.173000	59756.197000	1012.360	BOT1012.36F-0.00
830	27400.000000	59806.274000	1010.030	BOT1009.96F-0.07
846	27462.677674	59835.107861	1002.718	TOP6PVCLEACH
847	27373.938982	59835.721785	1001.834	TOP6PVCLEACH
848	27309.757159	59836.247193	1000.630	TOP6PVCLEACH
850	27590.046851	59585.311952	1025.000	TOPCLY
851	27586.005819	59589.280712	1025.000	TOPCLY
852	27575.210357	59601.911817	1025.000	TOPCLY
853	27548.812988	59653.297467	1022.400	TOPCLY
854	27531.674000	59736.149283	1019.000	TOPCLY
855	27510.518259	59807.666079	1015.000	TOPCLY
856	27496.287401	59816.228721	1013.400	TOPCLY
857	27449.080760	59818.043572	1010.500	TOPCLY
858	27396.294943	59817.623819	1010.000	TOPCLY
859	27448.110644	59811.909815	1011.850	SLP1011.79F-0.06
860	27395.027568	59815.217129	1012.380	SLP/INSDE1011.00
861	27566.398600	59627.918000	1023.860	TOPSUB
862	27548.121500	59617.025000	1022.970	SLP1023.04C-0.07
863	27497.804100	59702.567000	1011.810	TOE1011.88C-0.07
864	27520.703000	59707.331700	1018.450	SLP1018.52C-0.07
865	27467.213144	59839.948439	1002.666	6INPVC LEACHLINE
866	27461.060723	59857.472780	1001.865	6INPVC LEACHLINE
867	27444.153108	59901.608818	1000.446	6INPVC LEACHLINE
868	27417.780065	59971.019561	997.515	END6INPVCLEACHLN
869	27560.378414	59624.447469	1023.860	TOPCLY
870	27590.039301	59581.151959	1025.000	TOPLCH
871	27583.973792	59587.087320	1025.000	TOPLCH
872	27572.402761	59599.739282	1025.000	TOPLCH
873	27557.111263	59622.382748	1023.860	TOPLCH
874	27545.403182	59651.861076	1022.400	TOPLCH
875	27533.088434	59709.908481	1020.000	TOPLCH
876	27528.174000	59736.148926	1019.000	TOPLCH
877	27507.399433	59805.970371	1015.000	TOPLCH
878	27494.112382	59812.955467	1013.400	TOPLCH

ACHW PN #96901
JOB: LF5A2PRO.CR5 TIME: 15:39 DATE: 11-05-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
879	27448.528528	59814.551973	1010.500	TOPLCH
880	27394.421837	59814.066872	1010.000	TOPLCH
881	27585.546387	58694.939199	1062.600	TOPLCH
882	27580.890193	58704.149100	1061.170	SLP1061.15F-0.02
883	27560.959695	58683.992901	1062.000	TOPLCH
884	27555.919848	58693.916450	1060.230	SLP1060.28C-0.05
885	27499.998449	58657.730445	1060.350	TOPLCH
887	27470.225949	58655.766575	1059.400	TOPLCH
890	27536.534629	59710.625518	1020.000	TOPCLY
891	27471.030147	58673.895913	1055.078	TOP6INPVCBENDLCH
892	27471.000819	58655.763883	1059.759	TOP6INPVC LCHEND
893	27470.107810	58652.582225	1060.487	TOP6INPVC33BNLCH
901	27580.865000	59591.115000	1027.000	PTOP1026.97F0.03
902	27563.414000	59609.459000	1026.000	PTOP1025.99F0.01
903	27551.413000	59630.574000	1025.000	PTOP1025.05C0.05
904	27543.483000	59653.501000	1024.000	PTOP1023.98F0.02
905	27538.594000	59676.571000	1023.000	PTOP1022.94F0.06
906	27533.709000	59700.042000	1022.000	PTOP1022.04C0.04
907	27528.823000	59723.519000	1021.000	PTOP1021.00F0.00
908	27523.938000	59746.997000	1020.000	PTOP1019.91F0.09
909	27519.052000	59770.475000	1019.000	PTOP1018.98F0.02
910	27514.299000	59791.676000	1018.000	PTOP1017.91F0.09
911	27509.607000	59800.300000	1017.000	PTOP1017.07C0.07
912	27502.747000	59807.017000	1016.000	PTOP1015.99F0.01
913	27494.709000	59811.288000	1015.000	PTOP1014.97F0.03
914	27485.024000	59813.227000	1014.000	PTOP1013.94F0.06
915	27466.253000	59813.317000	1013.000	PTOP1013.02C0.02
916	27444.421000	59813.387000	1012.000	PTOP1012.10C0.10
917	27387.213000	59810.945000	1011.000	PTOP1010.94F0.06
918	27385.387000	59816.086000	1011.000	PTOP1010.92F0.08
919	27390.024000	59829.144000	1011.000	PTOP1011.04C0.04
920	27452.498000	59825.611000	1012.000	PTOP1011.94F0.06
921	27474.329000	59825.542000	1013.000	LFBL1012.94F0.06
922	27490.612000	59824.948000	1014.000	LFBL1013.91F0.09
923	27503.828000	59820.664000	1015.000	LFBL1015.02C0.02
924	27515.108000	59812.552000	1016.000	LFBL1016.07C0.07
925	27523.376000	59801.386000	1017.000	LFBL1016.99F0.01
926	27527.868000	59788.236000	1018.000	LFBL1017.91F0.09
927	27532.744000	59764.804000	1019.000	LFBL1018.93F0.07
928	27537.629000	59741.331000	1020.000	LFBL1019.99F0.01
929	27542.515000	59717.853000	1021.000	LFBL1020.96F0.04
930	27547.401000	59694.376000	1022.000	LFBL1021.97F0.03
931	27552.285000	59670.905000	1023.000	LFBL1022.95F0.05
932	27557.073000	59650.250000	1024.000	LFBL1023.93F0.07
933	27565.209000	59630.170000	1025.000	LFBL1024.99F0.01
934	27576.812000	59611.895000	1026.000	LFBL1026.05C0.05
935	27591.563000	59595.953000	1027.000	LFBL1027.08C0.08
936	27606.015000	59597.006000	1026.000	TOE/CONSTACESSRD
937	27591.233000	59610.309000	1025.000	TOE/CONSTACESSRD
938	27579.103000	59626.032000	1024.000	TOE/CONSTACESSRD
939	27569.997000	59643.679000	1023.000	TOE1023.08C-0.08
940	27564.210000	59662.670000	1022.000	TOE1022.02C-0.02

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*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
941	27559.325000	59686.142000	1021.000	TOE1021.04C-0.04
942	27554.440000	59709.615000	1020.000	TOE1020.05C-0.05
943	27549.555000	59733.087000	1019.000	TOE1018.93F-0.07
944	27544.673000	59756.530000	1018.000	TOE1018.08C-0.08
945	27539.789000	59779.987000	1017.000	TOE1017.08C-0.08
946	27535.170000	59799.389000	1016.000	TOE1016.09C-0.09
947	27526.911000	59814.297000	1015.000	TOE1014.95F-0.05
948	27514.933000	59825.652000	1014.000	TOE1014.03C-0.03
949	27500.076000	59832.958000	1013.000	TOE1012.95F-0.05
950	27483.686000	59835.513000	1012.000	TOE1011.96F-0.04
951	27461.859000	59835.581000	1011.000	TOE1011.03C-0.03
952	27441.067000	59828.981000	1011.000	PTOP1010.93F0.07
953	27489.463000	59737.034000	1010.000	BOT1010.08C-0.08
954	27470.000000	59725.200000	1010.000	BOT1009.98F-0.02
955	27400.000000	59806.274000	1010.000	BOT1009.93F-0.07
956	27431.963000	59769.255000	1010.000	BOT1010.10C-0.10
957	27400.000000	59807.404000	1010.000	BOT1009.93F-0.07
958	27438.450000	59807.281000	1010.000	BOT1010.05C-0.05
959	27477.915000	59800.742000	1010.000	BOT1010.04C-0.04
960	27486.264000	59791.463000	1010.000	BOT1010.04C-0.04
961	27456.400000	59784.381000	1009.750	BOT/1009.74F0.01
962	27429.429000	59788.719000	0.000	20"X28" CMP
963	27430.000000	59792.000000	1009.250	20*28CMP
964	27430.571000	59795.281000	0.000	20"X28" CMP
965	27383.429000	59796.719000	0.000	20"X28" CMP
966	27384.000000	59800.000000	1008.750	20*28CMP
967	27384.571000	59803.281000	0.000	20"X28" CMP
968	27581.807000	58694.162000	1064.000	PTOP1064.04C0.04
969	27595.965000	58689.164000	1064.000	LFBL1064.01C0.01
970	27556.110000	58668.928000	1063.000	LFBL1062.98F0.02
971	27540.149000	58674.563000	1063.000	PTOP1063.08C0.08
972	27513.462000	58649.658000	1062.000	LFBL1061.98F0.02
973	27498.646000	58658.507000	1062.000	PTOP1061.93F0.07
974	27454.100000	58657.209000	1061.000	PTOP1060.98F0.02
975	27464.099000	58643.861000	1061.000	LFBL1061.07C0.07
976	27410.793000	58671.855000	1060.000	PTOP1059.94F0.06
977	27416.676000	58655.299000	1060.000	LFBL1060.02C0.02
978	27438.399000	58637.580000	1059.000	TOE1059.02C-0.02
979	27490.619000	58634.670000	1060.000	TOE1060.08C-0.08
980	27540.706000	58649.893000	1061.000	TOE1061.06C-0.06
981	27580.562000	58670.128000	1062.000	TOE1062.05C-0.05
982	27471.300963	59835.680974	1012.077	TOPMH2ALCHSEW
983	27306.430110	59835.158512	1010.592	TOPMH3ALCHSEW
984	27303.969428	59836.283302	1000.290	TOP6INPVCLCHLINE
985	27225.334617	59832.846471	1000.030	TOP6INPVCLCHLINE
986	27101.867335	59833.032784	1012.401	TOPMH4LCHSEW
987	27101.867335	59833.032784	997.680	DINV6INPCVLCHLIN
988	27104.234052	59833.218447	997.745	TOP6INPVCLCHLINE
989	27653.367754	59571.296190	1028.929	TOPRIPRAPDITCH
990	27634.609273	59580.643422	1027.782	TOPRIPRAPDITCH
991	27616.910345	59588.412246	1027.506	TOPRIPRAPDITCH
992	27619.762426	59602.842580	1025.481	TOPRIPRAPDITCH

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*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
993	27622.462799	59605.113778	1025.117	TOPRIPRAPDITCH
994	27637.620717	59605.554873	1025.526	TOPRIPRAPDITCH
995	27660.433373	59595.042188	1026.501	TOPRIPRAPDITCH
996	27657.276918	59587.439900	1023.214	TOERIPRAPDITCH
997	27655.304363	59582.842218	1023.239	TOERIPRAPDITCH
998	27619.919141	59595.242931	1023.398	TOERIPRAPDITCH
999	27622.313181	59601.931290	1023.120	INV15INCMP
1000	27626.922418	59608.762788	1025.118	TOPRIPRAPDITCH
1001	27634.003274	59608.182999	1025.422	TOPRIPRAPDITCH
1002	27633.021692	59603.577658	1023.221	TOERIPRAPDITCH
1003	27626.401841	59605.259728	1023.323	TOERIPRAPDITCH
1004	27605.926047	59597.146845	1026.620	GND
1005	27591.222714	59610.230508	1025.499	GND
1006	27587.886511	59638.825238	1020.503	INV15INCMP
1007	27605.566879	59618.913188	1025.304	GND
1008	27662.971209	59626.108438	1025.685	EDGRVRD
1009	27650.894986	59632.860892	1024.683	EDGRVRD
1010	27618.796919	59667.800523	1021.857	EDGRVRD
1011	27603.229641	59722.597859	1019.447	EDGRVRD
1012	27589.626065	59795.749994	1016.346	EDGRVRD
1013	27575.007799	59861.437266	1014.412	EDGRVRD
1014	27565.640883	59914.088438	1013.105	EDGRVRD
1015	27558.285530	59954.220572	1011.948	EDGRVRD
1016	27538.062079	59963.865830	1012.008	EDGRVRD
1017	27554.424221	59888.247895	1013.752	EDGRVRD
1018	27565.664790	59825.717255	1015.550	EDGRVRD
1019	27580.327775	59733.345317	1018.830	EDGRVRD
1020	27594.771928	59667.829728	1021.731	EDGRVRD
1021	27621.808706	59627.861609	1024.351	EDGRVRD
1022	27644.424243	59607.871002	1025.681	EDGRVRD
1023	27668.725657	59596.257315	1026.899	EDGRVRD
1024	27572.577870	59722.728962	1018.911	TOPRIPRAPDITCH
1025	27586.668365	59664.320000	1021.738	TOPRIPRAPDITCH
1026	27592.554053	59642.838931	1022.824	TOPRIPRAPDITCH
1027	27591.471859	59635.912910	1023.548	TOPRIPRAPDITCH
1028	27581.453616	59629.826479	1023.689	TOPRIPRAPDITCH
1029	27565.239302	59674.230776	1021.644	TOPRIPRAPDITCH
1030	27555.384952	59718.842888	1019.757	TOPRIPRAPDITCH
1031	27540.571980	59783.840570	1016.670	TOPRIPRAPDITCH
1032	27532.799480	59821.178572	1015.047	TOPRIPRAPDITCH
1033	27522.074639	59837.034350	1014.037	TOPRIPRAPDITCH
1034	27492.817048	59849.104043	1011.648	TOPRIPRAPDITCH
1035	27473.127643	59854.322632	1010.308	TOPRIPRAPDITCH
1036	27473.965227	59860.235322	1010.335	TOPRIPRAPDITCH
1037	27475.001924	59867.108840	1010.830	TOPRIPRAPDITCH
1038	27490.842023	59870.126325	1011.738	TOPRIPRAPDITCH
1039	27507.931740	59864.984539	1011.947	TOPRIPRAPDITCH
1040	27528.228611	59856.777542	1013.211	TOPRIPRAPDITCH
1041	27540.229115	59848.711195	1013.889	TOPRIPRAPDITCH
1042	27476.137849	59860.022890	1008.808	INV18INCMP
1043	27494.221375	59858.508110	1009.410	CLRIPRAPDITCH
1044	27512.141274	59852.314377	1010.731	CLRIPRAPDITCH

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*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
1045	27528.546661	59844.227354	1011.840	CLRIPRAPDITCH
1046	27539.310007	59830.260660	1012.221	CLRIPRAPDITCH
1047	27546.465639	59799.088402	1013.719	CLRIPRAPDITCH
1048	27564.470040	59717.896836	1016.687	CLRIPRAPDITCH
1049	27569.040412	59693.360562	1018.372	CLRIPRAPDITCH
1050	27575.088289	59666.252686	1018.965	CLRIPRAPDITCH
1051	27583.160374	59644.687092	1019.776	CLRIPRAPDITCH
1052	27416.163217	59854.232718	1004.428	INV18INCMP
1053	27403.435652	59854.009566	1004.030	CLRIPRAPDITCH
1054	27410.766057	59853.892859	1005.213	CLTOPJB5*5
1055	27400.054837	59855.030516	1004.118	CLRIPRAPDITCH
1056	27372.168200	59856.565121	1004.517	CLRIPRAPDITCH
1057	27342.162655	59856.588940	1004.960	CLRIPRAPDITCH
1058	27306.817168	59853.766274	1005.713	CLTOPJB5*5
1059	27311.074531	59868.589211	1008.122	TOPRIPRAPDITCH
1060	27371.915313	59868.866559	1008.530	TOPRIPRAPDITCH
1061	27417.876194	59868.997140	1009.198	TOPRIPRAPDITCH
1062	27423.185615	59855.366932	1009.096	TOPRIPRAPDITCH
1063	27418.364639	59844.815940	1009.024	TOPRIPRAPDITCH
1064	27379.042301	59846.298300	1006.640	TOPRIPRAPDITCH
1065	27365.359452	59846.156518	1007.603	TOPRIPRAPDITCH
1066	27317.933055	59846.807998	1007.848	TOPRIPRAPDITCH
1067	27362.768945	59841.977877	1008.396	TOPDITCH
1068	27358.743464	59805.557133	1010.023	TOPDITCH
1069	27354.656733	59753.465275	1012.781	TOPDITCH
1070	27362.044457	59743.884433	1012.677	TOPDITCH
1071	27376.219535	59742.490623	1012.725	TOPDITCHEDRIPRAP
1072	27387.248040	59743.858078	1013.141	TOPDITCHEDRIPRAP
1073	27393.888567	59747.550148	1012.938	TOPDITCHEDRIPRAP
1074	27395.117116	59780.942913	1011.627	TOPDITCHEDRIPRAP
1075	27394.657364	59799.553049	1011.770	TOPDITCHEDRIPRAP
1076	27392.653767	59811.699047	1011.461	TOPCORRIPRAPDITC
1077	27386.108842	59811.876072	1011.080	TOPEDRIPRAPDITCH
1078	27385.825557	59815.242047	1010.940	TOPDITCH
1079	27383.901639	59837.586763	1009.768	TOPDITCH
1080	27379.127104	59848.317460	1004.913	TOEENDRIPRAP
1081	27368.557197	59849.657026	1005.164	TOEENDRIPRAP
1082	27372.727292	59849.119325	1004.117	CLTOEDITCH
1083	27373.038460	59813.362013	1005.195	CLTOEDITCH
1084	27376.339380	59779.272979	1005.791	CLTOEDITCH
1085	27377.524279	59754.625906	1006.315	CLTOEDITCH
1086	27372.890473	59752.936966	1007.772	CORRIPRAP
1087	27385.128030	59754.879225	1008.434	CORRIPRAP
1088	27384.475719	59781.359697	1007.095	EDRIPRAP
1089	27379.994300	59808.997807	1006.823	CORRIPRAP
1090	27391.270547	59801.486995	1008.572	INV28*20CMPARCH
1091	27390.613805	59798.833899	1008.570	INV28*20CMPARCH
1092	27389.771522	59796.760267	1008.820	INV28*20CMPARCH
1093	27429.348847	59788.883958	1009.251	INV28*20CMPARCH
1094	27430.074688	59791.940687	1009.065	INV28*20CMPARCH
1095	27430.488218	59794.502652	1009.026	INV28*20CMPARCH
1096	27377.299370	59753.933929	1006.944	INV24INCMP

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*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
1097	27376.904668	59713.005408	1008.498	INV24INCMP
1098	27364.405253	59715.168524	1012.933	TOP
1099	27376.828654	59717.867240	1012.702	TOP
1100	27390.214640	59719.692845	1013.471	TOP
1101	27313.379246	59873.337714	1008.225	EDGRVRD
1102	27387.596281	59873.629700	1008.995	EDGRVRD
1103	27419.816743	59874.701824	1009.678	EDGRVRD
1104	27452.440771	59876.632605	1010.410	GRV
1105	27442.743989	59856.166578	1010.651	GRV
1106	27493.275482	59877.031492	1012.039	EDGRVRD
1107	27522.118749	59870.328790	1013.090	EDGRVRD
1108	27538.435772	59860.217499	1013.707	EDGRVRD
1109	27557.014387	59797.238177	1016.137	TOPRIPRAP
1110	27545.467284	59842.983721	1014.499	TOPRIPRAP
1111	27550.186131	59889.088549	1013.602	GRV
1112	27539.111440	59939.692420	1012.484	EDGRVRD
1113	27535.830567	59928.566543	1012.578	EDGRVRD
1114	27519.961472	59910.434153	1012.241	EDGRVRD
1115	27470.844774	59896.010282	1010.758	EDGRVRD
1116	27408.931502	59896.378643	1009.199	EDGRVRD
1117	27363.825501	59897.370454	1008.290	EDGRVRD
1118	27304.868312	59897.539845	1007.456	EDGRVRD
1119	27471.405563	59867.036605	1010.657	EDGRVRD
1120	27451.924385	59839.347647	1010.546	TOE/EDGRV
1121	27451.253613	59839.816259	1010.981	TOP/EDGRV
1122	27436.840894	59821.464266	1011.937	TOP/EDGRV
1123	27437.679427	59820.834394	1011.584	TOE/EDGRV
1124	27430.009749	59797.991810	1009.124	TOE/EDGRV
1125	27425.011080	59798.898976	1012.126	TOP/EDGRV
1126	27421.970276	59778.488293	1011.976	TOP/EDGRV
1127	27423.987664	59774.147414	1010.343	TOE/EDGRV
1128	27422.566314	59732.990100	1012.342	TOE/EDGRV
1129	27419.425881	59732.756611	1013.099	TOP/EDGRV
1130	27423.740120	59657.354080	1015.847	TOP/EDGRV
1131	27425.381687	59656.928585	1015.242	TOE/EDGRV
1132	27426.942920	59609.161760	1017.241	TOE/EDGRV
1133	27425.336460	59609.120206	1017.999	TOP/EDGRV
1134	27424.426700	59550.740401	1020.528	TOP/EDGRV
1135	27427.739275	59550.920737	1019.638	TOE/EDGRV
1136	27426.681492	59454.859056	1023.870	TOE/EDGRV
1137	27423.536977	59454.539281	1024.777	TOP/EDGRV
1138	27424.665240	59353.262190	1029.313	TOP/EDGRV
1139	27428.326089	59353.654309	1028.284	TOE/EDGRV
1140	27428.564833	59253.624422	1032.983	TOE/EDGRV
1141	27424.982529	59253.717925	1033.847	TOP/EDGRV
1142	27424.737183	59156.882020	1038.309	TOP/EDGRV
1143	27426.844710	59157.067309	1037.552	TOE/EDGRV
1144	27427.613865	59058.795577	1041.756	TOE/EDGRV
1145	27424.508127	59058.710833	1042.448	TOP/EDGRV
1146	27426.094092	58957.370086	1046.482	TOP/EDGRV
1147	27427.885443	58957.319737	1045.946	TOE/EDGRV
1148	27428.559269	58853.446887	1050.536	TOE/EDGRV

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Point	Northing	Easting	Elevation	Note
1149	27424.773096	58854.038665	1051.442	TOP/EDGRV
1150	27423.027613	58755.336443	1056.119	TOP/EDGRV
1151	27426.900566	58755.271141	1055.228	TOE/EDGRV
1152	27425.024030	58669.900044	1059.231	TOE/EDGRV
1153	27422.560305	58670.149975	1059.737	TOP/EDGRV
1154	27423.491849	58659.213837	1060.801	EDGRV
1155	27415.309480	58640.835317	1059.220	EDGRV
1156	27415.080503	58628.442568	1058.384	EDGRV
1157	27399.484553	58631.399882	1058.331	EDGRV
1158	27395.317320	58643.537860	1058.743	EDGRV
1159	27399.228029	58663.477894	1060.205	EDGRV
1160	27420.965743	59868.094065	1009.402	EDGRV
1161	27425.678808	59857.946529	1009.516	EDGRV
1162	27424.128352	59846.393099	1009.864	EDGRV
1163	27414.739643	59827.811308	1011.110	EDGRV
1164	27404.072499	59805.257897	1012.075	EDGRV
1165	27397.904592	59779.044288	1012.263	EDGRV
1166	27394.778752	59748.014677	1013.293	EDGRV
1167	27396.075276	59714.558377	1014.323	EDGRV/TOPDITCH
1168	27400.581848	59656.528953	1017.036	EDGRV/TOPDITCH
1169	27401.350350	59606.131952	1019.601	EDGRV/TOPDITCH
1170	27402.294652	59555.943533	1021.584	EDGRV/TOPDITCH
1171	27401.774014	59456.287972	1025.998	EDGRV/TOPDITCH
1172	27401.481130	59356.227898	1030.607	EDGRV/TOPDITCH
1173	27402.872603	59256.279779	1034.875	EDGRV/TOPDITCH
1174	27402.641383	59157.464834	1039.111	EDGRV/TOPDITCH
1175	27401.513148	59056.195417	1043.361	EDGRV/TOPDITCH
1176	27400.906382	58957.283465	1048.136	EDGRV/TOPDITCH
1177	27401.344469	58856.038218	1052.264	EDGRV/TOPDITCH
1178	27401.200769	58756.188849	1057.139	EDGRV/TOPDITCH
1179	27399.928221	58682.579148	1060.422	EDGRV/TOPDITCH
1180	27376.322844	58696.082124	1054.546	TOECLDITCH
1181	27374.258123	58755.762181	1050.118	TOECLDITCH
1182	27371.752616	58857.152374	1045.049	TOECLDITCH
1183	27375.858793	58958.130734	1041.420	TOECLDITCH
1184	27377.525675	59056.730478	1037.389	TOECLDITCH
1185	27377.580088	59158.063749	1032.718	TOECLDITCH
1186	27377.055554	59256.655109	1028.467	TOECLDITCH
1187	27376.240814	59356.666123	1023.845	TOECLDITCH
1188	27375.866906	59456.038639	1018.808	TOECLDITCH
1189	27376.938453	59556.813579	1013.930	TOECLDITCH
1190	27376.080287	59656.824937	1010.389	TOECLDITCH
1191	27361.051962	59713.495778	1013.821	TOPBK
1192	27339.063601	59693.273878	1017.747	TOPBK
1193	27324.716388	59659.054125	1023.896	TOPBK
1194	27312.730591	59617.207709	1030.216	TOPBK
1195	27304.647597	59570.707070	1036.364	TOPBK
1196	27285.214567	59456.510606	1049.277	TOPBK
1197	27277.091204	59358.193468	1057.670	TOPBK
1198	27272.320663	59290.577098	1063.602	TOPBK
1199	27258.491239	59280.694014	1064.591	TOPBK
1200	27249.032828	59219.144949	1066.502	TOPBK

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*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
1201	27251.845157	59168.462257	1066.941	TOPBK
1202	27264.969465	59056.666407	1065.928	TOPBK
1203	27288.949088	58961.110738	1060.259	TOPBK
1204	27311.441665	58853.355350	1058.258	TOPBK
1205	27327.617385	58788.994535	1056.822	TOPBK
1206	27348.821344	58740.441285	1055.355	TOPBK
1207	27362.965191	58718.899624	1054.003	TOPBK
1208	27347.249342	58671.192658	1054.916	INV18INCMP
1209	27417.506399	58632.830632	1056.438	INV18INCMP
1210	27357.671668	58644.541039	1057.624	EDGRVRD
1211	27414.041749	58619.231638	1058.627	EDGRVRD
1212	27453.864400	58607.050205	1059.289	EDGRVRD
1213	27514.903789	58613.860597	1060.447	EDGRVRD
1214	27567.773721	58636.292202	1061.720	EDGRVRD
1215	27625.804631	58664.894329	1062.898	EDGRVRD
1216	27623.689266	58645.452723	1062.872	EDGRVRD
1217	27561.809644	58615.015957	1061.818	EDGRVRD
1218	27512.060787	58595.593267	1060.590	EDGRVRD
1219	27456.687722	58590.368106	1059.947	EDGRVRD
1220	27405.959546	58603.858759	1058.863	EDGRVRD
1221	27346.944728	58629.926272	1057.765	EDGRVRD
1222	27415.619452	58632.447380	1058.515	TOPRIPRAPDITCH
1223	27418.817922	58624.817153	1058.281	TOPRIPRAPDITCH
1224	27439.488886	58617.116241	1058.674	TOPRIPRAPDITCH
1225	27463.384378	58615.038057	1058.939	TOPRIPRAPDITCH
1226	27473.325011	58615.887090	1059.003	TOPRIPRAPDITCH
1227	27475.393178	58622.162165	1059.288	TOPRIPRAPDITCH
1228	27469.140491	58627.771001	1059.349	TOPRIPRAPDITCH
1229	27445.697391	58631.192151	1058.551	TOPRIPRAPDITCH
1230	27416.895562	58637.290040	1059.011	TOPRIPRAPDITCH
1231	27422.105372	58629.835690	1056.316	TOECLRIPRAPDITC
1232	27446.245991	58622.576731	1057.072	TOECLRIPRAPDITC
1233	27468.809161	58622.040755	1057.560	TOECLRIPRAPDITC
1234	27472.435994	58625.265295	1057.679	INV18INCMP
1235	27511.975238	58624.563902	1059.890	TOPRIPRAPDITCH
1236	27515.718617	58619.241810	1059.560	TOPRIPRAPDITCH
1237	27545.608775	58629.636814	1060.766	TOPRIPRAPDITCH
1238	27587.280969	58650.646069	1062.365	TOPRIPRAPDITCH
1239	27624.929541	58669.954180	1062.841	TOPRIPRAPDITCH
1240	27628.883522	58692.373683	1063.236	TOPRIPRAPDITCH
1241	27593.335327	58673.019460	1061.809	TOPRIPRAPDITCH
1242	27547.902561	58650.820610	1060.818	TOPRIPRAPDITCH
1243	27511.026344	58633.199996	1060.092	TOPRIPRAPDITCH
1244	27518.870448	58629.290707	1058.244	TOECLRIPRAPDITC
1245	27560.489011	58646.782159	1058.705	TOECLRIPRAPDITC
1246	27602.424973	58667.503989	1059.875	TOECLRIPRAPDITC
1247	27619.006770	58676.729659	1059.948	TOECLRIPRAPDITC
1248	27470.041634	58651.480937	1061.566	1.1MTLCO3.1SQCPD
1249	27618.719027	58731.665846	1058.211	TOEBK
1250	27616.677672	58757.302152	1056.757	TOEBK
1251	27608.304192	58856.863425	1052.257	TOEBK
1252	27607.426733	58956.074254	1048.813	TOEBK

ACHW PN #96901
JOB: LF5A2PRO.CR5 TIME: 15:39 DATE: 11-05-1996
*TRANSITION LINE BETWEEN AREA 2&1

Point	Northing	Easting	Elevation	Note
1253	27606.057926	59057.153478	1044.374	TOEBK
1254	27605.500959	59156.962738	1039.771	TOEBK
1255	27602.378226	59255.960762	1034.666	TOEBK
1256	27605.150373	59354.215837	1030.689	TOEBK
1257	27615.464131	59454.902791	1027.053	TOEBK
1258	27620.894373	59484.627562	1026.934	TOEBK
1259	27620.315815	59512.231358	1026.011	TOEBK
1260	27605.640636	59548.489427	1023.791	TOEBK
1261	27609.772072	59575.071098	1028.295	TOPBK
1262	27626.214457	59554.519879	1028.831	TOPBK
1263	27628.482486	59541.355276	1029.675	TOPBK
1264	27644.231910	59538.443708	1032.431	TOPBK
1265	27641.010682	59502.928318	1035.026	TOPBK
1266	27636.002495	59455.225025	1038.262	TOPBK
1267	27627.151021	59354.769646	1041.457	TOPBK
1268	27626.341337	59259.371615	1045.656	TOPBK
1269	27623.047645	59157.912366	1049.838	TOPBK
1270	27625.250701	59062.499419	1054.289	TOPBK
1271	27623.477646	58959.580018	1058.171	TOPBK
1272	27629.089609	58860.213146	1061.454	TOPBK
1273	27633.385736	58760.076562	1064.751	TOPBK
1274	27633.843490	58731.903461	1064.771	TOPBK
1275	27628.389537	58716.641362	1064.485	TOPBK
1276	27623.634637	59581.826988	1028.384	4INSSTLVENTPIPE

APPENDIX F

TDEC CORRESPONDENCE

MARTIN MARIETTA

ARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2009
OAK RIDGE, TENNESSEE 37831

November 22, 1995

Mr. Larry L. Radcliffe, Director
Waste Management and Technology Development Division
Department of Energy
Oak Ridge Operations Office
Post Office Box 2001
Oak Ridge, Tennessee 37831-8620

Dear Mr. Radcliffe:

Y/TS-1395 Permit Application Modification Package for Industrial Landfill V, Resolution of Tennessee Department of Environment and Conservation (TDEC) Review Comments (Program Managers: B. C. Demonia and R. M. Skinner)

In a letter to you dated October 25,1995, Rick Brown of the TDEC, Division of Solid Waste Management, identified a few deficiencies concerning the Y/TS-1395 Permit Application Modification Package for Industrial Landfill V submitted under your signature on October 6, 1995. These deficiencies were to be addressed, and the resulting modifications resubmitted to TDEC for substitution in the original modification package.

Enclosed are the replacement sections affected by the TDEC comments. All TDEC comments were addressed and resolutions incorporated. Replacement sections are being utilized to simplify updating, provide for correct pagination, and to include correct revision number and date on page footers. Portions of text affected by the revisions are noted in the margins of the revised pages. Update instructions for the replacement sections and locations of the revised text are attached.

Please review and substitute the replacement pages into your copy of the Y/TS-1395 document. Also, please forward the five replacement sets provided for the previously submitted packages to Mr. Jack P. Crabtree, Field Office Manager, Tennessee Department of Environment and Conservation, 2700 Middlebrook Pike, Suite 220, Knoxville, Tennessee 37921, requesting review and approval of these revisions.

If you have any questions or require additional information, please contact Ed Murrill at 241-3073 or Mickey Willoughby at 576-8166.

Sincerely,

J R Wright for

P. J. Franco, Acting Director
Energy Systems Waste Management Organization

PJF:MLW:mp

Enclosures: As Stated

cc: F. P. Gustavson
J. E. Heiskell/J. E. Stone
E. M. Murrill - RC

cc/enc: D. G. Ailey
D. E. Bohrman/M. C. Wiest/C. C. Hill
K. D. Delius
G. L. Humphrey/R. W. Sellars
A. K. Lee, DOE-OSTI (2 copies)
D. H. Level, DOE-ORO
L. R. Roddy, MKF
M. L. Willoughby
Y-12 Central Files
File - PJF

ENCLOSURE

Update Instructions for Affected Sections of Y/TS-1395 Permit Application Modification Package for Industrial Landfill V

Technical Specifications

Replace title page dated 8/19/95 with replacement title page dated 11/17/95

Replace index page titled; "Division 2, Site Work Index, (August 1995, Rev. 0)", with replacement page (November 1995, Rev. 1).

Replace section titled "Section 02211, Rough Grading" pages 02211-1 through 02211-13 (August 1995, Rev. 0), with replacement pages 02211-1 through 02211-14, (November 1995, Rev. 1)

Design and Operating Procedure

Replace entire Design and Operating section dated August 1995 with replacement section dated November 1995

Construction QA Plan

Replace Construction Quality Assurance Plan dated August 1995 with replacement section dated November 1995. Retain Appendix C titled "Results of Hydraulic Conductivity Tests and Recommended Water Content-Dry Density for Potential Borrow Sources".

Locations of Revised Text

Technical Specifications
- Title page
- Index page
- page 02211-5
- page 02211-10
- page 02211-11
- page 02211-13

Design and Operating Procedure
- Title page
- page 25

Construction QA Plan
- Title page
- Table of contents page ii
- pages 11 through 14

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Solid Waste Management
5th Floor, L & C Tower
401 Church Street
Nashville, Tennessee 37243-1535
615-532-0780

December 20, 1995

Mr. Larry Radcliffe, Waste Management Division
U. S. Department of Energy
P O Box 2001
Oak Ridge, TN 37831-8620

RE: Design Modification of the Y-12 Industrial Landfill V IDL 01-103-0083

Dear Mr. Radcliffe:

The Division of Solid Waste Management has completed the review of a design modification of the Y-12 Industrial Landfill. The modification consists of an upgrade of the liner/leachate collection system and final cap and does not incorporate any increase in landfill capacity.

By this letter, the Division hereby approves the design upgrade of the liner/leachate collection system and the final cap as a modification to permit IDL 01-103-0083. In accordance with Rule 1200-1-7-.04(4) and (5), this action will not be subject to public notice.

The Division appreciates the Department of Energy's efforts towards compliance with the State of Tennessee's environmental regulations.

Sincerely,

Tom Tiesler

Tom Tiesler, Director
Division of Solid Waste Management

JTT/GAP/ss SWM/PER11

cc: Jack Crabtree, Knoxville Field Office

Fle - 0018

Lockheed Martin Energy Systems
Building K-1037, MS 7357
Post Office Box 2003 Oak Ridge, Tennessee 37831 - 7357
Telephone: 423-241-4921 Facsimile: 423-576-6222

LOCKHEED MARTIN

March 20, 1996

Mr. Larry L. Radcliffe, Director
Waste Management and Technology Development Division
Department of Energy
Oak Ridge Operations Office
Post Office Box 2001
Oak Ridge, Tennessee 37831-8620

Dear Mr. Radcliffe:

Contract DE-AC05-84OR21400, Minor Modification for Industrial Landfill V (ILF V)
(Program Managers: B. C. Demonia and R. M. Skinner)

The Y-12 Industrial Landfill V (Permit No. IDL-01-103-0083) Permit Application Modification Package (Y/TS 1395/R1) has been approved by the Tennessee Department of Environment and Conservation (TDEC). Within this package are Technical Specifications and a Construction Quality Assurance Plan containing specific requirements for the development of Area II disposal unit. As Lockheed Martin Energy Systems (LMES) prepares to begin development of Area II, several items in these documents have been identified for minor modification based on LMES experience gained during the installation of the Y-12 Sanitary Landfill II compacted clay cap. These modifications are intended to better utilize existing equipment and forces, minimize cost, and improve operational efficiency during the upcoming activities. Enclosed are the proposed modifications, including rational for each.

These proposed modifications have been discussed with Mr. Rick Brown of TDEC. Mr. Brown indicated the proposed modifications should be acceptable, and they should be submitted for formal review and approval.

Please review and forward the proposed minor modifications of the ILF V Permit Modification Package to Mr. Rick Brown, Tennessee Department of Environment and Conservation, 2700 Middlebrook Pike, Suite 220, Knoxville, Tennessee 37921, requesting review and approval.

If you have any questions or require additional information, please contact Mickey Willoughby at 576-8166.

Sincerely,

T.W. Morris, Director
Energy Systems Waste Management Organization

TWM:MLW:mkn

Enclosure: As Stated

cc/enc: D. G. Ailey
W. H. Bessom
K. D. Delius
F. P. Gustavson
J. E. Heiskell/J. E. Stone
E. M. Ingram
D. H. Level, DOE-ORO
E. M. Murrill - RC
T. J. Pierce
R. W. Sellars
R. J. Spence, DOE-ORO
P. F. Waldschlager
M. L. Willoughby
File - TWM

Enclosure
Letter, Morris to Radcliffe
Dated: March 20, 1996

Letter Title: **Contract DE-AC05-84OR21400, Minor Modification for Industrial Landfill V (ILF V) (Program Managers: B. C. Demonia and R. M. Skinner)**

Proposed Minor Permit Modifications to the Industrial Landfill V (ILF V) Technical Specifications and Construction Quality Assurance (CQA) Plan

Technical Specifications

1) Page 02211-5, section 2.02 C

Installation of the compacted clay liner requires use of a 30,000 lb. footed compactor with a minimum foot length of 6 inches for the compaction of the six inch loose lifts. Successful compaction was obtained during the installation of the Y-12 Sanitary Landfill II (SLF II) clay cap using a 5 inch footed compactor provided the loose lifts did not exceed 6 inches. Approval is requested for the use of a 30,000 lb. 5 inch footed compactor as approved on SLF II.

2) Page 02211-5, section 2.02 D

Installation of the compacted clay liner requires that fill material be worked after placement with a tiller capable of tilling 10 inches in depth. Approval is requested that a heavy-duty disk be used in lieu of a tiller due to equipment availability. Material working capabilities are similar with the heavy-duty disk as those of the tiller. The heavy-duty disc was used successfully in working the clay during the installation of the SLF II clay cap.

3) Page 02211-12, section 3.04 C.1.c

Compaction to the specified moisture density relationship is to be verified by in place density test using ASTM 2922 (nuclear density equipment), with every fifth density test being verified by sand cone method (ASTM 1556). Current nuclear density equipment calibration techniques performed daily and integrated with the performance of the moisture content testing per ASTM D3017 (as specified in Section 3.04 C.1.d) make the required frequency of sand cone testing excessive. In consideration of time and expense in performing this test, approval is requested to perform sand cone testing or other acceptable methods as ASTM D2167 balloon test or ASTM D2937-94 drive cylinder for verification of nuclear density equipment at the frequency of one test per lift.

4) Page 02211-12, section 3.04 C.1.f

Permeability testing in accordance with ASTM 5084 is to be performed on Shelby tube samples at a rate of 1 test per 3 acres lift. The Daniel's criteria (Appendix C of the CQA) rigorously established relationships between the moisture and in-place density of the carefully selected and placed compacted clay versus the permeability of the compacted clay. Hence, meeting Daniel's moisture-density criteria for the compacted clay establishes that the permeability requirements for the compacted clay has been met; therefore, performance of the Shelby tube sampling and associated permeability testing is an unnecessary activity and expense that would delay placement of successive lifts and require additional maintenance to prevent desiccation of exposed material while awaiting test results. TDEC has previously approved installation of compacted clay caps and liners on the Oak Ridge Reservation using the Daniel's criteria without the Shelby tube sampling and permeability testing. Approval is requested for deleting the Shelby tube sampling and permeability testing in this section.

(5) Page 02276-3, section 2.01.B.2b & 3b and page 02276-5,section 3.02.B

The 16 oz. protective geotextile overlying the flexible membrane liner and the 8 oz. separator geotextile overlying the aggregate collection layer shall be manufactured such that a 20 ft. continuous width can be installed. Side and end seams of the geotextile fabric will have a minimum of 18" overlap field joined by sewing with nylon thread at a stitch density of at least 5 stitches per inch and two rows of single thread stitches or one row of double thread stitches.

Standard available width for the geotextile specified is a maximum of 15 ft. The availability of 20 ft. width is by special order only and will result in a substantial cost increase and delay in availability. Conversations with vendor technical representatives indicate no functional benefits are gained by the extra width, provided the required overlap is maintained. Approval is requested for use of geotextile with minimum 15 ft. width and the previously approved 18" seam overlap.

While use of field sewing of the 16oz. geotextile overlying the flexible membrane liner is needed to ensure maximum protection during the installation of the aggregate drainage layer, the field seaming of the 8 oz. separator fabric overlying the aggregate drainage layer should not be required. Discussions with geotextile vendor technical representatives indicate that field sewing is not required in this application provided that sand bags or other suitable ballast are used as necessary to secure the fabric during placement of the protective soil cover. Successful installation of the 8 oz. separator geotextile over the drainage layer of Area I was accomplished without seaming while using a 12 in. overlap. Approval is requested to delete the requirement for field sewing the 8 oz. geotextile used for the separator fabric overlying the drainage layer.

Construction Quality Assurance Plan

(1) Page 5, section 4.3

This section requires "A progress meeting will be held daily before the start of work." During periods of routine work activities, a progress meeting before the start of work activities is too restrictive. Holding progress meetings before starting work activities is necessary in circumstances of job problems, commencement of new activities, or deviations in planned operations. Approval is requested for rewording this section as "Progress meetings will be scheduled daily between the QA officer and the on-site supervisor and/or technical representative to ensure work activities proceed as appropriate."

2) Page 8, section 5.1.3.2, second paragraph

Installation of the compacted clay liner requires use of a footed compactor with a minimum foot length of 6 inches for the compaction of the six inch loose lifts. The rational is as item 1 above of the Technical Specifications. Approval is requested for the use of a 30,000 lb., 5 inch footed compactor.

3) Page 9, section 5.1.3.3, first paragraph

Placed soil shall be protected from desiccation cracking by use of a smooth-drum roller to seal the surface of a completed lift at the end of the work period. To provide more operational flexibility in the sealing of each lift, it is desired to use partially loaded rubber tire equipment as an option to the steel wheel roller. The use of rubber tire equipment for sealing lifts was done successfully on SLF II and is a requested method for use at ILF V. Sealing of the final lift will be performed with a steel wheel roller in preparation for flexible membrane liner.

4) Page 10, section 5.1.6, second paragraph

Laboratory permeability testing referred to in this section is unnecessary based on the October 1992 Daniel's Criteria (see item 4 above under Technical Specifications). Approval is requested for deleting the permeability testing.

Drawing C2E900000A630, Final Closure Plan

At the northwest corner of the landfill, this drawing shows a maintenance road for accessing the top of the closed landfill from the perimeter road. The maintenance road crosses a drainage ditch without the use of a drainage culvert. To facilitate proper drainage flow in the drainage ditch, approval is requested for the addition of a 12 inch corrugated metal drainage pipe. This pipe will be located where minimal drainage will occur.

Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

March 29, 1996

Mr. Rick Brown
Tennessee Department of Environment and Conservation
2700 Middlebrook Pike, Suite 220
Knoxville, Tennessee 37921

Dear Mr. Brown:

CONTRACT DE-AC05-84OR21400, MINOR MODIFICATION FOR INDUSTRIAL LANDFILL V

The Y-12 Industrial Landfill V (Permit No. IDL-01-103-0083) Permit Application Modification Package (Y/TS 1395/R1) has been approved by the Tennessee Department of Environment and Conservation (TDEC). Within the package are Technical Specifications and a Construction Quality Assurance Plan containing specific requirements for the development of the Area II disposal unit. As we prepared to begin development of Area II, several items in the documents were identified for minor modification based on experience gained during the installation of the Y-12 Sanitary Landfill II compacted clay cap. These modifications are intended to better utilize existing equipment and forces, minimize cost, and improve operational efficiency during the upcoming activities. Enclosed are the proposed modifications and rational for each.

If you have any questions, please contact Brian DeMonia of my staff at 241-6182.

Sincerely,

Larry L. Radcliffe, Director
Waste Management and Technology
Development Division

Enclosure

4/4/96
copies to:
P. Waldschlager
E. Murrill
D. Aitey
B. Besson

For your files.
Mickey

cc w/o enclosure:
E. Leming, TDEC, Oak Ridge
J. Heiskell, 9624, MS 8222
T. Morris, K-1037, MS 7357
M. Willoughby, 9204-1, MS 8053

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
KNOXVILLE ENVIRONMENTAL FIELD OFFICE
2700 MIDDLEBROOK PIKE, SUITE 220
KNOXVILLE, TENNESSEE 37921-5602
(615) 594-6035 FAX (615) 594-6105

April 8, 1996

Mr. Larry L. Radcliffe, Director, Waste Management and Technology Development Division
U.S. Department of Energy, Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennesee 37831-8620

RE: Proposed modification to approved construction and operation plans- Changes to liner system construction/installation procedures and construction quality assurance testing procedures for Y-12 Industrial Landfill V

Dear Mr. Radcliffe:

The revised plan for Y-12 Industrial Landfill V, which you submitted on April 2, 1996, has been reviewed in accordance with Rule Chapter 1200-1-7, Solid Waste Processing and Disposal. This modification consists of changes in the liner system construction/installation procedures to:
(1)Allow use of 5-inch footed rollers rather than 6-inch, provided that the loose lift thickness does not exceed 6 inches;
(2)Allow use of discs rather than a tiller to work the soil after placement;
(3)Allow use of a loaded scraper rather than a smooth drum roller to seal lifts after placement;
(4)Require progress meetings on an as-needed basis rather than as a fixed daily requirement; and
(5)Allowing use of geotextile rolls 15 feet wide rather than 20 feet, and not requiring panels of geotextile to be sewn together in the top separation layer.
Construction quality assurance testing procedures would be modified to:
(1)Require verification of nuclear density test results by sand cone testing, balloon testing, or laboratory testing of drive cylinders, once each lift, rather than performing a sand cone test with every fifth nuclear density test;

4/12/96 Copies to: K. Delius, E Murrill, P. Waldschlager, E. Ingram, D. Riley, T. Pierce, B. Bessom

For your information + files.
Thanks
Mickey

96-0517

(2) Remove the requirement for final permeability testing of the clay liner, based on the amount of testing which has already been done to establish the Daniels permeability-moisture/density relationship.
In addition, a culvert is proposed to be added under the maintenance road for the final cap to improve drainage control and site maintenance.

We find that the revised plan meets the regulatory requirements, and we agree that this revision should be considered a minor modification. In all cases, the modifications are consistent with standard liner construction and construction quality assurance practice and/or remove sections of the original plan that were overly restrictive. We are therefore approving the plan as submitted. In all aspects of construction and operation affected by the modification, this plan will replace and supercede the original plan.

An approved copy of the modified plan is enclosed for your use. If you have any questions concerning this matter, do not hesitate to contact me.

Yours truly,

Rick Brown

Rick Brown
Environmental Engineer
Division of Solid Waste Management

RSB a:\illcqam.doc minrmod

cc: Nashville Office - Division of Solid Waste Management

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶ 2

To Pat Willoughby	From B. DeMonia
Dept./Agency	Phone #
Fax # 6-0530	Fax #

NSN 7540 01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Lockheed Martin Energy Systems
Building K-1037
Post Office Box 2003 Oak Ridge, Tennessee 37831 - 7357
Telephone: 423-241-4921 Facsimile: 423-576-6222

LOCKHEED MARTIN

July 1, 1996

Mr. Larry L. Radcliffe, Director
Waste Management and Technology Development Division
Department of Energy
Oak Ridge Operations Office
Post Office Box 2001
Oak Ridge, Tennessee 37831-8620

Dear Mr. Radcliffe:

Contract DE-AC05-84OR21400, Minor Modifications for Industrial Landfill V (ILF V) (Program Managers: B. C. Demonia and R. M. Skinner)

The Y-12 ILF V (Permit No. IDL-01-103-0083) Permit Application Modification Package (Y/TS 1395/R1) has been approved by the Tennessee Department of Environment and Conservation (TDEC). Within this package are Technical Specifications and a Construction Quality Assurance Plan containing specific requirements for the development of Area II disposal unit. As Lockheed Martin Energy Systems (LMES) continues development of Area II, some of the items in these documents have been identified for minor modification. These modifications are intended to minimize cost, provide consistency with manufactured products, and improve efficiency during the activities. Enclosed are the proposed modifications, including rationale.

The proposed modifications have been discussed with Mr. Rick Brown of TDEC. Mr. Brown has provided verbal approval on some of the proposed modifications and indicated the other proposed modifications should be acceptable. He indicated that these modifications should be submitted for written review and approval.

Please review and forward the proposed minor modifications of the ILF V Permit Modification Package to Mr. Rick Brown, Tennessee Department of Environment and Conservation, 2700 Middlebrook Pike, Suite 220, Knoxville, Tennessee 37921, requesting review and approval.

If you have any questions or require additional information, please contact Mickey Willoughby at 576-8166.

Sincerely,

T. W. Morris, Director
Energy Systems Waste Management Organization

TWM:MLW:jmp

Enclosure: As stated

cc/enc: D. G. Ailey
W. H. Bessom
K. D. Delius
F. P. Gustavson
J. E. Heiskell/J. E. Stone
E. M. Ingram
D. H. Level, DOE-ORO
E. M. Murrill - RC
T. J. Pierce
R. W. Sellars
R. J. Spence, DOE-ORO
P. F. Waldschlager
M. L. Willoughby
File-TWM

Enclosure
Letter, Morris to Radcliffe
Dated July 1, 1996

Letter Title: **Contract DE-AC05-84OR21400, Minor Modifications for Industrial Landfill V (ILF V) (Program Managers: B. C. Demonia and R. M Skinner)**

Proposed Minor Permit Modifications to the Industrial Landfill V (ILF V) Technical Specifications and Construction Quality Assurance (CQA) Plan

July 1996

1.0 Construction Quality Assurance (CQA) Plan

Page 7, last paragraph in Section 5.1.1:

This paragraph requires that delivered clay material for the clay liner be tested per the requirements listed in Table 1 on Page A-2. These "recommended" tests include percent fines, percent gravel, liquid and plastic limits, water content, and moisture/density at frequencies ranging from one test per 200 yd^3 to one test per 5,000 yd^3. Based upon the following items, it is felt that additional testing per Table 1 is unnecessary data collection, and the expense for the additional testing is not warranted.

- The clay material for the liner is being obtained from the Industrial Landfill V (ILF V) site. The clay material at ILF V has been well characterized in the Daniels' reports that have been previously submitted to the Tennessee Department of Environment and Conservation (TDEC), and these reports have served as the basis for the successful construction of several clay liners and final covers on waste facilities on the reservation.

- The material used in the clay liner construction is well-mixed. A review of data from Table 1 testing already performed on the clay materials being used to build the clay liner at ILF V indicates the clay material has insignificant variability, and it meets the guidelines outlined in the CQA Plan.

- If unusual or different soil material is encountered, it will not be used for the clay liner construction.

Based upon a discussion of the above information, TDEC has provided verbal approval to cease the testing presented in Table 1. Written approval to cease the testing is requested.

2.0 Technical Specifications

2.1 Section 2276- Geosynthetics, Page 2276-3, Table 1 - Physical Properties for Protective Geotextile Fabric: This table indicates that the geotextile fabric shall have a minimum elongation of 60%. Several geotextile fabric manufacturers have indicated they can meet 50% elongation, but they can not meet 60% elongation. It has been determined that 50% elongation of the geotextile fabric will exceed the design and performance requirements for the geotextile for this project; therefore, approval is requested to change the geotextile minimum elongation from 60% to 50%.

2.2 Section 2280 - Geomembrane, Page 2280-7, Section 2.01, Paragraph B.2: This paragraph requires that the geomembrane fabric be manufactured with "a 20 ft minimum continuous width (without seams)." Several geomembrane fabric manufacturers have indicated this is a demanding requirement and it will be difficult to meet. It is reasonable to produce a minimum panel width of 18 feet for field installation and the 18-foot wide panel may include 2 factory seams. Approval is requested to allow the geomembrane fabric to be manufactured with a minimum panel width of 18 feet that may include 2 factory seams within that width.

2.3 Section 2280 - Geomembrane, Page 2280-6, Table 1: This table presents the "Typical Property Requirements for Geomembrane." During the pre-bid meeting for the polypropylene geomembrane, bidders commented that the "typical values" listed in the polypropylene specification Table 1 were higher than published industry standards. Examination of the situation indicated that the engineering design firm had determined the

Table 1 values based on actual laboratory test results from a single manufacturer, because published material properties had not been readily available at the time the specification was prepared. After discussion with the engineering designers and review of current manufacturers' published property values, the Table 1 values were adjusted so that several manufacturers' material would qualify. The published property values are minimum average roll values, often referred to as "MARV". The definition of MARV value is two standard deviations below the statistical mean (average) value for that test. MARV is a standardized minimum value established for many roll goods including geosynthetics. Put another way, actual laboratory test data on any given sample taken from a roll would always exceed the MARV value and on average would exceed the MARV value by two standard deviations.

The following Table 1 presents properties for the original polypropylene specification, the revised polypropylene specification, and comparable published MARV property data for High Density Polyethylene (HDPE).

Table 1, Typical Property Requirements for Geomembrane

	Column A	Column B	Column C
Property/Test Method	"Typical Value" for Polypropylene from original specification	"Typical Value" for Polypropylene for revised specification	"Typical Value" for HDPE
Thickness, (mils) ASTM D751	40	40	40
Density, (g/cc) ASTM D 1238	0.9	0.9	0.94
Tensile Strength at Yield (psi) ASTM D 638	900 (machine direction) 700 (cross direction)	750	2,200
Tensile Strength at Break (psi) ASTM D 638	2,400 (machine direction) 2,300 (cross direction)	2,100	3,800
Elongation Break (%) ASTM D 638	800 (machine direction) 900 (cross direction)	700	700
Critical Cone Height (cm) GRI/GM3	>10	>7	1
Multiaxial Burst Extension (%) GRI/GM4	>150	>100	47

COMPARISON OF PROPERTIES

Although the tensile strengths at yield and break for polypropylene are lower than for HDPE, the critical cone height and multiaxial burst extension values are significantly higher for polypropylene than for HDPE.

The critical cone height test and multiaxial burst extension test were created to simulate field conditions where protrusions exist in the ground surface and subsidence of the ground surface might occur. These tests measure the behavior of geomembranes in a multiaxial stress/strain environments which is more reflective of actual field conditions than the routinely reported one-dimensional tensile strength and elongation values from the ASTM D 638 tensile test.

The choice of a geomembrane is based on a combination of properties and the required performance of the geomembrane in the specific design application.

REVIEW OF DESIGN CALCULATIONS

A review of the engineer's design calculations involving the geomembrane revealed that tensile stress along the side slopes is carried by the protective geotextile overlying the geomembrane with no transfer of stress to the geomembrane. For this design, the two conditions where stress is applied to the geomembrane are 1) tensile stress on geomembrane due to anchorage, and 2) tensile stress on geomembrane due to subsidence with potential puncture of the geomembrane. Tensile stress values were recalculated for these conditions and compared with the revised yield stress. The Factors of Safety for these recalculated values were all within the Factory of Safety ranges listed by Koerner in "Designing with Geosynthetics" for these two conditions.

REVIEW OF REASONS FOR ORIGINALLY SELECTING PPE AS GEOMEMBRANE FOR LANDFILL V, AREA II

1) Polypropylene (PPE) conforms to subgrade irregularities and protrusions under stress (i.e., critical cone height significantly higher than HDPE).

2) PPE is not susceptible to stress cracking. Due to HDPE's high crystalinity, surface scratches tend to propagate into cracks through the geomembrane at stresses much lower than measured lab tensile strength values.

3) PPE has a much lower coefficient of thermal expansion/contraction than HDPE and does not pose the "crawling," "wrinkling" and/or contraction problems that HDPE does prior to being covered.

4) PPE has a significantly wider band of optimal seaming temperatures than HDPE to achieve the desired field seam strengths. This allows for easier production of quality seams even if field conditions are not ideal.

5) PPE can be shop fabricated into larger panels, accordion folded, and transported to the site for placement. Due to the rigidity of HDPE, it is usually brought to the field as roll stock requiring a greater number of field seams.

6) PPE allows for progressive construction of the liner into Area III with minimal preparation. Preparation is limited to washing the surface before seaming. HDPE requires washing and then grinding of the oxidized surface along the full length of the seam before seaming.

7) The chemical resistance of PPE is only slightly less than HDPE (both are considered "highly chemical resistant").

Approval Request

Based upon a discussion of the above information with TDEC, TDEC has provided verbal approval to use the revised polypropylene specification listed in Column B of the previously presented Table 1 for the flexible membrane liner for only Area II of ILF V which has shallow side slopes. In consideration of the higher side slopes for Areas III through V and the lower tensile strength of the specified polypropylene, TDEC indicated that the flexible membrane liner for Area III through V will require additional analysis and evaluation followed by TDEC review and approval. Written approval is requested on the revised polypropylene specification data presented in Column B of Table 1 for use in Area II of ILF V.

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
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(615) 594-6035 FAX (615) 594-6105

July 18, 1996

Mr. Larry L. Radcliffe, Director, Waste Management and Technology Development Division
U.S. Department of Energy, Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8620

RE: Proposed modification to approved construction and operation plans-Revisions to original material specifications and CQA procedures for Y-12 Industrial landfill V

Dear Mr. Radcliffe:

The revised plan for Y-12 Industrial Landfill V which you submitted on July 18, 1996, has been reviewed in accordance with Rule Chapter 1200-1-7, Solid Waste Processing and Disposal. This modification consists of changes in material specifications and CQA procedures to:
(a) allow cessation of testing of soils from the borrow source, based on the abundance of data already gathered;
(b) change the requirement for the minimum elongation of the geotextile from 60% to 50%, based on current industry standards and the actual use of this material;
(c) change the geomembrane panel width from 20 to 18 feet, based on manufacturing feasibility. 18-foot panels will have two (2) factory seams included.
(d) change the specifications for certain parameters for the polypropylene liner material to slightly lower values, based on current industry standards (this applies to the current module only). "Tensile strength at yield" will be modified from 900 psi machine direction, 700 psi cross direction; to 750 psi overall. "Tensile strength at break" will be modified from 2400 psi machine direction, 2300 psi cross direction; to 2100 psi overall. "Elongation break" will be modified from 800% machine direction, 900% cross direction; to 700% overall. These are only slight variations from the original specifications; however, since either original or modified specifications are considerably lower than typical

values for HDPE for tensile strength, we are only approving this modification, or continued use of the polypropylene material, for the current module, which has very low side slopes. The liner material will need to be re-evaluated before construction of later modules, which will have higher side slopes.

We find that the revised plan meets the regulatory requirements, and we agree that this revision should be considered a minor modification. We are therefore approving the plan as submitted. In all aspects of construction and operation affected by the modification, this plan will replace and supercede the original plan.

An approved copy of the modified plan is enclosed for your use. If you have any questions concerning this matter, do not hesitate to contact me.

Yours truly,

Rick Brown
Environmental Engineer
Division of Solid Waste Management

RSB
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cc: Nashville Office - Division of Solid Waste Management

Energy Systems Waste Management Organization
Post Office Box 2003 Oak Ridge, Tennessee 37831-7357
Telephone: 423-241-4921 Facsimile: 423-576-6222

LOCKHEED MARTIN

October 16, 1996

Ms. Suzanne P. Riddle, Acting Director
Waste Management and Technology Development Division
Department of Energy
Oak Ridge Operations Office
Post Office Box 2001
Oak Ridge, Tennessee 37831-8620

Dear Ms. Riddle:

Contract DE-AC05-84OR21400, Permit for Industrial Landfill V (ILF V) (Permit No. IDL-01-103-0083), Minor Modifications (Program Managers: B. C.Demonia and R. M. Skinner)

The Y-12 ILF V Permit Application Modification Package (Y/TS-1395/R1) has been approved by the Tennessee Department of Environment and Conservation (TDEC). Within this package are technical specifications containing specific requirements for the development of the disposal units. As Lockheed Martin Energy Systems continues development of the disposal units, additional items in the technical specifications have been identified for minor modification. These modifications are intended to minimize costs and improve efficiencies during the activities. A description of the proposed modifications is enclosed.

The proposed modifications have been discussed with Mr. Rick Brown of TDEC, and he has provided verbal approval on the proposed modifications. He indicated that these modifications should be submitted for written review and approval. After review and concurrence, please forward the proposed minor modifications to Mr. Rick Brown, Tennessee Department of Environment and Conservation, 2700 Middlebrook Pike, Suite 220, Knoxville, Tennessee 37921, requesting review and written approval.

Please contact Mickey Willoughby (576-8166) or Ed Murrill (241-3073) if you have questions or require additional information.

Sincerely,

T. W. Morris, Director
Energy Systems Waste Management Organization

TWM:MLW:mkn

Enclosure

c: F. P. Gustavson
J. E. Heiskell/J. E. Stone
R. J. Spence, DOE-ORO

c/enc: D. G. Ailey
W. H. Bessom
K. D. Delius
E. M. Ingram
D. H. Level
E. M. Murrill
R. W. Sellars
P. F. Waldschlager
M. L. Willoughby - RC

Enclosure: Correspondence to S. P. Riddle from T. W. Morris dated October 16, 1996; Subject: Permit for Industrial Landfill V (ILF V) (Permit No. IDL-01-103-0083), Minor Modifications (Program Managers: B. C. Demonia and R. M. Skinner)

PROPOSED MINOR MODIFICATIONS TO THE INDUSTRIAL LANDFILL V (PERMIT NO. IDL-01-103-0083) TECHNICAL SPECIFICATIONS
October 1996

1) Section 02270 requires that accumulated sediment be cleaned from Sediment Ponds 1 and 2 at the completion of Area II construction. An examination of Sediment Pond 1 indicates the pond is in good shape and has a very minor accumulation of sediment which does not justify the expense and work associated with cleaning the sediment pond. Sediment Pond 2 will be cleaned of accumulated sediment. Approval is requested to delete the cleaning of sediment from Sediment Pond 1 at the completion of Area II construction. Sediment and mud resulting from the clean out of sediment ponds and silt fences will be taken to a prepared area on an undeveloped portion (Area III, IV, or V) of Industrial Landfill V (ILF V). The area will be prepared by grading to promote good drainage and installing silt fences and/or hay bales to receive the runoff and down gradient flow from the sediment drying area. The sediment pond mud will be unloaded and spread in this area to facilitate drying of the material.

2) Paragraphs 2.01 C and 3.02 C of Section 02276 require the installation of a temporary synthetic cover over the protective soil cover during the construction process. This temporary synthetic cover is a feature exceeding the minimum regulatory requirement, and its purpose is to minimize the generation of rainfall-induced leachate during the initial stages of operating a disposal area. Approval is requested to delete installation of the temporary synthetic cover as a specific requirement during construction of the disposal area. The landfill operator will monitor rainfall-induced leachate generation rates and will have the option to install and use the temporary synthetic cover to minimize the rainfall-induced leachate as deemed operationally necessary. If a temporary synthetic cover is used, the individual panels will be installed with overlapped joints that are secured with sandbags, tape, or other methods recommended by the manufacturer. Hot wedge welding of the seams will not be necessary.

STATE OF TENNESSEE
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October 28, 1996

Ms. Suzanne P. Riddle, Acting Director
Waste Management and Technology Development Division
U.S. Department of Energy, Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8620

RE: Proposed modification to approved construction and operation plans-Changes to sediment pond cleanout schedule and temporary cover specifications for Y-12 Industrial Landfill V, IDL 01-103-0083

Dear Ms. Riddle:

The revised plan for Y-12 Industrial Landfill V, submitted to our office on October 28, 1996, has been reviewed in accordance with Rule Chapter 1200-1-7, Solid Waste Processing and Disposal. This modification consists of changes to the schedule for removal of sediment from the ponds to delete any requirements to remove sediment at a particular time; sediment will be removed when it has accumulated to the cleanout level. Also, the requirement to install a synthetic membrane over the protective soil layer covering the gravel drainage layer would be removed; use of the synthetic material would be an option. Since this material is not a liner component and might be moved and reused in different areas, it would not be seamed but would be anchored in place with sandbags or other suitable means. We find that the revised plan meets the regulatory requirements, and we agree that this revision should be considered a minor modification. We are therefore approving the plan as submitted. In all aspects of construction and operation affected by the modification, this plan will replace and supercede the original plan.

96 2:02

96-47038

An approved copy of the modified plan is enclosed for your use. If you have any questions concerning this matter, do not hesitate to contact me.

Yours truly,

Rick Brown

Rick Brown
Environmental Engineer
Division of Solid Waste Management

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cc: DSWM, Nashville

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL

# of pages ▶ 3

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Fax # 6-0530	Fax #

NSN 7540 01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

10/30/96

copies to:

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B. Bessom
L. Jelius
R. Sellars

For your files + information.

Mickey