Carmen Johnson
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INTERIM REPORT
PRELIMINARY DATA REVIEW
FOR LANDFILL NUMBER 6

Canton, North Carolina

Volume I

Prepared by:

ROY F. WESTON, INC.
1000 Perimeter Park Drive, Suite E
Morrisville, North Carolina 27560

5 December 1994

WESTON
MANAGERS DESIGNERS/CONSULTANTS

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INTERIM REPORT
PRELIMINARY DATA REVIEW
FOR LANDFILL NUMBER 6

Prepared for:

CHAMPION INTERNATIONAL CORPORATION
Canton Pulp and Paper Mill
Canton, North Carolina

William C. Morris, P.G.
Registration Number 1218, North Carolina

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5 December 1994

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5 December 1994

Mr. Mark Poindexter
North Carolina Department of Environment, Health and Natural Resources
Division of Solid Waste Management
PO Box 27687
Raleigh, NC 27611-7687

RE: Transmittal of Interim Report - Preliminary Data Review for Landfill Number 6
Champion International Corporation, Canton Pulp and Paper Mill
Canton, North Carolina

Dear Mr. Poindexter:

Please find attached three copies of the above referenced report. The report addresses those items discussed in our meeting of 31 October 1994. The additional elements of the 17 August 1994 assessment plan will be incorporated into the March 1995 report. It is noted that the data analysis completed in this preliminary report suggests that Areas F, G and H may be impacting groundwater monitored by wells MW-2, MW-4 and MW-14, and that focus on this portion of the site is recommended.

If you have any questions or comments regarding this report or other matters, please do not hesitate to contact Mr. Derric Brown, (704)646-2318, or Mr. Jim Giauque, (704)646-2028, at Champion's Canton, North Carolina facility.

Very Truly Yours,

ROY F. WESTON, INC.

William C. Morris

William C. Morris, Jr., P.G.
Project Manager

attachments

cc: William Beers, RFW
Jim Giauque, Champion
Derric Brown, Champion
Bob Williams, Champion
John Bengel, Champion

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SECTION 1

INTRODUCTION

1.1 PURPOSE

At the request of Champion International Corporation (Champion), Roy F.Weston (WESTON.) has prepared this preliminary data review report for the Champion Canton Mill Landfill Number 6. The preliminary report has been developed in response to a request from the North Carolina Department of Environment, Health, and Natural Resources, Division of Solid Waste Management (DEHNR, DSWM).

On 31 October 1994, Champion with WESTON met with DEHNR to discuss the Comprehensive Assessment Plan for Groundwater and Surface Water at Landfill Number 6 (WESTON, 17 August 1994). During the meeting, it was agreed to conduct a preliminary review of existing Landfill Number 6 data, with the results of the review to be submitted 30 working days after the meeting. The preliminary review was to include the following items:

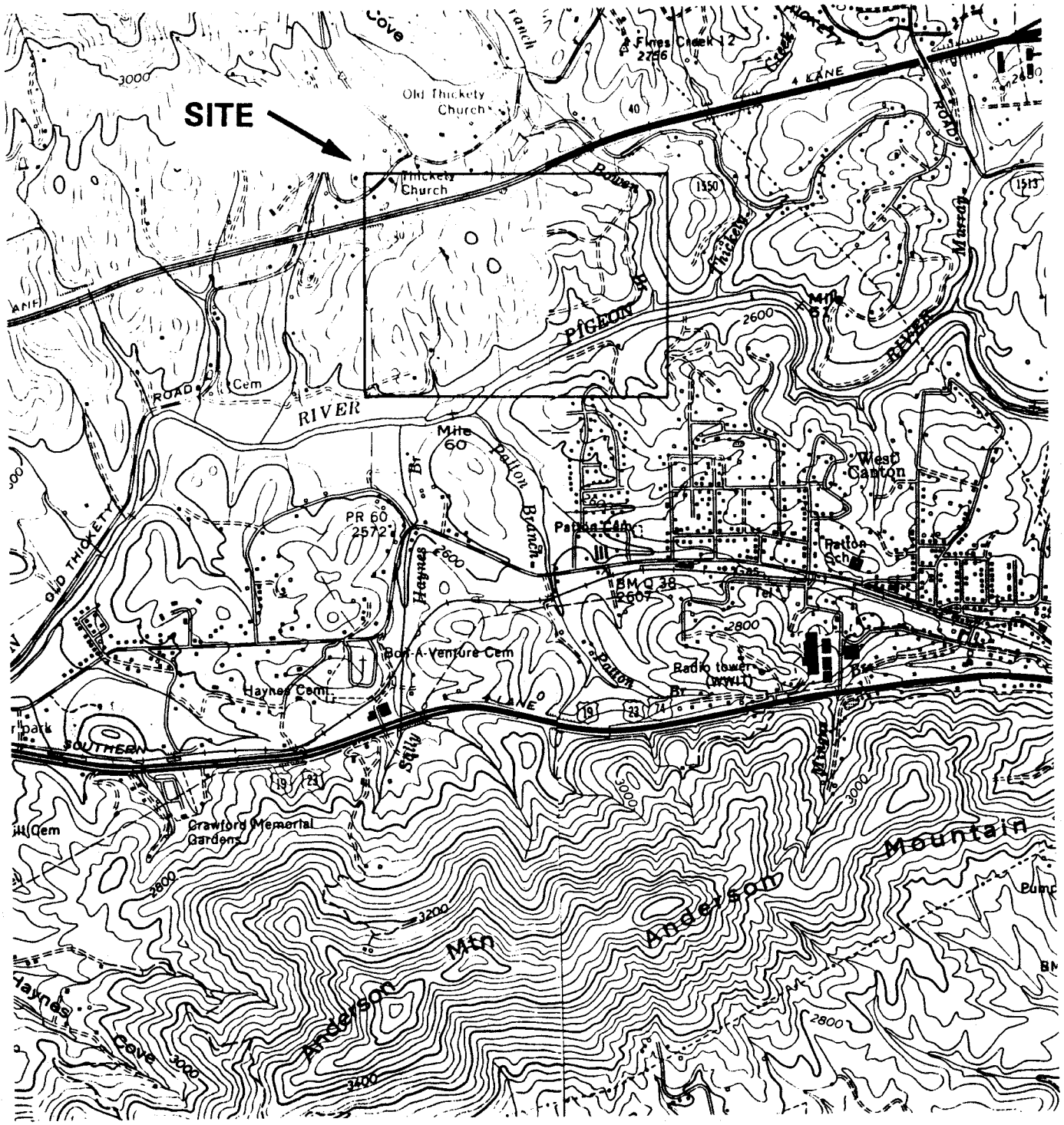
- A discussion of the landfill history
- An evaluation of monitoring well construction data, on a well-by-well basis
- A discussion of the construction of the various cells in the landfill
- A discussion of chemical analyses of wastes disposed of at the landfill
- A statistical analysis of historical groundwater chemical analytical data
- A discussion of available data for an adjacent County owned and operated landfill
- Development of a preliminary field sampling and analysis plan

This report presents the findings of the preliminary data review, and addresses each of the agreed upon items to the extent possible within the schedule. In preparing this report, WESTON has searched through files maintained at the environmental department offices of the Champion Canton Mill, and has interviewed the environmental staff at the Mill. Repeated attempts were made by Champion to obtain groundwater quality data for the adjacent County landfill, but to date such information has not been received. Information regarding the regional geology was collected from published survey data as part of the development of the 17 August 1994 Groundwater Assessment Plan.

1.2 PHYSICAL SETTING

Landfill No. 6 is located in the western portion of North Carolina, approximately 1.5 miles west of Canton, in Haywood County (Figure 1-1). The site is currently bordered to the north by Interstate Highway 40, to the south by the Pigeon River, to the east by State Road 1513, and

NORTH



REFERENCE: USGS TOPOGRAPHIC MAPS
CLYDE,NC AND CANTON, NC QUADRANGLES
CLYDE – 1967, PHOTOREVISED 1978
1967, PHOTOREVISED 1990

SCALE (Feet)

0 2000

1000

WESTON MANAGERS DESIGNERS/CONSULTANTS	FIGURE	1-1
	DATE	7/5/94
	REVISION	0
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	FILE	SITETOPO

FACILITY LOCATION MAP
CHAMPION INTERNATIONAL
CANTON LANDFILL NO. 6
CANTON, NORTH CAROLINA

to the west by State Road 1550. The site covers approximately 240 acres, and is subdivided into eight areas, designated A through H (Figure 1-2).

Geologically, the site is located in the Blue Ridge Belt of the Blue Ridge Province. The 1985 North Carolina Geologic Map indicates that the site lies within a (middle) proterozoic sequence of highly metamorphosed (kyanite to sillimanite facies) sedimentary and igneous rock described as felsic and biotite gneiss which is locally migmatitic and mylonitic. Local intrusions of later Proterozoic mafic and felsic plutons are present.

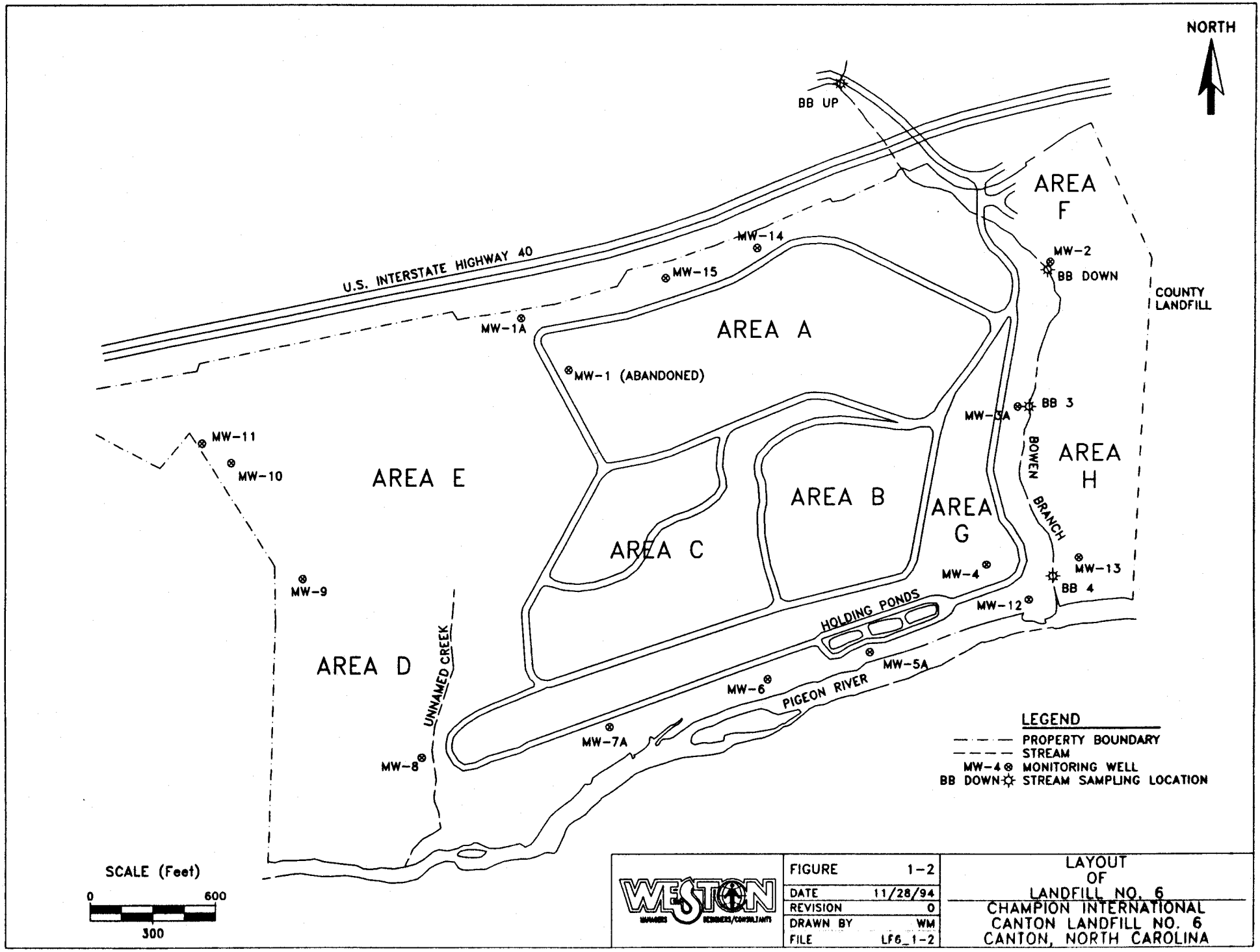
The area in the vicinity of the site is mapped as the Ashe Metamorphic Suite - schist unit (Late Proterozoic), with a dunite body present in the eastern portion of the site, mapped as part of the Earlies Gap Biotite Gneiss (North Carolina Geological Survey Bulletin 90, Geology of the Sandymush and Canton Quadrangles, North Carolina, 1988). The schist unit is described as a two mica (muscovite-biotite) schist, light-to-medium gray, thin-to-medium layered, medium-to-coarse grained, finely foliated, with kyanite or sillimanite present as an accessory mineral.

The Earlies Gap Biotite Gneiss, of Middle Proterozoic age, is highly jointed and folded, comprised primarily of biotite gneiss. As the biotite content increases, the gneiss becomes more schistose. Muscovite is present in much lesser quantities than biotite. Amphibolite occurs as thin layers, lenses and pods. The Earlies Gap Biotite Gneiss contacts the Ashe Metamorphic Suite along the Holland Mountain thrust fault.

A late proterozoic dunite body in the vicinity of the site is mapped on the upper plate of the western edge of the Holland Mountain thrust fault, located approximately where monitor well MW-2 resides. Where unaltered, the dunite is comprised primarily of olivine, and may contain black crystals and blebs of chromite. Weathered or altered dunite may include talc, anthophyllite, chlorite, tremolite, and vermiculite, and eventually weather out to a nickeliferous saprolite and a dark red soil containing chalcedonic fragments.

Soils at the area are generally comprised of thin alluvium and colluvium. The alluvium and colluvium are modified by running water, vegetation, and weathering. Underlying this surface material is a variable thickness of saprolite. The saprolite is typically finer grained nearer the surface, where weathering is most pronounced. With increasing depth, the degree of weathering decreases, and the saprolite typically becomes progressively coarser. Eventually, the saprolite grades into heavily fractured rock, which typically becomes less fractured with depth.

Groundwater in the region may be present in the soil and in the fractured rock (filling the fractures). Depth to groundwater is highly variable, depending to a large degree on the surface topography. In low lying areas, groundwater may be encountered within 10 feet or less of ground surface, whereas depth to groundwater on hilltops may be in excess of 100 feet.


NORTH
BB UP
AREA F
MW-14
MW-2
BB DOWN
COUNTY LANDFILL
U.S. INTERSTATE HIGHWAY 40
MW-15
MW-1A
AREA A
MW-1 (ABANDONED)
BB 3
MW-3A
MW-11
MW-10
AREA E
AREA B
AREA G
AREA H
BOWEN BRANCH
AREA C
MW-13
MW-4
BB 4
MW-9
MW-12
HOLDING PONDS
AREA D
UNNAMED CREEK
MW-5A
MW-6
PIGEON RIVER
MW-7A
MW-8
LEGEND
PROPERTY BOUNDARY
STREAM
MW-4 MONITORING WELL
BB DOWN STREAM SAMPLING LOCATION
SCALE (Feet)
0
600
300
WESTON
MANAGERS
ENGINEERS/CONSULTANTS
FIGURE 1-2
DATE 11/28/94
REVISION 0
DRAWN BY WM
FILE LF6_1-2
LAYOUT OF LANDFILL NO. 6
CHAMPION INTERNATIONAL
CANTON LANDFILL NO. 6
CANTON, NORTH CAROLINA

The area is drained by numerous small creeks and the larger Beaverdam Creek and Hominy Creek. Thickety Creek is located immediately east of the site. Bowen Branch runs through the eastern portion of the site. Small unnamed creeks are present along the western portion of site. The creeks and branches drain into the Pigeon River, located along the southern border of the site. In the vicinity of the site, the Pigeon River flows from east-to-west.

SECTION 2

PRELIMINARY DATA REVIEW

The following sections discuss each of the elements reviewed as part of this interim report. To facilitate the review, data has been tabularized as much as possible.

2.1 LANDFILL HISTORY

On 28 March 1984, Champion received Solid Waste Permit Number 45-06 from the North Carolina Department of Environment, Health, and Natural Resources, Division of Solid Waste Management (DEHNR, DSWM) to operate Landfill Number 6 for disposal of solid, non-hazardous waste. On 16 October 1992, the permit was amended to allow for a vertical expansion of the landfill. Prior to 1984, this site was owned by Brantley M. and Gladys S. Davis. Aerial photographs taken in 1964 indicate that this land was used primarily for agricultural purposes. Aerial photographs associated with a 1983 report also reveal the presence of some small structures (homes and trailers) in the area, including a structure in the vicinity of monitoring well MW-1A and MW-1 (abandoned) and a structure between existing wells MW-2 and MW-3A.

The landfill received papermill wastes consisting of lime, sludge, flyash, cinders, asbestos, and woodwaste. The landfill consists of eight areas, designated A through H, which have received various wastes over time (Table 2-1, Figures 2-1 and 2-2, and Appendix A). Five of these areas are designated for combined sludge and ash disposal (A,B,C,D, and E), while the remaining three have been used for lime and asbestos disposal. Disposal has been completed in areas F and G, and is expected to be completed in areas B and C in 1995. A lined cell in area A is slated to begin operation in early 1995. Areas D and E are still undeveloped, but borrow operations have resulted in some excavation of soil from area E.

The first area to be constructed was Area F, completed in the first half of 1984. Aerial photographs taken in April 1984 show this area as undergoing construction, but not yet receiving waste. Champion records indicate this area was opened in the fall of 1984 and was used to accept lime and asbestos materials. This area was filled to capacity and closed in October 1986.

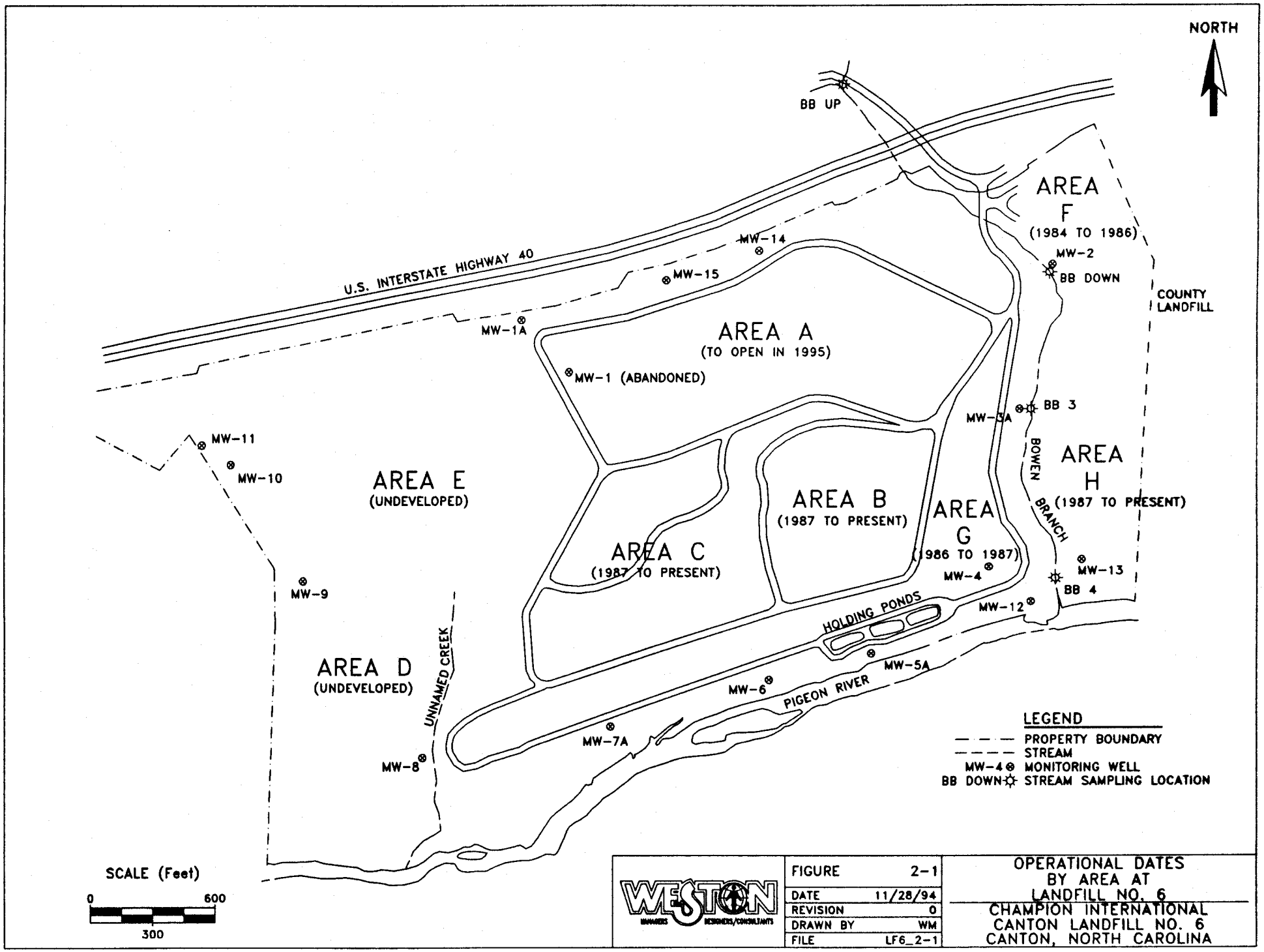
Construction of Area B was completed by December 1986. This site was designed to hold sludge, cinders, woodwaste, and flyash. The first load was delivered in June 1987, and is still in use due to vertical expansion.

Area G was constructed and started receiving lime and asbestos in 1986. Champion records indicate the area was filled to capacity in late 1987. Aerial photographs taken in October 1987 indicate the area as being inactive.

TABLE 2-1
HISTORY OF LANDFILL USAGE

YEAR	SLUDGE (CU. YARDS)	FLYASH (CU. YARDS)	WOODWASTE (CU. YARDS)	CINDERS (CU. YARDS)	LIME (CU. YARDS)	*ESTIMATED TOTAL FILL AMOUNTS (CU.YARDS)	***ACTIVE CELL AREAS
1984	312980	86300	55140	15840	141540	638600	F
1985	318700	81960	39680	16540	132083	598420	F
1986	277800	73240	26340	14340	158500	635220	F,G
1987	273900	66480	24860	14420	133180	512840	B,G,H
1988	290940	71480	11520	16720	140900	531560	B,H
1989	246200	82180	5400	16900	148220	498900	B,H
1990	270180	82540	19860	6940	103800	483320	B,C,H
1991	255620	73080	2820	11780	99020	442320	B,C,H
1992	254640	72580	5140	6000	110620	448980	B,C,H
1993	220500	64680	13020	8320	111640	418160	B,C,H
1994**	177000	78000	12000	7500	72000	346500	B,C,H

* Based on Champion landfill haul records.
** Total estimate for January through September (YTD).
*** Landfill No. 5 received sludge until June 1990.


NORTH
BB UP
U.S. INTERSTATE HIGHWAY 40
MW-14
MW-15
MW-1A
AREA A
(TO OPEN IN 1995)
MW-1 (ABANDONED)
AREA F
(1984 TO 1986)
MW-2
BB DOWN
COUNTY LANDFILL
MW-3A
BB 3
BOWEN BRANCH
AREA H
(1987 TO PRESENT)
MW-13
BB 4
MW-11
MW-10
AREA E
(UNDEVELOPED)
AREA B
(1987 TO PRESENT)
AREA G
(1986 TO 1987)
MW-4
AREA C
(1987 TO PRESENT)
MW-9
HOLDING PONDS
MW-12
MW-5A
MW-6
PIGEON RIVER
AREA D
(UNDEVELOPED)
UNNAMED CREEK
MW-7A
MW-8
LEGEND
PROPERTY BOUNDARY
STREAM
MW-4 MONITORING WELL
BB DOWN STREAM SAMPLING LOCATION
SCALE (Feet)
0
600
300
WESTON
MANAGERS DESIGNERS/CONSULTANTS
FIGURE 2-1
DATE 11/28/94
REVISION 0
DRAWN BY WM
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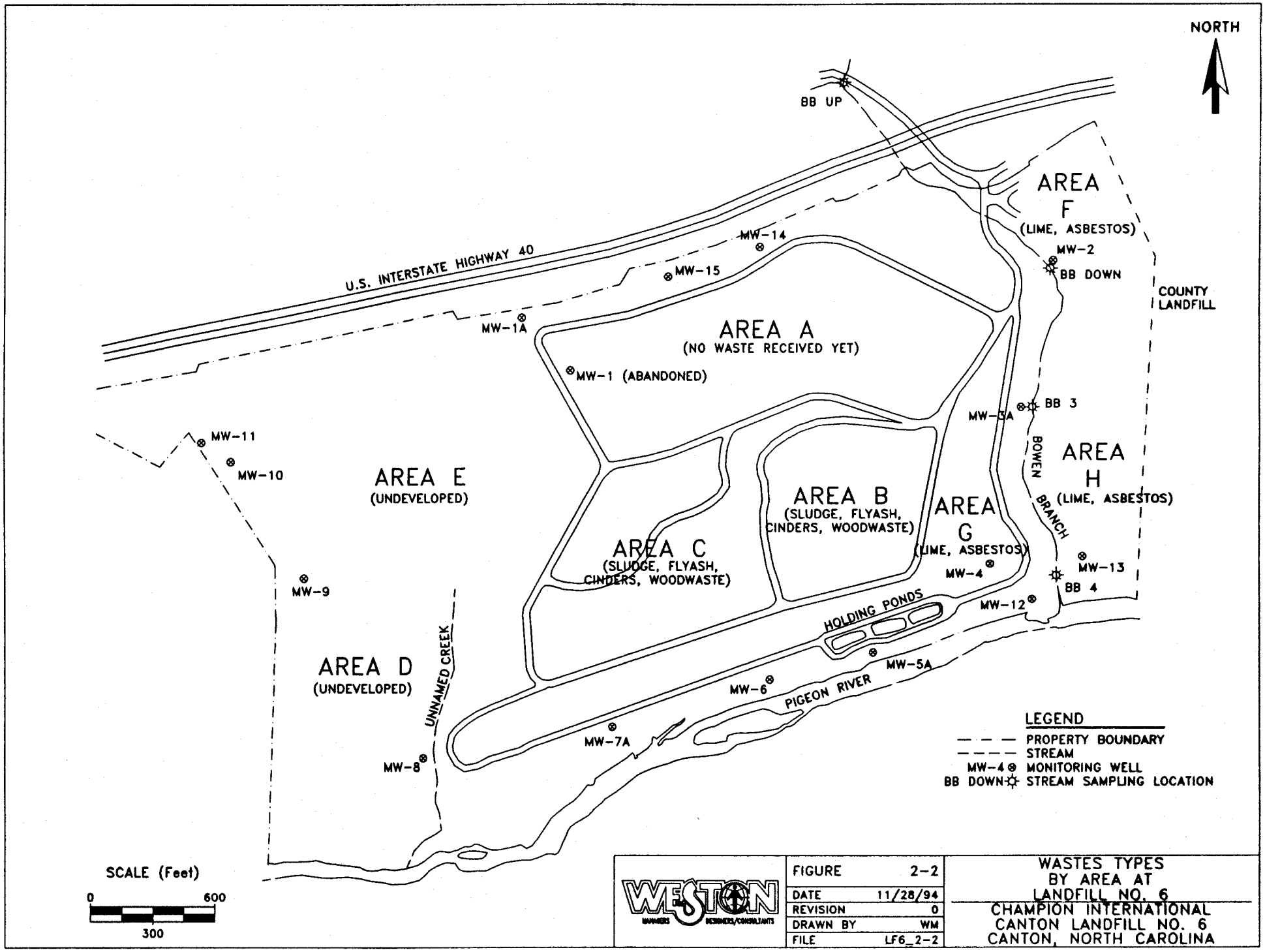
OPERATIONAL DATES BY AREA AT LANDFILL NO. 6
CHAMPION INTERNATIONAL
CANTON LANDFILL NO. 6
CANTON, NORTH CAROLINA


NORTH
BB UP
U.S. INTERSTATE HIGHWAY 40
MW-14
MW-15
MW-1A
AREA A
(NO WASTE RECEIVED YET)
MW-1 (ABANDONED)
AREA F
(LIME, ASBESTOS)
MW-2
BB DOWN
COUNTY LANDFILL
MW-3A
BB 3
BOWEN BRANCH
AREA H
(LIME, ASBESTOS)
MW-11
MW-10
AREA E
(UNDEVELOPED)
AREA B
(SLUDGE, FLYASH, CINDERS, WOODWASTE)
AREA G
(LIME, ASBESTOS)
AREA C
(SLUDGE, FLYASH, CINDERS, WOODWASTE)
MW-4
MW-13
BB 4
MW-9
MW-12
HOLDING PONDS
MW-5A
AREA D
(UNDEVELOPED)
UNNAMED CREEK
MW-6
PIGEON RIVER
MW-7A
MW-8
LEGEND
PROPERTY BOUNDARY
STREAM
MW-4 MONITORING WELL
BB DOWN STREAM SAMPLING LOCATION
SCALE (Feet)
0
600
300
WESTON
MANAGERS DESIGNERS/CONSULTANTS
FIGURE 2-2
DATE 11/28/94
REVISION 0
DRAWN BY WM
FILE LF6_2-2
WASTES TYPES BY AREA AT LANDFILL NO. 6
CHAMPION INTERNATIONAL
CANTON LANDFILL NO. 6
CANTON, NORTH CAROLINA

Area H construction was completed in the first half of 1987. Lime and asbestos disposal began in September 1987. Individual cells are still active at present.

In October 1987, construction of Area C was completed. Sludge, woodwaste, cinder, and flyash are still disposed of in this area. Aerial photographs taken in its initial month of operation indicate the presence of sludge.

The most recent area to be constructed is Area A. This section is divided into a lined cell, completed in May 1993, and an second cell that will be lined in the near future. (Specifics on the construction of the various cells in Landfill Number 6 are presented Section 2-2.) This area will be used to hold sludge, lime, flyash, and woodwaste.

Areas D and E have not been used for waste disposal. In 1987, some topsoil was removed from Area D during the construction of Area C. Area E is largely undeveloped and is covered with vegetation.

The leachate holding ponds were built during the initial construction phase in 1984, as shown in aerial photographs taken in April 1985. The ponds are gravity fed from the various cells' leachate collection systems. The leachate from the holding ponds is pumped to Champion's wastewater treatment facility.

2.2 LANDFILL CONSTRUCTION

This section presents an overview of construction details on an area by area basis. Items discussed include: date of construction, cell lining information, and leachate collection system used. Table 2-2 presents a summary of construction data for each cell in Landfill Number 6. Figure 2-3 illustrates construction data for each of the areas at the landfill.

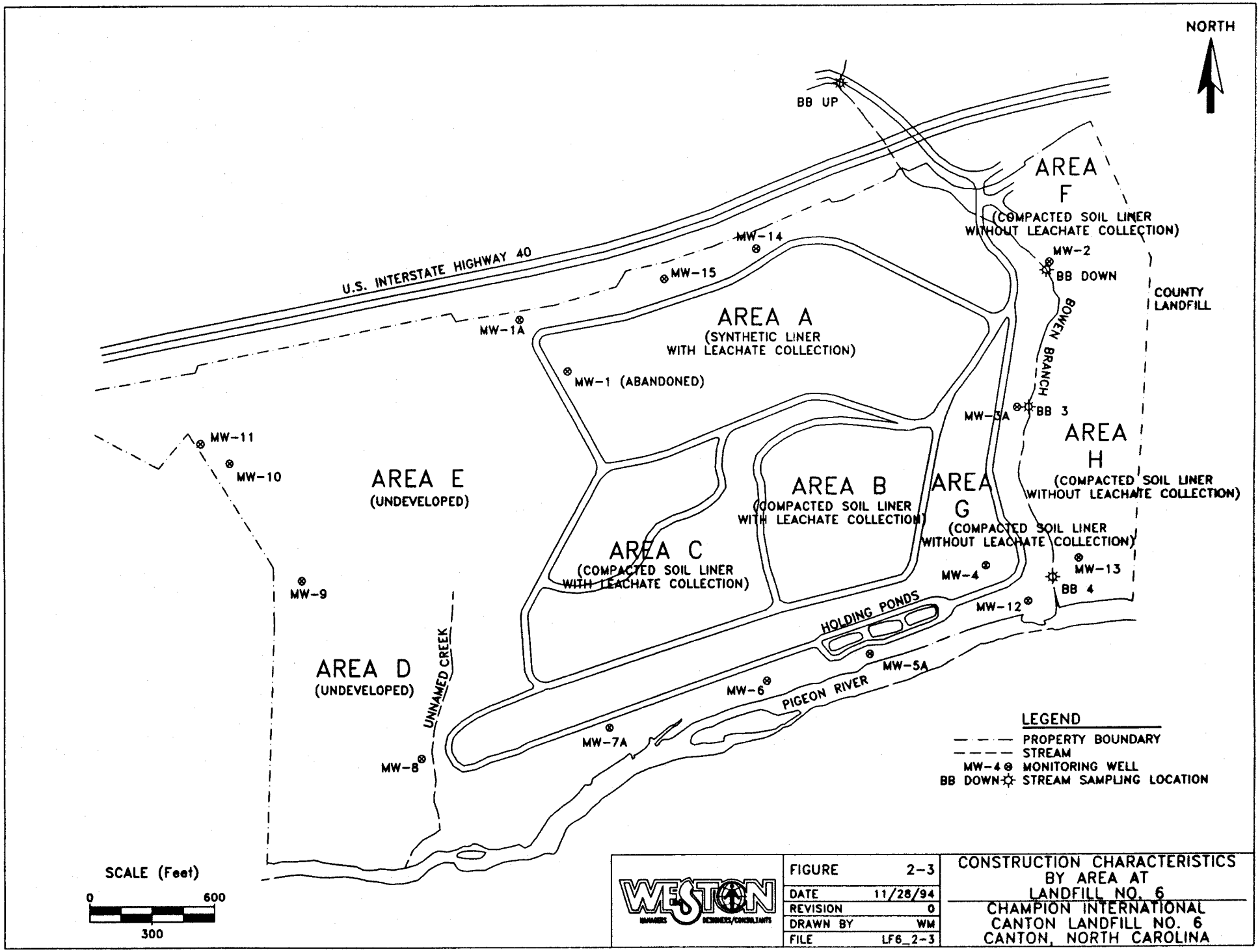
AREA A

Area A construction began in June of 1992. Construction of Area A East was completed in May of 1993, and is scheduled to open in 1995. Construction of a second cell, Area A West, is not yet completed.

The lining of the completed Area A East cell is comprised of a 60 mil textured high density polyethylene synthetic membrane. The leachate collection system in both cells consists of 6-inch perforated HDPE laterals which connect to a 12-inch header that runs down the length of Area A. This header is connected to a 12-inch steel leachate collection pipe that conveys to the leachate ponds. The laterals and headers are protected from damage by a mounded gravel berm extending the length of Area A.

TABLE 2–2
SUMMARY OF LANDFILL NUMBER 6 CELL CONSTRUCTION

CELL AREA	STATUS	LINER	LEACHATE COLLECTION SYSTEM	MAJOR WASTE TYPE
A	OPENS 1995	SYNTHETIC	YES	NA
B	NO LONGER ACCEPTING WASTE 1995	COMPACTED SOIL	YES	SLUDGE, FLYASH, CINDERS, WOODWASTE
C	NO LONGER ACCEPTING WASTE 1995	COMPACTED SOIL	YES	SLUDGE, FLYASH, CINDERS, WOODWASTE
D	UNDEVELOPED	NA	NA	NA
E	UNDEVELOPED	NA	NA	NA
F	CLOSED	COMPACTED SOIL	NO	LIME, ASBESTOS
G	CLOSED	COMPACTED SOIL	NO	LIME, ASBESTOS
H	ACTIVE	COMPACTED SOIL	NO	LIME, ASBESTOS



WESTON	FIGURE 2-3	CONSTRUCTION CHARACTERISTICS BY AREA AT LANDFILL NO. 6
	DATE 11/28/94	CHAMPION INTERNATIONAL
	REVISION 0	CANTON LANDFILL NO. 6
	DRAWN BY WM	CANTON, NORTH CAROLINA
	FILE LF6_2-3	

Additional construction activities are planned for Area A West, which will include installation of a liner and leachate collection system similar to Area A East under separate permit in the future.

AREA B

Construction of Area B began in 1985 and was completed by December of 1986. This area was designed to contain sludge, woodwaste, and flyash. The liner at the base of the landfill consists native soils compacted during construction of the cell. A leachate collection system was installed and is operational. The leachate collection system collects the leachate and transfers it to the leachate collection ponds. The area is currently active, but is planned to no longer be accepting waste in 1995.

AREA C

Construction was completed on Area C in mid-1987. As with Area B, this area was built to contain sludge, flyash, and woodwaste. The soil at the base of the landfill was compacted during construction and a leachate collection system was installed. This collection system is tied into lines leading to the leachate collection ponds. The area is currently active, but is planned to no longer be accepting waste in 1995.

AREA D

Area D has not been developed for use in receiving waste. The only use of the area to date is as a soil borrow area during construction of other cells in Landfill Number 6.

AREA E

This is an undeveloped section of the landfill, and has not been used to receive waste. There has been some limited excavation of soil for borrow operations during construction of other cells at Landfill Number 6.

AREA F

Area F construction was completed in the summer of 1984. This section was developed to handle lime and asbestos. This site was opened in September of 1984 and reached capacity in October of 1986. The liner is comprised of native soil at the base of the landfill compacted at the time of construction. A leachate collection system was not installed in Area F.

AREA G

Construction of this area was completed in December 1986. The area reached capacity in December 1987. Area G was designated to contain lime and asbestos. Records indicate the lining consists of compaction of on-site materials (soil). No leachate collection system was installed.

AREA H

Area H construction was completed in mid-1987 and began operation shortly thereafter. The site was designated for mixed lime and asbestos fill. Additionally, a dedicated cell, located in the northern portion of Area H, is designated for asbestos only. Area H is still in use at the present time. Records indicate that the lining consists of compaction of on-site soils. A leachate collection system was not installed.

2.3 MONITORING WELL CONSTRUCTION DATA

As part of the preliminary assessment of the data, WESTON reviewed monitoring well construction records for existing and abandoned monitoring wells at the landfill. Additionally, lithologic data from some soil borings were reviewed and compared to the well construction information. In some instances, no lithologic log could be located for a given monitoring well, and lithologic data from nearby borings were used to estimate subsurface conditions in the vicinity of the well. Occasionally, lithologic information was limited to a reference to bedrock depth. A summary of well construction data is presented in Table 2-3. Appendix B presents monitoring well construction logs and soil boring lithologic logs.

Comparison of monitor well construction records and depth to groundwater measurements suggests that most or all wells are screened into the first encountered saturation (the surficial or water table aquifer), which appears to variably occur in overburden and bedrock. Only at monitoring well MW-10 is the depth to water significantly shallower than the top of the sand pack. (When reviewing Table 2-3, note that total well depth and depth to water are referenced from the top-of-casing, whereas the other data in the table are referenced relative to ground surface. The top-of-casing typically extends 2-to-3 feet above ground surface.)

Well screens vary in length from 5 feet to 20 feet, and sand pack intervals vary in length from approximately 6 feet to 25 feet, although the sand pack at monitoring well MW-4 is approximately 50 feet long. In some wells (MW-2, MW-3, MW-5, and MW-7) the top of the sand pack is very shallow (5 feet or less below ground surface), and therefore these wells may be (or may have been, in the case of abandoned wells MW-3, MW-5, and MW-7) more sensitive to surface water infiltration. (Wells MW-3, MW-5, and MW-7 were abandoned as a consequence of landfill construction activities. The replacements for these wells, MW-3A,

TABLE 2-3
SUMMARY OF MONITORING WELL DATA

MONITOR WELL#	TOTAL DEPTH (FT BTOC)	DEPTH TO WATER (FT BTOC)	GROUNDWATER ELEVATION (FT MSL)	DEPTH TO FIRST SATURATION (FT BGS)	SCREENED INTERVAL (FT BGS)	SANDPACK INTERVAL (FT BGS)	SEAL THICKNESS (FEET)	GROUTED INTERVAL (FT BGS)	SCREENED WITHIN	LITHOLOGIC DATA SOURCE**	DOWN-GRADIENT TO AREAS
*MW-1	122.9	93.8	2714.10	NS	102.9-122.9	122.9-92.1	4.7	0.0-87.4	BEDROCK	IR	A
MW-1A	70.8	49.4	2715.65	NS	60.2-70.2	70.8-57.8	2.3	0.0-55.5	BEDROCK	IR	A
MW-2	10.2	4.2	2591.16	NS	5.2-10.2	10.2-4.5	1.0	0.0-3.5	SAPROLITE	IR	F
*MW-3	11.0	8.3	2569.40	6.0	6.0-11.0	11.0-4.5	1.0	0.0-3.5	SAPROLITE	IR/B9	A,B,G
MW-3A	20.0	7.6	UNKNOWN	NS	7.5-17.5	17.5-5.2	1.2	0.0-4.0	SOIL	IR/B9	A,B,G
MW-4	84.0	59.7	2569.95	66.0	64.0-84.0	84.0-34.4	1.4	0.0-33.0	BEDROCK	IR/B10	B,G
*MW-5	15.6	5.1	2542.10	NS	5.6-15.6	15.6-5.0	1.5	0.0-3.5	SAPROLITE	IR/B7	B
MW-5A	42.0	35.0	UNKNOWN	NS	32.0-42.0	42.0-29.4	1.1	0.0-28.3	BEDROCK	IR/B7	B
MW-6	20.4	15.0	2534.71	NS	8.5-18.5	18.5-9.0	1.0	0.0-8.0	BEDROCK	IR	B,C
*MW-7	16.3	6.2	2544.30	8.5	4.3-14.3	14.03-4.0	1.0	0.0-3.0	SAPROLITE	IR/B15	C
MW-7A	26.2	9.6	UNKNOWN	8.5	13.5-23.5	23.5-10.8	1.3	0.0-9.5	BEDROCK	IR/B15	C
MW-8	29.3	11.3	2583.14	NS	17.7-27.7	27.7-7.0	1.0	0.0-6.0	BEDROCK	IR	D
MW-9	66.9	35.4	2648.62	NS	44.8-64.8	64.8-41.0	1.7	0.0-39.3	BEDROCK	IR	-
MW-10	75.6	36.2	2641.63	NS	54.0-74.0	74.0-52.4	3.4	0.0-49.0	BEDROCK	IR/B1	-
MW-11	21.9	10.6	2628.81	NS	10.4-20.4	20.4-10.0	2.0	0.0-8.0	SOIL	IR/B1	-
MW-12	30.3	11.4	2532.35	NS	20.4-30.4	30.4-18.0	2.0	0.0-16.0	BEDROCK	IR	B,G
MW-13	36.3	18.6	UNKNOWN	NS	24.0-34.0	34.0-21.1	1.5	0.0-19.6	BEDROCK	IR	H
MW-14	27.0	26.3	2623.75	10.4	17.0-27.0	27.0-14.8	2.4	0.0-12.4	BEDROCK	IR/B11	A
MW-15	43.5	22.3	2587.70	NS	31.0-41.0	41.0-28.3	2.8	0.0-25.5	BEDROCK	IR	A

* Monitor Well has been abandoned.
** IR is Installation Record. Additional information available from borehole sampling conducted near monitor well.
NS = Not Specified
FT BTOC = Feet Below Top of Casing
FT MSL = Feet Above Mean Sea Level
FT BGS = Feet Below Ground Surface
Groundwater levels recorded 8 November 1994.

MW-5A and MW-7A, respectively, have sand packs which do not extend to within five feet of ground surface.)

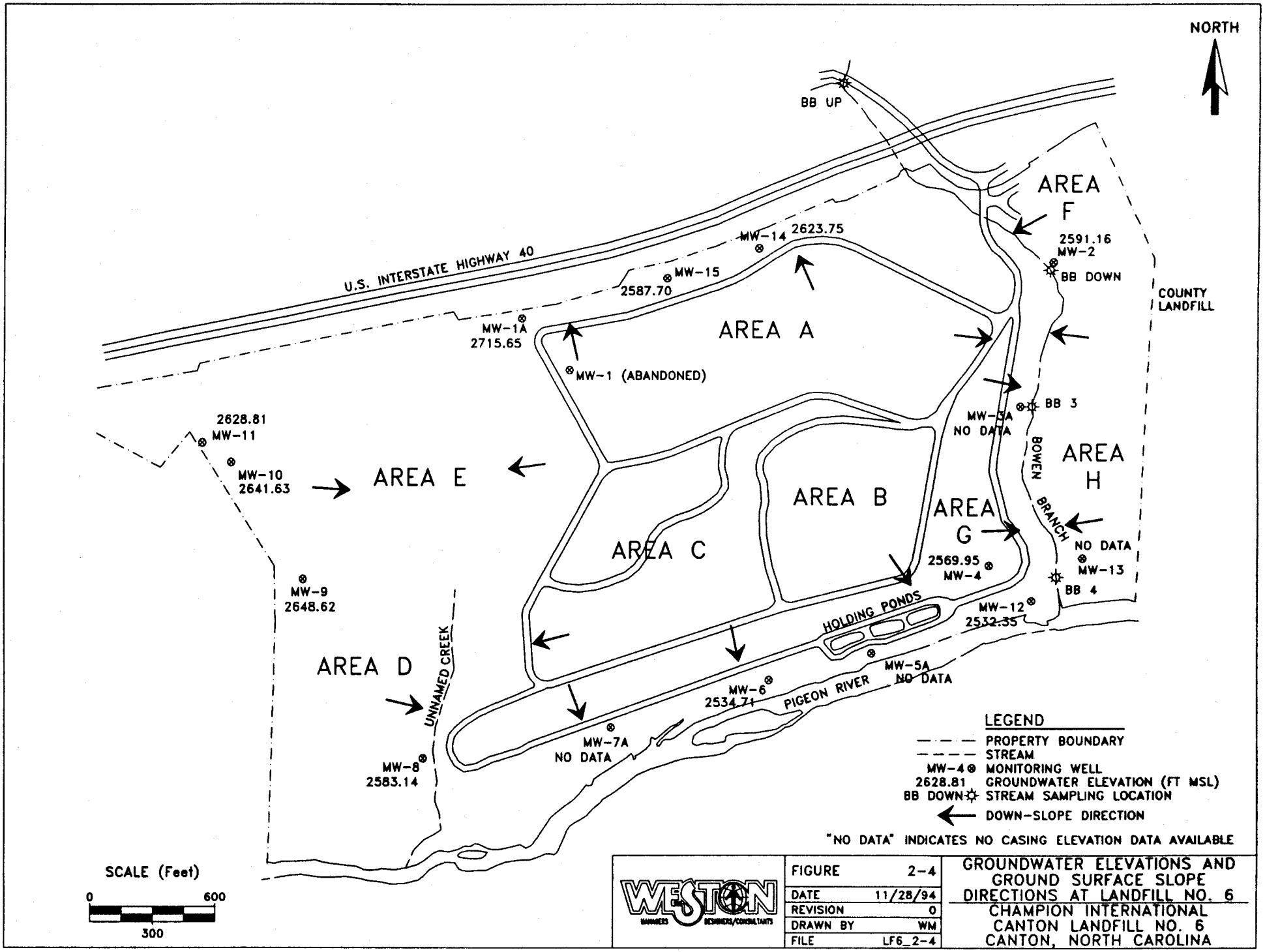
It is noted that the bentonite seal extends into the screened interval at well MW-2. At well MW-6, the bentonite seal extends to a level even with the top of the screened interval. The presence of bentonite within or adjacent to the screened interval is irregular, but probably does not significantly affect the analytical results for samples collected from these wells.

Figure 2-4 illustrates 8 November 1994 groundwater elevations, and indicates the downslope direction of the surface topography as estimated from a 1989 topographic map of the landfill (prepared by Sirrine Environmental, last revised in 1991; this map is the most recent topographic map of the landfill retrieved during the file review and presented in Appendix C). In preparing the figure, it is noted that casing elevation data was not available for all wells, and in some cases was limited in precision to the nearest foot. It is further noted that ground surface elevations are expected to have changed by an undetermined amount since the 1989 topographic map was prepared. Lastly, it is noted that there are no monitoring wells installed along the eastern boundary of the landfill (which borders the County landfill). Consequently, uncertainty exists regarding groundwater flow direction in this portion of the site. Once data for the County landfill wells are received, interpretation of groundwater flow in this area will be more feasible.

In general, surficial groundwater elevations are consistent with an interpretation of groundwater flow which would somewhat reflect surface topography (i.e., groundwater elevations are highest in areas where the ground surface is highest, groundwater elevations are lower in areas of lower ground surface elevation, and groundwater flow is expected to generally flow from areas of high to areas of low groundwater elevation). Estimated groundwater flow directions based on this interpretation of the November 1994 data are generally similar to a previous interpretation of groundwater flow using similar assumptions, as depicted in a 1982 Law Environmental Incorporated map (Appendix C).

Using an interpretation of groundwater flow paths similar to surface topography, monitoring wells were categorized according to which landfill cell(s) they appeared be downgradient of (Table 2-3 and Figure 2-4). Monitor wells MW-9, MW-10 and MW-11 do not appear to be located so as to have a high probability of intercepting groundwater flowing away from any of the areas of the landfill. Consequently, groundwater quality data from these wells should be useful as indicators of the natural or background conditions of the aquifer, and have been used as such in conducting the statistical analysis of groundwater quality (Section 2.5).

It is noted that other, regional influences are also expected to influence groundwater flow, particularly in those wells screened into bedrock and which are not screened close to the ground surface (as bedrock groundwater is expected to receive recharge over a wider area, and respond to more regionalized gradients). Other interpretations of groundwater flow which do not


NORTH
BB UP
U.S. INTERSTATE HIGHWAY 40
MW-14 2623.75
MW-15
2587.70
MW-1A
2715.65
MW-1 (ABANDONED)
AREA A
AREA F
2591.16
MW-2
BB DOWN
COUNTY LANDFILL
BB 3
MW-5A
NO DATA
BOWEN BRANCH
AREA H
NO DATA
MW-13
BB 4
AREA B
AREA G
2569.95
MW-4
AREA C
AREA E
2628.81
MW-11
MW-10
2641.63
MW-9
2648.62
AREA D
UNNAMED CREEK
MW-8
2583.14
MW-7A
NO DATA
MW-6
2534.71
PIGEON RIVER
HOLDING PONDS
MW-12
2532.35
MW-5A
NO DATA
LEGEND
PROPERTY BOUNDARY
STREAM
MW-4 MONITORING WELL
2628.81 GROUNDWATER ELEVATION (FT MSL)
BB DOWN STREAM SAMPLING LOCATION
DOWN-SLOPE DIRECTION
"NO DATA" INDICATES NO CASING ELEVATION DATA AVAILABLE
SCALE (Feet)
0
600
300
WESTON
HANDLERS DESIGNERS/CONSULTANTS
FIGURE 2-4
DATE 11/28/94
REVISION 0
DRAWN BY WM
FILE LF6_2-4
GROUNDWATER ELEVATIONS AND GROUND SURFACE SLOPE DIRECTIONS AT LANDFILL NO. 6
CHAMPION INTERNATIONAL
CANTON LANDFILL NO. 6
CANTON, NORTH CAROLINA

necessarily closely reflect ground surface elevations are possible, and may, after further study of the groundwater system, be developed.

2.4 WASTE STREAM ANALYTICAL DATA

From 1983 to the present, Champion has tested solid wastes generated at the papermill, including: flyash from coal boilers; cinders from the bark-coal burners; sludge from the waste treatment plant; and lime mud from #6 filter. These wastes have been tested according to RCRA and USEPA standards, primarily using the EP Toxicity test through June 1993 and the TCLP test since June 1993. Solid wastes which have been disposed of in Landfill Number 6 include: woodwaste; flyash from coal boilers; cinders from the bark-coal burners; sludge from the waste treatment plant; and lime mud from #6 filter.

The flyash consists of particles of ash carried by combustion gases of the coal boilers, collected by electrostatic precipitators. Cinders can be described as incombustible matter remaining after the burning process. The sludge comes from a slurry collected during processing of plant wastewater; a large amount is comprised of wood fibers lost from the paper machines. Lime mud (calcium carbonate) is precipitated in the causticizing reaction.

The results of the tests are reported in Table 2-4, which identifies those constituents detected in a given waste. (The analytic suite employed for groundwater and surface water monitoring is also based on the characteristics of the wastes. Monitoring data is discussed in the following section.) Barium is the most frequently detected constituent, with a variety of other metals detected at various times. Some organic compounds have been detected on occasion. All TCLP (and EP Toxicity) analyses indicate the wastes are non-hazardous. Appendix D presents the laboratory reports for the analyses summarized in Table 2-4.

2.5 STATISTICAL ANALYSIS OF GROUNDWATER QUALITY DATA

The objective of the statistical analysis was to determine if there is a statistically significant difference in groundwater quality between areas of the facility thought to represent background conditions of the aquifer (represented by wells MW-9, MW-10, and MW-11) and other parts of the site which have the potential to monitor possible influences of the landfill usage.

Statistical Modeling Approach

The statistical analysis involved conducting a parametric, one-way, univariate, repeated-measures analysis of variance (ANOVA) on pH, dissolved solids, conductivity, and concentrations of 25 potential groundwater contaminants. An ANOVA model was used instead of t-test because the ANOVA statistical design accounts for both temporal and spatial variations, while t-tests only assess spatial variation. Furthermore, the ANOVA tests can compensate for false test results (positive or negative) such as may occasionally occur in a large number of individual chemical

TABLE 2-4
SUMMARY OF HISTORICAL WASTE ANALYSES

SAMPLE NAME	DATE	TEST METHOD	CONCENTRATION OF DETECTED CONSTITUENTS
Flyash	06/27/83	EP Toxicity	Arsenic/ 0.41 mg/L
			Barium/ 0.22 mg/L
			Cadmium/ 0.02 mg/L
			Selenium/ 0.045 mg/L
			Siver/ 0.004 mg/L
Cinders	06/27/83	EP Toxicity	Arsenic/ 0.022 mg/L
			Barium/ 0.46 mg/L
WTP Sludge	06/27/83	EP Toxicity	Arsenic/ 0.013 mg/L
			Barium/ 0.24 mg/L
Lime Mud	06/27/83	EP Toxicity	Barium/ 0.49 mg/L
Leachate	07/25/88	TCLP	Phenol/ 34.1 ppb
			p-Cresol/ 63.2 ppb
Sludge Extract	07/25/88	TCLP	Phenol/ 56.4 ppb
			4-Ethylphenol/ 12.6 ppb
Flyash	07/25/88	TCLP	Phenol/ 21.9 ppb
Lime Mud Extract	07/25/88	TCLP	Phenol/ 53.6 mg/L
Sludge	09/05/90	TCLP	Cloroform/ 0.490 mg/L
			*Barium/ 1.4 mg/L
Lime Mud	09/05/90	TCLP	Chloroform/ 1.1 mg/L
			*Barium/ 0.04 mg/L
Flyash	09/05/90	TCLP	*Chloroform/ 0.023 mg/L
			*Barium/ 0.10 mg/L
Cinders	09/05/90	TCLP	Chloroform/ 0.062 mg/L
			Barium/ 2.1 mg/L
			*Cadmium/ 0.009 mg/L
Lime Sample	09/24/90	Priority Pollutant Metals (total)	Cadmium/ 2.0 mg/kg
			Chromium/ 6.4 mg/kg
			Copper/ 5.6 mg/kg
			Lead/ 1.3 mg/kg
			Nickel/ 11.0 mg/kg
			Silver/ 3.3 mg/kg
			Zinc/ 12.0 mg/kg
		Pestcides and PCB's	Aldrin/ 15.0 ug/kg
Lime Sample	10/10/90	Priority Pollutant Metals (total)	Antimony/ 3.0 mg/kg
			Cadmium/ 2.0 mg/kg
			Chromium/ 9.4 mg/kg
			Copper/ 11.0 mg/kg
			Lead/ 1.3 mg/kg
			Nickel/ 14.0 mg/kg
			Silver/ 2.6 mg/kg
			Zinc/ 15.0 mg/kg
		Volatile Organics	Chlorobenzene/ 35.0 ug/kg
			Methylene Chloride/ 31.0 ug/kg
Lime Mud	08/06/91	TCLP	Barium/ 72.0 ppm
			Silver/ 5.0 ppm
			Sodium/ 4850 ppm
Lime Mud	01/08/92	TCLP	Barium/ 0.2 mg/L
Fly Ash-#4 Boiler	08/13/94	TCLP	Arsenic/ 0.70 mg/L
			Selenium/ 0.13 mg/L
Flyash-PG/BB/RC	08/13/94	TCLP	Arsenic/ 1.85 mg/L
Flyash-Riley Bark	08/13/94	TCLP	Arsenic/ 0.10 mg/L
WTP Sludge	08/13/94	TCLP	Barium/ 2.76 mg/L

* Indicates compound was detected at levels below the practical quantitation limit. The level reported is approximate.

analytical tests; simple t-testing does not allow for such compensation to be incorporated into the model.

Database

The database of the analytical information used in the statistical analysis consisted of analytical data generated between July 1983 and May 1993 from 19 wells (MW-1, MW-1A, MW-2, MW-3, MW-3A, MW-4, MW-5, MW-5A, MW-6, MW-7, MW-7A, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15). Analytical parameters included in the database were: pH; dissolved solids; conductivity; silver; arsenic; barium; calcium; cadmium; chloride; chromium; fluoride; iron; mercury; chloride; fluoride; manganese; nickel; nitrite; lead; phenol; selenium; sodium; sulfate; total organic carbon (TOC); and total organic halogens (TOX). The limited schedule available for conducting this analysis precluded input of the data collected after May 1993. This data will be included in the March 1995 report.

A preliminary examination of the data set was undertaken to ensure that the data were in forms appropriate for statistical modeling. This task consisted of five activities:

(1) Recoding "nondetects" as one-half of the detection limit in accordance with U.S. EPA policy. The recoding approach proposed is described in U.S. EPA, 1989, Methods for evaluating the attainment of cleanup standards, p. 2-16.

(2) evaluating whether the analytical data appear to be normally distributed. This activity involved examining descriptive statistics (e.g., skewness, kurtosis, and the coefficient of variation), statistical graphics (e.g., stem-leaf diagrams, box plots, and normal probability plots) and statistical tests (e.g., Shapiro-Wilk's test) to identify gross departures from normality that should be corrected prior to conducting the ANOVA. Because each approach has its advantages and limitations, the decision on whether the concentrations of an analyte are normally distributed was based on the preponderance of the evidence.

(3) Correcting non-normal distributions by applying a logarithmic transformation. This transformation was applied to all data except pH.

(4) Reevaluating whether the transformed data appear to be normally distributed. Although several analytes failed the Shapiro-Wilk normality test, the distributions were deemed to be sufficiently close to normal to proceed with the ANOVA.

(5) Evaluating the analyte measurements for outliers. This activity involved identifying influential observations that may be outliers using box plots, bivariate plots, and other statistical techniques. Although several possible outliers were identified (as discussed below), none were excluded from the analysis because sampling and analysis records were not available to determine if the sample should be representative of the groundwater quality in the area at the time the sample was collected.

Statistical Testing

The statistical analysis involved conducting a parametric, one-way, univariate, repeated-measures analysis of variance (ANOVA) on pH, dissolved solids, conductivity, and concentrations of 25 potential groundwater contaminants. The GLM Procedure in SAS (version 6.02) was used to conduct the analysis. (The GLM procedure in the SAS software is used for analyzing general linear models using either an ANOVA or regression approach. For details, see SAS Institute Inc., SAS/STAT™ User's Guide, Release 6.03 Edition, Cary, NC: SAS Institute Inc., 1988, 1028 pp.) Well location was used as the main blocking factor and date of sampling was the repeated measure. Output from the analysis is provided in Appendix E.

A variety of tests are shown on the output, including the following:

- Global Tests – one test for each analyte to determine whether the ANOVA model accounts for a significant proportion of the variance in the groundwater quality. These tests were not of major importance in the analysis because the focus of the study was on detecting specific difference between background and downgradient areas. All of the global tests were significant except the tests for mercury, selenium, lead, nitrite, and total organic halogens.

- Main Effects Tests – one test of whether the mean concentration for an analyte is statistically greater than or equal to zero (or not equal to zero in the case of pH). These tests were not of major importance in the analysis because the focus of the study was on detecting specific differences between background and downgradient areas. All of the main effects tests for well location were significant except for the tests for pH, silver, arsenic, mercury, nickel, lead, fluoride, nitrate, phenols, total organic carbon, and total organic halogens. All of the main effects tests for time were significant except for the tests for arsenic, mercury, selenium, nickel, lead, fluoride, nitrate, phenols, total organic carbon, and total organic halogens.

- *A Priori* Tests for Comparison to "Background" – Tests of whether the mean analyte concentration in a well is greater than or equal to the mean analyte concentration in a wells MW-9, MW-10, and MW-11 (or not equal to the background in the case of pH). These tests were the primary focus of the analysis because they indicated where specific differences may exist between background and downgradient wells.

Results of the ANOVA

A priori tests for the comparison to the background wells are shown on the SAS output after the main ANOVA table for each analyte. Significant tests were defined as those having an F-test probability less than 0.05. Only 5 of the 19 wells appear to have water qualities that are different from the three background wells. An interpretation of these results is provided below.

Wells MW-13 and MW-4

Wells MW-13 and MW-4, located in the southeastern corner of the site, appear to have similar deviations from background groundwater quality. Both wells have elevated concentrations of sodium, chloride, and sulfate, and higher specific conductances. It is not clear whether these trends are attributable to landfill releases, natural environmental conditions (e.g., geologic deposits), or other factors. The significant statistical test for TOC in well MW-13 is probably spurious and not meaningful given the small difference in the mean TOC concentrations (10.6 mg/l in MW-13 versus 3.7 mg/l in the background wells).

Well MW-2

Analysis of data from MW-2, located in the northeastern corner of the site, did not produce any significant *a priori* tests for the comparison to the background wells. However, the large variance of the data from this well may have rendered the ANOVA model unable to detect these differences effectively. (ANOVA models assume that the variance is approximately equal in all the cells of the ANOVA block design. If this assumption is not valid, estimates of the test statistics may be somewhat in error. For additional details, see Kufs, C., 1992, "Statistical Modeling of Hydrogeologic Data - Part 1: Regression and ANOVA Models." Ground Water Monitoring Review, v. XII, No.2, p. 120-130.) This well appears to share the same geochemical profile as wells MW-13 and MW-4 (elevated concentrations of sodium, chloride, and sulfate, and higher specific conductances). MW-2 also appears to have an elevated TOC concentration (364 mg/l in MW-2 versus 3.7 mg/l in the background wells).

Well MW-14

Well MW-14, located on the north central border of the site, had significant *a priori* tests for cadmium, chromium, and nickel. However, a review of the raw data suggests that these

differences are attributable to changes in detection limits over time rather than any degradation in the groundwater quality. (As non-detects are input to the model as data points set at half of the detection limit, variations in the detection limits are processed by the model in the same manner as would actual variations of detected groundwater constituents.)

Well MW-1

Well MW-1, located in the north central part of the site, had a significant *a priori* test for pH. However, a review of the raw data suggests that this difference is attributable to one anomalously elevated pH value (9.9 on 13 July 1993) that may not be representative of the true groundwater pH in the area. The mean pH of groundwater in well MW-1 between 1983 and 1993 is 6.76, whereas the mean pH in the background wells during this time period is 5.56.

Conclusions From the Statistical Analysis

Based on the statistical analysis of the groundwater quality data, it appears that there may be some water quality degradation isolated to the vicinity of wells MW-2, MW-4, and MW-13 on the eastern side of the site. Using only the statistical analysis of the monitoring data, it is not clear whether this apparent degradation can be attributed to releases from the landfill or to other factors. Section 3 presents conclusions using the statistical analysis in conjunction with other elements of this preliminary data review.

2.6 COUNTY LANDFILL DATA

The Haywood County Construction and Demolition Landfill is located adjacent to the eastern boundary of Champion's Landfill Number 6. The landfill is used for the disposal of construction waste, such as roofing shingles, plywood, lumber, insulation materials, and other common construction materials.

The western section of the County Landfill is topographically uphill of Areas F and H. From the property boundary, WESTON observed the above mentioned fill materials. WESTON also noted the existence of two groundwater monitor wells. Reportedly, four monitoring wells are present across the county landfill.

Champion has placed several requests to the County to receive copies of county landfill monitoring well construction data and groundwater quality data for groundwater samples collected from the County landfill monitoring wells. Champion was informed by the County representative that copies of the monitoring well construction data and groundwater sampling data will be forwarded to Champion. At the time of this report, no information has been received. WESTON will incorporate this data into the evaluation of Landfill Number 6 upon receipt of the data.

2.7 PRELIMINARY GROUNDWATER SAMPLING AND ANALYSIS PLAN

A preliminary groundwater sampling and analysis plan has been developed as part of this interim evaluation, and is presented in Appendix F. The current analytic suite employed for routine landfill monitoring has been retained to maintain compliance with the landfill's operating permit. Additionally, dissolved metals has been preliminarily added to the analytic suite, in an attempt to assess the contribution of inorganic constituents resulting from suspended solids present in the groundwater samples. This plan is only preliminary, and may be revised following additional evaluation of existing data and data to be collected as part of the full implementation of the 17 August 1994 work plan. It is noted that, beginning with the November 1994 field sampling effort, two additional stream monitoring location have been added to the monitoring program. These locations are identified as BB-3 and BB-4, and are located on Bowen Branch downstream of the BB-Down sampling location. These locations have been included on the maps used throughout this report.

SECTION 3

CONCLUSIONS

A summary table (Table 3-1) has been complied which provides data from the various items included in this interim evaluation of Landfill Number 6. From the preliminary review of the data, including types of wastes disposed of, landfill area construction information, estimated relative locations of monitoring wells, and a statistical analysis of groundwater quality data, it appears that monitoring wells MW-2, MW-4, and MW-13 may be monitoring groundwater which has been impacted by lime wastes disposed of in Areas F, G, and H, respectively. Each of these three areas do not appear to have a leachate collection system, and use compacted soil as a liner. Sodium, chloride, sulfate, higher specific conductances, and, at well MW-2 only, TOC, are the principle constituents detected in these wells which appear to be elevated with respect to their estimated background concentrations. Consequently, based on these findings, it is recommended that it is appropriate to focus on this portion of the site.

TABLE 3-1
SUMMARY OF DATA REVIEW ELEMENTS

CELL AREA	STATUS	LINER	LEACHATE COLLECTION SYSTEM	WASTE TYPE	TYPICAL DETECTED WASTE CONSTITUENTS	ESTIMATED DOWNGRADIENT MONITOR WELLS	PARAMETERS IN DOWN-GRADIENT WELLS SHOWING STATISTICAL SIGNIFICANCE
A	OPENS 1995	SYNTHETIC	YES	NA	NA	1,1A,3,3A,14,15	NONE
B	NO LONGER ACCEPTING WASTE 1995	COMPACTED SOIL	YES	SLUDGE, FLYASH, CINDERS, WOODWASTE	ARSENIC,BARIUM	3,3A,4,5,5A,6,12	Na, Cl, SO4, Conductivity
C	NO LONGER ACCEPTING WASTE 1995	COMPACTED SOIL	YES	SLUDGE, FLYASH, CINDERS, WOODWASTE	ARSENIC,BARIUM	6,7A	NONE
D	UNDEVELOPED	NA	NA	NA	NA	8	NONE
E	UNDEVELOPED	NA	NA	NA	NA	–	NONE
F	CLOSED	COMPACTED SOIL	NO	LIME, ASBESTOS	BARIUM	2	Na, Cl, SO4, Conductivity, TOC
G	CLOSED	COMPACTED SOIL	NO	LIME, ASBESTOS	BARIUM	3,3A,4,12	Na, Cl, SO4, Conductivity
H	ACTIVE	COMPACTED SOIL	NO	LIME, ASBESTOS	BARIUM	13	Na, Cl, SO4, Conductivity

APPENDIX A

LANDFILL HAUL RECORDS

L A N D F I L L H A U L R E C O R D

YEAR	SLUDGE	LIME	FLYASH	BARK	CINDERS	POLY	WATER	TOTAL
1979	19,416	10,203	485	3,361	1,103	867	2,744	38,179
1980	19,442	9,214	947	4,310	1,017	43	1,329	36,302
1981	19,184	8,429	2,744	2,659	1,083	0	239	34,338
1982	15,563	7,740	2,921	2,663	853	0	615	30,355
1983	16,658	7,807	3,320	3,183	793	0	0	31,761
1984	15,649	8,417	4,315	2,757	792	0	0	31,930
1985	15,935	7,077	4,098	1,984	827	0	0	29,921
1986	13,890	7,925	3,662	1,317	717	0	0	27,511
1987	13,695	6,659	3,324	1,243	721	0	0	25,642
1988	14,547	7,045	3,574	576	836	0	0	26,578
1989	12,310	7,411	4,109	270	845	0	0	24,945
1990	13,509	5,190	4,127	993	347	0	0	24,166
1991	12,781	4,951	3,654	141	589	0	0	22,116

CANTON MILL WASTE TO CHAMPION LANDFILL

		LOADS	VOLUME (yds x 3)	TONS
1988:				
	WTP SLUDGE	14,547	290,940	254,572
	LIME	7,045	140,900	130,333
	FLYASH	3,574	71,480	62,545
	CINDERS	836	16,720	12,540
	WOOD WASTE	576	11,520	5,760
1989:				
	WTP SLUDGE	12,310	246,200	215,425
	LIME	7,411	148,220	137,104
	FLYASH	4,109	82,180	71,908
	CINDERS	845	16,900	12,675
	WOOD WASTE	270	5,400	2,700
1990:				
	WTP SLUDGE	13,509	270,180	236,408
	LIME	5,190	103,800	96,015
	FLYASH	4,127	82,540	72,223
	CINDERS	347	6,940	5,205
	WOOD WASTE	993	19,860	9,930
1991:				
	WTP SLUDGE	12,781	255,620	223,668
	LIME	4,951	99,020	91,594
	FLYASH	3,654	73,080	63,945
	CINDERS	589	11,780	8,835
	WOOD WASTE	141	2,820	1,410
1992:				
	WTP SLUDGE	12,732	254,640	222,810
	LIME	5,531	110,620	102,324
	FLYASH	3,629	72,580	63,508
	CINDERS	300	6,000	4,500
	WOOD WASTE	257	5,140	2,570

LANDFILL HAUL DATA – 1993

MONTH	SLUDGE (CUBIC YARDS)	LIME MUD	FLY ASH	CINDERS	WOODWASTE	TOTAL (CUBIC YARDS)
JANUARY	22040	10160	6900	660	720	40480.0
FEBRUARY	18220	6560	5280	560	820	30940.0
MARCH	21080	4020	5140	660	620	32320.0
APRIL	19840	6640	5600	860	1140	34080.0
MAY	19560	7700	4580	940	500	33400.0
JUNE	19420	5880	5340	620	1020	31780.0
JULY	18960	9380	5140	780	680	34960.0
AUGUST	14880	10500	4640	600	1340	31960.0
SEPTEMBER	15100	11060	5220	900	1440	33720.0
OCTOBER	16220	13280	5660	800	1980	37140.0
NOVEMBER	17640	11500	5540	480	2820	37480.0
DECEMBER	17900	14660	5940	460	940	39900.0
TOTAL CUBIC YARDS	220500	111640	64600	8320	13020	418160

MONTH	SLUDGE (TONS)	LIME MUD	FLY ASH	CINDERS	WOODWASTE	TOTAL (TONS)
JANUARY	19810	9398	5513	495	360	35575.5
FEBRUARY	15943	6068	4620	420	160	27210.5
MARCH	18445	4459	4490	495	310	28206.0
APRIL	17360	6142	4900	645	570	29617.0
MAY	17139	7123	4095	705	250	29306.0
JUNE	16993	4977	4673	465	510	27616.5
JULY	16608	8677	4498	585	340	30706.5
AUGUST	13020	9713	4060	450	670	27912.5
SEPTEMBER	13213	10231	4568	675	720	29405.5
OCTOBER	13318	12284	5129	600	990	32319.0
NOVEMBER	15435	10638	4848	360	1160	32440.0
DECEMBER	15668	13561	5190	345	470	35235.5
TOTAL TRUCK TONS	192938	103267	56595	6240	6510	365550

MONTH	SLUDGE (TRUCK LOADS)	LIME MUD	FLY ASH	CINDERS	WOODWASTE	TOTAL (CUBIC YARDS)	TOTAL (TONS)
JANUARY	1132	500	315	33	36	40480.0	35575.5
FEBRUARY	911	328	264	28	16	30940.0	27210.5
MARCH	1054	241	257	33	31	32320.0	28206.0
APRIL	992	332	280	43	57	34080.0	29617.0
MAY	979	385	234	47	25	33400.0	29306.0
JUNE	971	269	267	31	51	31780.0	27616.5
JULY	949	469	257	39	34	34960.0	30706.5
AUGUST	744	525	232	30	67	31960.0	27912.5
SEPTEMBER	755	553	261	45	72	33720.0	29405.5
OCTOBER	761	664	293	40	99	37140.0	32319.0
NOVEMBER	882	575	277	24	116	37480.0	32440.0
DECEMBER	895	733	297	23	47	39900.0	35235.5
TOTAL TRUCK LOADS	11025	5592	3284	416	651	418160	365550

USING THESE FACTORS:	JANUARY '93 - DECEMBER '93				
Avg. Tons/load	17.5	18.5	17.5	15	10

FILE LISTING: AUDMLANDF'93

4/F #6

State of North Carolina

Department of Environment, Health, and Natural Resources
Division of Solid Waste Management and Office of Waste Reduction
P.O. Box 27687 Raleigh, NC 27611

INDUSTRIAL WASTE LANDFILL ANNUAL REPORT

FOR THE PERIOD OF JULY 1, 1993-JUNE 30, 1994

Separate surveys will be sent to all counties and cities to gather information about other components of solid waste management programs in North Carolina.

For questions or assistance in completing this report, contact your Regional Waste Management Specialist.
Completed forms must be returned to your Regional Waste Management Specialist:

James Patterson
59 Woodfin Place
Asheville NC 28801 (704)251-6452
A copy of this report must be sent to the county manager of each county from which waste was received.

Name: CHAMPION INTERNATIONAL **Permit Number:** 4406
Address: MAIN STREET CANTON NC 28716
Facility Contact Person: JIM GIAUQUE
Phone Number of Contact Person: (704)646-2028
Fax: 704-646-6892
Date Facility Began Receiving Waste: Sep. 1984 **Date Facility Expected to Close:** 2014
Tipping Fee $ NA **/Ton** _____ **(Attach a schedule of tipping fees if appropriate.)**

1. Total waste landfilled at this facility during the period of July 1, 1993, through June 30, 1994. Indicate below tonnage received by county of waste origin.
(Photocopy the Table and use when waste is received at this landfill from more than three counties.)

MONTH	TONS FROM _____ COUNTY	TONS FROM _____ COUNTY	TONS FROM _____ COUNTY	TOTAL
July 1993				30,707
August				27,912
September				29,406
October				26,869
November				26,961
December				29,089
January 1994				27,552
February				26,251
March				28,279
April				24,992
May				25,537
June				24,678
TOTAL				328,233

170944

4/F #5

State of North Carolina

Department of Environment, Health, and Natural Resources
Division of Solid Waste Management and Office of Waste Reduction
P.O. Box 27687 Raleigh, NC 27611

INDUSTRIAL WASTE LANDFILL ANNUAL REPORT

FOR THE PERIOD OF JULY 1, 1993-JUNE 30, 1994

Separate surveys will be sent to all counties and cities to gather information about other components of solid waste management programs in North Carolina.

For questions or assistance in completing this report, contact your Regional Waste Management Specialist.
Completed forms must be returned to your Regional Waste Management Specialist:

James Patterson
59 Woodfin Place
Asheville NC 28801 (704)251-6452

A copy of this report must be sent to the county manager of each county from which waste was received.

Name: CHAMPION INTERNATIONAL Permit Number: 4401
Address: MAIN STREET CANTON NC 28716
Facility Contact Person: JIM GIAUQUE
Phone Number of Contact Person: (704)646-2028
Fax: (704) 646-6892
Date Facility Began Receiving Waste: 1983 Date Facility Expected to Close: 1994
Tipping Fee $ N/A /Ton _____ (Attach a schedule of tipping fees if appropriate.)

1. Total waste landfilled at this facility during the period of July 1, 1993, through June 30, 1994. Indicate below tonnage received by county of waste origin.
(Photocopy the Table and use when waste is received at this landfill from more than three counties.)

MONTH	TONS FROM _____ COUNTY	TONS FROM _____ COUNTY	TONS FROM _____ COUNTY	TOTAL
July 1993				0
August				0
September				0
October				0
November				0
December				0
January 1994				0
February				0
March				0
April				0
May				0
June				0
TOTAL				0

2. Indicate types of disposal activity occurring at this facility. (Check all that apply.)

☒ Landfilling of industrial waste (specify waste) *Paper mill sludge, flyash, lime mud, cinders, wood waste

☐ Landfilling of construction and demolition waste

☐ Landfilling of asbestos

☒ Landfilling of ash

☒ Landfilling of sludge

☐ Landfilling of other waste (specify)_____

3. Indicate other types of activities occurring at this facility. (Check all that apply.)

☐ Yard waste composting

☐ Recycled material collection

☐ Shredding or grinding (other than tires) operation

Material(specify)_____

☐ Other Activity (describe)_____

4. Are there SWANA/GRCDA or other certified operator(s) at this facility?

☐ Yes

☒ No

If yes, indicate the following: (Attach additional sheet if necessary.)

Name:_____

Certification type and expiration date:_____

Name:_____

Certification type and expiration date:_____

Other Comments

We would appreciate your comments about this report or other matters regarding solid waste management in North Carolina. Thank you for your cooperation. (Attach additional sheets if needed.)

*Note that during the reporting period none of the wastes listed have been deposited in the No. 5 Landfill. A request for closure has been submitted to the Solid Waste Section, but no reply has been received to date.

This report must be sent to the Regional Waste Management Specialist for your area.

Person completing this form: James A. Giauque (print legibly) Phone: 704-646-2028

Signature: James A. Giauque Date: 7/28/94

State of North Carolina

Department of Environment, Health, and Natural Resources
Division of Solid Waste Management

SANITARY LANDFILL
ANNUAL REPORT
FOR THE PERIOD OF JULY 1, 1992–JUNE 30, 1993

Solid waste disposal facilities are a vital part of the North Carolina infrastructure to manage solid waste. This report gathers information about solid waste facilities in the State.

Separate surveys have been sent to all counties and cities to gather information about other components of solid waste management programs in North Carolina.

Thank you for your assistance in completing this report. The information gathered as a part of this process should be of value to local governments and the State in assessing waste management programs and future solid waste planning.

If you have any questions or concerns regarding this report please contact the Solid Waste Section at 919-733-0692 or a Waste Management Specialist. Completed forms must be returned to the Waste Management Specialist for your area. Refer to the attached map for names and addresses. A copy of this report must be sent to the County Manager of each county served by this facility.

Facility Name Champion Int. Corp. Landfill No. 5 Permit Number 44-01
Address SR 1613
Location Canton, NC 28716
Facility Owner Champion Int. Corp.
Facility Operator Champion Int. Corp.
Facility Contact Person George W. Pickard
Phone Number of Contact Person (704) 646-2653 FAX (704) 646
Date Facility Began Receiving Waste Dec. 1979
Date Facility Expected to Close 8/93
County(s) Served by this Facility Haywood (Champion Waste Only)
Tipping Fee $ NA /Ton _____ *(please attach a schedule of tip fees if appropriate)*

1. Total waste landfilled at this facility during the period of July 1, 1992, thru June 30, 1993. Indicate tonnage received from each county served by this facility.

MONTH 1992/93	COUNTY Haywood	COUNTY	COUNTY	TOTAL TONS
July - 1992	0			0
August	0			0
September	0			0
October	0			0
November	0			0
December	0			0
January - 1993	0			0
February	0			0
March	0			0
April	0			0
May	0			0
June	0			0
TOTAL TONS	0			0

2. Please indicate types of disposal activity occurring at this facility. (Check all that apply)

- ☐ Landfilling of residential waste
- ☐ Landfilling of commercial waste
- ☒ Landfilling of industrial waste
- ☐ Landfilling of yard waste
- ☐ Landfilling of construction and demolition waste
- ☐ Landfilling of demolition waste (limbs, bricks, stumps)
- ☐ Landfilling of asbestos
- ☐ Landfilling of shredded or split tires
- ☒ Landfilling of ash
- ☐ Landfilling of other waste (please specify) _____

3. Please indicate other types of activities occurring at this landfill. (Check all that apply)

- ☐ Scrap tire collection
- ☐ Yard waste composting
- ☐ Recyclable material collection
- ☐ Used oil collection
- ☐ Household hazardous waste collection
- ☐ White goods separation
- ☐ Lead acid battery collection
- ☐ Shredding or grinding (other than tires) operation

  Material (specify) _____
- ☒ Other activity (please describe) Site undergoing closure - not accepting waste

4. Are there SWANA/GRCDA or other certified operator(s) at this facility?

- ☐ Yes
- ☒ No

If yes, please indicate the following: (attach additional sheets if necessary)

Name: _____

Certification type and expiration date: _____

Name: _____

Certification type and expiration date: _____

5. Have you begun the siting process for your county's next landfill?

- ☐ Yes. If yes, please describe: _____
- ☒ No

Other Comments

We would appreciate your comments about this report or other matters regarding solid waste management in North Carolina. Thank you for your cooperation. (Attach additional sheets if needed.)

This completed report must be mailed to the Waste Management Specialist for your area.

Person completing this form: James A. Grayson (please print) Phone: 704-646-2028

Signature: [signature] Date: 8/19/93

Champion
Champion International Corporation

To: DISTRIBUTION

Date: FEBRUARY 6, 1992

From: GEORGE PICKARD

Subject: LANDFILL HAUL DATA

For your information, attached is a listing of loads hauled each month of 1991 and a haul record for the past thirteen (13) years.

It should be noted that during 1990 the Landfill Group had one tractor-trailer which was capable of hauling a heavier pay load than our dump trucks and in 1991 we had two tractor-trailers. This would account for some of the reduction in loads hauled.

Contact me if further information is needed.

George

George Pickard, Superintendent
Landfill Operations

GP/dj

attachments
cc: file (5)

Distribution

Andy Apostolopoulos
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1991 LANDFILL TOTALS

MONTH	SLUDGE	LIME	FLYASH	CINDERS	BARK	TOTALS
JANUARY	1,090	476	306	74	0	1,946
FEBRUARY	991	379	280	51	22	1,723
MARCH	1,065	517	291	71	12	1,723
APRIL	1,027	382	314	47	5	1,956
MAY	953	435	306	48	45	1,746
JUNE	948	368	342	70	27	1,755
JULY	1,075	444	322	67	32	1,940
AUGUST	1,033	567	323	36	2	1,961
SEPTEMBER	928	403	250	19	15	1,615
OCTOBER	1,174	117	346	55	19	1,711
NOVEMBER	1,276	412	282	26	0	1,996
DECEMBER	1,221	451	292	25	3	1,992
	12,781	4,951	3,654	589	141	22,116

APPENDIX B

MONITORING WELL CONSTRUCTION LOGS
AND
SOIL BORING LITHOLOGIC LOGS

TABLE 1
GROUND-WATER MONITORING WELLS(1)
Champion Papers
Landfill No. 6
Canton, North Carolina
LETCo. Job No. CH 4507C

Well No.	Ground Surface Elevation	Groundwater(2) Elevation	Groundwater(2) Depth	Depth of Well	Screen Interval	Type Material Exposed to screen	Depth to Top of Sand	Depth to Top of Bentonite
MW-1	2807.82	2714.1	93.8	122.9	102.9-122.9	Rock	92.1	87.4
MW-2	2595.31	2587.6	7.7	10.2	5.2-10.2	PWR	4.5	3.5
MW-3	2577.70	2569.4	8.3	11.0	6.0-11.0	Soil-PWR	4.5	3.5
MW-4	2629.63	2574.8	54.8	84.0	64.0-84.0	Rock	34.4	33.0
MW-5	2547.18	2542.1	5.1	15.6	5.6-15.6	Soil-PWR	5.0	3.5
MW-6	2549.72	2535.6	14.1	18.5	8.5-18.5	PWR-Rock	9.0	8.0
MW-7	2550.44	2544.3	6.2	14.3	4.3-14.3	Soil-PWR	4.0	3.0
MW-8	2594.39	2583.5	10.9	27.7	17.7-27.7	Rock	7.0	6.0
MW-9	2684.02	2652.4	31.7	64.8	44.8-64.8	PWR-Rock	41.0	39.3
MW-10	2677.78	2644.9	32.8	74.0	54.0-74.0	Rock	52.4	49.0
MW-11	2639.44	2630.6	8.9	20.4	10.4-20.4	Soil-PWR	10.0	8.0
MW-12	2543.73	2533.9	9.8	30.4	20.4-30.4	PWR-Rock	18.0	16.0

(1) All measurements in feet.
(2) Based on measurements made on 7/12/83.

PWR - Partially Weathered Rock

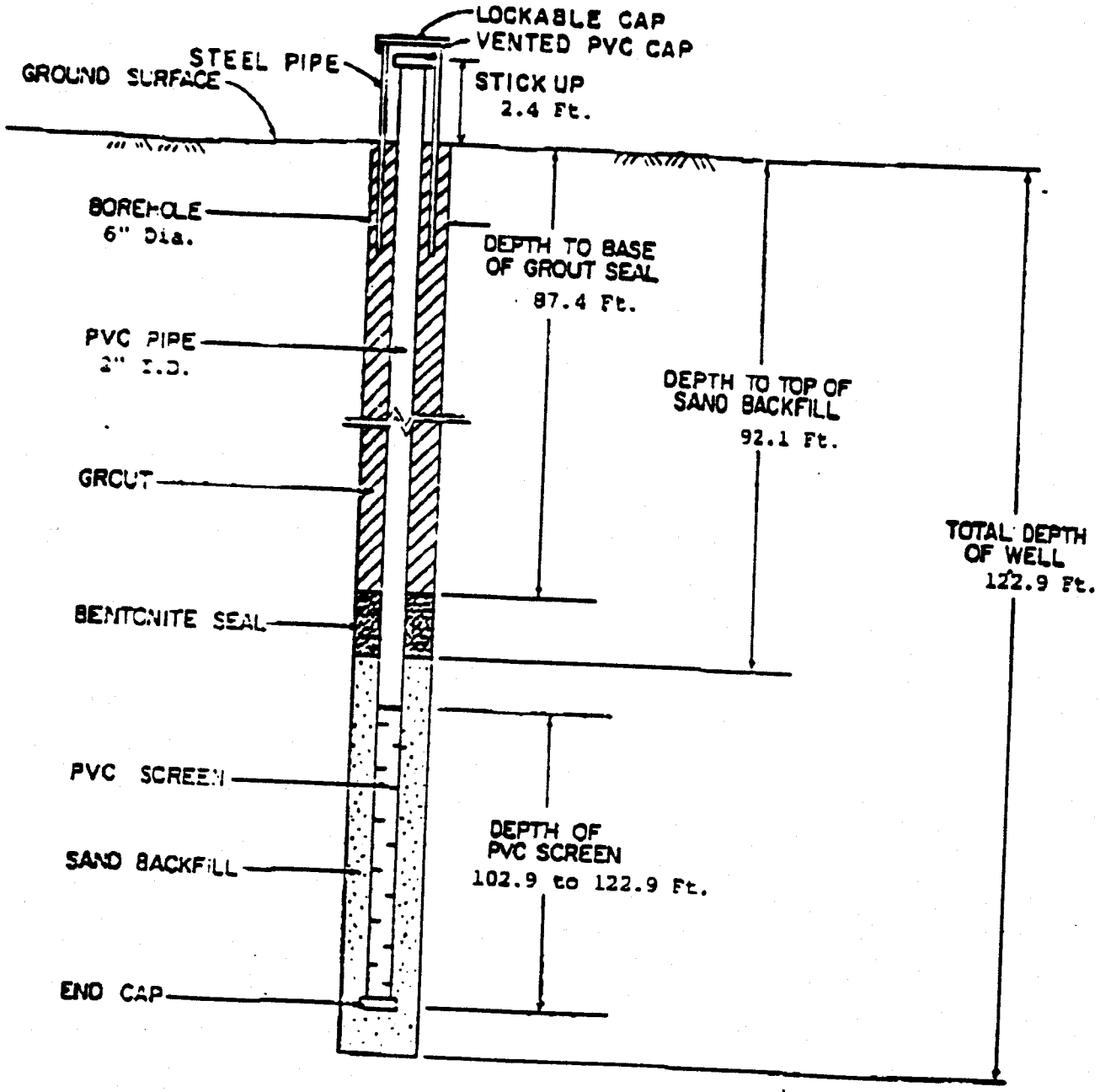
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CU 4507 C

WELL NUMBER MW-1 GROUND SURFACE ELEVATION 2807.92 Ft.

LOCATION Knoll on North Central Part of Site

INSTALLATION DATE 7-6-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-1

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION - BLOWS/FOOT (0 10 20 30 40 60 80 100)
0.0	Hard moist reddish brown fine sandy micaceous SILT relic foliation - high angle - Residuum.		41
7.0	Hard dry reddish brown very micaceous SILT - relic foliation.		32
12.0	Very hard dry red to brown medium sandy micaceous SILT with relic structure.		54
18.0	Very hard dry tan to brown medium to coarse sandy micaceous SILT with relic structure.		74
			50=5.5"
27.0	Hard moist gray to reddish brown fine sandy very micaceous SILT with relic structure.		45
32.0	Hard moist gray to green minor medium sandy very micaceous SILT with relic structure.		41
38.0	Hard moist medium to dark gray minor medium sandy very micaceous SILT with relic structure.		39

REMARKS:

TEST BORING RECORD

BORING NUMBER	MW- 1A
DATE DRILLED	January 27, 1992
PROJECT NUMBER	2410446501
PROJECT	CHAMPION #6A LANDFILL
PAGE 1 OF 2	

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

LAW ENGINEERING

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION - BLOWS/FOOT (0 10 20 30 40 60 80 100)
43.0	Hard moist brown to gray fine to medium sandy micaceous SILT with relic structure.		32
48.0	Very stiff wet dark gray fine to medium sandy micaceous SILT with relic structure.		20
53.0	Hard wet tan to gray fine to medium sandy micaceous SILT with layering.		40
58.0	Partially weathered rock which sampled as (wet gray fine to medium sandy micaceous SILT with layering).		50=5"
63.0	Partially weathered rock which sampled as (wet brown fine to medium sandy micaceous SILT with layering).		50=3"
68.0	Partially weathered rock which sampled as wet light to dark brown medium to coarse sandy micaceous SILT with layering.		50=4.5"
70.8	Boring terminated at 70.8 feet. Auger refusal at 70.8 feet. Ground water encountered at 47.32 feet after 24 hours. Monitoring well installed to 70.2 feet on January 29, 1992.		

REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

TEST BORING RECORD

BORING NUMBER	MW- 1A
DATE DRILLED	January 27, 1992
PROJECT NUMBER	2410446501
PROJECT	CHAMPION #6A LANDFILL
PAGE 2 OF 2	

LAW ENGINEERING

JOB NAME CHAMPION NO. 6 LANDFILL

JOB NUMBER 2410446501

WELL NUMBER MW-1A

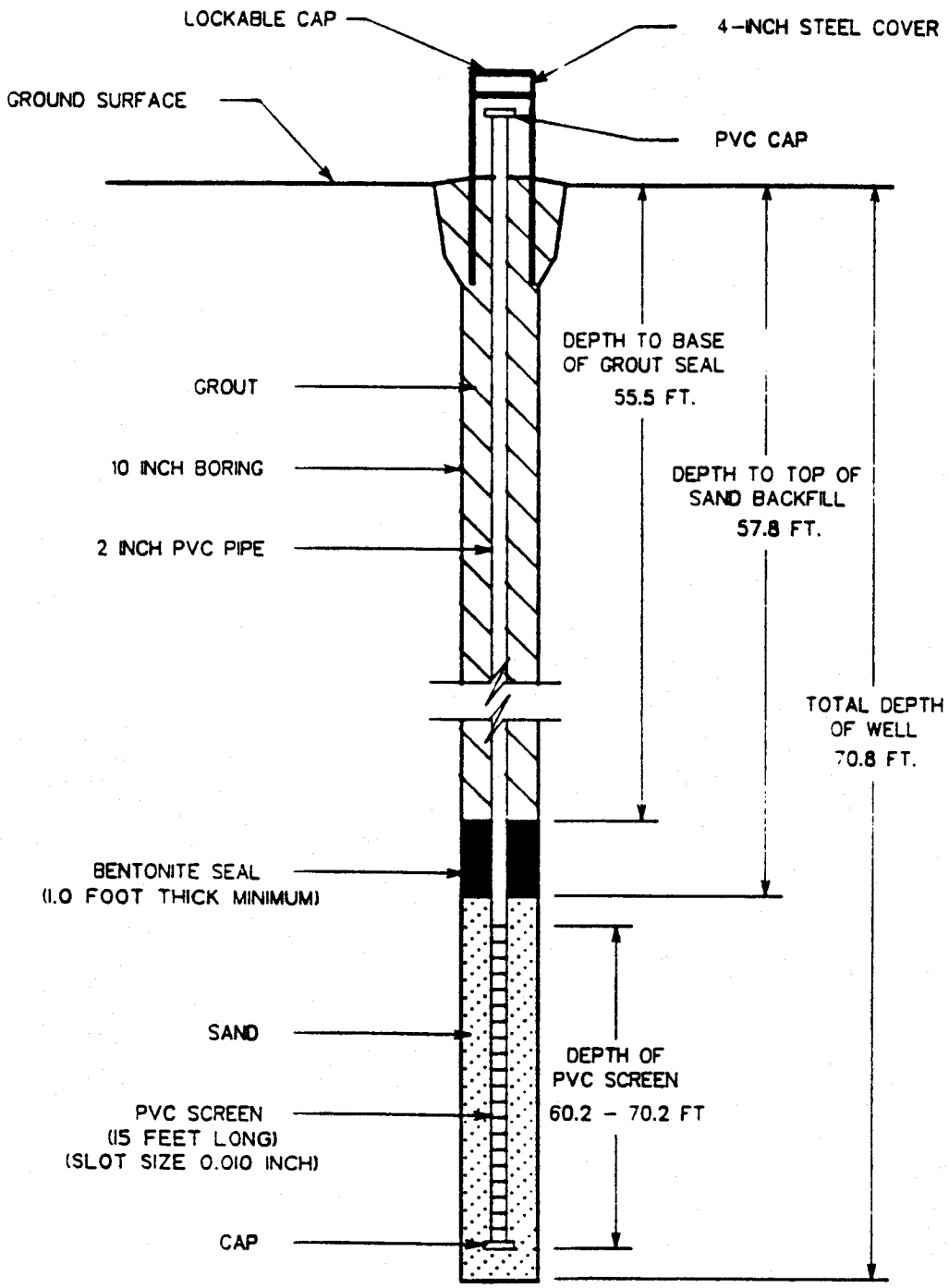
GROUND SURFACE ELEVATION 2765 FT (MSL)

LOCATION SEE ATTACHED LOCATION MAP

MEASURING POINT ELEVATION

INSTALLATION DATE 1/29/92

LATITUDE LONGITUDE



LAW ENGINEERING
GREENVILLE, SOUTH CAROLINA

MONITORING WELL INSTALLATION RECORD
CHAMPION LANDFILL NO. 6A
CANTON, SOUTH CAROLINA

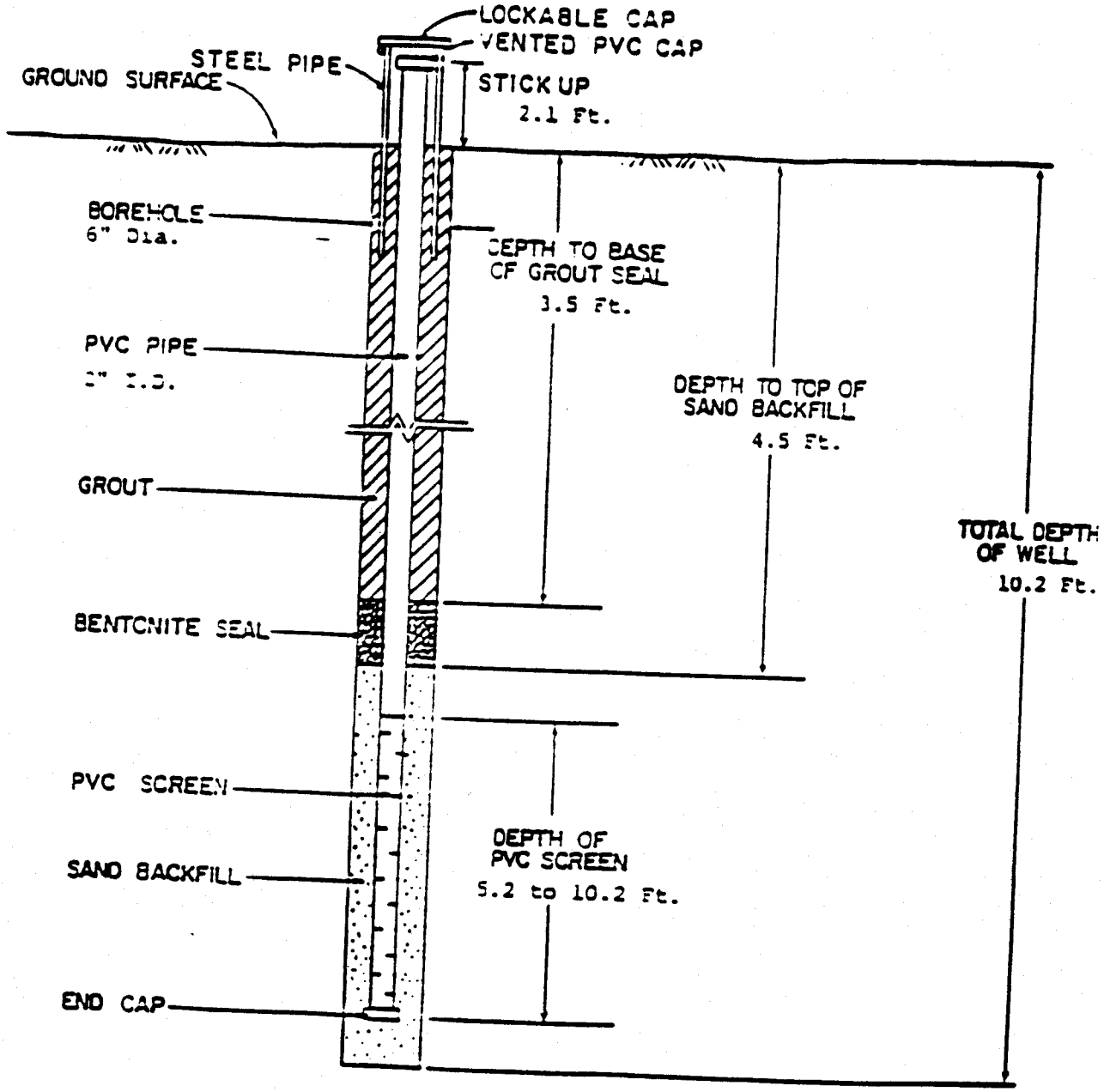
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-2 GROUND SURFACE ELEVATION 3595.31 Ft.

LOCATION Southwest of Area F

INSTALLATION DATE 7-6-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-2

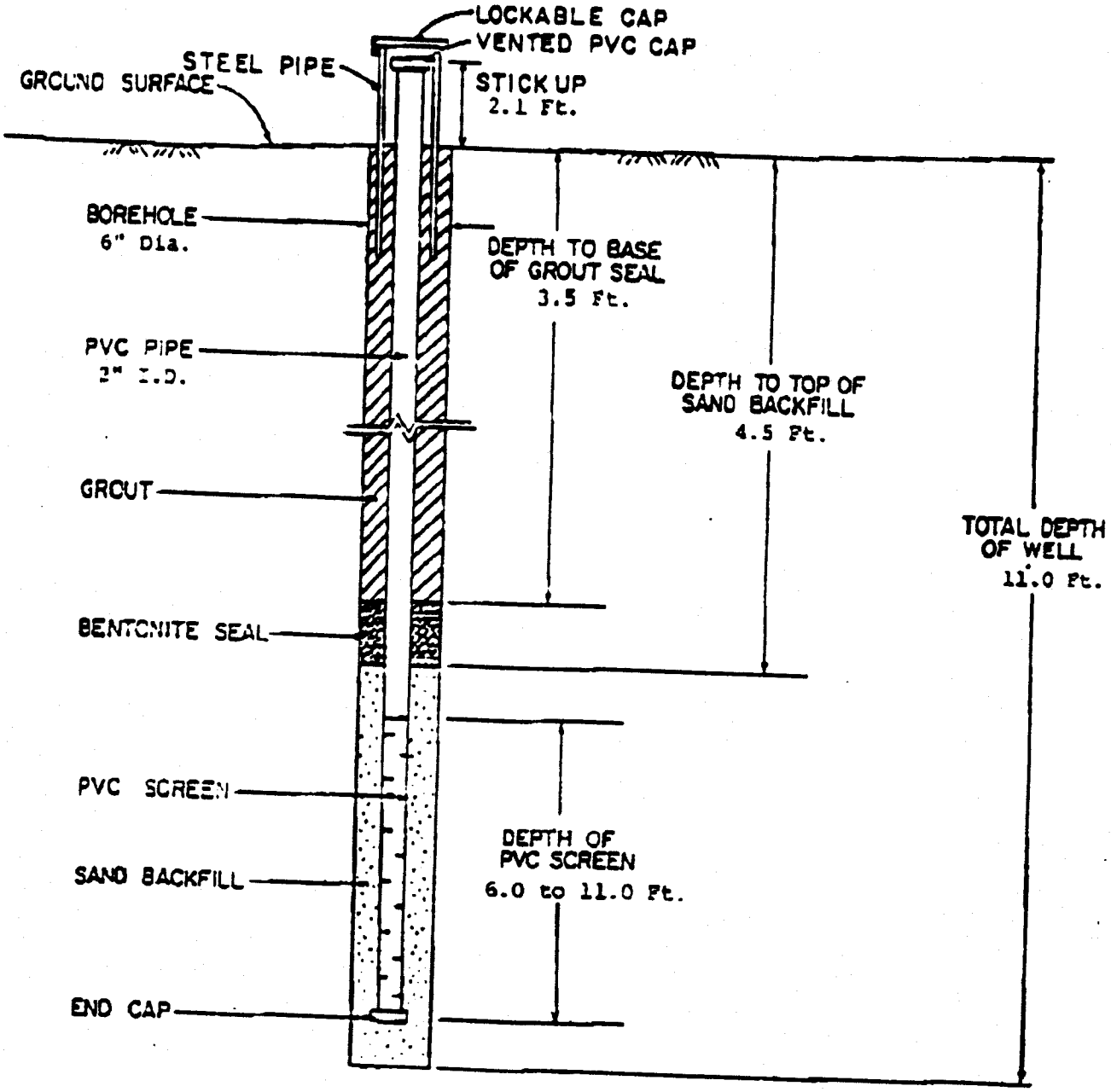
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-3 GROUND SURFACE ELEVATION 2577.70 Ft.

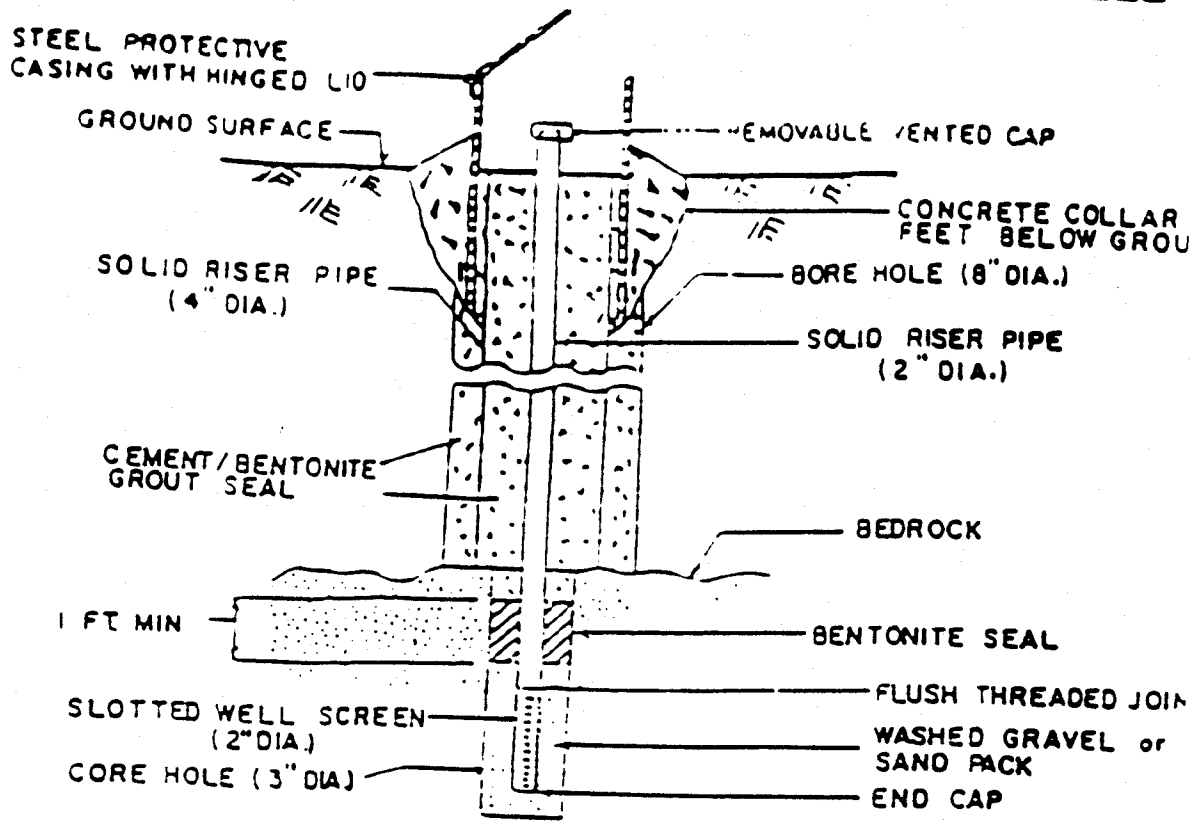
LOCATION East of Area A

INSTALLATION DATE 7-6-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-3

TYPICAL DIAGRAM - TYPE III MONITORING WELL



MONITORING WELL INSTALLATION DETAILS					
WELL NUMBER	MW-3A				
GROUND ELEVATION (FT.)	--				
GROUND WATER ELEVATION (FT.) MEASURED ON:	--				
TOTAL DEPTH OF WELL BELOW GROUND SURFACE (FT.)	17.5				
MEASURING POINT ELEVATION (FT.)	--				
SCREEN LENGTH (FT.)	10.0				
SOLID RISER LENGTH BELOW GROUND SURFACE (FT.)	7.5				
PVC HEIGHT ABOVE GROUND (FT.)	2.5				
THICKNESS OF BENTONITE SEAL	1.2				
THICKNESS OF CEMENT SEAL	4.0				
4 INCH DIAMETER PVC LENGTH BELOW GROUND SURFACE (FT.)	5.0				

Champion International
Canton Landfill
Haywood County, N.C.

LAW ENGINEERING

INSTALLATION DETAILS
TYPE III MONITORING WEL

JOB NO. AV-1834 | FIGURE 2

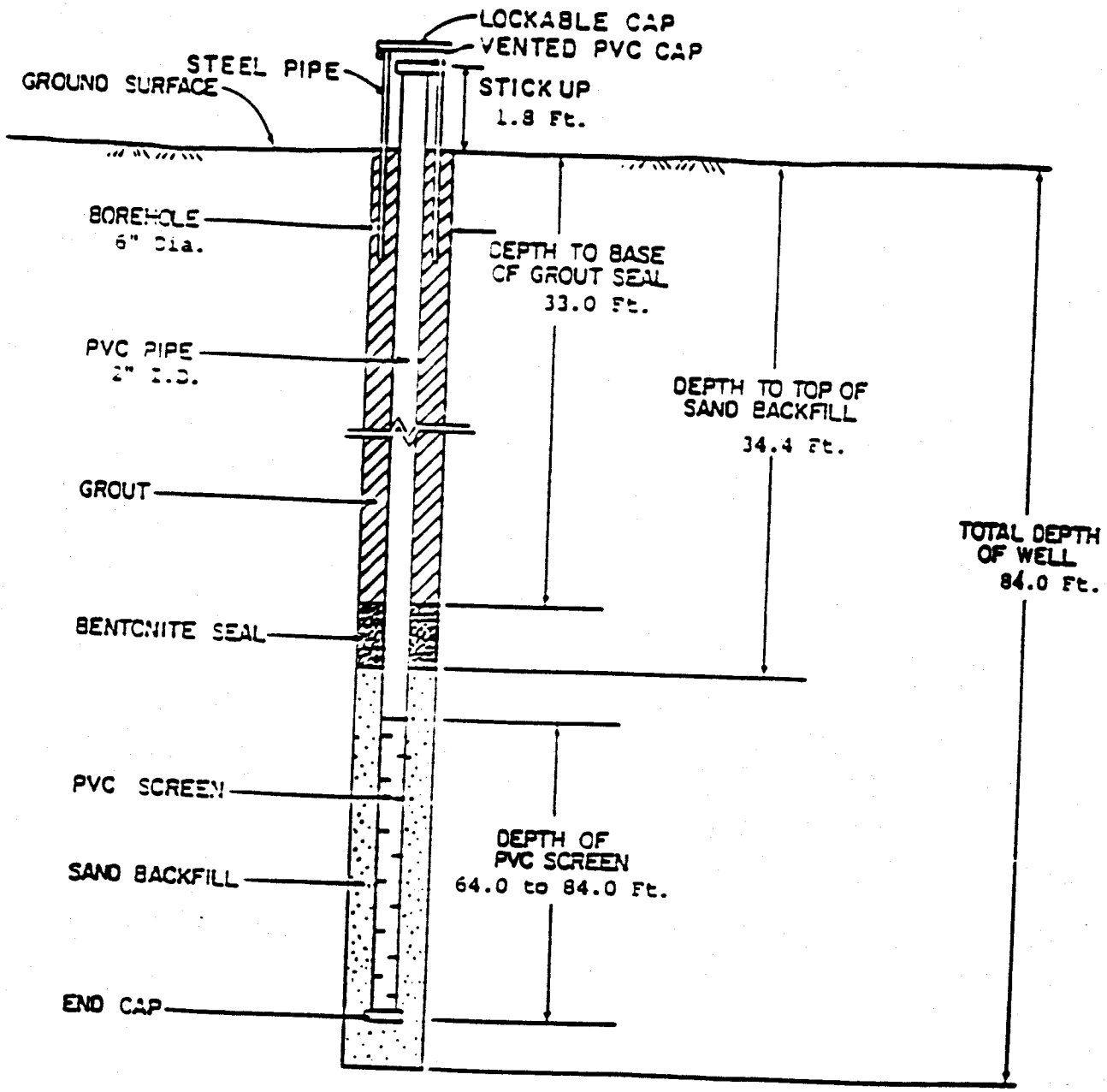
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-4 GROUND SURFACE ELEVATION 2629.63 Ft.

LOCATION Southeast of Area 3

INSTALLATION DATE 7-7-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-4

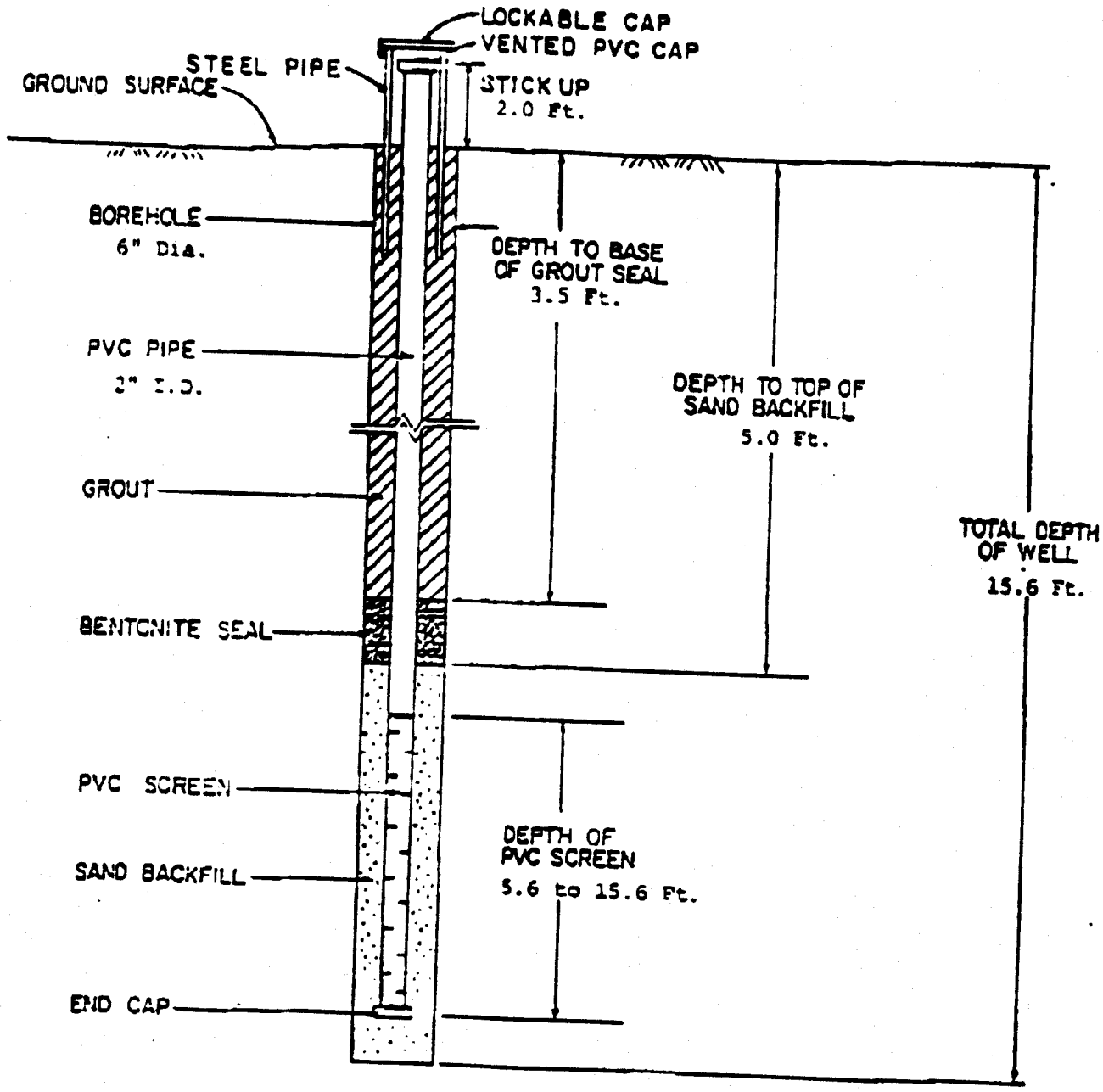
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

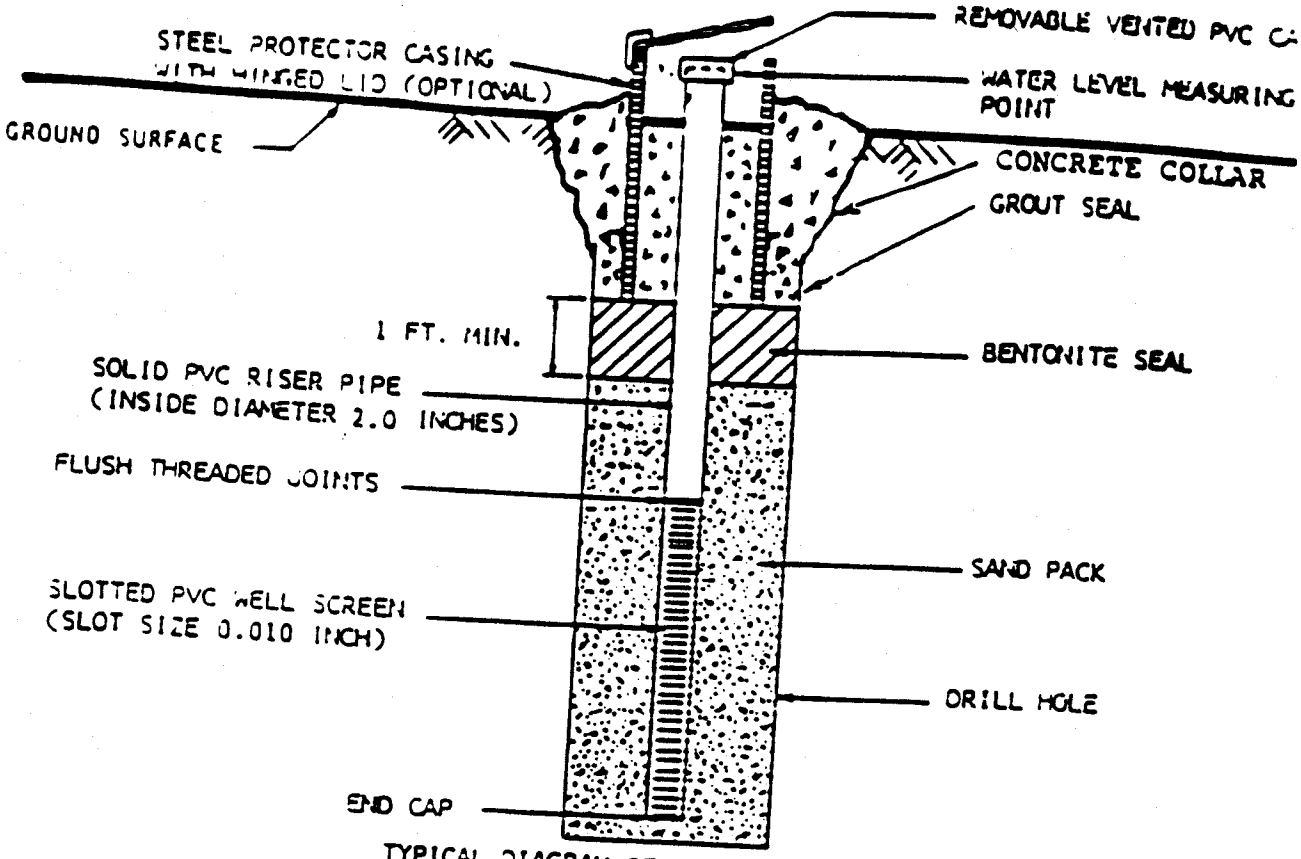
WELL NUMBER MW-5 GROUND SURFACE ELEVATION 2547.18 Ft.

LOCATION South of Area B

INSTALLATION DATE 7-7-93



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-5



TYPICAL DIAGRAM OF MONITORING WELLS
(NOT TO SCALE)

MONITORING WELL INSTALLATION DETAILS

WELL NUMBER	MW-5A	MW-7A	MW-13		
GROUND ELEVATION (FT.)	---	---	---		
GROUND WATER ELEVATION (FT.) MEASURED ON:	---	---	---		
TOTAL DEPTH OF WELL BELOW GROUND SURFACE (FT.)	42.0	23.5	34.0		
MEASURING POINT ELEVATION (FT.)	---	---	---		
SCREEN LENGTH (FT.)	10.0	10.0	10.0		
SOLID RISER LENGTH BELOW GROUND SURFACE (FT.)	32.0	13.5	24.0		
PVC HEIGHT ABOVE GROUND (FT.)	2.5	2.5	2.5		
THICKNESS OF BENTONITE SEAL (FT.)	1.1	1.3	1.5		
THICKNESS OF CEMENT SEAL (FT.)	28.3	9.5	19.6		

NOTES:

Champion International
Canton Landfill
Haywood County, N.C.

LAW ENGINEERING

MONITORING WELL INSTALLATION DETAILS

JOB NO. AV-1834

FIGURE 3

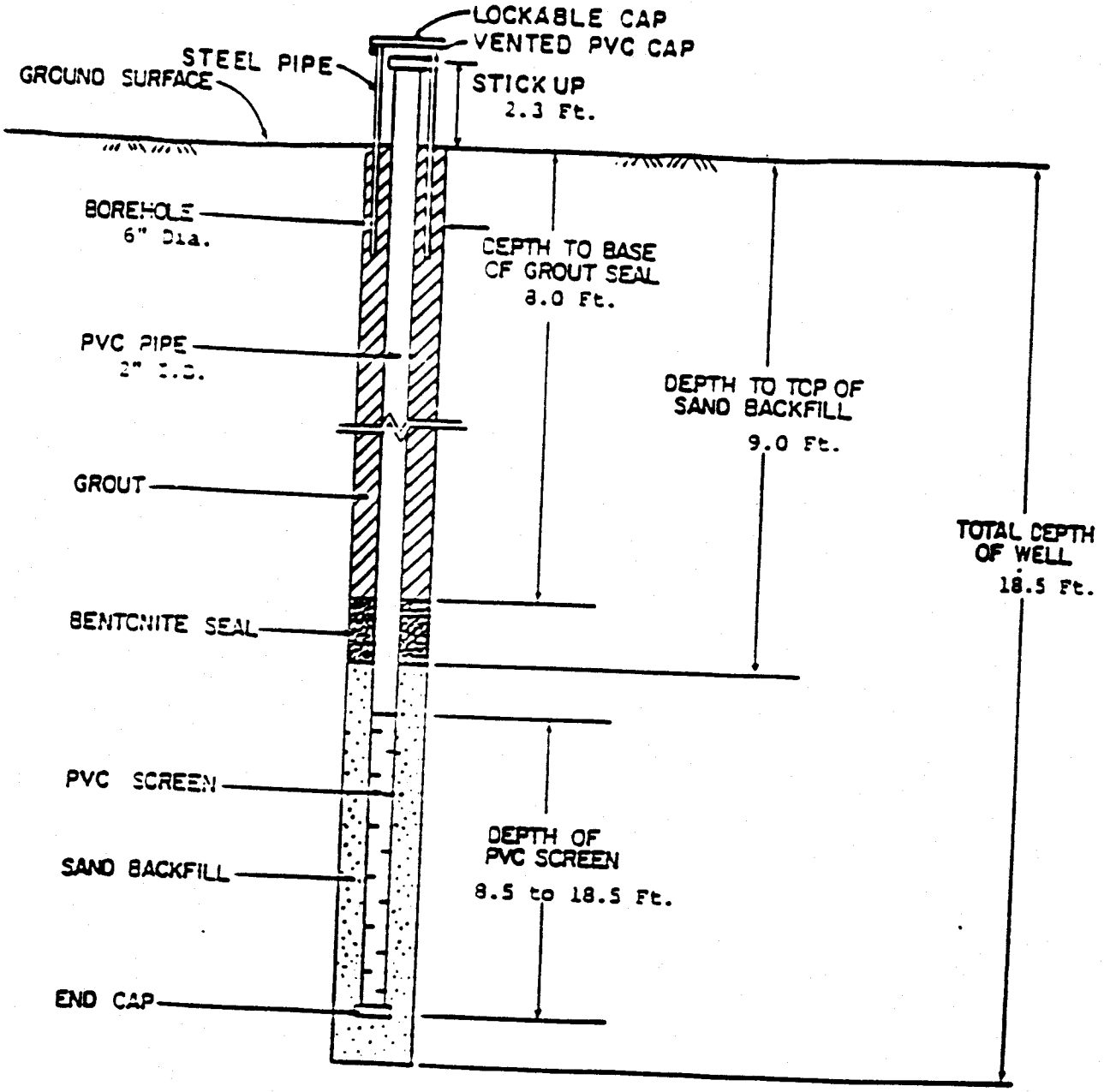
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-6 GROUND SURFACE ELEVATION 2549.72 Ft.

LOCATION South - Southeast of Area C

INSTALLATION DATE 7-7-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-6

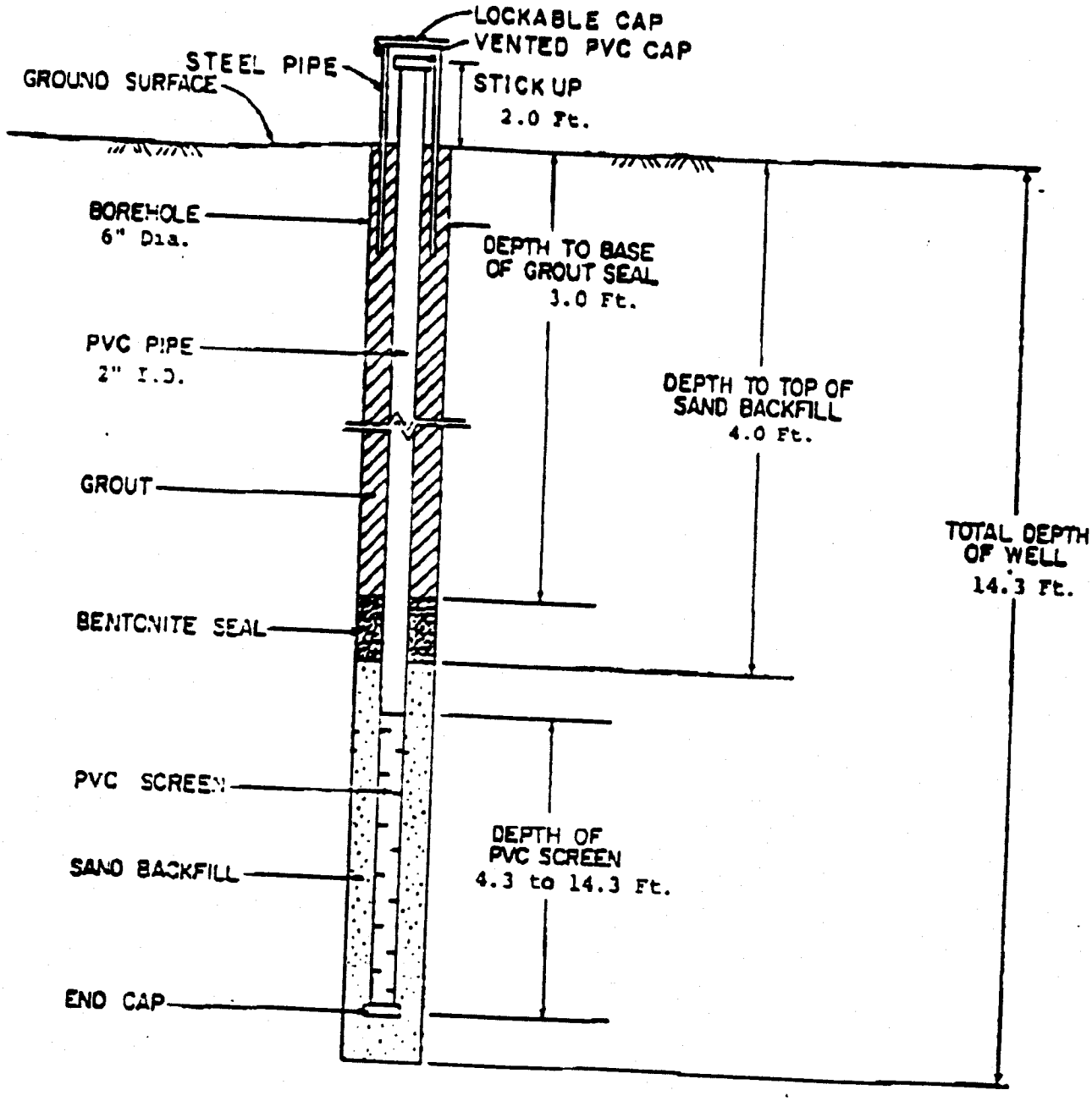
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-7 GROUND SURFACE ELEVATION 2550.44 Ft.

LOCATION South - Southwest of Area C

INSTALLATION DATE 7-7-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-7

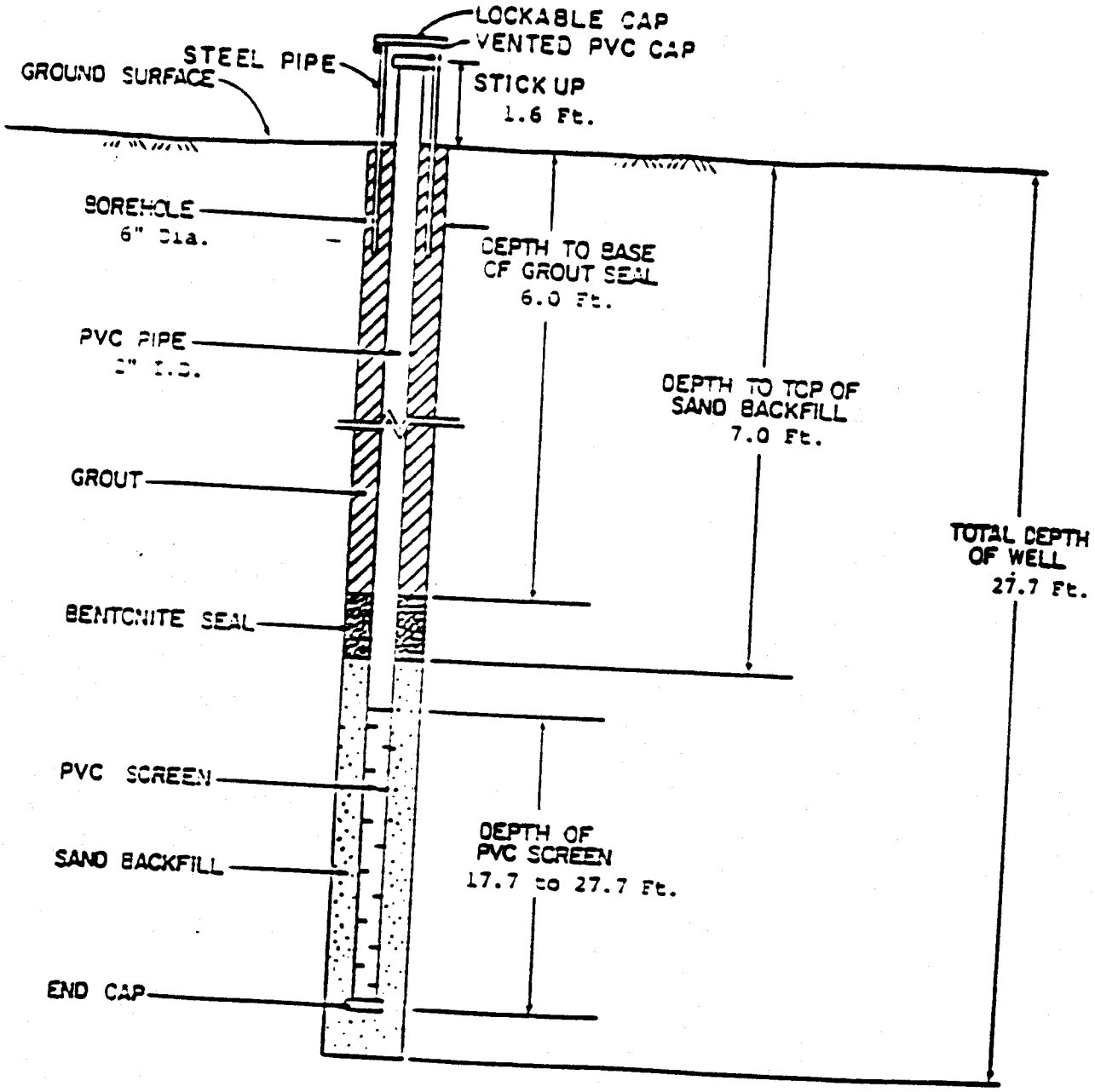
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-8 GROUND SURFACE ELEVATION 1594.39 Ft.

LOCATION South of Area D

INSTALLATION DATE 7-8-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-8

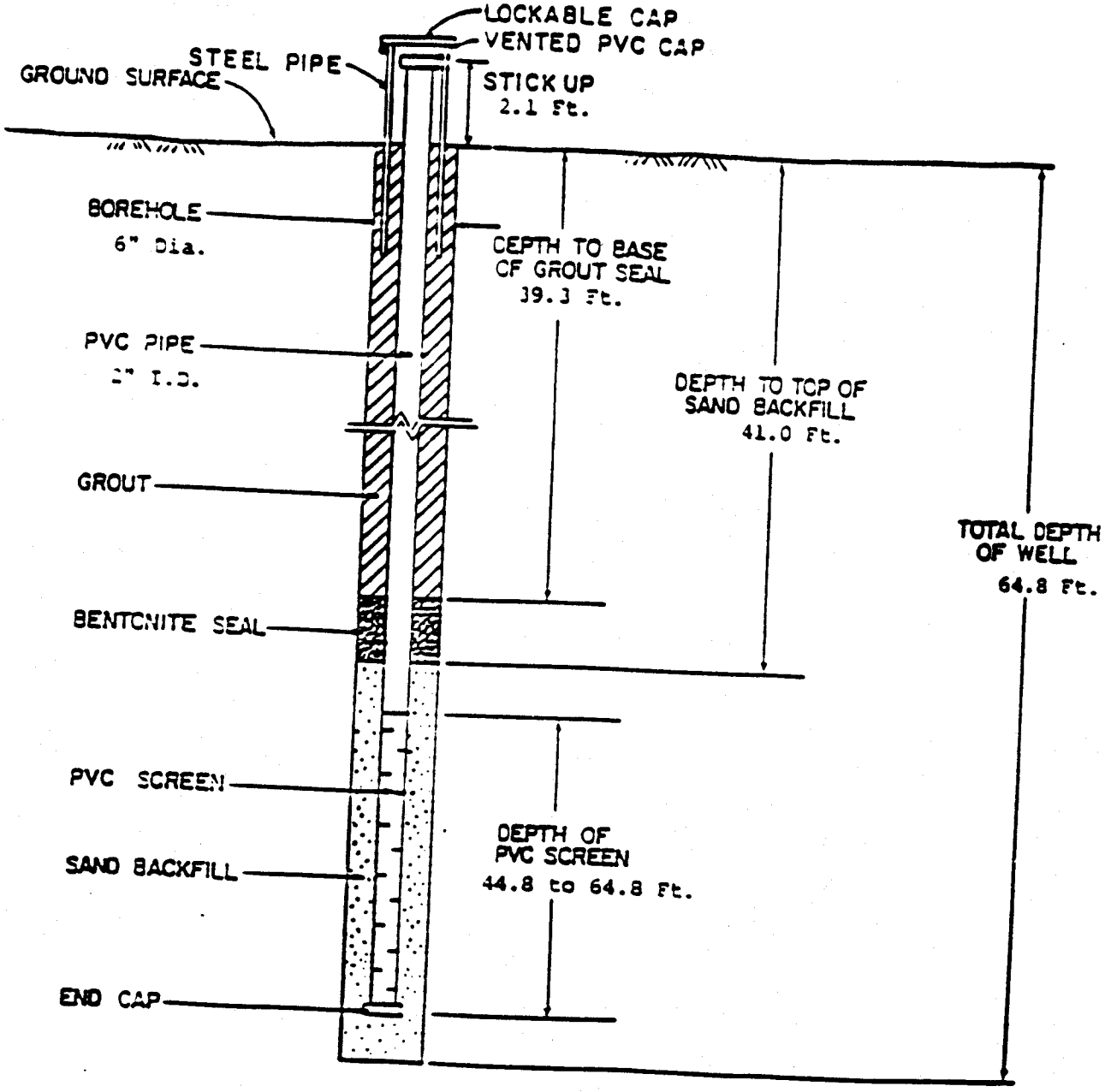
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 5 JOB NUMBER CH 4507 C

WELL NUMBER MW-9 GROUND SURFACE ELEVATION 3584.02 Ft.

LOCATION West of Area D

INSTALLATION DATE 7-6-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-9

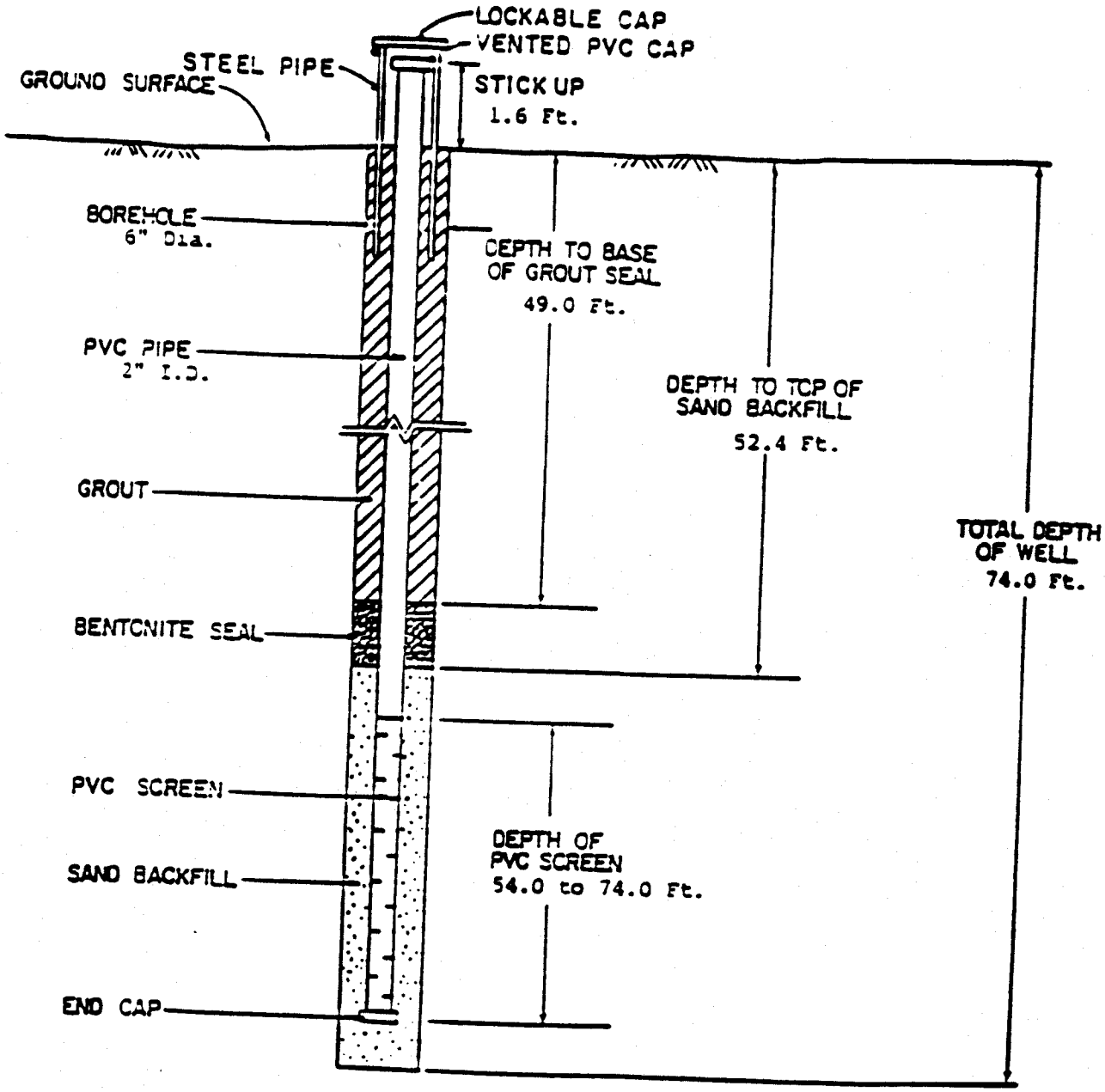
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-10 GROUND SURFACE ELEVATION 3577.78 Ft.

LOCATION West of Area E

INSTALLATION DATE 7-7-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-10

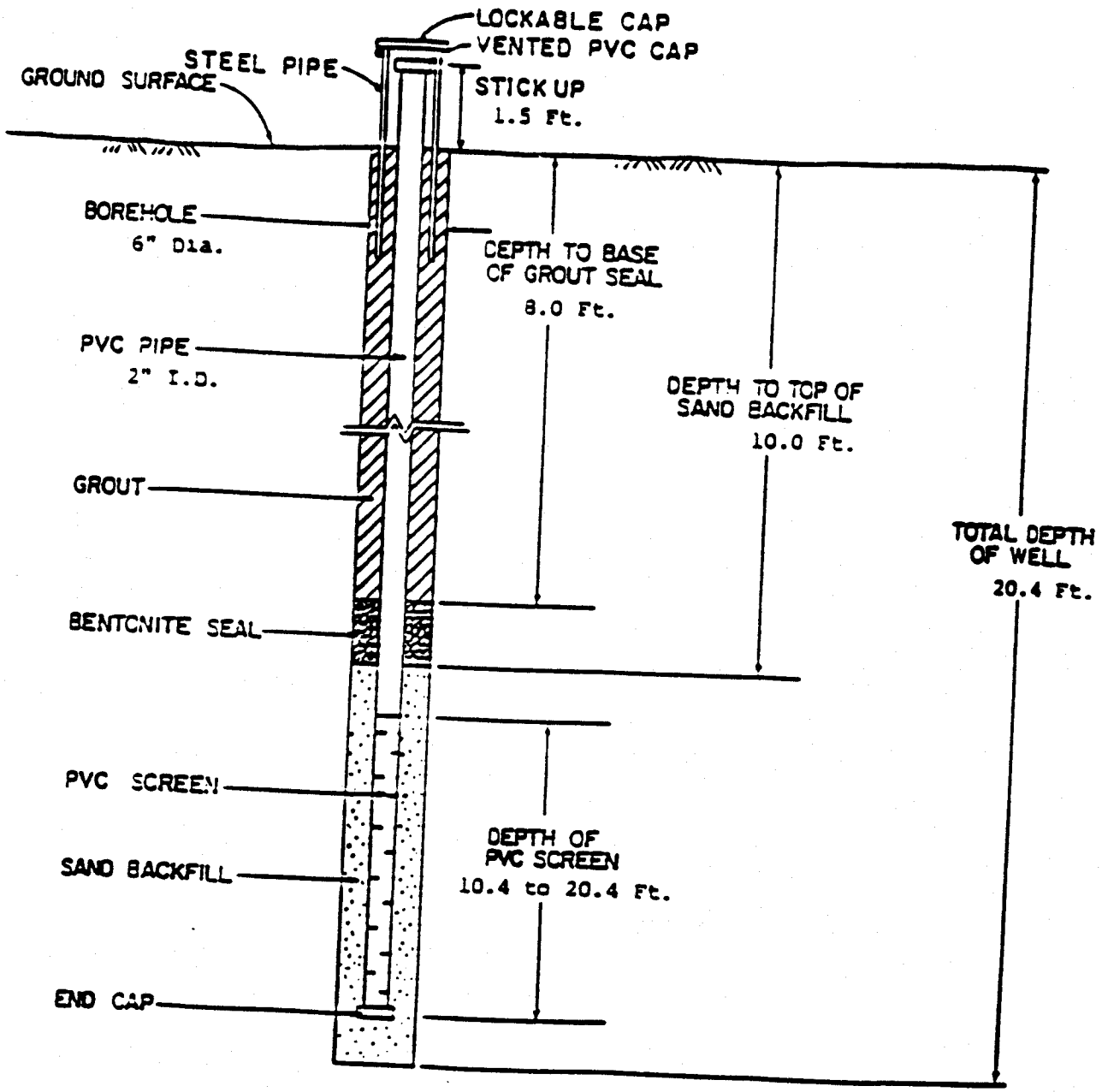
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-11 GROUND SURFACE ELEVATION 2639.44 Ft.

LOCATION West of Area 5

INSTALLATION DATE 7-8-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-11

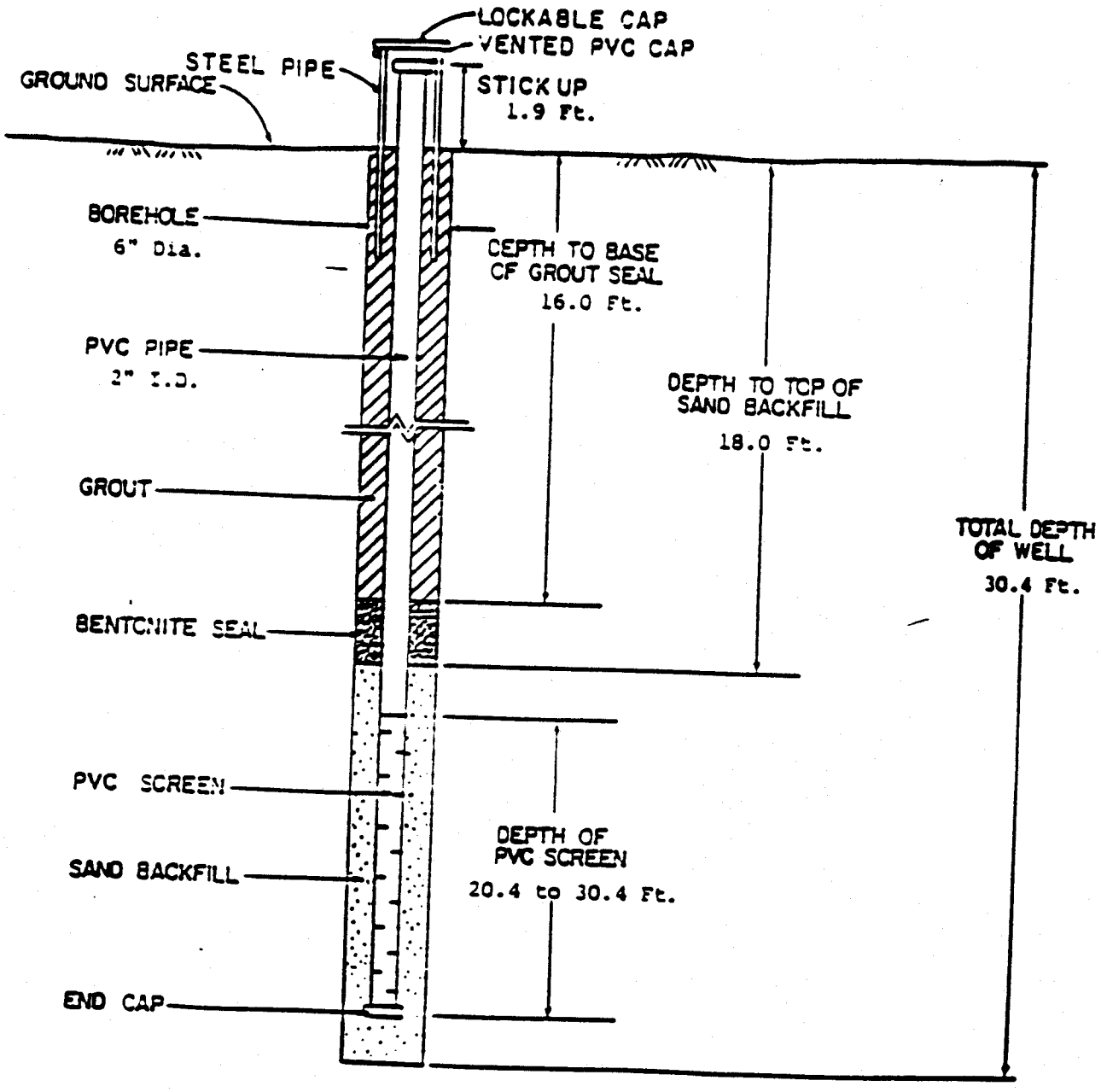
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-12 GROUND SURFACE ELEVATION 2543.73 Ft.

LOCATION Northwest of Junction of Bowen Branch and Pigeon River

INSTALLATION DATE 7-6-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-12

JOB NAME CHAMPION NO. 6 LANDFILL

JOB NUMBER 2410446501

WELL NUMBER MW-14

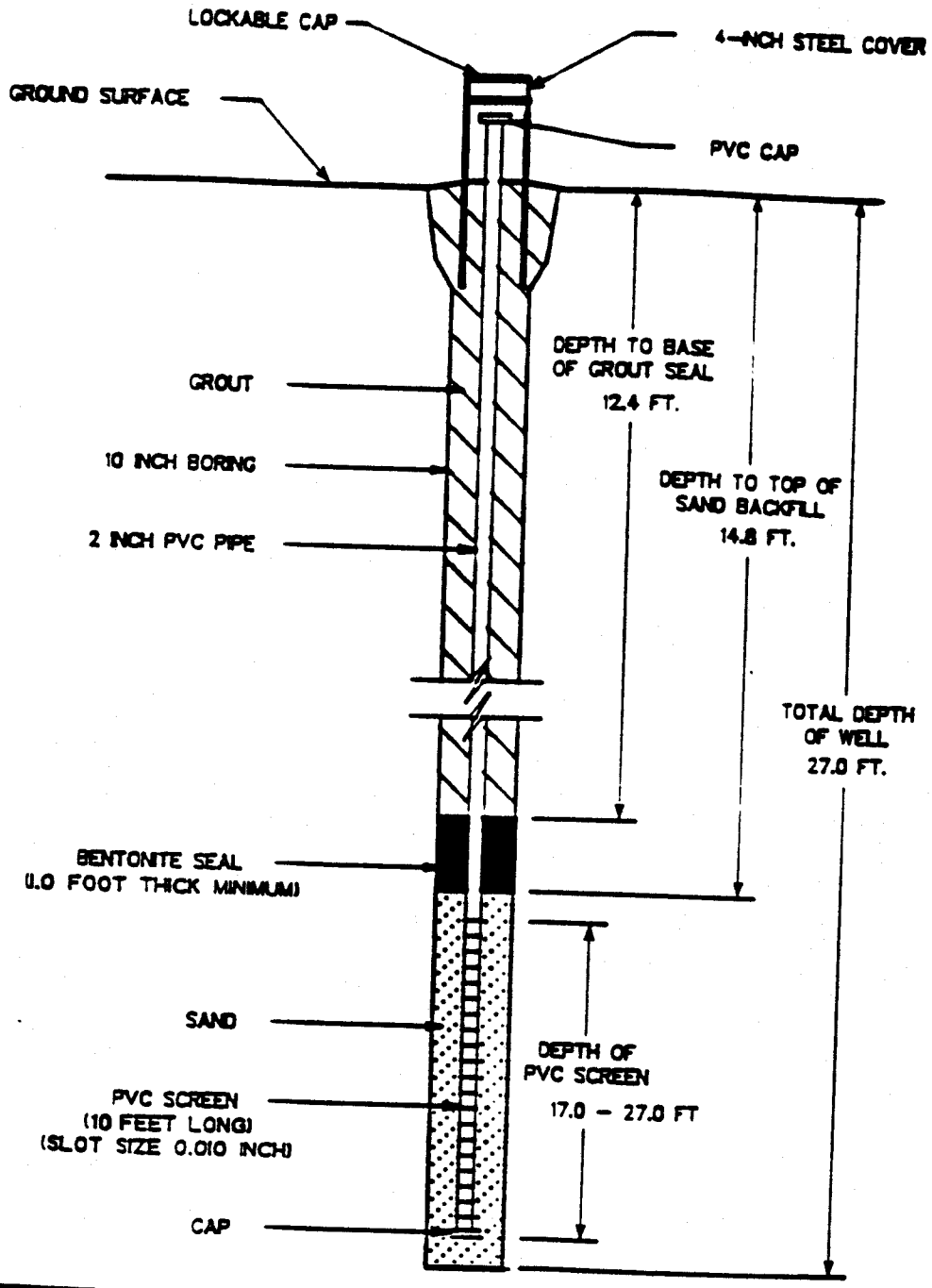
GROUND SURFACE ELEVATION 2000 FT. (MSL)

LOCATION SEE ATTACHED LOCATION MAP

MEASURING POINT ELEVATION

INSTALLATION DATE 1/24/92

LATITUDE LONGITUDE



LAW ENGINEERING
GREENVILLE, SOUTH CAROLINA

MONITORING WELL
INSTALLATION RECOR
CHAMPION LANDFILL N
CANTON, SOUTH CARO

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION - BLOWS/FOOT (0 10 20 30 40 60 80 100)
0.0			
0.5	Grass and topsoil.		
	Stiff moist light brown fine to medium sandy micaceous SILT - Residuum.		14
7.0			
	Stiff moist white to gray medium to coarse sandy micaceous SILT.		10
12.0			
	Firm wet light to medium brown fine to medium sandy micaceous SILT with relic foliation.		12
17.0			
	Firm wet light to medium brown micaceous silty medium to coarse SAND with relic structure.		13
22.0			
	Hard wet brown to black minor fine sand very micaceous SILT with relic foliation.		36
27.0			
	Boring terminated at 27.0 feet. Auger refusal at 27.0 feet. Ground water encountered at 10.43 feet at time of boring. Monitoring well installed to 27.0 feet on January 24, 1992.		

REMARKS:

TEST BORING RECORD

BORING NUMBER	MW-14
DATE DRILLED	January 24, 1992
PROJECT NUMBER	2410446501
PROJECT	CHAMPION #6A LANDFILL
PAGE 1 OF 1	

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

LAW ENGINEERING

JOB NAME CHAMPION NO. 6 LANDFILL

JOB NUMBER 2410446501

WELL NUMBER MW-15

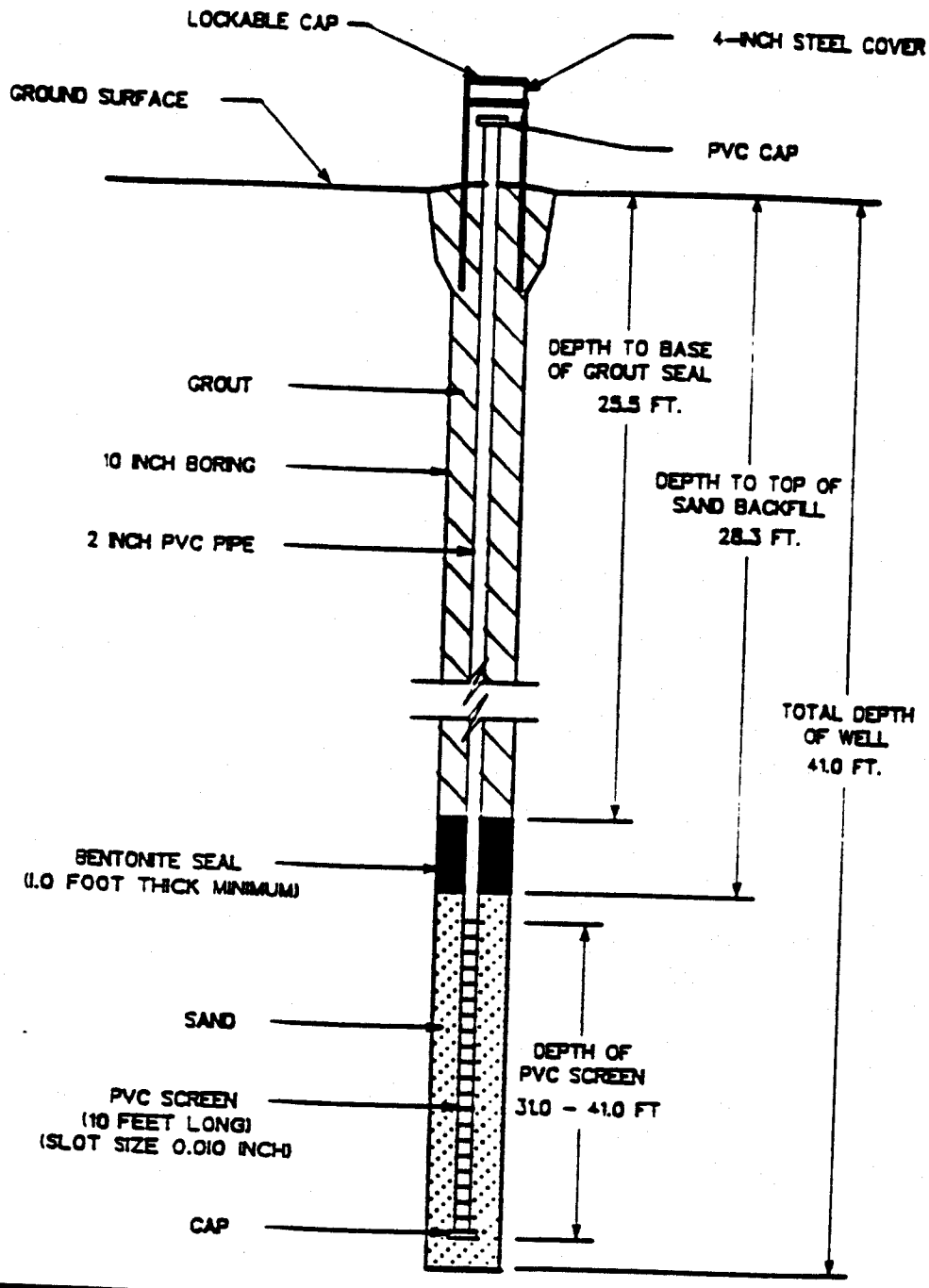
GROUND SURFACE ELEVATION 2910 FT. (MSL)

LOCATION SEE ATTACHED LOCATION MAP

MEASURING POINT ELEVATION

INSTALLATION DATE 1/27/92

LATITUDE LONGITUDE



LAW ENGINEERING
GREENVILLE, SOUTH CAROLINA

MONITORING WELL INSTALLATION RECORD
CHAMPION LANDFILL NO
CANTON, SOUTH CAROL

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION - BLOWS/FOOT (0 10 20 30 40 60 80 100)
0.0	Drilling platform of fill soil.		
8.0	Very stiff moist light to medium brown fine sandy very micaceous SILT - Residuum.		17
11.0	Very stiff moist gray to brown minor fine sandy very micaceous SILT with relic foliation.		21
17.0	Very stiff moist gray very micaceous SILT with relic foliation.		23
22.0	Very stiff wet gray very micaceous SILT with minor white clayey inclusions.		18
27.0	Very stiff wet dark gray to dark brown fine sandy very micaceous SILT with relic foliation.		25
33.0	Very stiff wet dark gray very micaceous SILT with minor white clayey layering.		26
38.0	Very hard wet dark gray medium to coarse sandy micaceous SILT.		50/5"
40.0	Boring terminated at 40.0 feet. Auger refusal at 40.0 feet. Monitoring well installed to 41.0 feet on January 27, 1992. No ground water encountered at time of boring.		

REMARKS:

TEST BORING RECORD

BORING NUMBER	MW-15
DATE DRILLED	January 24, 1992
PROJECT NUMBER	2410446501
PROJECT	CHAMPION #6A LANDFILL
PAGE 1 OF 1	

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

LAW ENGINEERING

CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

	NO. OF BLOWS, N	RELATIVE DENSITY
SANDS:	0-4	Very Loose
	5-10	Loose
	11-20	Firm
	21-30	Very Firm
	31-50	Dense
	OVER 50	Very Dense

		CONSISTENCY
SILTS & CLAYS:	0-2	Very Soft
	3-4	Soft
	5-8	Firm
	9-15	Stiff
	16-30	Very stiff
	31-50	Hard
	OVER 50	Very Hard

PARTICAL SIZE IDENTIFICATION

BOULDERS:		Greater than 300 mm
COBBLES:		75 mm to 300 mm
GRAVEL:	Coarse -	19.0 mm to 75 mm
	Fine -	4.75 mm to 19.0 mm
SANDS:	Coarse -	2.00 mm to 4.75 mm
	Medium -	0.425 mm to 2.00 mm
	Fine -	0.075 mm to 0.425 mm
SILTS & CLAYS:		Less than 0.075 mm

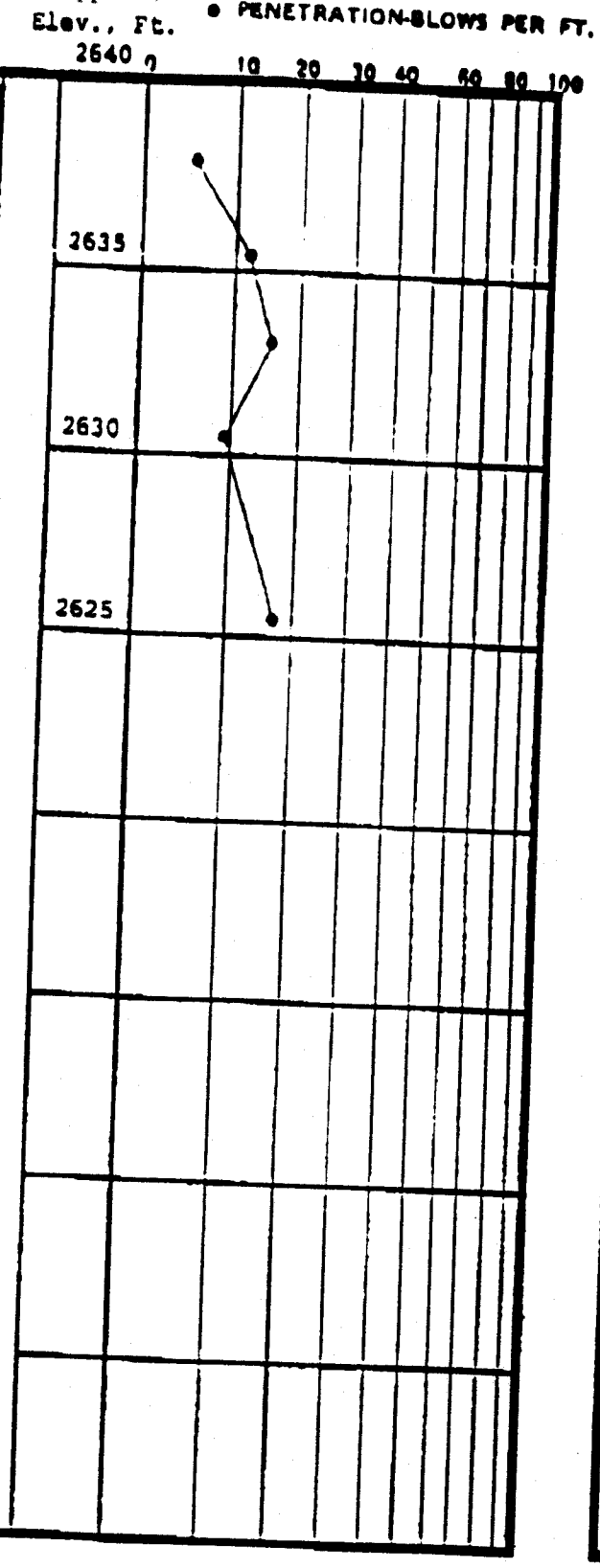
KEY TO DRILLING SYMBOLS

- Undisturbed Sample
- Split Spoon Sample
- Water Table 24 HR.
- Water Table at Time of Drilling
- Pressuremeter Test
- Loss of Drilling Water

KEY TO SOIL CLASSIFICATIONS

- ASPHALT
- CL - Low plasticity inorganic clays
- CH - High plasticity inorganic clays
- ML - Low plasticity inorganic silts and very fine sands
- MH - High plasticity inorganic silts
- SP - Poorly graded sands
- SW - Well graded sands
- GP - Poorly graded gravels
- PARTIALLY WEATHERED ROCK - A transitional material between soil and rock which retains the relict structure of the parent rock.
- CONCRETE
- GW - Well graded gravels
- OL - Low plasticity organic silts and clays
- OH - High plasticity organic silts and clays
- SM - Silty sands
- GM - Silty gravels
- SC - Clayey sands
- GC - Clayey gravels
- SP-SM - Typical Dual Classification

FT.		Elev., Ft.
0	Alluvium - Firm Brown Gray Micaceous Fine to Medium Sandy Silt With Small Gravel	2640
3.0	Alluvium - Stiff Gray Tan Micaceous Fine Sandy Silty Clay	2635
5.0	Residuum - Loose to Firm Brown Gray Very Micaceous Silty Fine to Medium Sand	2630
15.0	Boring Terminated at 15.0 Feet Groundwater at 5.5 Feet After 24 Hours Observation Well Set to 13.5 Feet Groundwater at 7.2 Feet, March 11, 1981 *Grass and Topsoil	2625



BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. B-1

DATE DRILLED 4/23/80

JOB NO. CH 4429

PAGE 1 OF 1

LAW ENGINEERING TESTING COMPAN

Depth	Description	Elev., Ft.
5"	Grass and Topsoil	2565
	Alluvium - Firm Brown Micaceous Fine to Medium Sandy Silt	
4.0	Possible Alluvium - Stiff Brown Black Micaceous Clayey Fine to Medium Sandy Silt	2560
6.0	Residuum-Stiff Black Gray Brown Micaceous Fine to Medium Sandy Silty**	
8.0	Partially Weathered Rock That Becomes Gray Tan Very Micaceous Silty Fine to Coarse Sand When Sampled*	2555
11.5	Firm Gray Green Very Micaceous Silty Fine to Coarse Sand*	
15.0		2550

Boring Terminated at 15.0 Feet

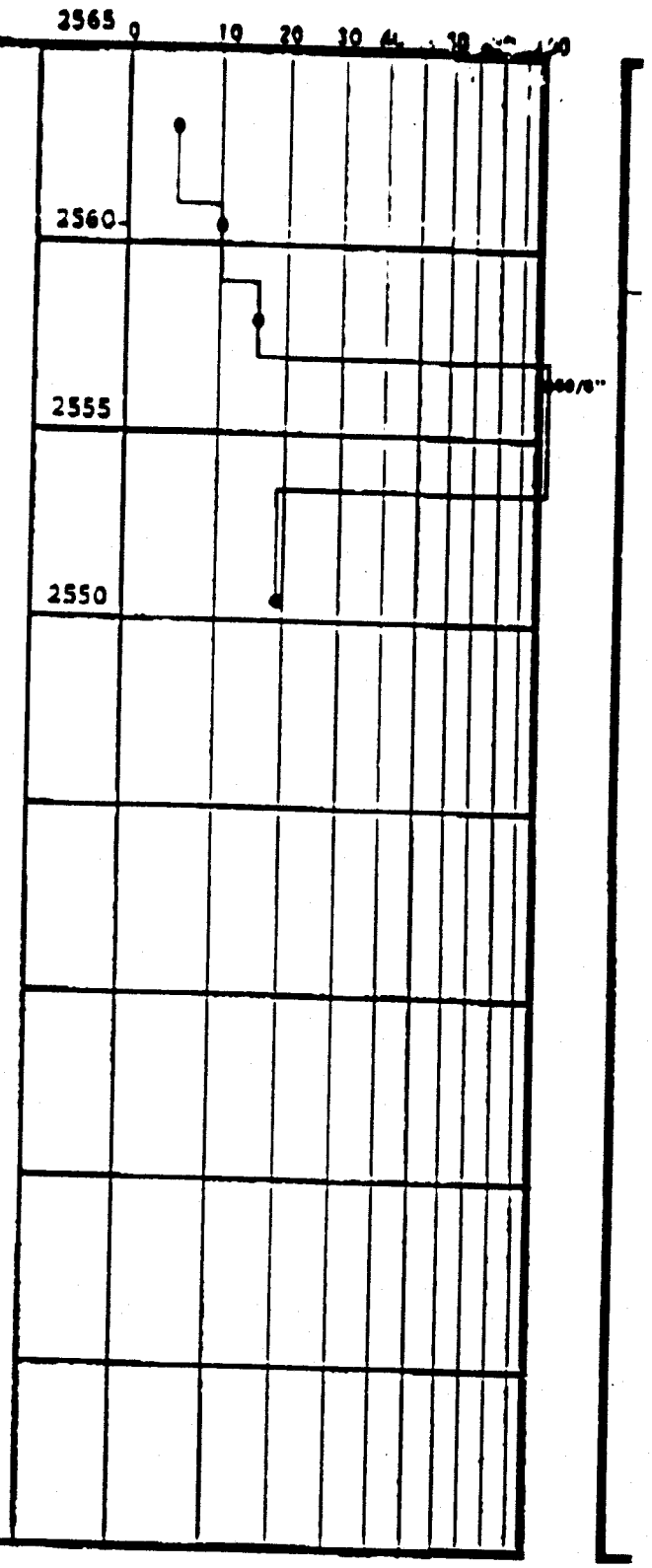
Groundwater at 6.0 Feet After 24 Hours

Observation Well Set to 14.0 Feet

Groundwater at 9.0 Feet, March 11, 1981

*Sand Sized Particles Are Predominately Mica

**Clay With Rock Fragments



BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. B-7

DATE DRILLED 4/22/80

JOB NO. CH 4429

PAGE 1 OF 1

LAW ENGINEERING TESTING COMPA

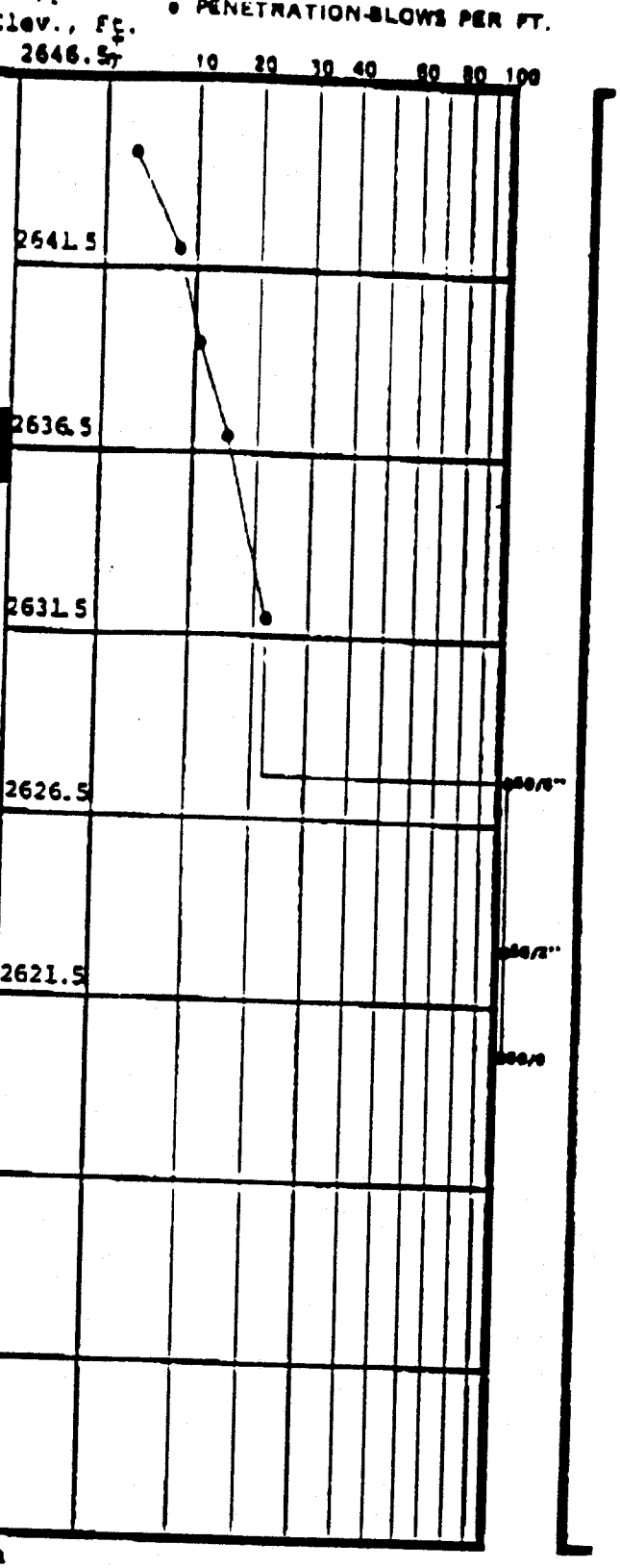
FT.		Elev., Ft.
0		2646.5
5"	Residuum - Soft Brown Gray Very Micaceous Fine to Medium Sandy Silt	
3.0	Stiff Brown Gray Very Micaceous Fine to Coarse Very Sandy Silt With Some Rock Fragments*	2641.5
		2636.5
12.0	Firm Brown Tan Very Micaceous Silty Fine to Coarse Sand With Rock Fragments*	2631.5
19.0	Partially Weathered Rock That Becomes Black Brown Very Micaceous Silty Fine to Coarse Sand With Rock Fragments When Sampled*	2626.5
		2621.5
26.5	Auger Refusal at 26.5 Feet	

Boring Terminated at 26.5 Feet

No Groundwater Encountered at Time of Boring

Bulk "Bag" Sample 3.0 to 12.0 Feet and Undisturbed Sample 9.0 to 11.0 Feet from Adjacent Boring

Note: Boring Filled In After Drilling; Thus, No 24-Hour Water Measurement Made.



*Sand Sized Particles Are Predominately Mica

BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. B-8

DATE DRILLED 4/25/80

JOB NO. CH 4429

PAGE 1 OF 1

LAW ENGINEERING TESTING COMPA

FT.		Elev., Ft.
0	Topsoil and Other Organic Material	2591
1.5	Alluvium - Loose Brown Micaceous Silty Fine to Medium Sand with Clayey Silt Seams	
3.5	Alluvium - Soft Brown Gray Clayey Fine to Coarse Sandy Silt with Small Roots and Rock Fragments	2586
6.0	Residuum - Firm Brown Gray Slightly Micaceous Silty Fine to Medium Sand with Small Rock Fragments	
8.0	Very Stiff Dark Brown Micaceous Fine Very Sandy Silt	2581
13.0	Partially Weathered Rock - No Sample Recovery at 14.5 Feet	2576
14.5		

Power Auger Refusal at 14.5 Feet

Boring Terminated at 14.5 Feet

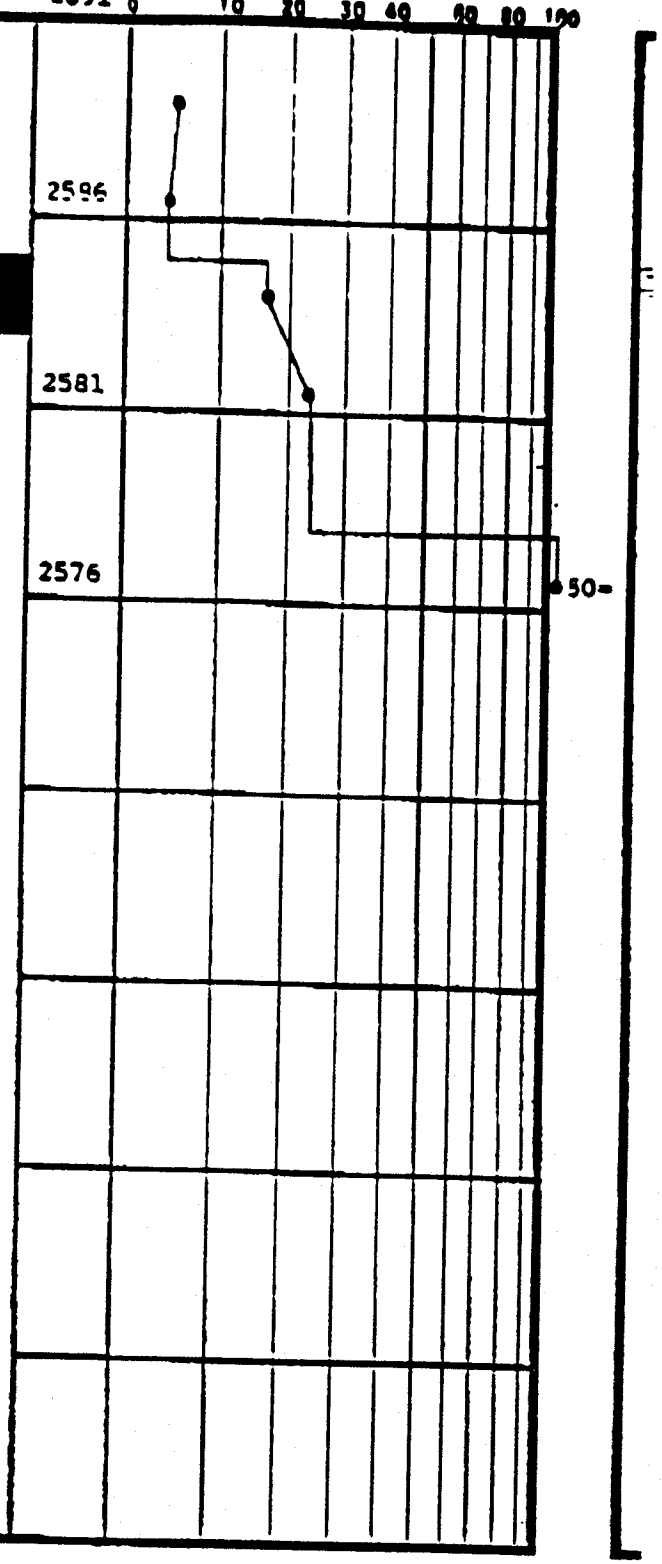
Groundwater Encountered at 6.0 Feet at Time of Boring

Installed Observation Well to 14.5 Feet

Groundwater at 6.5 Feet After 1 Week

Undisturbed Samples From Adjacent Boring 2.0 to 4.0 Feet (No Recovery) and 6.0 to 8.0 Feet

Groundwater at 6.4 Feet, March 11, 1981.



BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. B-9

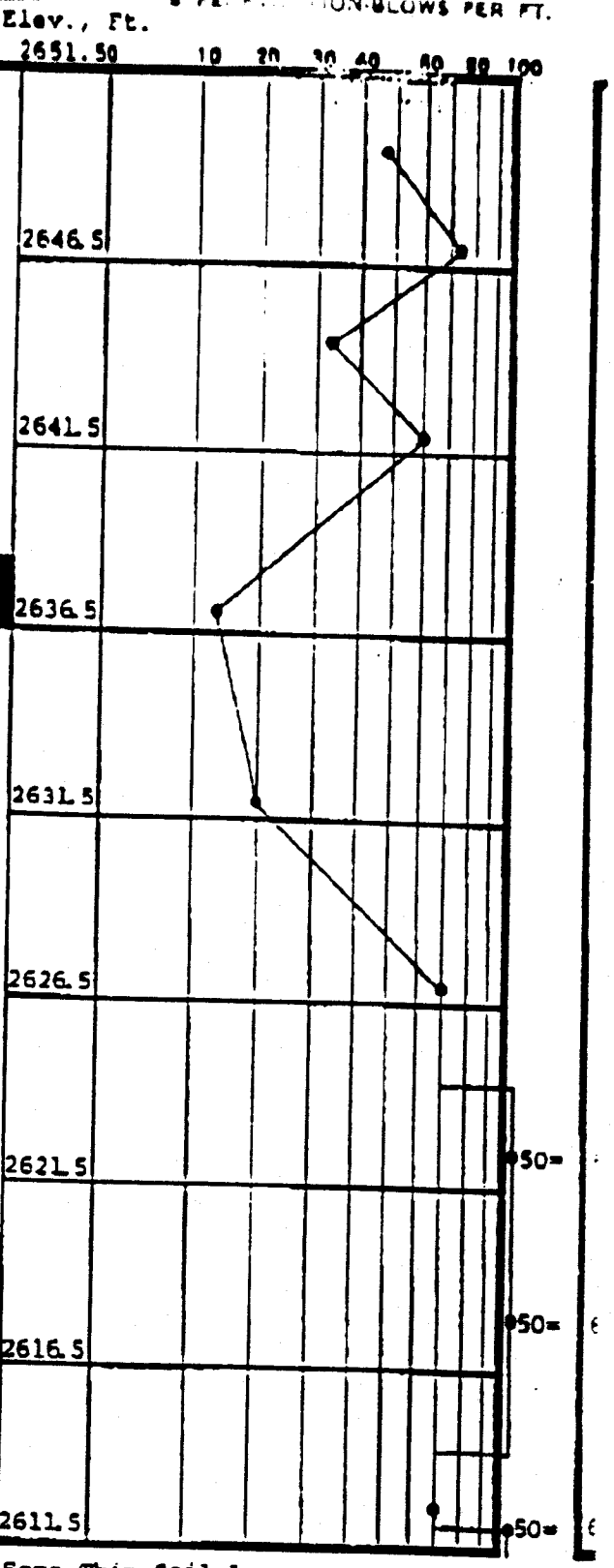
DATE DRILLED 11/14/80

JOB NO. CH 4507

PAGE 1 OF 1

LAW ENGINEERING TESTING COMPA

FT.		Elev., Ft.
0		2651.50
0.3	Residuum - Hard Red Brown Slightly Micaceous Fine to Medium Sandy Silt	
2.5	Hard Brown and Black Micaceous Fine Sandy Silt	2646.5
5.5	Hard Red Brown White and Black Slightly Micaceous Slightly Clayey Fine to Coarse Sandy Silt	2641.5
12.0	Stiff to Very Stiff Red Brown and Black Slightly Micaceous Fine to Medium Sandy Silt	2636.5
		2631.5
22.0	Very Dense Red Brown Slightly Micaceous Silty to Very Silty Fine to Coarse Sand	2626.5
27.0	Partially Weathered Rock That Becomes Light Gray and Brown Slightly Micaceous Fine to Medium Sandy Silt When Sampled	2621.5
32.0	Partially Weathered Rock That Becomes Light Brown and Brown Slightly Micaceous Silty Fine to Coarse Sand When Sampled	2616.5
37.0	Partially Weathered Rock That Becomes Light and Dark Brown Slightly Micaceous Fine to Medium Sandy Silt When **	2611.5
40.0		



*Topsoil **Sampled - Interlayered with Some Thin Soil Lenses

BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. B-10

DATE DRILLED 11/14/80

JOB NO. CH 4507

PAGE 1 OF 2

LAW ENGINEERING TESTING COMPA

Ft.	Description	Elev., Ft.	Penetration Blows Per Ft. (10 20 30 40 50 60 80 100)
40.0	Partially Weathered Rock That Becomes Light and Dark Brown Slightly Micaceous Fine to Medium Sandy Silt**	2611.5	
42.0	Partially Weathered Rock That Becomes Gray Brown Slightly Micaceous Slightly Silty Fine to Coarse Sand With Small Rock Fragments When Sampled	2606.5	50=
47.0	Partially Weathered Rock That Becomes Brown Micaceous Very Silty Fine to Coarse Sand When Sampled	2601.5	50=
53.0	Residuum - Hard Brown and Black Micaceous to Very Micaceous Fine to Medium Sandy to Very Sandy Silt	2596.5	
57.0	Partially Weathered Rock That Becomes Brown Slightly Micaceous Fine to Coarse Sandy Silt When Sampled - Interlayered with Some Thin Soil Lenses No Sample Recovery at 68.5 Feet	2591.5	50=
		2586.5	50=
		2581.5	50=
71.0	Power Auger Refusal at 71.0 Feet Boring Terminated at 71.0 Feet Groundwater Encountered at 66.0 Feet at Time of Boring Installed Observation Well to 71.0 Feet Groundwater at 65.0 Feet After 1 Week Groundwater at 66.6 Feet, March 11, 1981. Bulk "Bag" Sample 1.0-8.0 Feet and Undisturbed Sample 13.0-15.0 Feet From Adjacent Boring		

**When Sampled - Interlayered with Some Thin Soil Lenses

BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

98 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECOR

BORING NO. B-10

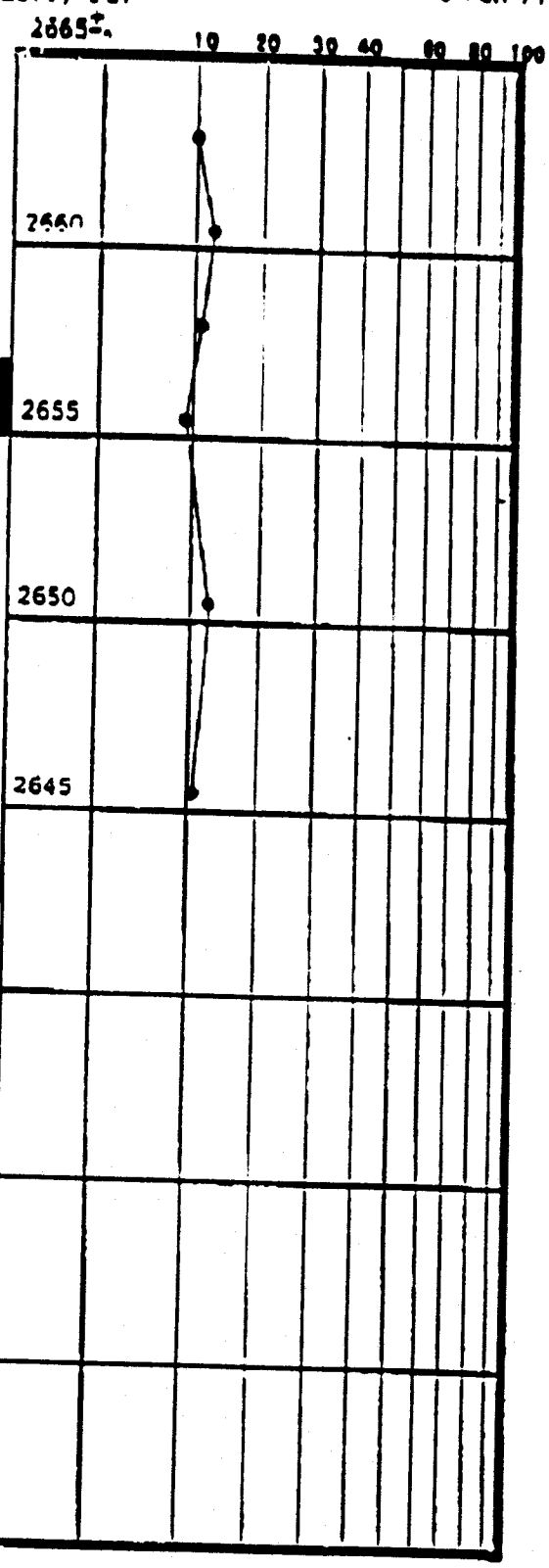
DATE DRILLED 11/14/80

JOB NO. CE 4507

PAGE 2 OF 2

LAW ENGINEERING TESTING COM

FT.		Elev., Ft. 2665±
0	Residuum - Stiff Brown and Dark Brown Slightly Micaceous Slightly Clayey Fine to Medium Sandy Silt with Some Small Roots in Sample 1.0-2.5 Feet	
5.5	Stiff Gray Brown Slightly Micaceous Slightly Clayey Fine to Coarse Very Sandy Silt	2660
8.0	Stiff Brown and Black Micaceous Silty Fine to Coarse Sand with Thin Vertical Mica Seams	2655
12.0	Stiff Brown Slightly Micaceous to Micaceous Slightly Clayey Fine to Coarse Sandy to Very Sandy Silt	2650
20.0	Boring Terminated at 20.0 Feet Groundwater Encountered at 14.6 Feet at Time of Boring Installed Observation Well to 19.0 Feet Groundwater at 11.0 Feet After 1 Week Groundwater at 11.2 feet, March 11, 1981 Undisturbed Sample 8.0 to 10.0 Feet from Adjacent Boring	2645



BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. B-11

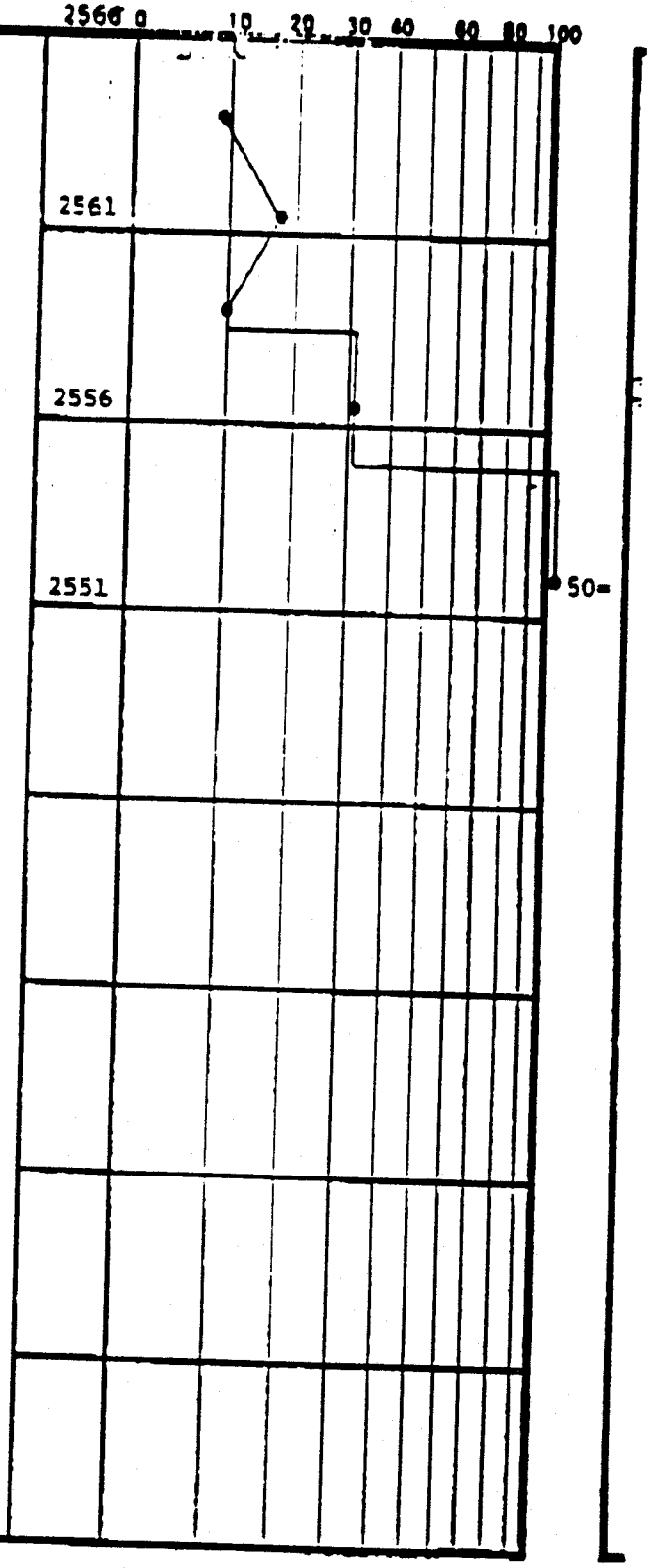
DATE DRILLED 11/25/80

JOB NO. CH 4507

PAGE 1 OF 1

LAW ENGINEERING TESTING COMPA

FT.	DESCRIPTION	APPROX. Elev., Ft.
0	Alluvium - Stiff to Very Stiff Brown Slightly Micaceous Fine to Medium Sandy to Very Sandy Silt with Some Small Roots and Rock Fragments	2566
7.5	Residuum - Dense Brown and Black Micaceous Silty Fine to Coarse Sand with Rock Fragments	2561
11.0	Partially Weathered Rock That Becomes Slightly Micaceous Slightly Silty to Silty Fine to Coarse Sand with Rock Fragments When Sampled	2556
15.0	Boring Terminated at 15.0 Feet Groundwater Encountered at 8.5 Feet at Time of Boring Installed Observation Well to 15.0 Feet Groundwater at 9.0 Feet After 2 Weeks Groundwater at 9.1 Feet, March 11, 1981	2551



BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

58 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. B-15

DATE DRILLED 11/20/80

JOB NO. CH 4507

PAGE 1 OF 1

LAW ENGINEERING TESTING COMPA

APPENDIX C

PREVIOUS MAPS

"Under Seperate Cover"

APPENDIX D

LABORATORY REPORTS FOR WASTE ANALYSES

Codes: 41/42/43/44

Waste stream 1983

Champion
Champion International Corporation

To:

Mary Lee Ransmeier

From:

Louise Ahles-Kedziora

Louise Ahles-Kedziora

Date:

June 28, 1983

Subject:

RCRA Analysis -- Canton Solid Wastes

Project 997-S1000

The following solid wastes from Canton Mill were tested according to the RCRA EP Toxicity Procedure:

41 - 1. Fly ash from coal boilers

42 - 2. Cinders from bark-coal boiler

43 - 3. Sludge from WTP

44 - 4. Lime mud from #6 filter

The results are reported on the attached table. For reference, I have included the threshold levels for each of the toxic contaminants analyzed.

lr
Attachments
Central File
copies: P. Blickensderfer
E. Clem
H. Judd
J. Reeve
D. Smiley
H. Fremont

Please note that all of the sludges are well below the Federal EPA hazardous limit of 100 times Drinking Water Standards for toxic metals and organics. However, the limit of 10 times Drinking Water Standard for lead is exceeded by the Primary Sludge, and for arsenic by Secondary Sludge/Coal Fly Ash Mixture.

To insure that the samples are representative, new samples of Primary Sludge, Coal Fly Ash, Secondary Sludge, and the Secondary Sludge/Coal Fly Ash Mixture are to be taken on July 21 and brought back to Hamilton the same day by Bill Dorman. The samples are to be tested for lead, arsenic and barium on July 22 and 23. We will phone the results to you as soon as they are available, and confirm by letter.

If you have any questions, please call me.

PSB/ps
Central File
c: W. Bliesner
E. Clem
W. Dorman
H. Fremont
L. Griffin
E. Potts, Jr.
D. Striley
J. Reeve

CHAMPION INTERNATIONAL CORPORATION
Analytical Services Report

Location : Canton, NC
Project : 997-S1000
Sample ID: Solid Wastes

Date Submitted: 6-17-83
Date Analyzed : 6-27-83

Parameter	EP Toxicity Extract Concentration, mg/L			
	Fly Ash	Cinders	WTP Sludge	Lime Mud
Arsenic	0.41	0.022	0.013	<0.001
Barium	0.22	0.46	0.24	0.49
Cadmium	0.02	<0.02	<0.02	<0.02
Chromium	<0.12	<0.12	<0.12	<0.12
Lead	<0.19	<0.19	<0.19	<0.19
Mercury	<0.001	<0.001	<0.001	<0.001
Selenium	0.045	<0.001	<0.001	<0.001
Silver	0.004	<0.001	<0.001	<0.001
Endrin	<0.002	<0.002	<0.002	<0.002
Lindane	<0.04	<0.04	<0.04	<0.04
Methoxychlor	<1.0	<1.0	<1.0	<1.0
Toxaphene	<0.05	<0.05	<0.05	<0.05
2,4,D	<1.0	<1.0	<1.0	<1.0
2,4,5,TP Silvex	<0.10	<0.10	<0.10	<0.10

THRESHOLD LEVELS OF CONTAMINANTS FOR CHARACTERISTIC OF EP TOXICITY[1]

CONTAMINANT	CONCENTRATION - mg/L 100X Drinking Water Standards	10X Drinking Water Standards
ARSENIC	5.0	0.50
BARIUM	100.0	10.0
CADMIUM	1.0	0.10
CHROMIUM	5.0	0.50
LEAD	5.0	0.50
MERCURY	0.2	0.02
SELENIUM	1.0	0.10
SILVER	5.0	0.50
ENDRIN	0.02	0.002
LINDANE	0.4	0.04
METHOXYCHLOR	10.0	1.0
TOXAPHENE	0.5	0.05
2,4,D	10.0	1.0
2,4,5 -TP SILVEX	1.0	0.10

[1] Federal Register Vol. 45, No. 98, Part 261.24, May 19, 1980.

LAW ENGINEERING TESTING COMPANY
geotechnical environmental & construction materials consultants
501 MINUET LANE
P.O. BOX 11297 • CHARLOTTE NORTH CAROLINA 28220
(704) 523-2022

January 13, 1984

Champion Papers
Canton Mill
Canton, North Carolina 28716

Attention: Mr. Jack M. Harrell

Subject: Champion Papers Landfill No. 6 and
Off-site Leachate Removal Line
Canton, North Carolina
LETCo. Job No. CH 4507E & CH 4507F

Gentlemen:

Submitted herewith are drawings prepared for the construction plan application for Landfill No. 6. Included with the Landfill No. 6 drawings are plans for the off-site leachate removal line (along Thickety Road) for use in obtaining an "Encroachment Permit" from the North Carolina D.O.T. The enclosed Landfill No. 6 drawings largely provide the additional information requested by the State's letter dated June 7, 1983 to Champion's Ms. Mary Lee Ransmeir. The drawings and this letter supplement our "Revised Report of Geotechnical Exploration and Evaluation and Conceptual Site Development Recommendations" dated February 5, 1982 and complete Law Engineering's authorized scope of services presented in Proposal No. 144S3 to Champion dated August 3, 1983.

The specific information requested in the State's June 7 letter is listed below with the corresponding responses.

1. Location (on topo map) of all homes and wells within 500 ft of the property boundary.

   Hampton, Hintz & Associates of Fletcher, N.C. performed the survey and provided this information. The structures and wells are indicated on the enclosed Grading Plan (Drawing No. 1).

2. The EP Toxicity results for lime mud.

Champion is providing this information.

3. Final construction plans per 0.0504(2) a, b, c and d.

The accompanying drawings for Landfill No. 6 provide this information. Item a refers to a map showing existing site features; this is provided by the survey map prepared by Hampton, Hintz & Associates and is used as the base map for the accompanying Grading Plan (Drawing No. 1). Item b refers to a grading plan which is provided by Drawing No. 1. Item c refers to a construction plan which is provided by the accompanying drawing entitled Plan of Final Contours and Permanent Surface Drainage Control Measures (Drawing No. 4). Item d refers to an erosion control plan which is provided by the drawing entitled Erosion/Sediment Control Measures (Drawing No. 2). Also, included in the Landfill No. 6 package are an operation plan entitled Landfill Operation and Leachate Control Measures (Drawing No. 2) and several drawings of Cross Sections (Drawing Nos. 5, 6 and 7).

4. Final disposition of wastewater (i.e., applicable permits).

Champion is preparing this information.

5. Final design calculations of individual drains and their locations.

The principal drainage systems at the proposed landfill are the leachate control system and the uncontaminated runoff control system. The locations and design of these systems are illustrated in specific detail (type, size, etc.) on the accompanying drawings. Both of the systems are designed to utilize gravity flow where possible, and thereby limit the number of pumping stations. Only two pumping stations will be required, both in the handling of leachate; no pumping stations will be required to control uncontaminated runoff.

The leachate control system is designed to allow gravity flow of leachate from the landfill areas (except Area E) to a lined leachate holding pond that has a capacity to hold 100 percent runoff from a 100-year, 24-hour duration rainfall (7.6 inches) over an 8 acre active cell area. From Area E, the collected leachate will be pumped to a pump stand from which the leachate will flow by gravity to the holding pond. The leachate collection system is designed for rapid drainage from the active cells to the holding pond, to minimize ponding of runoff in the active cells. From the holding pond the leachate will be pumped off-site to a City sewer line which ties into Champion's waste

treatment facilities. The capacity of this off-site line is dictated by the capacity of the receiving line and by the capacity of the treatment plant, and is limited .5 cfs (225 gpm) maximum flow rate. Under assumed design storm conditions (100-year rainfall), the leachate could be ponded no more than about five days in the lined holding pond. All the main leachate lines that empty into the holding pond are designed to have shut-off valves to allow cut-off of leachate drainage into the pond in cases of emergency (e.g., prolonged pump repairs, greater than 100-year storm occurrence, storm runoff from an active cell larger than 8-acre area, etc.).

The uncontaminated runoff control system is designed to collect storm runoff from areas upslope of active landfilling operations and convey the uncontaminated runoff out of the landfill area through sealed pipes under the landfill. The pipes and inlet risers in the system are sized to pass runoff resulting from the 100-year storm without overtopping the dikes which separate the upslope areas from the active (and completed) landfill cells. The uncontaminated runoff outlet pipes also are designed to have shut-off valves to allow cut-off of flow of collected runoff in the event of runoff ponding to great enough depth in the active cell to spill over the separation dike into the uncontaminated area (e.g., due to clogging of drains in the active cell or due to runoff from a greater than 100-year storm occurrence, etc.).

6. Quantity and type of final cover.

As indicated in the February 5, 1982 report, a total volume of soil cover on the order of 475,000 cubic yards will be required at the proposed landfill. The soil cover materials will come from on-site. More than 3 million cubic yards of borrow soils are available on-site. The above referenced report indicates that approximately 1.5 million cubic yards will be required for fill (dike construction). The dike construction illustrated by the accompanying drawings will require somewhat greater volume than this, but there still appears to be much more borrow material available at the site than needed for fill and cover materials.

The source of the 3-ft thick final cover will be residual soils excavated from on-site. The residual soils sampled at the site consist of sandy silty clays, clayey sandy silts and sandy silts and silty sands. In general, the more clayey and silty soils are nearer the surface (upper 10 ft on average in the borings) and the sand content increases with depth. Most of the residual soils are very micaceous, some with as much as 60 percent mica. The upper more clayey and silty soils are less micaceous than the

deeper sands. The high mica content will probably cause them to "act" more like a silt than a sand. Unified Soil Classifications of the residual soils are estimated to be CL (clays), ML (silts) and SM (sands). Permeabilities of remolded soils constructed of the deeper, sandy soils are estimated to be in the range of 10^{-5} to 10^{-3} cm/sec. Laboratory permeability test results available on remolded samples of the upper, more clayey and silty soils indicate permeabilities on the order of 10^{-6} to 10^{-5} cm/sec for these soils. Through selective use of the upper, clayey and silty soils and/or blending of these soils with the very micaceous silty sands from deeper in the profile, the in-place final soil cover should have a low to very low permeability. Use of the deeper, very sandy soils in the final cover should be avoided, unless suitably blended with the clayey or silty soils.

7. Engineering calculations for erosion control structures.

   a. Sediment basin (and location)
   b. riser pipe
   c. velocity dissipator

   Each of the major landfill areas, which will be formed by construction of earth dikes at the lower ends of the principal "draws" at the site, will in itself function as a sedimentation basin. Thus, because of the extraordinarily large available capacity of these "basins" for trapping and storing sediment during grading, no rigorous engineering calculations are warranted. As noted on Drawing No. 3, initial grading operations are to involve construction of the dikes at the lower ends of the landfill areas. The area upslope of the dikes are not to be cleared (except in borrow areas for dike fill) until the outlet pipes have been installed and the lower part of the dikes has been constructed to about 3 ft above the top of the riser at the inlet of the outlet pipes. The inlet riser is to be perforated and surrounded by washed stone as shown by a typical detail on the drawing. The outlet pipe and its riser inlet form the first segment in the uncontaminated runoff control system which, as previously discussed, is sized for 100-year storm runoff. In the unlikely event (during grading) of sediment build-up to near the top of the 4-ft high riser, the riser would simply be extended upward by adding another perforated section of the pipe to the top of the riser and surrounding it with washed stone. The outlet pipes will discharge into riprap lined "plunge" pools.

8. Erosion control measures below the outside dike.

   Erosion control measures are shown on Drawing Nos. 2 and 4.

9. Clarification of details on Drawing No. 12 (in the February 5, 1982 report).

   This was generally accomplished in a meeting on July 11, 1983 between Gordon Layton and Jim Moore of the State, Mary Lee Ransmeier and Mike Singleton of Champion and Jim Smith of Law Engineering. The landfill plan is much more specific now and the accompanying drawings should help clarify details of the proposed landfill.

10. Location of leachate collection system.

    The leachate collection system is shown in plan view on Drawing No. 3 and is illustrated by details and on cross sections on Drawing Nos. 5, 6 and 7.

11. Method of handling surface water from top of landfill.

    Control measures for removing surface water from the top of the landfill are shown on Drawing No. 4.

12. The water quality parameters and sampling frequency suggested by the State are being handled by Champion.

Law Engineering Testing Company has enjoyed working with Champion Papers on this project and looks forward to continuing to provide our professional services on this and related projects. If you have any questions concerning this letter or the drawings, please contact us.

Very truly yours,

LAW ENGINEERING TESTING COMPANY

Fred C. Tucker

Fred C. Tucker, P. E.
Project Geotechnical Engineer
Registered, N. C. 8160

Jim N. Smith Jr

Jimmy N. Smith, P. E.
Senior Geotechnical Engineer
Registered, N. C. 7964

FCT/JNS:tmc

Champion

L. Gerard - Canton

J. P. Kelly

S0943F

July 14, 1986

Toluene Analysis of Canton WTP Sludge

02503-CA-53

The sample of Waste Treatment Plant sludge you submitted on June 19 has been analyzed to determine the presence of toluene. The sludge was extracted with methylene chloride and analyzed by GC/MS.

The results of the analysis are as follows:

SAMPLE	TOLUENE CONCENTRATION
WTP Sludge	<10 ppm (µg/g)
	(based on 44% dry weight)

A second sample was spiked with toluene and an 81% recovery was achieved.

If you have any questions or if I can be of any additional assistance please do not hesitate to call me.

Jim Kelly

JPK:fl

copies

F.R. Antonucci
E.G. Kelleher
86-512

Mary Lee Ransmeier
Dave Smiley
Mike Cody

CENTRAL-LAKE STATES REGIONAL CENTER
Western Michigan University
Kalamazoo, MI 49008-3844
(616) 387-5128

NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR AND STREAM IMPROVEMENT, INC.

copy: Liz Dickson

July 25, 1988

Mr. Paul Weigand
Champion International Corporation
Park Street
Canton, North Carolina 28716

Dear Paul:

About a year ago we collected samples of solid waste at your facilities with the stated intention of subjecting them to the proposed toxicity characteristic leaching procedure (TCLP). At the time we told you that the results from extraction of your waste(s) would be made available to you.

We have finally received all the analytical results and are herewith enclosing the results for your samples. All results are concentrations in TCLP extracts of the waste materials except that leachate concentrations were measured directly without application of any extraction procedure. No extracts were analyzed for metals because our earlier studies of the EP extraction procedure (Technical Bulletin No. 319), which is similar to the TCLP in terms of its ability to solubilize metals from a sample, indicated very low levels of most metals.

The results from all our sampling and analysis will be compiled in a technical bulletin later this year. All data will, of course, be presented in a manner such that the facility from which samples were collected will remain anonymous. We may, however, wish to include some information on bleaching practices at those mills practicing chlorine bleaching. We will be contacting you separately about this if we need information.

Thank you very much for your participation in this research. If you have any questions please feel free to contact me or Research Assistant Steven Norton who was intimately involved with this project and who compiled the information enclosed.

Sincerely,

Jay P. Unwin
Regional Manager

enclosure

pc: I. Gellman, R. Miner, S. Norton

Summary of Semi-Volatiles and TOX Analyses of the Champion International Canton, North Carolina TCLP Samples

Sample Type:		Concentrations (ppb)			
		Leachate	Combined Sludge Extract		
Analytes	Quant. Limit (ppb)	020 LNV-1	016 NV-2	016 NV-3	mean
2-CHLOROPHENOL	2.0	ND	ND	NA	
4-CHLOROPHENOL	1.3	ND	ND	NA	
2,6-DICHLOROPHENOL	5.9	ND	ND	ND	
2,4-DICHLOROPHENOL	4.6	ND	ND	ND	
3,5-DICHLOROPHENOL	6.3	ND	ND	ND	
3,4-DICHLOROPHENOL	5.3	ND	ND	ND	
2,4,6-TRICHLOROPHENOL	4.1	ND	ND	ND	
2,3,6-TRICHLOROPHENOL	6.1	ND	ND	ND	
2,4,5-TRICHLOROPHENOL	5.3	ND	ND	ND	
2,3,4,6-TETRACHLOROPHENOL	3.4	ND	ND	ND	
PENTACHLOROPHENOL	5.4	ND	ND	ND	
4-CHLOROGUAIACOL	6.9	ND	ND	NA	
4,5-DICHLOROGUAIACOL	4.6	ND	ND	ND	
3,4,5-TRICHLOROGUAIACOL	3.2	ND	ND	ND	
4,5,6-TRICHLOROGUAIACOL	4.4	ND	ND	ND	
TETRACHLOROGUAIACOL	3.5	ND	ND	ND	
TRICHLOROSYRINGOL	4.5	ND	ND	ND	
PHENOL	1.5	34.1	56.4	NA	
o-CRESOL	1.4	ND	ND	NA	
m-CRESOL	1.6	ND	ND	NA	
p-CRESOL	3.1	63.2	ND	NA	
2,5-DIMETHYLPHENOL	3.8	ND	ND	NA	
2,4-DIMETHYLPHENOL	5.1	ND	ND	NA	
3,4-DIMETHYLPHENOL	5.0	ND	ND	NA	
4-ETHYLPHENOL	4.9	ND	12.6	NA	
THYMOL	2.7	ND	ND	NA	
CARVACROL	4.2	ND	ND	NA	
GUAIACOL	3.1	ND	ND	NA	
		Concentrations (ppm)			
TOX	20	2.12	2.07	NA	

ND - not detected above quantitation limit.
UQ - unable to quantitate due to analytical problems.
NA - not analyzed.

Summary of Semi-Volatiles and TOX Analyses of the Champion International Canton, North Carolina TCLP Samples

Sample Type:		Concentrations (ppb) Fly Ash Extract			
Analytes	Quant. Limit (ppb)	018 NV-1	018 NV-2	018 NV-3	mean
2-CHLOROPHENOL	2.0	ND	NA	NA	
4-CHLOROPHENOL	1.3	ND	NA	NA	
2,6-DICHLOROPHENOL	5.9	ND	ND	ND	
2,4-DICHLOROPHENOL	4.6	ND	ND	ND	
3,5-DICHLOROPHENOL	6.3	ND	ND	ND	
3,4-DICHLOROPHENOL	5.3	ND	ND	ND	
2,4,6-TRICHLOROPHENOL	4.1	ND	ND	ND	
2,3,6-TRICHLOROPHENOL	6.1	ND	ND	ND	
2,4,5-TRICHLOROPHENOL	5.3	ND	ND	ND	
2,3,4,6-TETRACHLOROPHENOL	3.4	ND	ND	ND	
PENTACHLOROPHENOL	5.4	ND	ND	ND	
4-CHLOROGUAIACOL	6.9	ND	NA	NA	
4,5-DICHLOROGUAIACOL	4.6	ND	ND	ND	
3,4,5-TRICHLOROGUAIACOL	3.2	ND	ND	ND	
4,5,6-TRICHLOROGUAIACOL	4.4	ND	ND	ND	
TETRACHLOROGUAIACOL	3.5	ND	ND	ND	
TRICHLOROSYRINGOL	4.5	ND	ND	ND	
PHENOL	1.5	21.9	NA	NA	
o-CRESOL	1.4	ND	NA	NA	
m-CRESOL	1.6	ND	NA	NA	
p-CRESOL	3.1	ND	NA	NA	
2,5-DIMETHYLPHENOL	3.8	ND	NA	NA	
2,4-DIMETHYLPHENOL	5.1	ND	NA	NA	
3,4-DIMETHYLPHENOL	5.0	ND	NA	NA	
4-ETHYLPHENOL	4.9	ND	NA	NA	
THYMOL	2.7	ND	NA	NA	
CARVACROL	4.2	ND	NA	NA	
GUAIACOL	3.1	ND	NA	NA	
		Concentrations (ppm)			
TOX	20	UQ	NA	NA	

ND - not detected above quantitation limit.
UQ - unable to quantitate due to analytical problems.
NA - not analyzed.

Summary of Semi-Volatiles and TOX Analyses of the Champion International Canton, North Carolina TCLP Samples

Sample Type:		Concentrations (ppb) Lime Mud Extract			
Analytes	Quant. Limit (ppb)	017 NV-1	017 NV-2	017 NV-3	mean
2-CHLOROPHENOL	2.0	ND	NA	NA	
4-CHLOROPHENOL	1.3	ND	NA	NA	
2,6-DICHLOROPHENOL	5.9	ND	ND	ND	
2,4-DICHLOROPHENOL	4.6	ND	ND	ND	
3,5-DICHLOROPHENOL	6.3	ND	ND	ND	
3,4-DICHLOROPHENOL	5.3	ND	ND	ND	
2,4,6-TRICHLOROPHENOL	4.1	ND	ND	ND	
2,3,6-TRICHLOROPHENOL	6.1	ND	ND	ND	
2,4,5-TRICHLOROPHENOL	5.3	ND	ND	ND	
2,3,4,6-TETRACHLOROPHENOL	3.4	ND	ND	ND	
PENTACHLOROPHENOL	5.4	ND	ND	ND	
4-CHLOROGUAIACOL	6.9	ND	NA	NA	
4,5-DICHLOROGUAIACOL	4.6	ND	ND	ND	
3,4,5-TRICHLOROGUAIACOL	3.2	ND	ND	ND	
4,5,6-TRICHLOROGUAIACOL	4.4	ND	ND	ND	
TETRACHLOROGUAIACOL	3.5	ND	ND	ND	
TRICHLOROSYRINGOL	4.5	ND	ND	ND	
PHENOL	1.5	53.6	NA	NA	
o-CRESOL	1.4	ND	NA	NA	
m-CRESOL	1.6	ND	NA	NA	
p-CRESOL	3.1	ND	NA	NA	
2,5-DIMETHYLPHENOL	3.8	ND	NA	NA	
2,4-DIMETHYLPHENOL	5.1	ND	NA	NA	
3,4-DIMETHYLPHENOL	5.0	ND	NA	NA	
4-ETHYLPHENOL	4.9	ND	NA	NA	
THYMOL	2.7	ND	NA	NA	
CARVACROL	4.2	ND	NA	NA	
GUAIACOL	3.1	ND	NA	NA	
		Concentrations (ppm)			
TOX	20	UQ	NA	NA	

ND - not detected above quantitation limit.
UQ - unable to quantitate due to analytical problems.
NA - not analyzed.

TCLP Volatiles Extraction Fluid Results
Champion International, Canton, North Carolina

Analyte	Quantitation Limit (ppb)	CLS-016-VE-1 Champ.,Canton Comb. Sludge
1,1-diClethene	20	ND
CHCl3	20	163.2
methyl ethyl ketone	100	ND
1,2-diClethane	20	ND
1,1,1-triClethane	20	ND
CCl4	20	ND
triClethene	20	ND
benzene	20	ND
1,1,2-triClethane	20	ND
1,1,1,2-tetClethane	100	ND
1,1,2,2-tetClethane	20	ND
toluene	20	ND
Cl-benzene	20	ND

Summary of the Volatiles Analysis of Leachates
Champion International Canton, North Carolina

Analyte	Quantitation Limit (ppb)	Concentrations (ppb) Sample I.D. CLS-019-LV-1 Champ.,Canton
1,1-diClethene	20	ND
CHCl3	20	ND
methyl ethyl ketone	100	ND
1,2-diClethane	20	ND
1,1,1-triClethane	20	ND
CCl4	20	ND
triClethene	20	ND
benzene	20	ND
1,1,2-triClethane	20	ND
1,1,1,2-tetClethane	100	ND
1,1,2,2-tetClethane	20	ND
toluene	20	ND
Cl-benzene	20	ND

Summary of the Volatiles Analysis of TCLP Extracts and Leachates
Champion International, Canton, North Carolina

Analyte	Quantitation Limit (ppb)	Concentrations (ppb) Sample I.D. CLS-017-VE-1 Champ.,Canton Lime Mud	CLS-018-VE-1 Champ.,Canton Ash
1,1-diClethene	20	ND	ND
CHCl3	20	ND	ND
methyl ethyl ketone	100	ND	ND
1,2-diClethane	20	ND	ND
1,1,1-triClethane	20	ND	ND
CCl4	20	ND	ND
triClethene	20	ND	ND
benzene	20	ND	ND
1,1,2-triClethane	20	ND	ND
1,1,1,2-tetClethane	100	ND	ND
1,1,2,2-tetClethane	20	ND	ND
toluene	20	ND	ND
Cl-benzene	20	ND	ND

51 - 58

AnalytiKEM *An American NuKEM Company*

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
215/923-2068
Fax. 609/751-0824

TEST REPORT NO. A40194, Revision

November 15, 1990

Prepared for:

Champion International
P.O. Box C-10
Main Street
Canton, NC 28716

Attention: Elizabeth Dickson

Project: TCLP - Canton Mill

Reviewed &
Approved by: _____

Name Edward J. Palmer, Jr.

Title Technical Manager

AnalytiKEM

TCLP
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I. List of Certifications

State	Certification Number
Connecticut	PH-0715
Florida	E87201
New Jersey	04012
New York	10815
North Carolina	258
Pennsylvania	68-366
South Carolina	94004
Tennessee	02908

II. Definition of Terms

Term	Definition
DI	Deionized Water
J	Compound was detected at levels below the practical quantitation limit. The level reported is approximate.
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NA	Analysis not applicable to the sample matrix.
ND	Not Detected
NR	Not Requested
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
U	Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound.
mg/L	Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm).
CCC	Calibration Check Compound; used to verify the precision of a GC/MS calibration curve.
SPCC	System Performance Check Compound; used to verify the correct operation of a GC/MS instrument.
PQL	Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated.
TCLP	Toxic Characteristic Leachate Procedure
ZHE	Zero Headspace Extraction
TC	Toxic Characteristic
ug	Micrograms

III. Sample Designations

AnalytiKEM Designation	Client Designation	Matrix	Date Sampled
A40194-1	Sludge	Nonaqueous	9/5/90
A40194-2	Lime Mud	Nonaqueous	9/5/90
A40194-3	Fly Ash	Nonaqueous	9/5/90
A40194-4	Cinders	Nonaqueous	9/5/90
A40194-5	Used Oil	Aqueous	9/5/90

Note: Samples will be held for 30 days beyond test report date unless otherwise requested.

IV. Methodology

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 261, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

AnalytiKEM

V. Laboratory Chronicle

	DATE I	DATE II
Date Sampled	9/5/90	
Receipt/Refrigeration	9/6/90	
TCLP Extractions		
Zero Headspace Extraction	9/14/90	
TC Extraction	9/15/90	9/27/90
Sample Preparations		
Semivolatiles	9/20/90	
Metals	9/29/90	
Analyses		
Volatiles	9/23-9/24/90	
Semivolatiles	9/25-9/26/90	
Metals	10/1/90	

Laboratory Manager Review & Approval
(Signature) Elisabeth F. Winkle for
(Printed Name) William Fithian
(Date) 11/14/90

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

AnalytiKEM

VI. Extraction Log

Sample Designation	Zero Headspace Extraction, (g)	TCLP Extraction, (g)	Extraction Fluid Type #	Extraction Fluid Volume (ml)
A40194-1	25	--	1	500
A40194-2	25	--	1	500
A40194-3	25	--	1	500
A40194-4	25	--	1	500
A40194-5	25	--	1	500
A40194-1	--	100	1	2,000
A40194-2	--	100	1	2,000
A40194-3	--	100	1	2,000
A40194-4	--	100	1	2,000
A40194-5	--	100	1	2,000

AnalytiKEM

I. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

A40194-1	Sludge
A40194-2	Lime Mud
A40194-3	Fly Ash
A40194-4	Cinders
A40194-5	Used Oil

AnalytiKEM

II. Analytical Results

TCLP Organic Analyses

AnalytiKEM Designation A40194-1

Client Designation Sludge

EPA HW Number	Contaminant	Method Blank		Sample Result		Regulatory Level
Volatile Organics						
D043	Vinyl Chloride	0.010	U	0.050	U	0.2
D029	1,1-Dichloroethylene	0.010	U	0.050	U	0.7
D022	Chloroform	0.008	J	0.490		6.0
D028	1,2-Dichloroethane	0.010	U	0.050	U	0.5
D035	2-Butanone (Methyl Ethyl Ketone)	0.010	U	0.050	U	200
D019	Carbon Tetrachloride	0.010	U	0.050	U	0.5
D040	Trichloroethylene	0.010	U	0.050	U	0.5
D018	Benzene	0.010	U	0.050	U	0.5
D039	Tetrachloroethylene	0.010	U	0.050	U	0.7
D021	Chlorobenzene	0.010	U	0.050	U	100
Semivolatile Organics						
D038	Pyridine	0.010	U	0.010	U	5.0
D027	1,4-Dichlorobenzene	0.010	U	0.010	U	7.5
D023	o-Cresol	0.050	U	0.050	U	200
D024,D025	m,p-Cresol	0.050	U	0.050	U	200
D034	Hexachloroethane	0.010	U	0.010	U	3.0
D036	Nitrobenzene	0.010	U	0.010	U	2.0
D033	Hexachlorobutadiene	0.010	U	0.010	U	0.5
D042	2,4,6-Trichlorophenol	0.010	U	0.010	U	2.0
D041	2,4,5-Trichlorophenol	0.050	U	0.050	U	400
D030	2,4-Dinitrotoluene	0.010	U	0.010	U	0.13
D032	Hexachlorobenzene	0.010	U	0.010	U	0.13
D037	Pentachlorophenol	0.050	U	0.050	U	100
TCLP Metals						
D004	Arsenic	0.50	U	0.50	U	5.0
D005	Barium	2.0	U	1.4	J	100
D006	Cadmium	0.10	U	0.10	U	1.0
D007	Chromium	0.50	U	0.50	U	5.0
D008	Lead	0.50	U	0.50	U	5.0
D009	Mercury	0.02	U	0.02	U	0.2
D010	Selenium	0.50	U	0.50	U	1.0
D011	Silver	0.40	U	0.40	U	5.0
Units		(mg/L)		(mg/L)		(mg/L)

Total Solids: 100%

NOTE: All results are not corrected for spike recoveries.

III. Analytical Results (Cont'd)

AnalytiKEM

TCLP Organic Analyses

AnalytiKEM Designation A40194-2

Client Designation Lime Mud

EPA HW Number	Contaminant	Method Blank		Sample Result		Regulatory Level
Volatile Organics						
D043	Vinyl Chloride	0.010	U	0.050	U	0.2
D029	1,1-Dichloroethylene	0.010	U	0.050	U	0.7
D022	Chloroform	0.038		1.1		6.0
D028	1,2-Dichloroethane	0.010	U	0.050	U	0.5
D035	2-Butanone (Methyl Ethyl Ketone)	0.010	U	0.050	U	200
D019	Carbon Tetrachloride	0.010	U	0.050	U	0.5
D040	Trichloroethylene	0.002	J	0.050	U	0.5
D018	Benzene	0.010	U	0.050	U	0.5
D039	Tetrachloroethylene	0.010	U	0.050	U	0.7
D021	Chlorobenzene	0.010	U	0.050	U	100
Semivolatile Organics						
D033	Hexachlorobutadiene	0.010	U	0.010	U	0.5
D042	2,4,6-Trichlorophenol	0.010	U	0.010	U	2.0
D041	2,4,5-Trichlorophenol	0.050	U	0.050	U	400
D030	2,4-Dinitrotoluene	0.010	U	0.010	U	0.13
D032	Hexachlorobenzene	0.010	U	0.010	U	0.13
D037	Pentachlorophenol	0.050	U	0.050	U	100
TCLP Metals						
D004	Arsenic	0.50	U	0.50	U	5.0
D005	Barium	2.0	U	0.04	J	100
D006	Cadmium	0.10	U	0.10	U	1.0
D007	Chromium	0.50	U	0.50	U	5.0
D008	Lead	0.50	U	0.50	U	5.0
D009	Mercury	0.02	U	0.02	U	0.2
D010	Selenium	0.50	U	0.50	U	1.0
D011	Silver	0.40	U	0.40	U	5.0
Units		(mg/L)		(mg/L)		(mg/L)

Total Solids: 100%

NOTE: All results are not corrected for spike recoveries.

AnalytiKEM

II. Analytical Results (Cont'd)

TCLP Organic Analyses

AnalytiKEM Designation A40194-3

Client Designation Fly Ash

EPA HW Number	Contaminant	Method Blank		Sample Result		Regulatory Level
Volatile Organics						
D043	Vinyl Chloride	0.010	U	0.050	U	0.2
D029	1,1-Dichloroethylene	0.010	U	0.050	U	0.7
D022	Chloroform	0.038		0.023	J	6.0
D028	1,2-Dichloroethane	0.010	U	0.050	U	0.5
D035	2-Butanone (Methyl Ethyl Ketone)	0.010	U	0.050	U	200
D019	Carbon Tetrachloride	0.010	U	0.050	U	0.5
D040	Trichloroethylene	0.002	J	0.050	U	0.5
D018	Benzene	0.010	U	0.050	U	0.5
D039	Tetrachloroethylene	0.010	U	0.050	U	0.7
D021	Chlorobenzene	0.010	U	0.050	U	100
Semivolatile Organics						
D038	Pyridine	0.010	U	0.010	U	5.0
D027	1,4-Dichlorobenzene	0.010	U	0.010	U	7.5
D023	o-Cresol	0.050	U	0.050	U	200
D024,D025	m,p-Cresol	0.050	U	0.050	U	200
D034	Hexachloroethane	0.010	U	0.010	U	3.0
D036	Nitrobenzene	0.010	U	0.010	U	2.0
D033	Hexachlorobutadiene	0.010	U	0.010	U	0.5
D042	2,4,6-Trichlorophenol	0.010	U	0.010	U	2.0
D041	2,4,5-Trichlorophenol	0.050	U	0.050	U	400
D030	2,4-Dinitrotoluene	0.010	U	0.010	U	0.13
D032	Hexachlorobenzene	0.010	U	0.010	U	0.13
D037	Pentachlorophenol	0.050	U	0.050	U	100
TCLP Metals						
D004	Arsenic	0.50	U	0.50	U	5.0
D005	Barium	2.0	U	0.10	J	100
D006	Cadmium	0.10	U	0.10	U	1.0
D007	Chromium	0.50	U	0.50	U	5.0
D008	Lead	0.50	U	0.50	U	5.0
D009	Mercury	0.02	U	0.02	U	0.2
D010	Selenium	0.50	U	0.50	U	1.0
D011	Silver	0.40	U	0.40	U	5.0
Units		(mg/L)		(mg/L)		(mg/L)

Total Solids: 100%

NOTE: All results are not corrected for spike recoveries.

AnalytiKEM

II. Analytical Results (Cont'd)

TCLP Organic Analyses

AnalytiKEM Designation A40194-4

Client Designation Cinders

EPA HW Number	Contaminant	Method Blank		Sample Result		Regulatory Level
Volatile Organics						
D043	Vinyl Chloride	0.010	U	0.050	U	0.2
D029	1,1-Dichloroethylene	0.010	U	0.050	U	0.7
D022	Chloroform	0.038		0.062		6.0
D028	1,2-Dichloroethane	0.010	U	0.050	U	0.5
D035	2-Butanone (Methyl Ethyl Ketone)	0.010	U	0.050	U	200
D019	Carbon Tetrachloride	0.010	U	0.050	U	0.5
D040	Trichloroethylene	0.002	J	0.050	U	0.5
D018	Benzene	0.010	U	0.050	U	0.5
D039	Tetrachloroethylene	0.010	U	0.050	U	0.7
D021	Chlorobenzene	0.010	U	0.050	U	100
Semivolatile Organics						
D038	Pyridine	0.010	U	0.010	U	5.0
D027	1,4-Dichlorobenzene	0.010	U	0.010	U	7.5
D023	o-Cresol	0.050	U	0.050	U	200
D024,D025	m,p-Cresol	0.050	U	0.050	U	200
D034	Hexachloroethane	0.010	U	0.010	U	3.0
D036	Nitrobenzene	0.010	U	0.010	U	2.0
D033	Hexachlorobutadiene	0.010	U	0.010	U	0.5
D042	2,4,6-Trichlorophenol	0.010	U	0.010	U	2.0
D041	2,4,5-Trichlorophenol	0.050	U	0.050	U	400
D030	2,4-Dinitrotoluene	0.010	U	0.010	U	0.13
D032	Hexachlorobenzene	0.010	U	0.010	U	0.13
D037	Pentachlorophenol	0.050	U	0.050	U	100
TCLP Metals						
D004	Arsenic	0.50	U	0.50	U	5.0
D005	Barium	2.0	U	2.1		100
D006	Cadmium	0.10	U	0.009	J	1.0
D007	Chromium	0.50	U	0.50	U	5.0
D008	Lead	0.50	U	0.50	U	5.0
D009	Mercury	0.02	U	0.02	U	0.2
D010	Selenium	0.50	U	0.50	U	1.0
D011	Silver	0.40	U	0.40	U	5.0
Units		(mg/L)		(mg/L)		(mg/L)

Total Solids: 100%

NOTE: All results are not corrected for spike recoveries.

II. Analytical Results (Cont'd)

AnalytiKEM

TCLP Organic Analyses

AnalytiKEM Designation A40194-5

Client Designation Used Oil

EPA HW Number	Contaminant	Method Blank		Sample Result		Regulatory Level
Volatile Organics						
D043	Vinyl Chloride	0.010	U	0.050	U	0.2
D029	1,1-Dichloroethylene	0.010	U	0.050	U	0.7
D022	Chloroform	0.038		0.050	U	6.0
D028	1,2-Dichloroethane	0.010	U	0.050	U	0.5
D035	2-Butanone (Methyl Ethyl Ketone)	0.010	U	0.050	U	200
D019	Carbon Tetrachloride	0.010	U	0.050	U	0.5
D040	Trichloroethylene	0.002	J	0.050	U	0.5
D018	Benzene	0.010	U	0.050	U	0.5
D039	Tetrachloroethylene	0.010	U	0.050	U	0.7
D021	Chlorobenzene	0.010	U	0.050	U	100
Semivolatile Organics						
D038	Pyridine	0.010	U	0.030	U	5.0
D027	1,4-Dichlorobenzene	0.010	U	0.030	U	7.5
D023	o-Cresol	0.050	U	0.150	U	200
D024,D025	m,p-Cresol	0.050	U	0.150	U	200
D034	Hexachloroethane	0.010	U	0.030	U	3.0
D036	Nitrobenzene	0.010	U	0.030	U	2.0
D033	Hexachlorobutadiene	0.010	U	0.030	U	0.5
D042	2,4,6-Trichlorophenol	0.010	U	0.030	U	2.0
D041	2,4,5-Trichlorophenol	0.050	U	0.150	U	400
D030	2,4-Dinitrotoluene	0.010	U	0.030	U	0.13
D032	Hexachlorobenzene	0.010	U	0.030	U	0.13
D037	Pentachlorophenol	0.050	U	0.150	U	100
TCLP Metals						
D004	Arsenic	0.50	U	0.50	U	5.0
D005	Barium	2.0	U	1.0	J	100
D006	Cadmium	0.10	U	0.10	U	1.0
D007	Chromium	0.50	U	0.50	U	5.0
D008	Lead	0.50	U	0.50	U	5.0
D009	Mercury	0.02	U	0.02	U	0.2
D010	Selenium	0.50	U	0.50	U	1.0
D011	Silver	0.40	U	0.40	U	5.0
Units		(mg/L)		(mg/L)		(mg/L)

Total Solids: 100%

NOTE: All results are not corrected for spike recoveries.

IX. Quality Control Data

TCLP Procedure

Volatile Organics

Aqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A22538-1

Parameter	Amount of Spike	Recovery MS	Recovery MSD
Vinyl Chloride	0.25	92	94
1,1-Dichloroethene	0.25	90	91
Chloroform	0.25	98	95
1,2-Dichloroethane	0.25	94	92
2-Butanone (MEK)	0.25	115	110
Carbon Tetrachloride	0.25	96	102
Trichloroethene	0.25	95	97
Benzene	0.25	100	102
Tetrachloroethene	0.25	97	101
Chlorobenzene	0.25	98	100
Units	(ug)	(%)	(%)

AnalytiKEM

IX. Quality Control Data (Cont'd)

TCLP Procedure

Volatile Organics

Aqueous Surrogate Recovery Data

Sample Designation	Surrogate Recovery 1,2-Dichloroethane-d_4 (0.25 ug added)	Toluene-d_8 (0.25 ug added)	4-Bromofluorobenzene (0.25 ug added)
Method Blank 1	95	100	100
Method Blank 2	84	101	95
A22538-1 Spike	93	99	106
A22538-1 Spike Dup.	93	99	105
A40194-1	99	99	100
A40194-2	88	100	96
A40194-3	98	100	98
A40194-4	99	100	98
A40194-5	101	102	91
Units	(%)	(%)	(%)

IX. Quality Control Data (Cont'd)

TCLP Procedure

Semivolatile Organics

Aqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A22696-1

Parameter	Amount of Spike	Recovery MS	Recovery MSD
Pyridine	50	70	89
1,4-Dichlorobenzene	50	53	62
o-Cresol	100	83	103
m,p-Cresol	100	96	119
Hexachloroethane	50	59	79
Nitrobenzene	50	63	85
Hexachlorobutadiene	50	54	66
2,4,6-Trichlorophenol	100	63	81
2,4,5-Trichlorophenol	100	75	66
2,4-Dinitrotoluene	50	72	67
Hexachlorobenzene	50	55	62
Pentachlorophenol	100	51	49
Units	(ug)	(%)	(%)

IX. Quality Control Data (Cont'd)

TCLP Procedure

Semivolatile Organics

Aqueous Surrogate Recovery Data

Sample Designation	Surrogate Recovery 2-Fluorophenol (200 ug Added)	Phenol-d_5 (200 ug Added)	2,4,6-Tribromophenol (200 ug Added)
Method Blank	59	52	88
A22696-1 Spike	63	58	45
A22696-1 Spike Dup.	86	75	61
A40194-1	26	25	36
A40194-2	59	48	69
A40194-3	47	37	61
A40194-4	80	62	93
A40194-5	22	20	34
Units	(%)	(%)	(%)

Sample Designation	Surrogate Recovery Nitrobenzene-d_5 (100 ug Added)	2-Fluorobiphenyl (100 ug Added)	Terphenyl-d_{14} (100 ug Added)
Method Blank	58	71	76
A22696-1 Spike	69	64	55
A22696-1 Spike Dup.	88	73	64
A40194-1	57	84	78
A40194-2	56	73	74
A40194-3	62	79	80
A40194-4	99	108	115
A40194-5	61	97	86
Units	(%)	(%)	(%)

AnalytiKEM

Quality Control Data (Cont'd)

TCLP Procedure

Metals

Aqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A40194-3

Parameter	Amount of Spike	Recovery MS	Recovery MSD
Arsenic	100	103	104
Barium	300	110	108
Cadmium	300	107	102
Chromium	300	103	98
Lead	300	100	97
Mercury	20	109	111
Selenium	100	110	109
Silver	300	22	18
Units	(ug)	(%)	(%)

28 Springdale Rd
Cherry Hill, New Jersey 08003
(609) 751-1122 • (215) 923-2068
Fax: (609) 751-0824

Chain-of-Custody

454 South Anderson Road Ste 532
Rock Hill, South Carolina 29730
(803) 329 9690
Fax: (803) 329 9689

Client: CHAMPION INTERNATIONAL CORP. Project: TCLP - CANTON MILL AnalytiKEM Contact: NANCY GELLERT

SAMPLE DESIGNATION	DATE	MATRIX	40 ml vials	950 ml Org. Pres.	ml Unpres.	ml HNO_3	ml H_2SO_4	ml NaOH	ml HCL	950 ml Unpres.	500 ml Unpres.	120 ml Unpres.	PARAMETERS
SLUDGE	9/5/90									✓	✓	✓	TCLP
LIME MUD	9/5/90									✓	✓	✓	TCLP
FLY ASH	9/5/90									✓	✓	✓	TCLP
CINDERS	9/5/90									✓	✓	✓	TCLP
USED OIL	9/5/90									✓	✓	✓	TCLP

Field Measurements:

Data Sheets: Y N

Filtered: Y Not Required

II. Field Conditions/Comments:

III. Special Instructions:
(Detection Limits, Data Package,etc)

Relinquished By:	Time/Date:	Received By:	Time/Date:
Liz Dickson	3:25pm, 9/5/90	Tracy Zachers	9/6/90 1000

Page: 4

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Company: Champion International
Date: February 05, 1991
Client Job No.: 1217.87

Work Order: F0-10-002

TEST NAME: Priority Pollutant Metals

SAMPLE ID: LIME SAMPLE
SAMPLE DATE: 09/24/90
ANALYSIS DATE: 10/15/90

	Results in mg/kg Dry Wt.	Detection Limit
Antimony	ND	3.1
Arsenic	ND	1.6
Beryllium	ND	0.80
Cadmium	2.0	0.80
Chromium	6.4	1.6
Copper	5.6	3.1
Lead	1.3	0.80
Mercury	ND	0.16
Nickel	11	6.2
Selenium	ND	0.80
Silver	3.3	1.6
Thallium	ND	1.6
Zinc	12	3.1

Comments: ND indicates the compound is not detected at the level indicated.

Attachment 1

Page: 3

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Company: Champion International
Date: February 05, 1991
Client Job No.: 1217.87

Work Order: F0-10-002

TEST NAME: Pesticides & PCB's

SAMPLE ID: LIME SAMPLE
SAMPLE DATE: 09/24/90
ANALYSIS DATE: 10/06/90

	Results in ug/kg Dry Wt.	Detection Limit
Aldrin	15	13
Alpha-BHC	ND	13
Beta-BHC	ND	13
Delta-BHC	ND	13
Gamma-BHC	ND	13
4,4'-DDD	ND	26
4,4'-DDE	ND	26
4,4'-DDT	ND	26
Dieldrin	ND	26
Endosulfan I	ND	26
Endosulfan II	ND	26
Endosulfan Sulfate	ND	26
Endrin	ND	26
Endrin Aldehyde	ND	26
Heptachlor	ND	13
Heptachlor Epoxide	ND	13
Chlordane	ND	130
Toxaphene	ND	1300
Arochlor 1016	ND	260
Arochlor 1221	ND	260
Arochlor 1232	ND	260
Arochlor 1242	ND	260
Arochlor 1248	ND	260
Arochlor 1254	ND	260
Arochlor 1260	ND	260

Comments: ND indicates the compound is not detected at the level indicated.

Attachment 2(26)

Oxford Laboratories, Inc.

Analytical and Consulting Chemists
1316 South Fifth Street
Wilmington, N.C. 28401
(919) 763-9793

DATE RECEIVED 8-06-91
DATE REPORTED 8-15-91
91W2140

CHAMPION INTERNATIONAL CORP
P. O. BOX C-10
CANTON, NC 28716

P.O. # C92049

ATTENTION: LOUISE JUSTUS

SAMPLE DESCRIPTION: LIME CAKE

1. LIME CAKE

RESULTS

	1
Arsenic, as As, Wt/Wt PPM	<.200
arium, as Ba, Wt/Wt PPM	72.0
Cadmium, as Cd, Wt/Wt PPM	<1.00
hromium, as Cr, Wt/Wt PPM	<2.00
ead, as Pb, Wt/Wt PPM	<2.00
ercury, as Hg, Wt/Wt PPM	<.0400
Selenium, as Se, Wt/Wt PPM	<.200
Silver, as Ag, Wt/Wt PPM	5.00
(1) Calcium, as Ca, %	30
(2) Calcium, as Calcium Carbonate, %	75.0%
(3) Mesh 20, % Pass (Dry Basis)	99.8
(4) Mesh 100, % Pass (Dry Basis)	99.3
(5) Sodium, as Na, PPM	4850

Attachment 3

TEST DATA REPORT

Date 01/16/92
Page 1

--- Project Information ---

Lab Number : 92-1744-01
Project No. : 2490440802
Project Name : CHAMPION GREEN LIME

Cust. No. :

Manager: GEORGE MAALOUF

--- Sample Information ---

Station ID : GREEN LIME
Matrix : NA
Type : GRAB
Collector : JA

Sampled Date/Time : 01/08/92 13
Received Date/Time : 01/09/92 09
Received From/By : JA/LD
Chain of Custody : 7943
Number of Containers : 2

Remarks :

--- Test Data ---

Parameter	Method	Units	PQL	Results	Test Date
-- INORGANIC CHEMISTRY RESULTS --					
Corrosivity (pH)	SW 846	units	2-12	12.7	01/10/92
-- METALS ANALYSIS - METALS PREP RESULTS --					
Arsenic, TCLP	EPA 6010	mg/l	0.5	ND	01/15/92
Barium, TCLP	EPA 6010	mg/l	0.1	0.2	01/13/92
Cadmium, TCLP	EPA 6010	mg/l	0.1	ND	01/15/92
Chromium, TCLP	EPA 6010	mg/l	0.1	ND	01/15/92
Lead, TCLP	EPA 6010	mg/l	0.1	ND	01/15/92
Mercury, TCLP	EPA 7470	mg/l	0.002	ND	01/15/92
Selenium, TCLP	EPA 6010	mg/l	0.5	ND	01/15/92
Silver, TCLP	EPA 6010	mg/l	0.1	ND	01/15/92
--- SERIES 35000					
Total Metals Prep: Aqueous ICP	EPA 3010			N/A	01/10/92
TCLP EXTRACTION	EPA 1311			N/A	01/09/92

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Champion International
Canton Mill
Canton, NC 28716
Attn: Mr. George Pickard

Date: November 30, 1990

NJ Lab Certification ID#: 12064

Job No.: 1217.87

P.O. Number: C84823

This is the Certificate of Analysis for the following samples:

Client Project ID: Lime sample
Date Received: 10/12/90
Number of Samples: 1
Sample Type: SOIL

I Samples were labeled as follows:

SAMPLE IDENTIFICATION	LABORATORY #
LIME SAMPLE	F0-10-196-01

Reviewed and Approved:

Ralph A. Kocsis
Operations Manager

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

Work Order: F0-10-196

SAMPLE ID	LIME SAMPLE	
SAMPLED	10/10/90	
TEST		UNITS
Total Cyanide	ND [0.18]	mg/Kg Dry Wt.
Total Phenols	ND [0.76]	mg/Kg Dry Wt

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F0-10-196

TEST NAME: **Pesticides & PCB's**

SAMPLE ID: **LIME SAMPLE**
SAMPLE DATE: **10/10/90**
ANALYSIS DATE: 10/30/90

	Results in ug/Kg dry wt.	Detection Limit
Aldrin	ND	13
Alpha-BHC	ND	13
Beta-BHC	ND	13
Delta-BHC	ND	13
Gamma-BHC	ND	13
4,4'-DDD	ND	25
4,4'-DDE	ND	25
4,4'-DDT	ND	25
Dieldrin	ND	25
Endosulfan I	ND	25
Endosulfan II	ND	25
Endosulfan Sulfate	ND	25
Endrin	ND	25
Endrin Aldehyde	ND	25
Heptachlor	ND	13
Heptachlor Epoxide	ND	13
Technical Chlordane	ND	130
Toxaphene	ND	1300
Arochlor 1016	ND	250
Arochlor 1221	ND	250
Arochlor 1232	ND	250
Arochlor 1242	ND	250
Arochlor 1248	ND	250
Arochlor 1254	ND	250
Arochlor 1260	ND	250

Comments: ND indicates the compound is not detected at the level indicated.

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: FO-10-196

TEST NAME: Priority Pollutant Metals

SAMPLE ID: LIME SAMPLE
SAMPLE DATE: 10/10/90
ANALYSIS DATE: 10/29/90

	Results in mg/kg dry wt.	Detection Limit
Antimony	3.0	3.0
Arsenic	ND	1.5
Beryllium	ND	0.76
Cadmium	2.0	0.76
Chromium	9.4	1.5
Copper	11	3.0
Lead	1.3	0.76
Mercury	ND	0.15
Nickel	14	6.1
Selenium	ND	1.5
Silver	2.6	1.5
Thallium	ND	1.5
Zinc	15	3.0

Comments: ND indicates the compound is not detected at the level indicated.

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F0-10-196

TEST NAME: **Acid/Base Neutrals**

SAMPLE ID: **LIME SAMPLE**
SAMPLE DATE: **10/10/90**
ANALYSIS DATE: 10/20/90

Results in	ug/kg dry wt.	Detection Limit
Acenaphthene	ND	500
Acenaphthylene	ND	500
Anthracene	ND	500
Benzidine	ND	500
Benzo(a)Anthracene	ND	500
Benzo(b)Fluoranthene	ND	500
Benzo(k)Fluoranthene	ND	500
Benzo(a)Pyrene	ND	500
bis(2-Chloroethyl)Ether	ND	500
bis(2-Chloroethoxy)Methane	ND	500
bis(2-Ethylhexyl)Phthalate	ND	500
bis(2-Chloroisopropyl)Ether	ND	500
4-Bromophenyl Phenyl Ether	ND	500
Butyl Benzyl Phthalate	ND	500
2-Chloronaphthalene	ND	500
4-Chlorophenyl Phenyl Ether	ND	500
Chrysene	ND	500
Dibenzo(a,h)anthracene	ND	500
Di-n-butylphthalate	ND	500
1,2-Dichlorobenzene	ND	500
1,3-Dichlorobenzene	ND	500
1,4-Dichlorobenzene	ND	500
3,3'-Dichlorobenzidine	ND	500
Diethylphthalate	ND	500
Dimethylphthalate	ND	500
2,4-Dinitrotoluene	ND	500
2,6-Dinitrotoluene	ND	500
Di-n-Octylphthalate	ND	500
1,2-Diphenylhydrazine	ND	500
Fluoranthene	ND	500
Fluorene	ND	500
Hexachlorobenzene	ND	500
Hexachlorobutadiene	ND	500
Hexachloroethane	ND	500

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F0-10-196

TEST NAME: Acid/Base Neutrals

SAMPLE ID: LIME SAMPLE
SAMPLE DATE: 10/10/90

Hexachlorocyclopentadiene	ND	500
Indeno(1,2,3-cd)pyrene	ND	500
Isophorone	ND	500
Naphthalene	ND	500
Nitrobenzene	ND	500
N-nitroso-dimethylamine	ND	500
N-Nitrosodipropylamine	ND	500
N-Nitrosodiphenylamine	ND	500
Phenanthrene	ND	500
Pyrene	ND	500
1,2,4-Trichlorobenzene	ND	500
4-Chloro-3-methylphenol	ND	500
2-Chlorophenol	ND	500
2,4-Dichlorophenol	ND	500
2,4-Dimethylphenol	ND	500
2,4-Dinitrophenol	ND	2500
4,6-Dinitro-2-methylphenol	ND	2500
2-Nitrophenol	ND	500
4-Nitrophenol	ND	2500
Pentachlorophenol	ND	2500
Phenol	ND	500
2,4,6-Trichlorophenol	ND	500

Comments: ND indicates the compound is not detected at the level indicated.

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Work Order: F0-10-196

TEST NAME: Volatile Organics

SAMPLE ID: LIME SAMPLE
SAMPLE DATE: 10/10/90
ANALYSIS DATE: 10/22/90

Results in	ug/kg dry wt.	Detection Limit
Acrolein	ND	76
Acrylonitrile	ND	76
Benzene	ND	8
Bromoform	ND	8
Bromomethane	ND	8
Carbon Tetrachloride	ND	8
Chlorobenzene	35	8
Chlorodibromomethane	ND	8
Chloroethane	ND	8
2-Chloroethylvinyl Ether	ND	8
Chloroform	ND	8
Chloromethane	ND	8
Dichlorobromomethane	ND	8
1,1-Dichloroethane	ND	8
1,2-Dichloroethane	ND	8
1,1-Dichloroethene	ND	8
trans-1-2-Dichloroethene	ND	8
1,2-Dichloropropane	ND	8
cis-1-3-Dichloropropene	ND	8
trans-1-3-Dichloropropene	ND	8
Ethylbenzene	ND	8
Methylene Chloride	31	8
1,1,2,2-Tetrachloroethane	ND	8
Tetrachloroethene	ND	8
Toluene	ND	8
1,1,1-Trichloroethane	ND	8
1,1,2-Trichloroethane	ND	8
Trichloroethene	ND	8
Trichlorofluoromethane	ND	8
Vinyl Chloride	ND	8

Comments: ND indicates the compound is not detected at the level indicated.

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Work Order: FO-10-196

TEST NAME: NBS Search for ABN's

SAMPLE ID: LIME SAMPLE
SAMPLE DATE: 10/10/90

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/kg dry wt.)
Unknown	113	1000 B
Unknown	154	29000 B
Sulfur, Molecule	1208	260

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(201) 225-2000

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

Work Order: F0-10-196

TEST NAME: NBS Search for VOA's

SAMPLE ID: LIME SAMPLE
SAMPLE DATE: 10/10/90

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/kg dry wt.)
Acetone	141	75

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F0-10-196

II ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by Analytical test. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits. Detection limits may vary due to factors arising from concentration/dilution of the sample and sample matrix. ND denotes that the compound is not detected at or above the indicated detection limit. The methodologies for the analytical results requested are described below.

Pesticides/PCB's (Soil)

The analysis of pesticides and PCB's is based on Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition, Method 3550 and Method 8080. An aliquot of sample is sonicated three times with a 1:1 solution of methylene chloride/acetone and exchanged to hexane. The extracts are dried through sodium sulfate and concentrated. The extract is then separated by gas chromotography and the analytes are measured using an electron capture detector.

Metals

The analysis of metals is based on Method 200.7 from 40CFR, Part 136. Samples to be analyzed by flame AA or ICP are digested with hydrochloric and nitric acid. Furnace analysis requires nitric acid digestion and mercury samples are digested with nitric and sulfuric acid.

Arsenic, Selenium, Antimony and Thallium are analyzed by graphite furnace. Mercury by cold vapor AA and all other metals by flame AA or ICP.

Base/Neutral and Acid Extractable Organics - GC/MS (Solid)

The analysis of base/neutral and acid extractables organics is based on Test Methods for Evaluating Soild Waste (SW-846), 3rd Edition Method 3550 and 8270. An aliquot of sample is sonicated three times with methylene chloride. The extracts are dried through sodium sulfate, concentrated and analyzed by mass spectroscopy.

Volatile Organics - GC/MS (Solid)

For the analysis of volatile organics in soils, SW-846, 3RD Edition, Method 8240 is employed. The volatile organic compounds are introduced into the gas chromatograph by the purge and trap method. The purgeables are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the sorbent column is heated and backflushed with the inert gas to

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87

Work Order: F0-10-196

desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are then detected with a mass spectrometer.

Cyanide

The analysis of cyanide is based on Technicon Method 696-82W and Test Methods for Evaluating Solid Waste (SW-846, 3rd Edition) Method 9010. The cyanide, as hydrocyanic acid (HCN) is released by refluxing the sample with strong acid. The hydrocyanic acid is then distilled into an absorber-scurbber containing sodium hydroxide solution. The cyanide concentration in the absorbing solution is determined colorimetrically using an automated flow injection method.

Phenols - Technicon Method

The analysis of phenol is based on Technicon Industrial Method 127-71 W/B. The sample is distilled and the distillate reacts with alkaline ferricyanide and 4-aminoantipyrine to form a red complex which is measured colorimetrically at 505nm.

III QUALITY CONTROL

The Determinations were performed in accordance with EPA/NJDEP approved methodology.

The value listed for chromium is based on the blank and matrix spike due to the relative percent difference of the replicates not meeting the QC acceptance criteria. The data was accepted due to the value being less than 5 times the detection limit.

The value listed for zinc is based on the blank spike and relative percent difference of the replicates due to the matrix spike not meeting the acceptance criteria. This was attributed to the high concentration of zinc in the sample analyzed as the matrix spike.

The value for selenium is based on the blanks spike and relative percent difference of the replicates. The matrix spikes were not within the QC acceptance limits due to matrix interference.

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Company: Champion International
Date: November 30, 1990
Client Job No.: 1217.87
Work Order: F0-10-196

The tentatively identified compounds denoted with a "B" were also detected in the Method Blank.

The sample was analyzed for cyanide past the recommended holding time. The value reported is based on the blank spike and relative percent difference of the replicate, due to the matrix spike not meeting the QC acceptance limits. This has been attributed to matrix interferences.

LAW ENVIRONMENTAL, INC.
112 TOWNPARK DRIVE
KENNESAW, GEORGIA 30144-5599
404-421-3400

September 8, 1992

SEP 8 1992
LAW ENGINEERING
GREENVILLE, S.C.

Law Engineering, Inc.
Four Interchange Blvd.
Greenville, SC 29607

Attention: Charles Bristow

Job Number: 2490480501

Subject: Chemical Analysis of Samples Received on 08/22/92.

Dear Mr. Bristow:

Law Environmental National Laboratories has completed its analysis of your samples and reports the results on the following pages. These results relate only to the contents of the samples as submitted. This report shall not be reproduced except in full without the approval of Law Environmental National Laboratories.

If there are any questions, please do not hesitate to contact us.

Sincerely,

LAW ENVIRONMENTAL NATL LABS

W. Pat Gifford, for

Clifford H. McBride
QC Coordinator

Attachment: Data Report
Invoice

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 09/08/92
Page 1

--- Project Information ---

Lab Number : 92-3460-01
Project No. : 2490480501
Project Name : CHAMPION

Cust. No. :

Manager: CHARLES BRISTOW

--- Sample Information ---

Station ID : SLAKER GRIT (5N, 5S, +4)
Matrix : NA
Type : COMP
Collector : CB

Sampled Date/Time : 08/21/92 11:
Received Date/Time : 08/22/92 11:
Received From/By : CB/LD
Chain of Custody : 14257
Number of Containers : 2

Parameter	Method	Units	DL	Results	Test Date	A
-- METALS ANALYSIS - METALS PREP RESULTS --						
Arsenic, TCLP	EPA 6010	mg/l	0.50	ND	09/01/92	J
Barium, TCLP	EPA 6010	mg/l	1.0	ND	09/01/92	J
Cadmium, TCLP	EPA 6010	mg/l	0.10	ND	09/01/92	J
Chromium, TCLP	EPA 6010	mg/l	0.50	ND	09/01/92	J
Lead, TCLP	EPA 6010	mg/l	0.50	ND	09/01/92	J
Mercury, TCLP	EPA 7470	mg/l	0.02	ND	08/31/92	H
Selenium, TCLP	EPA 6010	mg/l	0.10	ND	09/01/92	J
Silver, TCLP	EPA 6010	mg/l	0.50	ND	09/01/92	J
--- SERIES 35000						
Total Metals Prep: Aqueous ICP	EPA 3010			N/A	08/30/92	H
Total Metals Prep: Aqueous, Hg	EPA 7470			N/A	08/30/92	H
TCLP EXTRACTION	EPA 1311			EXTRACTED	08/27/92	H
--- SERIES 66000						
Ext/Zero Headspace, TCLP	EPA 1311			EXTRACTED	08/25/92	J
-- Ext/Zero Headspace, TCLP RESULTS --						
Vinyl chloride, TCLP	EPA 8240	ug/l	50	ND	08/28/92	B
1,1-Dichloroethene, TCLP	EPA 8240	ug/l	25	ND	08/28/92	B
Chloroform, TCLP	EPA 8240	ug/l	25	ND	08/28/92	B
1,2-Dichloroethane, TCLP	EPA 8240	ug/l	25	ND	08/28/92	B
2-Butanone (MEK), TCLP	EPA 8240	ug/l	500	ND	08/28/92	B
Carbon tetrachloride, TCLP	EPA 8240	ug/l	25	ND	08/28/92	B
Trichloroethene, TCLP	EPA 8240	ug/l	25	ND	08/28/92	B
Benzene, TCLP	EPA 8240	ug/l	25	ND	08/28/92	B
Tetrachloroethene, TCLP	EPA 8240	ug/l	25	ND	08/28/92	B
Chlorobenzene, TCLP	EPA 8240	ug/l	25	ND	08/28/92	B

Remarks:

DL = Detection Limit ND = Not Detected at the DL
Unless otherwise noted, all soil test results are calculated based on dry weight.

Signed Paul Stafford

ACL

ADVANCED CHEMISTRY LABS, INC.

P.O. BOX 88610 • ATLANTA, GEORGIA 30356
PHONE (404) 409-1444 • FAX (404) 409-1844

Client: Champion International Corp.
Canton Mill, Box C-10
Canton, NC 28716

Attention: Mr. Jim Giauque

Canton Mill
Client Project No.: P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: Lime Mud
ACL #: 86425

MATRIX: Solids

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	< 0.10	08-29-94	1311/6010
Barium	< 2.0	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	< 0.10	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andrps
QA/QC Manager

ACL

ADVANCED CHEMISTRY LABS, INC.

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Canton, NC 28716

Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION: Lime Mud
ACL #: 86425

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

ACL

ADVANCED CHEMISTRY LABS, INC.

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Client: Champion International Corp.
Canton Mill, Box C-10
Canton, NC 28716

Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: Slaker Grit
ACL #: 86426

MATRIX: Solids

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	< 0.10	08-29-94	1311/6010
Barium	< 2.0	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	< 0.10	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andros
QA/QC Manager

ACL

ADVANCED CHEMISTRY LABS, INC.

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Client: Champion International Corp.
Canton Mill, Box C-10
Canton, NC 28716

Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION: Slaker Grit
ACL #: 86426

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

ACL

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PHONE (404) 409-1444 • FAX (404) 409-1844

Client: Champion International Corp.
Canton Mill, Box C-10
Canton, NC 28716

Attention: Mr. Jim Giauque

Canton Mill
Client Project No.: P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: Flyash-#4 Boiler
ACL #: 86427

MATRIX: Ash

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	0.70	08-29-94	1311/6010
Barium	< 2.0	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	0.13	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andros
QA/QC Manager

ACL

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Client: Champion International Corp.
Canton Mill, Box C-10
Canton, NC 28716

Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION: Flyash-#4 Boiler
ACL #: 86427

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

ACL

ADVANCED CHEMISTRY LABS, INC.

P.O. BOX 88610 • ATLANTA, GEORGIA 30356
PHONE (404) 409-1444 • FAX (404) 409-1844

Client: Champion International Corp.
Canton Mill, Box C-10
Canton, NC 28716

Attention: Mr. Jim Giauque

Canton Mill
Client Project No.: P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: Flyash-PG/BB/RC
ACL #: 86428

MATRIX: Ash

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	1.85	08-29-94	1311/6010
Barium	< 2.0	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	< 0.10	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andros
QA/QC Manager

ACL

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Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION: Flyash-PG/BB/RC
ACL #: 86428

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

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Client: Champion International Corp.
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Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: Flyash-Riley Bark
ACL #: 86429

MATRIX: Ash

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	< 0.10	08-29-94	1311/6010
Barium	< 2.0	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	< 0.10	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andros
QA/QC Manager

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Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION: Flyash-Riley Bark
ACL #: 86429

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

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Attention: Mr. Jim Giauque

Canton Mill
Client Project No.: P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: Klinkers/Cinders
ACL #: No. 4 Boiler
86430

MATRIX: Solids

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	< 0.10	08-29-94	1311/6010
Barium	< 2.0	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	< 0.10	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andros
QA/QC Manager

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Client: Champion International Corp.
Canton Mill, Box C-10
Canton, NC 28716

Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION: Klinkers/Cinders
ACL #: No. 4 Boiler
86430

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

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Canton, NC 28716

Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: Klinkers/Cinders
ACL #: PG/BB/RC 86431

MATRIX: Solids

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	< 0.10	08-29-94	1311/6010
Barium	< 2.0	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	< 0.10	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andros
QA/QC Manager

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Client: Champion International Corp.
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Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION: Klinkers/Cinders
ACL #: PG/BB/RC 86431

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

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Attention: Mr. Jim Giauque

Canton Mill
Client Project No.: P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: Klinkers/Cinders
ACL #: Riley Bark
86432

MATRIX: Water/Solids

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	< 0.10	08-29-94	1311/6010
Barium	< 2.0	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	< 0.10	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andros
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Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION:	Klinkers/Cinders
ACL #:	Riley Bark 86432

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

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Attention: Mr. Jim Giauque

Canton Mill
Client Project No.: P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: Precoat Dregs
ACL #: 86433

MATRIX: Solids

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	< 0.10	08-29-94	1311/6010
Barium	< 2.0	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	< 0.10	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andros
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Canton, NC 28716

Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION: Precoat Dregs
ACL #: 86433

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

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ADVANCED CHEMISTRY LABS, INC.

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Waste

Client: Champion International Corp.
Canton Mill, Box C-10
Canton, NC 28716

Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

STATION: WWTP Sludge
ACL #: 86424

MATRIX: Sludge

PARAMETERS:	RESULTS	DATE ANALYZED	METHOD
TCLP Metals (mg/liter)			
Arsenic	< 0.10	08-29-94	1311/6010
Barium	2.76	08-29-94	1311/6010
Cadmium	< 0.10	08-29-94	1311/6010
Chromium	< 0.20	08-29-94	1311/6010
Lead	< 0.50	08-29-94	1311/6010
Mercury	< 0.002	08-29-94	1311/7470
Selenium	< 0.10	08-29-94	1311/6010
Silver	< 0.50	08-29-94	1311/6010

John H. Andros
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Attention: Mr. Jim Giauque

Client Project No.: Canton Mill P.O. #C72823
ACL Project No.: 16628
Date Received: 08-13-94
Report Date: 09-14-94
NC Lab ID #362

TCLP VOLATILES/SEMI-VOLATILES

STATION: WWTP Sludge
ACL #: 86424

VOLATILES (mg/liter)(1311/8240)	Results	Federal Regulatory Level
Benzene	< 0.05	0.5
Carbon tetrachloride	< 0.05	0.5
Chlorobenzene	< 10	100
Chloroform	< 0.60	6.0
1,2-Dichloroethane	< 0.05	0.5
1,1-Dichloroethylene	< 0.07	0.7
Methyl ethyl ketone	< 20	200
Tetrachloroethylene	< 0.07	0.7
Trichloroethylene	< 0.05	0.5
Vinyl chloride	< 0.02	0.2

SEMI-VOLATILES (mg/liter)(1311/8270)		
m-Cresol	< 20	200
o-Cresol	< 20	200
p-Cresol	< 20	200
Total Cresol*	----	200
1,4-Dichlorobenzene	< 0.75	7.5
2,4-Dinitrotoluene	< 0.013	0.13
Hexachlorobenzene	< 0.013	0.13
Hexachlorobutadiene	< 0.05	0.5
Hexachloroethane	< 0.30	3.0
Nitrobenzene	< 0.20	2.0
Pentachlorophenol	< 10	100
Pyridine	< 0.50	5.0
2,4,5-Trichlorophenol	< 40	400
2,4,6-Trichlorophenol	< 0.20	2.0

* If m-,o- and p-Cresol cannot be differentiated, the total Cresol concentration is used.

APPENDIX E

OUTPUT FROM STATISTICAL ANALYSIS

Champion International
Canton Landfill No. 6
Canton, North Carolina

Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-1

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
13	PH	pH	13	5.40	9.90	6.76	1.12
	DISSOL	Total Dissolved Solids	13	6.70	13950.00	2980.59	4756.57
	CONDUCT	Specific Conductance	13	135.00	807.00	367.08	166.63
	AG	Silver	13	0.00	0.25	0.03	0.07
	AS	Arsenic	13	0.00	0.08	0.02	0.02
	BA	Barium	12	0.04	0.75	0.19	0.23
	CA	Calcium	12	0.01	109.00	31.75	39.78
	CD	Cadmium	11	0.00	0.01	0.00	0.00
	CR	Chromium	13	0.00	0.30	0.04	0.08
	FE	Iron	13	1.30	118.00	44.53	41.64
	HG	Mercury	13	0.00	0.00	0.00	0.00
	MN	Manganese	12	0.02	0.88	0.34	0.36
	NA	Sodium	12	21.60	2320.00	251.92	653.01
	NI	Nickel	12	0.02	0.47	0.10	0.12
	PB	Lead	13	0.02	0.33	0.13	0.14
	SE	Selenium	13	0.00	0.03	0.00	0.01
	CL	Chloride	13	1.00	7.18	3.48	2.23
	F	Fluoride	13	0.05	1.00	0.34	0.26
	NO2	Nitrite	12	0.00	1.00	0.11	0.28
	PHEN	Total Phenols	13	0.00	0.14	0.02	0.04
	SO4	Sulfate	13	27.00	900.00	223.38	239.85
	TOC	Total Organic Carbon	13	0.05	38.00	10.47	12.30
	TOH	Total Organic Halogens	13	0.01	2.35	0.32	0.67

Champion International
Canton Landfill No. 6
Canton, North Carolina

Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-10

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
18	PH	pH	17	5.00	6.44	5.77	0.51
	DISSOL	Total Dissolved Solids	17	7.50	684.00	89.32	155.83
	CONDUCT	Specific Conductance	17	25.00	106.00	36.12	18.33
	AG	Silver	18	0.00	0.25	0.05	0.09
	AS	Arsenic	17	0.00	0.08	0.01	0.02
	BA	Barium	16	0.04	0.25	0.08	0.06
	CA	Calcium	17	0.45	3.60	1.71	1.06
	CD	Cadmium	18	0.00	0.01	0.00	0.00
	CR	Chromium	18	0.00	0.03	0.01	0.01
	FE	Iron	18	0.02	19.20	3.41	5.45
	HG	Mercury	17	0.00	0.00	0.00	0.00
	MN	Manganese	17	0.00	0.61	0.12	0.16
	NA	Sodium	17	1.00	5.30	2.29	1.36
	NI	Nickel	17	0.01	0.06	0.02	0.01
	PB	Lead	16	0.00	15.40	0.98	3.85
	SE	Selenium	17	0.00	0.03	0.00	0.01
	CL	Chloride	17	0.25	11.50	2.55	2.90
	F	Fluoride	17	0.04	0.50	0.10	0.12
	NO2	Nitrite	16	0.00	0.08	0.02	0.03
	PHEN	Total Phenols	17	0.00	0.04	0.01	0.01
	SO4	Sulfate	17	1.00	30.00	7.66	8.86
	TOC	Total Organic Carbon	17	0.25	10.80	2.54	2.90
	TOH	Total Organic Halogens	16	0.01	0.18	0.03	0.04

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WELLNO=MW-11

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
17	PH	pH	17	4.50	7.27	5.36	0.70
	DISSOL	Total Dissolved Solids	17	6.80	692.00	113.15	154.22
	CONDUCT	Specific Conductance	17	72.00	550.00	111.35	113.23
	AG	Silver	17	0.00	0.25	0.03	0.08
	AS	Arsenic	17	0.00	0.08	0.01	0.02
	BA	Barium	16	0.05	1.10	0.16	0.26
	CA	Calcium	16	1.00	4.00	2.29	1.14
	CD	Cadmium	17	0.00	0.01	0.00	0.00
	CR	Chromium	17	0.01	0.16	0.02	0.04
	FE	Iron	17	0.02	327.00	31.32	79.56
	HG	Mercury	17	0.00	0.00	0.00	0.00
	MN	Manganese	16	0.00	0.50	0.06	0.12
	NA	Sodium	16	3.10	7.95	4.64	1.18
	NI	Nickel	16	0.01	0.12	0.02	0.03
	PB	Lead	17	0.01	11.80	0.72	2.86
	SE	Selenium	17	0.00	0.03	0.00	0.01
	CL	Chloride	17	0.50	15.00	9.44	3.62
	F	Fluoride	16	0.02	0.50	0.09	0.12
	NO2	Nitrite	16	0.00	5.00	0.44	1.29
	PHEN	Total Phenols	17	0.00	0.04	0.01	0.01
	SO4	Sulfate	17	0.50	21.00	4.56	5.50
	TOC	Total Organic Carbon	17	0.08	14.00	3.78	4.17
	TOH	Total Organic Halogens	16	0.00	0.25	0.06	0.07

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Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-12

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
18	PH	pH	18	5.20	7.89	5.99	0.71
	DISSOL	Total Dissolved Solids	18	6.80	732.00	151.21	160.46
	CONDUCT	Specific Conductance	18	44.00	740.00	101.94	160.40
	AG	Silver	18	0.00	0.25	0.03	0.08
	AS	Arsenic	18	0.00	0.08	0.01	0.02
	BA	Barium	17	0.05	0.50	0.12	0.12
	CA	Calcium	17	0.39	6.70	2.81	2.25
	CD	Cadmium	17	0.00	0.01	0.00	0.00
	CR	Chromium	18	0.01	0.07	0.02	0.02
	FE	Iron	18	0.02	86.40	12.32	24.41
	HG	Mercury	18	0.00	0.00	0.00	0.00
	MN	Manganese	18	0.01	8.75	0.77	2.05
	NA	Sodium	17	2.10	7.90	4.13	1.63
	NI	Nickel	17	0.01	0.07	0.02	0.02
	PB	Lead	18	0.00	0.05	0.02	0.01
	SE	Selenium	18	0.00	0.03	0.00	0.01
	CL	Chloride	18	1.00	6.50	3.16	1.35
	F	Fluoride	18	0.05	0.50	0.11	0.10
	NO2	Nitrite	16	0.00	0.63	0.09	0.20
	PHEN	Total Phenols	18	0.00	0.07	0.02	0.02
	SO4	Sulfate	18	1.00	34.00	13.66	8.09
	TOC	Total Organic Carbon	18	0.05	11.00	3.37	3.11
	TOH	Total Organic Halogens	17	0.01	0.12	0.04	0.04

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Groundwater Geochemistry Data

WELLNO=MW-13

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
10	PH	pH	10	5.30	7.41	5.92	0.58
	DISSOL	Total Dissolved Solids	10	60.00	3800.00	1983.20	1508.64
	CONDUCT	Specific Conductance	10	34.00	340000.00	35946.60	106846.27
	AG	Silver	10	0.00	0.25	0.08	0.12
	AS	Arsenic	10	0.00	0.08	0.01	0.02
	BA	Barium	9	0.05	1.39	0.48	0.46
	CA	Calcium	10	0.20	213.00	130.18	87.35
	CD	Cadmium	10	0.00	0.02	0.01	0.01
	CR	Chromium	10	0.01	0.13	0.05	0.05
	FE	Iron	10	0.17	196.00	62.41	75.34
	HG	Mercury	10	0.00	2.40	0.24	0.76
	MN	Manganese	9	0.34	17.00	10.35	6.29
	NA	Sodium	10	2.10	750.00	322.73	304.38
	NI	Nickel	10	0.02	0.12	0.05	0.04
	PB	Lead	10	0.00	11.40	1.17	3.59
	SE	Selenium	10	0.00	0.03	0.01	0.01
	CL	Chloride	10	2.00	268.00	143.53	91.63
	F	Fluoride	10	0.03	0.70	0.24	0.26
	NO2	Nitrite	8	0.00	0.07	0.03	0.03
	PHEN	Total Phenols	10	0.00	0.03	0.01	0.01
	SO4	Sulfate	10	2.50	2600.00	1238.75	1040.26
	TOC	Total Organic Carbon	10	0.50	25.00	10.64	8.91
	TOH	Total Organic Halogens	9	0.01	111.00	12.42	36.97

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Groundwater Geochemistry Data

WELLNO=MW-14

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
4	PH	pH	4	5.66	6.60	6.09	0.39
	DISSOL	Total Dissolved Solids	4	30.00	160.00	90.00	54.77
	CONDUCT	Specific Conductance	4	120.00	910.00	355.00	373.50
	AG	Silver	4	0.01	0.25	0.11	0.10
	AS	Arsenic	4	0.00	0.01	0.00	0.00
	BA	Barium	2	1.60	3.75	2.67	1.52
	CA	Calcium	4	7.80	92.00	38.05	39.46
	CD	Cadmium	4	0.00	0.05	0.03	0.03
	CR	Chromium	4	0.03	4.00	1.50	1.85
	FE	Iron	4	18.00	2100.00	792.50	973.95
	HG	Mercury	4	0.00	0.00	0.00	0.00
	MN	Manganese	4	1.80	50.00	18.67	22.48
	NA	Sodium	4	7.00	40.00	16.82	15.54
	NI	Nickel	4	0.02	2.20	0.80	1.02
	PB	Lead	4	0.02	0.28	0.12	0.13
	SE	Selenium	4	0.00	0.01	0.00	0.00
	CL	Chloride	4	13.00	40.00	24.25	11.59
	F	Fluoride	4	0.05	0.67	0.21	0.31
	NO2	Nitrite	2	0.02	0.03	0.03	0.01
	PHEN	Total Phenols	4	0.00	0.03	0.01	0.01
	SO4	Sulfate	4	1.50	5.00	2.77	1.66
	TOC	Total Organic Carbon	4	1.40	4.50	2.85	1.32
	TOH	Total Organic Halogens	3	0.01	0.01	0.01	0.00

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Groundwater Geochemistry Data

WELLNO=MW-15

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
4	PH	pH	4	6.03	6.50	6.31	0.20
	DISSOL	Total Dissolved Solids	4	5.00	120.00	45.25	51.65
	CONDUCT	Specific Conductance	4	31.00	320.00	117.00	135.97
	AG	Silver	4	0.01	0.25	0.10	0.11
	AS	Arsenic	4	0.00	0.01	0.00	0.00
	BA	Barium	2	1.70	4.20	2.95	1.77
	CA	Calcium	4	4.80	32.00	13.10	12.69
	CD	Cadmium	4	0.00	0.05	0.02	0.02
	CR	Chromium	4	0.03	0.97	0.36	0.42
	FE	Iron	4	19.00	1200.00	424.75	528.24
	HG	Mercury	4	0.00	0.00	0.00	0.00
	MN	Manganese	4	0.92	26.00	11.76	11.50
	NA	Sodium	4	3.40	32.00	11.05	13.98
	NI	Nickel	4	0.02	0.30	0.14	0.12
	PB	Lead	4	0.02	0.20	0.08	0.08
	SE	Selenium	4	0.00	0.01	0.00	0.00
	CL	Chloride	4	0.50	2.10	0.90	0.80
	F	Fluoride	4	0.05	0.27	0.11	0.11
	NO2	Nitrite	2	0.03	0.20	0.12	0.12
	PHEN	Total Phenols	4	0.00	0.03	0.01	0.01
	SO4	Sulfate	4	1.50	5.00	2.37	1.75
	TOC	Total Organic Carbon	4	1.80	2.90	2.22	0.48
	TOH	Total Organic Halogens	3	0.01	0.01	0.01	0.00

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Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-1A

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
4	PH	pH	4	6.32	6.60	6.49	0.12
	DISSOL	Total Dissolved Solids	4	42.00	56.00	51.25	6.40
	CONDUCT	Specific Conductance	4	33.00	56.00	46.25	10.44
	AG	Silver	4	0.01	0.25	0.07	0.12
	AS	Arsenic	4	0.00	0.01	0.00	0.00
	BA	Barium	2	0.10	2.40	1.25	1.63
	CA	Calcium	4	4.30	24.00	10.10	9.32
	CD	Cadmium	4	0.00	0.01	0.00	0.00
	CR	Chromium	4	0.03	0.52	0.19	0.22
	FE	Iron	4	15.00	540.00	196.75	236.48
	HG	Mercury	4	0.00	0.00	0.00	0.00
	MN	Manganese	4	0.72	7.00	2.70	2.90
	NA	Sodium	4	3.00	5.70	4.37	1.48
	NI	Nickel	4	0.02	0.26	0.10	0.11
	PB	Lead	4	0.01	0.05	0.02	0.02
	SE	Selenium	4	0.00	0.01	0.00	0.00
	CL	Chloride	4	0.50	1.90	1.07	0.69
	F	Fluoride	4	0.05	0.70	0.21	0.32
	NO2	Nitrite	3	0.01	0.05	0.03	0.02
	PHEN	Total Phenols	4	0.00	0.03	0.01	0.01
	SO4	Sulfate	4	1.50	22.00	7.87	9.53
	TOC	Total Organic Carbon	4	0.25	4.20	1.36	1.90
	TOH	Total Organic Halogens	3	0.01	0.01	0.01	0.00

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Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-2

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
18	PH	pH	17	6.00	11.50	8.97	1.42
	DISSOL	Total Dissolved Solids	16	9.40	13400.00	7802.34	3575.57
	CONDUCT	Specific Conductance	17	220.00	14500.00	8815.12	3827.06
	AG	Silver	17	0.00	0.25	0.04	0.08
	AS	Arsenic	17	0.00	0.77	0.14	0.19
	BA	Barium	17	0.04	0.50	0.10	0.11
	CA	Calcium	16	0.01	43.90	10.11	12.41
	CD	Cadmium	15	0.00	0.01	0.00	0.00
	CR	Chromium	17	0.01	0.17	0.03	0.04
	FE	Iron	17	0.02	23.50	7.04	6.67
	HG	Mercury	17	0.00	0.00	0.00	0.00
	MN	Manganese	16	0.02	4.00	0.49	1.09
	NA	Sodium	16	175.00	3800.00	2437.50	867.77
	NI	Nickel	16	0.06	0.82	0.30	0.20
	PB	Lead	17	0.01	5.39	0.40	1.29
	SE	Selenium	17	0.00	0.03	0.01	0.01
	CL	Chloride	18	2.00	520.00	259.14	189.23
	F	Fluoride	18	0.05	21.00	5.68	5.57
	NO2	Nitrite	16	0.00	1.90	0.18	0.48
	PHEN	Total Phenols	16	0.01	5.40	0.58	1.34
	SO4	Sulfate	17	46.00	2200.00	1360.25	659.61
	TOC	Total Organic Carbon	17	0.50	900.00	364.42	277.55
	TOH	Total Organic Halogens	17	0.01	496.00	29.70	120.16

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Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-3A

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
9	PH	pH	9	6.50	8.83	7.33	0.68
	DISSOL	Total Dissolved Solids	9	76.00	220.00	122.00	52.44
	CONDUCT	Specific Conductance	9	83.00	1100.00	212.33	333.03
	AG	Silver	9	0.00	0.25	0.03	0.08
	AS	Arsenic	9	0.00	0.01	0.00	0.00
	BA	Barium	8	0.02	0.50	0.18	0.20
	CA	Calcium	9	1.10	12.00	6.25	4.10
	CD	Cadmium	9	0.00	0.01	0.00	0.00
	CR	Chromium	9	0.01	0.03	0.01	0.01
	FE	Iron	9	0.13	39.50	12.28	12.58
	HG	Mercury	9	0.00	0.00	0.00	0.00
	MN	Manganese	8	0.01	0.06	0.03	0.02
	NA	Sodium	9	5.70	9.40	7.52	1.24
	NI	Nickel	9	0.01	0.04	0.02	0.01
	PB	Lead	9	0.00	7.59	0.85	2.53
	SE	Selenium	9	0.00	0.01	0.00	0.00
	CL	Chloride	9	0.50	7.50	2.82	2.81
	F	Fluoride	9	0.05	0.20	0.13	0.05
	NO2	Nitrite	8	0.00	0.05	0.02	0.02
	PHEN	Total Phenols	9	0.00	0.05	0.01	0.02
	SO4	Sulfate	9	10.00	32.00	15.92	6.78
	TOC	Total Organic Carbon	9	0.25	9.30	3.73	3.66
	TOH	Total Organic Halogens	8	0.01	0.16	0.03	0.05

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Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-4

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
18	PH	pH	17	4.10	6.30	5.48	0.63
	DISSOL	Total Dissolved Solids	18	6.00	2600.00	865.50	826.06
	CONDUCT	Specific Conductance	18	57.00	270000.00	15873.78	63430.15
	AG	Silver	18	0.00	0.25	0.05	0.09
	AS	Arsenic	18	0.00	0.08	0.01	0.02
	BA	Barium	17	0.05	0.65	0.15	0.17
	CA	Calcium	17	0.57	140.00	38.46	46.34
	CD	Cadmium	17	0.00	0.02	0.00	0.00
	CR	Chromium	18	0.01	0.08	0.02	0.02
	FE	Iron	18	0.02	335.00	127.63	133.86
	HG	Mercury	18	0.00	0.00	0.00	0.00
	MN	Manganese	17	0.06	13.00	2.91	3.86
	NA	Sodium	17	2.10	230.00	57.40	74.37
	NI	Nickel	17	0.01	8.00	0.50	1.93
	PB	Lead	18	0.00	11.70	0.67	2.75
	SE	Selenium	18	0.00	0.05	0.01	0.01
	CL	Chloride	18	1.00	330.00	111.44	120.60
	F	Fluoride	18	0.02	193.00	10.95	45.43
	NO2	Nitrite	17	0.00	0.70	0.08	0.18
	PHEN	Total Phenols	18	0.00	0.10	0.02	0.03
	SO4	Sulfate	18	2.00	1303.00	385.17	467.53
	TOC	Total Organic Carbon	18	0.50	28.00	6.79	7.43
	TOH	Total Organic Halogens	17	0.02	24.20	1.55	5.84

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Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-5A

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
10	PH	pH	10	5.40	6.50	5.92	0.41
	DISSOL	Total Dissolved Solids	10	31.00	140.00	81.00	36.99
	CONDUCT	Specific Conductance	10	65.00	900.00	170.00	256.68
	AG	Silver	10	0.00	0.25	0.05	0.10
	AS	Arsenic	10	0.00	0.08	0.01	0.02
	BA	Barium	9	0.05	0.50	0.21	0.15
	CA	Calcium	10	0.20	5.48	3.62	1.67
	CD	Cadmium	10	0.00	0.01	0.00	0.00
	CR	Chromium	10	0.01	0.08	0.03	0.02
	FE	Iron	10	0.31	80.50	28.50	22.53
	HG	Mercury	10	0.00	0.00	0.00	0.00
	MN	Manganese	9	0.45	2.50	0.91	0.69
	NA	Sodium	10	3.90	14.00	8.42	2.96
	NI	Nickel	10	0.01	0.06	0.03	0.02
	PB	Lead	10	0.00	25.70	2.58	8.12
	SE	Selenium	10	0.00	0.03	0.01	0.01
	CL	Chloride	10	4.00	12.50	8.49	2.66
	F	Fluoride	10	0.05	0.50	0.15	0.17
	NO2	Nitrite	8	0.00	1.50	0.21	0.52
	PHEN	Total Phenols	10	0.00	0.04	0.01	0.01
	SO4	Sulfate	10	5.00	49.00	14.86	13.21
	TOC	Total Organic Carbon	9	0.25	62.00	12.55	19.73
	TOH	Total Organic Halogens	9	0.01	3.40	0.40	1.13

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Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-6

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
18	PH	pH	18	4.80	6.21	5.50	0.45
	DISSOL	Total Dissolved Solids	18	6.60	2452.00	390.26	703.52
	CONDUCT	Specific Conductance	18	80.00	1300.00	192.11	278.21
	AG	Silver	18	0.00	0.25	0.03	0.08
	AS	Arsenic	18	0.00	0.08	0.01	0.02
	BA	Barium	17	0.05	0.50	0.13	0.14
	CA	Calcium	17	0.61	10.50	4.59	3.39
	CD	Cadmium	17	0.00	0.01	0.00	0.00
	CR	Chromium	18	0.01	0.05	0.02	0.01
	FE	Iron	18	0.02	38.10	7.89	11.60
	HG	Mercury	18	0.00	0.01	0.00	0.00
	MN	Manganese	17	0.05	3.60	0.44	0.84
	NA	Sodium	17	5.80	15.10	8.30	2.67
	NI	Nickel	17	0.01	0.06	0.02	0.01
	PB	Lead	17	0.00	50.80	3.01	12.32
	SE	Selenium	18	0.00	0.03	0.00	0.01
	CL	Chloride	18	4.00	43.00	9.28	8.64
	F	Fluoride	18	0.05	0.80	0.15	0.20
	NO2	Nitrite	16	0.00	6.40	0.47	1.59
	PHEN	Total Phenols	18	0.00	0.06	0.02	0.02
	SO4	Sulfate	18	8.90	47.10	24.29	9.03
	TOC	Total Organic Carbon	18	0.25	30.30	6.83	7.85
	TOH	Total Organic Halogens	17	0.01	0.12	0.03	0.03

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Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-7A

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
10	PH	pH	10	5.20	6.50	6.00	0.41
	DISSOL	Total Dissolved Solids	10	71.00	275.00	160.40	64.55
	CONDUCT	Specific Conductance	10	63.00	2400.00	408.40	705.95
	AG	Silver	10	0.00	0.25	0.05	0.10
	AS	Arsenic	10	0.00	0.08	0.01	0.02
	BA	Barium	9	0.05	0.50	0.16	0.14
	CA	Calcium	10	0.57	31.00	14.15	9.63
	CD	Cadmium	10	0.00	0.02	0.01	0.01
	CR	Chromium	10	0.01	0.04	0.02	0.01
	FE	Iron	10	0.13	79.70	21.31	28.42
	HG	Mercury	10	0.00	0.00	0.00	0.00
	MN	Manganese	9	0.14	5.10	1.79	1.81
	NA	Sodium	10	4.30	9.00	5.85	1.64
	NI	Nickel	10	0.01	0.06	0.03	0.02
	PB	Lead	10	0.00	13.90	1.41	4.39
	SE	Selenium	10	0.00	0.03	0.01	0.01
	CL	Chloride	10	2.00	30.70	11.40	10.74
	F	Fluoride	10	0.05	0.50	0.12	0.14
	NO2	Nitrite	9	0.00	0.11	0.03	0.04
	PHEN	Total Phenols	9	0.00	5.00	0.57	1.66
	SO4	Sulfate	10	2.50	175.00	73.84	55.40
	TOC	Total Organic Carbon	10	0.25	39.80	11.36	13.01
	TOH	Total Organic Halogens	9	0.01	0.07	0.02	0.02

Champion International
Canton Landfill No. 6
Canton, North Carolina

Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-8

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
16	PH	pH	16	5.30	6.70	5.96	0.54
	DISSOL	Total Dissolved Solids	16	5.10	864.00	224.01	265.52
	CONDUCT	Specific Conductance	16	64.00	740.00	119.94	166.13
	AG	Silver	16	0.00	0.25	0.05	0.10
	AS	Arsenic	16	0.00	0.08	0.01	0.02
	BA	Barium	15	0.05	0.90	0.16	0.22
	CA	Calcium	15	0.22	27.30	4.56	6.85
	CD	Cadmium	15	0.00	0.02	0.00	0.00
	CR	Chromium	16	0.01	0.14	0.03	0.04
	FE	Iron	16	0.57	230.00	26.06	56.36
	HG	Mercury	16	0.00	0.00	0.00	0.00
	MN	Manganese	15	0.01	1.40	0.21	0.35
	NA	Sodium	15	4.50	11.30	6.38	1.89
	NI	Nickel	15	0.01	3.00	0.23	0.77
	PB	Lead	16	0.00	30.70	1.98	7.66
	SE	Selenium	16	0.00	0.02	0.00	0.00
	CL	Chloride	16	1.00	8.50	3.26	2.25
	F	Fluoride	16	0.05	0.90	0.20	0.22
	NO2	Nitrite	15	0.00	0.45	0.06	0.12
	PHEN	Total Phenols	16	0.00	0.09	0.02	0.02
	SO4	Sulfate	16	7.50	70.00	24.88	17.42
	TOC	Total Organic Carbon	16	0.25	23.00	4.73	5.76
	TOH	Total Organic Halogens	15	0.01	0.30	0.05	0.07

Champion International
Canton Landfill No. 6
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Descriptive Statistics for
Groundwater Geochemistry Data

WELLNO=MW-9

N Obs	Variable	Label	N	Minimum	Maximum	Mean	Std Dev
16	PH	pH	16	4.80	6.50	5.54	0.58
	DISSOL	Total Dissolved Solids	16	7.00	744.00	115.44	172.19
	CONDUCT	Specific Conductance	16	27.00	149.00	50.56	29.27
	AG	Silver	16	0.00	0.25	0.04	0.08
	AS	Arsenic	16	0.00	0.08	0.01	0.02
	BA	Barium	15	0.03	0.27	0.11	0.09
	CA	Calcium	15	0.19	6.00	2.03	1.80
	CD	Cadmium	16	0.00	0.01	0.00	0.00
	CR	Chromium	16	0.01	0.08	0.02	0.02
	FE	Iron	16	0.02	73.80	12.96	23.48
	HG	Mercury	16	0.00	0.00	0.00	0.00
	MN	Manganese	15	0.00	1.07	0.28	0.34
	NA	Sodium	15	1.50	8.58	3.63	2.13
	NI	Nickel	15	0.01	0.06	0.02	0.01
	PB	Lead	16	0.00	28.40	1.79	7.10
	SE	Selenium	16	0.00	0.03	0.01	0.01
	CL	Chloride	16	0.25	9.50	2.08	2.71
	F	Fluoride	16	0.03	0.33	0.09	0.08
	NO2	Nitrite	15	0.00	0.72	0.06	0.18
	PHEN	Total Phenols	16	0.00	0.04	0.01	0.01
	SO4	Sulfate	16	1.00	32.00	13.61	8.35
	TOC	Total Organic Carbon	16	0.25	39.00	4.70	9.31
	TOH	Total Organic Halogens	15	0.01	13.70	1.08	3.52

Champion International
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Canton, North Carolina

Analysis of Variance for

General Linear Models Procedure
Class Level Information

Class	Levels	Values
WELLNO	16	MW-1 MW-10 MW-11 MW-12 MW-13 MW-14 MW-15 MW-1A MW-2 MW-3A MW-4 MW-5A MW-6 MW-7A MW-8 MW-9

Number of observations in data set = 203

Group	Obs	Dependent Variables
1	200	PH
2	200	LDISSOL
3	201	LCONDUCT
4	202	LAG LCR LFE
5	201	LAS LHG LSE LSO4
6	183	LBA
7	193	LCA LNA LNI
8	194	LCD
9	190	LMN
10	199	LPB
11	202	LCL
12	201	LF
13	179	LNO2
14	199	LPHEN
15	200	LTOC
16	187	LTOH

NOTE: Variables in each group are consistent with respect to the presence or absence of missing values.

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: PH pH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	204.01640375	6.58117431	13.18	0.0001
Error	168	83.89598375	0.49938086		
Corrected Total	199	287.91238750			

R-Square	C.V.	Root MSE	PH Mean
0.708606	11.45934	0.70666884	6.16675000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	190.15528755	12.67701917	25.39	0.0001
DATENUM(WELLNO)	16	13.86111619	0.86631976	1.73	0.0445

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	12.45367832	0.83024522	1.66	0.0628
DATENUM(WELLNO)	16	13.86111619	0.86631976	1.73	0.0445

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	12.45367832	0.83024522	0.96	0.5306

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	6.53540797	6.53540797	7.54	0.0143

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.69803648	0.69803648	0.81	0.3827

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	0.00511563	0.00511563	0.01	0.9397

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.30258086	0.30258086	0.35	0.5628

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Canton, North Carolina

Analysis of Variance for

General Linear Models Procedure

Dependent Variable: PH pH

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.01689939	0.01689939	0.02	0.8907

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.05111955	0.05111955	0.06	0.8112

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.08743454	0.08743454	0.10	0.7548

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.03924286	0.03924286	0.05	0.8341

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.09671106	0.09671106	0.11	0.7426

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.03793291	0.03793291	0.04	0.8369

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.56777485	0.56777485	0.66	0.4301

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.00910950	0.00910950	0.01	0.9196

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.66132298	0.66132298	0.76	0.3952

Champion International
Canton Landfill No. 6
Canton, North Carolina

Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LDISSOL Log of Total Dissolved Solids

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	432.25084966	13.94357580	11.95	0.0001
Error	168	195.98963552	1.16660497		
Corrected Total	199	628.24048518			

R-Square	C.V.	Root MSE	LDISSOL Mean
0.688034	20.73950	1.08009489	5.20791169

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	347.31686020	23.15445735	19.85	0.0001
DATENUM(WELLNO)	16	84.93398947	5.30837434	4.55	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	51.26871775	3.41791452	2.93	0.0004
DATENUM(WELLNO)	16	84.93398947	5.30837434	4.55	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	51.26871775	3.41791452	0.64	0.8000

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	1.07197205	1.07197205	0.20	0.6592

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.27844480	0.27844480	0.05	0.8217

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	14.30441667	14.30441667	2.69	0.1202

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	1.38048541	1.38048541	0.26	0.6170

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Canton, North Carolina

Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LDISSOL Log of Total Dissolved Solids

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	5.30512465	5.30512465	1.00	0.3323

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.00022412	0.00022412	0.00	0.9949

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	6.87339242	6.87339242	1.29	0.2719

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.68498358	0.68498358	0.13	0.7241

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	16.33758757	16.33758757	3.08	0.0985

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	1.69822437	1.69822437	0.32	0.5795

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.10525363	0.10525363	0.02	0.8898

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.39207087	0.39207087	0.07	0.7893

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.88277001	0.88277001	0.17	0.6888

Champion International
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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LCONDUCT Log of Specific Conductance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	548.86054974	17.70517902	35.33	0.0001
Error	169	84.69278532	0.50114074		
Corrected Total	200	633.55333506			

R-Square	C.V.	Root MSE	LCONDUCT Mean
0.866321	13.59447	0.70791295	5.20735808

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	414.84225778	27.65615052	55.19	0.0001
DATENUM(WELLNO)	16	134.01829196	8.37614325	16.71	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	88.42813002	5.89520867	11.76	0.0001
DATENUM(WELLNO)	16	134.01829196	8.37614325	16.71	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	88.42813002	5.89520867	0.70	0.7491

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.21311982	0.21311982	0.03	0.8753

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	1.75667774	1.75667774	0.21	0.6531

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	47.79605137	47.79605137	5.71	0.0296

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	1.24513728	1.24513728	0.15	0.7049

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LCONDUCT Log of Specific Conductance

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	1.29813644	1.29813644	0.15	0.6990

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.14737650	0.14737650	0.02	0.8961

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	4.59176821	4.59176821	0.55	0.4698

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	1.64705863	1.64705863	0.20	0.6634

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	39.61152163	39.61152163	4.73	0.0450

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	1.54207364	1.54207364	0.18	0.6736

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	1.15172675	1.15172675	0.14	0.7156

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	7.02360046	7.02360046	0.84	0.3734

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	1.05098516	1.05098516	0.13	0.7278

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LAG Log of Silver

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	175.44804409	5.65961433	2.37	0.0002
Error	170	405.22711818	2.38368893		
Corrected Total	201	580.67516228			

R-Square	C.V.	Root MSE	LAG Mean
0.302145	-32.27036	1.54391999	-4.78432849

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	42.46268560	2.83084571	1.19	0.2855
DATENUM(WELLNO)	16	132.98535849	8.31158491	3.49	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	16.70091626	1.11339442	0.47	0.9541
DATENUM(WELLNO)	16	132.98535849	8.31158491	3.49	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	16.70091626	1.11339442	0.13	0.9998

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	4.95593862	4.95593862	0.60	0.4513

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.07747523	0.07747523	0.01	0.9243

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	1.07439598	1.07439598	0.13	0.7239

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.03083527	0.03083527	0.00	0.9522

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LAG Log of Silver

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.02323450	0.02323450	0.00	0.9585

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	6.54222991	6.54222991	0.79	0.3881

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.71834863	0.71834863	0.09	0.7725

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.09381036	0.09381036	0.01	0.9167

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.16774412	0.16774412	0.02	0.8888

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.63596343	0.63596343	0.08	0.7856

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.07354578	0.07354578	0.01	0.9262

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.63596343	0.63596343	0.08	0.7856

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.09628220	0.09628220	0.01	0.9156

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LCR Log of Chromium

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	142.64633261	4.60149460	8.15	0.0001
Error	170	96.03168867	0.56489229		
Corrected Total	201	238.67802127			

R-Square	C.V.	Root MSE	LCR Mean
0.597652	-18.43296	0.75159317	-4.07744256

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	94.57488475	6.30499232	11.16	0.0001
DATENUM(WELLNO)	16	48.07144786	3.00446549	5.32	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	41.69874545	2.77991636	4.92	0.0001
DATENUM(WELLNO)	16	48.07144786	3.00446549	5.32	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	41.69874545	2.77991636	0.93	0.5576

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	10.03860817	10.03860817	3.34	0.0863

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.02702710	0.02702710	0.01	0.9256

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	0.78961280	0.78961280	0.26	0.6152

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	17.11802709	17.11802709	5.70	0.0297

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General Linear Models Procedure

Dependent Variable: LCR Log of Chromium

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	6.10034627	6.10034627	2.03	0.1734

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	3.39962969	3.39962969	1.13	0.3032

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.08420745	0.08420745	0.03	0.8691

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.58889930	0.58889930	0.20	0.6639

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.09466815	0.09466815	0.03	0.8613

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.42603128	0.42603128	0.14	0.7114

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.11082791	0.11082791	0.04	0.8501

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.25329513	0.25329513	0.08	0.7753

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	1.29397861	1.29397861	0.43	0.5210

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General Linear Models Procedure

Dependent Variable: LFE Log of Iron

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	780.40271475	25.17428112	6.08	0.0001
Error	170	703.98280720	4.14107534		
Corrected Total	201	1484.38552195			

R-Square	C.V.	Root MSE	LFE Mean
0.525741	134.5892	2.03496323	1.51198126

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	445.59902996	29.70660200	7.17	0.0001
DATENUM(WELLNO)	16	334.80368479	20.92523030	5.05	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	94.77136437	6.31809096	1.53	0.1008
DATENUM(WELLNO)	16	334.80368479	20.92523030	5.05	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	94.77136437	6.31809096	0.30	0.9873

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	13.29626737	13.29626737	0.64	0.4370

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	4.38688270	4.38688270	0.21	0.6532

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	0.90579849	0.90579849	0.04	0.8378

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	19.24061887	19.24061887	0.92	0.3519

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General Linear Models Procedure

Dependent Variable: LFE Log of Iron

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	10.62356889	10.62356889	0.51	0.4864

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	7.39861847	7.39861847	0.35	0.5604

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	29.33772195	29.33772195	1.40	0.2537

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.37672625	0.37672625	0.02	0.8949

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	1.96898751	1.96898751	0.09	0.7630

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.92078047	0.92078047	0.04	0.8365

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	3.41861219	3.41861219	0.16	0.6914

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.11755858	0.11755858	0.01	0.9412

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	14.00418535	14.00418535	0.67	0.4253

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Dependent Variable: LAS Log of Arsenic

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	137.45415568	4.43400502	3.26	0.0001
Error	169	229.92797238	1.36052055		
Corrected Total	200	367.38212806			

R-Square	C.V.	Root MSE	LAS Mean
0.374145	-22.26839	1.16641354	-5.23797841

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	88.05225534	5.87015036	4.31	0.0001
DATENUM(WELLNO)	16	49.40190034	3.08761877	2.27	0.0051

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	2.82165636	0.18811042	0.14	1.0000
DATENUM(WELLNO)	16	49.40190034	3.08761877	2.27	0.0051

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	2.82165636	0.18811042	0.06	1.0000

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.77308216	0.77308216	0.25	0.6236

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.11431059	0.11431059	0.04	0.8498

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	0.02431169	0.02431169	0.01	0.9304

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.10908987	0.10908987	0.04	0.8533

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General Linear Models Procedure

Dependent Variable: LAS Log of Arsenic

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.10908987	0.10908987	0.04	0.8533

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.10908987	0.10908987	0.04	0.8533

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.01637756	0.01637756	0.01	0.9428

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.51552165	0.51552165	0.17	0.6882

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.40307687	0.40307687	0.13	0.7226

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.08436650	0.08436650	0.03	0.8708

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.00341500	0.00341500	0.00	0.9739

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.04249764	0.04249764	0.01	0.9081

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.03894509	0.03894509	0.01	0.9120

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General Linear Models Procedure

Dependent Variable: LHG Log of Mercury

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	46.52628814	1.50084800	1.20	0.2349
Error	169	212.05179076	1.25474432		
Corrected Total	200	258.57807890			

R-Square	C.V.	Root MSE	LHG Mean
0.179931	-14.52378	1.12015371	-7.71255108

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	36.64863309	2.44324221	1.95	0.0218
DATENUM(WELLNO)	16	9.87765505	0.61735344	0.49	0.9486

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	10.06232938	0.67082196	0.53	0.9184
DATENUM(WELLNO)	16	9.87765505	0.61735344	0.49	0.9486

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	10.06232938	0.67082196	1.09	0.4339

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.48569064	0.48569064	0.79	0.3882

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.00331687	0.00331687	0.01	0.9425

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	2.32573851	2.32573851	3.77	0.0701

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.14101540	0.14101540	0.23	0.6392

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General Linear Models Procedure

Dependent Variable: LHG Log of Mercury

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	1.04116308	1.04116308	1.69	0.2125

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	1.04116308	1.04116308	1.69	0.2125

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.94398558	0.94398558	1.53	0.2341

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	1.18361168	1.18361168	1.92	0.1852

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.19605622	0.19605622	0.32	0.5809

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.23709263	0.23709263	0.38	0.5442

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	1.22087368	1.22087368	1.98	0.1788

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.12050380	0.12050380	0.20	0.6645

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.10075400	0.10075400	0.16	0.6916

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General Linear Models Procedure

Dependent Variable: LSE Log of Selenium

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	58.40020397	1.88387755	1.83	0.0081
Error	169	173.54977965	1.02692177		
Corrected Total	200	231.94998362			

R-Square	C.V.	Root MSE	LSE Mean
0.251779	-17.27247	1.01337149	-5.86697594

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	10.89132760	0.72608851	0.71	0.7752
DATENUM(WELLNO)	16	47.50887637	2.96930477	2.89	0.0003

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	4.65718296	0.31047886	0.30	0.9947
DATENUM(WELLNO)	16	47.50887637	2.96930477	2.89	0.0003

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	4.65718296	0.31047886	0.10	1.0000

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.02048605	0.02048605	0.01	0.9348

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.17708615	0.17708615	0.06	0.8102

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	0.19478820	0.19478820	0.07	0.8011

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.10967207	0.10967207	0.04	0.8500

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General Linear Models Procedure

Dependent Variable: LSE Log of Selenium

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.10967207	0.10967207	0.04	0.8500

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.10967207	0.10967207	0.04	0.8500

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	1.29597505	1.29597505	0.44	0.5182

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.00094522	0.00094522	0.00	0.9860

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.09671401	0.09671401	0.03	0.8590

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.10892132	0.10892132	0.04	0.8505

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.18077873	0.18077873	0.06	0.8082

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.10892132	0.10892132	0.04	0.8505

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.00577529	0.00577529	0.00	0.9654

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General Linear Models Procedure

Dependent Variable: LSO4 Log of Sulfate

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	720.82562217	23.25243942	28.63	0.0001
Error	169	137.26645016	0.81222752		
Corrected Total	200	858.09207232			

R-Square	C.V.	Root MSE	LSO4 Mean
0.840033	27.70942	0.90123666	3.25245542

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	615.60772812	41.04051521	50.53	0.0001
DATENUM(WELLNO)	16	105.21789405	6.57611838	8.10	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	80.71906207	5.38127080	6.63	0.0001
DATENUM(WELLNO)	16	105.21789405	6.57611838	8.10	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	80.71906207	5.38127080	0.82	0.6488

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.02753654	0.02753654	0.00	0.9492

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	1.05448620	1.05448620	0.16	0.6941

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	38.28271230	38.28271230	5.82	0.0282

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.42911886	0.42911886	0.07	0.8016

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Dependent Variable: LSO4 Log of Sulfate

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.83711931	0.83711931	0.13	0.7259

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	1.27800827	1.27800827	0.19	0.6652

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.93048875	0.93048875	0.14	0.7117

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.05330136	0.05330136	0.01	0.9294

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	32.05326458	32.05326458	4.87	0.0422

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.00448019	0.00448019	0.00	0.9795

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.21823430	0.21823430	0.03	0.8577

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	10.45544427	10.45544427	1.59	0.2254

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.00520888	0.00520888	0.00	0.9779

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LBA Log of Barium

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	86.31671931	2.78441030	4.74	0.0001
Error	151	88.62185207	0.58689968		
Corrected Total	182	174.93857138			

R-Square	C.V.	Root MSE	LBA Mean
0.493412	-34.82763	0.76609378	-2.19967259

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	63.17769096	4.21184606	7.18	0.0001
DATENUM(WELLNO)	16	23.13902835	1.44618927	2.46	0.0024

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	16.38499992	1.09233333	1.86	0.0313
DATENUM(WELLNO)	16	23.13902835	1.44618927	2.46	0.0024

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	16.38499992	1.09233333	0.76	0.7040

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.97762343	0.97762343	0.68	0.4231

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.01488691	0.01488691	0.01	0.9204

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	0.28617212	0.28617212	0.20	0.6624

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.29376761	0.29376761	0.20	0.6583

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LBA Log of Barium

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.48989604	0.48989604	0.34	0.5687

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	5.29271947	5.29271947	3.66	0.0738

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.09952326	0.09952326	0.07	0.7964

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	1.88868722	1.88868722	1.31	0.2699

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	1.95965809	1.95965809	1.36	0.2615

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.63826183	0.63826183	0.44	0.5159

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	1.83892465	1.83892465	1.27	0.2761

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	1.43822115	1.43822115	0.99	0.3335

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.33493900	0.33493900	0.23	0.6369

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General Linear Models Procedure

Dependent Variable: LCA Log of Calcium

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	486.86902847	15.70545253	13.42	0.0001
Error	161	188.43732175	1.17041815		
Corrected Total	192	675.30635022			

R-Square	C.V.	Root MSE	LCA Mean
0.720960	89.18187	1.08185865	1.21309262

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	173.07689479	11.53845965	9.86	0.0001
DATENUM(WELLNO)	16	313.79213368	19.61200835	16.76	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	110.86927249	7.39128483	6.32	0.0001
DATENUM(WELLNO)	16	313.79213368	19.61200835	16.76	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	110.86927249	7.39128483	0.38	0.9671

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	61.39870523	61.39870523	3.13	0.0959

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	1.01663379	1.01663379	0.05	0.8228

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	23.01079469	23.01079469	1.17	0.2948

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	4.74932766	4.74932766	0.24	0.6293

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LCA Log of Calcium

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	1.74512587	1.74512587	0.09	0.7693

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	1.40414407	1.40414407	0.07	0.7924

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	12.95006057	12.95006057	0.66	0.4284

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.27392390	0.27392390	0.01	0.9074

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	21.16137362	21.16137362	1.08	0.3144

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.42738995	0.42738995	0.02	0.8845

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.11922300	0.11922300	0.01	0.9388

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	3.97368888	3.97368888	0.20	0.6587

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	1.92597488	1.92597488	0.10	0.7580

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LNA Log of Sodium

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	748.09570103	24.13211939	83.30	0.0001
Error	161	46.64224722	0.28970340		
Corrected Total	192	794.73794824			

R-Square	C.V.	Root MSE	LNA Mean
0.941311	21.27442	0.53824102	2.52999146

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	657.04162403	43.80277494	151.20	0.0001
DATENUM(WELLNO)	16	91.05407700	5.69087981	19.64	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	70.20553247	4.68036883	16.16	0.0001
DATENUM(WELLNO)	16	91.05407700	5.69087981	19.64	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	70.20553247	4.68036883	0.82	0.6452

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	2.44617814	2.44617814	0.43	0.5214

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.21027681	0.21027681	0.04	0.8500

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	33.07212936	33.07212936	5.81	0.0283

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.93300362	0.93300362	0.16	0.6909

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LNA Log of Sodium

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	1.04803332	1.04803332	0.18	0.6735

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.00543492	0.00543492	0.00	0.9757

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.00698575	0.00698575	0.00	0.9725

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.00017527	0.00017527	0.00	0.9956

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	25.80932498	25.80932498	4.54	0.0491

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.39216573	0.39216573	0.07	0.7963

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.01593299	0.01593299	0.00	0.9585

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.05924116	0.05924116	0.01	0.9200

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.50838460	0.50838460	0.09	0.7689

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General Linear Models Procedure

Dependent Variable: LNI Log of Nickel

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	155.76596908	5.02470868	7.03	0.0001
Error	161	115.07358372	0.71474276		
Corrected Total	192	270.83955279			

R-Square	C.V.	Root MSE	LNI Mean
0.575123	-24.28222	0.84542460	-3.48166038

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	126.76070791	8.45071386	11.82	0.0001
DATENUM(WELLNO)	16	29.00526117	1.81282882	2.54	0.0017

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	25.60690006	1.70712667	2.39	0.0038
DATENUM(WELLNO)	16	29.00526117	1.81282882	2.54	0.0017

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	25.60690006	1.70712667	0.94	0.5441

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.18019184	0.18019184	0.10	0.7566

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.04094251	0.04094251	0.02	0.8824

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	0.09336539	0.09336539	0.05	0.8233

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	14.42580825	14.42580825	7.96	0.0123

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General Linear Models Procedure

Dependent Variable: LNI Log of Nickel

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	3.46707591	3.46707591	1.91	0.1857

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	2.26353668	2.26353668	1.25	0.2803

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	3.16568380	3.16568380	1.75	0.2049

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.05023383	0.05023383	0.03	0.8699

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.25989868	0.25989868	0.14	0.7099

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.00225806	0.00225806	0.00	0.9723

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.02899413	0.02899413	0.02	0.9009

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.01855322	0.01855322	0.01	0.9207

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.44925394	0.44925394	0.25	0.6254

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General Linear Models Procedure

Dependent Variable: LCD Log of Cadmium

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	20.45593322	0.65986881	2.10	0.0016
Error	162	50.85705849	0.31393246		
Corrected Total	193	71.31299171			

R-Square	C.V.	Root MSE	LCD Mean
0.286847	-9.877084	0.56029676	-5.67269404

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	12.54107655	0.83607177	2.66	0.0012
DATENUM(WELLNO)	16	7.91485666	0.49467854	1.58	0.0806

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	7.27097388	0.48473159	1.54	0.0954
DATENUM(WELLNO)	16	7.91485666	0.49467854	1.58	0.0806

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	7.27097388	0.48473159	0.98	0.5135

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.00910297	0.00910297	0.02	0.8938

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.02059380	0.02059380	0.04	0.8409

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	0.02626305	0.02626305	0.05	0.8207

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	5.03479746	5.03479746	10.18	0.0057

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LCD Log of Cadmium

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	1.37212015	1.37212015	2.77	0.1153

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.23965198	0.23965198	0.48	0.4964

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.01805631	0.01805631	0.04	0.8509

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.01259184	0.01259184	0.03	0.8752

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.08825327	0.08825327	0.18	0.6784

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.01048630	0.01048630	0.02	0.8861

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.02034875	0.02034875	0.04	0.8418

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.28744330	0.28744330	0.58	0.4570

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.03171649	0.03171649	0.06	0.8033

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General Linear Models Procedure

Dependent Variable: LMN Log of Manganese

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	625.25071644	20.16937795	10.19	0.0001
Error	158	312.84742827	1.98004701		
Corrected Total	189	938.09814471			

R-Square	C.V.	Root MSE	LMN Mean
0.666509	-85.82447	1.40714143	-1.63955733

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	493.51465993	32.90097733	16.62	0.0001
DATENUM(WELLNO)	16	131.73605651	8.23350353	4.16	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	74.21338402	4.94755893	2.50	0.0025
DATENUM(WELLNO)	16	131.73605651	8.23350353	4.16	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	74.21338402	4.94755893	0.60	0.8347

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.21156154	0.21156154	0.03	0.8747

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	2.09156085	2.09156085	0.25	0.6211

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	5.72749172	5.72749172	0.70	0.4165

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	6.84389140	6.84389140	0.83	0.3755

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Dependent Variable: LMN Log of Manganese

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	7.69457687	7.69457687	0.93	0.3481

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	2.32911605	2.32911605	0.28	0.6021

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	17.62218899	17.62218899	2.14	0.1628

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.83118529	0.83118529	0.10	0.7548

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	3.51669034	3.51669034	0.43	0.5227

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	6.99877290	6.99877290	0.85	0.3702

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	6.36228371	6.36228371	0.77	0.3924

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	3.77336208	3.77336208	0.46	0.5081

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.90353797	0.90353797	0.11	0.7447

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General Linear Models Procedure

Dependent Variable: LPB Log of Lead

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	80.41330741	2.59397766	0.59	0.9588
Error	167	737.10284638	4.41378950		
Corrected Total	198	817.51615379			

R-Square	C.V.	Root MSE	LPB Mean
0.098363	-57.73218	2.10090207	-3.63904848

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	38.68231743	2.57882116	0.58	0.8842
DATENUM(WELLNO)	16	41.73098998	2.60818687	0.59	0.8878

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	30.34404918	2.02293661	0.46	0.9578
DATENUM(WELLNO)	16	41.73098998	2.60818687	0.59	0.8878

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	30.34404918	2.02293661	0.78	0.6862

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	1.98952899	1.98952899	0.76	0.3954

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.13332776	0.13332776	0.05	0.8240

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	2.81042825	2.81042825	1.08	0.3147

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	5.42747713	5.42747713	2.08	0.1684

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Dependent Variable: LPB Log of Lead

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	1.89197173	1.89197173	0.73	0.4069

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.26009673	0.26009673	0.10	0.7562

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.01039958	0.01039958	0.00	0.9504

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	5.15875685	5.15875685	1.98	0.1787

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.02804815	0.02804815	0.01	0.9187

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	5.65808329	5.65808329	2.17	0.1602

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.00473961	0.00473961	0.00	0.9665

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	2.25677203	2.25677203	0.87	0.3661

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	1.81933735	1.81933735	0.70	0.4159

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Dependent Variable: LCL Log of Chloride

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	546.88094790	17.64132090	22.29	0.0001
Error	170	134.56813560	0.79157727		
Corrected Total	201	681.44908351			

R-Square	C.V.	Root MSE	LCL Mean
0.802526	47.34661	0.88970628	1.87913423

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	443.89016709	29.59267781	37.38	0.0001
DATENUM(WELLNO)	16	102.99078081	6.43692380	8.13	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	86.62861330	5.77524089	7.30	0.0001
DATENUM(WELLNO)	16	102.99078081	6.43692380	8.13	0.0001

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	86.62861330	5.77524089	0.90	0.5809

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	1.89794273	1.89794273	0.29	0.5946

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.00653052	0.00653052	0.00	0.9750

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	17.33334425	17.33334425	2.69	0.1203

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.51760219	0.51760219	0.08	0.7804

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Dependent Variable: LCL Log of Chloride

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.06782644	0.06782644	0.01	0.9195

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.30216884	0.30216884	0.05	0.8312

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	0.44476481	0.44476481	0.07	0.7960

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	1.88636960	1.88636960	0.29	0.5957

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	43.18057711	43.18057711	6.71	0.0197

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.02416090	0.02416090	0.00	0.9519

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.03226101	0.03226101	0.01	0.9444

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	2.86549481	2.86549481	0.45	0.5141

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	2.23069984	2.23069984	0.35	0.5643

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Dependent Variable: LF Log of Fluoride

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	236.15633703	7.61794636	7.09	0.0001
Error	169	181.66072006	1.07491550		
Corrected Total	200	417.81705709			

R-Square	C.V.	Root MSE	LF Mean
0.565215	-52.91527	1.03678132	-1.95932357

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	207.88857396	13.85923826	12.89	0.0001
DATENUM(WELLNO)	16	28.26776307	1.76673519	1.64	0.0625

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	30.00521463	2.00034764	1.86	0.0303
DATENUM(WELLNO)	16	28.26776307	1.76673519	1.64	0.0625

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	30.00521463	2.00034764	1.13	0.4028

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	2.52078924	2.52078924	1.43	0.2497

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.07913307	0.07913307	0.04	0.8351

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	2.34628220	2.34628220	1.33	0.2661

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	3.56557938	3.56557938	2.02	0.1746

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General Linear Models Procedure

Dependent Variable: LF Log of Fluoride

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	1.50110686	1.50110686	0.85	0.3703

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	3.68728876	3.68728876	2.09	0.1679

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	5.21303366	5.21303366	2.95	0.1051

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.18144207	0.18144207	0.10	0.7528

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.08555788	0.08555788	0.05	0.8286

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.20757734	0.20757734	0.12	0.7362

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.94513580	0.94513580	0.53	0.4751

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.01551753	0.01551753	0.01	0.9265

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	1.86999743	1.86999743	1.06	0.3189

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Dependent Variable: LNO2 Log of Nitrite

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	63.46898603	2.04738665	0.51	0.9842
Error	147	586.66044470	3.99088738		
Corrected Total	178	650.12943073			

R-Square	C.V.	Root MSE	LNO2 Mean
0.097625	-45.39316	1.99772055	-4.40092903

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	26.49494457	1.76632964	0.44	0.9636
DATENUM(WELLNO)	16	36.97404146	2.31087759	0.58	0.8958

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	25.00758642	1.66717243	0.42	0.9721
DATENUM(WELLNO)	16	36.97404146	2.31087759	0.58	0.8958

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	25.00758642	1.66717243	0.72	0.7337

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	1.69774639	1.69774639	0.73	0.4040

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.00894700	0.00894700	0.00	0.9512

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	2.47239646	2.47239646	1.07	0.3164

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.11392007	0.11392007	0.05	0.8271

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Dependent Variable: LNO2 Log of Nitrite

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	1.64900481	1.64900481	0.71	0.4107

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.24833620	0.24833620	0.11	0.7473

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	2.38995488	2.38995488	1.03	0.3243

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	1.89921132	1.89921132	0.82	0.3781

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	1.04426738	1.04426738	0.45	0.5110

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	6.58113316	6.58113316	2.85	0.1109

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.71870022	0.71870022	0.31	0.5848

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	2.40443563	2.40443563	1.04	0.3229

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.12668232	0.12668232	0.05	0.8178

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Dependent Variable: LPHEN Log of Total Phenols

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	118.71676643	3.82957311	2.19	0.0009
Error	167	292.65175074	1.75240569		
Corrected Total	198	411.36851716			

R-Square	C.V.	Root MSE	LPHEN Mean
0.288590	-28.35488	1.32378461	-4.66863103

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	73.13037597	4.87535840	2.78	0.0007
DATENUM(WELLNO)	16	45.58639046	2.84914940	1.63	0.0669

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	14.98713234	0.99914216	0.57	0.8946
DATENUM(WELLNO)	16	45.58639046	2.84914940	1.63	0.0669

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	14.98713234	0.99914216	0.35	0.9756

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	0.20918105	0.20918105	0.07	0.7899

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.13315081	0.13315081	0.05	0.8316

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	1.56142349	1.56142349	0.55	0.4698

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	3.31437776	3.31437776	1.16	0.2968

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Dependent Variable: LPHEN Log of Total Phenols

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.08752817	0.08752817	0.03	0.8631

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	1.10665787	1.10665787	0.39	0.5419

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	3.16709061	3.16709061	1.11	0.3074

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.30719164	0.30719164	0.11	0.7469

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.31487215	0.31487215	0.11	0.7439

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	0.16329658	0.16329658	0.06	0.8138

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.01603569	0.01603569	0.01	0.9411

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	3.65729940	3.65729940	1.28	0.2739

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.24258313	0.24258313	0.09	0.7742

Champion International
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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LTOC Log of Total Organic Carbon

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	324.70919064	10.47449002	4.82	0.0001
Error	168	364.75037420	2.17113318		
Corrected Total	199	689.45956484			

R-Square	C.V.	Root MSE	LTOC Mean
0.470962	113.2775	1.47347656	1.30076714

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	307.52067880	20.50137859	9.44	0.0001
DATENUM(WELLNO)	16	17.18851184	1.07428199	0.49	0.9472

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	15.55232905	1.03682194	0.48	0.9493
DATENUM(WELLNO)	16	17.18851184	1.07428199	0.49	0.9472

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	15.55232905	1.03682194	0.97	0.5252

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	2.18852925	2.18852925	2.04	0.1727

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.23391975	0.23391975	0.22	0.6471

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	7.17465019	7.17465019	6.68	0.0200

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.06052376	0.06052376	0.06	0.8154

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LTOC Log of Total Organic Carbon

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.12374791	0.12374791	0.12	0.7387

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.00958540	0.00958540	0.01	0.9259

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	1.44835636	1.44835636	1.35	0.2626

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.63193056	0.63193056	0.59	0.4543

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	0.45750284	0.45750284	0.43	0.5233

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	1.59545653	1.59545653	1.49	0.2406

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.02512146	0.02512146	0.02	0.8804

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	0.20677487	0.20677487	0.19	0.6667

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.04684448	0.04684448	0.04	0.8372

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LTOH Log of Total Organic Halogens

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	31	288.78704747	9.31571121	3.83	0.0001
Error	155	376.64603709	2.42997443		
Corrected Total	186	665.43308457			

R-Square	C.V.	Root MSE	LTOH Mean
0.433984	-47.53061	1.55883753	-3.27964993

Source	DF	Type I SS	Mean Square	F Value	Pr > F
WELLNO	15	210.83959422	14.05597295	5.78	0.0001
DATENUM(WELLNO)	16	77.94745326	4.87171583	2.00	0.0159

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	43.44432498	2.89628833	1.19	0.2833
DATENUM(WELLNO)	16	77.94745326	4.87171583	2.00	0.0159

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Source	DF	Type III SS	Mean Square	F Value	Pr > F
WELLNO	15	43.44432498	2.89628833	0.59	0.8397

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1 vs Bkg & time	1	2.17669269	2.17669269	0.45	0.5134

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-12 vs Bkg & time	1	0.25567002	0.25567002	0.05	0.8217

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-13 vs Bkg & time	1	4.34081788	4.34081788	0.89	0.3592

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-14 vs Bkg & time	1	0.00014590	0.00014590	0.00	0.9957

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Analysis of Variance for

General Linear Models Procedure

Dependent Variable: LTOH Log of Total Organic Halogens

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-15 vs Bkg & time	1	0.02510281	0.02510281	0.01	0.9437

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-1A vs Bkg & time	1	0.02510281	0.02510281	0.01	0.9437

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-2 vs Bkg & time	1	10.29502578	10.29502578	2.11	0.1654

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-3A vs Bkg & time	1	0.03900485	0.03900485	0.01	0.9298

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-4 vs Bkg & time	1	11.36800282	11.36800282	2.33	0.1461

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-5A vs Bkg & time	1	14.49985861	14.49985861	2.98	0.1037

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-6 vs Bkg & time	1	0.46291403	0.46291403	0.10	0.7619

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-7A vs Bkg & time	1	4.09308795	4.09308795	0.84	0.3730

Tests of Hypotheses using the Type III MS for DATENUM(WELLNO) as an error term

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
MW-8 vs Bkg & time	1	0.25591209	0.25591209	0.05	0.8216

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Evaluation of the Assumptions for the
Analysis of Variance

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	200	Sum Wgts	200
Mean	0	Sum	0
Std Dev	0.649298	Variance	0.421588
Skewness	0.32535	Kurtosis	3.27484
USS	83.89598	CSS	83.89598
CV	.	Std Mean	0.045912
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	-642	Prob>|S|	0.4348
Num ^= 0	200		
W:Normal	0.960023	Prob<W	0.0003

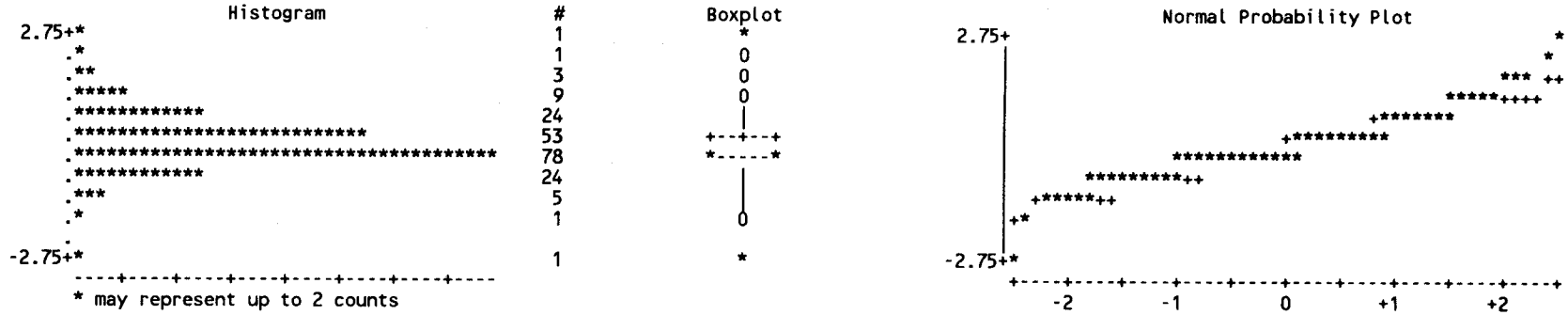
Quantiles(Def=5)

100% Max	2.605653	99%	1.955994
75% Q3	0.325161	95%	1.160173
50% Med	-0.05553	90%	0.731649
25% Q1	-0.41788	10%	-0.58525
0% Min	-2.87031	5%	-0.78732
		1%	-1.66747
Range	5.475967		
Q3-Q1	0.743037		
Mode	-2.87031		

Extremes

Lowest	Obs	Highest	Obs
-2.87031(	100)	1.607018(	58)
-1.88469(	106)	1.657478(	12)
-1.45026(	104)	1.813005(	41)
-1.37228(	127)	2.098983(	96)
-1.1612(	95)	2.605653(	94)

Missing Value	.
Count	3
% Count/Nobs	1.48



Champion International
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Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-1 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	13	Sum Wgts	13
Mean	0	Sum	0
Std Dev	0.890829	Variance	0.793576
Skewness	0.61033	Kurtosis	-0.9195
USS	9.522908	CSS	9.522908
CV	.	Std Mean	0.247071
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	-1.5	Prob>|S|	0.9460
Num ^= 0	13		
W:Normal	0.905423	Prob<W	0.1544

Quantiles(Def=5)

100% Max	1.657478	99%	1.657478
75% Q3	0.983396	95%	1.657478
50% Med	-0.3648	90%	1.03789
25% Q1	-0.54191	10%	-1.02829
0% Min	-1.07986	5%	-1.07986
		1%	-1.07986
Range	2.737336		
Q3-Q1	1.525308		
Mode	-1.07986		

Extremes

Lowest	Obs	Highest	Obs
-1.07986(	13)	0.051772(	6)
-1.02829(	3)	0.983396(	9)
-0.79174(	5)	1.005502(	1)
-0.54191(	10)	1.03789(	7)
-0.49464(	2)	1.657478(	12)

```
Stem Leaf                     #             Boxplot
   1 7                        1                |
   1 000                      3             +-----+
   0                                        |     |
   0 01                       2             |  +  |
  -0 44                       2             *-----*
  -0 855                      3             +-----+
  -1 10                       2                |
     ----+----+----+----+
```

Normal Probability Plot

```
1.75+                                                  *+++++
    |                                            *   *++++
    |                                         *+++++
0.25+                                     ++*+*+*+
    |                                +*+*+*+*
    |                           +++*+*
-1.25+                   *+++++*
      +----+----+----+----+----+----+----+----+----+----+
          -2        -1         0        +1        +2
```

Champion International
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Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-10 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	17	Sum Wgts	17
Mean	0	Sum	0
Std Dev	0.415662	Variance	0.172775
Skewness	0.397418	Kurtosis	-0.04707
USS	2.764402	CSS	2.764402
CV	.	Std Mean	0.100813
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	-1.5	Prob>|S|	0.9632
Num ^= 0	17		
W:Normal	0.948471	Prob<W	0.4288

Quantiles(Def=5)

100% Max	0.930908	99%	0.930908
75% Q3	0.230267	95%	0.930908
50% Med	0.028509	90%	0.498932
25% Q1	-0.41687	10%	-0.5589
0% Min	-0.58415	5%	-0.58415
		1%	-0.58415
Range	1.515059		
Q3-Q1	0.647132		
Mode	-0.58415		

Extremes

Lowest	Obs	Highest	Obs
-0.58415(	15)	0.230267(	8)
-0.5589(	6)	0.234006(	2)
-0.45202(	7)	0.432903(	10)
-0.43673(	4)	0.498932(	12)
-0.41687(	17)	0.930908(	16)

Missing Value	.
Count	1
% Count/Nobs	5.56

```
Stem Leaf                     #             Boxplot
   0 59                       2                |
   0 00112224                 8             +--+--+
  -0 4430                     4             +-----+
  -0 665                      3                |
     ----+----+----+----+
```

Normal Probability Plot

```
 0.75+                                  +++++*++++++
                                  ***+*+**+*+*++*
                            ++*+*+**+*++
-0.75+ ++++++*++++*
       +----+----+----+----+----+----+----+----+----+
           -2        -1         0        +1        +2
```

Champion International
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Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-11 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	17	Sum Wgts	17
Mean	0	Sum	0
Std Dev	0.688777	Variance	0.474413
Skewness	1.345593	Kurtosis	1.804592
USS	7.590613	CSS	7.590613
CV	.	Std Mean	0.167053
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	-15.5	Prob>|S|	0.4874
Num ^= 0	17		
W:Normal	0.884139	Prob<W	0.0369

Quantiles(Def=5)

100% Max	1.813005	99%	1.813005
75% Q3	0.137413	95%	1.813005
50% Med	-0.1453	90%	1.088151
25% Q1	-0.41805	10%	-0.69627
0% Min	-0.80445	5%	-0.80445
		1%	-0.80445
Range	2.617457		
Q3-Q1	0.555459		
Mode	-0.80445		

Extremes

Lowest	Obs	Highest	Obs
-0.80445(	4)	0.137413(	5)
-0.69627(	16)	0.586674(	12)
-0.6828(	14)	0.630435(	7)
-0.53715(	6)	1.088151(	15)
-0.41805(	8)	1.813005(	10)

```
Stem Leaf                     #             Boxplot
   1 8                        1                *
   1 1                        1                0
   0 66                       2                |
   0 01                       2             +--+--+
  -0 4432110                  7             *-----*
  -0 8775                     4                |
     ----+----+----+----+
```

Normal Probability Plot

```
1.75+                                                  *   ++++
    |                                            * +++++++
    |                                       *+*++++
    |                              +++++**+
    |                        +***+*+*** *
-0.75+       *   +*++*+*
     +----+----+----+----+----+----+----+----+----+----+
         -2        -1         0        +1        +2
```

Champion International
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Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-12 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	18	Sum Wgts	18
Mean	0	Sum	0
Std Dev	0.621395	Variance	0.386131
Skewness	1.567735	Kurtosis	1.771058
USS	6.564233	CSS	6.564233
CV	.	Std Mean	0.146464
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	-19.5	Prob>|S|	0.4171
Num ^= 0	18		
W:Normal	0.787898	Prob<W	0.0007

Quantiles(Def=5)

100% Max	1.607018	99%	1.607018
75% Q3	0.328185	95%	1.607018
50% Med	-0.26071	90%	1.232196
25% Q1	-0.4246	10%	-0.44612
0% Min	-0.57062	5%	-0.57062
		1%	-0.57062

Range	2.177635
Q3-Q1	0.752782
Mode	-0.57062

Extremes

Lowest	Obs	Highest	Obs
-0.57062(	15)	0.328185(	9)
-0.44612(	1)	0.345464(	12)
-0.43722(	11)	0.697386(	5)
-0.43169(	8)	1.232196(	16)
-0.4246(	7)	1.607018(	10)

```
Stem Leaf                     #             Boxplot
   1 6                        1                0
   1 2                        1                |
   0 7                        1                |
   0 133                      3             +--+--+
  -0 4444443221              11             *-----*
  -0 6                        1                |
     ----+----+----+----+
```

Normal Probability Plot

```
1.75+                                                  *      +
    |                                             *   ++++++++
    |                                        ++*+++++
    |                                 +++++*+**
    |                        * *  **+**+** ** *
-0.75+                 * ++++++++
     +----+----+----+----+----+----+----+----+----+
         -2        -1         0        +1        +2
```

Champion International
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Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-13 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	10	Sum Wgts	10
Mean	0	Sum	0
Std Dev	0.582546	Variance	0.33936
Skewness	2.036107	Kurtosis	5.154253
USS	3.054239	CSS	3.054239
CV	.	Std Mean	0.184217
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	-6.5	Prob>|S|	0.5566
Num ^= 0	10		
W:Normal	0.786085	Prob<W	0.0102

Quantiles(Def=5)

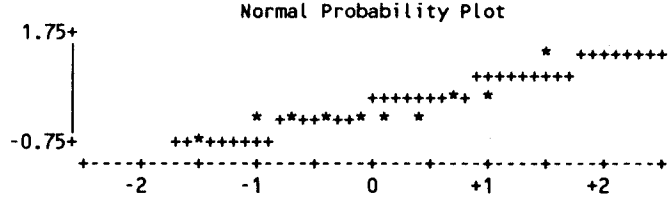
100% Max	1.480487	99%	1.480487
75% Q3	0.195823	95%	1.480487
50% Med	-0.16393	90%	0.866038
25% Q1	-0.27075	10%	-0.54053
0% Min	-0.618	5%	-0.618
		1%	-0.618
Range	2.098484		
Q3-Q1	0.466573		
Mode	-0.618		

Extremes

Lowest	Obs	Highest	Obs
-0.618(	5)	-0.1559(	10)
-0.46307(	1)	-0.06748(	3)
-0.27075(	2)	0.195823(	8)
-0.18074(	9)	0.25159(	6)
-0.17196(	4)	1.480487(	7)

```
Stem Leaf                     #             Boxplot
   1 5                        1                0
   1                                           |
   0                                           |
   0 23                       2             +--+--+
  -0 32221                    5             *-----*
  -0 65                       2                |
     ----+----+----+----+
```

Normal Probability Plot



Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-14 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	4	Sum Wgts	4
Mean	0	Sum	0
Std Dev	0.251953	Variance	0.06348
Skewness	0.572369	Kurtosis	1.4623
USS	0.190441	CSS	0.190441
CV	.	Std Mean	0.125977
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	0	Prob>|S|	1.0000
Num ^= 0	4		
W:Normal	0.965572	Prob<W	0.7811

Quantiles(Def=5)

100% Max	0.330123	99%	0.330123
75% Q3	0.166248	95%	0.330123
50% Med	-0.02473	90%	0.330123
25% Q1	-0.16625	10%	-0.28065
0% Min	-0.28065	5%	-0.28065
		1%	-0.28065
Range	0.610777		
Q3-Q1	0.332496		
Mode	-0.28065		

Extremes

Lowest	Obs	Highest	Obs
-0.28065(	2)	.(	)
-0.05184(	4)	-0.28065(	2)
0.002372(	1)	-0.05184(	4)
0.330123(	3)	0.002372(	1)
.(	)	0.330123(	3)

```
Stem Leaf                     #             Boxplot
   3 3                        1                |
   2                                           |
   1                                        +-----+
   0 0                        1             |  +  |
  -0 5                        1             *-----*
  -1                                        +-----+
  -2 8                        1                |
      ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Normal Probability Plot

```
0.35+                                  * ++++
    |                                ++++
    |                            ++++
0.05+                        +++*
    |                    *++
    |                ++++
-0.25+           +*++
     +----+----+----+----+----+----+----+----+----+----+
         -2        -1         0        +1        +2
```

Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-15 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	4	Sum Wgts	4
Mean	0	Sum	0
Std Dev	0.176801	Variance	0.031259
Skewness	-0.17448	Kurtosis	-4.97481
USS	0.093776	CSS	0.093776
CV	.	Std Mean	0.088401
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	0	Prob>|S|	1.0000
Num ^= 0	4		
W:Normal	0.839159	Prob<W	0.1872

Quantiles(Def=5)

100% Max	0.155072	99%	0.155072
75% Q3	0.150402	95%	0.155072
50% Med	0.017818	90%	0.155072
25% Q1	-0.1504	10%	-0.19071
0% Min	-0.19071	5%	-0.19071
		1%	-0.19071
Range	0.345781		
Q3-Q1	0.300804		
Mode	-0.19071		

Extremes

Lowest	Obs	Highest	Obs
-0.19071(	2)	.(	)
-0.1101(	4)	-0.19071(	2)
0.145732(	3)	-0.1101(	4)
0.155072(	1)	0.145732(	3)
.(	)	0.155072(	1)

```
Stem Leaf                     #             Boxplot
   1 56                       2             +-----+
   1                                        |     |
   0                                        |     |
   0                                        *--+--*
  -0                                        |     |
  -0                                        |     |
  -1 1                        1             |     |
  -1 9                        1             +-----+
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Normal Probability Plot

```
0.175+                                          +*+
     |                                     *  +++
     |                                     +++
     |                                  +++
     |                                ++
     |                             +++
     |                        +++  *
-0.175+                     +*+
       +----+----+----+----+----+----+----+----+----+----+
           -2        -1         0        +1        +2
```

Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-1A ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	4	Sum Wgts	4
Mean	7.11E-15	Sum	2.84E-14
Std Dev	0.054097	Variance	0.002927
Skewness	-0.20487	Kurtosis	-4.81364
USS	0.00878	CSS	0.00878
CV	7.614E14	Std Mean	0.027049
T:Mean=0	2.63E-13	Prob>|T|	1.0000
Sgn Rank	0	Prob>|S|	1.0000
Num ^= 0	4		
W:Normal	0.841467	Prob<W	0.1939

Quantiles(Def=5)

100% Max	0.046981	99%	0.046981
75% Q3	0.045884	95%	0.046981
50% Med	0.006121	90%	0.046981
25% Q1	-0.04588	10%	-0.05922
0% Min	-0.05922	5%	-0.05922
		1%	-0.05922
Range	0.106204		
Q3-Q1	0.091768		
Mode	-0.05922		

Extremes

Lowest	Obs	Highest	Obs
-0.05922(	2)	.(	)
-0.03255(	4)	-0.05922(	2)
0.044786(	1)	-0.03255(	4)
0.046981(	3)	0.044786(	1)
.(	)	0.046981(	3)

```
Stem Leaf                     #
   4 57                       2
   2
   0
  -0
  -2 3                        1
  -4 9                        1
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-2
```

Boxplot

```
+-----+
|     |
*--+--*
|     |
+-----+
```

Normal Probability Plot

```
 0.05+                    *   ++*+
     |                 ++++
     |              ++++
     |           +++
     |        +++++*
-0.05+      +*++
     +----+----+----+----+----+----+----+----+----+
          -2        -1         0        +1        +2
```

Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-2 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	17	Sum Wgts	17
Mean	0	Sum	0
Std Dev	1.419328	Variance	2.014493
Skewness	-0.09746	Kurtosis	-0.09414
USS	32.23189	CSS	32.23189
CV	.	Std Mean	0.344238
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	0.5	Prob>|S|	1.0000
Num ^= 0	17		
W:Normal	0.99248	Prob<W	0.9991

Quantiles(Def=5)

100% Max	2.605653	99%	2.605653
75% Q3	0.753446	95%	2.605653
50% Med	0.081691	90%	2.098983
25% Q1	-0.75869	10%	-1.88469
0% Min	-2.87031	5%	-2.87031
		1%	-2.87031

Range	5.475967
Q3-Q1	1.512135
Mode	-2.87031

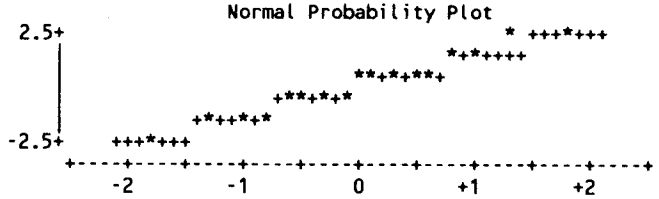
Extremes

Lowest	Obs	Highest	Obs
-2.87031(	12)	0.753446(	9)
-1.88469(	18)	1.273455(	17)
-1.45026(	16)	1.286334(	15)
-1.1612(	7)	2.098983(	8)
-0.75869(	3)	2.605653(	6)

Missing Value	.
Count	1
% Count/Nobs	5.56

```
Stem Leaf                     #             Boxplot
   2 16                       2                |
   1 33                       2                |
   0 12478                    5             +--+--+
  -0 8750                     4             +-----+
  -1 952                      3                |
  -2 9                        1                |
     ----+----+----+----+
```

Normal Probability Plot



Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-3A ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	9	Sum Wgts	9
Mean	0	Sum	0
Std Dev	0.658012	Variance	0.432979
Skewness	1.434392	Kurtosis	2.607415
USS	3.463834	CSS	3.463834
CV	.	Std Mean	0.219337
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	-6.5	Prob>|S|	0.4961
Num ^= 0	9		
W:Normal	0.874987	Prob<W	0.1368

Quantiles(Def=5)

100% Max	1.454431	99%	1.454431
75% Q3	0.021721	95%	1.454431
50% Med	-0.11839	90%	1.454431
25% Q1	-0.37432	10%	-0.78026
0% Min	-0.78026	5%	-0.78026
		1%	-0.78026
Range	2.234695		
Q3-Q1	0.39604		
Mode	-0.78026		

Extremes

Lowest	Obs	Highest	Obs
-0.78026(	7)	-0.11839(	2)
-0.53225(	4)	-0.07481(	9)
-0.37432(	3)	0.021721(	8)
-0.12562(	1)	0.529511(	5)
-0.11839(	2)	1.454431(	6)

```
Stem Leaf                     #             Boxplot
   1 5                        1                *
   1                                           |
   0 5                        1                |
   0 0                        1             +--+--+
  -0 4111                     4             *-----*
  -0 85                       2                |
     ----+----+----+----+
```

Normal Probability Plot

```
1.75+                                                  +++
    |                                        *+++++++
    |                                   +*++++++
    |                              ++++++*+
    |                       +*++*++*  *
-0.75+            *+++++*+
     +----+----+----+----+----+----+----+----+----+----+
          -2        -1        0        +1        +2
```

Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-4 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	17	Sum Wgts	17
Mean	0	Sum	0
Std Dev	0.629763	Variance	0.396602
Skewness	-0.61644	Kurtosis	-0.25324
USS	6.345628	CSS	6.345628
CV	.	Std Mean	0.15274
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	3.5	Prob>|S|	0.8900
Num ^= 0	17		
W:Normal	0.946447	Prob<W	0.4003

Quantiles(Def=5)

100% Max	0.824591	99%	0.824591
75% Q3	0.529491	95%	0.824591
50% Med	0.026918	90%	0.734388
25% Q1	-0.47395	10%	-0.87399
0% Min	-1.37228	5%	-1.37228
		1%	-1.37228
Range	2.196875		
Q3-Q1	1.003438		
Mode	-1.37228		

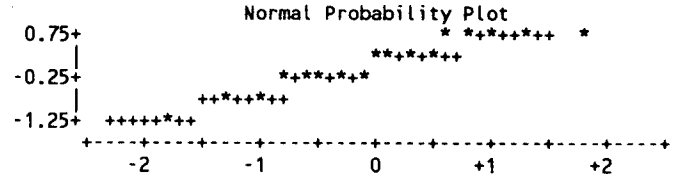
Extremes

Lowest	Obs	Highest	Obs
-1.37228(	12)	0.529491(	5)
-0.87399(	8)	0.623479(	9)
-0.78289(	7)	0.721362(	14)
-0.48163(	13)	0.734388(	16)
-0.47395(	11)	0.824591(	17)

Missing Value	.
Count	1
% Count/Nobs	5.56

```
Stem Leaf                     #             Boxplot
   0 56778                    5             +-----+
   0 0223                     4             *--+--*
  -0 111                      3             |     |
  -0 9855                     4             +-----+
  -1 4                        1                |
     ----+----+----+----+
```

Normal Probability Plot



Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-5A ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	10	Sum Wgts	10
Mean	0	Sum	0
Std Dev	0.411026	Variance	0.168942
Skewness	0.299485	Kurtosis	-1.38673
USS	1.520481	CSS	1.520481
CV	.	Std Mean	0.129978
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	-0.5	Prob>|S|	1.0000
Num ^= 0	10		
W:Normal	0.91691	Prob<W	0.3181

Quantiles(Def=5)

100% Max	0.581358	99%	0.581358
75% Q3	0.382627	95%	0.581358
50% Med	-0.02023	90%	0.581069
25% Q1	-0.41771	10%	-0.46866
0% Min	-0.51896	5%	-0.51896
		1%	-0.51896
Range	1.100315		
Q3-Q1	0.800334		
Mode	-0.51896		

Extremes

Lowest	Obs	Highest	Obs
-0.51896(	5)	0.079917(	3)
-0.41836(	4)	0.080204(	7)
-0.41771(	1)	0.382627(	6)
-0.22947(	2)	0.580781(	8)
-0.12038(	10)	0.581358(	9)

```
Stem Leaf                     #             Boxplot
   4 88                       2                |
   2 8                        1             +-----+
   0 88                       2             |  +  |
  -0 2                        1             *-----*
  -2 3                        1             |     |
  -4 222                      3             +-----+
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Normal Probability Plot

```
 0.5+                                  *+++++*
    |                                ++*++
    |                             +*+++*
    |                          +++*
    |                       +++++*
-0.5+          *+++++*  *
     +----+----+----+----+----+----+----+----+----+----+
         -2        -1         0        +1        +2
```

Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-6 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	18	Sum Wgts	18
Mean	0	Sum	0
Std Dev	0.327505	Variance	0.10726
Skewness	0.275961	Kurtosis	-0.80856
USS	1.823417	CSS	1.823417
CV	.	Std Mean	0.077194
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	-3.5	Prob>|S|	0.8986
Num ^= 0	18		
W:Normal	0.958876	Prob<W	0.5737

Quantiles(Def=5)

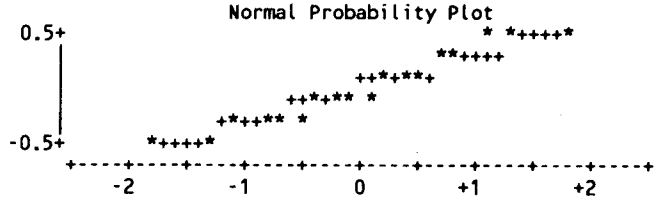
100% Max	0.549934	99%	0.549934
75% Q3	0.302025	95%	0.549934
50% Med	-0.05063	90%	0.540596
25% Q1	-0.20774	10%	-0.41254
0% Min	-0.5538	5%	-0.5538
		1%	-0.5538
Range	1.103739		
Q3-Q1	0.509765		
Mode	-0.5538		

Extremes

Lowest	Obs	Highest	Obs
-0.5538(	2)	0.302025(	9)
-0.41254(	7)	0.320876(	10)
-0.36423(	1)	0.445405(	11)
-0.24308(	17)	0.540596(	16)
-0.20774(	15)	0.549934(	13)

```
Stem Leaf                     #             Boxplot
   4 545                      3                |
   2 02                       2             +-----+
   0 564                      3             |  +  |
  -0 9373                     4             *-----*
  -2 6411                     4             +-----+
  -4 51                       2                |
     ----+----+----+----+
  Multiply Stem.Leaf by 10**-1
```

Normal Probability Plot



Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-7A ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	10	Sum Wgts	10
Mean	0	Sum	0
Std Dev	0.394983	Variance	0.156011
Skewness	-0.37061	Kurtosis	-0.69649
USS	1.404101	CSS	1.404101
CV	.	Std Mean	0.124904
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	0.5	Prob>|S|	1.0000
Num ^= 0	10		
W:Normal	0.964709	Prob<W	0.8269

Quantiles(Def=5)

100% Max	0.535035	99%	0.535035
75% Q3	0.253814	95%	0.535035
50% Med	0.050759	90%	0.505187
25% Q1	-0.29537	10%	-0.58281
0% Min	-0.6681	5%	-0.6681
		1%	-0.6681
Range	1.203137		
Q3-Q1	0.549184		
Mode	-0.6681		

Extremes

Lowest	Obs	Highest	Obs
-0.6681(	1)	0.115642(	7)
-0.49753(	5)	0.166433(	6)
-0.29537(	10)	0.253814(	4)
-0.07114(	2)	0.475338(	8)
-0.01412(	3)	0.535035(	9)

```
Stem Leaf                     #             Boxplot
   4 84                       2                |
   2 5                        1             +-----+
   0 27                       2             *--+--*
  -0 71                       2             |     |
  -2 0                        1             +-----+
  -4 0                        1                |
  -6 7                        1
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Normal Probability Plot

```
 0.5+                                  *+++++*
    |                              +*+++
    |                         +*+++*+
-0.1+                    +*+++*
    |                +++*+
    |           +++++*
-0.7+     +++++*
       +----+----+----+----+----+----+----+----+----+
            -2        -1         0        +1        +2
```

Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-8 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	16	Sum Wgts	16
Mean	0	Sum	0
Std Dev	0.4095	Variance	0.16769
Skewness	0.392141	Kurtosis	-1.08737
USS	2.51535	CSS	2.51535
CV	.	Std Mean	0.102375
T:Mean=0	0	Prob>|T|	1.0000
Sgn Rank	2	Prob>|S|	0.9399
Num ^= 0	16		
W:Normal	0.914906	Prob<W	0.1413

Quantiles(Def=5)

100% Max	0.743197	99%	0.743197
75% Q3	0.324889	95%	0.743197
50% Med	0.019838	90%	0.601299
25% Q1	-0.39665	10%	-0.46853
0% Min	-0.47953	5%	-0.47953
		1%	-0.47953
Range	1.22273		
Q3-Q1	0.721544		
Mode	-0.47953		

Extremes

Lowest	Obs	Highest	Obs
-0.47953(	4)	0.216499(	1)
-0.46853(	6)	0.433279(	10)
-0.45698(	3)	0.485095(	14)
-0.41605(	13)	0.601299(	11)
-0.37726(	7)	0.743197(	5)

```
Stem Leaf                     #             Boxplot
   6 04                       2                |
   4 39                       2                |
   2 2                        1             +-----+
   0 588                      3             *--+--*
  -0 31                       2             |     |
  -2 86                       2             |     |
  -4 8762                     4             +-----+
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Normal Probability Plot

```
0.7+                                   * +++*+
   |                                 * *++++
   |                              +*+++
0.1+                           +**+*
   |                        ++**
   |                   +++*+*
-0.5+       *   +*++* *
    +----+----+----+----+----+----+----+----+----+----+
        -2        -1         0        +1        +2
```

Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

---------- WELLNO=MW-9 ----------

UNIVARIATE PROCEDURE

Variable=RESIDUAL

Moments

N	16	Sum Wgts	16
Mean	-638E-16	Sum	-102E-14
Std Dev	0.565797	Variance	0.320126
Skewness	0.437135	Kurtosis	-1.47044
USS	4.801887	CSS	4.801887
CV	-8.87E14	Std Mean	0.141449
T:Mean=0	-451E-15	Prob>|T|	1.0000
Sgn Rank	3	Prob>|S|	0.8999
Num ^= 0	16		
W:Normal	0.870043	Prob<W	0.0270

Quantiles(Def=5)

100% Max	1.007689	99%	1.007689
75% Q3	0.588103	95%	1.007689
50% Med	-0.20609	90%	0.72891
25% Q1	-0.49752	10%	-0.58634
0% Min	-0.61907	5%	-0.61907
		1%	-0.61907
Range	1.626763		
Q3-Q1	1.085625		
Mode	-0.61907		

Extremes

Lowest	Obs	Highest	Obs
-0.61907(	14)	0.561299(	5)
-0.58634(	2)	0.614908(	15)
-0.56918(	6)	0.6301(	10)
-0.53193(	7)	0.72891(	1)
-0.46312(	11)	1.007689(	12)

```
Stem Leaf                     #             Boxplot
   1 0                        1                |
   0 6667                     4             +-----+
   0 13                       2             |     |
  -0 4440                     4             *--+--*
  -0 66655                    5             +-----+
     ----+----+----+----+
```

Normal Probability Plot

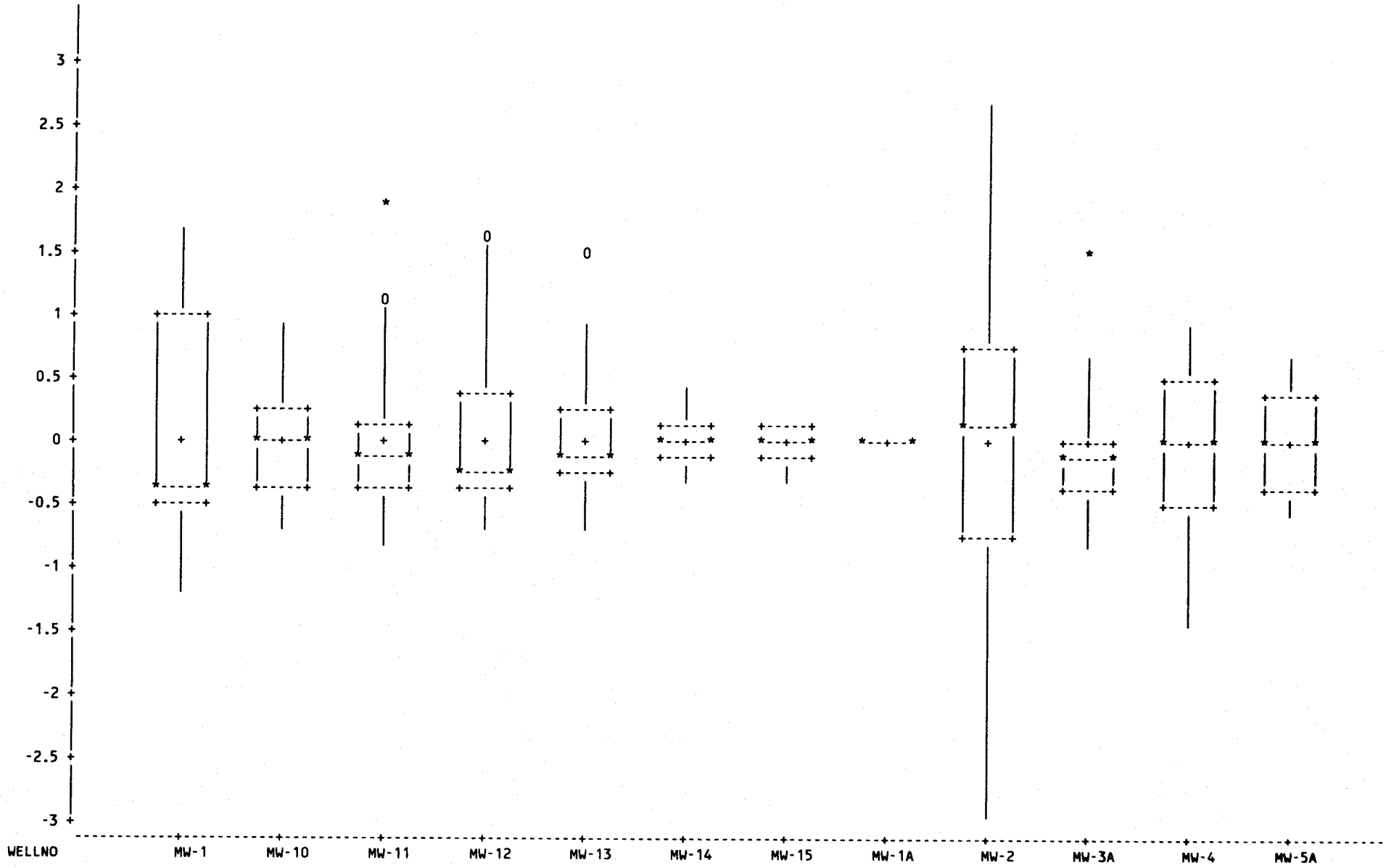
```
 1.25+                                  *+++++++
     |                            * *+*++*++++
 0.25+                        +*+*++++
     |                 ++*+*+***+*
-0.75+        *++++*++*+*
      +----+----+----+----+----+----+----+----+----+
           -2        -1         0        +1        +2
```

Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

UNIVARIATE PROCEDURE
Schematic Plots

Variable=RESIDUAL

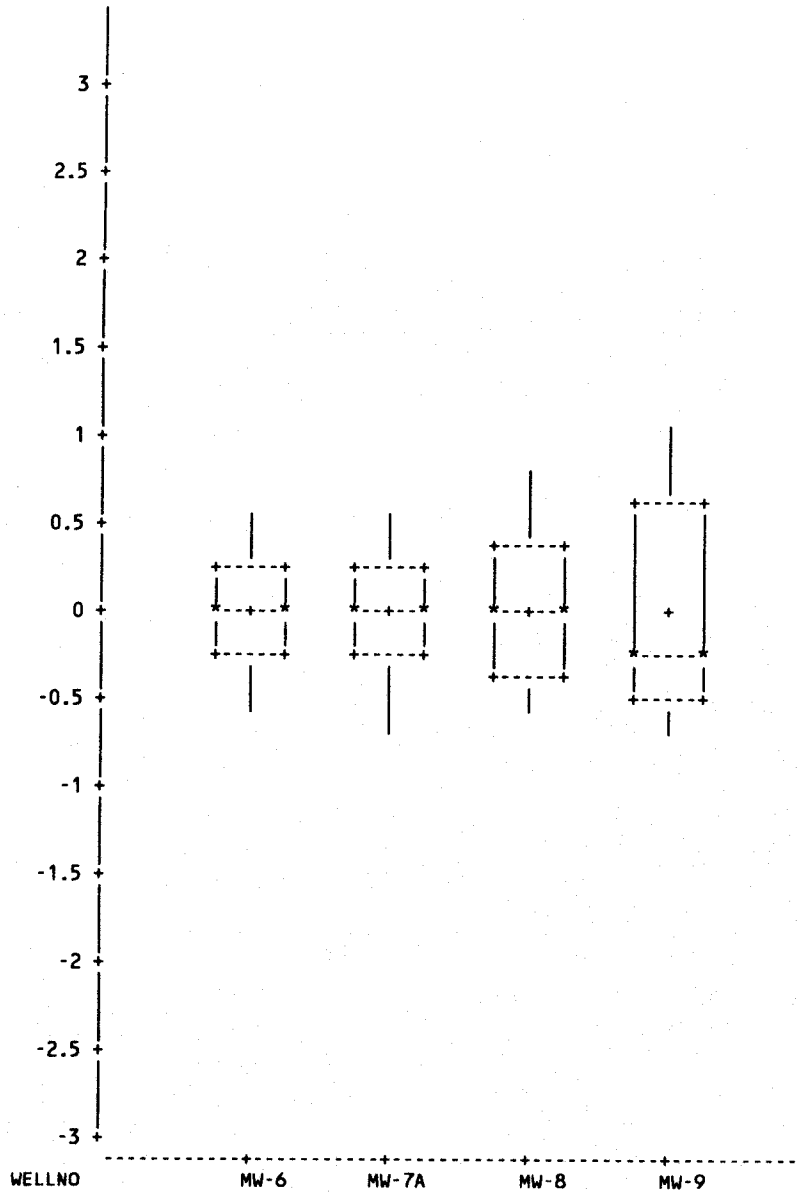


Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

UNIVARIATE PROCEDURE
Schematic Plots

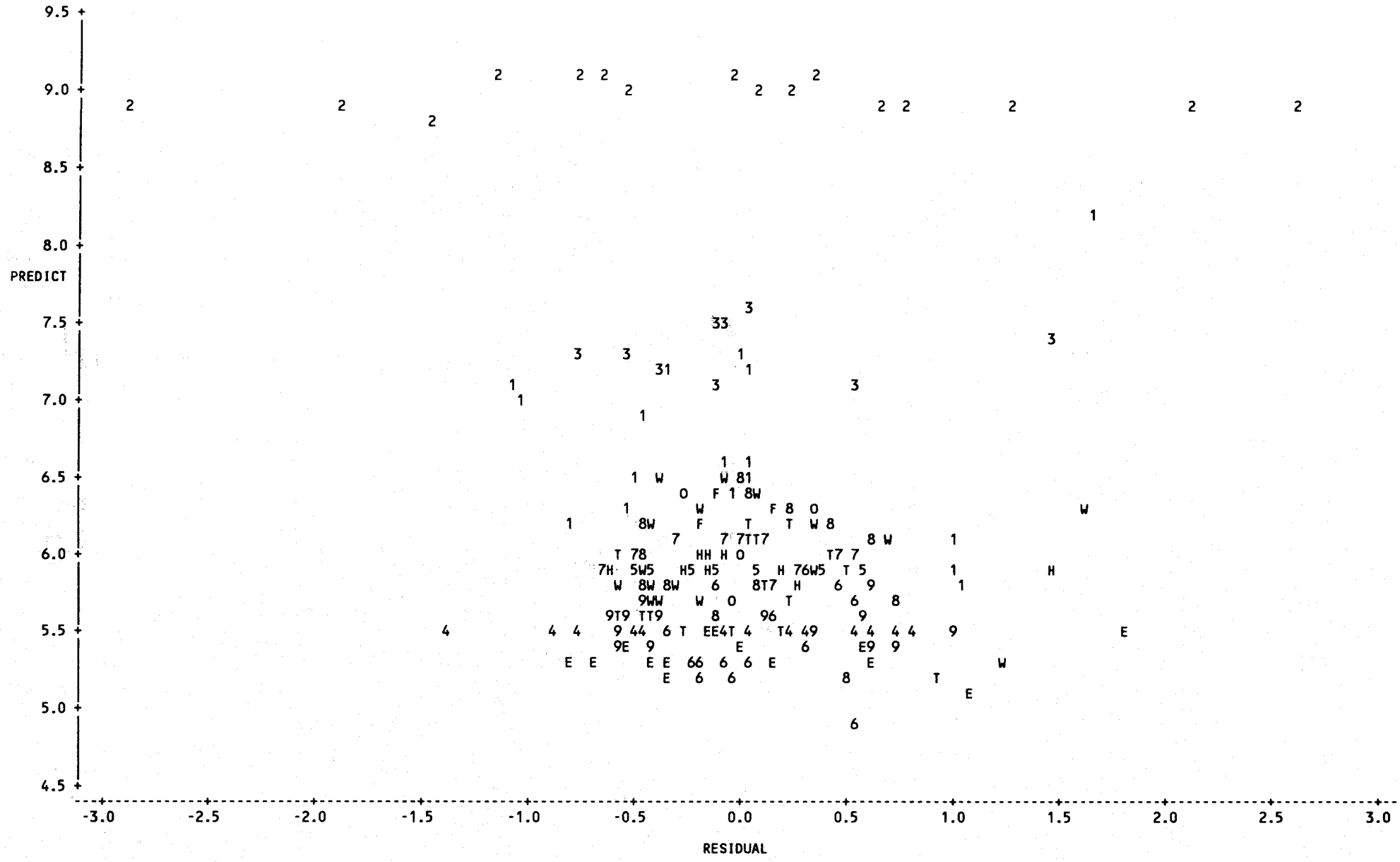
Variable=RESIDUAL



Champion International
Canton Landfill No. 6
Canton, North Carolina

Evaluation of the Assumptions for the
Analysis of Variance

Plot of PREDICT*RESIDUAL. Symbol is value of CHAR.



NOTE: 3 obs had missing values. 24 obs hidden.