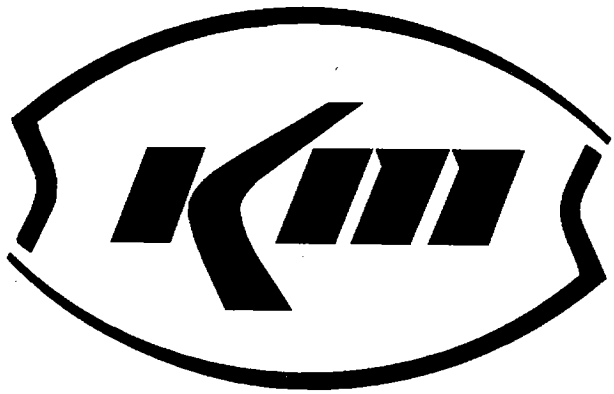
KERR-McGEE CHEMICAL CORPORATION



RESPONSE TO LETTER OF UNDERSTANDING HENDERSON, NEVADA FACILITY

MAY, 1996

KERR-McGEE CHEMICAL CORPORATION
POST OFFICE BOX 55 • HENDERSON, NEVADA 89009

May 10, 1996

Priority Mail

Mr. Allan Biaggi
Nevada Division of Environmental Protection
333 West Nye Lane
Carson City, Nevada 89710

Subject: Phase II Response to Letter of Understanding

Dear Mr. Biaggi:

Attached for your review are four copies of Kerr-McGee Chemical Corporation's (KMCC's) response to the Letter of Understanding (LOU) dated August 15, 1994 between KMCC and the Nevada Division of Environmental Protection (NDEP). This response contains written information and documentation requested by NDEP. LOU items requiring field sampling are covered in a separate Work Plan, submitted concurrently with this document.

As mentioned in your recent discussion with J. T. Smith of Covington and Burling , KMCC's outside counsel, KMCC would appreciate having NDEP review this document and the Work Plan prior to our finalizing the Consent Agreement. We believe that this will facilitate the overall process by focusing the Consent Agreement on an already agreed to scope of work. Your assistance in this matter is appreciated.

If you have any questions, please feel free to contact me at (702) 651-2234.

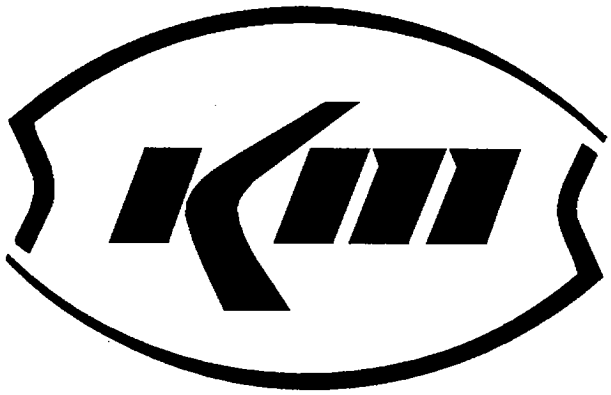
Sincerely,

Susan Crowley

Susan Crowley
Environmental Engineer.

cc:
P. R. Demps
R. H. Jones
R. A. Napier
T. W. Reed
R. A. Simon
J. T. Smith

KERR-McGEE CHEMICAL CORPORATION



RESPONSE TO LETTER OF UNDERSTANDING HENDERSON, NEVADA FACILITY

MAY, 1996

RESPONSE TO LETTER OF UNDERSTANDING

HENDERSON SITE

1) On-Site Portions of "Trade Effluent" Settling Ponds and Associated Vitrified Clay Piping, SWMU KMCC-014:

Provide the results of soil sampling performed by DataChem (KMCC Final Phase I Report Reference K353 "Analytical reports of soil samples taken in the vicinity of proposed SIs WC-1 and WC-2").

Provide a work plan for characterization of potential contamination in the western portion of the KMCC "Trade Effluent" pond area (that area which lies west of Ponds WC-1 and WC-2 and east of the earthen berm which defines the eastern margin of the On-site Hazardous Waste Landfill. Historical usage and waste disposal practices are to be used to establish the list of analytes to be evaluated.

Soil sampling results from DataChem are contained in Attachment 1. All EP Tox metals were "not detected" with the exception of barium which was less than or equal to 1.0 mg/L. Selected pesticides were also "not detected." The remainder of this response is addressed in the Work Plan.

2) Open Area Due South of "Trade Effluent Disposal Ponds:

KMCC will attempt to further delineate this poorly defined historic disposal area and to establish the nature of materials deposited therein. KMCC will incorporate characterization of this area in the work plan for #1 above ("Trade Effluent" settling Ponds).

This item is addressed in the Work Plan.

3) Air Pollutant Emissions Associated with Industrial Processes:

Provide specific references to those passages in KMCC's Final Phase I report (and any other sources of information) which describe the nature (vapor, particulate, etc.) of historical and current air emissions at the KMCC facility. For those emissions which are determined to have been or which are presently depositional in nature, KMCC will provide information regarding patterns of dispersion and probable deposition.

The list below identifies sections of the April 1993 ECA report which were modified to include additional information on air emissions. ECA report modifications range from adding the permit number for the emission control unit to giving further details regarding the nature of the emission.

Process	Section	Page/Paragraph
Sodium Chlorate	4.1.3	4-7/3
Potassium Chlorate	4.2.3	4-14/6
Potassium Perchlorate	4.5.3	4-26/6
Ammonium Perchlorate	4.7.3 4.7.4	4-36/5 & 7 4-41/5 & 6
Manganese Dioxide	4.8.3	4-45/4 & 5
Manganese Dioxide (Leach Plant)	4.9.3	4-50/4 4-51/1
Boron Trichloride	4.11.3	4-62/1

An assessment was performed to determine the "patterns of dispersion and probable deposition" of emissions. Modeling for this assessment is documented in Attachment 2. The assessment consisted of determining the emissions and modeling the dispersion and deposition of particulate matter from the manganese dioxide process. This process was selected because it represents the majority of the emissions from the facility that are considered "depositional".

The emission estimates were developed as part of the application for the federal (Title V) operating permit and are based on source test data and EPA-approved emission factors (AP-42). The air dispersion model calculated the rate of deposition of these emissions in the areas surrounding the plant.

Deposition was calculated by the air dispersion model at "receptor" locations along the perimeter of the plant and in surrounding areas out to a distance of five kilometers (approximately 3 miles) beyond the plant boundary. The model used (i.e., version 3 of Industrial Source Complex Model--Short Term) is the air dispersion model approved by EPA for determining deposition of particulate matter. One year of actual, hourly meteorological observations (including winds, temperatures, and stability) from Las Vegas were used in the simulation for realistic treatment of transport and dispersion.

The results of the modeling are presented in Attachment 2 which contains a plot depicting isopleths of annual deposition of particulate emissions in units of grams per square meter (g/m^2). The maximum calculated deposition is 17 g/m^2 at a point on the eastern boundary of the plant, reflecting the predominance of southwesterly winds in the Las Vegas area. At other points along the KMCC boundary, the calculated deposition is much less than this maximum value. In fact, the deposition is less than 0.05 g/m^2 at the

northwest corner of the KMCC facility and is less than 1 g/m^2 along over 80 percent of the boundary. Away from the boundary, deposition falls off rapidly, decreasing by an order of magnitude within one kilometer.

4) Hardesty Chemical Company Site:

Provide analytical data obtained from sampling of the ground water monitoring wells installed on the J. B. Kelley lease site. As these wells were installed for the evaluation of potential hydrocarbon contamination from the underground storage tanks formerly located at the J. B. Kelley site, they are in the area where Hardesty is believed to have carried out its operations. NDEP may request additional sampling of these wells with an expanded list of analytes.

KMCC will provide NDEP with any additional information regarding the past operation of Hardesty Chemical Company at the KMCC facility which may be reasonably available, including facility locations, products, waste streams and waste disposal. KMCC and NDEP will then determine what additional investigatory work is necessary based upon the identified information concerning the activities of Hardesty at the KMCC site.

Information relating to the J. B. Kelley lease site is located in the response to LOU Item #63.

Additional documentation was obtained from the national archives at San Bruno, California regarding Hardesty Chemical and other lessees operating on the site in the late 1940s. A letter dated March 11, 1948, contained a description of the portions of the BMI complex that were under lease by the following tenants: Ruth Mitchell, Nevada Clay Products Company, Allied Productions, Inc., U. S. Vanadium, Hardesty Chemical Company, and Western Electrochemical Company (WECCO).

Information on WECCO is provided in KMCC's Environmental Conditions Assessment dated April 1993. Locations of the remaining lessees are shown in Attachment 3 (based on descriptions in the 3/11/48 document).

Hardesty was having difficulty in getting into production. Around October 1947, Amecco Chemicals, Inc., undertook the total obligations of the lease and continued with modifications to the facility. In a letter dated March 6, 1948, Amecco projected sales for the following products.

Monochlorobenzene
Paradichlorobenzene
Soda Arsenite Solution
Synthetic Detergent
Chlorinated paraffin

There were no documents identified to demonstrate what quantity of these chemicals were actually produced, if any. The documentation did not discuss waste streams or disposal locations.

5) On-Site Portion of Beta Ditch, Including "Small Diversion Ditch" Northwest of Pond C-1:

Identify segments or tributaries of these conveyances (if any) which received waste streams from KMCC or its predecessors/tenants exclusively. Those portions of the conveyances which historically received waste streams from two or more of the BMI companies, will be addressed as BMI Common Areas Issues. For those segments or tributaries identified as having been utilized by KMCC or its tenants exclusively, KMCC will prepare a work plan to characterize residual contamination by contaminants of concern which may exist therein.

This item will be addressed in the Common Areas Work Plan. Sample locations in the Common Areas Work Plan have been located either in the tributary or immediately down stream of the confluence of these tributaries. (See Figure 3-1 of the BMI Common Areas Environmental Conditions Investigation Plan.)

6) Unnamed Drainage Ditch Segment:

Based upon KMCC's assertion that this ditch is in fact the Northwest Drainage Ditch which received waste streams from more than one BMI company, this area will be addressed as a BMI Common Areas issue.

Due to the pending construction of Warm Springs Road adjacent to the Northwest Drainage Ditch, KMCC collected samples from both the ditch bottom and from the center of the proposed right of way of the new road. Also, ground water samples were collected from several existing wells in the area. Analytical results were provided to NDEP in a letter dated August 4, 1994. The City of Henderson has recently collected samples in this area; however, data has not been provided to KMCC to date.

7) Old P-2 Pond and Associated Conveyance Facilities:

Provide a work plan for sampling of subsurface soils in the area of the former pond to confirm that residual material concentrations are below State and Federal action levels.

This item is addressed in the Work Plan.

8) P-3 Pond and Associated Conveyance Facilities:

KMCC will provide a work plan for sampling of subsurface soils in the area of the former pond to confirm that residual material concentrations are below State and Federal action levels. As a necessary component of this work plan, KMCC will provide additional information on the location, regulatory/closure status, and release history of this impoundment. KMCC will also provide information on the disposition of contaminated material removed from this pond.

Sampling of this area is addressed in the Work Plan. The pond location is shown on Plate 1. While operational, this process pond was regulated under NPDES Permit #NV0000078. Upon closure of this process pond, the liner, solids and underlying soil were removed and disposed of at U. S. Ecology as chromium contaminated waste.

Monitor wells used for this pond while it was in operation were MW-50 (upgradient) and MW-76 (downgradient). Both wells show elevated conductivity and chromium levels. However, they are also in the general path of the contaminant plume emanating from Units 4 & 5 upgradient of the pond. This plume is being captured and remediated by the down gradient groundwater intercept system.

9) New P-2 Pond and Associated Piping:

Provide engineering specifications of the impoundment including leak detection systems (e.g. double lined with leachate collection) and the location and configuration of monitor wells intended for this purpose. Provide information regarding the operational and regulatory status of this impoundment and release history (if applicable).

Issues exclusively concerning Total Dissolved Solids impacts to ground or surface water will continue to be addressed by NDEP's Bureau of Water Pollution control.

Engineering drawings for construction of the containment system for New P-2 are located in Plate A-001-53 (Attachment 4). The impoundment was initially constructed with two liners (30 mil unreinforced PVC and 36 mil reinforced polyester). Approximately 18 months later, an additional 60 mil high density polyethylene liner was installed. This process pond is scheduled to be taken out of service by June, 1996 and replaced with a tank system located north of Unit 2.

New P-2 pond is regulated under NPDES permit #NV0000078. It has a leak detection system as shown on the above referenced plate which is monitored monthly. No leaks have been identified. Because this leak detection system was installed as part of the original construction of the impoundment, no groundwater monitor wells were installed for this unit; however, upgradient and downgradient wells are present in the area.

10) On-Site Hazardous Waste Landfill, SWMU KMCC-013:

Provide the Division with copies of correspondence relating to the closure and post-closure status of the landfill. This information should include the post-closure plan.

Attachment 5 contains the Closure/Post Closure Plan for the on-site hazardous waste landfill. Also provided in Attachment 5 are the April 16, 1985, and the January 17, 1986, letters from NDEP concerning the landfill.

11) SWMU KMCC-005:

Provide specific information (i.e. volume of material, depth of excavation, criteria used to determine extent of contamination, etc.) relating to the removal of the "old drying pad" and underlying fill material and native soils. Provide an evaluation of the feasibility of collecting confirmatory samples of soil from beneath the area of the old pad.

Alan Gaddy, former Environmental Engineer for KMCC, was present at the time that the original drying pad was removed. Attachment 6 contains a summary of his observation regarding the scope of the work completed. The current pad was built directly over the old pad and is underlain by a synthetic liner. This liner serves as secondary containment in the event that the pad should leak.

Obtaining a sample from directly beneath the pad, which would be the location of greatest potential for contamination, would require penetration of the liner thus compromising its integrity. Based on observations of Mr. Gaddy, all discolored soil plus additional soil was removed from beneath the old pad. As such, KMCC believes that confirmatory sampling is not warranted.

12) Hazardous Waste Storage Area, SWMU KMCC-006:

No further action is required at this time.

13) Pond S-1:

No further action is required at this time. A review of the RCRA permit status of this SI may be required pending the outcome of Phase II investigations.

14) Pond P-1, and Associated Conveyance Piping:

KMCC will provide Closure documentation for this impoundment. A review of the RCRA permit status of this SI may be required pending the outcome of Phase II investigations. No further action is anticipated.

KMCC will provide Closure documentation for this impoundment. A review of the RCRA permit status of this SI may be required pending the outcome of Phase II investigations. No further action is anticipated.

Attachment 7 contains a letter from Thomas J. Fronapfel, P.E., of the NDEP, to Rolfe B. Chase, Jr., of KMCC, stating that the "impoundments have been properly closed, and that they no longer remain under the interim status standards of 40 CFR Part 265". Also included in Attachment 7 is a copy of the analytical results obtained from both P-1 and S-1 that KMCC collected as part of the clean closure demonstration. (Due to the poor quality of the original, some of the values have been penciled in next to the printed value for clarity.)

15) Platinum Drying Unit, SWMU KMCC-007:

KMCC will provide either analytical data or a technically based argument supporting their contention that minor staining of the soil surrounding this unit is not a threat to either human health or the environment and is not a violation of State or Federal regulations. Included in this information shall be a discussion of how KMCC has revised housekeeping practices so as to eliminate or minimize further releases of waste material from this unit.

Since the LOU was issued, KMCC has removed the platinum sludge unit. This was done to make way for construction of the new boron and boron trichloride plant which now covers the area previously occupied by the pad. In preparation for plant construction, the pad was removed and disposed of at U. S. Ecology, Beatty, NV. Soils under the pad were collected and analyzed for <u>total</u> chromium. Chromium concentrations were below regulatory limits (see Attachment 8).

The TCLP results of material in the platinum sludge drying area collected in January 1993 showed that all metals were below the method detectable limit with the exception of chromium which had a concentration of 1.1 mg/l (see Attachment 8). Based on these results, any material that may have escaped from the unit was below regulatory levels.

16 & 17) Ponds AP-1 and AP-2, and Associated Transfer Lines and Ponds AP-3 and Associated Transfer Lines:

Provide a technical evaluation of the appropriateness of the placement and design criteria for wells used to monitor potential contaminant migration from these impoundments. Include a list of the analytes which are currently monitored for and the latest data. Reference to the facility wide hydrologic evaluation conducted in July of 1993 may be used to provide some or all of the requested information.

Because ammonium perchlorate is highly soluble in water, and due to the fact that the ammonium ion (NH^{4+}) may be rapidly transformed to nitrate by the action of indigenous microbes in the soil through the process of nitrification, the AP pond area should be evaluated for potential ground water impacts by nitrates.

Provide an evaluation of the potential reactivity of ammonium perchlorate in the ponds and in site soils.

Provide chromium concentration data for pond contents.

Provide a summary diagram/facility map which more accurately identifies the location of the AP impoundments and the other waste management units/areas of concern at the KMCC facility. Modification of Plate 3-2 of the KMCC final Phase I report would be acceptable for this purpose.

Issues exclusively concerning Total Dissolved Solids impacts to ground or surface water will continue to be addressed by NDEP's Bureau of Water Pollution Control.

Well Placement and Design/Pond Locations

Figure 1 in Attachment 9 shows the locations of the AP ponds. AP-2 is the only single lined pond in this area. It is monitored as part of the facility's NPDES program via monitor wells MW-17 (upgradient), MW-89 & MW-25 (down gradient). The upgradient and downgradient placement of the wells is dictated by the prevailing north-northwest direction of groundwater flow. All of the wells are constructed with 2-inch diameter PVC and contain 15 to 20 feet of screened interval across the water table. These wells are located in appropriate positions and are screened at proper depths to effectively monitor potential impact from AP-2. Under NPDES Permit #NV0000078, wells are monitored monthly for water level, pH, specific conductivity, sodium chloride and ammonium perchlorate. The 1996 analytical data are contained in Attachment 9.

Plate 1 in the "Plates" section is a facility-wide map displaying groundwater specific conductivity values collected in June, 1993. The AP ponds area is located within a pathway of elevated groundwater conductivity values originating upgradient from the ponds. Included in Attachment 9 is a graph depicting specific conductivity trends for the wells monitoring AP-2. Very little variation in groundwater conductivity is noted between the upgradient (M-17) and downgradient (M-89) wells.

In the fall of 1995, materials were transferred from AP-2 to a new double lined pond, AP-6. AP-2 has since been decommissioned. The liner was removed and disposed of at the Apex Industrial Waste Landfill.

The remaining ponds (AP-1, AP-3, AP-4, AP-5 and AP-6) are all double lined with a leak detection system between the liners. Because the leak detection system was installed as part of the original construction of the impoundments, no groundwater monitor wells were installed; however, upgradient and downgradient wells are present in the area. On occasion, leaks in the upper liners of some of these ponds have been detected and actions have been taken to repair these leaks.

KMCC's ultimate goal is to remove all of these impoundments via new technology. Installation of a new system that will ultimately eliminate the need for the ponds has begun.

Nitrate Sampling

Samples will be collected for nitrate analysis from three wells up and down gradient from the AP ponds. A discussion of the well locations and sampling rationale is provided in the Work Plan.

Reactivity Analysis

Low levels of ammonium perchlorate in the environment do not constitute a reactivity hazard. While no pertinent studies were found through a literature search, simple calculations show that if moderate levels (around one percent) of ammonium perchlorate in soil underwent instantaneous decomposition, the temperature increase would be negligible. This conclusion is consistent with work on the thermal destruction of ammonium perchlorate in sodium chloride, that found this process step to be safe up to at least 10 percent AP in sodium chloride. A discussion of the energy release potential of AP during decomposition is provided in Attachment 9.

AP in the ponds is in water and is not reactive.

Chromium Analysis

Ponds AP-1 and AP-2, receive solutions from the sodium perchlorate and ammonium perchlorate purification steps. Liquid from these impoundments is recycled back into the process from AP-3 which serves as a pump basin. On June 1-2, 1993, KMCC collected eight solids samples each from AP-1 and AP-2. The locations were randomly selected following guidelines outlined in Chapter 9 of Test Methods for Evaluating Solid Waste; SW-846 Third Edition. Analytical results are located in Attachment 9.

Statistical guidelines outlined in SW-846 Chapter 9 were also followed to determine concentrations of chromium. Calculations show that the average concentration for AP-1 was 3.13 mg/l with a confidence interval of +/- 0.45 mg/l. Results for AP-2 were 2.80+/-0.88 mg/l.

Liquid samples were also collected from the two ponds and analyzed for chromium. Results were both <0.12 mg/l.

18) Pond AP-4:

Reference items 16 & 17 above. The issue of potential chromium contamination is not applicable to this impoundment.

See response to Items 16 and 17 above.

19) Pond AP-5:

Reference items 16 & 17 above. The issue of potential chromium contamination is not applicable to this impoundment.

See response to items 16 and 17 above.

20) Pond C-1 and Associated Piping, SWMU KMCC-011:

This impoundment has the potential to impact ground water with elevated levels of total dissolved solids. With the exception of manganese which has a secondary MCL of 50 ug/L, no other compounds of concern appear to have been disposed here. The potential presence of manganese in site ground water should be evaluated (reference to the KMCC hydrologic evaluation of the site performed in July of 1993 is acceptable).

Issues exclusively concerning Total Dissolved Solids impacts to ground or surface water will continue to be addressed by NDEP's Bureau of Water Pollution Control. The planned closure of this impoundment should be coordinated with the BWPC as well.

In October, 1994, discharges to C-1 were stopped in order to allow pond contents to dry. Subsequently, the liner and dried pond sludges were characterized and sent to Silver State Landfill.

The location of Pond C-1 is shown on Plates 1 and 2 in the "Plates" section. The pond is downgradient from the manganese tailings pile, leach plant area, and electrolytic cells in Unit 6. While it was in operation, groundwater in four monitor wells upgradient and downgradient from Pond C-1 were monitored monthly for specific conductivity, pH, and chloride. These wells, M-19, M-22, M-35, and M-39, (shown on Plate 1) were constructed with 2-inch diameter PVC. Wells M-19, M-22, M-35 and M-39 contain 15 to 20 feet of screened intervals across the water table.

Plate 2 is an isopleth of total manganese concentration in groundwater beneath the facility. The presence of manganese in high concentrations (530 mg/l) is apparent in groundwater beneath Unit 6. This high concentration of manganese decreases dramatically downgradient in the vicinity of the impoundments (Well M-19 - 1.2 mg/l and Well M-39 - 0.05 mg/l). There does not appear to be a contribution of manganese to the groundwater due to operation of C-1.

Manganese is present naturally in the groundwater system due to the presence of eroded mafic igneous material in the alluvium. The June, 1993, sampling of groundwater from monitor well M-10, upgradient from the facility, found 0.7 mg/l manganese - 14 times greater than the secondary MCL.

A review of groundwater conductivity trends at the facility (Plate 1) show that impoundment C-1 does not appear to be contributing dissolved solids to the groundwater system. Well M-39, downgradient from the impoundments had a conductivity value of 10,900 as compared to 10,630 in the upgradient well (M-35). In addition, higher conductivity values not associated with the impoundments exist both east of the impoundments (Wells M-19 and CLD-4), and west of the impoundments (Wells M-34 and M-17).

21) Pond Mn-1 and Associated Piping:

Reference item 20 above. It is understood that closure of this impoundment is not anticipated by KMCC at this time.

The discussion contained in Item 20 above also applies to Pond Mn-1. This is a double lined pond and is still in service.

22) Pond WC-1 and Associated Piping, SWMU KMCC-015:

No further action is required at this time.

23) Pond WC-2 and Associated Piping:

Provide information regarding the clean up of apparently contaminated soil referred to in the KMCC Final Phase I Report.

The waste collection ponds at the north end of the KMCC facility collect water from the plant and hold it until it is transported to the on-site waste water treatment plant. The ponds will, over the seasons, develop a growth of living material, including algae, bacteria and insect populations. To combat this and to ensure a clear transportation line, sodium hypochlorite and several other Nalco water treatment products are injected into the water as it is transported from the pond to the plant. During the initial investigation to

determine the appropriate product to use, the Nalco containers were placed on the ground between the two ponds. There was a small amount of spillage from the fittings as they were installed, then later removed. As appropriate treatment chemicals and container sizes were selected, containment was installed to hold the small tanks. The treatment area now consists of a containment pad and three small 250 and 500 gallon tanks. The soil which was stained with the Nalco products was placed in the pond to get value from the remaining chemicals. These chemicals are non-hazardous.

24) Leach Beds, Associated Conveyance Facilities, and Mn Tailings Area, SWMU KMCC-009:

Provide a technically based argument (which may include existing TCLP and EP Toxicity data) to demonstrate that pre-1975 disposal of slurried and solid waste to these areas will not have the potential to impact ground water with manganese.

Provide a technical evaluation of the appropriateness of the placement and design criteria for wells used to monitor potential contaminant migration from these waste management units. Include a list of the analytes which are currently monitored for and the latest monitoring data. Reference to the facility wide hydrologic evaluation conducted in July of 1993 may be used to provide some or all of the requested information.

Monitor wells in the vicinity of the former leach beds show that there is no significant manganese impact to the ground water in the vicinity of the tailings pile or former leach beds. In addition, TCLP data collected in 1990 and 1993 from the existing manganese tailings area show that the leaching potential of metals from the pile is small (see Attachment 10). While no TCLP data is available from the former leach bed tails, neither the process nor the material has changed in a manner that would affect the chemical leachability of the tails.

The current manganese tailings area is shown on Plate 2. This area is bounded upgradient by monitor Wells M-31, M-32, and M-33, and downgradient by monitor Wells M-34 and M-35. A comparison of the June, 1993, groundwater manganese concentrations shows that manganese values in the groundwater are lower downgradient from the tailings area than upgradient from it.

The former manganese tailings areas are also shown on Plate 2. The highest concentration of manganese downgradient from the former tailings area west of the current tailings area is 0.9 mg/l in Well M-75. This value is slightly above that of the background Well M-10 (0.7 mg/l). The eastern portion of the former tailings area is north of Unit 6. A comparison of manganese values downgradient from the area (Well M-77) to upgradient (Well M-28),

shows an increase in groundwater manganese concentrations. This increase may be due to impact from the manganese originating from beneath Unit 6.

Wells M-19, M-22, M-35, and M-39 are monitored monthly for manganese, pH, specific conductivity, and water elevation. These wells are downgradient from the current manganese tailings area and are utilized for monitoring of impoundment C-1. No specific wells are currently designated for monitoring of the tailings area. However, the above wells would identify impacts caused by the tailings if they were to occur.

25) Process Hardware Storage Area, SWMU KMCC-001:

No further action is required at this time.

26) Trash Storage Area:

No further action is required at this time.

27) PCB Storage Area, SWMU KMCC-003:

No further action is required at this time.

28) Hazardous Waste Storage Area, SWMU KMCC-004

Provide documentation of the remediation of hydrocarbon contaminated soil observed during Kleinfelder's site reconnaissance. This documentation should include confirmatory sampling and analysis using EPA Method 8015 modified for petroleum hydrocarbons.

The oil stains identified by Kleinfelder were associated with the used oil storage area and were non-hazardous.

As part of the project to take New P-2 pond out of service, the hazardous waste storage pad and adjoining waste oil storage pad were relocated to make way for installation of two above ground tanks. During installation of the tanks, the storage pad and surrounding soils were removed to a depth of 4½ feet. Testing of the soil showed elevated levels of TPH. These soils and pad materials were disposed of at the Silver State disposal site near APEX, NV. A composite sample taken from several locations in the bottom of the excavation showed that TPH values were non-detect. (see Attachment 11).

29) Solid Waste Dumpsters, SWMU KMCC-008

No further action is required at this time.

30) Ammonium Perchlorate Area - Pad 35, SWMU KMCC-0017:

No further action is required at this time.

31) Drum Crushing and Recycling Area, SWMU KMCC-018:

Provide documentation of the remediation of minor soil staining in this area.

Provide information regarding improvements in area operating procedures for the removal of residual materials from drums prior to storage and crushing so as to minimize or eliminate spillage of waste materials to the ground.

The drum crushing station located east of the new D-1 building is used to crush drums from the AP operation. Procedures are in place to clean the residue from the drums before they are crushed. These are included as Attachment 12. Procedures also include management review of the drums prior to transporting them to the crushing area.

Unassociated staining of the soil close to the crushing area was mentioned in the KMCC Phase 1 report. The minor staining was attributed to ammonium perchlorate transportation or material handling. The minor soil staining was shoveled up and put into drums for recovery of the ammonium perchlorate value.

32) Ground Water Remediation Unit, SWMU KMCC-019:

Provide information regarding improvements in area operating procedures for the purpose of minimizing or eliminating spillage of waste materials to the ground. Document any modifications made to the remediation unit for this purpose.

In accordance with a Consent Order in 1987 between KMCC and the Nevada Division of Environmental Protection (NDEP), KMCC implemented a remediation program to remove hexavalent chromium from groundwater at the site. Over the last several years, modifications have been made to minimize spills of treated water from the remediation unit and discharge lines. These modifications focused on the groundwater treatment system and the recharge trenches.

An evaluation of the remediation program in September 1993, indicated a decrease in the permeability of the recharge trench. This was caused by periodic process upsets which allowed treated water containing soluble iron to carry over into the treatment system discharge. While the process upsets did not result in the treatment criteria being exceeded, the iron precipitated in the trench and reduced its permeability. This caused treated water to periodically rise in the recharge trench stand pipes and pool in the area.

KMCC evaluated the necessity of a polishing filter to protect the recharge system from the iron precipitate but determined that improvements to the current settling tank would be as effective. The settling improvements included modifying the coagulating polymer, altering the process to introduce a previously precipitated iron particle to act as a seed for incoming iron to precipitate on, and maintaining better pH control. These modifications appear successful at eliminating iron precipitate in the treatment discharge to the recharge trench.

The recharge trench which had become plugged by the iron precipitate was renovated in 1994. The infiltration gravel was removed and replaced with clean gravel. The removed gravel was disposed of at the Apex Industrial Waste Landfill. The renovated trench has performed well since that time.

When the remediation program was started in 1987, the volume of treated groundwater ranged from 100 to 120 gallons per minute (G.P.M.). Today, groundwater volume ranges from 35 to 50 G.P.M. This is due primarily to cessation of the use of the unlined Beta ditch which is upgradient of the groundwater recovery system.

Due to the diminished flow of groundwater, the treatment system required frequent on and off cycling. The intermittent operation caused a number of mechanical failures resulting in the treated water spilling into the containment area and surrounding soils. The treatment system was modified to allow for a more continuous operation by recycling a portion of the treated water back to the treatment process. This has significantly reduced mechanical failure rate and the subsequent spillage.

33) Sodium Perchlorate Platinum By-Product filter, SWMU KMCC-021.

KMCC will provide a written statement describing the repair of floor cracks in this unit. *Beyond this,* no further action is required at this time.

The floor inside the bermed area around the filter has been coated with a Chevron industrial membrane material that provides a continuous cover over the floor. This fully covers any cracks that may be present in the underlying concrete.

34) Former Manganese Tailings Area, SWMU KMCC-022:

Reference item 24 above.

See response to Item 24.

35) Truck Emptying/Dump Site, SWMU KMCC-025:

Provide a sampling plan for assessment/characterization of "unknown" waste materials disposed in this area.

This item is addressed in the Work Plan.

36-38) Former Satellite Accumulation Points:

No further action is required at this time.

39) Satellite Accumulation Point - AP Maintenance Shop, SWMU KMCC-29:

Provide documentation of remediation of minor spill noted in the Phase I Report. This should include information regarding the association between the spill and the 1,1,1-trichloroethane stored in this area.

Provide information regarding improvements in area operating procedures for the purpose of minimizing or eliminating spillage of waste materials.

A parts washer is used at the AP Maintenance shop to clean oily debris from parts undergoing repair. Waste from the parts washer, if containing 1,1,1 TCA, was sent to a hazardous waste disposal site for proper disposal. Non-hazardous cleaning fluids are now used for parts washing and the use of 1,1,1 TCA has been eliminated.

The small amount of soil staining near the drum of parts washer was not associated with the 1,1,1 TCA drum. It was the result of minor spillage from a used oil drum also in the area. Visibly stained soil was picked up and placed in a drum. This drum was tested and found fit for disposal at Environmental Technologies soil/oil treatment farm. Subsequent tests indicate that some elevated TPH values are still present. Additional soil will be removed and results provided to the NDEP.

40) PCB Transformer Spill:

No further action is required at this time.

41) Unit 1 Tenant Stains:

Provide documentation of remediation of hydrocarbon impacted soil in this area.

Visibly stained soil immediately to the north of Unit 1 was removed and disposed of at Environmental Technologies soil farm near Apex, NV. Confirmatory sampling indicates some areas of elevated TPH are still present. These areas will be cleaned again and results provided to the NDEP.

42) Unit 2 Salt Redler:

No further action is required at this time.

43) Unit 4 and 5 Basements:

Provide a discussion concerning the feasibility of characterization and removal and/or stabilization of residual chromium contamination in the unsaturated zone beneath these units.

Provide, as a stand alone document, a full re-evaluation of the effectiveness of the chromium recovery system. Included should be such items as aquifer properties and characteristics, ground water flow patterns, capture and reinjection zones, influent concentration trends, etc. A discussion of the transport and fate of chromium within the shallow aquifer and within the vadose zone beneath units 4 & 5 should also be included in this document.

Recovery System Reevaluation

A report titled Groundwater Interception System Evaluation Report, Henderson, Nevada Facility prepared by the Kerr-McGee Hydrology Department was submitted to NDEP on September 15, 1993. The report concluded that four additional intercept wells were needed to improve the recovery performance of the system. These wells were installed and put into service in July, 1994.

In addition (as discussed in Item 32 above), studies of the infiltration beds showed that they had plugged off due to iron oxide precipitation in the voids. The entire trench system was excavated and renovated in October, 1994. The treatment system itself has been upgraded to reduce the build up of iron in the system and prevent future plugging of the infiltration galleries.

Based on the latest monitoring results, the system is effectively capturing and treating the groundwater chromium plume. Analytical results are reported semi-annually to the NDEP.

Removal or In-situ Stabilization of Chrome in Contaminated Soil

Unit 5 houses the sodium perchlorate production process and part of the manganese dioxide process. Any characterization or stabilization/removal of soils from beneath this unit would require the shutdown of these two processes for an extended period of time.

Unit 4, while currently inactive, is being held in reserve for possible use at a future date. Removal of soil from beneath this building would require

destruction of the building if significant quantities had to be removed. Traditional stabilization technologies reviewed such as injection or mixing of reducing agents would ultimately add additional TDS to the groundwater. Other technologies reviewed have not been proven on a field scale to date.

As mentioned above, the groundwater remediation system downgradient of these units is effectively capturing and treating the chromium.

44) Unit 6 Basement:

Provide a technically based discussion of the potential impacts to ground water from manganese bearing solutions and from residual high/low pH contamination in the vadose zone which may have resulted from leakage of the basement of this unit. A discussion is required of the engineering features, leak detection system(s), and periodic maintenance of the basement liner and any other appropriate method of addressing the issue of potential on-going releases. Ground water monitoring data should be used to document impacts (or lack thereof) from residual contamination beneath the unit.

In response to an Administrative Order issued 8-16-86, the basement liner is inspected and repaired on a regular basis. A recent history of these repairs is included as Attachment 13. Repairs were made not only to any holes that were discovered in the liner, but to indentations as well. As a result, the majority of the "holes repaired" noted on the summary sheet were not actual penetrations of the liner. It should also be noted that there is typically no standing water on the liner. Any drips onto the liner are directed to a sump and recovered.

Well M-29 is located in the basement of the Unit 6 building. Groundwater manganese, specific conductivity, and pH values were collected and recorded for this well as part of the facility-wide sampling program in June, 1993. Well M-29 contained the highest manganese concentration (530 mg/L) noted during the sampling program. This information is shown on Plate 2. This well also contained the lowest pH recorded for groundwater beneath the facility. This value (6.39) is depicted on Plate 3.

The elevated manganese and relatively low pH beneath Unit 6 are due to past, historic leaks of manganese sulfate solution from the electrolytic cells housed in the building. The groundwater pH trend emanating from Unit 6 shows a rapid neutralization downgradient from the building (see Plate 3). Likewise, manganese concentrations are also reduced markedly in a downgradient direction. Manganese is most soluble as a sulfate, but is relatively insoluble as an oxide or hydroxide. The manganese sulfate reacts with calcium in the vadose zone to produce calcium sulfate (gypsum) which precipitates. The residual manganese is apparently oxidized, drops out of solution, and is immobilized downgradient from the building. This rapid

diminution of manganese in the groundwater downgradient from Unit 6 is readily apparent in the trends presented on Plate 2.

45) Diesel Storage Tank:

Within 180 days of receipt of this letter of understanding, KMCC will provide the Division with a work plan designed to address visible and potential hydrocarbon contamination of soil and/or ground water in this area. If KMCC decides to renovate the tank, integrity testing (including some form of non-destructive testing of the tank bottom) will be performed. If KMCC decides to discontinue tank use, the tank will be removed and the area assessed for contamination.

KMCC has removed the above-ground diesel storage tank. Following discussion with NDEP, the diesel tank area assessment plan will be included in the Phase II Work Plan and will be implemented when approved by NDEP as part of the Phase II investigation.

46) Former Old Main Cooling Tower and Recirculation Lines:

No further action is required at this time.

47) Leach Plant Area Manganese Ore Piles:

Provide data/documentation from industrial hygiene studies to on-site workers and off-site residents from exposure to manganese ore and/or manganese compounds.

Dust samples are collected periodically in the manganese leach plant as part of the facility's industrial hygiene program. From these surveys, eight-hour time weighted averages for dust exposure are developed. In 1995, the average exposures were:

Operator A	**1.74 mg/M^3 total dust**
Maintenance Technician	**0.058 mg/M^3 total dust**

Operator A is directly involved in turning the roaster piles and has the greatest potential for exposure to dust. The Maintenance Technician results are more typical of dust exposures in the general area of the leach plant.

No such testing has been conducted off-site.

48) Leach Plant Anolyte Tanks:

Provide a technical evaluation of the appropriateness of the placement and design criteria for wells used to monitor potential manganese and pH contaminant migration from this area. Include a list of the analytes which are currently

monitored for and the latest data. Reference to the facility wide hydrologic evaluation conducted in July of 1993 may be used to provide some or all of the requested information.

The manganese leach plant area containing the various tanks and lines is shown on Plates 1, 2 and 3. The leach plant area is bounded on the downgradient portion by monitor wells M-31, M-32, and M-33, and upgradient by Wells M-11, M-28, and M-29. Each well is screened across the water table for effective water level measurement and monitoring purposes. All the wells except M-11 are constructed with 2-inch PVC. Well M-11 is 5-inch diameter steel. The screened interval in the wells ranges from 10 to 20 feet in length. The upgradient and downgradient placement of the wells is based on the prevailing north-northwest direction of groundwater flow.

Although the well network is not currently sampled as part of a required monitoring program, certain parameters are collected on a monthly basis from the wells. Upgradient wells M-11 and M-28, and downgradient wells M-31 and M-32, are monitored for water level, pH, and specific conductivity. Well M-32 is also monitored for manganese. The 1996 analytical data are contained in Attachment 14.

Plate 2 shows the manganese concentrations in groundwater sampled from these wells in the June 1993 sampling event. Well M-29, upgradient from the leach plant area and underneath Unit 6, contained a manganese concentration of 530 mg/L. This elevated manganese value, which trends downgradient to the north-northwest toward the leach plant area and Well M-32, is related to historic releases from Unit 6. Well M-32, directly downgradient from the leach plant area, contained a manganese concentration of 9.4 mg/L. The reduced concentration of manganese downgradient from the leach plant area indicates that the leach plant apparently has not contributed manganese to the groundwater. Based on the 1996 analytical data for M-32, manganese concentrations have declined since the 1993 sampling.

Plate 3 displays the groundwater pH trends at the facility based on the June 1993 sampling event. These data for the upgradient and downgradient wells are presented in graphical form in Attachment 14. A review of these data indicate that no identifiable impact to the groundwater system from leach plant activity is apparent.

49) Leach Plant Area Sulfuric Acid Storage Tank:

Reference item 48 above.

See response to Item 48.

50) Leach Plant Area Leach Tanks:

Reference item 48 above.

See response to Item 48.

51) Leach Plant Area Transfer Lines:

Reference item 48 above.

See response to Item 48.

52) AP Plant Area Screening Building, Dryer Building and Associated Sump:

Provide documentation of remediation of "minor white staining" from ammonium perchlorate wash downs and modifications to area procedures to mitigate or eliminate further releases of waste materials.

Modifications to this area include installation of secondary containment around the sump, and a collection ditch completely around the building. This prevents the release of material from the building to the surrounding soil. The minor white staining was cleaned up and the material recycled for recovery of the AP value.

53) AP Plant Area Tank Farm:

Provide documentation of remediation of small visible staining and repair or replacement of the concrete pad.

Provide a discussion of procedural changes intended to mitigate or eliminate further releases of waste materials.

The AP Plant tank farm area has been renovated by replacing old concrete around the tanks and installing curbs to prevent spills from reaching the soil. Any spilled or leaking material is captured by a sump and returned to the process to recover ammonium perchlorate value. These renovations have eliminated releases of ammonium perchlorate to soil surrounding the tank farm.

The small stained areas were picked up and recycled for recovery of AP values.

54) AP Plant Area Change House/Laboratory Septic Tank:

Provide a work plan for assessment/characterization of potential contamination related to waste chemical disposal via the laboratory septic system.

This item is addressed in the Work Plan.

55) Area Affected by July 1990 Fire:

Provide documentation of the remediation of the impacted area including specific data (e.g. waste volume, etc.) regarding material disposal at U.S. Ecology.

In July, 1990, a fire occurred on AP storage pad 24. The fire was extinguished with water. The ammonium perchlorate not destroyed in the fire was reclaimed in the AP plant. The nature of ammonium perchlorate decomposition leaves negligible residue as all the decomposition products are gases; NOx, Cl_2, HCl and 0_2. The drums involved in the fire were washed at the tank farm to recover the ammonium perchlorate value, then crushed. The burned asphalt and soil surrounding the area, consisting of about 30 yd^3, was removed and sent to US Ecology.

56) AP Plant Area Old Building D-1 -- Washdown:

Provide a technically based discussion concerning the environmental fate of ammonium perchlorate in site soils (see also the requirements of item #52 above).

A literature search of available information on the environmental fate of ammonium perchlorate (AP) in soils turned up very little information. One report titled Biodegradation of Rocket Propellant Waste, Ammonium Perchlorate, by Dr. Syed M. Z. Naqvi and Dr. Abdul Latif was issued on June 23, 1975, under a NASA contract (NASA-CR-142965).

A second report (NASA-CR-148323) under the same title by the same authors was issued on July 3, 1976. The former report discusses the impact of AP on various plants and micro-organisms and presents initial data on a long-term impact of AP in soils. The later report also discusses results of additional tests to determine the effects of AP on selected plants and micro-organisms. It also provides results of tests on the long-term impacts of AP on soil chemistry started in the first report.

The soil tests were run for 22 months. General conclusions regarding the impact of AP on soil chemistry are:

1) **No statistically significant difference was obtained in chloride contents of soil which was analyzed after 12, 16, and 22 months of initial treatment.**

2) **No change in the nitrogen contents of soil occurred anytime after the initial treatment with AP.**

3) There was no significant difference in pH levels after 22 months.

4) Soil chemistry is not affected by the treatment of ammonium perchlorate.

Other conclusions related to plant germination and growth show that at the 55 gAP/m^2 concentration in soil level (which was the highest concentration tested) shows some toxicity to selected plant species. However, micro-organisms were unaffected.

57 & 58) AP Plant Area New Building D-1 -- Washdown and AP Plant Transfer Lines to Sodium Chlorate Process:

No further action is required at this time.

59) Storm Sewer System:

Provide documentation of system flow/integrity investigations as part of a technical evaluation concerning the potential for soil and/or ground water contamination resulting from waste disposal and storm water discharges through the storm sewer system.

Provide a technical evaluation of the appropriateness of the placement and design criteria for wells used to monitor potential contaminant migration from the storm sewer system. Include a list of the analytes which are currently monitored for and the latest data. Reference to the facility wide hydrologic evaluation conducted in July of 1993 may be used to provide some or all of the requested information.

Attachment 15 contains a "Declaration of Observation" from Alan Gaddy regarding his observations of flows in the storm sewer system.

A general configuration of the storm sewer system and the acid drain system is shown on Plates 1 and 3. Neither drain system has a specific monitor well network designated for monitoring potential impact to the groundwater; however, numerous monitor wells are located throughout the facility in upgradient and downgradient positions to segments of the drain systems. Based on the configurations of groundwater pH and specific conductivity trends at the facility, there are no apparent point sources of impact directly attributable to the drain systems. The low pH and high specific conductivity values noted on Plates 1 and 3 are related to past leaks and spills into the subsurface from operations within the Unit buildings 4, 5, and 6 and not from the storm sewer or acid drain systems. The existing placement of monitor wells at the facility should be sufficient to detect any point source impact emanating from the drain systems.

60) Acid Drain System:

Provide a technically based evaluation of the potential for soil and/or ground water contamination resulting from historic waste disposal through the acid drain system.

Provide a technical evaluation of the appropriateness of the placement and design criteria for wells used to monitor potential contaminant migration from the acid system. Include a list of the analytes which are currently monitored for and the latest data. Reference to the facility wide hydrologic evaluation conducted in July of 1993 may be used to provide some or all of the requested information.

See response to Item 59. All acid drains in operating portions of this plant have been plugged and are no longer in use. The existing placement of monitor wells at the facility should be sufficient to detect any point source impact emanating from the drain systems.

61) Old Sodium Chlorate Plant Decommissioning:

No further action is required at this time.

62) State Industries, Inc. Site, Including Impoundments and Catch Basin:

Provide a work plan for the complete assessment/ characterization of the State Industries surface impoundments. Analytes should be selected based upon known or suspected waste streams disposed to these ponds and should include TCLP metals, volatile organic compounds (if applicable), TPH (if applicable), and pH.

KMC has been working with State Industries to determine the appropriate action on the surface impoundments. Samples were collected from the east impoundment in March, 1994. Additional samples were collected on January 3 & 4, 1996, which included both the east impoundment and the west impoundments. Samples were collected by Western Technologies, Inc. (WTI). Results are presented in a report prepared by WTI (see Attachment 16). These results indicate that metal and other compound concentrations are low.

63) J. B. Kelley, Inc. Trucking Site:

Provide closure and/or remediation documentation for the underground storage tanks formerly located at this site. Include data from the ground water monitor wells installed by KMCC to evaluate potential hydrocarbon contamination.

Provide an assessment plan to characterize areas potentially impacted by truck washing rinsate and liquids and sludges present in the concrete vaults at this site.

An investigation plan for the concrete vaults is presented in the Work Plan.

J. B. Kelley, Inc. previously leased a portion of Kerr-McGee Chemical Corporation (KMCC) property to the north of the Unit 1 and 2 buildings. Kelley conducted trucking-related activities on the property from September 1986 to June 1991 which included truck washing, fueling, oil changes, and minor repair work. Trucks were fueled on-site from a 10,000 gallon underground diesel storage tank. Waste oil was stored temporarily in a 600 gallon underground tank.

In June, 1991, all on-site fueling operations were discontinued and the diesel and waste oil tanks were removed. The tank closure activities were performed for J. B. Kelley by an environmental contractor. At the time of removal, both tanks were found to have released hydrocarbons to the subsurface. Hydrocarbon-impacted soils surrounding the tanks were subsequently excavated, and Clark County approved the closure.

On May 4-6, 1993, KMCC performed a soil and groundwater assessment of the J. B. Kelley site to evaluate groundwater quality conditions. The work performed included a comprehensive soil boring program, monitor well installation, and monitor well sampling.

Two soil borings were drilled at the locations shown on Figure 2. Soil boring M-92 is located upgradient to the south from the underground storage tank excavations. Soil boring M-93 is located approximately 100 feet downgradient from the diesel tank excavation. Soils were logged according to the Unified Soil Classification System. Soil lithology, photoionization detector (PID) response, depth to groundwater, and the presence or absence of hydrocarbon odor were noted. The soil boring information is presented on soil boring log forms in Attachment 17.

Groundwater monitor wells were installed in each of the soil borings. These wells were constructed of 2-inch diameter Schedule 40 PVC. All casing and screen joints were flush-threaded and assembled without the use of cementing compounds. Ten foot screened sections with 0.010 inch slot size were installed in each well. Number 16 grade silica sand was utilized for filter pack around the well screens. This filter pack material extends at least two feet above each screen and is topped by a minimum of two feet of hydrated bentonite pellets.

A cement-bentonite grout was emplaced above the bentonite pellet seal. Well M-92 was completed with a 3 foot by 3 foot concrete pad and steel casing protector. Well M-93 was completed as a flush-mount well. Following well completion, the wells were developed by bailing to remove fines from the natural formation. All information relating to well construction and development is presented in Attachment 17.

Provide documentation of KMCC's efforts to work with the tenant to further assess and characterize contamination which may be present at this location.

Mr. Vohs' lease terminated in 1995. KMCC has hauled the remaining trash and debris from the site to the Silver State Landfill at Apex. The area is now vacant and free of trash and debris.

68) Southern Nevada Auto Parts Site:

Provide documentation of KMCC's efforts to work with the tenant to further assess and characterize contamination which may be present at this location.

In mid-January 1993, KMCC requested information from Nevada Recycling Corporation, the current lessee, regarding actions being taken to address observations made the Phase I ECA report. They responded by stating that they have made efforts to employ practices and make improvements that prevent contamination of the property. These include, pouring many yards of cement so that the processing of cars is handled on concrete, draining fluids from the cars on the concrete processing pads before cars are placed in the yard for customer access, and eliminating the crushing of cars on the property.

KMCC representatives co[redacted]mber 22, 1993 to follow up on progress made to c[redacted]made efforts to ensure that automotive fluids do[redacted]mises. Collected fluids were contained in tanks f[redacted]e recycled. As cars are removed from the site fo[redacted]a is cleaned of debris. Other visits have also bee[redacted]ices at the site.

KMCC has notified Nevada Recycling of lease termination, effective December, 1996, at which time all cars and equipment will be removed.

69) Dillon Potter Site:

No further action is required at this time.

List of Attachments

Attachment 1	LOU Item 1	Soil Sample Results from DataChem
Attachment 2	LOU Item 3	Particulate Dispersion Modeling
Attachment 3	LOU Item 4	Hardesty Chemical
Attachment 4	LOU Item 9	New P-2 Construction Drawing
Attachment 5	LOU Item 10	Hazardous Waste Landfill Documentation
Attachment 6	LOU Item 11	Old Drying Pad Cleanup Observations
Attachment 7	LOU Item 14	Pond P-1 Closure Documentation
Attachment 8	LOU Item 15	Platinum Drying Unit Documentation
Attachment 9	LOU Items 16 & 17	AP-1, 2, & 3 Documentation
Attachment 10	LOU Item 24	Leach Bed Data
Attachment 11	LOU Item 28	Hazardous Waste Storage Area Soil Documentation
Attachment 12	LOU Item 31	Drum Crushing Procedures
Attachment 13	LOU Item 44	Unit 6 Repair Records
Attachment 14	LOU Item 48	Leach Plant Analyte Tanks
Attachment 15	LOU Item 59	Storm Sewer System Declaration of Observation
Attachment 16	LOU Item 62	State Industries Data
Attachment 17	LOU Item 63	J. B. Kelly Documentation
Plates		

1

ATTACHMENT 1

LOU ITEM 1

SOIL SAMPLE RESULTS FROM DATACHEM

DataChem
ANALYTICAL REQUEST FORM

Purchase Order No. SD 87-502

Date 10-23-87

Corporate/Agency Name KERR McGEE CHEMICAL CORP

Address PO BOX 55, LAKE MEAD DR
HENDERSON NV 89015

Person to Contact SM CROWLEY Telephone (702) 565-8901

Billing Address SAME

Sample Collection

Sampling Site HENDERSON - NORTH PROPERTY

Industrial Process —

Date of Collection — Time Collected

Date of Sample Shipment to DataChem 10-23-87

Request for Analyses

Data Chem Use Only	Sample Field Number	Type*	Sample Volume (Liters)	Analyses Requested
EG 2981	HOLE #1 1-2ft	Soil	1 Bag	pH, NACE Test, Tot EP Tox, Total Carbon Profile, Reactivity
	" 3-4ft	"	"	pH, EP Metals
	" 5-6ft	"	"	pH, EP Metals
	" 7-8ft	"	"	pH, EP Metals
	" 9-10ft	"	"	pH, EP Metals
	" 11-12ft	"	"	pH, EP Metals
	" 13-14ft	"	"	pH, EP Metals
	" 15-16ft	"	"	pH, EP Metals
EG 2982	Hole #2 Surface	"	"	pH, NACE Test, Tot EP Tox, Total Carbon Profile, Reactivity
	" 1-2	"	"	pH, EP Metals
	" 3-4	"	"	pH, EP Metals
EG 2983	Iron Oxide	Solid	"	pH, NACE Test, Tot EP Tox, Total H_2O Profile, Reactivity

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

Comments Please call for any questions about Samples

Possible Interfering Compounds —

Requested by Susan M CROWLEY

520 Wakara Way / Salt Lake City, Utah 84108 / 1-800-321-6451 or 801-583-3600

DataChem

November 11, 1987

ANALYTICAL REPORT

SUBMITTED TO: Susan Crowley

SUBMITTED BY: Brian F. Hammond

REFERENCE DATA:

Analysis of: Pesticides

Identification No: S87-0673

Sample(s): 3 Analyses: 12

Laboratory No.: EG 2981 through EG 2983

The samples were extracted and prepared for analysis using EPA 608.

The analysis was performed on a Varian Model 3700 gas chromatograph equipped with an electron capture detector. A 6' x 2mm I.D. glass column packed with 1.5% SP-2250/1.95% SP-2401 on 100/120 mesh Supelcoport was used at an isothermal temperature of 190 °C. Nitrogen was used as the carrier gas.

The limits of detection are as follows:

Analyte	LOD µg/L
Endrin	.01
Lindane (gamma-BHC)	.01
Methoxychlor	.1
Toxaphene	1.

The results are tabulated on the following page(s).

Brian F. Hammond
Brian F. Hammond

Rand Potter/alp
Rand Potter

520 Wakara Way, Research Park
Salt Lake City, Utah 84108

✓K353

DataChem

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 1
Part 1 of 1

Date November 13, 1987
Agency Identification Number S87-0673-BC
Account No. 01018

Kerr-McGee Corporation
Lake Mead Drive
P.O. Box 55
Henderson, NV 89015
Attention: Susan Crowley

Telephone (702) 565-8901

Sampling Collection and Shipment

Sampling Site Henderson-North Prop. Date of Collection _____

Date Samples Received at DataChem October 29, 1987

Analysis

Method of Analysis GCEC

Date(s) of Analysis November 07, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Endrin ug/L	Lindane ug/L	Methoxychlor ug/L	Toxaphene ug/L				
HOLE #1	EG 2981	SOIL	ND*	ND*	ND*	ND*				
HOLE #2 SUR	EG 2982	SOIL	ND*	ND*	ND*	ND*				
IRON OXIDE	EG 2983	SOIL	ND*	ND*	ND*	ND*				
* Limit of Detection			.01	.01	.1	1.				

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

UBTL

DataChem was formerly known as UBTL

Analyst: Brian Hammond

Reviewer: Ellen E. Jenkins

Laboratory Supervisor: Ellen Jenkins

DataChem

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 1
Part 1 of 1

Date November 13, 1987
Agency Identification Number S87-0673-CC
Account No. 01018

Kerr-McGee Corporation
Lake Mead Drive
P.O. Box 55
Henderson, NV 89015
Attention: Susan Crowley

Telephone (702) 565-8901

Sampling Collection and Shipment

Sampling Site Henderson-North Prop. Date of Collection _____

Date Samples Received at DataChem October 29, 1987

Analysis

Method of Analysis GCEC

Date(s) of Analysis Nov 9, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	2,4-D ug/L	2,4,5-TP Silvex ug/L						
HOLE #1	EG 2981	SOIL	ND*	ND*						
HOLE #2 SUR	EG 2982	SOIL	ND*	ND*						
IRON OXIDE	EG 2983	SOIL	ND*	ND*						
* Limit of Detection			.1	.1						

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

UBTL

DataChem was formerly known as UBTL

Analyst: Brian Hammond

Reviewer: Ellen Jenkins

Laboratory Supervisor: Ellen Jenkins

DataChem

November 12, 1987

ANALYTICAL REPORT

SUBMITTED TO: Susan Crowley

SUBMITTED BY: Brian F. Hammond

REFERENCE DATA:

Analysis of: 2,4-D, 2,4,5-TP (Silvex)

Identification No: S87-0673-CC

Sample(s): 3 Analyses: 6

Laboratory No.: EG 2981 through EG 2983

The samples were extracted and prepared for analysis using EPA 615.

The analysis was performed on a Varian Model 3700 gas chromatograph equipped with an electron capture detector. A 6' x 2mm I.D. glass column packed with 1.5% SP-2250/1.95% SP-2401 on 100/120 mesh Supelcoport was used at an isothermal temperture of 190 °C. Nitrogen was used as the carrier gas.

The limits of detection are as follows:

Analyte	LOD µg/L
2,4-D	.1
2,4,5-TP (Silvex)	.1

The results are tabulated on the following page(s).

Brian Hammond
Brian F. Hammond

Rand Potter/slp
Rand Potter

520 Wakara Way, Research Park
Salt Lake City, Utah 84108

CHAIN OF CUSTODY RECORD

Date Extract _____
Date Digested: _____
Date Analyzed: _____

Account:	DataChem Set ID:	Sponsor:	SPLITS					
3018/1018	587-0673	Kerr McGee Chemical		pH, NACE, Reactivity, TOC	EP TOX metals Pest. & Herb.			

Field Comment:

Date Sampled	Field ID Number	DataChem Sample Number(s)	Sample Matrix	Number of Containers	Remarks
	Hole #1 1-2 Ft.	EG 2981	Soil	2	1-pH, NACE Test, Reactivity, TOC; 1- Pest. & Herb. EP TOX Metals
	Hole #2 Surf.	2982	Soil	2	" "
	Iron Oxide	2983	Soil	2	" "

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
UPS	10/28/87 0930	Todd Schumacher	Todd Schumacher	10/29/87 1400	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Final Disposition: _____ Signature: _____

DataChem
ANALYTICAL REQUEST FORM

Purchase Order No. _____

Date _____

Corporate/Agency Name KERR MCGEE CHEMICAL

Address P.O. BOX 55 LAKE MEAD DR

HENDERSON NV 89015

Person to Contact SEAN CROWLEY Telephone (702) 565-8801

Billing Address SAME

Sample Collection

Sampling Site HENDERSON NORTH PROPERTY

Industrial Process —

Date of Collection _____ Time Collected _____

Date of Sample Shipment to DataChem 10-23-87

Request for Analyses

Data Chem Use Only	Sample Field Number	Type*	Sample Volume (Liters)	Analyses Requested
	HOLE #1 1-2ft	Soil	250g	pH NACE Test, Tot EP Tox Profile, Total Carbon
EG 2984	3-4ft	"	"	pH, EP Metals
85	5-6ft	"	"	pH, EP Metals
86	7-8ft	"	"	pH EP Metals
87	9-10ft	"	"	pH EP Metals
88	11-12ft	"	"	pH EP Metals
89	13-14ft	"	"	pH EP Metals
↓ 90	15-16ft	"	"	pH EP Metals, Total Carbon
	Hole #2 Surface	"	"	pH NACE Test, Tot EP Tox Profile, Karsh Suite
EG 2991	1-2	"	"	pH EP Metals
↓ 92	3-4	"	"	pH EP Metals
	Iron oxide	Solid	"	pH NACE Test, Tot EP Tox Profile, Total H2O

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

Comments Please call for any questions about Samples

Possible Interfering Compounds _____

Requested by SEAN M CROWLEY

520 Wakara Way / Salt Lake City, Utah 84108 / 1-800-321-6451 or 801-583-3600

DataChem

ENVIRONMENTAL WASTE REPORT (EP-TOX)

Date November 13, 1987
Agency Identification Number S87-0674
Account No. 03018

Kerr-McGee Corporation
Lake Mead Drive
P.O. Box 55
Henderson, NV 89015
Attention: Susan Crowley

Telephone (702) 565-8901

Sampling Collection and Shipment

Sampling Site Henderson-North Prop. Date of Collection _____

Date Samples Received at DataChem October 29, 1987

Analytical Results

Parameter Name / Analysis Date / Units / Method / Prep Method	Field Number / Lab Number	HOLE1 3-4 EG 2984	HOLE1 5-6 EG 2985	HOLE1 7-8 EG 2986	HOLE1 9-10 EG 2987	HOLE1 11-12 EG 2988	HOLE1 13-14 EG 2989	HOLE1 15-16 EG 2990	HOLE2 1-2 EG 2991
Arsenic (As) 11/09/1987 mg/L 6010 [1] 1310 [1]		ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
Barium (Ba) 11/09/1987 mg/L 6010 [1] 1310 [1]		0.16	0.95	0.48	0.95	0.66	1.0	0.90	0.10
Cadmium (Cd) 11/09/1987 mg/L 6010 [1] 1310 [1]		ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
Chromium (Cr) 11/09/1987 mg/L 6010 [1] 1310 [1]		ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
Lead (Pb) 11/09/1987 mg/L 6010 [1] 1310 [1]		ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
Mercury (Hg) 11/10/1987 mg/L 7470 [1] 1310 [1]		ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
Selenium (Se) 11/09/1987 mg/L 6010 [1] 1310 [1]		ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
Silver (Ag) 11/09/1987 mg/L 6010 [1] 1310 [1]		ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
[1] Analyses completed on or before this date.

** Parameter not analyzed (See comment page).
( ) Parameter between LOD and LOQ.
[ ] Method Reference (See comments page.)

Analyst: John T. Kershisnik

Reviewer: Henry F. Lin

Laboratory Supervisor: A. Brent Torgensen

UBTL

DataChem was formerly known as UBTL

DataChem

ENVIRONMENTAL WASTE REPORT
(EP-TOX)

Date November 13, 1987
Agency Identification Number S87-0674
Account No. 03018

Analytical Results

Parameter Name / Analysis Date / Units / Method / Prep Method	Field Number / Lab Number	HOLE1 3-4 EG 2984	HOLE1 5-6 EG 2985	HOLE1 7-8 EG 2986	HOLE1 9-10 EG 2987	HOLE1 11-12 EG 2988	HOLE1 13-14 EG 2989	HOLE1 15-16 EG 2990	HOLE2 1-2 EG 2991
pH 11/12/1987 pH units 9045 [1]		7.0	8.0	8.2	6.8	6.5	6.8	6.5	8.4

[1] See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
[1] Analyses completed on or before this date.

** Parameter not analyzed (See comments page).
( ) Parameter between LOD and LOQ.
[ ] Method Reference (See comments page).

DataChem

ENVIRONMENTAL WASTE REPORT (EP-TOX)

Date November 13, 1987
Agency Identification Number S87-0674
Account No. 03018

Kerr-McGee Corporation
Lake Mead Drive
P.O. Box 55
Henderson, NV 89015
Attention: Susan Crowley

Telephone (702) 565-8901

Sampling Collection and Shipment

Sampling Site Henderson-North Prop. Date of Collection _____

Date Samples Received at DataChem October 29, 1987

Analytical Results

Parameter Name / Analysis Date / Method / Prep Method	Units	Field Number / Lab Number	HOLE2 3-4 EG 2992							* Limit of Detection
Arsenic (As) 11/09/1987 6010 [1] 1310 [1]	mg/L		ND*							0.3
Barium (Ba) 11/09/1987 6010 [1] 1310 [1]	mg/L		0.65							0.05
Cadmium (Cd) 11/09/1987 6010 [1] 1310 [1]	mg/L		ND*							0.05
Chromium (Cr) 11/09/1987 6010 [1] 1310 [1]	mg/L		ND*							0.05
Lead (Pb) 11/09/1987 6010 [1] 1310 [1]	mg/L		ND*							0.3
Mercury (Hg) 11/10/1987 7470 [1] 1310 [1]	mg/L		ND*							0.0002
Selenium (Se) 11/09/1987 6010 [1] 1310 [1]	mg/L		ND*							0.3
Silver (Ag) 11/09/1987 6010 [1] 1310 [1]	mg/L		ND*							0.1

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
[1] Analyses completed on or before this date.

** Parameter not analyzed (See comment page).
( ) Parameter between LOD and LOQ.
[ ] Method Reference (See comments page.)

DataChem

ENVIRONMENTAL WASTE REPORT
(EP-TOX)

Date November 13, 1987
Agency Identification Number S87-0674
Account No. 03018

Analytical Results

Parameter Name / Analysis Date / Units / Method / Prep Method	Field Number / Lab Number	HOLE2 3-4 EG 2992							* Limit of Detection
pH 11/12/1987 pH units 9045 [1]		6.8							± 0.1

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
[1] Analyses completed on or before this date.

** Parameter not analyzed (See comments page).
( ) Parameter between LOD and LOQ.
[ ] Method Reference (See comments page).

Date November 13, 1987
Agency Identification Number S87-0674

General Set Comments

Each soil pH was measured in 0.01 M CaCl2.

Method Index **-- Method Reference --**

[1] SW-846 "Test Methods for Evaluating Solid Waste", July 1982

CHAIN OF CUSTODY RECORD

Date Extr: _____
Date Digested: _____
Date Analyzed: _____

Account:	DataChem Set ID:	Sponsor:	SPLITS					
3018	587-0674	Kerr McGee Chemical		pH	EP Tox metals			
Field Comment:								

Date Sampled	Field ID Number	DataChem Sample Number(s)	Sample Matrix	Number of Containers	Remarks
	Hole #1 3-4 ft.	EG 2984	Soil	2	1 - pH; 1 - EP Tox metals
	5-6 ft.	85			
	7-8 ft.	86			
	9-10 ft.	87			
	11-12 ft.	88			
	13-14 ft.	89			
	15-16 ft.	90			
	Hole #2 1-2 ft.	91			
	3-4 ft.	92			

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
UPS	10/29/87 0930	Todd Schumacher	Todd Schumacher	10/29/87 1400	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Final Disposition: _____ Signature: _____

2

ATTACHMENT 2

LOU ITEM 3

PARTICULATE DISPERSION MODELING

Air Dispersion and Deposition Modeling

ENSR performed air dispersion and deposition modeling to quantify deposition in the areas surrounding the manganese dioxide (MnO_2) facility. Version 3 of the Industrial Source Complex Short Term model (ISCST3) was used for the analysis because it incorporates newly improved algorithms for treating area sources and deposition. This model is approved by the U.S.EPA.

The simulations incorporated actual particulate emissions of 90 pounds per day (lb/day). The facility's three major source areas were represented in the modeling as follows:

- A point source representing the Unit 6 dryer baghouse vent for which the effluent is heated; and a point source representing the baghouse vents for which the effluent is not heated (assumed to be at ambient temperature).
- An area source covering the tailings pile.
- Four point sources representing the four hearths.

The total particulate emission amount (90 lb/day) was based on estimates developed for the federal operating permit application. Measurements indicate that there are 48 lb/day of emissions from the baghouses. Of this amount, 75 percent (36 lbs/day) was allocated to the dryer baghouse and 25 percent (12 lb/day) was allocated to the other baghouses. The remaining 42 lb/day of particulate emissions from the plant (90 lb/day minus 48 lb/day), were split equally between the hearths and the tailings pile--5¼ lb/day for each hearth and 21 lb/day for the tailings pile.

The majority of the emissions are believed to be less than 10 microns in diameter. Because the exact size distribution is not known, all of the particulate emissions were assumed to have a diameter of 10 microns. This has the effect of increasing the deposition velocities, which produces generally conservative results.

The model inputs for the seven sources are summarized in Table AQ-1. The "stack" parameters for the point sources were derived from available information on the baghouses and the hearths. The equivalent stack height and diameter for the hearth sources were determined assuming a stack top at 4 feet, which is 2/3 of the typical height of the ore piles on the hearths, and calculating the diameter of a circle with the same area as a horizontal slice through the pile at this height. The flow rate was available from process information and the flow temperature was assumed to be the typical temperature at the surface of the piles. For the purposes of calculating deposition, the particulate emissions were assumed to have a density of 5 g/cm^3.

Potential building downwash effects on the point sources are accounted for in the modeling. The dimensions of the Unit 6 building, associated with the baghouses, and the hopper structure to the west of the hearths were incorporated into the model input.

One year (1990) of Las Vegas meteorological data was used to make the simulation. The Las Vegas data were obtained from the EPA Bulletin Board System and processed for input to the model.

Receptors (points at which calculations are made) were located around the perimeter of the facility and in surrounding areas out to a distance of five kilometers. A total of 632 receptors were included in the simulation. Figure 1 shows a plot of the receptor locations. Note that many of these receptors were placed within the boundaries of the Kerr-McGee complex and the BMI complex to avoid significant gaps in the areal coverage. However, receptors were not placed within the MnO_2 plant.

Terrain variations were not considered in the modeling, which is appropriate for the generally flat topography of the area.

Deposition amounts, in grams per square meter (g/m^2), were calculated by the model for the one-year simulation period (1/1/90 through 12/31/90) at each of the receptors. These results were used to prepare an isopleth plot showing the patterns of deposition of particulate emisions from the plant. This plot, presented in Figure 2, shows that the greatest deposition occurs at locations east and northeast of the source areas, reflecting the predominance of southwesterly winds in the Las Vegas area. The maximum overall deposition amount was 17 g/m^2, which was predicted to occur on the eastern plant boundary. Overall, however, the deposition along the KMCC boundary is considerably lower than this maximum value, with a minimum value of less than 0.05 g/m^2 near the northwest corner. At a distance of one kilometer downwind, the deposition has tapered off from the maximum to a value of less than 1 g/m^2.

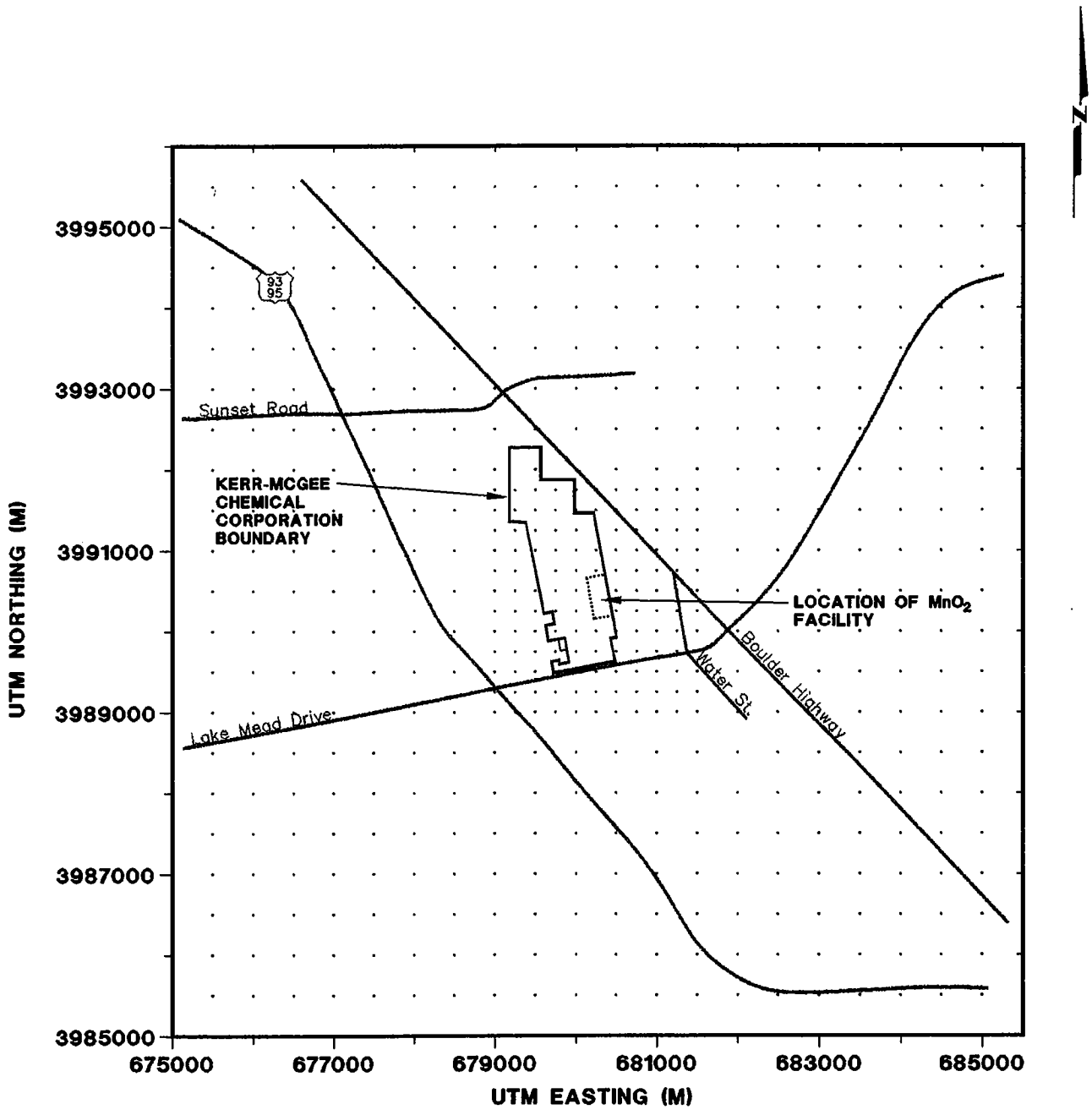
TABLE AQ-1

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BUILDING EXISTS
HEARTH1	1	0.27600E-01	680272.0	3990425.0	0.0	1.22	922.00	0.14	2.18	YES
HEARTH2	1	0.27600E-01	680274.0	3990411.0	0.0	1.22	922.00	0.14	2.18	YES
HEARTH3	1	0.27600E-01	680276.0	3990398.0	0.0	1.22	922.00	0.14	2.18	YES
HEARTH4	1	0.27600E-01	680266.0	3990383.0	0.0	1.22	922.00	0.14	2.18	YES
EASTBH	1	0.18900E+00	680360.0	3990294.0	0.0	15.24	413.20	16.20	0.61	YES
WESTBH	1	0.63100E-01	680365.0	3990295.0	0.0	15.24	ambient	16.20	0.61	YES

*** AREA SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	COORD (SW CORNER) X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	X-DIM OF AREA (METERS)	Y-DIM OF AREA (METERS)	ORIENT. OF AREA (DEG.)	INIT. SZ (METERS)
TAIL	1	0.11000E-04	680216.0	3990569.0	0.0	1.00	100.00	100.00	0.00	1.00



NOTE:
UTM = UNIVERSAL TRANSVERSE MERCATOR COORDINATE SYSTEM

0 1000 2000 4000

SCALE IN METERS

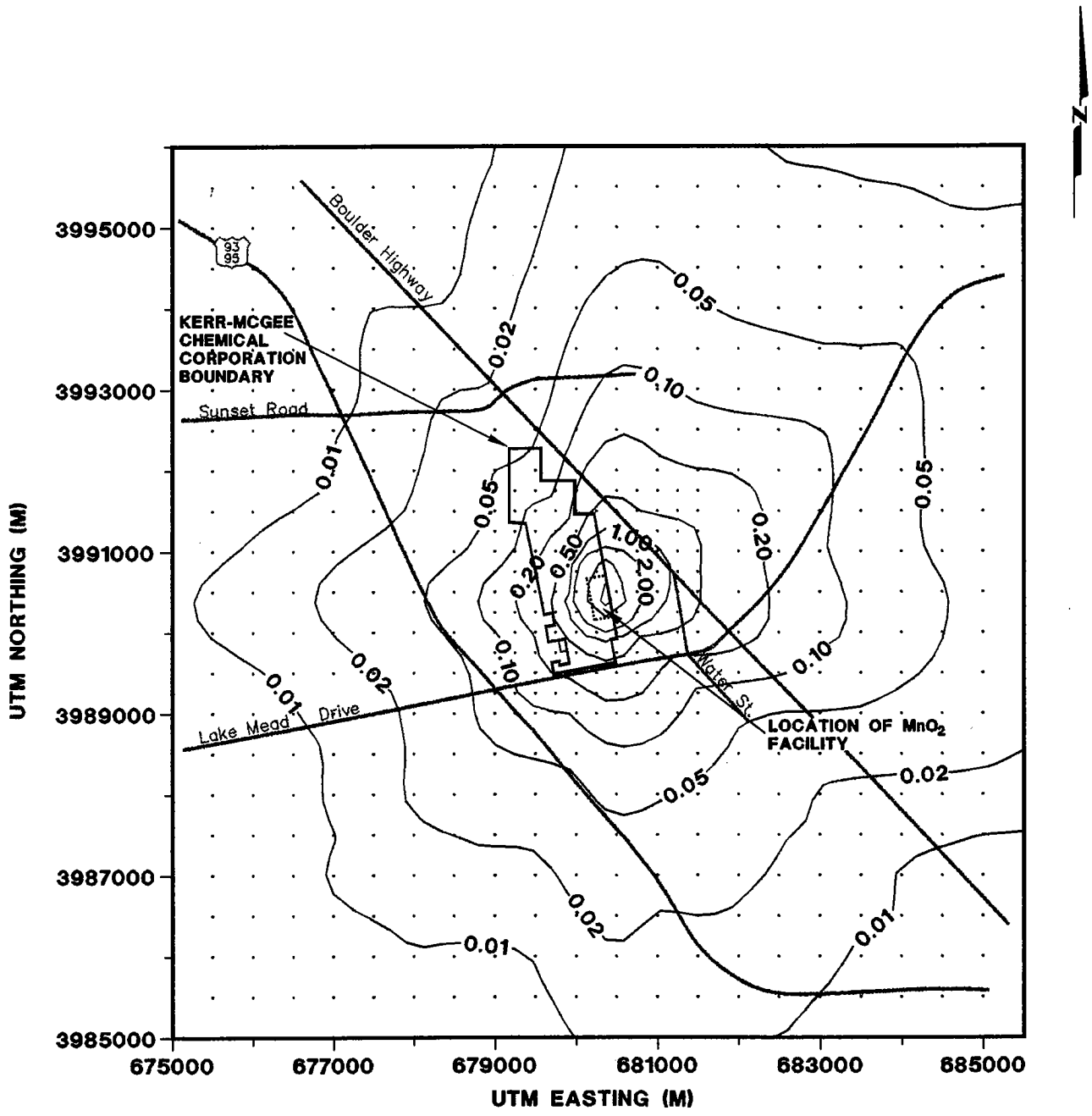
ENSR CONSULTING AND ENGINEERING

FIGURE 1

RECEPTOR LOCATIONS

Kerr-McGee Chemical Corporation
Henderson, Nevada

DRAWN: M. SCOP	DATE: 3/14/00	PROJECT NO. 4020-004-400	REV.
FILE NO. 4020004C	CHK BY:		



NOTE:
UNLABELED ISOPLETHS ARE 5 AND 10 g/m²

0 1000 2000 4000

SCALE IN METERS

ENSR CONSULTING AND ENGINEERING

FIGURE 2

DEPOSITION OF PARTICULATE MATTER [g/m²]

Kerr-McGee Chemical Corporation

Henderson, Nevada

DRAWN: M. SCOP	DATE: 3/14/98	PROJECT NO. 4020-004-400	REV.
FILE NO. 40200048	CHK BY:		

3

ATTACHMENT 3

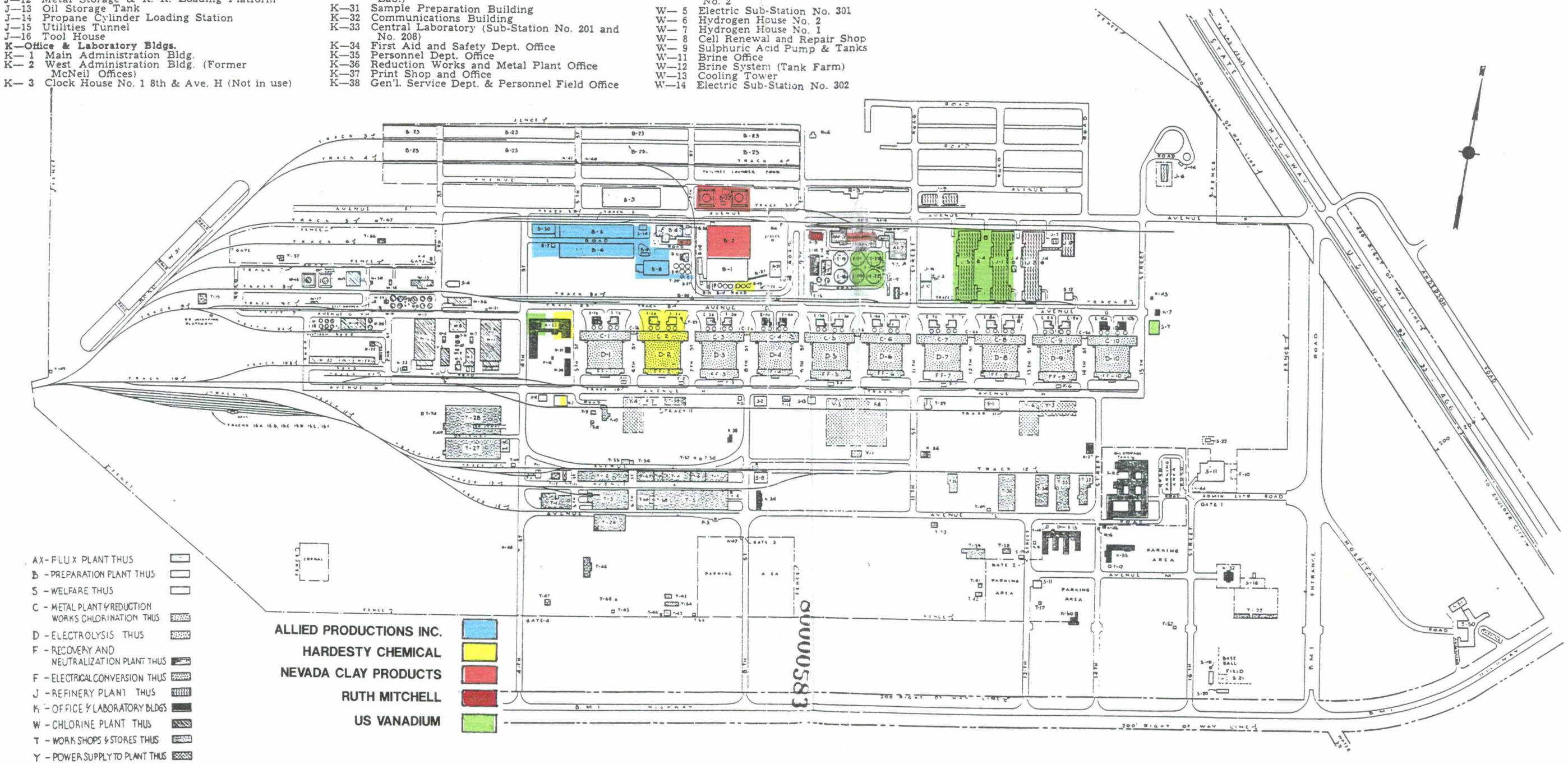
LOU ITEM 4

HARDESTY CHEMICAL

J—Refinery Plant
J— 1 Ingot Foundry (Sub-Station No. [illegible] & No. 603)
J— 2 Ingot Foundry (Sub-Station No. 602 & No. 604)
J— 3 Crucible Sand Blast House
J— 4 Foundry Stacks
J— 5 Billet Foundry (Sub-Station No. 603 & No. 606)
J— 6 Propane Tanks
J— 7 Propane Vaporizing and Mixing Equipment
J— 8 Metal Recovery Structure
J— 9 Sludge Disposal Tanks & Ponds
J—10 Pot Storage Yard & Crane
J—11 Hardener Furnace Building
J—12 Metal Storage & R. R. Loading Platform
J—13 Oil Storage Tank
J—14 Propane Cylinder Loading Station
J—15 Utilities Tunnel
J—16 Tool House

K—Office & Laboratory Bldgs.
K— 1 Main Administration Bldg.
K— 2 West Administration Bldg. (Former McNeil Offices)
K— 3 Clock House No. 1 8th & Ave. H (Not in use)
K— 4 Clock House No. 3 3rd [illegible]et
K— 5 Clock House No. 4 Cont[illegible] House 7th St. & Ave. F
K— 6 Clock House No. 6 Administration Office (14th St. & Ave. L
K— 7 Clock House No. 7 N.E. of Metal Unit No. 10
K— 8 Clock House No. 8 E. of Gen'l. Stores Bldg. T. 5
K— 9 Clock House No. 9 W. of Admin. Bldg. Annex
K—11 Chlorine Lines Tunnel
K—12 Experimental Chlorinator & Sub-Station
K—30 C & A and Laboratory Stores (Former Temp. Lab.)
K—31 Sample Preparation Building
K—32 Communications Building
K—33 Central Laboratory (Sub-Station No. 201 and No. 208)
K—34 First Aid and Safety Dept. Office
K—35 Personnel Dept. Office
K—36 Reduction Works and Metal Plant Office
K—37 Print Shop and Office
K—38 Gen'l. Service Dept. & Personnel Field Office
K—40 Tool House Peat Storage Area)
K—41 Peat Storage Guard Tower
K—43 to K—49 Inc. Guard Shelters (Portable)
K—50 Vocational School Building

W—Chlorine Plant
W— 1 Cell Bldg. No. 1 (Sub-Sta. No. 110) (Rect. & Oil Circuit Breaker)
W— 2 Cell Bldg. No. 2 (Sub-Sta. No. 120) (Rect. & Oil Circuit Breaker)
W— 3 Cooling, Drying and Liquefaction Building No. 1
W— 4 Cooling and Drying & Liquefaction Building No. 2
W— 5 Electric Sub-Station No. 301
W— 6 Hydrogen House No. 2
W— 7 Hydrogen House No. 1
W— 8 Cell Renewal and Repair Shop
W— 9 Sulphuric Acid Pump & Tanks
W—11 Brine Office
W—12 Brine System (Tank Farm)
W—13 Cooling Tower
W—14 Electric Sub-Station No. 302
W—15 Boiler H[illegible] & Air Compressor Room
W—16 Fuel Oil [illegible]age & Pump House
W—17 Salt Storage
W—18 Caustic Storage Tanks & Car Loading Platforms
W—19 Caustic Evaporation Building
W—20 Cell Liquor Storage Tanks
W—21 Sulphuric Acid Unloading Station
W—22 Electric Sub-Station No. 303 & No. 304
W—23-24 Warehouse and Stoneware Bldg. (Chl. & Caustic Storage)
W—25 Tank Car Conditioning Shed
W—26 Concr[illegible]Parts Building
W—27 Tank [illegible] and Cylinder Loading Shed & Track Scales
W—28 Electric Sub-Station No. 305
W—29 Brine Field Electric Control House
W—30 Distilled Water Building
W—31 Storage Area
W—32 Liquid Chlorine Unloading Platforms
W—33 Former Chlorine & Caustic Plant Office (Not in Use)
W—34 Salt Unloading Hopper, Conveyor & Weigh House



T—Workshops & Stores
T— 1 Plant Transportation Office & Service Garage (Former Elec. Repair Shop)
T— 2 Building Maintenance Shops (Former Small Stores Bldg.)
T— 3 Structural and Machine Shop (Sub-Sta. Nos. 202-203)
T— 4 Anode Shop
T— 5 General Stores and Purchasing Dept. Office
T— 6 Tygon Lining Shop
T— 7 C & A Stores No. 4
T— 8 Magnesium Chloride Storage
T— 9 Transformer Oil Pump House & Elec. Repair Shop Office
T—10 Transformer Repair & Elec. Repair Shop (Sub-Sta. No. 204)
T—11 Inflammable Liquid Stores
T—12 Transformer Oil Storage Tanks
T—13 Tile Setting Maintenance Bldg.
T—15 C and A Stores (Former Salt Truck Garage)
T—16 Railroad Tool House
T—17 Fire Station Storage Building
T—18 Lubricating Oil Storage Building
T—19 Oil Storage Building in Chlorine Plant Area
T—20 Oil Storage Building in Preparation Plant Area
T—21 Oil Storage Building in Neutralization Plant Area
T—22 C & A Stores No. 5
T—23 Oil Storage Building E. of Recovery Bldg. E—2b
T—24 Oil Storage Building W. of Recovery Bldg. E—6a
T—25 Oil Storage Building E. of Recovery Bldg. E—8b
T—26 Sheet Metal Shop (Former Bus Bar Shop)
T—27 Brick Grinding & Storage Bldg. (Unfinished Brick)
T—28 Brick Grinding & Storage Bldg. (Finished Brick)
T—29 Central Battery Charging Bldg.
T—30 Magnesite Truck Garage
T—31 Concrete Laboratory (Not in Use)
T—32 C & A Stores No. 1
T—33 C & A Stores Motor Pool No. 2
T—34 C & A Stores No. 3
T—35 Electrical Maintenance and Construction Bldg.
T—36 Tygon Lining Shop
T—37 Former Surplus Stores No. 4 (Not in Use)
T—38 Automobile Service Station & Grease Rack
T—39 Automobile Steam Cleaning & Wash Rack & Cable Storage Shed
T—40 Water Cooler Building
T—41 Storage Shed for Drinking Cans
T—42 C and A Stores No. 6 (Cooler Pads)
T—43 Lumber Storage Building
T—44 Water Valve Storage Shed (Not in Use)
T—69 Oil Storage Bldg. (Brick Plant)
T—70 Repair Shed
T—71 Tool House (Neutralization Area)
T—72 Tool House (Not in Use)
T—73 Construction Field Office
T—74 Ice House
T—45 Ironworkers Tool House (Not in Use)
T—46 A P M Workshop & Plywood Storage Bldg.
T—47 Furnace Storage Building DPC
T—49 Magnesite Truck Garage Fuel Oil Pump House
T—50 Sand Blast House
T—51a to J Brick Grinding Shops
T—52 Storage Vault (Proposed Street Lighting Sub-Station)
T—53 Cable Storage Building
T—54 Fluorspar Storage Shed
T—55 Lumber Shed
T—56 Lumber Mill
T—57 Tool House
T—58 Oxygen—Acetylene Storage Shed
T—59 Process Tool House
T—60 Structural Steel Storage Platform
T—61 Bus Bar Shop
T—62 Cathode Shop
T—63 General Stores Annex
T—64 Casting Shop (Plaster)
T—66 Tool House (Not in Use)
T—67 Flare Servicing Bldg.
T—68 Bar Bending & Cutting Sheds

Y—Power Supply to Plant
Y—1 Main Electric Control House
Y—1 Control Cable Tunnel
Y—3 Electric Sub-Station No. 9
Y—4 Electric Sub-Station No. 1
Y—5 Electric Sub-Station No. 2
Y—6 Electric Sub-Station No. 3
Y—7 Spare Transformer

BUILDINGS AND STRUCTURES PLANT SITE AREA

SCALE IN FEET
300 400 300 200 100 0 500 100

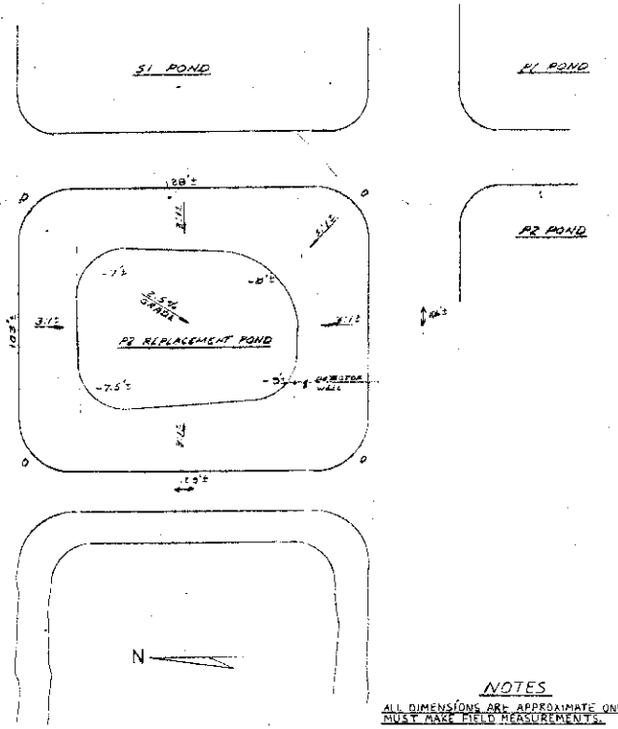
80000584

4

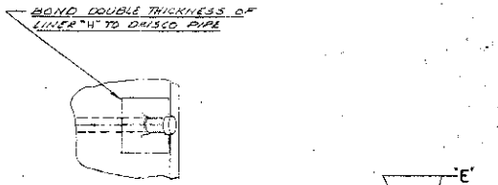
ATTACHMENT 4

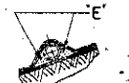
LOU ITEM 9

NEW P-2 CONSTRUCTION DRAWING

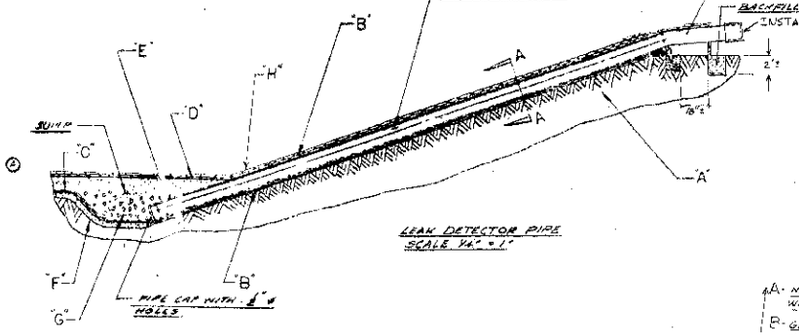


PLAN VIEW
1" = 30'
FINISHED ELEV. 4004.5'

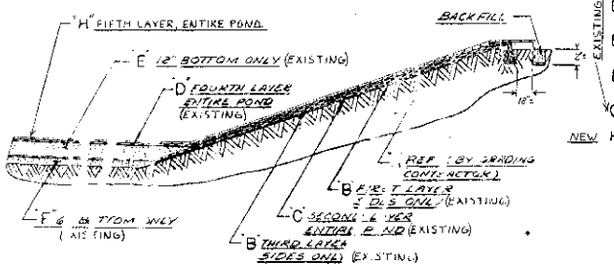




SECTION A-A



LEAK DETECTOR PIPE
SCALE 1/4" = 1'



TYPICAL POND SEE 10.1
SCALE 1/4" = 1'

- A- NATIVE SOIL COMPACTED TO 95% WITH SURFACE ROCKS OVER 1" REMOVED
- B- GEOTEXTILE POLYPROPYLENE 400 g/m²
- C- PVC 30 MIL, UNREINFORCED
- D- HYPALON 36 MIL, POLYESTER REINFORCED
- E- SCREENED SAND, $\pm 10^{-2}$ CM/SEC PERMEABILITY
- F- COMPACTED SAND TO MEET SM OR SP IN U.S.C.S.
- G- GRAVEL APPX ¾" ø
- NEW H- 60 MIL HIGH DENSITY POLYETHYLENE

EXISTING

NOTES

ALL DIMENSIONS ARE APPROXIMATE ONLY, CONTRACTOR MUST MAKE FIELD MEASUREMENTS.

CONTRACTOR RESPONSIBLE FOR ALL MATERIALS AND INSTALLATION AS SHOWN BY PLANS.

SEE A-00-1-49 FOR GRADING

KERR-McGEE CHEMICAL CORP. P. O. BOX 55 HENDERSON, NEV. 89015

AFE No. _____ JOB No. _____

REVISIONS					
NO.	DESCRIPTION	BY	DATE	CHK	APP
A					

APPROVED FOR CONSTRUCTION	BY	TITLE	DATE
SAFETY			
PRODUCTION			
MAINTENANCE			
PROCESS			
MNMT		PLT. MNGR.	

DESIGN	DATE
DRAWN BY REH	8/13/84
PROJ. ENGR. REH	8/14/84
ENGR. MNGR.	8/14/84

PLANNED P2 REPLACEMENT POND
RELINING WITH HIGH DENSITY POLYETHYLENE

DATE 8-6-84 SCALE AS NOTED

DRAWING NO. A-00-1-53

SHEET 1 OF 1

REVISION

5

ATTACHMENT 5

LOU ITEM 10

HAZARDOUS WASTE LANDFILL DOCUMENTATION

KERR-McGEE CHEMICAL CORPORATION

HENDERSON, NEVADA FACILITY

CLOSURE/POST-CLOSURE PLAN

FOR

HAZARDOUS-WASTE LANDFILL

Revised June 13, 1984

Revised October 25, 1984

0599E

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

APPENDICES

LIST OF TABLES

CLOSURE/POST-CLOSURE PLAN

FOR HAZARDOUS-WASTE LANDFILL

I. BACKGROUND

The Kerr-McGee Chemical Corporation (KMCC) Facility at Henderson, Nevada is located on Lake Mead Drive, off Water Street, P. O. Box 55, Henderson, Nevada 89015.

The property comprises approximately 415 acres in the Basic Management, Inc. (BMI) industrial complex. It adjoins other industries in the complex and is bounded by public highways approximately 1/4 to 1/2 mile away on the north and south. A location map is attached in Appendix I. The closest residence is approximately 5/8 mile northeast of the landfill.

NPDES fact sheet

The plant has been in operation since 1945 and manufactures several electrochemical products, including manganese dioxide, sodium chlorate, and ammonium perchlorate. The facility was acquired by Kerr-McGee Chemical Corporation in 1967 by its acquisition of American Potash & Chemical Corporation, and has since been operated by KMCC.

The plant has certain environmental permits, including the following, all of which are in good standing:

- Twenty-~~four~~ one air emission source permits issued by Clark County, Nevada, APCD.
- Water discharge (NPDES) permit #NV0000078 for once-through non-contact cooling water. No discharge of process-related water is permitted.
- Interim status Part A authorization for the management of hazardous wastes under RCRA, administered by the Nevada DEP and U. S. EPA, Region IX.

Prior to January 25, 1983, the plant operated three onsite hazardous waste treatment, storage, or disposal units (HW-TSD units). All three units were designated hazardous because of low levels of chromium in the wastes. Two of these units were surface impoundments designated S-1 and P-1, for which closure/post-closure plans were submitted to Nevada DEP on April 9, 1984. Applicable data contained in the S-1 closure plan are included in Appendix III. An onsite HW landfill was used for disposal of low-level chromium-bearing mud from the sodium chlorate cells. Disposal of HW to this landfill occurred before January 23, 1983, and the landfill has not received any waste since thats

date. The locations of the landfill and impoundments S-1 and P-1 are shown in Figure 2, Appendix I.

After closure of the HW landfill, as well as surface impoundments S-1 and P-1, KMCC wishes to keep its generator status and dispose of all HW offsite at commercially permitted disposal facilities.

II. SUMMARY OF CLOSURE/POST-CLOSURE CARE PLAN [265.112(a)(i)]

This closure plan amends all closure plans previously prepared for the HW landfill at the Henderson Facility, and a copy is on file at the plant office. This plan, together with the closure/post-closure care plans for the surface impoundments submitted to NDEP on April 9, 1984, covers all HW TDS units at the Henderson Facility.

A copy of EPA form 3510, Part A application, as amended dated July 13, 1982, is attached in the Appendix II. A survey plat, showing the location of the HW landfill cell and analytical data supporting the exclusion of ponds AP-1, AP-2, and AP-4, are also included in Appendix II.

Closure and post-closure care of the landfill will be done by the following major steps:

1. Leave contents of HW landfill in place and undisturbed.

2. Cover the landfill with a layer of compacted clay overlain with a 30-mil impervious membrane, suitably covered with native soil and topped with an erosion-resistant layer of native cover material. The cover components will extend 5 feet beyond the perimeter of the cell.

3. Grade, shape, and contour the cover to 3-5 percent slope, in accordance with engineering design and construction specifications given in Appendix IV.

4. Install diversion berms around the cell over sufficient to protect against a once-in-25-year rainfall event.

5. Monitor and maintain site for 30 years, or petition NDEP for review when it is evident there is no impact on groundwater.

6. Proper notice will be made in the deed of the existence of the HW landfill and restricted use of the area.

7. Final closure inspection and certification by an independent registered P.E. with notification to the NDEP.

Details of the closure/post-closure care procedures are given in the pertinent sections of this plan, together with a final closure schedule.

III. CLOSURE PLAN DETAILS [265.112 AND 265.310]

A. Maximum Inventory of Waste [265.112(a)(2)]

The landfill is inactive; no waste has been placed in it since January 25, 1983. All HW is now being transported offsite for disposal at the U. S. Ecology landfill in Beatty, Nevada.

The maximum volume of the cell is approximately 13,000 cubic yards. This estimate is based on the cell dimensions of 410' x 45' x 20', including 2 feet of freeboard. This cell contains an estimated 3,000 cubic yards of mud from the sodium chlorate process which was solidified with an equal volume of native soil. In addition, 2,900 cubic yards of contaminated soil from the closure of S-1 impoundment solidified with native soil was placed in the cell, together with the membrane from the bottom and sides.

The landfill was filled from back to front in truckload (approximately 20-yard) increments. The fill was solidified with native soil during operation and packed after each level or lift. The upper fill is comprised of native soil from beneath pond S-1 which was essentially clean and free of contamination. Analytical data submitted with the S-1 closure plan are provided in Appendix III.

Grab samples, taken at 4 points on the top of the landfill, were subjected to EP toxicity tests for chromium. The results are also reported in Appendix III and show no hazardous waste.

No other treatment or storage was given the waste.

As shown in Appendix IV, Cover Design and Construction Specifications, the cover and cap will extend 5 feet beyond the perimeter of the cell which insures that potentially contaminated areas will be safely covered. This is considered very conservative treatment in view of the absence of chromium in surface samples.

The surrounding area is free of contamination as determined by visual inspection, since the carbonaceous chrome-bearing waste is detectable by color.

B. Decontamination of Equipment [265.112(a)(3)]

As described above, the surface of the landfill is not hazardous. It will not abe penetrated when the final cover is applied. Accordingly, no decontamination of equipment, tools, or clothing will be required.

C. Cover and Cap Design and Construction [265.112(a)(1); 265.310a]

1. Description

The existing cell will not be disturbed. No vibrating compaction equipment will be used as the fill is already compacted.

From the bottom to top, the cover will consist of the following layers:

a. A bottom low permeability layer of 1.5 feet of clay from the Clark County School District clay pit on Cheyenne Avenue, North Las Vegas, Nevada (or equivalent) will be placed over the cell.

The permeability of this clay was determined by an independent laboratory to be 4.7 x 10^{-8}cm/sec, using the falling-head method for determine saturated hydraulic conductivity. The sample was compacted at 90 percent relative compaction of ASTM D-1557 with a calculated porosity of 88 percent. A grain-size distribution was also performed by this outside consultant using ASTM D-422. The permeability of this material falls within RCRA's guideline of a saturated hydraulic conductivity of not more than 1 x 10^{-7}cm/sec. This clay will be spread in 6" lifts and compacted to 85 percent minimum relative compaction, according to ASTM D-1557. The clay will extend 5 feet in all directions beyond the perimeter of the cell to ensure that seepage does not occur around the edges. The overall dimensions of the cover will be approximately 55 feet wide by 420 feet long. The final slope of this layer will be finished at 3-5 percent.

b. A high-density polyethylene membrane, 30-mil thick, will be placed over the clay layer. The clay meets the EPA criteria for bedding

material (being no coarser than Universal Soil Classification [USCS] Sand [SP], which obviates the need for sand beds).

c. An overlying 6-inch layer of the same clay, used in the bottom layer, will be spread carefully, using rubber-tired equipment to prevent damage to the membrane. Final slope will be maintained at 3-5 percent.

d. A final cap will be placed over the clay, using 2 feet of compacted native soil (caliche), available on the site. This natural cover material is stable and erosion resistant to wind and the occasional rainfall events in the area (average: 3.76"/year, U. S. Geological Survey data).

See data in Appendix IV.

e. Final slope of the cap will be 3-5 percent.

f. The engineering design and specifications for final grade, length of run, and slope of cover and cap are provided in Appendix IV.

g. Vegetative cover will not be used since there are no suitable grasses indigenous to the area that would improve or benefit the cap stability. Native vegetation is too sparse and stalky to provide surface cover, and the arid climate precludes turf culture.

h. On completion of the final cover and cap, a benchmark will be set at a reasonable location on the top to establish the elevation. This mark will be the reference point to determine settling and subsidence that may occur during post-closure maintenance. This benchmark will also be used for reference in providing notice in the deed and to local land authorities [265.119, 265.120].

2. Surface Water Control [265.310(b)(2)(3)]

The landfill is protected from flooding by its elevation and the nearby surface contour. A dike, roughly 20 feet high running almost east to west across the north end of the cell, prevents inflow from that direction. Figure 3, Survey Plat in Appendix II, shows these features.

Other surface water run-on will be controlled by constructing a diversion drainage berm around the cover as shown in the engineering drawing in Appendix IV.

Surface pooling will be prevented by proper slope and contour of the cover. There are no obstacles to the drainage path that might lead to ponding or excessive erosion.

Calculations in Appendix IV show that run-off from the cover will not cause excessive erosion of the surface because the gravel drains rapidly and the 3-5 percent slop will allow steady drainage without erosion. The internal membrane, as well as the compacted clay, will prevent any detrimental surface water percolation into the landfill. In the remote chance that surface water penetrates the cap and upper clay cover, the membrane will intercept and drain it away from the cell contents [265.310(b)(2)].

D. Climatological Consideration [265.310(c)(4)]

The Henderson, Nevada area is in the arid southwest region of the U. S. Data obtained from the U. S. Department of Commerce, National Oceanic and Atmosphere Administration, Environmental Data Service, and the USGS lists the average precipitation as 3.76" per year. Average monthly precipitation rates are reported in inches as follows:[1]

Jan.	0.45	May	0.10	Sept.	0.27
Feb.	0.30	June	0.09	Oct.	0.22
March	0.33	July	0.44	Nov.	0.43
April	0.27	Aug.	0.49	Dec.	0.37

The 10-year, 1-hour rainfall is approximately 0.8". The once-in-25-year rainfall event is reported at 2.4" in 24 hours; the once-in-100-year event is 3.0" in 24 hours (U. S. Weather Bureau).

We have been unable to locate any recorded data on rainfall pH. The National Climatic Data Center in Asheville, North Carolina, the U. S. EPA in San Francisco, the EPA Laboratory in Las Vegas, the Clark County, Nevada APCD, and the Desert Research Institute have indicated there is no program to measure pH of rainfall at this time.

[1]Climatography of the U. S. #81, National Climatic Center, Asheville, North Carolina, August, 1973.

Average net evaporation in the Henderson area is on the order of 90-96 inches per year. Natural solar and wind evaporation rapidly removes water from surface areas, and vertical penetration of rainfall is minimal.

As previously discussed, control of rainfall by surface diversion and containment structures will protect the landfill from run-on. Subsequent penetration of rainfall will be essentially nil.

E. Leachate Collection and Recovery System

For reasons given in Sections III, C and D, we believe there will not be any leachate, and a leachate collection and recovery system will not be installed.

F. Geological and Geochemical Consideration

1. Geologic Setting

The Henderson, Nevada, Kerr-McGee Facility is located at the southern edge of the Las Vegas Valley. The Valley is similar to a large bowl (with a bedrock bottom) filled with unconsolidated alluvial deposits. The Valley fill is comprised primarily of a thick sequence (at least 2,160 feet) of Quarternary-age, fine grained materials known collectively as the Muddy Creek formation. Lithologically, the formation is characterized by thin layers of sand with some gravel interbedded with thick layers of silt and clay. Sediments of the Muddy Creek formation are typically light-colored, ranging from reddish tan to light green or white. Overlying the Muddy Creek formation at the plantsite is a relatively thin layer of alluvial fan deposits.

These alluvial sediments consist primarily of sand and gravel (with lesser amounts of silt and clay) derived from the erosion of the McCullough Range Mountains about one mile south of the Kerr-McGee property. Alluvial fans along the mountain front have overlapped to form coalescent alluvial fans with collectively similar deposits. Alluvial fan deposition occurred during the infrequent flood runoff periods which formed two basic types of deposits within the alluvial fans. The most widespread deposits consist of poorly sorted mixtures of boulders, cobbles, gravel, sand, silt, and clay. Distinct layers may be present in the

form of gravel beds cemented with caliche (calcium carbonate). Cutting through (and encased by) these poorly sorted deposits are stream or wash deposits consisting of moderately well sorted deposits of sand and gravel resembling "gravel trains." These deposits are probably similar to sand and gravel in the wash channels present on the surface at the site. The "gravel trains" were buried by subsequent deposits of poorly sorted sediments and are characteristically narrow and linear in configuration. Thickness of these alluvial deposits range from 20 to 50 feet in the Kerr-McGee property area, with an overall average thickness of about 40 feet.

A distinct formation change between the alluvial sediments and the Muddy Creek formation generally does not exist. Normally, a 5- to 10-foot transitional zone occurs above the Muddy Creek where clay lenses are interbedded with sand and gravel.

Two generalized geologic cross sections were prepared to show the thickness and character of the overlying alluvial fan deposits, as well as the northerly slope of the surface of the Muddy Creek formation. Figure 1 represents a typical east-west profile through the Kerr-McGee plantsite. Figure 2 represents a typical north-south profile through the Kerr-McGee plantsite. Lithologic logs for the landfill area are enclosed in Figures 3 through 5 and Tables 1 through 4.

2. Hydrologic Setting

Groundwater in the Las Vegas Valley occurs under artesian and semi-artesian conditions. Regionally, there are three principal artesian aquifer zones within the Muddy Creek formation. The so-called shallow, middle, and deep artesian zones are tapped by wells at about 200 to 450, 500 and 700 feet, respectively, in the Las Vegas Valley. A fourth water-bearing zone is found overlying the top of the Muddy Creek formation, usually in the alluvial sand and gravel.

The primary source of recharge is runoff from precipitation occurring in the surrounding mountains which infiltrates the alluvium along the Valley margins. Rainfall (less than 5 inches annually) occurring in the Valley itself is consumed by evaporation and transpiration by

vegetation. Therefore, the near-surface aquifer receives little or no direct recharge from infiltrating rainfall and is recharged by upward-leakage from deeper aquifers and recharge from the infiltration of water applied to the land surface in the forms of irrigation and wastewater discharges to unlined ditches.

Groundwater from the shallow, middle, and deep aquifers is discharged from the system through springs and pumping wells in Las Vegas Valley. In the Henderson area, groundwater from the near-surface water-bearing alluvial d deposits is discharged by seepage into Las Vegas Wash, as well as by evapotranspiration, but not by any known pumping wells.

Based on test drilling results near the Kerr-McGee plantsite, groundwater occurs in the near-surface alluvial deposits at depths ranging from about 20 feet (at the northern property boundary) to 50+ feet below land surface (at the southern property boundary). The groundwater in the near-surface alluvial deposits occur as the top of the Muddy Creek formation, perched on and/or confined by clay layers in the transitional zone above the Muddy Creek formation, and within the uppermost part of the Muddy Creek formation where it may be confined by a layer of caliche.

The alluvial-saturated zone is typically unconfined; however, varying degrees of confinement may be present, depending on the clay or caliche layers in the transitional zone above the Muddy Creek.

Estimating the saturated thickness of the near-surface water-bearing zone is made difficult by the variable layering within the transition zone above the Muddy Creek formation. However, the near-surface water-bearing zone ranges in saturated thickness from less than 1 foot in the southern area to 20+ feet at the northern property boundary.

The primary geologic factors affecting groundwater occurrence and movement in the Kerr-McGee plant area are the presence of relatively high permeability zones in the form of "gravel trains," the slope configuration of the surface of the Muddy Creek formation, and the lithology of the Muddy Creek formation. These factors affect the distribution of permeability, the

TABLE 1: Lithology Log for Henderson Well No. M-5

Depth in Feet	Lithology Description
0-12.0	Silty sandy gravel
12.0-15.0	Partially cemented sand and gravel
15.0-20.0	Cobbles
20.0-23.0	Silty sand and gravel
23.0-24.5	Gravel and sand with cobbles
24.5-25.5	White clay and gravel with gypsum and cobbles
25.5-28.0	Brown clayey silt with about 50% gypsum
28.0-31.0	Brown clayey silt with sand and gravel and white streaks
31.0-43.0	Brown clay with occasional thin caliche lenses

Top of Muddy Creek at 31 feet

TABLE 2: Lithology Log for Henderson Well No. K-6

Depth in Feet	Lithology Description
0-29.0	Silty gravel and sand; slightly cemented from 12' - 13'
29.0-32.0	Silty sand and gravel with gypsum
32.0-32.5	Brown silty clay
32.5-34.0	Silty sand and gravel
34.0-38.0	Brown silty clay
38.0-43.0	Brown clay with sand and gravel

Top of Muddy Creek at 32 feet

TABLE 3: Lithology Log for Henderson Well No. M-7

Depth in Feet	Lithology Description
0-15.0	Silty gravel and sand
15.0-18.0	Silty gravel and sand with gypsum
18.0-22.5	Silty gravel and sand with abundant gypsum; approximately 40% gypsum
22.5-28.0	Light brown silty clay with thin beds of caliche. Cemented from 27' - 27.5'
28.0-29.5	Clayey gravel (Not cemented)
29.5-37.0	Brown silty clay.

Top of Muddy Creek at 29.5'

TABLE 1: Lithology Log for Henderson Well No. H-28

Description	Depth Below Land Surface (feet)
Sand, silty to clayey, grayish-brown very fine to very coarse (poorly sorted), and gravel, pebbles, cobbles and boulders, rounded to subangular; also with layers of caliche and caliche-cemented sand and gravel	0-44 1/2
Clay, silty, to silt, clayey, light brown with traces of sand and gravel in matrix; also, with occasional thin layers of sand, reworked caliche, and caliche (Muddy Creek Formation)	44 1/2 - 51

Data from Geraghty and Miller, Inc., October, 1980.

water-table configuration, and the vertical extent of water-bearing zones. The groundwater in the near-surface alluvial deposits flows north-northwest.

G. Groundwater Monitoring

Kerr-McGee Chemical Corporation has installed 8 RCRA monitoring wells around the hazardous-waste sites located at the Henderson Facility. Samples from the 4 wells serving the landfill site, M-5, M-6, M-7, and H-28, have been taken and analyzed for the RCRA drinking-water, water-quality-and-contamination-indication parameter over the past two years with background data being botained during 1983. Chromium as a contaminant present in process operations and waste was added to the list of chemicals tested for during groundwater sampling.

The four RCRA wells at the landfill will continue to be sampled during closure/post-closure on a semi-annual basis in June and December with the results and the subsequent evaluation forwarded to the Nevada DEP within 30 days of receiving lab results. The groundwater quality parameters which will be checked are pH, specific conductance, TOC, TOH, chromium, chloride, sodium, sulfate, iron, manganese, and phenols.

Since chromium is the item of concern for this waste, a sample will be taken from each well monthly and analyzed from chromium only. Water levels of all wells will also be recorded monthly.

H. Special Requirements

1. Ignitable or Reactive Wastes [265.312]

The wastes are not reactive or ignitable and require no special treatment, stabilization or security provisions.

2. Incompatible Wastes [265.313]

All wastes in the landfill are fully compatible and have been in place for over 18 months.

3. Liquid Waste [265.314]

All waste was placed prior to January 26, 1983. All waste was solidified with native soil to eliminate any liquid that may have been present.

4. Containerized [265.315]

No containers, either empty, crushed or containing hazardous material, were placed in this landfill during its life.

IV. POST-CLOSURE CARE AND MAINTENANCE PLAN

1. Final Cover [265.310(b)(1)(4)]

a. The erosion-resistant cover will be inspected routinely on the first Wednesday of each month for visible evidence of surface deterioration by the Environmental Supervisor or his designated inspector. A written record will be kept of these inspections by the plant Environmental Supervisor.

b. Remedial maintenance will be taken within 5 working days to repair any observed defects. Records will be kept of this work by the Environmental Supervisor.

c. Special inspections will be made after each severe event, i.e., precipitation in excess of 0.5 inch in 24 hours, or high wind conditions equivalent to gale velocity during dry periods.

d. At least once a year (week of July 15), the elevation of the benchmark will be checked for subsidence and stability of the fill. The slope of the cover will be restored to 3 percent if any subsidence has changed the contour of the cover. The significance of any change in elevation will be assessed and the NDEP notified of any appropriate maintenance that is done.

e. At least once a year (week of July 15), and more often if inspection indicates the need, the erosion-resistant cap will be renewed and a slope of 3 percentmaintained along its length.

f. Signs will be posted around the covered landfill to identify the perimeter, restrict access, and prevent unauthorized vehicular movement over the cap.

2. Groundwater Quality Monitoring

a. The groundwater-monitoring program around the landfill will continue for 30 years. Sampling, analysis, and reporting to NDEP will be done semi-annually or more frequently as directed by the NDEP. Groundwater quality parameters will

include pH, specific conductance, TOC, TOH, and Cr. Samples will be collected from monitor wells M-5, M-6, M-7, and H-28.

b. Permission to terminate this monitoring program may be requested from the NDEP when groundwater quality assessment data indicate no impact from the landfill for a period of 24 consecutive months.

c. To insure that the groundwater-monitoring system remains functional, monthly checks of each of the four wells will be made. they will be checked for water level and signs of silting, as well as any tampering of the well-closure cap. To prevent unauthorized personnel from removing the well cap, a lock will be installed with the key kept in the plant master key lockbox. If any signs are found that tampering has occurred with any well, a sample will be taken and analyzed. If the well is determined unserviceable, a new well will be installed to replace it and maintain the integrity of the monitoring system.

3. Facility Manager's Checklist for Post-Closure Care

a. First Wednesday of each month:

1) Inspect cap for evidence of visible deterioration.

2) Perform necessary maintenance.

3) Keep written records of inspection and maintenance.

4) Check well cap for tampering and well for siltation; then measure and record.

5) Sample wells M-5, M-6, M-7, and H-28 and analyze for chromium.

b. After heavy rainfall or windstorm event:

1) Inspect cap for evidence of deterioration.

2) Perform necessary maintenance.

3) Keep written records of inspection and maintenance.

c. Week of July 15, annually:

1) Check elevation of benchmark.

2) Renew erosion-resistant cap and slope (more often as needed).

3) Keep written records of same.

d. Semi-annual groundwater monitoring and reporting:

1) Sample and analyze monitor wells around the landfill every December and June.

2) Assess data and report to NDEP within 30 days after receiving laboratory results.

4. Facility Contact

During closure activities and post-closure care, contact with the facility should be made as follows:

a. Facility Manager
Kerr-McGee Chemical Corporation
P. O. Box 55
Henderson, Nevada 89015
Phone (702) 565-8901

Rolfe B. Chase, Jr., is Facility Manager as of June 1, 1984.

b. Environmental Supervisor
Kerr-McGee Chemical Corporation
P. O. Box 55
Henderson, Nevada 89015
Phone (702) 565-8901

F. R. Stater is Environmental Supervisor as of June 1, 1984.

V. CERTIFICATION OF CLOSURE [265.115]

As independent professional engineer, registered in the State of Nevada, will be engaged to inspect the closure proceedings for compliance with the approved plan.

The PE will make inspection at each of the following stages of closure:

1. Prior to any closure activities to verify no additional waste has been added.

2. Upon completion of the application of the low permeability layer, verify coverage, depth, compaction, and slope of finished lift.

3. Upon completion of the installation of the protective membrane to insure seams are according to drawing and thickness meets specification.

4. Upon final completion of top cover, insure the final slope of 3-5 percent is maintained and the drainage around the waste cell matches the engineering drawings as specified in this closure.

Certification of proper closure will be submitted by KMCC and the registered PE to the Director, NDEP, and the Regional Administrator, U. S. EPA, within 30 days after all work has been completed and inspected.

VI. PROPERTY RESTRICTIONS

1. Post-Closure Use [265.117]

The closed landfill will not be used in a manner that will disturb the integrity of the final cover unless KMCC demonstrates to the satisfaction of the Director, NDEP, that any contemplated use would not create a hazard to health or the environment.

Within the foreseeable future year (year 2015), there is enough land within the existing property to satisfy all anticipated land use requirements without disturbing the landfill site.

2. Notice to Local Authorities [265.119]

Kerr-McGee will promptly notify the Clark County Recorder and the Director, NDEP, by providing within 90 days after closure a final plat showing the location and dimensions of the closed landfill. The benchmark set in the cover will be used for this identification. A registered land surveyor will prepare and certify this plat.

3. Notice in Property Deed [265.120]

KMCC, the property owner, will record with the Clark County Recorder of Deeds a notification on the deed to the facility property that will in perpetuity notify any potential or future purchaser that the land has been used for HW disposal and its use is restricted under 40 CFR 265.117(c).

VII. COST ESTIMATES

A. Cost Estimates for Closure [265.142]

Cost estimates for closure are shown in Table 5. The cost estimate for closing the landfill is based

TABLE 5 - CLOSURE COST ESTIMATE

The following cost estimate for installation of the landfill cap is based on the design specifications contained in Appendix IV:

1. Low Permeability Layer			
Material:	2,000 $yd.^3$ clay x \$15/$yd.^3$	\$30,000	
Installation:	2,000 $yd.^3$ clay x \$ 3/$yd.^3$	6,000	
	Total		\$ 36,000
2. Synthetic Membrane			
Material:	30 mil HDPE 24,000 $ft.^2$ x \$0.27	\$ 6,500	
Installation:	30 mil HDPE 24,000 $ft.^2$ x \$0.50	12,000	
	Total		\$ 18,500
3. Protective Layer			
Material:	450 $yd.^3$ clay x \$15/yd^3	\$ 6,750	
Installation:	450 $yd.^3$ clay x \$ 2/$yd.^3$	900	
	Total		\$ 7,650
4. Final Cap - Drainage and Protective Layers			
Material:	1,750 $yd.^3$ native soil x \$10/$yd.^3$	\$17,500	
Installation:	1,750 $yd.^3$ native soil x \$ 2/$yd.^3$	3,500	
	Total		\$ 21,000
5. Grading for Drainage			
	Total		\$ 10,000
6. Miscellaneous Costs			
Installation of BM:		\$ 1,500	
PE Certification:		500	
Administrative:		3,000	
	Total		\$ 5,000
	Total Closure Cost		\$ 98,150
	10% Contingency		\$ 9,800
			\$107,950

on the procedure proposed in this plan and on 1984 costs. These estimated costs will be escalated by the 1984 inflation factors if approval of this plan is delayed beyond December 31, 1984.

B. Cost Estimate for Post-Closure Care [265.144]

Post-closure cost estimates are give in Table 6. The cost for post-closure care is based on 1984 es- timated costs for site maintenance, sampling and analysis of groundwater-monitor wells, and reporting thereof.

Post-closure care for 30 years, beginning June, 1985, is forecasted. Annual revision of the post-closure cost estimates will be provided within 30 days of each anniversary date of final closure to reflect inflation and any changes that may occur in the plan. A copy of the annual revision to the post-closure plan will be kept at the Henderson Facility office.

VIII. FINANCIAL ASSURANCE

A. Financial Assurance for Closure [265.143]

Attached in Appendix V is the letter from the Chief Financial Officer of Kerr-McGee Corporation to demonstrate financial assurance of closure as specified in 40 CFR 265.143.

Also attached is a certificate of liability in- surance for a HW facility provided by Harbor Insurance Company, Policy No. HI-167898.

B. Financial Assurance for Post-Closure Care and Groundwater Monitoring and Maintenance [265.145]

The same documents to meet the requirements of 265.143 apply to 265.145.

IX. CLOSURE TIME SCHEDULE

KMCC is prepared to begin closure with 7 days after notification of approval of the closure/post-closure plan by the NDEP.

The chronological listing and checkpoints for increments of progress are listed below. A bar chart, showing time versus activity, follows in Figure 6 to show simulta- neous activities that may occur.

TABLE 6 - COST ESTIMATE FOR POST-CLOSURE CARE
[265.144]

1.	Inspections and Recordkeeping		
	a) One per week		52
	b) Special events (precipitation, high winds, etc.) Assume 10 = Total 62 62 x 1/2 hour = 31 hours - 31 x $15		$ 500
2.	Maintenance of Cover and Drainage Swales		
	Assume restoration of top cover and drainage swales once per year		$ 2,000
3.	Annual Subsidence Check		$ 1,000
4.	Groundwater Monitoring		
	a) Sampling and Analysis	$6,000	
	b) Maintenance	500	
	Total	$ 6,500	
Total Post-Closure Costs/Year			$ 10,000
For 30 Years			$300,000

Time Frame	Action
0	1. Approval of Closure Plan
Within 1 week	2. Begin preparation of requests for bids for installation of cover, survey work, and PE services
Within 5 weeks	3. Award contracts
Within 7 weeks	4. Begin construction of landfill cover
Within 15 weeks	5. Completion of landfill cover
Within 17 weeks	6. Survey and set benchmark
Within 18 weeks	7. Obtain PE Certification
Within 20 weeks	8. Notify NDEP of completion

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
CAPITOL COMPLEX
CARSON CITY, NEVADA 89710

TELEPHONE (702) 885-4670

April 16, 1985

Certified Mail #1673285
Return Receipt Requested

Rolfe B. Chase, Jr.
Facility Manager
Kerr-McGee Chemical Corporation
P.O. Box 55
Henderson, NV 89015

Dear Mr. Chase:

The public comment period for review of the Closure Plans for the Kerr-McGee Chemical Corporation hazardous waste landfill and surface impoundments expired on Thursday, April 11, 1985. No comments or requests for a public hearing were received by the Division.

Kerr-McGee Chemical Corporation may begin closure activities for the landfill and the impoundments in accordance with the aforementioned Closure Plans dated September 26, 1984, and October 26, 1984. As specified in 40 CFR 265.113, the owner or operator must, within 90 days after approval of the closure plan, treat, remove from the site, or dispose of on-site all hazardous wastes in accordance with the approved closure plan. In addition, closure activities must be completed in accordance with the approved closure plan within 180 days after approval of the closure plan. Please provide the Division with all appropriate details of the plan's execution, such as sampling locations, analytical data, and quality control, quality assurance of the sampling data and date of commencement of closure.

Should you have any questions regarding this matter, please contact me.

Sincerely

Thomas J. Fronapfel

Thomas J. Fronapfel, P.E.
Environmental Engineer
Waste Management Section

TJF/kb

cc: Gary Lance, EPA, Region IX

RICHARD H. BRYAN
Governor

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
Capitol Complex
Carson City, Nevada 89710
(702) 885-4670

Janaury 17, 1986

P.S. Corbett
Operations Manager
Kerr-McGee Chemical Corporation
P.O. Box 55
Henderson, NV 89015

Certified Mail No. P 264 098 722
Return Receipt Requested

Dear Mr. Corbett:

The Division has completed its review of your letter of December 19, 1985. Based upon this review, it appears that the hazardous waste landfill has been closed in accordance with the Closure Plan approved by the Division on April 16, 1985. It is understood that KMCC will begin and continue post-closure activities in accordance with the approved post-closure plan.

As required by 40 CFR Section 265.120, KMCC must record a notation on the deed to facility property within 90 days after completion of closure. The Division hereby requests that KMCC submit certification, including a copy of the document in which the notice has been placed, to the Division within 14 days of placement of the notice in the deed.

In addition, the Division will contact KMCC to schedule an inspection of the closed facilities.

Should you have any questions concerning this matter, please contact me.

Sincerely,

Thomas J. Fronapfel

Thomas J. Fronapfel, P.E.
Environmental Engineer
Waste Management Section

TJF/pr

cc: Jan Palumbo, EPA Region IX

6

ATTACHMENT 6

LOU ITEM 11

OLD DRYING PAD CLEANUP OBSERVATIONS

RECORD OF OBSERVATION

ITEM #11

On June 21, 1993, representatives of Kerr-McGee Chemical Corporation (KMCC) meet with the Nevada Division of Environmental Protection (NDEP) to discuss the Environmental Conditions Assessment of the KMCC Henderson, Nevada Facility. One of the items requested in that meeting was a discussion on the condition of soils beneath a new Sodium Chlorate Hazardous Waste Storage Unit.

This unit is KMCC Solid Waste Management Unit (SWMU) 005 in the Environmental Conditions Report for the KMCC facility.

In January, 1990, KMCC began operations of a new sodium chlorate process at the Henderson facility. This new process utilized some of the existing process equipment for purification of the sodium chlorate product. One continuing aspect was purification of the product by filtration removal of excess chlorides and sulfates. This waste was typically a dry cake which was properly disposed as hazardous waste containing chromium.

During the first quarter of 1991, the production process produced a slightly more wet, semi-solid waste from the filtration step. In order to properly handle the sludge, a hazardous waste tank was to be constructed at a location where an existing concrete containment structure was situated. The existing structure was similar in design and size to the new structure desired for handling the sludge material.

Before construction of this new storage area, the existing structure was demolished and removed from the KMCC facility for disposal as hazardous waste. The former structure had a sloped ramp leading to an elevated concrete pad with 6 inch concrete berms. The structure sat upon approximately 2 feet of type 2 soil which formed the foundation for the concrete floor of the pad.

I was present at the demolition of the old pad and construction of the new waste storage unit at the KMCC facility. Demolition of the existing pad involved removal of all concrete comprising the foundation and berms, excavation of the foundation soils to bring the elevation back down to grade, and disposal of all material as a hazardous waste. During demolition of the pad, the only contamination visible was that portion of soil outside the structure and closest to the bermed curbing. The discoloration was shallow and completely removed for disposal. As the base of the pad was demolished, no visible sign of contamination was present.

Since there was no attempt to segregate the contaminated media from uncontaminated soil from the foundation, all material was disposed as a hazardous waste. No contaminated material was left at the location or used in the construction of the new structure

I certify and declare that no visibly contaminated soils were present under the bottom of the unit upon which the new environmental protection controls were constructed for the new storage area.

Alan J. Gaddy

Alan J. Gaddy
Certified Environmental Manager #1102

8/10/93
Date

7

ATTACHMENT 7

LOU ITEM 14

POND P-1 CLOSURE DOCUMENTATION

(131)

RICHARD H. BRYAN
Governor

RECEIVED
DEC 9 1985
R.B. CHASE

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
Capitol Complex
Carson City, Nevada 89710
(702) 885-4670

December 5, 1985

Rolfe B. Chase, Jr.
Plant Manager
Kerr-McGee Chemical Corporation
P.O. Box 55
Henderson, NV 89015

Certified Mail #P336 765 599
Return Receipt Requested

Dear Mr. Chase:

The Division has completed its review of the closure certifications for the S-1 and P-1 impoundments and for the hazardous waste landfill, dated September 4, 1985, September 6, 1985 and October 22, 1985, respectively.

The S-1 and P-1 impoundments appear to have been closed in accordance with the closure plan for these impoundments dated September 26, 1984, and approved by the Division on April 16, 1985. The Division hereby acknowledges that these impoundments have been properly closed, and that they no longer remain under the interim status standards of 40 CFR Part 265.

With regard to the hazardous waste landfill, the certification does not appear to conform to the approved closure plan. Specifically, the closure plan specified a final cover slope of 3 to 5 percent, whereas the installed final cover slope is verified as 1 percent North to South and 3 percent East to West. Although no specific slope is required by regulation, closure must be done in accordance with the approved closure plan. Therefore, it is necessary for KMCC to show that the 1 percent slope will prevent infiltration and that it will provide adequate drainage away from the landfill cell. Please submit this information to the Division within fifteen (15) days of receipt of this letter.

Should you have any questions concerning this matter, please contact me.

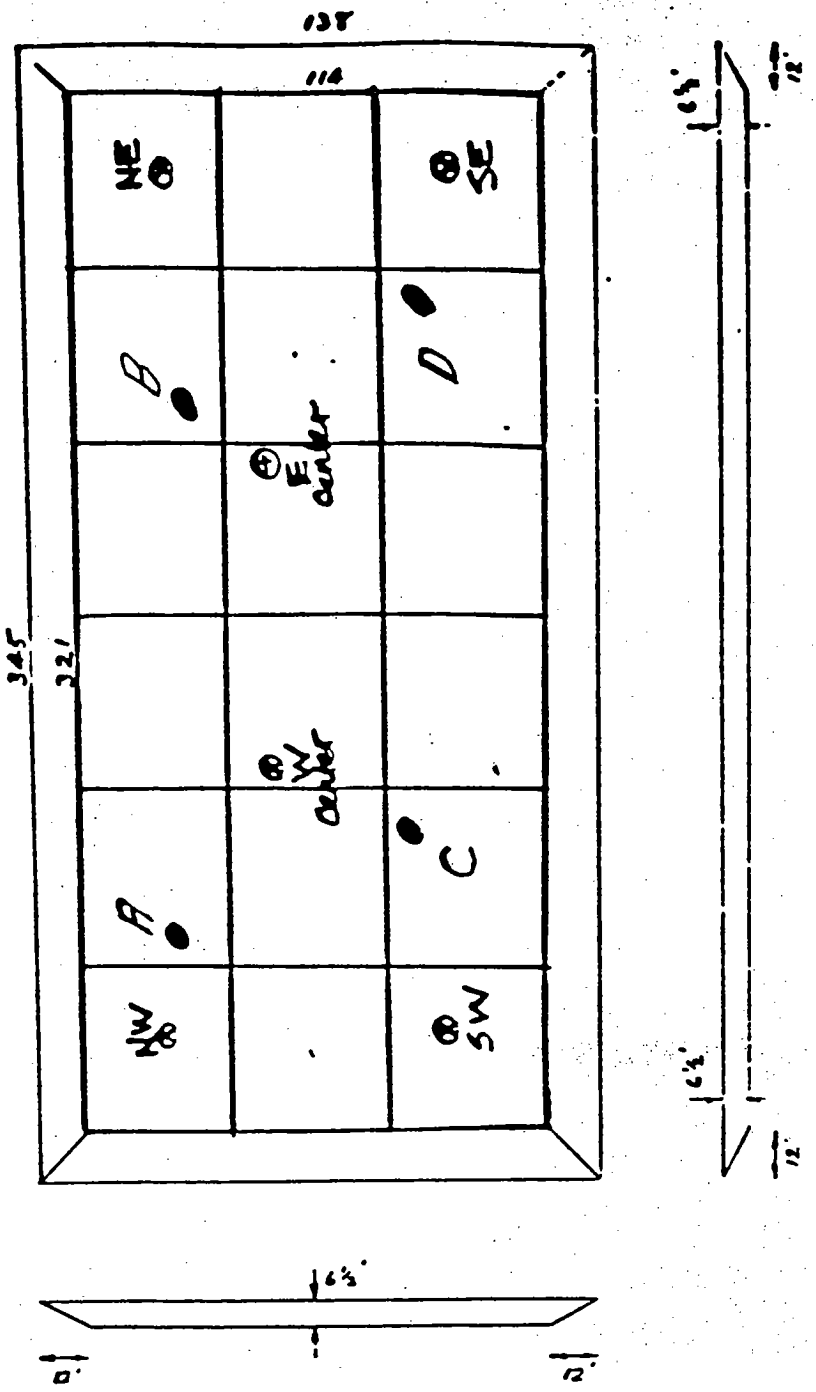
Sincerely,

Thomas J. Fronapfel

Thomas J. Fronapfel, P.E.
Environmental Engineer
Waste Management Section

TJF/pr

cc: Gary Lance, EPA Region IX



EVAPORATION POND S-1

Analyses Attached

Figure 1

Pond S-1

CHAIN OF CUS RECORD— ENVIRONMENTAL SAMPLES NM-4778

FACILITY	SAMPLING FIRM	SAMPLE
NAME: KMCC Henderson	NAME: Desert Research Institute	☐ Effluent ☐ Groundwat
ADDRESS: Box 55	ADDRESS:	☑ Solid ☐ Surface Wa
Henderson, NV. 89015	SIGNATURE:	☐ Soils

NO.	LOCATION	DATE	TIME	WEATHER TEMP	WEATHER PREC	SAMPLE TYPE AND METHOD COMP.	GRAB	MECH	MAN	TIMES CASING CLEARED	NO. OF CONTAINERS	ANALYSIS REQUIRED	REMARKS
1	S-1 NW Corner	3/2/84		70s	None							Nitric Acid Extraction leachate analyzed for Chromium	1 composite at each loc comprised grab sampl for for
2	S-1 SW Corner												
3	S-1 W Center												
4	S-1 E Center												
5	S-1 NE Corner												
6	S-1 SE Corner												
M-1	background												
M-21	background												
M-4	background												
T	tails											EP Toxicity ext. for all metals	3 grai.

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME

DISPATCHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY (SIGNATURE)	DATE	TIME
			[signature]	3/6/84	9:56

CARRIER	LABORATORY
	DESERT RESEARCH INST. WRC
ADDRESS: 90001402	ADDRESS: 7010 DANDINI BLVD RENO NV 89512
METHOD OF SHIPMENT	

ADDITIONAL REMARKS

ALL ANALYSIS PERFORMED BY EPA APPROVE PROCEDURES

☒ Yes ☐ No, explain above

KERR-McGEE C ORATION

CHAIN OF CUSTODY RECORD — ENVIRONMENTAL SAMPLES KM-4778

FACILITY	SAMPLING FIRM	SAMPLE
NAME: Kerr McGee Chem Corp	NAME: SAME + Bert Research Lab	☐ Effluent ☐ Groundwater
ADDRESS: P.O. Box 55 Henderson NV. 89015	ADDRESS: Kevin W. Eyster	☑ Solid ☐ Surface Water
	SIGNATURE:	☐

NO.	LOCATION	DATE	TIME	WEATHER TEMP.	WEATHER PREC.	SAMPLE TYPE AND METHOD COMP.	GRAB	MECH	MAN.	TIMES CASING CLEARED	NO. OF CONTAINERS	ANALYSIS REQUIRED	REMARKS
A-1	NW Corner Pond S-1, 1' Depth	8-24-84	11:00	95	—		✓	✓		NA	1 BAG	Chromium	Analyze by EP Tox and Nitric Acid for Chromium
A-2	NW Corner S-1, 2' depth	8-24-84	"	95	"		✓	✓		"		"	
A-3	NW Corner S-1, 3' depth	8-24-84	"	"	—		✓	✓		"			
A-4	NW Corner S-1, 4' depth	8-24-84	"	"	✓		✓	✓		"			
A-5	NW Corner S-1, 5' depth	8-24-84	"	"	—		✓	✓		"			
A-6	NW Corner S-1, 6' depth	8-24-84	1125	"	—		✓	✓		"			
B-1	NE Corner S-1, 1'	8-24-84	1115	"	—		✓	✓		"			
B-2	NE Corner S-1, 2'	8-24-84	1117	"	—		✓	✓		"			
B-3	NE Corner S-1, 3'	8-24-84	1120	"	—		✓	✓		"			
B-4	NE Corner S-1, 4'		1125	"	—		✓	✓		"			
B-5	NE Corner S-1, 5'		1130	"	✓		✓	✓		"			

RELINQUISHED BY (SIGNATURE): Frederick P. Slaten — RECEIVED BY (SIGNATURE): — DATE: Aug 24 84 — TIME:

RELINQUISHED BY (SIGNATURE): — RECEIVED BY (SIGNATURE): — DATE: — TIME:

RELINQUISHED BY (SIGNATURE): — RECEIVED BY (SIGNATURE): — DATE: — TIME:

DISPATCHED BY (SIGNATURE): — DATE: — TIME:

RECEIVED FOR LABORATORY (SIGNATURE): James C. Walton — DATE: 27 Aug 84 — TIME: 12:30

CARRIER: /

LABORATORY: Bert Ellicott James C. Walton

ADDRESS: 90001405

ADDRESS: DRI WATER LAB RENO NV

METHOD OF SHIPMENT:

ADDITIONAL REMARKS:

ALL ANALYSIS PERFORMED BY EPA APPROVED PROCEDURES

☒ Yes ☐ No, explain above.

KERR-McGEE CORPORATION

CHAIN OF CUST[illegible]ECORD— ENVIRONMENTAL SAMPLES KM-4776

FACILITY

NAME: Kerr McGee Chem. Corp.
ADDRESS: P.O. Box 55
Henderson NV 89015

SAMPLING FIRM

NAME: Some of D.R.I.
ADDRESS: Reno NV.
SIGNATURE:

SAMPLE

☐ Effluent ☐ Groundwater
☑ Solid ☐ Surface Water
☐ Soil Sample

NO.	LOCATION	DATE	TIME	WEATHER TEMP.	WEATHER PREC.	SAMPLE TYPE AND METHOD COMP.	GRAB	MECH	MAN.	TIMES CASING CLEARED	NO. OF CONTAINERS	ANALYSIS REQUIRED	REMARKS
B-6	NE Corner S-1, 6'	8-24-84	1130	95	—		✓	✓	"	NA	1 Bag	Chromium	Analyze by
C-1	SW Corner S-1, 1'	8-24-84	1135	95	—		✓	✓		"	1 Bag		Both EP
C-2	SW Corner S-1, 2'	8-24-84	1137	"	—		✓	✓		"	1 Bag		Toxic and
C-3	SW Corner S-1, 3'	8-24-84	1140	"	—		✓	✓		"	1 Bag		Nitric Acid
C-4	SW Corner S-1, 4'	8-24-84	1145	"	—		✓	✓		"	1 Bag		Extraction of
C-5	SW Corner S-1, 5'	8-24-84	1147	"	—		✓	✓		"	1 Bag		Chromium.
C-6	SW Corner S-1, 6'	8-24-84	1150	"	—		✓	✓		"	1 Bag		
D-1	SE Corner S-1, 1'	8-24-84	1155	"	—		✓	✓		"	1 Bag		
D-2	SE Corner S-1, 2'	8-24-84	1158	"	—		✓	✓		"	1 Bag		
D-3	SE Corner S-1, 3'	8-24-84	1200	"	—		✓	✓		"	1 Bag		
D-4	SE Corner S-1, 4'	8-24-84	1205	"	—		✓			"	1 Bag	✓	

RELINQUISHED BY (SIGNATURE): Frederick R. Slater
RECEIVED BY (SIGNATURE):
DATE: 8-24-84 TIME:

RELINQUISHED BY (SIGNATURE):
RECEIVED BY (SIGNATURE):
DATE: TIME:

RELINQUISHED BY (SIGNATURE):
RECEIVED BY (SIGNATURE):
DATE: TIME:

DISPATCHED BY (SIGNATURE): DATE: TIME:
RECEIVED FOR LABORATORY (SIGNATURE): Susan C. Mueller DATE: 27AUG84 TIME: 12:30
CARRIER:
LABORATORY: Susan C. Mueller
ADDRESS: DRF WATER LAB RENO NV
METHOD OF SHIPMENT: 90001403

ADDITIONAL REMARKS:

ALL ANALYSIS PERFORMED BY EPA APPROVED PROCEDURES
☒ Yes. ☐ No, explain above.

KERR-McGEE CORPORATION

CHAIN OF CUSTODY RECORD — ENVIRONMENTAL SAMPLES KM-4778

FACILITY
NAME: Kerr McGee
ADDRESS: P.O. Box 55
Henderson NV 89015

SAMPLING FIRM
NAME: Same + DRI
ADDRESS:
SIGNATURE:

SAMPLE
☐ Effluent ☐ Groundwater
☑ Solid ☐ Surface Water
☐ Soil Samples

NO.	LOCATION	DATE	TIME	WEATHER TEMP.	WEATHER PREC.	SAMPLE TYPE AND METHOD COMP.	GRAB	MECH	MAN.	TIMES CASING CLEARED	NO. OF CONTAINERS	ANALYSIS REQUIRED	REMARKS
D-5	SE Corner S-1	8-24-84	1205	95	-		✓	✓		NA	1 Bag	Chromium by EP Tox and Nitric Acid Extraction	
D-6	SE Corner S-1	8-24-84	1210	95	-		✓	✓		NA	1 Bag		

RELINQUISHED BY (SIGNATURE): [signature] — RECEIVED BY (SIGNATURE): — DATE: 8-24-84 — TIME:
RELINQUISHED BY (SIGNATURE): — RECEIVED BY (SIGNATURE): — DATE: — TIME:
RELINQUISHED BY (SIGNATURE): — RECEIVED BY (SIGNATURE): — DATE: — TIME:

ADDITIONAL REMARKS:

DISPATCHED BY (SIGNATURE): — DATE: — TIME:
RECEIVED FOR LABORATORY (SIGNATURE): [signature] — DATE: 27 Aug 84 — TIME: 12:30
CARRIER:
LABORATORY: DRI WATER LAB
ADDRESS: 90001404
ADDRESS: RENO NV
METHOD OF SHIPMENT:

ALL ANALYSIS PERFORMED BY EPA APPROVED PROCEDURES
☒ Yes ☐ No

TCH SEP 24

WATER ANALYSIS LABORATORY
DESERT RESEARCH INSTITUTE

REPORT DATE: 20-SEP-84
FILE NAME: 7714KM.TB_

LAB # / DATE	SAMPLE POINT	CR MG/L	
7714	EP-TOX S1		
8-MAR-84	NW CORNER	0.05	0.05
7715	EP-TOX S2		
8-MAR-84	SW CORNER	<.02	<.02
7716	EP-TOX S3		
8-MAR-84	W CENTER	<.02	<0.02
7717	EP-TOX S4		
8-MAR-84	E CENTER	0.11	0.11
7718	EP-TOX S5		
8-MAR-84	NE CORNER	0.02	0.02
7719	EP-TOX S6		
8-MAR-84	SE CORNER	<.02	<0.02
7720	EP-TOX M1		
8-MAR-84	BACKGROUND	<.02	<0.02
7721	EP-TOX M2		
8-MAR-84	BACKGROUND	<.02	<0.02
7722	EP TOX M4		
8-MAR-84	BACKGROUND	<.02	<0.02

Table I

OLP 17 1984

WATER ANALYSIS LABORATORY
DESERT RESEARCH INSTITUTE

REPORT DATE: 13-SEP-84
FILE NAME: 8701KM.TBL

LAB # / DATE	SAMPLE POINT	CR EPTOX	
8701 24-AUG-84	A-1	.03	0.03
8702 24-AUG-84	A-2	<.02	<0.02
8703 24-AUG-84	A-3	.02	0.02
8704 24-AUG-84	A-4	.02	.02
8705 24-AUG-84	A-5	<.02	<.02
8706 24-AUG-84	A-6	<.02	<.02
8707 24-AUG-84	B-1	<.02	<.02
8708 24-AUG-84	B-2	<.02	<.02
8709 24-AUG-84	B-3	<.02	<.02
8710 24-AUG-84	B-4	<.02	<.02
8711 24-AUG-84	B-5	<.02	<.02
8712 24-AUG-84	B-6	<.02	<.02
8713 24-AUG-84	C-1	<.02	<.02
8714 24-AUG-84	C-2	<.02	<.02
8715 24-AUG-84	C-3	<.02	<.02

RESULTS BY EPTOX ESTIMATE REPORTED IN MG/L.

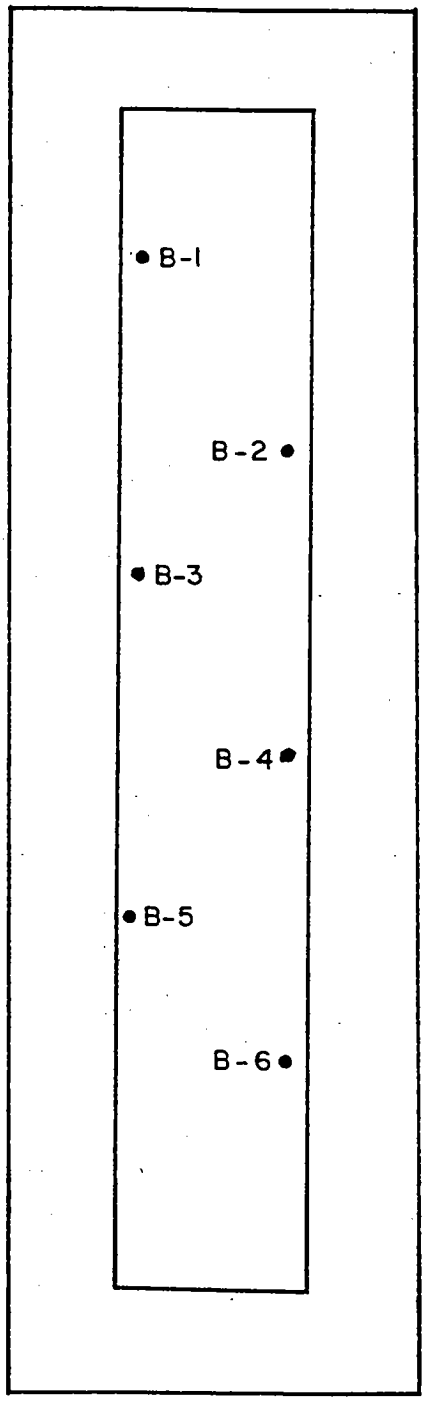
Table I (continued)

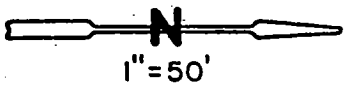
WATER ANALYSIS LABORATORY
DESERT RESEARCH INSTITUTE

REPORT DATE: 13-SEP-84
FILE NAME: 8701KM.TBL

LAB # / DATE	SAMPLE POINT	CR EPTOX	
8716 24-AUG-84	C-4	(.02	<0.02
8717 24-AUG-84	C-5	(.02	<0.02
8718 24-AUG-84	C-6	(.02	<0.02
8719 24-AUG-84	D-1	.02	0.02
8720 24-AUG-84	D-2	(.02	<0.02
8721 24-AUG-84	D-3	(.02	<0.02
8722 24-AUG-84	D-4	(.02	<0.02
8723 24-AUG-84	D-5	(.02	<0.02
8724 24-AUG-84	D-6	(.02	<0.02

RESULTS IN [illegible] REPORTED IN MG/L





• B-2: Approximate Location of Exploratory Boring

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PROJECT NO. L-1359-3

PLOT PLAN
POND P-1

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature) Paul A. Davis (Paul A. Davis)

Phone: 702-736-2936

S TO:
DESERT RESEARCH INST.
7010 DANDINI
SPARKS, NV 89431
ATTN: WRC LAB

ATTENTION:

Phone No.

SHIPPING INFORMATION

Shipper

Address

Date Shipped

Shipment Service

Airbill No.

Cooler No.

Relinquished by: (Signature) William Siegel	Received by: (Signature) Mary Alexander	Date/Time 8-12-85 11:24
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Receive for laboratory by*: (Signature)	Date/Time 8-13-85 11:30

*Analysis laboratory should complete, "sample condition upon receipt", section below, sign and return top copy to J. H. KLEINFELDER & ASSOCIATES, 5115 South Industrial Road, Suite 605, Las Vegas, Nevada 89118

Sample Number	Site Identification	Date Sampled	Analysis Requested	Sample Condition Upon Receipt
C-½	B-1	8-9-85	Chromium	GOOD
½-1½	B-1			
1½-2½	B-1			
2½-3½	B-1			
3½-4½	B-1			
0-½	B-2			
½-1½	B-2			
1½-2½	B-2			
2½-3½	B-2			
3½-4½	B-2			
0-½	B-3			
½-1½	B-3			
1½-2½	B-3			
2½-3½	B-3			
3½-4½	B-3			
0-½	B-4			
½-1½	B-4			
1½-2½	B-4			
2½-3½	B-4			
3½-4½	B-4			

Form A-382 (Rev. 7/82)
White-Sampler Canary- J. H. KLEINFELDER & ASSOCIATES Pink-Lab Courtesy Copy

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature) Paul A. Davis (Paul A. Davis)

Phone: 702-736-2936

SHIPPING INFORMATION

Shipper

Address

Date Shipped

Shipment Service

Airbill No.

Cooler No.

SHIP TO:

DESERT RESEARCH INST.
2010 NANDINI
SPARKS, NV

ATTENTION: WRCC LAB

Phone No.

Relinquished by: (Signature) William Siegel	Received by: (Signature) Mara Morrison	Date/Time 8/12/85 11:24
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Receive for laboratory by*: (Signature) K. Laura C. Mueller	Date/Time 8-13-85 11:30

*Analysis laboratory should complete, "sample condition upon receipt", section below, sign and return top copy to J. H. KLEINFELDER & ASSOCIATES, 5115 South Industrial Road, Suite 605, Las Vegas, Nevada 89118

Sample Number	Site Identification	Date Sampled	Analysis Requested	Sample Condition Upon Receipt
[illegible] ½	B-5	8-9-85	Chromium	GOOD
½-1½	B-5			
½-2½	B-5			
½-3½	B-5			
½-4½	B-5			
2-½	B-6			
½-1½	B-6			
½-2½	B-6			
½-3½	B-6			
½-4½	B-6			

Form A-382 (Rev. 7/82)
White-Sampler Canary- J. H. KLEINFELDER & ASSOCIATES Pink-Lab Courtesy Copy

WATER ANALYSIS LABORATORY
DESERT RESEARCH INSTITUTE

REPORT DATE: 22-AUG-85
FILE NAME: 9735KL.TBL

LAB # / DATE	SAMPLE POINT	CR MG/L
9735 9-AUG-85	B-1 0 - .5'	0.11
9736 9-AUG-85	B-1 .5 - 1.5'	<.10
9737 9-AUG-85	B-1 1.5 - 2.5'	<.10
9738 9-AUG-85	B-1 2.5 - 3.5'	<.10
9739 9-AUG-85	B-1 3.5 - 4.5'	<.10
9740 9-AUG-85	B-2 0 - .5'	0.41
9741 9-AUG-85	B-2 .5 - 1.5'	0.10
9742 9-AUG-85	B-2 1.5 - 2.5'	<.10
9743 9-AUG-85	B-2 2.5 - 3.5'	<.10
9744 9-AUG-85	B-2 3.5 - 4.5'	<.10
9745 9-AUG-85	B-3 0 - .5'	0.27
9746 9-AUG-85	B-3 .5 - 1.5'	<.10
9747 9-AUG-85	B-3 1.5 - 2.5'	<.10
9748 9-AUG-85	B-3 2.5 - 3.5'	<.10
9749 9-AUG-85	B-3 3.5 - 4.5'	<.10

CHROMIUM ANALYSIS ON EP-TOX EXTRACTS

WATER ANALYSIS LABORATORY — REPORT DATE: 22-AUG-85
DESERT RESEARCH INSTITUTE — FILE NAME: 9735XL.TBL

LAB # / DATE	SAMPLE POINT	CR MG/L
9750 / 9-AUG-85	B-4 :0 - .5'	< .10
9751 / 9-AUG-85	B-4 :.5 - 1.5'	< .10
9752 / 9-AUG-85	B-4 :1.5 - 2.5'	< .10
9753 / 9-AUG-85	B-4 :2.5 - 3.5'	< .10
9754 / 9-AUG-85	B-4 :3.5 - 4.5'	< .10
9755 / 9-AUG-85	B-5 :0 - .5'	0.21
9756 / 9-AUG-85	B-5 :.5 - 1.5'	< .10
9757 / 9-AUG-85	B-5 :1.5 - 2.5'	< .10
9758 / 9-AUG-85	B-5 :2.5 - 3.5'	< .10
9759 / 9-AUG-85	B-5 :3.5 - 4.5'	< .10
9760 / 9-AUG-85	B-6 :0 - .5'	0.25
9761 / 9-AUG-85	B-6 :.5 - 1.5'	< .10
9762 / 9-AUG-85	B-6 :1.5 - 2.5'	0.10
9763 / 9-AUG-85	B-6 :2.5 - 3.5'	0.11
9764 / 9-AUG-85	B-6 :3.5 - 4.5'	< .10

CHROMIUM ANALYSIS ON EP-TOX EXTRACTS

8

ATTACHMENT 8

LOU ITEM 15

PLATINUM DRYING UNIT DOCUMENTATION

TCLP ANALYSIS (SW-846 1311)
SAMPLE RESULTS

Client Sample ID: #8 Pt Sludge Pit Solids	**LAL Sample ID: A50297**
LAL Batch ID: 115 KMC	**Matrix: solid- TCLP EXTRACT**

Constituent	Method of Analysis	Regulatory Limit (mg/L)	Reporting Limit (mg/L)	Concentration (mg/L)	Data Qualifier	Date Analyzed
Arsenic	6010	5.0	1.0	<1.0		1-21-93
Barium	6010	100	10	<10		1-21-93
Cadmium	6010	1.0	0.1	<0.1		1-21-93
Chromium	6010	5.0	0.5	1.1		1-21-93
Lead	6010	5.0	1.0	<1.0		1-21-93
Mercury	7471	0.2	0.02	<0.02		1-20-93
Selenium	7740	1.0	0.1	<0.1	N	1-16-93
Silver	6010	5.0	0.5	<0.5		1-21-93

Comments:

aliquots diluted (1:10) to reduce acetate matrix interferences

CHAIN OF CUSTODY RECORD — ENVIRONMENTAL SAMPLES KM-4778

KERR-McGEE CORPORATION

FACILITY
NAME: KERR-McGEE CHEMICAL CORPORATION
ADDRESS: 8000 WEST LAKE MEAD DRIVE
HENDERSON, NV 89015

SAMPLING FIRM
NAME: KERR-McGEE CHEMICAL CORPORATION
ADDRESS: 8000 WEST LAKE MEAD DR., HENDERSON, NV 89015
SIGNATURE: SM Crowther

SAMPLE
☐ Effluent ☐ Groundwater
☐ Solid ☐ Surface Water
☒ Pavement

NO.	LOCATION	DATE	TIME	WEATHER TEMP	WEATHER PREC.	COMP.	GRAB	MECH	MAN.	TIMES CASING CLEARED	NO OF CONTAINERS	ANALYSIS REQUIRED	REMARKS
1	Air st new pt sludge filter	4-15-94					X		X	NA	1	Chrome - Total	by acid extraction
												Cr = 17.8 ppm	
												17.8 ppm / 20 for extraction dilution = 0.9 ppm	
												0.9 ppm is below RCRA level of 5 ppm chromium	

RELINQUISHED BY (SIGNATURE): SM Crowther
RECEIVED BY (SIGNATURE): DATE: TIME:

RELINQUISHED BY (SIGNATURE):
RECEIVED BY (SIGNATURE): DATE: TIME:

RELINQUISHED BY (SIGNATURE):
RECEIVED BY (SIGNATURE): DATE: TIME:

DISPATCHED BY (SIGNATURE): DATE: TIME:
RECEIVED FOR LABORATORY (SIGNATURE): DATE: TIME:

CARRIER: Hand Carried
LABORATORY: KMCC

ADDRESS:
ADDRESS:

METHOD OF SHIPMENT:

ADDITIONAL REMARKS:

ALL ANALYSIS PERFORMED BY EPA APPROVED PROCEDURES
☐ Yes ☐ No, explain above

CHAIN OF CUSTODY RECORD — ENVIRONMENTAL SAMPLES KM-4778

KERR-McGEE CORPORATION

FACILITY
NAME: KERR-McGEE CHEMICAL CORPORATION
ADDRESS: 8000 WEST LAKE MEAD DRIVE
HENDERSON, NV 89015

SAMPLING FIRM
NAME: KERR-McGEE CHEMICAL CORPORATION
ADDRESS: 8000 WEST LAKE MEAD DR., HENDERSON, NV 89015
SIGNATURE:

SAMPLE
☐ Effluent ☐ Groundwater
☐ Solid ☐ Surface Water
☒ Soil north Unit 4-Pt p

NO.	LOCATION	DATE	TIME	WEATHER TEMP.	WEATHER PREC.	SAMPLE TYPE AND METHOD COMP.	SAMPLE TYPE AND METHOD GRAB	SAMPLE TYPE AND METHOD MECH	SAMPLE TYPE AND METHOD MAN.	TIMES CASING CLEARED	NO. OF CONTAINERS	ANALYSIS REQUIRED	REMARKS
1	N of U4 - beside Pt pad - ½ below grade	4-7-94					X		X	NA	1 quart	Total Chromium #1N 50.7 ppm #2S 24.7 ppm	

RELINQUISHED BY (SIGNATURE): [signature]
RECEIVED BY (SIGNATURE): DATE: TIME:
RELINQUISHED BY (SIGNATURE): [signature]
RECEIVED BY (SIGNATURE): DATE: TIME:
RELINQUISHED BY (SIGNATURE): DATE: TIME:
RECEIVED BY (SIGNATURE): DATE: TIME:
DISPATCHED BY (SIGNATURE): DATE: TIME:
RECEIVED FOR LABORATORY (SIGNATURE): DATE: TIME:
CARRIER: Hand Carried
ADDRESS:
METHOD OF SHIPMENT:
LABORATORY: KMCC - QC lab
ADDRESS: 8000 West Lake Mead Dr
Henderson NV 89015

ADDITIONAL REMARKS:

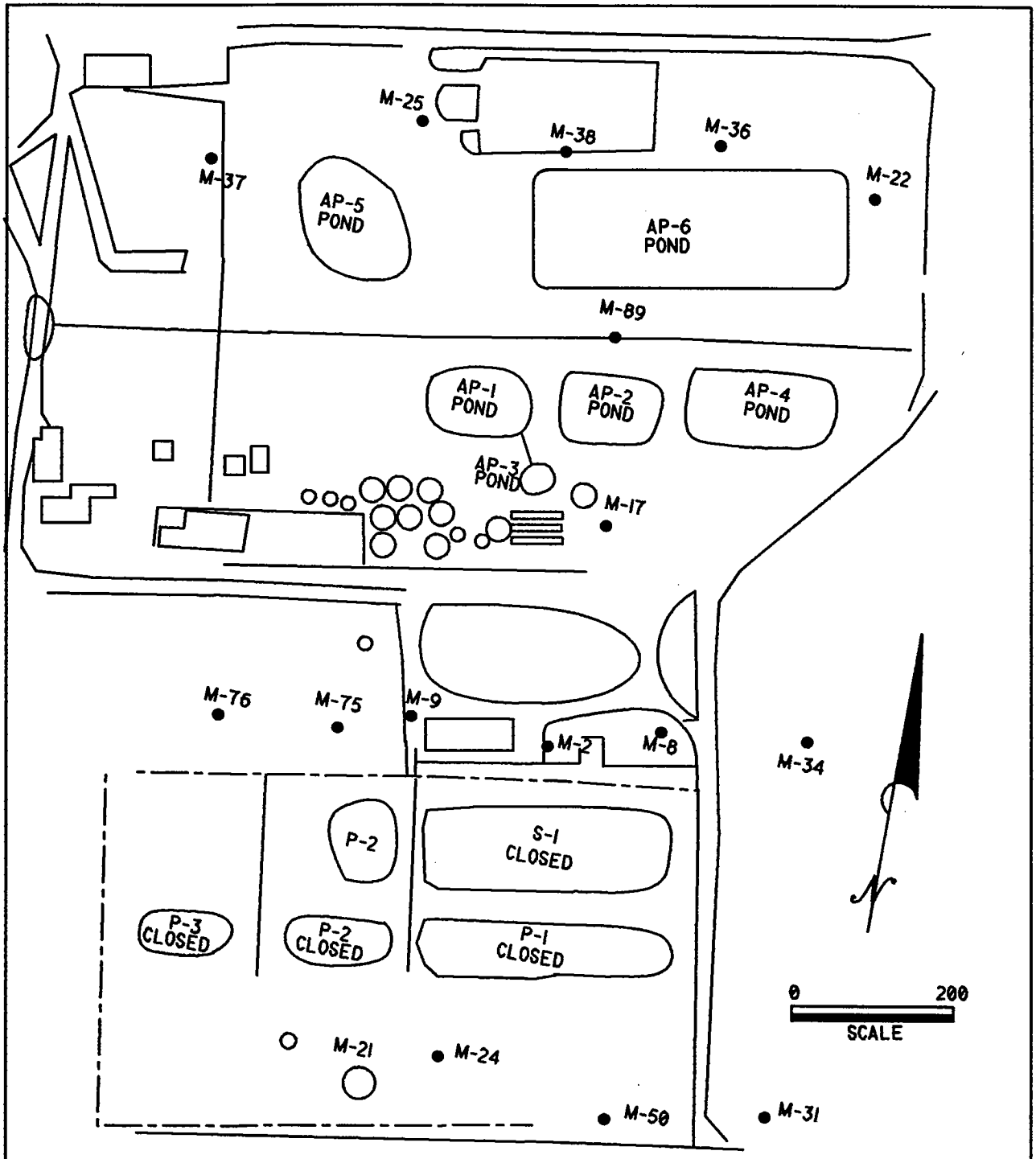
ALL ANALYSIS PERFORMED BY EPA APPROVED PROCEDURES
☒ Yes ☐ No, explain above

9

ATTACHMENT 9

LOU ITEMS 16 & 17

AP-1, 2, & 3 DOCUMENTATION



EXPLANATION

M-77 ● MONITOR WELL

KERR-McGEE CORP. - HYDROLOGY DEPT.

KERR-McGEE CHEMICAL CORP.
HENDERSON, NV

FIGURE 1:
SODIUM CHLORATE AND AP POND LOCATIONS

MAP DATE: 4/96

January 1996 Well Data

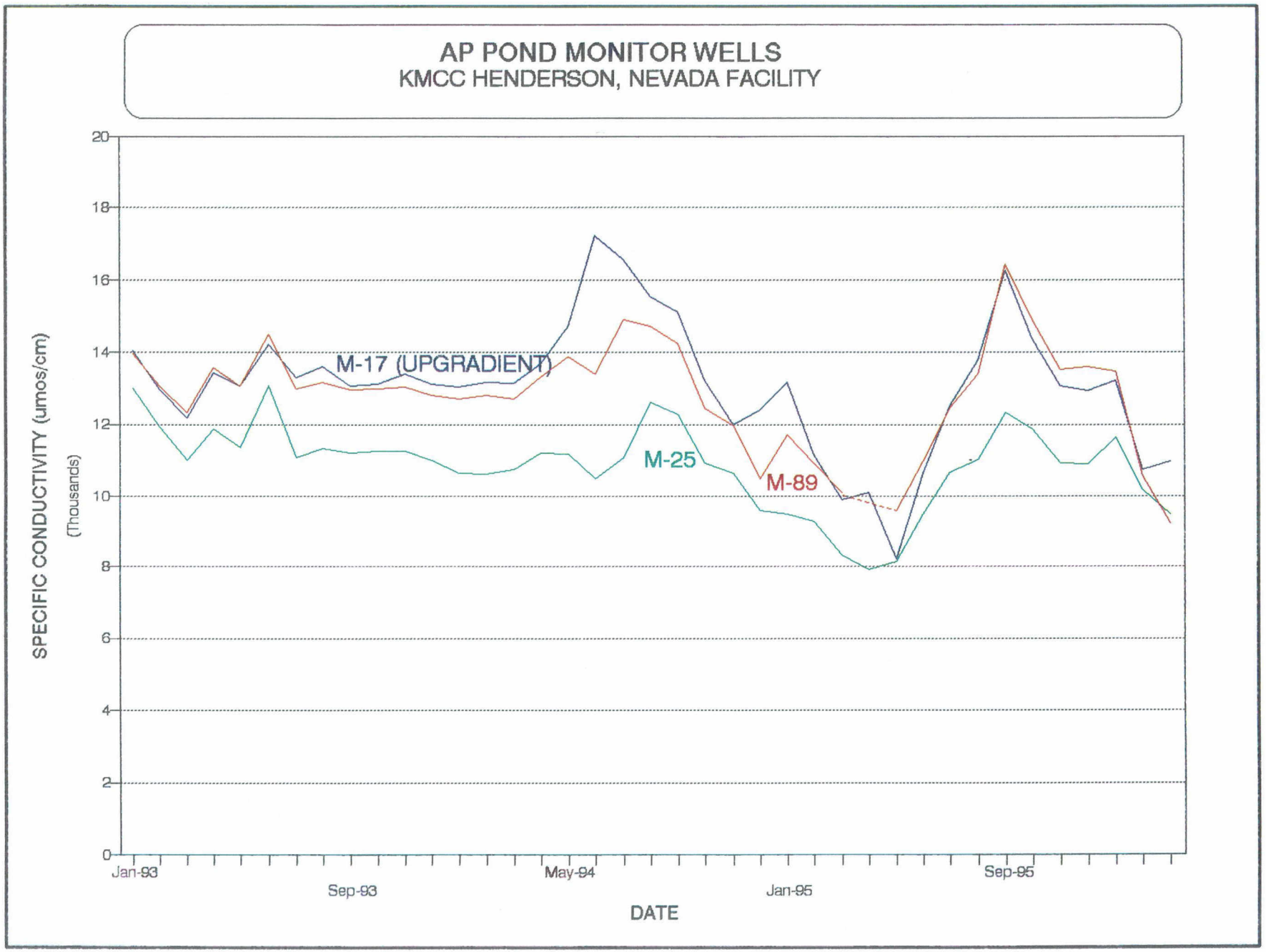
Well #	Groundwater Elevation (feet-AMSL)	pH	Specific Conductivity	NaCl (g/L)	NH_4ClO_4 (g/L)
M-17	1736.20	7.30	10,720	3.4	0.04
M-25	1725.05	7.27	10,150	3.3	0.14
M-89	1732.75	7.17	10,570	3.7	0.16

February 1996 Well Data

Well #	Groundwater Elevation (feet-AMSL)	pH	Specific Conductivity	NaCl (g/L)	NH_4ClO_4 (g/L)
M-17	1736.00	7.17	13,210	3.5	0.05
M-25	1725.15	7.21	11,620	3.3	0.07
M-89	1732.80	7.09	10,470	3.4	0.15

March 1996 Well Data

Well #	Groundwater Elevation (feet-AMSL)	pH	Specific Conductivity	NaCl (g/L)	NH_4ClO_4 (g/L)
M-17	1736.10	7.34	10,940	3.5	0.05
M-25	1725.85	7.39	9,470	3.3	0.08
M-89	1732.35	7.25	9,220	3.4	0.14


AP POND MONITOR WELLS
KMCC HENDERSON, NEVADA FACILITY
SPECIFIC CONDUCTIVITY (umos/cm)
(Thousands)
20
18
16
14
12
10
8
6
4
2
0
M-17 (UPGRADIENT)
M-25
M-89
Jan-93
Sep-93
May-94
Jan-95
Sep-95
DATE

Energy Release Potential of Ammonium Perchlorate

By assuming decomposition equations for AP and calculating the heat release, adiabatic heat balance calculations allow estimation of temperature rise.

Two cases are considered:

1. AP in the absence of oxidizable matter, and
2. AP with a hydrocarbon fuel at the oxygen balanced composition.

Ammonium Perchlorate

The equation for oxygen balanced decomposition of ammonium perchlorate is:

$$NH_4ClO_4 \text{ ----} 1/2N_2 + \tfrac{1}{2}\, Cl_2 + 2H_2O + O_2$$

In actual decomposition reactions of AP, some oxidation of nitrogen and chlorine occurs so that the reaction above probably represents maximum energy release. The heat of reaction for this decomposition is ΔH = -66.05 kcal/mole AP at 298K. This is 562 cal/gAP, for product water in the liquid state, or 383 cal/g for product water as a gas. Typically, the heat of explosion of AP is reported around 500 cal/g.

Considering soil contaminated with one percent ammonium perchlorate, we can make the following calculation. The specific heat of soil is approximately 0.2 Cal/gdeg. If AP decomposes instantaneously under adiabatic conditions, releasing 500 cal per gram of AP, the temperature rise of the soil containing the AP would be 25°C. Considering the extremely conservative assumptions on which the calculation is based, this is a trivial result.

Ammonium Perchlorate - Fuel

Making the same calculation with an oxygen balanced AP-fuel mixture assumed to be homogeneously distributed in soil yields similar results. The reaction of AP with a C_{11} hydrocarbon may be written as follows:

$$17\ NH_4ClO_4 + C_{11}H_{24} \rightarrow 17/2N_2 + 17/2\ Cl_2 + 11CO_2 + 46H_2O$$

(The mixture is 7.2% hydrocarbon)

ΔH_{298} = -170 kcal/mole AP or 1450 cal/gAP

This result is consistent with the observation that mixtures of oxidizer (such as ammonium nitrate) with

fuel, at the optimum composition, yield approximately three times the energy released when the pure oxidizer decomposes.

So soil that contains one percent AP and 0.08 percent hydrocarbon will undergo a 75°C temperature rise if the AP-fuel decomposes instantaneously and adiabatically. Since dilute systems such as this are very unlikely to react instantaneously, and adiabatic reactions mostly exist in theory, this result is another non-happening.

To further assess the significance of this energy release and temperature rise, the thermal decomposition of AP becomes measurable between 300° and 400°C. This is with or without fuel present. The large heat capacity of the soil heat sink makes it impossible for the ammonium perchlorate decomposition to generate enough heat to become self-sustaining in dilute environmental systems.

The calculations show that low levels of AP in soil is not a reactive hazard. Even though the decomposition of ammonium perchlorate (with or without fuel) is an exothermic event, the presence of the large heat sink eliminates the possibility of runaway, self-heating decomposition reactions. This, of course, is consistent with the process step where AP in salt is thermally decomposed to make the salt suitable for reuse.

TM-930569

KERR-McGEE TECHNICAL CENTER ANALYTICAL CHEMISTRY SECTION

REPORT OF ANALYSIS

Sample(s)

Received From: Russell Jones

On Date: June 7, 1993

Identification: KM Chemical (Henderson): AP Pond Samples

Date of Report: Aug. 17, 1993

Charge Number: 7046

Page: 1 of 1

The TCLP chromium results for the samples listed in Table I are reported in Table III. This report confirms the results previously reported to you by telephone. This report has been delayed due to various discussions concerning the oxidizer tests.

Table I
Samples for TCLP Chromium Testing

Location	Field Sample ID	KMTC Computer ID
Henderson Facility	AP-1-1 through AP-1-8 AP-2-1 through AP-2-8 AP-4	AC001394

The sample logistics, TCLP extractions, total extract chromium digestions, and all subsequent chromium analyses followed EPA protocols.

The EPA methods used for this work are listed in Table II.

Table II
EPA Methods Used for This Work

Method	Description	Analyte(s)
Fed.Reg.;Vol.55, No.126, Apdx.II, Method 1311	TCLP (Metals)	Cr
SW 846; 3rd.Ed., 3010	Total Digestion for ICP Analysis	Cr
SW 846; 3rd.Ed., 6010	ICP Analysis	Cr

VALIDATED-Project Leader

08/17/93

APPROVED-Manager D. A. Ward

B. R. Clark 8-19-93

B. R. Clark

KERR-McGEE CORPORATION
TECHNOLOGY DIVISION
Proprietary Information of the Company
TO BE KEPT CONFIDENTIAL

DISTRIBUTION:

P. Carnes
S. Nelson

P/C 37107/7046
CHEM 4-2
AC-93119

KM-4684-1-B

Table III
Henderson Pond Samples
TCLP Extraction (Metals)
ICAP Analysis of Extract
JOB: AC 001394

Sample ID	TCLP Chromium (mg/l)
AP-1-1	3.95
AP-1-2	2.97
AP-1-3	3.04
AP-1-4	4.49
AP-1-5	1.42
AP-1-6	3.25
AP-1-7	3.21
AP-1-8	2.71
AP-2-1	5.58
AP-2-2	3.59
AP-2-3	2.38
AP-2-4	2.56
AP-2-5	4.93
AP-2-6	1.25
AP-2-7	0.914
AP-2-8	1.23
AP-4	0.038

TM-930463

KERR-McGEE TECHNICAL CENTER ANALYTICAL CHEMISTRY SECTION -

REPORT OF ANALYSIS

Sample(s)

Received From:	Russell Jones	Date of Report:	June 14, 1993
On Date:	May 21, 1993	Charge Number:	7046
Identification:	KM Chemical (Henderson): Pond Samples	Page:	1 of 1

The TCLP chromium results for the samples listed in Table I are reported in Table III. This report confirms the results previously reported to you by telephone.

Table I
Samples for TCLP Chromium Testing

Location	Field Sample ID	KMTC Computer ID
Henderson Facility	AP-1 Liquid; AP-2 Liquid; AP-4 Liquid; AP-5 Liquid	AC001302

The sample logistics, TCLP extractions, total extract chromium digestions, and all subsequent chromium analyses followed EPA protocols.

The EPA methods used for this work are listed in Table II.

Table II
EPA Methods Used for This Work

Method	Description	Analyte(s)
Fed.Reg.;Vol.55, No.126, Apdx.II, Method 1311	TCLP (Metals)	Cr
SW 846; 3rd.Ed., 3010	Total Digestion for ICP Analysis	Cr
SW 846; 3rd.Ed., 6010	ICP Analysis	Cr

VALIDATED-Project Leader

D. A. Ward 06/15/93

APPROVED-Manager

B. R. Clark 6-16-93

KERR-McGEE CORPORATION
TECHNOLOGY DIVISION

DISTRIBUTION:

P. Carnes

P/C 37107/7046
CHEM 4-2
AC-93083

Table III
Henderson Pond Liquids
TCLP Extraction (Metals)
ICAP Analysis of Extract
JOB: AC 001302

Sample IDs	TCLP Chromium (mg/l)
AP-1; Liquid	<0.12
AP-2; Liquid	<0.12
AP-4; Liquid	<0.12
AP-5; Liquid	0.23

10

ATTACHMENT 10

LOU ITEM 24

LEACH BED DATA

DATA CHEM LABORATORIES

Date 6/5/90
Agency Identification Number S90-0401-AB
Account No. 03018

Kerr-McGee Chemical Corporation
P.O. Box 55
Henderson, NV 89015
Attention: Alan Gaddy

SD 90-151

Telephone (702) 565-8901

Sampling Collection and Shipment

Sampling Site Henderson facility Date of Collection May 02, 1990

Date Samples Received at DataChem May 14, 1990

Analytical Results

Parameter Name / Analysis Date / Method / Prep Method	Units	Field Number / Lab Number	TAILINGS EJ 2096							* Limit of Detection
Arsenic (As) 05/31/1990 6010 [1] TCLP [1]	mg/L		ND*							0.3
Barium (Ba) 05/31/1990 6010 [1] TCLP [1]	mg/L		ND*							0.5
Cadmium (Cd) 05/31/1990 6010 [1] TCLP [1]	mg/L		0.45							0.05
Chromium (Cr) 05/31/1990 6010 [1] TCLP [1]	mg/L		0.14							0.05
Silver (Ag) 05/31/1990 6010 [1] TCLP [1]	mg/L		0.09							0.05
Selenium (Se) 05/31/1990 6010 [1] TCLP [1]	mg/L		ND*							0.3
Lead (Pb) 05/31/1990 6010 [1] TCLP [1]	mg/L		ND*							0.3
Mercury (Hg) 05/31/1990 7470 [1] TCLP [1]	mg/L		ND*							0.0002

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
[1] Analyses completed on or before this date.

** Parameter not analyzed (See comment page).
( ) Parameter between LOD and LOQ.
[ ] Method Reference (See comments page.)

Analyst: Keith A. Miller

Reviewer: John T. Kershisnik

Laboratory Supervisor: Brent E. Stephens

960 West LeVoy Drive / Salt Lake City, Utah 84123-2500 / (801) 266-7700

TCLP ANALYSIS (SW-846 1311)
SAMPLE RESULTS

Client Sample ID: #4 MnO2 Tails	**LAL Sample ID: A50293**
LAL Batch ID: 115 KMC	**Matrix: solid- TCLP EXTRACT**

Constituent	Method of Analysis	Regulatory Limit (mg/L)	Reporting Limit (mg/L)	Concentration (mg/L)	Data Qualifier	Date Analyzed
Arsenic	6010	5.0	1.0	<1.0		1-21-93
Barium	6010	100	10	<10		1-21-93
Cadmium	6010	1.0	0.1	<0.1		1-21-93
Chromium	6010	5.0	0.5	<0.5		1-21-93
Lead	6010	5.0	1.0	<1.0		1-21-93
Mercury	7471	0.2	0.02	<0.02		1-20-93
Selenium	7740	1.0	0.1	<0.1	N	1-16-93
Silver	6010	5.0	0.5	<0.5		1-21-93

)mments:

aliquots diluted (1:10) to reduce acetate matrix interferences

LOCKHEED ANALYTICAL LABORATORY.

11

ATTACHMENT 11

LOU ITEM 28

HAZARDOUS WASTE STORAGE AREA DOCUMENTATION

NEVADA ENVIRONMENTAL LABORATORY

Las Vegas Division
4208 Arcata Way, Suite A • Las Vegas, NV 89030
(702) 657-1010 • Fax: (702) 657-1577
1-800-368-5221

CLIENT: Kerr-McGee Chemical Corporation
8000 W. Lake Mead Drive
Henderson, Nevada 89015
ATTN: Mark J. Porterfield

Excavation
P-2 Tanks
(Final)

PROJECT: U-2 Storage Area
PROJECT #: 94-670

RECEIVED: 11/22/94
REPORTED: 11/28/94

METHOD: **EPA 8015 MOD. FOR TPH (FULL RANGE)**

SAMPLE MATRIX: **SOIL**

Client ID/ Date, Time	NEL ID	Extracted/ Analyzed	Concentration (mg/kg)	Detection Limit (mg/kg)
U2-7 11/22/94 10:00	L9411136-06	11/23/94 11/23/94	ND	10
Method Blank	L941123-SBLK	11/23/94	ND	10

ND - Not Detected.
QC Data (Total for Gasoline and Diesel Ranges): L941123-SMS: 85% Recovery

Scott Jelinek
Chemist

11/28/94
Date

12

ATTACHMENT 12

LOU ITEM 31

DRUM CRUSHING PROCEDURES

Example: 201011A would be the first floor sweep drum of the day generated in the D-2 building on January 1, 1991. The second drum on this date will have a "B" instead of an "A", and so on.

All drums of floor sweep materials will be written in a logbook. The logbooks contain carbonless copies--if you make a mistake when logging, do not erase that entry, instead draw a single line through the entry and begin again on the next line.

The tank farm operator at the Henderson facility will log all drums that are redissolved, thus, completing the full cycle of the tracking system.

Reconciliation of the tracking system will be handled by the Apex facility supervision.

V-B.3.I.6. Used Drum Handling and Disposition

All operators must be trained to identify drums which are not reusable. These drums must be removed from the system, cleaned, and disposed of as appropriate.

1. Inspect the drums to determine if they can be reused. Drums that can be reused must be free of holes, corrosion, or large dents. Store drums that can be reused on the empty drum storage pad. Make sure that the drums have the lids in place during storage to prevent contamination from foreign objects and/or moisture.

2. Drums that cannot be reused are designated for disposal. Remove the lids and rings and place in the appropriate container.

3. Inspect the drums for AP product residue and foreign objects. Remove foreign objects and rinse the drums with water in the AY-7 sump area until clean.

4. Store the drums designated for disposal on the designated pad.

5. If directed by the supervisor, trained personnel may operate the drum crusher by the following procedure:

   a. Check the eyewash and safety shower in the drum crusher area and ensure they are functional before proceeding.

   b. Ensure the drum is clean and free of any residual AP, trash, or contamination before loading in the crusher. Clean the drum thoroughly if any contamination is found.

   c. Place the drum upside down in the crusher. Close and latch the door; press the start button.

   d. Allow the crusher to go through the crushing cycle completely. **Do not open the doors until the crusher stops.** The crusher door is interlocked to the crusher motor.

   e. Once the crusher stops, open the door and remove the drum using proper body mechanics. Place the crushed drum inside the drum rack.

f. When all crushing has been completed, clean the surrounding area and isolate the equipment as designated by the supervisor.

To the best of our knowledge, this document accurately describes the policies and procedures of the Kerr-McGee Southern Nevada Facilities.

Plant Manager — Date: 10/19/94

Area Superintendent — Date: 10-18-94

13

ATTACHMENT 13

LOU ITEM 44

UNIT 6 REPAIR RECORDS

PU	KM ASSET	WORK ORDER	SEQ	INIT DATE	SCHEDULE DATE	REQUIRED DATE	COMPLETE DATE	ST AT	WORK CHARG	SG PR	PLAN INT	COM	CHK INT	WK	PCT COMP	CRFT	ESTIMATED HOURS	CRW	ACT HOURS
GAMM1000		905385.00	1	1/14/91		1/27/91	1/25/91	MC	41311	3 4	MDG	N	JJS	PM		CM	8.0	2	0.5

SERV POINT DESC: U6 CELL FLOOR COMP:TC
AVAIL: A EST COST: LAB RATE: 20.00 LAB COST: 10.00
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: SHUTDOWN: P
SUMMARY OF WORK DONE: INSPECT/REPAIR BASEMENT LINER U6
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION: INSPECT AND REPAIR BASEMENT LINER....U-6
INSPECT AND REPAIR BASE

GAMM1000		906696.00	1	4/15/91		4/27/91	5/03/91	MC	41311	3 4	MDG	N	JJS	PM		CM	16.0	2	0.5

SERV POINT DESC: U6 CELL FLOOR COMP:FS
AVAIL: A EST COST: LAB RATE: 20.00 LAB COST: 10.00
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: SHUTDOWN: P
SUMMARY OF WORK DONE: 2 MELTED AREAS, 2 SLICES, 8 INDENTATIONS ALL LOCATED BELOW BINS OF MNO2 (NW AREA).
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION: INSPECT AND REPAIR BASEMENT LINER....U-6
INSPECT AND REPAIR BASE

0		908495.00	1	10/10/91		10/24/91	12/01/91	MC	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U6 CELL FLOOR COMP:XX
AVAIL: A EST COST: LAB RATE: 20.00 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: SHUTDOWN: P
SUMMARY OF WORK DONE: BASEMENT LINER INSPECTION DONE FY FIELD LINING SERVICES. 120 REPAIRS MADE, 9 WERE PINHOLES.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION: INSPECT AND REPAIR BASEMENT LINER....U-6
INSPECT AND REPAIR BASE

TE ASSET	KM WORK ORDER	SEQ	INIT DATE	SCHEDULE DATE	REQUIRED DATE	COMPLETE DATE	ST AT	WORK CHARG	SG PR	PLAN INT	CHK COM	WK INT	PCT COMP	CRFT	ESTIMATED HOURS	CRW	ACT HOURS
:GAMM1000	909406.00	1	1/08/92	1/15/92	1/22/92	01/22/92	MC	41311	3 3	MDG	N	JJS	PM	CM	16.0	2	32

SERV POINT DESC: U6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: INSPECT/REPAIR
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION: INSPECT AND REPAIR BASEMENT LINER....U-6
INSPECT AND REPAIR BASE

:GAMM1000	910302.00	1	4/10/92	4/14/92	4/21/92	7/09/92	MC	41311	3 3	MDG	N	JJS	PM	CM	16.0	2	

SERV POINT DESC: U6 CELL FLOOR COMP:XX
AVAIL: A EST COST: LAB RATE: 20.00 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: FIELD LINING SERVICES REPAIRED BASMENT LINER. 6 REPAIRS WERE MADE, NONE OF WHICH WERE HOLES.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION: INSPECT AND REPAIR BASEMENT LINER....U-6
INSPECT AND REPAIR BASE

:GAMM1000	911165.00	1	7/07/92	7/13/92	7/20/92	7/09/92	MC	41311	3 3	MDG	N	JJS	PM	CM	16.0	2	

SERV POINT DESC: U6 CELL FLOOR COMP:XX
IL: A EST COST: LAB RATE: 20.00 LAB COST:
E NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: WORK COMPLETED BY FILED LINING SERVICES. 6 INDENTATIONS REPAIRED. NO HOLES FOUND.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION: INSPECT AND REPAIR BASEMENT LINER....U-6
INSPECT AND REPAIR BASE

GAMM1000	912086.00	1	10/12/92	10/11/9210/18/92		10/19/92	MC	41311	3 3	MDG	Y	JJS	PM	CM	16.0	2	32

SERV POINT DESC: U6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST: 638.40
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: LINER INSPECT DONE BY FIELD LINING SERVICES ON 11/24, 25, 26. SEE COMMENTS
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION:

PLANNERS COMMENTS:
A NEW COVER LINER WAS INSTALLED IN CRUSHER AND ANOLYTE PUMP AREA AND IN AREA WHE
RE DRUMS ARE RAISED.

AMM1000	912868.00	1	1/04/93	1/09/93	1/16/93	01/04/93	CA	41311	3 3	MDG	N		PM	CM	16.0	2	

SERV POINT DESC: U6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
TRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
ARY OF WORK DONE: CANCELLED
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION:

EQUIPMENT HISTORY

SE\ POINT	KM ASSET	WORK ORDER	SEQ	INIT DATE	SCHEDULE DATE	REQUIRED DATE	COMPLETE DATE	ST AT	WORK CHARG	SG PR	PLAN INT	COM	CHK INT	WK	PCT COMP	CRFT	ESTIMATED HOURS	CRW	ACT HOURS
:GAMM1000	912868.00		1	1/04/93	1/09/93	1/16/93	01/04/93	CA	41311	3 3	MDG	N		PM		CM	16.0	2	

SERV POINT DESC: U6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: CANCELLED
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION:

:GAMM1000	913706.00		1	4/02/93	4/09/93	4/16/93	04/20/93	MC	41311	3 3	MDG	Y	JJS	PM		CM	16.0	2	

SERV POINT DESC: U6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: COMPLETED. 30 HOLES FOUND AND REPAIRED.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION:

PLANNERS COMMENTS:
TORY SO FAR:
FIELD LINING SYSTEMS IS TO BE AT THE PLANT 4/16 TO LOOK AT JOB. WORK WILL PROBAB
LY BE DOEN WEEK OF 4/25.

:GAMM1000	914569.00		1	7/02/93	7/08/93	7/15/93	07/15/93	MC	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: COMPLETED PER J BROWN.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION:

:GAMM1000	915502.00		1	10/01/93	10/06/93	10/13/93	10/13/93	MC	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: COMPLETED PER J BROWN.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION:

:GAMM1000	916437.00		1	1/03/94	1/04/94	1/11/94	01/11/94	MC	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U6 CELL FLOOR COMP:
IL: A EST COST: LAB RATE: 19.95 LAB COST:
NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: COMPLETED PER J BROWN.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SE. POINT	KM ASSET	WORK ORDER	SEQ	INIT DATE	SCHEDULE DATE	REQUIRED DATE	COMPLETE DATE	ST AT	WORK CHARG	SG PR	PLAN INT	COM	CHK INT	WK	PCT COMP	CRFT	ESTIMATED HOURS	CRW	ACT HOURS
CGAMM1000	917332.00	1		3/31/94	4/04/94	4/11/94	05/06/94	MC	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	3

SERV POINT DESC: U6 CELL FLOOR COMP:TC
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST: 59.85
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: COMPLETED
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION:

CGAMM1000	918269.00	1		7/01/94	7/03/94	7/10/94	07/11/94	MC	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U-6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: FIELD LINING SERVICES INSPECTED U-5 & U-6 AND COMPLETED REPAIR.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION:

CGAMM1000	919271.00	1		9/30/94	10/01/94	10/08/94	09/30/94	MC	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U-6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: NO MAINT DONE.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER....U-6

SEQUENCE DESCRIPTION:

CGAMM1000	921203.00	1		2/22/95	3/30/95	4/29/95	02/28/95	MC	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U-6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.02 SHUTDOWN: P
SUMMARY OF WORK DONE: COMPLETED BY FIELD LINING SYSTEMS.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER - UNIT 6

SEQUENCE DESCRIPTION:

CGAMM1000	921363.00	1		3/03/95	3/30/95	4/29/95	03/03/95	CA	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U-6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: CANCEL
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER - UNIT 6, UNIT 5 AND PT SUMP

SEQUENCE DESCRIPTION:

SERVICE POINT	KM ASSET	WORK ORDER	SEQ	INIT DATE	SCHEDULE DATE	REQUIRED DATE	COMPLETE DATE	ST	WORK CHARG	SG PR	PLAN INT	COM	CHK INT	WK	PCT COMP	CRFT	ESTIMATED HOURS	CRW	ACT HOURS
CGAMM1000	921315.00		1	3/03/95	3/30/95	4/29/95	03/03/95	CA	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U-6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.02 SHUTDOWN: P
SUMMARY OF WORK DONE: CANCEL.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER - UNIT 6

SEQUENCE DESCRIPTION:

CGAMM1000	923786.00		1	9/01/95	9/26/95	10/26/95	09/11/95	MC	41311	3 3	MDG	Y	JJS	PM		CM	16.0	2	2

SERV POINT DESC: U-6 CELL FLOOR COMP:KA
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST: 39.90
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.00 SHUTDOWN: P
SUMMARY OF WORK DONE: COMPLETED - SEE COMMENTS
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER - UNIT 6, UNIT 5 AND PT SUMP

SEQUENCE DESCRIPTION:

PLANNERS COMMENTS:
CKED UNIT 5 LINER. FOUND 3 HOLES. ONE HOLE VERY LARGE UNDER CELL 1203 TEMP PA
TCH ON IT. 2 HOLES UNDER CELL 1402 SMALL BUT ALL THE WAY THROUGH LINER.

CGAMM1000	923740.00		1	9/01/95	9/26/95	10/26/95	10/19/95	MC	41311	3 3	MDG	N	JJS	PM		CM	16.0	2	

SERV POINT DESC: U-6 CELL FLOOR COMP:
AVAIL: A EST COST: LAB RATE: 19.95 LAB COST:
AFE NO: AFE MATL: AFE LABOR: REPLACE KM ASSET:
INSTRUMENT DEVICE NUMBER: TASK NUMBER: 700.02 SHUTDOWN: P
SUMMARY OF WORK DONE: SMALL HOLE UNDER CELL 610.
WORK REQUESTED: INSPECT AND REPAIR BASEMENT LINER - UNIT 6

SEQUENCE DESCRIPTION:

14

ATTACHMENT 14

LOU ITEM 48

LEACH PLANT ANALYTE TANKS

January 1996 Well Data

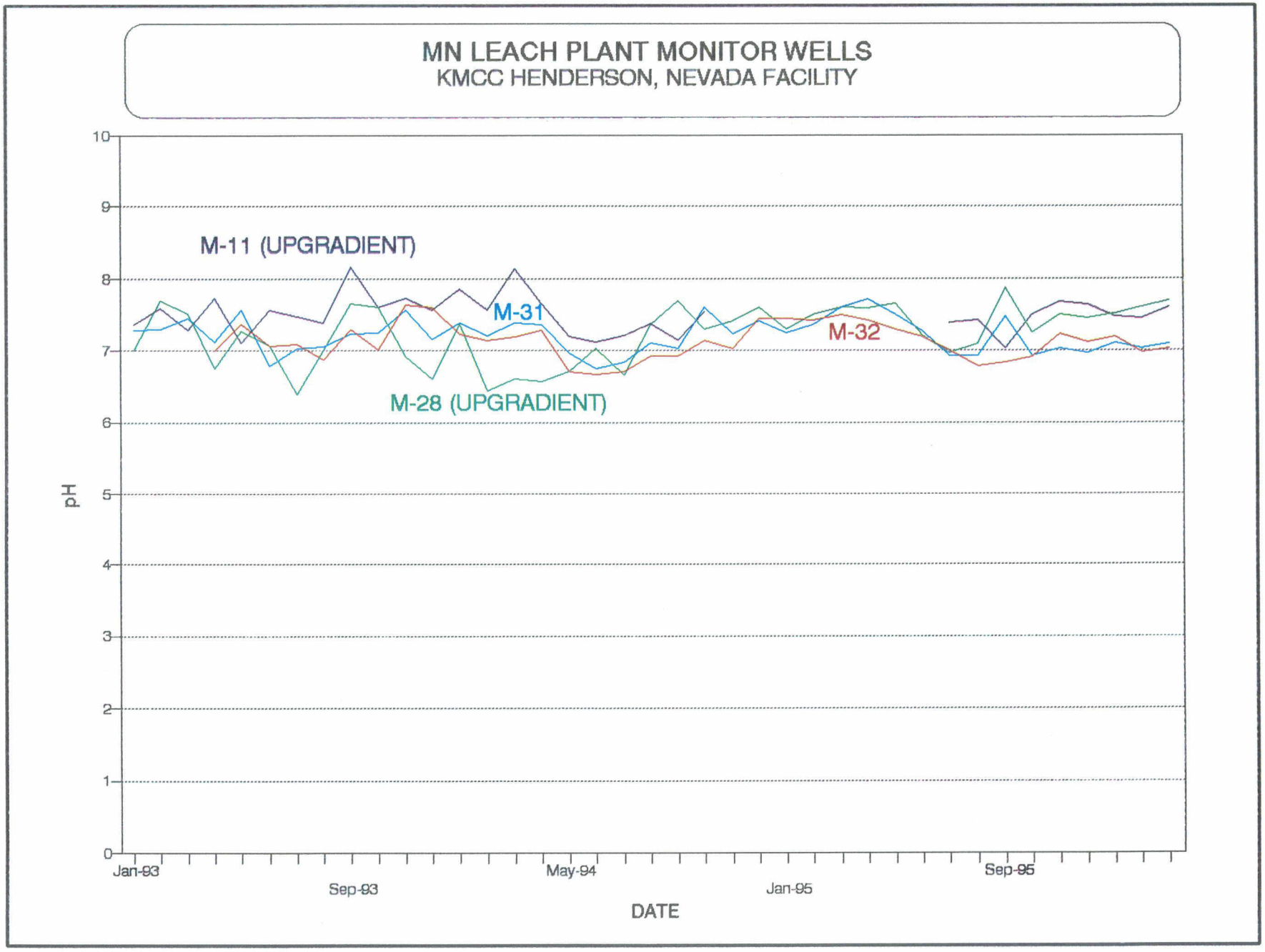
Well #	Groundwater Elevation (feet-AMSL)	pH	Specific Conductivity	Manganese (mg/L)
M-11	1772.11	7.48	14,380	
M-28	1770.98	7.52	6,830	
M-31	1750.31	7.11	11,700	
M-32	1741.28	7.20	7,480	5.60

February 1996 Well Data

Well #	Groundwater Elevation (feet-AMSL)	pH	Specific Conductivity	Manganese (mg/L)
M-11	1772.21	7.45	12,020	
M-28	1770.68	7.60	6,620	
M-31	1750.01	7.04	10,490	
M-32	1740.68	6.98	8,120	6.32

March 1996 Well Data

Well #	Groundwater Elevation (feet-AMSL)	pH	Specific Conductivity	Manganese (mg/L)
M-11	1771.06	7.60	10,050	
M-28	1768.68	7.69	5,530	
M-31	1750.09	7.09	9,280	
M-32	1740.38	7.03	7,630	6.0


MN LEACH PLANT MONITOR WELLS
KMCC HENDERSON, NEVADA FACILITY
M-11 (UPGRADIENT)
M-31
M-32
M-28 (UPGRADIENT)
pH
10
9
8
7
6
5
4
3
2
1
0
Jan-93
Sep-93
May-94
Jan-95
Sep-95
DATE

15

ATTACHMENT 15

LOU ITEM 59

STORM SEWER SYSTEM DECLARATION OF OBSERVATION

RECORD OF OBSERVATION

ITEM #59

On June 21, 1993, representatives of Kerr-McGee Chemical Corporation's (KMCC) meet with the Nevada Division of Environmental Protection (NDEP) to discuss the Environmental Conditions Assessment of the KMCC Henderson, Nevada Facility. One of the items requested in that meeting was a discussion on the integrity of the storm sewer system on KMCC property. The following descriptions are to address that request.

During my tenure at KMCC (December 1987 to May 1993) as the Environmental Engineer, I had several opportunities to witness and investigate the source of flows within the storm sewer system. It is my belief, the integrity of the piping system is intact for the KMCC portion of the BMI storm sewer system monitored. This belief is based upon confirmations of visual sightings with discharge monitoring systems operated by KMCC.

KMCC utilized monitoring equipment under conditions set forth in the facility's NPDES permit original established in 1971. With the renewal of the Permit in June, 1988, the monitoring equipment for the western portions of the storm sewer system was relocated; and an additional monitoring location was established for the eastern portion of the storm sewer. These monitoring locations represented NDEP approved positions for monitoring flows through the KMCC portion of the storm sewer.

Several of the observations of flow within the storm sewer system were made as a result of frequent testing of fire protection systems for the KMCC facility. During those tests, calibrated flow measuring devices were used to test system capabilities. KMCC also monitored those flows using the facility's NPDES monitoring devices. In each of the tests, flows were monitored and compared to previous tests. The tests produced no evidence of a breach in the storm sewer piping system.

Additional observations occurred as a results of water leaks upgradient from the KMCC facility. The flows were initially detected by NPDES monitoring equipment, and upon investigation, small stabilized water leaks had been identified. I have witnessed small flows of water exiting the KMCC storm sewers that originated at the farthest upgradient points of the KMCC system.

KMCC was also involved in calibration checks for the NPDES monitoring equipment. These tests involved measurement of a fire hydrant flow using a calibrated flow meter and comparing quantity and velocity data. In each case, there was no evidence of a breach in the storm sewer system piping used to conduct the tests.

I believe the KMCC portion of the BMI Complex storm sewer system to be intact and have no evidence of deterioration for the KMCC portion of the system.

Alan J. Gaddy
Certified Environmental Manager #1102

8/10/93
Date

16

ATTACHMENT 16

LOU ITEM 62

STATE INDUSTRIES DATA

SUBSURFACE SOIL EVALUATION
FORMER EVAPORATION POND SITES
FORMER STATE INDUSTRIES FACILITY
BMI INDUSTRIAL COMPLEX
HENDERSON, NEVADA

Western Technologies Inc.
The Quality People
Since 1955

LAS VEGAS–NEVADA
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050 • fax 798-7664

Prepared for: **State Industries, Inc.**
500 By Pass Road
Ashland City, TN 37015-1299

Project No.: **4185JL164**

Date: **February 20, 1996**

Timothy P. Aten, C.E.M.
Senior Project Manager

Randall L. Stone
Director of Environmental Services

OFFICES

ARIZONA (602)				CALIFORNIA (714)	NEVADA (702)	NEW MEXICO (505)	
BULLHEAD CITY	758-8378	PHOENIX	437-3737	RIVERSIDE 780-7482	LAS VEGAS 798-8050	ALBUQUERQUE	823-4488
FLAGSTAFF	774-8708	SIERRA VISTA	458-0364			FARMINGTON	327-4966
LAKESIDE	368-5568	TUCSON	748-2262				

EXECUTIVE SUMMARY

A Subsurface Soil Evaluation was conducted at two former evaporation ponds previously operated by State Industries, Inc. which are situated within the BMI industrial complex in Henderson, Nevada. Field activities were performed by WT on January 3, 1996 and January 4, 1996. This evaluation was conducted to investigate the soil/sediments existing directly above a former rectangular pond's liner, soils occurring under this liner and soils existing in the area of a former circular evaporation pond for potential contamination possibly originating from prior use of the ponds.

This Subsurface Soil Evaluation included drilling four randomly selected borings and five discrete soil borings in a central position in the rectangular pond, drilling three randomly selected borings and one centrally located boring in the circular pond, and drilling one boring from an undisturbed/undeveloped area near the project site to evaluate background soil conditions. Based on this assessment, trace levels of volatile organic compounds were identified from 6 of 11 soil samples obtained from the rectangular pond and from 1 of 5 soil samples obtained from the circular pond. Except for the presence of low levels of lead and molybdenum in some the soil samples, the total metal concentrations were similar to that of the background sample. Finally, no soil samples collected from either pond exhibited characteristics of corrosivity as defined in 40 CFR part 261.22.

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

Western Technologies, Inc. (WT) has completed this Subsurface Soil Evaluation for State Industries, Inc. at two former evaporation ponds previously operated by State Industries, Inc. which are situated within the BMI industrial complex in Henderson, Nevada. The general location of the subject property in the city is shown as Figure 1 of Appendix A. WT performed this evaluation pursuant to the scope of work authorized in WT's Proposal No. 4185PK198, dated March 20, 1995.

This Subsurface Soil Evaluation was conducted to investigate the soil/sediments existing directly above a former rectangular pond's liner, soils occurring under this liner and soils existing in the area of a former circular evaporation pond for potential contamination possibly originating from prior use of the ponds. WT's assessment activities consisted of obtaining soil samples from four randomly selected borings and five discrete soil borings in a central position in the rectangular pond, drilling three randomly selected borings and one centrally located boring in the circular pond, and drilling one boring from an undisturbed/undeveloped area near the project site to evaluate background soil conditions. The following sections contain a discussion of the subject property, field methodologies, results and conclusions.

1.1 PROPERTY DESCRIPTION: The subject property is approximately 7.0 acres in size and is located southwest of the main gate to the Kerr McGee Chemical Corporation facility within the Basic Management Inc. industrial complex in Henderson, Nevada. The site is situated within the southwest 1/4 of the northeast 1/4 of Section 13, Township 22 South, Range 62 East, Mount Diablo Base and Meridian, Clark County, Nevada.

The site is currently developed with a concrete slab, a concrete paved loading dock area and two retaining walls. Remaining portions of the project area are vacant, graded land covered with sparse desert vegetation. The general land surface slopes down to the north.

1.2 BACKGROUND: The project area was formerly developed by State Industries, Inc. as a warehouse/manufacturing facility. The factory building was razed in the early 1990's following structural damage incurred by the Pepcon facility explosion in 1989. The concrete slab is the former location of this structure. The rectangular evaporation pond adjoins the northeast corner of the

concrete slab. The pond was constructed approximately 0.7 acres in size, approximately five feet in depth and lined with plastic sheeting. The rectangular evaporation pond received spent wastes (generally sulfuric acid and neutralizing agents) produced during the manufacturing process of water heaters between 1985 and 1988. The pond was abandoned and filled with existing onsite soils in the early 1990's.

The former circular evaporation pond was situated west of the rectangular pond in the area of the concrete slab. From aerial photographs, the circular pond was approximately 100 feet in diameter. It is believed the circular pond received similar-type spent wastes as that discharged into the rectangular pond. This pond was abandoned and removed during construction of the concrete slab. The excavated soils were mixed with materials selected for use as subgrade under the concrete pad. The project area and approximate location of the evaporation ponds are shown on the Site Plan provided as Figure 2 in Appendix A.

2.0 ENVIRONMENTAL SETTING

The United States Geological Survey 7.5 Minute Series Las Vegas, SE Quadrangle topographic map (1967, photorevised in 1984) indicates that the natural terrain in the area of the site slopes toward the north. Local elevation at the site is approximately 1850 feet above mean sea level. There are no major washes or drainage channels adjoining the subject property.

2.1 REGIONAL GEOLOGY: The Las Vegas Valley lies in the southwestern part of the Great Basin, within the Basin and Range Physiographic Province. Sharp, rugged mountain ranges surround the low lying alluvial filled valley. A gently sloping alluvial fan piedmont lies between the mountains and the nearly level basin floor.

The mountain blocks bounding the valley consist predominantly of complexly folded and faulted Paleozoic carbonate rocks. Crystalline and sedimentary rock of Precambrian age occur in the eastern edge of the Las Vegas Valley. A series of volcanic flows occur in the southeastern portion of the valley. The valley fill consists primarily of fine-grained, Miocene and Pliocene sedimentary rocks of Esmeralda and Muddy Creek formations which are incised and filled with Quaternary and recent sands and gravels interbedded with playa and eolian sediments.

Natural soils encountered at the subject site consist of dense to very dense gravelly sand and sand. Fill soils encountered under the concrete slab and within the limits of the rectangular evaporation pond consist of gravelly sand, silty sand, sandy silt and silt. Groundwater was not encountered in any boring advanced at the project site as part of this study. Groundwater is estimated to occur approximately 50 feet below the ground surface at the project area.

3.0 FIELD INVESTIGATION

3.1 SOIL SAMPLING: On January 3 and 4, 1996, a total of 14 borings were drilled at the site to obtain soil samples. There were nine borings advanced in the rectangular evaporation pond (numbers BR-1 through BR-9), four borings placed in the area of the circular evaporation pond (numbers BC-1 through BC-4) and one boring for background conditions placed approximately 500 feet southeast of the rectangular pond (number BB-1). The location of the borings within the rectangular pond is shown on Figure 3 of Appendix A, the boring locations from the circular pond is shown on Figure 4 of Appendix A and the background boring location is shown on Figure 2 of Appendix A. The field operations were conducted under a site specific Health and Safety Plan. This plan is provided in Appendix B.

The borings were advanced using an auger drilling rig equipped with six-inch diameter solid-stem augers. The borings from the rectangular pond were drilled to total depths ranging from 4.5 to 7.0 feet below ground surface (bgs). The borings from the circular pond were drilled to total depths ranging from 8.5 to 11.5 feet bgs. The background soil boring was drilled to a total depth of 6.5 feet bgs. Soil cuttings from the borings were returned to each boring upon completion.

3.2 SAMPLING METHODS: Soil samples were obtained at various depths in each boring using a 2.5-inch diameter decontaminated split-spoon ring sampler fitted with six decontaminated stainless steel rings. In the rectangular evaporation pond, soil sampling was conducted to obtain representative material existing immediately above the plastic liner. The plastic liner was encountered at an average depth of approximately 4.5 feet bgs but was nearer the surface at its margins. Three soil samples were obtained from material existing under the plastic liner. In the circular pond, no liner was encountered. Soil samples were obtained from both fill and apparent native soils at this area.

The down-hole sampling equipment was decontaminated prior to use in each boring and prior to each sampling event. The decontamination procedures were conducted to remove all solid and liquid residues from previous use. The procedures consisted of scrubbing the sampling equipment (split-spoon sampler and stainless steel rings) in a detergent (Alconox™) and water mixture. The equipment was rinsed in water and allowed to air dry. The drilling augers were steam-cleaned between sampling activities at the rectangular and circular pond sites to remove solid residues and allowed to air dry.

When the sampling depth was achieved, the ring sampler was driven 18 inches into the soil or until refusal using a 140 pound hammer. Upon retrieval, a ring was removed from the sampler and screened in the field with a Thermo Environmental Instruments Inc. Model 580B™ Organic Vapor Meter (OVM). The OVM uses the principle of photoionization to detect volatile organic compounds. The OVM is a field instrument that provides an indication of potential contamination only. The OVM detected volatile organic vapors at concentrations ranging from 0.0 parts per million (ppm) to 181 ppm in air. Generalized soil classification logs showing the subsurface stratigraphy, depth of soil samples, depth of plastic liner, if applicable, and OVM field screening are presented in Appendix C.

Another undisturbed ring, from the same sample depth, was obtained for analytical testing. Each soil sample was sealed in the ring with teflon sheets and plastic caps, labelled, placed on ice and delivered to Nevada Environmental Laboratory in Las Vegas, Nevada under chain-of-custody protocols. There were 17 soil samples submitted for testing. The samples were analyzed for volatile organic compounds (VOCs) by EPA method 8240, CAM 17 total metals, and corrosivity (pH).

3.3 SAMPLING METHODOLOGY: The soil sampling locations at the project site were determined by both discrete and random selection. Discrete soil samples were obtained from the central location in the rectangular evaporation pond to which the sediment materials flowed when the pond was abandoned and filled. This central location was identified to WT by personnel of State Industries, Inc. Five borings were drilled in this area (BR-1 through BR-5). The remaining four borings (BR-6 through BR-9) were randomly located in the pond area. The random locations were determined by generating 45 grids over the pond area which were 25' by 25' in size. The grids were numbered sequentially and the grids selected for sampling were determined from a published random number list. The sampling grid and random numbers selected is shown on Figure 3 of Appendix A.

A similar sampling method was performed in the circular evaporation pond. One boring was placed within the approximate center of the circular pond (BC-1). This location was determined using aerial photographs and relations to existing onsite and adjoining structures. The remaining three borings (BC-2 through BC-4) were randomly located in the pond area. The random locations were determined by generating 32 grids over the pond area which were 15' by 15' in size. The grids were numbered sequentially and the grids selected for sampling were determined from a published random number list. The sampling grid and random numbers selected is shown on Figure 4 of Appendix A.

4.0 LABORATORY RESULTS

The laboratory analytical results indicate that several various volatile organic compounds were detected in 6 of the 11 soil samples obtained from the rectangular evaporation pond. Only 1 of 5 soil samples obtained from the circular pond had detectable concentrations of VOCs. The volatile compounds detected consisted of: acetone; 2-Butanone (MEK); ethylbenzene; 2-Hexanone (MBK); tetrachloroethene (PCE); toluene; 1,1,1-Trichloroethane (TCA); trichloroethene (TCA); and xylene. The VOC concentrations were only slightly above laboratory detection limits. Copies of the analytical results for the VOC analyses are provided in Appendix D.

The laboratory results show no elevated total metal concentrations in any of the soil samples from either evaporation pond. Except for the presence of lead and molybdenum in some of the samples, the metal concentrations were similar to that of the background soil sample. Copies of the analytical results for the CAM 17 metal analyses are provided in Appendix E.

Corrosivity testing shows the pH levels ranged from 2.57 to 8.38 units in the rectangular evaporation pond and from 4.45 to 7.97 units in the circular evaporation pond. Therefore, the materials from the evaporation ponds do not exhibit the characteristic of corrosivity as defined in 40 CFR part 261.22. The pH level of the background sample was 8.75 units. Copies of the analytical results for the corrosivity testing are provided in Appendix F.

5.0 CONCLUSIONS AND RECOMMENDATIONS

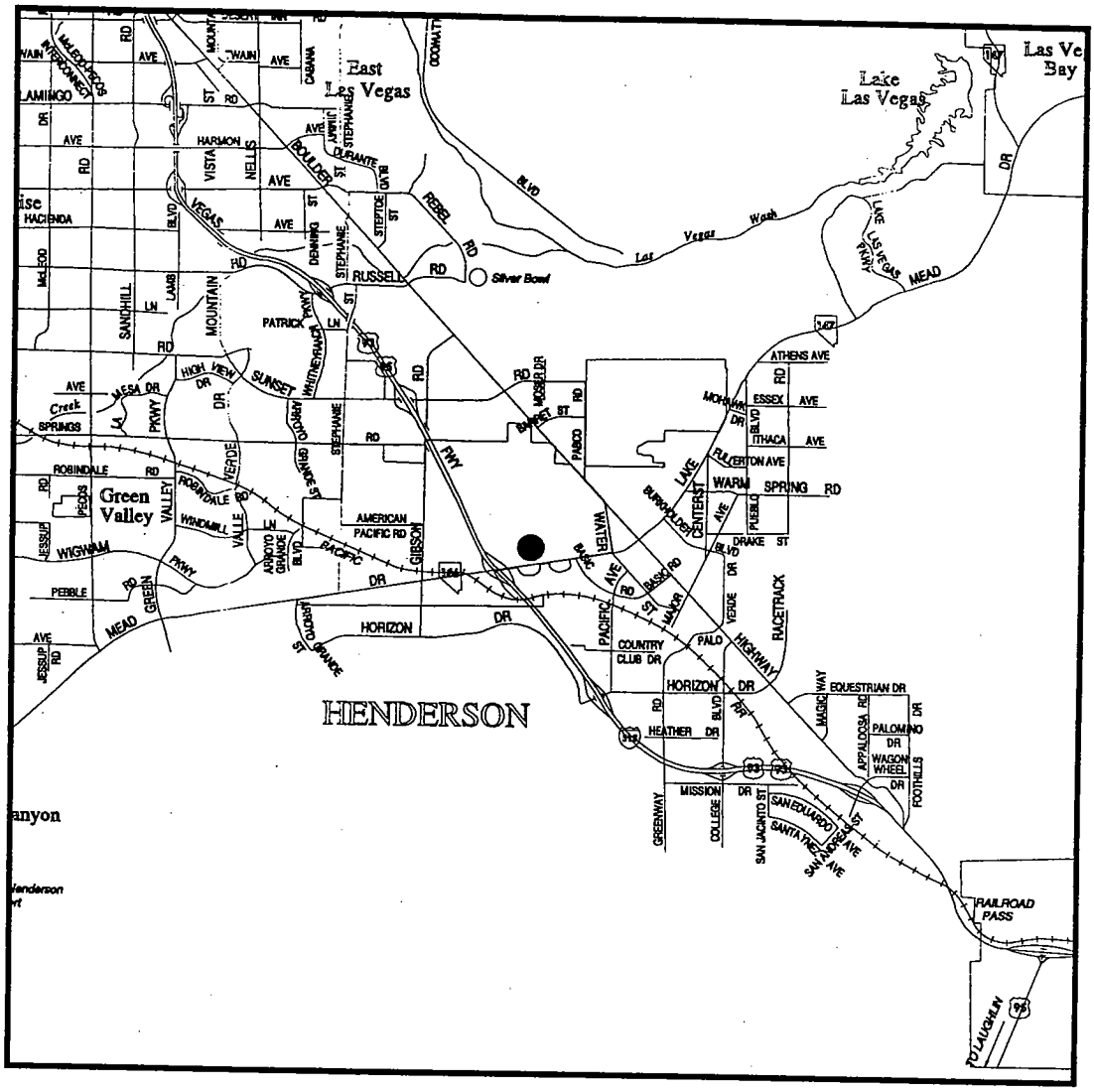
WT has completed a Subsurface Soil Evaluation for two former evaporation ponds previously operated by State Industries, Inc. which are situated within the BMI industrial complex in Henderson, Nevada. Based on the findings of this study, no elevated levels of volatile organic compounds, total metals or corrosivity were identified in evaporation pond sediments/soil at the project area. Therefore, neutralization or other remedial actions to these materials are not warranted. In conclusion, no further environmental investigations, related to the scope of work completed for this project, are necessary for the project site at this time.

6.0 LIMITATIONS

These professional services have been performed by Western Technologies, Inc. (WT) using that degree of care and skill ordinarily exercised under similar circumstances by reputable environmental consultants practicing in this or similar localities. No other warranty, expressed or implied, is made. The professional services performed do not guarantee compliance with Federal, State or local laws. This report is not a bidding document, and any contractor or consultant reviewing this report must draw his own conclusions regarding further investigation or remediation deemed necessary for the project.

The behavior of subsurface contaminants is a complex phenomenon involving geochemistry, hydrogeology, and the geotechnical sciences. WT's conclusions regarding the potential for subsurface contamination are based solely upon information cited in this report. The analyses and conclusions in this report are based upon data obtained from this assessment. The nature and extent of variations beyond this assessment may not become evident until further exploration. If variations then appear evident, it may be necessary to reevaluate the conclusions of this report. The professional services provided and judgment rendered on this project meet current professional standards and do not carry any other guarantee.

WT accepts no responsibility or liability to any person or organization for any claim, for loss or damage (including attorney's fees) caused, or believed to be caused, directly or indirectly by: conditions not revealed by the laboratory analyses performed; failure to perform other chemical analyses or utilize different test methods or equipment; or failure to locate or install additional sample points, test pits, soil borings, or monitoring wells.

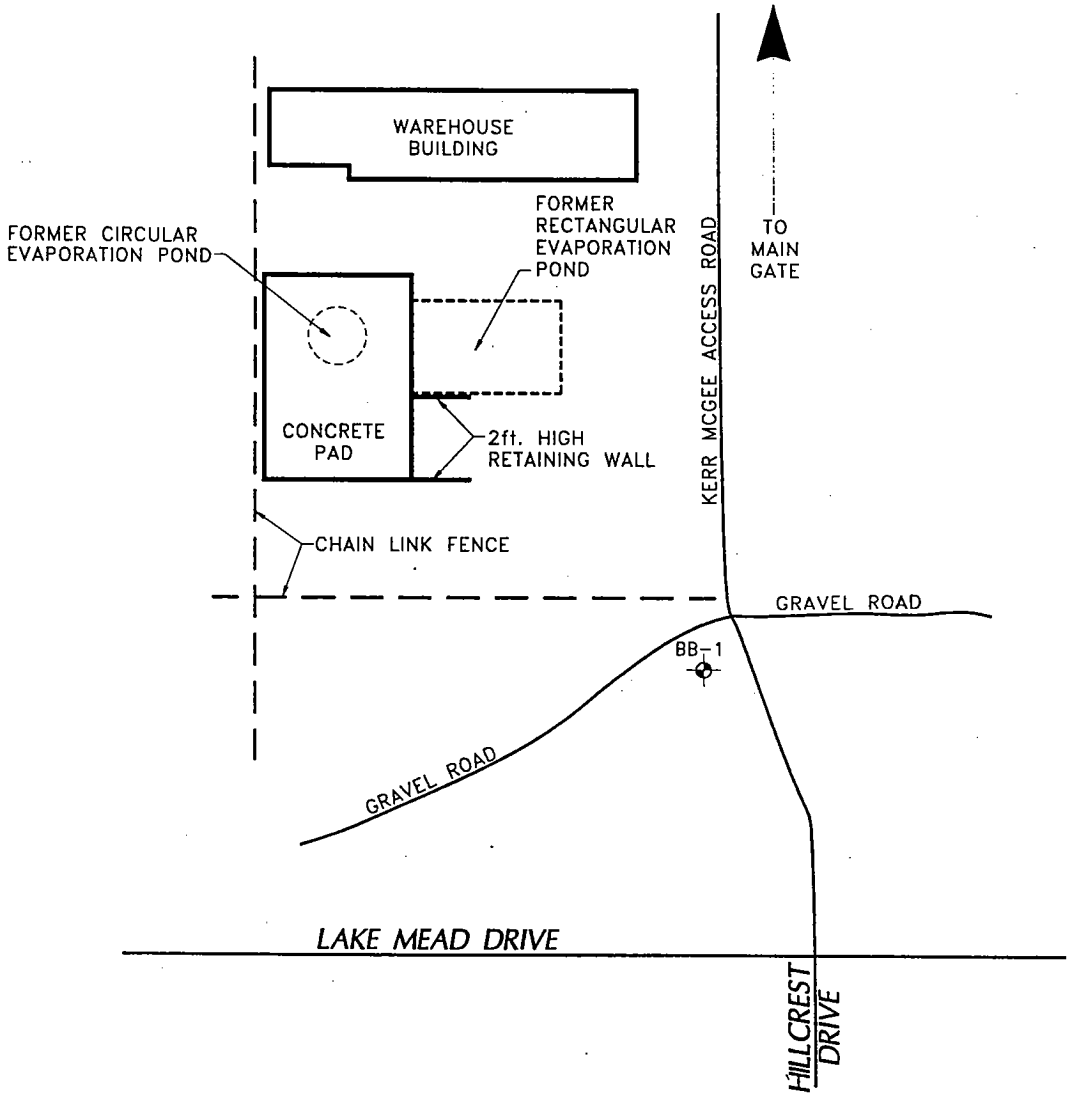


● – SITE VICINITY

N

NOT TO SCALE

Project: **STATE INDUSTRIES - BMI COMPLEX**	
Diagram: **Vicinity Map**	
Western Technologies Inc.	
Job No. **4185JL164**	Plate **1**



FOR BORING LOCATIONS AT RECTANGULAR POND SEE FIGURE 3
FOR BORING LOCATIONS AT CIRCULAR POND SEE FIGURE 4

LEGEND:

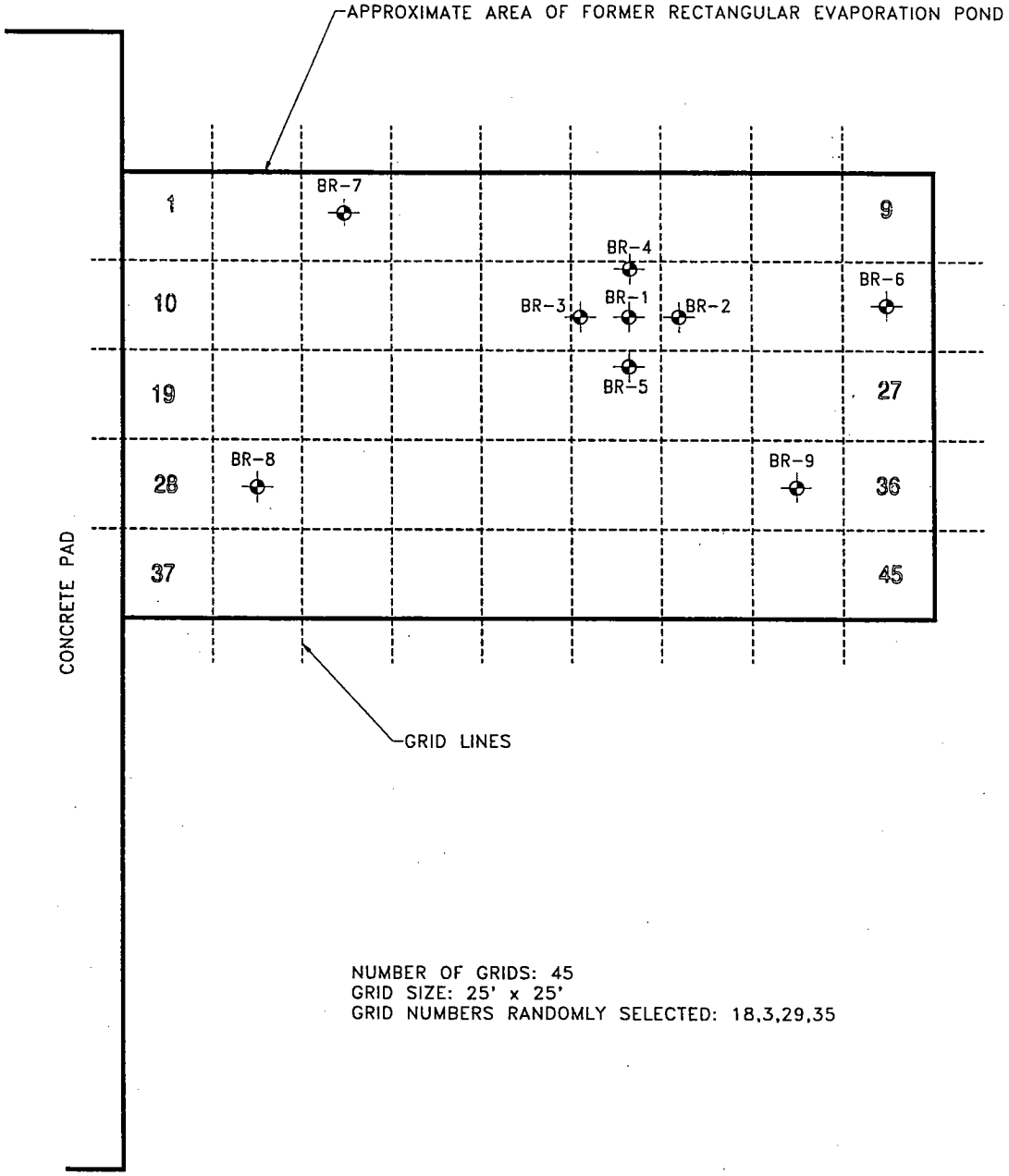
APPROXIMATE BORING LOCATION

N

SCALE 1"=300'

Project: STATE INDUSTRIES - BMI COMPLEX	
Diagram: Site Plan	
Western Technologies Inc.	
Job No. 4185JL164	Figure 2

STA 1
E:\1995\4185\JL



NUMBER OF GRIDS: 45
GRID SIZE: 25' x 25'
GRID NUMBERS RANDOMLY SELECTED: 18,3,29,35

LEGEND:

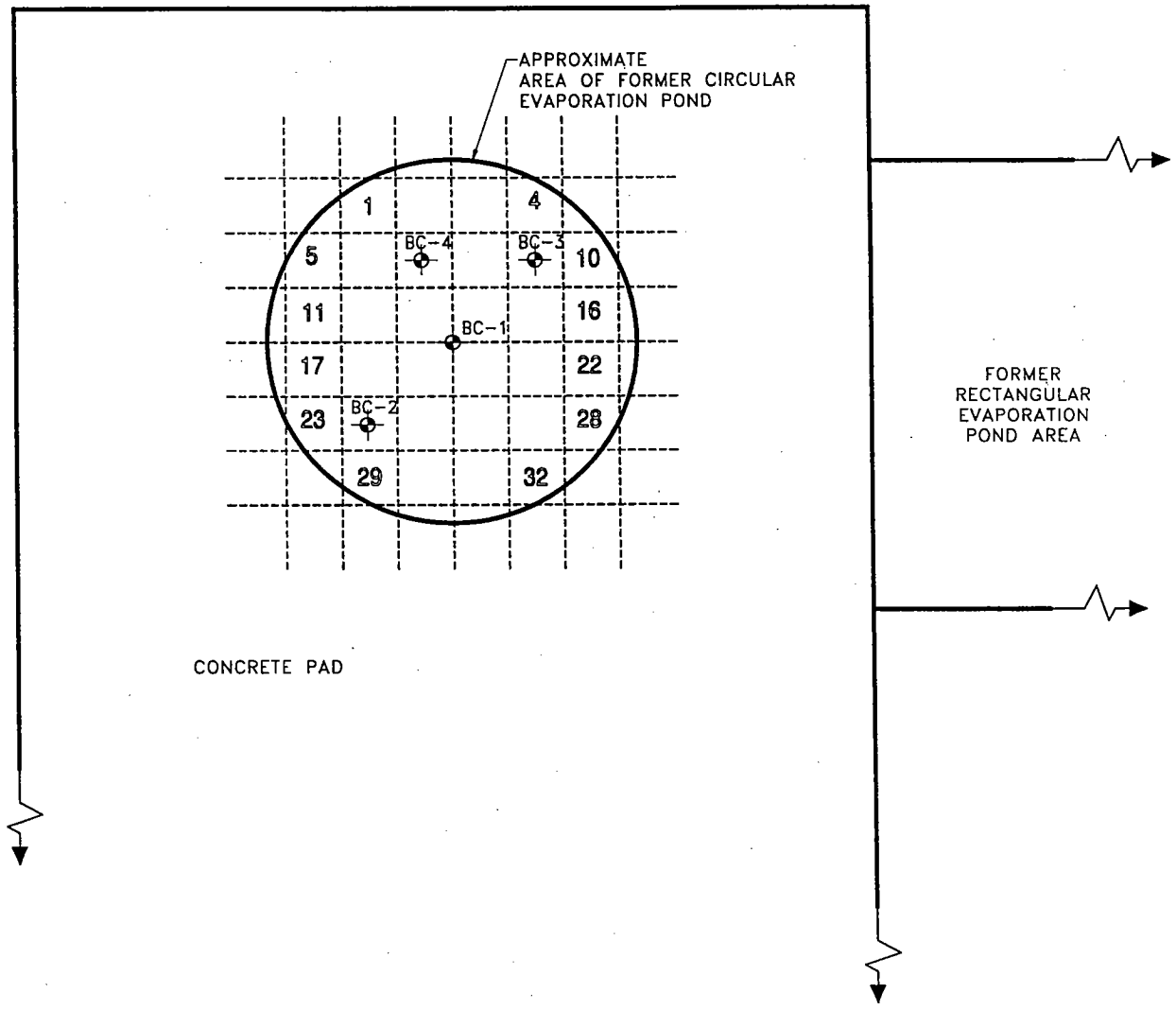
BR-2 BORING LOCATION AND NUMBER

N

1" = 50'

Project: STATE INDUSTRIES - BMI COMPLEX	
Diagram: RECTANGULAR EVAPORATION POND GRID PATTERN/BORING LOCATION	
Western Technologies Inc.	
Job No. 4185JL164	Figure 3

STA 1
E:\4185\JL164-G



NUMBER OF GRIDS: 32
GRID SIZE: 15' x 15'
GRID NUMBERS RANDOMLY SELECTED: 24,9,7

LEGEND:

BC-2 BORING LOCATION AND NUMBER

N

1" = 50'

Project: STATE INDUSTRIES - BMI COMPLEX	
Diagram: CIRCULAR EVAPORATION POND GRID PATTERN/BORING LOCATION	
Western Technologies Inc.	
Job No. 4185JL164	Figure 4

STA 1
E:\4185JL164-G

Western Technologies Inc.
The Quality People
Since 1955

3611 West Tompkins Avenue
Las Vegas, Nevada 89103-5618
(702) 798-8050 • fax 798-7664

WESTERN TECHNOLOGIES, INC.

"SHORT TERM PROJECT" HEALTH AND SAFETY PLAN

PROJECT NO. 4185JL164

Site Name:	State Industries, Inc. Former Pond Sites
Address:	Kerr McGee Chemical Corporation facility 8000 West Lake Mead Drive, Henderson, Nevada
Site Contact:	Michael Garrison Phone: (615) 792-6291
Scope of Site Work:	WT will advance 17 soil borings at the site to 5 feet below the ground surface or to the depth of the plastic liner. Soil samples will be collected from each boring for evaluation with the Organic Vapor Meter (OVM) and for analytical testing.
Date(s) of Operation:	January 1, 1996 through January 31, 1996

****

HASP PREPARATION:

Prepared By: Timothy P. Aten **Date:** January 2, 1996

APPROVALS:

Health and Safety: TA for _____ **Date:** 1/2/96
Randall L. Stone

Site Manager: Timothy P. Aten _____ **Date:** 1/2/96
Timothy P. Aten

I. ON-SITE ORGANIZATION

The following WT personnel are designated to carry out the stated job functions on-site. All site personnel have been trained and found medically qualified for site assignment.

WT PERSONNEL	RESPONSIBILITY
Timothy Aten	Project Management/Sample Collection/Site Management
Greg Ogle	Driller
Rick Erickson	Driller's Helper
Dennis Kish	Technician/Sample Collection

SUBCONTRACTOR PERSONNEL	RESPONSIBILITY
N/A	N/A

SUBCONTRACTOR: N/A

NOTE: Subcontractor personnel will be required to abide by the provisions of this HASP as a minimum.

II. SITE BACKGROUND INFORMATION

Site Status: ____ Active __XX__ Inactive _____ Unknown

Site Description: The subject property consists of a concrete slab and graded land. The site was formerly developed with two evaporation ponds and a warehouse structure. WT's work will be conducted in the area of the former evaporation ponds. The soil borings will be advanced in locations that may have residual amounts of pond sediments remaining.

Waste Types: Liquid ____ Solid __XX__ Sludge _____ Gas _____

Characteristics:

__X__	Corrosive	____	Ignitable	____	Reactive
__X__	Volatile	____	Toxic	____	Radioactive
____	Unknown	__X__	Other: metal contamination		
__X__	Carcinogen				

III. HAZARD EVALUATION

Known or suspected Hazardous/Toxic materials: Possible highly corrosive soils, high metals concentrations, and possible volatile organic concentrations.

Toxic/Pharmacological Effects: Irritating to skin and eyes. Harmful if swallowed. May cause redness of skin with extended contact. May cause gastrointestinal tract irritation if ingested.

Reactivity, Stability, Flammability: Volatile organic compounds can be flammable if found in highly saturated soils or as free product in groundwater.

Overall Hazard: ___ Serious __X__ Moderate ____ Low

IV. SCOPE OF WORK

WT will mark the proposed boring locations and arrange for the public utility companies to mark their underground line locations. Actual position of the borings will be contingent upon utility clearance factors. WT will cut four holes in the concrete slab on the western portion of the subject property. The locations will be randomly selected according to the approved work plan. Fourteen soil borings will be advanced at the site. Locations of the borings will be according to the approved work plan. The general areas are as follows: one boring will be advanced outside the rectangular evaporation pond and will be sampled to provide a background sample; nine borings will be advanced in the former rectangular evaporation pond according to the approved work plan; four borings will be located within the northern portion of the existing concrete slab which is located over the former location of the circular pond. The boring locations will be computer generated prior to work on the site. The work is being conducted to evaluate the presence, nature, and extent of any residual wastes from the former ponds. Soil samples will be analyzed for corrosivity, CAM 17 metals, and volatile organic compounds.

V. ON-SITE CONTROL

Ultimate site security is the responsibility of the property owner. However, Western Technologies, Inc. will endeavor to keep unauthorized persons away from all site activities by establishing perimeter markings and control boundaries. The hotline establishing the exclusion zone, as well as the support zone have been identified and are designated as follows:

Hotline- Areas within 10 feet of the drilling rig and/or support vehicles. Areas within this zone are considered hot.

Support Zone- The area outside the hotline zone.

VI. MONITORING

Site monitoring equipment will include:

_X_ OVM (PID)	_____ LEL Meter (GCI)	_____ CO Meter
_____ OVA (FID)	_____ O_2 Meter	_____ SO_2 Meter
_____ Dust Monitor	_____ Noise Meter (SLM)	_____ Sampling Pump
_____ Colormetric Detector Tube		_____ Rad. Dosimetry
_____ Other:_____		

Methods of surveillance: Sampling will be performed by WT personnel, described previously, working in teams of two at all times.

Special procedures: N/A

VII. LEVELS OF PROTECTION

Based on an evaluation of the potential hazards at the site and the activities to be conducted, the following levels for personal protection are designated for the following work areas:

TASK/LOCATION	PERSONNEL	LEVEL
Sample Collection	Timothy P. Aten	D*
Sample Collection	Dennis Kish	D*
Driller	Greg Ogle	D*
Driller's Helper	Rick Erickson	D*

* Upgrade to Level C based on OVM Readings

Specific protective equipment for each level of protection is as follows:

LEVEL A: Fully-encapsulating chemical resistant suit; pressure demand, atmosphere supplying respirator; inner chemical resistant gloves; radio communications; chemical resistant safety boots/ shoes; cooling unit*; coveralls*; hard hat*; disposable gloves and boot covers*.

LEVEL B: Pressure demand, atmosphere supplying respirator; chemical resistant protective clothing; inner and outer chemical resistant gloves; chemical resistant safety boots/shoes; hard hat; radio communications; coveralls*; disposable boot covers*; face shield*; long cotton underwear*.

LEVEL C: Full-face piece air-purifying respirator (with appropriate cartridges); chemical resistant protective clothing; inner and outer chemical resistant gloves; chemical resistant safety boots/shoes; hard hat; coveralls*; disposable boot covers*; face shield; escape mask*; long cotton underwear*.

LEVEL D: Coveralls; safety boot/shoes; safety glasses or goggles; hard hat; gloves*; escape mask*; face shield*.

* Optional

Modifications to these levels of protection require approval from the Manager of Health and Safety; downgrades require the approval from either the HSO and Site Manager, or the HSM.

VIII. DECONTAMINATION AND DISPOSAL

Decontamination procedure:

_____ A Segregated equipment drop; boot cover and glove wash/rinse; tape removal; boot cover removal, outer glove removal; sui and boot wash/rinse; suit removal; SCBA backpack removal; inner glove rinse; face piece removal; inner glove removal; inner clothing removal; field wash; redress.

_____ B Segregated equipment drop; boot cover and glove wash/rinse; tape removal; boot cover removal; outer glove backpack removal; sui removal; inner glove wash/rinse; face piece removal; inner glove removal; inner clothing removal; field wash; redress.

_____ C Segregated equipment drop; boot cover and glove wash/rinse; tape removal; boot cover removal outer glove removal; suit and boot wash/rinse; boot removal; suit removal; inner glove wash/rinse; face piece removal; inner glove removal; inner clothing removal; field wash; redress.

_X_ D Segregated equipment drop, boot and glove wash/rinse.

IX. EMERGENCY PROCEDURES FOR PERSONNEL EXPOSURE

- Skin contact: Wash exposed skin immediately with soap and water.
- Inhalation: Get to fresh air, artificial respiration as necessary, transport to medical facility.
- Emergency decontamination: Generally, emergency decon for medical emergency will consist of removal of the victim's outer protective clothing. Where chemical contamination is involved, the victim will be washed with excess water until emergency assistance arrives. If the medical emergency is life threatening itself, decontamination may be postponed until emergency medical attention is received. The provider of medical attention must be advised of the potential contamination.

X. CONTINGENCY PLAN

In the event of an incident which would potentially expose site personnel, or the public to hazardous materials or conditions, the Health and Safety Officer or Site Manager will be responsible for initiating the following actions:

1. Evacuate all personnel from any area on the site where the potential for exposure exists.
2. Stop site operations until the added risk is adequately addressed.
3. Provide for the immediate medical treatment of any injured or exposed personnel.
4. Notify the appropriate agencies for response to the incident.

Local resources:

Ambulance:	Mercy Ambulance **911**
Hospital:	St. Rose Dominican Hospital **564-4600**
Police:	City of Henderson **911**
Fire:	City of Henderson Fire Department **911**
Available phone:	Cellular phone at site (379-4032)
Office resources:	N/A

Emergency contacts: Randall L. Stone, Director of Environmental Services, WT Las Vegas, 798-8050

Chem trec: 1-800-424-9300

Hospital directions (with road map included):

From the project area, proceed south on the Kerr McGee access road to Lake Mead Drive. Turn left (east) on Lake Mead Drive and proceed approximately 1.2 miles to the emergency entrance to St Rose Dominican Hospital. The hospital is on the north side of Lake Mead Drive west of the intersection of Lake Mead Drive and Boulder Highway.

XI. **HASP REVIEW**

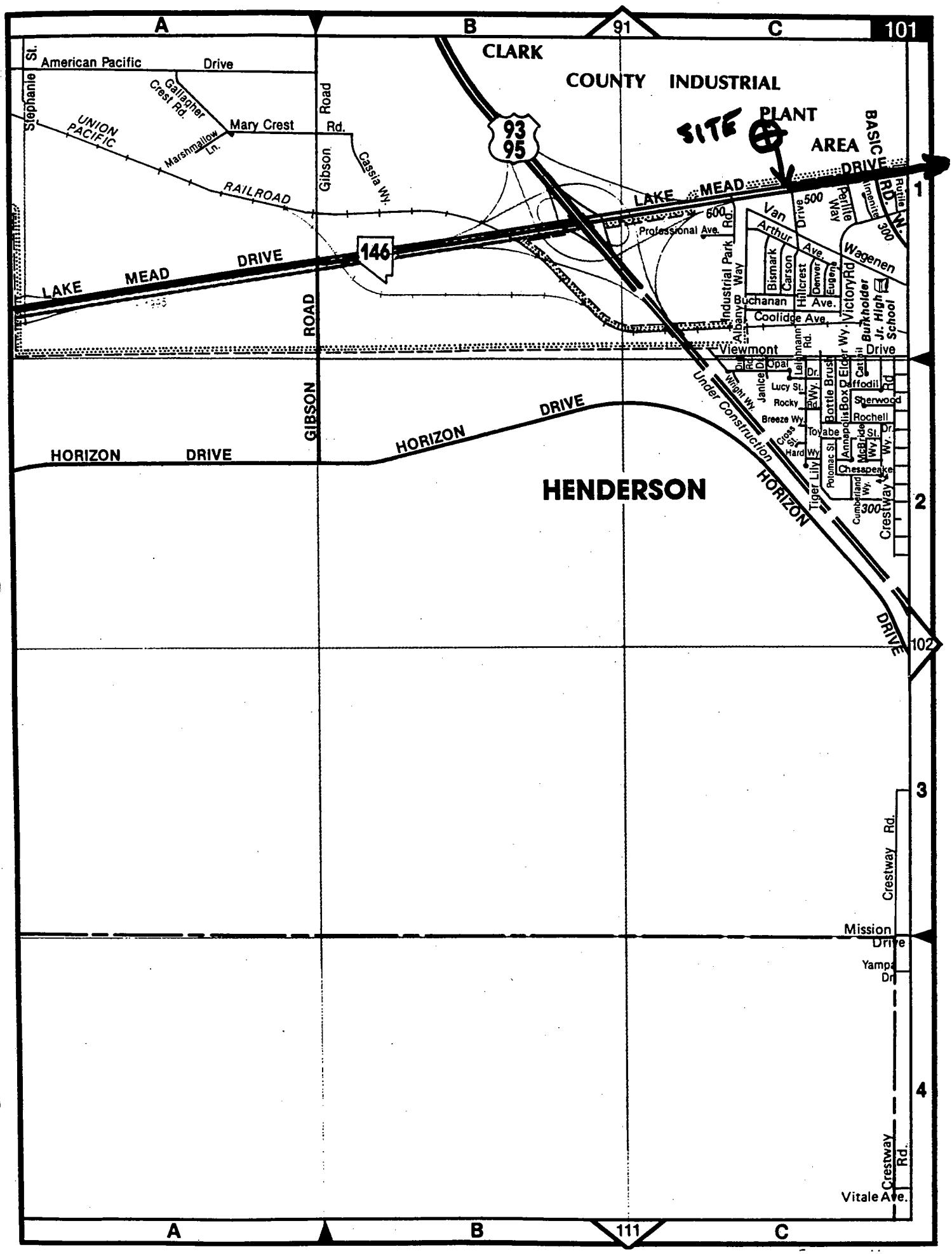
Site Name: State Industries, Inc. Former Pond Sites

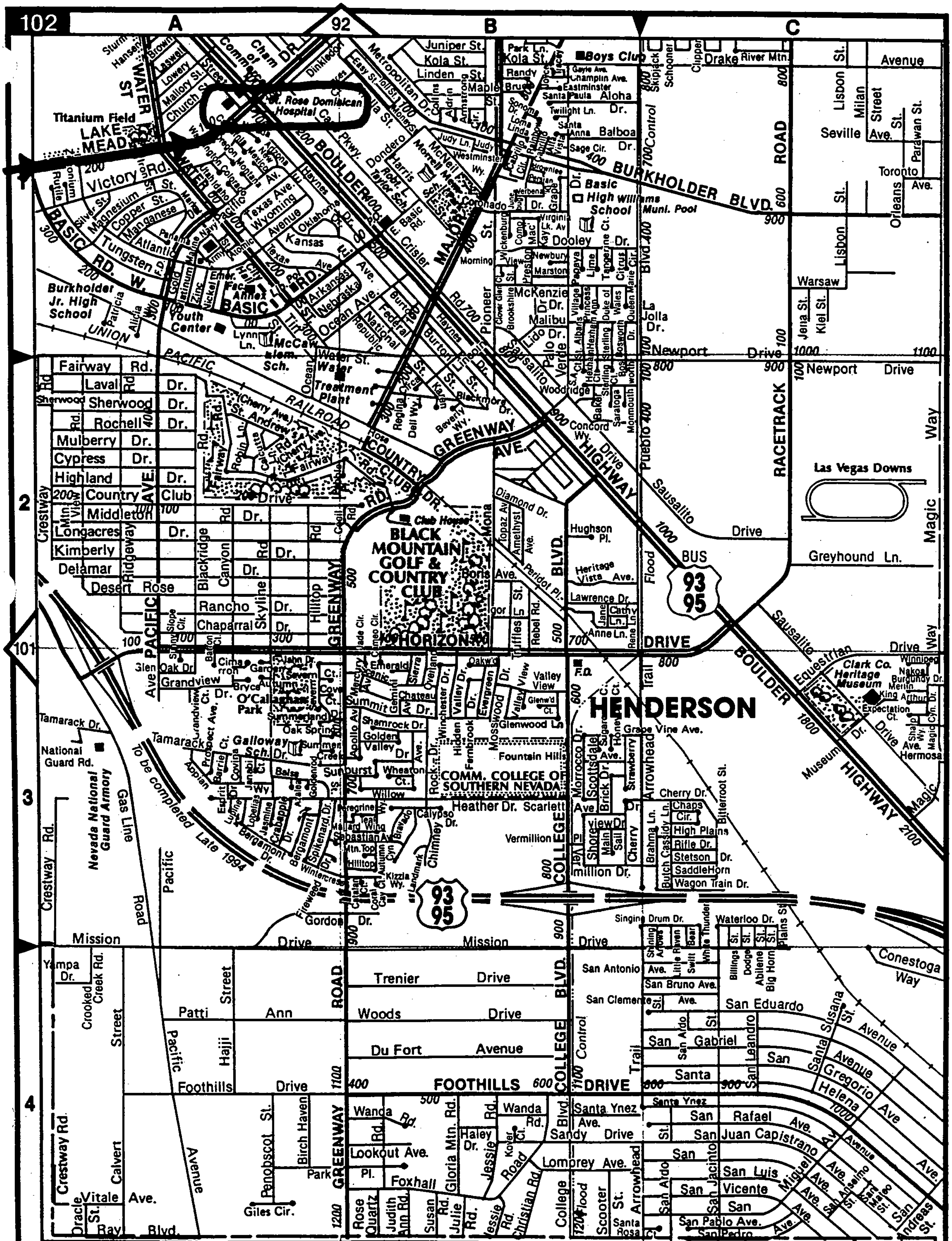
Location: BMI Complex
Henderson, Nevada

The undersigned certify that they have read this health and safety plan document, understand it, and will comply with its provisions.

NAME	AFFILIATION	DATE
[signature]	WTI	1/2/96 1/4/96
[signature]	WTI	1325 1/4/96
[signature]	WTI	1344 96

This document is to be submitted to the Health and Safety department at the conclusion of site operations.


A
B
91
C
101
CLARK
COUNTY INDUSTRIAL
SITE
PLANT
AREA
BASIC
DRIVE
93
95
LAKE MEAD
DRIVE
146
LAKE MEAD DRIVE
GIBSON ROAD
HORIZON DRIVE
HENDERSON
Under Construction
HORIZON DRIVE
American Pacific Drive
Stephanie St.
Gallagher Crest Rd.
Mary Crest Rd.
Marshmallow Ln.
UNION PACIFIC RAILROAD
Gibson Road
Cassia Wy.
Professional Ave.
500
Rd.
Industrial Park Way
Van Arthur Ave.
Bismark
Carson
Hillcrest
Denver
Eugene
Wagenen
Victory Rd
Buchanan Ave.
Coolidge Ave.
Albany
Bunkholder Jr. High School
Viewmont Drive
Leighmann Rd.
Opal Dr.
Lucy St.
Rocky Rd.
Breeze Wy.
Janice Dr.
Wright Wy.
Bottle Brush
Annapolis
Box Elder Wy.
Daffodil Rd.
Sherwood
Rochell St.
Toyabe Dr.
Cross St.
Hard Wy.
Potomac St.
McBride Wy.
Chesapeake Wy.
Tiger Lily
Cumberland Wy.
Crestway Wy.
Crestway Rd.
300
Mission Drive
Yampa Dr.
Vitale Ave.
1
2
3
4
102
111



A
B
C
92
101
1
2
3
4
HENDERSON
BLACK MOUNTAIN GOLF & COUNTRY CLUB
Club House
Las Vegas Downs
Clark Co. Heritage Museum
COMM. COLLEGE OF SOUTHERN NEVADA
St. Rose Dominican Hospital
Titanium Field
Burkholder Jr. High School
Youth Center
Basic High Williams School
Muni. Pool
Boys Club
Water Treatment Plant
O'Callaghan Park
Galloway Sch.
Nevada National Guard Armory
National Guard Rd.
LAKE MEAD
BOULDER HIGHWAY
BURKHOLDER BLVD.
BASIC RD.
MAJOR AVE.
GREENWAY RD.
COUNTRY CLUB DR.
HORIZON DRIVE
COLLEGE BLVD.
RACETRACK ROAD
FOOTHILLS DRIVE
Mission Drive
Newport Drive
Sausalito Drive
Greyhound Ln.
Magic Way
Pacific Ave.
Crestway Rd.
Gas Line Road
To be completed Late 1994
UNION PACIFIC RAILROAD
BUS 93 95
93 95
Trenier Drive
Patti Ann Woods Drive
Du Fort Avenue
Conestoga Way
Santa Ynez
San Rafael Ave.
San Juan Capistrano Ave.
Lookout Ave.
Foxhall
Lombrey Ave.
Sandy Drive
Giles Cir.
Vitale Ave.
Bay Blvd.
Fairway Rd.
Laval Dr.
Sherwood Dr.
Rochell Dr.
Mulberry Dr.
Cypress Dr.
Highland Dr.
Country Club
Middleton
Longacres Dr.
Kimberly Dr.
Delamar Dr.
Desert Rose
Rancho Dr.
Chaparral Dr.
Grandview
Tamarack Dr.
Heather Dr.
Vermillion Dr.
Victory Rd.
Water St.
Drake
Juniper St.
Kola St.
Linden St.
Maple St.
Aloha Dr.
Balboa Dr.
Seville Ave.
Dooley Dr.
McKenzie Dr.
Malibu
La Jolla Dr.
Equestrian
Museum Dr.
Hermosa

STA 1

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BR-1

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	FILL		GRAVELLY SAND -w/trace silt, yellow-brown	dry	
					2					
					3			SAND -w/trace silt and gravel, yellow-brown		
		R		68	4			SILTY SAND -w/trace gravel, yellow-brown OVM =11.0ppm	sl. moist	
					5	SP		GRAVELLY SAND -lt. brown		very dense
					6					
					7			Bottom at 7 feet.		
					8					
					9					
					10					
					11					
					12			Plastic liner at 5 feet.		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: Water not encountered. OVM = Organic Vapor Meter in parts per million.

WESTERN TECHNOLOGIES INC.

PROJECT NO. 4185JL164

PROJECT: STATE INDUSTRIES - BMI COMPLEX

BORING LOG

PLATE 1

STA 1

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BR-2

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	FILL		GRAVELLY SAND -w/trace silt, yellow-red-brown		
					2			SILTY SAND -lt. yellow-brown		
					3			-w/occasional silt lenses	sl. moist	
		R		67	4			OVM = 108ppm		
					5	SP		GRAVELLY SAND -w/trace silt, lt. brown		
					6			SAND -w/trace gravel and silt, lt. brown		very dense
					7					
					8					
					9					
					10					
					11					
					12			Plastic liner at 4'6"		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. **4185JL164**

PROJECT: **STATE INDUSTRIES - BMI COMPLEX**

BORING LOG

PLATE **2**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

STA 1

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BR-3

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	FILL		GRAVELLY SAND -w/trace silt, lt. red-brown		
					2			SILTY SAND -w/trace gravel, red-brown	sl. moist	
		R		74	3			-w/occasional silt lenses		
					4			OVM = 144ppm		
					5			GRAVELLY SAND -lt. brown		v.dense
								Bottom at 5 feet.		
					6					
					7					
					8					
					9					
					10					
					11					
					12			Plastic liner at 4'8"		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. 4185JL164

PROJECT: **STATE INDUSTRIES - BMI COMPLEX**

BORING LOG

PLATE **3**

STA 1

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BR-4

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	FILL		GRAVELLY SAND -w/trace silt, lt. yellow-brown		
					2			SILTY SAND -w/trace gravel, red-brown	sl. moist	
		R		100	3					
					4			OVM =84ppm		
								Bottom at 4.5 feet.		
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12			Plastic liner at 4'6"		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. 4185JL164

PROJECT: **STATE INDUSTRIES - BMI COMPLEX**

BORING LOG

PLATE **4**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

STA 1

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BR-5

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	FILL		GRAVELLY SAND -red-brown		
					2					
					3			SANDY SILT -lt. gray	sl. moist	
		R		12	4			-w/black lenses OVM =181ppm		
				50/ 6"	5	SP		GRAVELLY SAND -lt. brown		v.dense
								Bottom at 5 feet.		
					6					
					7					
					8					
					9					
					10					
					11					
					12			Plastic liner at 4'6"		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. 4185JL164

PROJECT:
STATE INDUSTRIES - BMI COMPLEX

BORING LOG

PLATE
5

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

STA 1

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BR-6

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	FILL		GRAVELLY SAND -w/occasional cobbles, lt. yellow-brown		
					2					
					3			SILTY SAND -lt. yellow-brown -w/occasional silt lenses	sl. moist	
		R		49	4			OVM =0.0ppm		
				50/		SP		GRAVELLY SAND -lt. brown		
		R		4" 70	5			OVM =0.0ppm		dense-very dense
					6					
								Bottom at 6.5 feet.		
					7					
					8					
					9					
					10					
					11					
					12			Plastic liner at 4'2"		
					13					
					14					

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. **4185JL164**

PROJECT: **STATE INDUSTRIES - BMI COMPLEX**

BORING LOG

PLATE **6**

STA 1

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BR-7

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	FILL		GRAVELLY SAND -lt. yellow-brown -w/occasional cobbles	sl. moist	
					2					
					3	SP		GRAVELLY SAND -red-brown		dense-very dense
		R		64	4			OVM =0.0ppm		
					5			Bottom at 5 feet.		
					6					
					7					
					8					
					9					
					10					
					11					
					12			Plastic liner at 2'6"		
					13					
					14					

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. **4185JL164**

PROJECT: **STATE INDUSTRIES - BMI COMPLEX**

BORING LOG

PLATE **7**

STA 1

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BR-8

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	FILL		GRAVELLY SAND -lt. yellow-brown	sl. moist	
					2			SILTY SAND -w/trace gravel, red-brown		
		R		34	3			SILT -w/trace sand, lt. brown OVM =48ppm		
		R		28/ 6"	4	SP		GRAVELLY SAND -brown		dense
					5			OVM =0.0ppm Bottom at 4.5 feet.		
					6					
					7					
					8					
					9					
					10					
					11					
					12			Plastic liner at 3'8"		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: Water not encountered. OVM = Organic Vapor Meter in parts per million.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

WESTERN TECHNOLOGIES INC.

PROJECT NO. 4185JL164

PROJECT: STATE INDUSTRIES - BMI COMPLEX

BORING LOG

PLATE 8

STA 1

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BR-9

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
						FILL		GRAVELLY SAND -lt. yellow-brown		
					1			-w/occasional cobbles		
					2					
								SILTY SAND -w/trace gravel, red-brown	sl. moist	
					3					
								SANDY SILT -lt. gray		
		R		40	4			OVM =7.0ppm		
				36/ 6"	5	SP		GRAVELLY SAND -red-brown		dense
								Bottom at 5.5 feet.		
					6					
					7					
					8					
					9					
					10					
					11					
					12			Plastic liner at 4'9"		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. **4185JL164**

PROJECT: **STATE INDUSTRIES - BMI COMPLEX**

BORING LOG

PLATE **9**

STA 1

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BC-1

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
						FILL		8" CONCRETE PAD		
					1			GRAVELLY SAND -red-brown		
					2			-w/occasional cobbles		
					3			boulder		
					4					
		R		50/ 4"	5			OVM =0.0ppm	sl. moist	
					6			-w/occasional cobbles		
					7			SAND -w/trace gravel, red-brown		
					8					
					9					
		R		100/ 10"	10			OVM =0.0ppm		
					11			Bottom at 11 feet.		
					12			No liner encountered.		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. **4185JL164**

PROJECT:
STATE INDUSTRIES - BMI COMPLEX

BORING LOG

PLATE
10

STA 1

DATE DRILLED: 1-3-96
LOCATION: See Figure 2

BORING NO. BC-2

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					0	FILL		6" CONCRETE PAD SANDY GRAVEL -red-brown		
					1					
					2			GRAVELLY SAND -red-brown		
					3					
					4					
					5					
					6			SANDY GRAVEL -w/cobbles, yellow-brown	sl. moist	
					7			GRAVELLY SAND -w/trace silt, yellow-brown		
					8					
					9					
					10	SP		SAND -w/trace gravel, red-brown		
		R		96/ 11"	11			OVM =0.0ppm		very dense
					12			Bottom at 11.5 feet. No liner encountered.		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. 4185JL164

PROJECT: STATE INDUSTRIES - BMI COMPLEX

BORING LOG

PLATE 11

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DATE DRILLED: 1-4-96
LOCATION: See Figure 2

BORING NO. BC-3

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
						FILL		6" CONCRETE PAD over 12" AGGREGATE BASE -brown		
					1					
					2			GRAVELLY SAND -w/silt, brown		
					3			SAND -w/trace gravel and silt, brown		
					4					
					5				moist	
					6					
					7					
					8					
		R		100/ 10"	9			OVM =0.0ppm		
					10			Bottom at 10 feet.		
					11					
					12			No liner encountered.		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. **4185JL164**

PROJECT: **STATE INDUSTRIES - BMI COMPLEX**

BORING LOG

PLATE **12**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

STA 1

STA 1

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DATE DRILLED: 1-4-96
LOCATION: See Figure 2

BORING NO. BC-4

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	FILL		6" CONCRETE over 12" AGGREGATE BASE -brown		
					2			GRAVELLY SAND -brown		
					3			-w/occasional cobbles		
					4			SAND -w/trace gravel and silt, brown	moist	
					5					
					6					
					7			OVM =0.0ppm		
		R		98/ 9"	8					
								Bottom at 8.5 feet.		
					9					
					10					
					11					
					12			No liner encountered.		
					13					
					14					

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. 4185JL164

PROJECT:
STATE INDUSTRIES - BMI COMPLEX

BORING LOG

PLATE
13

STA 1

DATE DRILLED: 1-4-96
LOCATION: See Figure 2

BORING NO. BB-1

ELEVATION:

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
					1	SP		SAND -w/trace gravel, lt. brown	dry	dense
					2	GP		GRAVELLY SAND -lt. brown		
					3			-w/occasional cobbles		
					4				sl. moist	very dense
		R		136	5					
					6			OVM =0.0ppm		
					7			Bottom 6.5 feet.		
					8					
					9					
					10					
					11					
					12					
					13					
					14					

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

SPT- STANDARD PENETRATION TEST
R- RING SAMPLE
C- CORE: %RECOVERY/%RQD
B- BAG
DRIVING WEIGHT (LBS) 140

NOTES: **Water not encountered. OVM = Organic Vapor Meter in parts per million.**

WESTERN TECHNOLOGIES INC.

PROJECT NO. **4185JL164**

PROJECT: **STATE INDUSTRIES - BMI COMPLEX**

BORING LOG

PLATE **14**

NEVADA ENVIRONMENTAL LABORATORY

Las Vegas Division
4208 Arcata Way, Suite A • Las Vegas, NV 89030
(702) 657-1010 • Fax: (702) 657-1577
1-800-368-5221

CLIENT: Western Technologies Inc.
3611 W. Tompkins Ave.
Las Vegas, NV 89103

ATTN: Tim Aten

PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164 NEL ID: L9601033

Attached are the analytical results for samples in support of the above referenced project.

Samples submitted for this project on 01/04/96 were received in good condition and under chain of custody. Unless otherwise noted, no anomalies were associated with this project.

Should you have any questions or comments, please feel free to contact our Client Services department (702) 657-1010.

Stan Van Wagenen
Laboratory Manager

1/12/96
Date

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-1-4
DATE SAMPLED: 01/03/96
NEL ID: L9601033-01

ANALYZED: 01/08-09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	NDJ	5µg/kg
Benzene	ND	5µg/kg	**Tetrachloroethene (PCE)**	**28J**	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	NDJ	5µg/kg
Bromoform	NDJ	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	NDJ	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	NDJ	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	NDJ	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	NDJ	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	NDJ	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	NDJ	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	NDJ	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	114	81-117%
Toluene-d8	83	81-117%
4-Bromofluorobenzene	62	74-121%

ND - Not Detected
Sample failed QC check. Sample was reanalyzed and again failed QC acceptance criterium. Thus, due to a probable matrix effect target compounds flagged with "J" are considered estimated quantations.

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-2-4
DATE SAMPLED: 01/03/96
NEL ID: L9601033-02

ANALYZED: 01/08-09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	**360**	25µg/kg	Styrene	NDJ	5µg/kg
Benzene	ND	5µg/kg	**Tetrachloroethene (PCE)**	**130J**	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	NDJ	5µg/kg
Bromoform	NDJ	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	**1,1,1-Trichloroethane (1,1,1-TCA)**	**31**	5µg/kg
2-Butanone	**30**	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	**Trichloroethene (TCE)**	**10**	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	NDJ	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	**m,p-Xylene**	**27J**	5µg/kg
Chloroform	ND	5µg/kg	**o-Xylene**	**20J**	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	NDJ	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	NDJ	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	NDJ	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	NDJ	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	110	81-117%
Toluene-d8	93	81-117%
4-Bromofluorobenzene	90	74-121%

ND - Not Detected
Sample failed QC check. Sample was reanalyzed and again failed QC acceptance criterium. Thus, due to a probable matrix effect target compounds flagged with "J" are considered estimated quantations.

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-3-3.5
DATE SAMPLED: 01/03/96
NEL ID: L9601033-03

ANALYZED: 01/08-09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	NDJ	25µg/kg	Styrene	NDJ	5µg/kg
Benzene	NDJ	5µg/kg	**Tetrachloroethene (PCE)**	**130J**	5µg/kg
Bromodichloromethane	NDJ	5µg/kg	1,1,2,2-Tetrachloroethane	NDJ	5µg/kg
Bromoform	NDJ	5µg/kg	Toluene	NDJ	5µg/kg
Bromomethane	NDJ	5µg/kg	**1,1,1-Trichloroethane (1,1,1-TCA)**	**17J**	5µg/kg
2-Butanone	NDJ	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	NDJ	5µg/kg
Carbon disulfide	NDJ	5µg/kg	**Trichloroethene (TCE)**	**5J**	5µg/kg
Carbon tetrachloride	NDJ	5µg/kg	Vinyl acetate	NDJ	5µg/kg
Chlorobenzene	NDJ	5µg/kg	Vinyl chloride	NDJ	5µg/kg
Chloroethane	NDJ	5µg/kg	**m,p-Xylene**	**6J**	5µg/kg
Chloroform	NDJ	5µg/kg	**o-Xylene**	**8J**	5µg/kg
Chloromethane	NDJ	5µg/kg			
2-Chloroethyl vinyl ether	NDJ	5µg/kg	**Additional Parameters**		
Dibromochloromethane	NDJ	5µg/kg	1,3-Dichlorobenzene (m-DCB)	NDJ	5µg/kg
1,1-Dichloroethane (1,1-DCA)	NDJ	5µg/kg	1,4-Dichlorobenzene (p-DCB)	NDJ	5µg/kg
1,2-Dichloroethane (1,2-DCA)	NDJ	5µg/kg	1,2-Dichlorobenzene (o-DCB)	NDJ	5µg/kg
1,1-Dichloroethene (1,1-DCE)	NDJ	5µg/kg			
cis-1,2-Dichloroethene	NDJ	5µg/kg			
trans-1,2-Dichloroethene	NDJ	5µg/kg			
1,2-Dichloropropane	NDJ	5µg/kg			
cis-1,3-Dichloropropene	NDJ	5µg/kg			
trans-1,3-Dichloropropene	NDJ	5µg/kg			
Ethylbenzene	NDJ	5µg/kg			
2-Hexanone	NDJ	25µg/kg			
Methylene chloride (Dichloromethane)	NDJ	5µg/kg			
4-Methyl-2-pentanone	NDJ	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	124	81-117%
Toluene-d8	78	81-117%
4-Bromofluorobenzene	75	74-121%

ND - Not Detected
Sample failed QC check. Sample was reanalyzed and again failed QC acceptance criterium. Thus, due to a probable matrix effect target compounds flagged with "J" are considered estimated quantations.

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-4-3.5
DATE SAMPLED: 01/03/96
NEL ID: L9601033-04

ANALYZED: 01/08/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	101	81-117%
Toluene-d8	97	81-117%
4-Bromofluorobenzene	87	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-5-3.5
DATE SAMPLED: 01/03/96
NEL ID: L9601033-05

ANALYZED: 01/08-09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	**99J**	25µg/kg	Styrene	NDJ	5µg/kg
Benzene	NDJ	5µg/kg	**Tetrachloroethene (PCE)**	**230J**	5µg/kg
Bromodichloromethane	NDJ	5µg/kg	1,1,2,2-Tetrachloroethane	NDJ	5µg/kg
Bromoform	NDJ	5µg/kg	**Toluene**	**6J**	5µg/kg
Bromomethane	NDJ	5µg/kg	**1,1,1-Trichloroethane (1,1,1-TCA)**	**77J**	5µg/kg
2-Butanone	NDJ	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	NDJ	5µg/kg
Carbon disulfide	NDJ	5µg/kg	**Trichloroethene (TCE)**	**14J**	5µg/kg
Carbon tetrachloride	NDJ	5µg/kg	Vinyl acetate	NDJ	5µg/kg
Chlorobenzene	NDJ	5µg/kg	Vinyl chloride	NDJ	5µg/kg
Chloroethane	NDJ	5µg/kg	**m,p-Xylene**	**57J**	5µg/kg
Chloroform	NDJ	5µg/kg	**o-Xylene**	**32J**	5µg/kg
Chloromethane	NDJ	5µg/kg			
2-Chloroethyl vinyl ether	NDJ	5µg/kg	**Additional Parameters**		
Dibromochloromethane	NDJ	5µg/kg	1,3-Dichlorobenzene (m-DCB)	NDJ	5µg/kg
1,1-Dichloroethane (1,1-DCA)	NDJ	5µg/kg	1,4-Dichlorobenzene (p-DCB)	NDJ	5µg/kg
1,2-Dichloroethane (1,2-DCA)	NDJ	5µg/kg	1,2-Dichlorobenzene (o-DCB)	NDJ	5µg/kg
1,1-Dichloroethene (1,1-DCE)	NDJ	5µg/kg			
cis-1,2-Dichloroethene	NDJ	5µg/kg			
trans-1,2-Dichloroethene	NDJ	5µg/kg			
1,2-Dichloropropane	NDJ	5µg/kg			
cis-1,3-Dichloropropene	NDJ	5µg/kg			
trans-1,3-Dichloropropene	NDJ	5µg/kg			
Ethylbenzene	**10J**	5µg/kg			
2-Hexanone	NDJ	25µg/kg			
Methylene chloride (Dichloromethane)	NDJ	5µg/kg			
4-Methyl-2-pentanone	NDJ	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	115	81-117%
Toluene-d8	81	81-117%
4-Bromofluorobenzene	105	74-121%

ND - Not Detected
Sample failed QC check. Sample was reanalyzed and again failed QC acceptance criterium. Thus, due to a probable matrix effect target compounds flagged with "J" are considered estimated quantations.

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-6-3.5
DATE SAMPLED: 01/03/96
NEL ID: L9601033-06

ANALYZED: 01/08-09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	NDJ	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	NDJ	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	NDJ	5µg/kg
Bromoform	NDJ	5µg/kg	**Toluene**	**7J**	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	NDJ	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	NDJ	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	NDJ	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	NDJ	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	NDJ	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	NDJ	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	112	81-117%
Toluene-d8	90	81-117%
4-Bromofluorobenzene	67	74-121%

ND - Not Detected
Sample failed QC check. Sample was reanalyzed and again failed QC acceptance criterium. Thus, due to a probable matrix effect target compounds flagged with "J" are considered estimated quantations.

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-6-5
DATE SAMPLED: 01/03/96
NEL ID: L9601033-07

ANALYZED: 01/08/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	99	81-117%
Toluene-d8	99	81-117%
4-Bromofluorobenzene	95	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-7-3.5
DATE SAMPLED: 01/03/96
NEL ID: L9601033-08

ANALYZED: 01/08/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	100	81-117%
Toluene-d8	99	81-117%
4-Bromofluorobenzene	96	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-8-3
DATE SAMPLED: 01/03/96
NEL ID: L9601033-09

ANALYZED: 01/08-09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	NDJ	5µg/kg
Benzene	ND	5µg/kg	**Tetrachloroethene (PCE)**	**8J**	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	NDJ	5µg/kg
Bromoform	NDJ	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	**27**	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	NDJ	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	NDJ	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	NDJ	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	NDJ	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	NDJ	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	NDJ	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	NDJ	5µg/kg			
2-Hexanone	**44**	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	112	81-117%
Toluene-d8	86	81-117%
4-Bromofluorobenzene	65	74-121%

ND - Not Detected
Sample failed QC check. Sample was reanalyzed and again failed QC acceptance criterium. Thus, due to a probable matrix effect target compounds flagged with "J" are considered estimated quantations.

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-8-4
DATE SAMPLED: 01/03/96
NEL ID: L9601033-10

ANALYZED: 01/08/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	103	81-117%
Toluene-d8	101	81-117%
4-Bromofluorobenzene	98	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BR-9-4
DATE SAMPLED: 01/03/96
NEL ID: L9601033-11

ANALYZED: 01/08/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	NDJ	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	NDJ	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	NDJ	5µg/kg
Bromoform	NDJ	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	NDJ	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	NDJ	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	NDJ	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	NDJ	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	NDJ	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	NDJ	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	NDJ	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	106	81-117%
Toluene-d8	91	81-117%
4-Bromofluorobenzene	64	74-121%

ND - Not Detected
Sample failed QC check. Sample was reanalyzed and again failed QC acceptance criterium. Thus, due to a probable matrix effect target compounds flagged with "J" are considered estimated quantations.

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BC-1-5
DATE SAMPLED: 01/03/96
NEL ID: L9601033-12

ANALYZED: 01/09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	105	81-117%
Toluene-d8	102	81-117%
4-Bromofluorobenzene	98	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BC-1-10
DATE SAMPLED: 01/03/96
NEL ID: L9601033-13

ANALYZED: 01/09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	102	81-117%
Toluene-d8	99	81-117%
4-Bromofluorobenzene	88	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BC-2-10
DATE SAMPLED: 01/03/96
NEL ID: L9601033-14

ANALYZED: 01/09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	102	81-117%
Toluene-d8	100	81-117%
4-Bromofluorobenzene	96	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BC-3-8.5
DATE SAMPLED: 01/04/96
NEL ID: L9601033-15

ANALYZED: 01/09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	103	81-117%
Toluene-d8	97	81-117%
4-Bromofluorobenzene	86	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BC-4-7
DATE SAMPLED: 01/04/96
NEL ID: L9601033-16

ANALYZED: 01/09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	NDJ	5µg/kg
Benzene	ND	5µg/kg	**Tetrachloroethene (PCE)**	**9J**	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	NDJ	5µg/kg
Bromoform	NDJ	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	NDJ	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	NDJ	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	NDJ	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	NDJ	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	NDJ	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	NDJ	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	NDJ	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	105	81-117%
Toluene-d8	90	81-117%
4-Bromofluorobenzene	67	74-121%

ND - Not Detected
Sample failed QC check. Sample was reanalyzed and again failed QC acceptance criterium. Thus, due to a probable matrix effect target compounds flagged with "J" are considered estimated quantations.

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: BB-1-5
DATE SAMPLED: 01/04/96
NEL ID: L9601033-17

ANALYZED: 01/09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	100	81-117%
Toluene-d8	100	81-117%
4-Bromofluorobenzene	96	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: Method Blank
DATE SAMPLED: NA
NEL ID: VBLK960108B

ANALYZED: 01/08/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	102	81-117%
Toluene-d8	100	81-117%
4-Bromofluorobenzene	98	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: Method Blank
DATE SAMPLED: NA
NEL ID: VBLK960109A

ANALYZED: 01/09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	103	81-117%
Toluene-d8	99	81-117%
4-Bromofluorobenzene	92	74-121%

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

CLIENT ID: Method Blank
DATE SAMPLED: NA
NEL ID: VBLK960109B

ANALYZED: 01/09/96
ANALYST: SJ

METHOD: **8240 VOLATILE ORGANIC COMPOUNDS BY EPA 8260A, September 1994**
SAMPLE MATRIX: **SOIL**

COMPOUND	RESULT µg/kg	REPORTING LIMIT	COMPOUND	RESULT µg/kg	REPORTING LIMIT
Acetone	ND	25µg/kg	Styrene	ND	5µg/kg
Benzene	ND	5µg/kg	Tetrachloroethene (PCE)	ND	5µg/kg
Bromodichloromethane	ND	5µg/kg	1,1,2,2-Tetrachloroethane	ND	5µg/kg
Bromoform	ND	5µg/kg	Toluene	ND	5µg/kg
Bromomethane	ND	5µg/kg	1,1,1-Trichloroethane (1,1,1-TCA)	ND	5µg/kg
2-Butanone	ND	25µg/kg	1,1,2-Trichloroethane (1,1,2-TCA)	ND	5µg/kg
Carbon disulfide	ND	5µg/kg	Trichloroethene (TCE)	ND	5µg/kg
Carbon tetrachloride	ND	5µg/kg	Vinyl acetate	ND	5µg/kg
Chlorobenzene	ND	5µg/kg	Vinyl chloride	ND	5µg/kg
Chloroethane	ND	5µg/kg	m,p-Xylene	ND	5µg/kg
Chloroform	ND	5µg/kg	o-Xylene	ND	5µg/kg
Chloromethane	ND	5µg/kg			
2-Chloroethyl vinyl ether	ND	5µg/kg	**Additional Parameters**		
Dibromochloromethane	ND	5µg/kg	1,3-Dichlorobenzene (m-DCB)	ND	5µg/kg
1,1-Dichloroethane (1,1-DCA)	ND	5µg/kg	1,4-Dichlorobenzene (p-DCB)	ND	5µg/kg
1,2-Dichloroethane (1,2-DCA)	ND	5µg/kg	1,2-Dichlorobenzene (o-DCB)	ND	5µg/kg
1,1-Dichloroethene (1,1-DCE)	ND	5µg/kg			
cis-1,2-Dichloroethene	ND	5µg/kg			
trans-1,2-Dichloroethene	ND	5µg/kg			
1,2-Dichloropropane	ND	5µg/kg			
cis-1,3-Dichloropropene	ND	5µg/kg			
trans-1,3-Dichloropropene	ND	5µg/kg			
Ethylbenzene	ND	5µg/kg			
2-Hexanone	ND	25µg/kg			
Methylene chloride (Dichloromethane)	ND	5µg/kg			
4-Methyl-2-pentanone	ND	25µg/kg			

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	104	81-117%
Toluene-d8	101	81-117%
4-Bromofluorobenzene	100	74-121%

ND - Not Detected

P.O. #4186P004

CHAIN OF CUSTODY RECORD

JOB NO. 4185JL164 | SAMPLER Tim Aten

PROJECT NAME State Industries - BMI Complex

SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION (Depth)	NUMBER OF CONTAINERS	SAMPLE METHOD: VACSAM	SOIL SCOOP	SOIL AUGER	SPLIT-SPOON	BAILER	GRAB	REMARKS (Physical Appearance, Compositing Instructions, etc.)	LABORATORY IDENTIFICATION NUMBER
BR-1-4	1/3/96	9:30	center spot	1 ring				X			SOIL SAMPLE FROM DEPTH	L9601033-01
BR-2-4		9:45						X				-02
BR-3-3.5		10:00						X				-03
BR-4-3.5		10:15						X				-04
BR-5-3.5		10:30	↓					X				-05
BR-6-3.5		10:45	grid #18					X				-06
BR-6-5		10:50	grid #18					X				-07
BR-7-3.5		11:15	grid #3					X				-08
BR-8-3		11:30	grid #29					X				-09
BR-8-4		11:30	grid #29					X				-10
BR-9-4	↓	11:45	grid #35	↓				X			↓	-11

Custody Seal Intact? Y N None

Condition when received (Good)

Temp. 11°C

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Tim Aten	1/4/96	1318	Wendy Hatt				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	SHIPPING TEMPERATURE (°F) →	MINIMUM / MAXIMUM

COMMENTS Analyze all samples for VOCs by EPA method 8240; CAM 17 metals; and pH. Normal TAT.

White - Testing Laboratory; Yellow - Department Job File; Pink - Field Sampler

P.O. # 4186P004

2 of 2

CHAIN OF CUSTODY RECORD

JOB NO. 4185JL164 | SAMPLER Tim Aten

PROJECT NAME State Industries - BMI Complex

SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION (Depth)	NUMBER OF CONTAINERS	SAMPLE METHOD: VACSAM	SOIL SCOOP	SOIL AUGER	SPLIT-SPOON	BAILER	GRAB	REMARKS (Physical Appearance, Compositing Instructions, etc.)	LABORATORY IDENTIFICATION NUMBER
BC-1-5	1/3/96	13:00	centerspot	1 ring				X			Soil Sample From Depth	L9601033-12
BC-1-10	↓	13:10	" "					X				-13
BC-2-10	↓	14:00	grid #24					X				-14
BC-3-8.5	1/4/96	8:30	grid #9					X				-15
BC-4-7	↓	8:45	grid #7					X				-16
BB-1-5	↓	9:00	background					X				-17

Custody Seal Intact? Y N (None)

Condition when received: good

Temp. 11°C

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Tim Aten	1/4/96	1318	[signature]				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	SHIPPING TEMPERATURE (°F) →	MINIMUM / MAXIMUM

COMMENTS: Analyze all samples for VOCs by EPA 8240; CAM 17 metals; and pH. Normal TAT.

White – Testing Laboratory; Yellow – Department Job File; Pink – Field Sampler

NEVADA ENVIRONMENTAL LABORATORY

Las Vegas Division
4208 Arcata Way, Suite A • Las Vegas, NV 89030
(702) 657-1010 • Fax: (702) 657-1577
1-800-368-5221

CLIENT: Western Technologies Inc.
3611 W. Tompkins Ave.
Las Vegas, NV 89103

ATTN: Tim Aten

PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164 NEL ID: L9601033

Attached are the analytical results for samples in support of the above referenced project.

Samples submitted for this project on 01/04/96 were received in good condition and under chain of custody. Unless otherwise noted, no anomalies were associated with this project.

Should you have any questions or comments, please feel free to contact our Client Services department (702) 657-1010.

Stan Van Wagenen
Laboratory Manager

1/12/96
Date

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-1-4
NEL ID: L9601033-01
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.6	1.0 mg/kg*
Barium	3050A/6010A	170	0.25 mg/kg
Beryllium	3050A/6010A	0.47	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	11	0.50 mg/kg
Cobalt	3050A/6010A	8.3	0.50 mg/kg
Copper	3050A/6010A	11	5.0 mg/kg*
Lead	3050A/7420	15	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	1.8	5.0 mg/kg*
Nickel	3050A/6010A	11	20 mg/kg*
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	23	2.5 mg/kg*
Zinc	3050A/6010A	26	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX:

CLIENT ID: BR-2-4
NEL ID: L9601033-02
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.4	1.0 mg/kg*
Barium	3050A/6010A	210	0.25 mg/kg
Beryllium	3050A/6010A	ND	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	20	0.50 mg/kg
Cobalt	3050A/6010A	13	0.50 mg/kg
Copper	3050A/6010A	6.7	5.0 mg/kg*
Lead	3050A/7420	15	12.5 mg/kg
Mercury	7471A	0.21	0.10 mg/kg
Molybdenum	3050A/6010A	7.5	5.0 mg/kg*
Nickel	3050A/6010A	11	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	5.0 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	10	2.5 mg/kg*
Zinc	3050A/6010A	81	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-3-3.5
NEL ID: L9601033-03
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.2	1.0 mg/kg*
Barium	3050A/6010A	150	0.25 mg/kg
Beryllium	3050A/6010A	0.28	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	54	0.50 mg/kg
Cobalt	3050A/6010A	13	0.50 mg/kg
Copper	3050A/6010A	13	5.0 mg/kg*
Lead	3050A/7420	16	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	6.8	5.0 mg/kg*
Nickel	3050A/6010A	16	20 mg/kg*
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	20	2.5 mg/kg*
Zinc	3050A/6010A	83	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-4-3.5
NEL ID: L9601033-04
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.0	1.0 mg/kg*
Barium	3050A/6010A	120	0.25 mg/kg
Beryllium	3050A/6010A	0.52	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	10	5.0 mg/kg*
Cobalt	3050A/6010A	20	0.50 mg/kg
Copper	3050A/6010A	13	5.0 mg/kg*
Lead	3050A/7420	ND	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	5.0 mg/kg*
Nickel	3050A/6010A	18	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	23	2.5 mg/kg*
Zinc	3050A/6010A	95	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-5-3.5
NEL ID: L9601033-05
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	4.0	1.0 mg/kg*
Barium	3050A/6010A	280	0.25 mg/kg
Beryllium	3050A/6010A	ND	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	18	0.50 mg/kg
Cobalt	3050A/6010A	14	0.50 mg/kg
Copper	3050A/6010A	ND	5.0 mg/kg*
Lead	3050A/7420	27	12.5 mg/kg
Mercury	7471A	0.23	0.10 mg/kg
Molybdenum	3050A/6010A	15	5.0 mg/kg*
Nickel	3050A/6010A	11	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	5.4	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	8.0	2.5 mg/kg*
Zinc	3050A/6010A	60	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-6-3.5
NEL ID: L9601033-06
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.7	1.0 mg/kg*
Barium	3050A/6010A	190	0.25 mg/kg
Beryllium	3050A/6010A	0.43	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	27	0.50 mg/kg
Cobalt	3050A/6010A	13	0.50 mg/kg
Copper	3050A/6010A	14	5.0 mg/kg*
Lead	3050A/7420	31	12.5 mg/kg
Mercury	7471A	0.16	0.10 mg/kg
Molybdenum	3050A/6010A	9.9	5.0 mg/kg*
Nickel	3050A/6010A	ND	20 mg/kg*
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	24	2.5 mg/kg*
Zinc	3050A/6010A	71	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: CAM 17 METALS

SAMPLE MATRIX: SOIL

CLIENT ID: BR-6-5
NEL ID: L9601033-07
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	2.4	1.0 mg/kg*
Barium	3050A/6010A	230	0.25 mg/kg
Beryllium	3050A/6010A	0.62	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	7.4	0.50 mg/kg
Cobalt	3050A/6010A	7.6	0.50 mg/kg
Copper	3050A/6010A	12	0.50 mg/kg
Lead	3050A/7420	ND	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	5.0 mg/kg*
Nickel	3050A/6010A	12	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	22	0.25 mg/kg
Zinc	3050A/6010A	26	0.50 mg/kg

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-7-3.5
NEL ID: L9601033-08
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	2.2	1.0 mg/kg*
Barium	3050A/6010A	140	0.25 mg/kg
Beryllium	3050A/6010A	0.54	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	6.7	0.50 mg/kg
Cobalt	3050A/6010A	7.4	0.50 mg/kg
Copper	3050A/6010A	11	0.50 mg/kg
Lead	3050A/7420	ND	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	5.0 mg/kg*
Nickel	3050A/6010A	11	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	20	0.25 mg/kg
Zinc	3050A/6010A	26	0.50 mg/kg

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-8-3
NEL ID: L9601033-09
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	2.7	1.0 mg/kg*
Barium	3050A/6010A	120	0.25 mg/kg
Beryllium	3050A/6010A	0.30	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	23	0.50 mg/kg
Cobalt	3050A/6010A	11	0.50 mg/kg
Copper	3050A/6010A	25	5.0 mg/kg*
ead	3050A/7420	15	12.5 mg/kg
lercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	5.0 mg/kg*
Nickel	3050A/6010A	12	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	20	2.5 mg/kg*
Zinc	3050A/6010A	70	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-8-4
NEL ID: L9601033-10
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.0	1.0 mg/kg*
Barium	3050A/6010A	130	0.25 mg/kg
Beryllium	3050A/6010A	0.73	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	8.3	0.50 mg/kg
Cobalt	3050A/6010A	34	0.50 mg/kg
Copper	3050A/6010A	11	5.0 mg/kg*
Lead	3050A/7420	ND	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	5.0 mg/kg*
Nickel	3050A/6010A	28	20 mg/kg*
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	24	2.5 mg/kg*
Zinc	3050A/6010A	100	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-9-4
NEL ID: L9601033-11
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.3	1.0 mg/kg*
Barium	3050A/6010A	170	0.25 mg/kg
Beryllium	3050A/6010A	0.38	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	26	0.50 mg/kg
Cobalt	3050A/6010A	18	0.50 mg/kg
Copper	3050A/6010A	12	5.0 mg/kg*
Lead	3050A/7420	21	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	5.9	5.0 mg/kg*
Nickel	3050A/6010A	22	20 mg/kg*
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	21	2.5 mg/kg*
Zinc	3050A/6010A	66	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BC-1-5
NEL ID: L9601033-12
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	2.4	1.0 mg/kg*
Barium	3050A/6010A	180	0.25 mg/kg
Beryllium	3050A/6010A	0.57	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	10	0.50 mg/kg
Cobalt	3050A/6010A	11	0.50 mg/kg
Copper	3050A/6010A	14	0.50 mg/kg
Lead	3050A/7420	16	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	0.50 mg/kg
Nickel	3050A/6010A	17	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	22	0.50 mg/kg
Zinc	3050A/6010A	43	0.50 mg/kg

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BC-1-10
NEL ID: L9601033-13
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	4.8	1.0 mg/kg*
Barium	3050A/6010A	90	0.25 mg/kg
Beryllium	3050A/6010A	ND	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	37	0.50 mg/kg
Cobalt	3050A/6010A	5.7	0.50 mg/kg
Copper	3050A/6010A	25	0.50 mg/kg
Lead	3050A/7420	14	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	6.2	0.50 mg/kg
Nickel	3050A/6010A	7.4	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	21	0.50 mg/kg
Zinc	3050A/6010A	23	0.50 mg/kg

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BC-2-10
NEL ID: L9601033-14
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.4	1.0 mg/kg*
Barium	3050A/6010A	150	0.25 mg/kg
Beryllium	3050A/6010A	0.54	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	8.2	0.50 mg/kg
Cobalt	3050A/6010A	8.8	0.50 mg/kg
Copper	3050A/6010A	11	0.50 mg/kg
Lead	3050A/7420	ND	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	0.50 mg/kg
Nickel	3050A/6010A	13	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	22	0.50 mg/kg
Zinc	3050A/6010A	26	0.50 mg/kg

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BC-3-8.5
NEL ID: L9601033-15
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	7.6	1.0 mg/kg*
Barium	3050A/6010A	63	0.25 mg/kg
Beryllium	3050A/6010A	0.52	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	110	0.50 mg/kg
Cobalt	3050A/6010A	7.2	0.50 mg/kg
Copper	3050A/6010A	29	5.0 mg/kg*
Lead	3050A/7420	15	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	5.0 mg/kg*
Nickel	3050A/6010A	12	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	36	2.5 mg/kg*
Zinc	3050A/6010A	50	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BB-1-5
NEL ID: L9601033-17
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg
Arsenic	3050A/7060A	2.9	1.0 mg/kg
Barium	3050A/6010A	160	0.25 mg/kg
Beryllium	3050A/6010A	0.59	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	6.7	0.50 mg/kg
Cobalt	3050A/6010A	7.4	0.50 mg/kg
Copper	3050A/6010A	12	5.0 mg/kg
Lead	3050A/7420	ND	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	5.0 mg/kg
Nickel	3050A/6010A	11	20 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg
Vanadium	3050A/6010A	19	2.5 mg/kg
Zinc	3050A/6010A	26	5.0 mg/kg

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: Method Blank
NEL ID:
DATE SAMPLED:

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg
Arsenic	3050A/7060A	ND	1.0 mg/kg
Barium	3050A/6010A	ND	0.25 mg/kg
Beryllium	3050A/6010A	ND	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	ND	0.50 mg/kg
Cobalt	3050A/6010A	ND	0.50 mg/kg
Copper	3050A/6010A	ND	0.50 mg/kg
Lead	3050A/7420	ND	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	0.50 mg/kg
Nickel	3050A/6010A	ND	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg
Vanadium	3050A/6010A	ND	0.50 mg/kg
Zinc	3050A/6010A	ND	0.50 mg/kg

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

Las Vegas Division
4208 Arcata Way, Suite A • Las Vegas, NV 89030
(702) 657-1010 • Fax: (702) 657-1577
1-800-368-5221

CLIENT: Western Technologies Inc.
3611 W. Tompkins Ave.
Las Vegas, NV 89103

ATTN: Tim Aten

PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164 NEL ID: L9601033

Attached are the analytical results for samples in support of the above referenced project.

Samples submitted for this project on 01/04/96 were received in good condition and under chain of custody. Unless otherwise noted, no anomalies were associated with this project.

Should you have any questions or comments, please feel free to contact our Client Services department (702) 657-1010.

Stan Van Wagenen
Laboratory Manager

1/12/96
Date

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-1-4
NEL ID: L9601033-01
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.6	1.0 mg/kg*
Barium	3050A/6010A	170	0.25 mg/kg
Beryllium	3050A/6010A	0.47	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	11	0.50 mg/kg
Cobalt	3050A/6010A	8.3	0.50 mg/kg
Copper	3050A/6010A	11	5.0 mg/kg*
Lead	3050A/7420	15	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	1.8	5.0 mg/kg*
Nickel	3050A/6010A	11	20 mg/kg*
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	23	2.5 mg/kg*
Zinc	3050A/6010A	26	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX:

CLIENT ID: BR-2-4
NEL ID: L9601033-02
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.4	1.0 mg/kg*
Barium	3050A/6010A	210	0.25 mg/kg
Beryllium	3050A/6010A	ND	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	20	0.50 mg/kg
Cobalt	3050A/6010A	13	0.50 mg/kg
Copper	3050A/6010A	6.7	5.0 mg/kg*
Lead	3050A/7420	15	12.5 mg/kg
Mercury	7471A	0.21	0.10 mg/kg
Molybdenum	3050A/6010A	7.5	5.0 mg/kg*
Nickel	3050A/6010A	11	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	5.0 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	10	2.5 mg/kg*
Zinc	3050A/6010A	81	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-3-3.5
NEL ID: L9601033-03
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.2	1.0 mg/kg*
Barium	3050A/6010A	150	0.25 mg/kg
Beryllium	3050A/6010A	0.28	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	54	0.50 mg/kg
Cobalt	3050A/6010A	13	0.50 mg/kg
Copper	3050A/6010A	13	5.0 mg/kg*
Lead	3050A/7420	16	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	6.8	5.0 mg/kg*
Nickel	3050A/6010A	16	20 mg/kg*
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	20	2.5 mg/kg*
Zinc	3050A/6010A	83	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BR-4-3.5
NEL ID: L9601033-04
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	3.0	1.0 mg/kg*
Barium	3050A/6010A	120	0.25 mg/kg
Beryllium	3050A/6010A	0.52	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	10	5.0 mg/kg*
Cobalt	3050A/6010A	20	0.50 mg/kg
Copper	3050A/6010A	13	5.0 mg/kg*
Lead	3050A/7420	ND	12.5 mg/kg
Mercury	7471A	ND	0.10 mg/kg
Molybdenum	3050A/6010A	ND	5.0 mg/kg*
Nickel	3050A/6010A	18	2.0 mg/kg
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	23	2.5 mg/kg*
Zinc	3050A/6010A	95	5.0 mg/kg*

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: STATE INDUSTRIES - BMI COMPLEX
PROJECT NUMBER: NA

ANALYST: JY

METHOD: **CAM 17 METALS**

SAMPLE MATRIX: **SOIL**

CLIENT ID: BC-4-7
NEL ID: L9601033-16
DATE SAMPLED: 1/3/96

DIGESTED: 01/08/96
ANALYZED: 01/09-1/11/96

PARAMETER	EPA METHOD	RESULT mg/kg	REPORTING LIMIT[1]
Antimony	3050A/7041	ND	1.0 mg/kg*
Arsenic	3050A/7060A	4.0	1.0 mg/kg*
Barium	3050A/6010A	440	2.5 mg/kg*
Beryllium	3050A/6010A	ND	0.25 mg/kg
Cadmium	3050A/6010A	ND	0.50 mg/kg
Chromium	3050A/6010A	20	5.0 mg/kg*
Cobalt	3050A/6010A	58	5.0 mg/kg*
Copper	3050A/6010A	42	5.0 mg/kg*
Lead	3050A/7420	21	12.5 mg/kg
Mercury	7471A	0.13	0.10 mg/kg
Molybdenum	3050A/6010A	2.6	5.0 mg/kg*
Nickel	3050A/6010A	120	20 mg/kg*
Selenium	3050A/7740	ND	1.0 mg/kg*
Silver	3050A/6010A	ND	0.75 mg/kg
Thallium	3050A/7841	ND	1.0 mg/kg*
Vanadium	3050A/6010A	19	0.25 mg/kg
Zinc	3050A/6010A	260	0.50 mg/kg

* Analyzed at 1:500 dilution due to matrix

EPA Method 3050A, July 1992
EPA Method 6010A, July 1992
EPA Method 7041, September 1986
EPA Method 7060A, September 1994
EPA Method 7420, September 1986
EPA Method 7471A, September 1994
EPA Method 7740, September 1986
EPA Method 7841, September 1986

ND - Not Detected

P.O. #4186P004

1 of 2

CHAIN OF CUSTODY RECORD

JOB NO: 4185JL164 | SAMPLER: Tim Aten

PROJECT NAME: State Industries - BMI Complex

SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION (Depth)	NUMBER OF CONTAINERS	SAMPLE METHOD: VACSAM	SOIL SCOOP	SOIL AUGER	SPLIT-SPOON	BAILER	GRAB	REMARKS (Physical Appearance, Compositing Instructions, etc.)	LABORATORY IDENTIFICATION NUMBER
BR-1-4	1/3/96	9:30	center spot	1 ring				X			SOIL SAMPLE FROM DEPTH	L9601033-01
BR-2-4		9:45						X				-02
BR-3-3.5		10:00						X				-03
BR-4-3.5		10:15						X				-04
BR-5-3.5		10:30						X				-05
BR-6-3.5		10:45	grid #18					X				-06
BR-6-5		10:50	grid #18					X				-07
BR-7-3.5		11:15	grid #3					X				-08
BR-8-3		11:30	grid #29					X				-09
BR-8-4		11:30	grid #29					X				-10
BR-9-4		11:45	grid #35					X				-11

Custody Seal Intact? Y N None

Condition when received: good

Temp. 11°C

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Tim Aten	1/4/96	1318	[signature]				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	SHIPPING TEMPERATURE (°F) →	MINIMUM / MAXIMUM

COMMENTS: Analyze all samples for VOCs by EPA method 8240; CAM 17 metals; and pH. Normal tat.

White - Testing Laboratory; Yellow - Department Job File; Pink - Field Sampler

151 (5/92)

Western Technologies Inc.

P.O. # 4186P004

2 of 2

CHAIN OF CUSTODY RECORD

JOB NO. 4185JL164 | SAMPLER Tim Aten

PROJECT NAME State Industries - BMI Complex

SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION (Depth)	NUMBER OF CONTAINERS	SAMPLE METHOD: VACSAM	SOIL SCOOP	SOIL AUGER	SPLIT-SPOON	BAILER	GRAB	REMARKS (Physical Appearance, Compositing Instructions, etc.)	LABORATORY IDENTIFICATION NUMBER
BC-1-5	1/3/96	13:00	centerspot	1 ring				X			Soil Sample From Depth	L9601033-12
BC-1-10	↓	13:10	" "					X				-13
BC-2-10	↓	14:00	grid #24					X				-14
BC-3-8.5	1/4/96	8:30	grid #9					X				-15
BC-4-7	↓	8:45	grid #7					X				-16
BB-1-5	↓	9:00	background					X				-17

Custody Seal Intact? Y N (None)
Condition when received good

Temp. 11°C

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Tim Aten	1/4/96	1318	[signature]
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
	DATE	TIME	SHIPPING TEMPERATURE (°F) → MINIMUM / MAXIMUM

COMMENTS Analyze all samples for VOCs by EPA 8240; CAM 17 metals; and pH.
Normal TAT.

White - Testing Laboratory; Yellow - Department Job File; Pink - Field Sampler

151 (5/92)

Western Technologies Inc.

NEVADA ENVIRONMENTAL LABORATORY

Las Vegas Division
4208 Arcata Way, Suite A • Las Vegas, NV 89030
(702) 657-1010 • Fax: (702) 657-1577
1-800-368-5221

CLIENT: Western Technologies Inc.
3611 W. Tompkins Ave.
Las Vegas, NV 89103

ATTN: Tim Aten

PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164 NEL ID: L9601033

Attached are the analytical results for samples in support of the above referenced project.

Samples submitted for this project on 01/04/96 were received in good condition and under chain of custody. Unless otherwise noted, no anomalies were associated with this project.

Should you have any questions or comments, please feel free to contact our Client Services department (702) 657-1010.

Stan Van Wagenen
Laboratory Manager

1/12/96
Date

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

METHOD: **INORGANIC NON-METALS** SAMPLE MATRIX: **WATER**

CLIENT ID: BR-1-4
NEL ID: L9601033-01
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	6.64	NA	pH units	150.1	01/10/96

CLIENT ID: BR-2-4
NEL ID: L9601033-02
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	2.79	NA	pH units	150.1	01/10/96

CLIENT ID: BR-3-3.5
NEL ID: L9601033-03
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	3.19	NA	pH units	150.1	01/10/96

CLIENT ID: BR-4-3.5
NEL ID: L9601033-04
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	3.92	NA	pH units	150.1	01/10/96

CLIENT ID: BR-5-3.5
NEL ID: L9601033-05
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	2.57	NA	pH units	150.1	01/10/96

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

METHOD: **INORGANIC NON-METALS** SAMPLE MATRIX: **WATER**

CLIENT ID: BR-6-3.5
NEL ID: L9601033-06
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	7.03	NA	pH units	150.1	01/10/96

CLIENT ID: BR-6-5
NEL ID: L9601033-07
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	8.38	NA	pH units	150.1	01/10/96

CLIENT ID: BR-7-3.5
NEL ID: L9601033-08
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	7.92	NA	pH units	150.1	01/10/96

CLIENT ID: BR-8-3
NEL ID: L9601033-09
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	3.78	NA	pH units	150.1	01/10/96

CLIENT ID: BR-8-4
NEL ID: L9601033-10
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	7.10	NA	pH units	150.1	01/10/96

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

METHOD: **INORGANIC NON-METALS** SAMPLE MATRIX: **WATER**

CLIENT ID: BR-9-4
NEL ID: L9601033-11
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	5.12	NA	pH units	150.1	01/10/96

CLIENT ID: BC-1-5
NEL ID: L9601033-12
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	7.97	NA	pH units	150.1	01/10/96

CLIENT ID: BC-1-10
NEL ID: L9601033-13
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	4.45	NA	pH units	150.1	01/10/96

CLIENT ID: BC-2-10
NEL ID: L9601033-14
DATE SAMPLED: 01/03/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	7.59	NA	pH units	150.1	01/10/96

CLIENT ID: BC-3-8.5
NEL ID: L9601033-15
DATE SAMPLED: 01/04/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	7.01	NA	pH units	150.1	01/10/96

NEVADA ENVIRONMENTAL LABORATORY

CLIENT: Western Technologies Inc.
PROJECT NAME: State Industries - BMI Complex
PROJECT NUMBER: 4185JL164

METHOD: **INORGANIC NON-METALS** SAMPLE MATRIX: **WATER**

CLIENT ID: BC-4-7
NEL ID: L9601033-16
DATE SAMPLED: 01/04/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	7.67	NA	pH units	150.1	01/10/96

CLIENT ID: BB-1-5
NEL ID: L9601033-17
DATE SAMPLED: 01/04/96

PARAMETER	RESULTS	REPORTING LIMIT	UNITS	EPA METHOD	ANALYZED
pH	8.75	NA	pH units	150.1	01/10/96

P.O. #4186P004

1 of 2

CHAIN OF CUSTODY RECORD

JOB NO. 4185JL164 | SAMPLER Tim Aten

PROJECT NAME State Industries - BMI Complex

SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION (Depth)	NUMBER OF CONTAINERS	SAMPLE METHOD: VACSAM	SOIL SCOOP	SOIL AUGER	SPLIT-SPOON	BAILER	GRAB	REMARKS (Physical Appearance, Compositing Instructions, etc.)	LABORATORY IDENTIFICATION NUMBER
BR-1-4	1/3/96	9:30	center spot	1 ring				X			SOIL SAMPLE FROM DEPTH	L9601033-01
BR-2-4		9:45						X				-02
BR-3-3.5		10:00						X				-03
BR-4-3.5		10:15						X				-04
BR-5-3.5		10:30						X				-05
BR-6-3.5		10:45	grid #18					X				-06
BR-6-5		10:50	grid #18					X				-07
BR-7-3.5		11:15	grid #3					X				-08
BR-8-3		11:30	grid #29					X				-09
BR-8-4		11:30	grid #29					X				-10
BR-9-4		11:45	grid #35					X				-11

Custody Seal Intact? Y N None

Condition when received good

Temp. 11°C

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Tim Aten	1/4/96	1318	Wendy Potter				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	SHIPPING TEMPERATURE (°F) →	MINIMUM / MAXIMUM

COMMENTS Analyze all samples for VOCs by EPA method 8240; CAM 17 metals; and pH. Normal TAT.

White - Testing Laboratory; Yellow - Department Job File; Pink - Field Sampler

451 (5/92)

Western Technologies Inc.

P.O. # 41856P0-4

2 of 2

CHAIN OF CUSTODY RECORD

JOB NO. 4185JL164 | SAMPLER Tim Atkin

PROJECT NAME State Industries - BMI Complex

SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION (Depth)	NUMBER OF CONTAINERS	SAMPLE METHOD: VACSAM	SOIL SCOOP	SOIL AUGER	SPLIT-SPOON	BAILER	GRAB	REMARKS (Physical Appearance, Compositing Instructions, etc.)	LABORATORY IDENTIFICATION NUMBER
BC-1-5	1/3/96	13:00	centerspot	1 ring				X			Soil Sample From Depth	L9601033-12
BC-1-10		13:10	" "					X				-13
BC-2-10		14:00	grid #24					X				-14
BC-3-8.5	1/4/96	8:30	grid #9					X				-15
BC-4-7		8:45	grid #7					X				-16
BB-1-5		9:00	background					X				-17

Custody Seal Intact? Y N (None) Temp. 11°C

Condition when received good

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Tim Atkin	1/4/96	1318					
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	SHIPPING TEMPERATURE (°F) →	MINIMUM / MAXIMUM

COMMENTS Analyze all samples for VOCs by EPA 8240; CAM 17 metals; and pH. Normal TAT.

White - Testing Laboratory; Yellow - Department Job File; Pink - Field Sampler

151 (5/92)

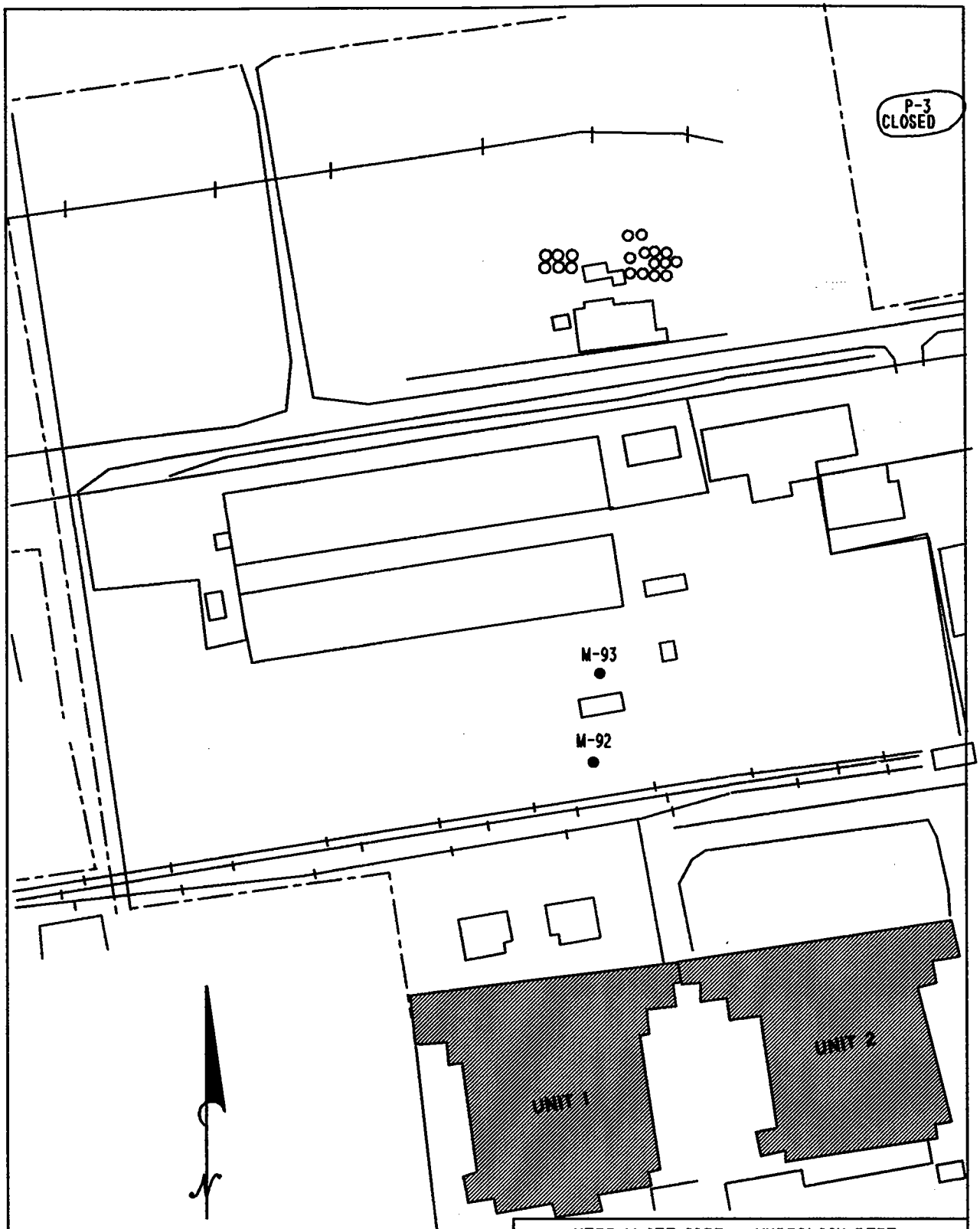
Western Technologies Inc.

17

ATTACHMENT 17

LOU ITEM 63

J. B. KELLY DOCUMENTATION



KERR-McGEE CORP. - HYDROLOGY DEPT.

KERR-McGEE CHEMICAL CORP.
HENDERSON, NV

FIGURE 2:
J. B. KELLY MONITOR WELLS

MAP DATE: 4/96

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431
(702) 355-1044
FAX: 702-355-0406
1-800-283-1183

Boise, Idaho
(208) 336-4145

2810 W. Charleston, Suite G67
Las Vegas, Nevada 89102
(702) 386-6747

ANALYTICAL REPORT

Kerr-McGee Chemical-Apex
P. O. Box 55
Henderson, NV

Project:
Phone: 565-8901
Attn: Alan Gaddy

Sampled: 05/06/93 Received: 05/07/93 Analyzed: 05/11-18/93

Matrix: [ ] Soil [X] Water [ ] Waste

Analysis Requested: TPH - Total Petroleum Hydrocarbons-Extractable Quantitated As Diesel
BTXE - Benzene,Toluene,Xylenes,Ethylbenzene

Methodology: TPH - Modified 8015/DHS LUFT Manual
BTXE - EPA Method 624/8240

TPH/BTXE Results:

Client ID/ Lab ID	Parameter	Concentration	Detection Limit
M-92	TPH	ND	0.5 mg/L
/KMC050793-01	Benzene	ND	1 ug/L
	Toluene	ND	1 ug/L
	Total Xylenes	ND	1 ug/L
	Ethylbenzene	ND	1 ug/L
M-93	TPH	ND	0.5 mg/L
/KMC050793-02	Benzene	ND	1 ug/L
	Toluene	ND	1 ug/L
	Total Xylenes	ND	1 ug/L
	Ethylbenzene	ND	1 ug/L

ND - Not Detected

Approved By: Roger E. Scholl Date: 5/19/93
Roger L. Scholl, Ph.D.
Laboratory Director

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY CHEMICAL	LOCATION HENDERSON, NV.	BORING NUMBER M-92

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	SILTY SAND, LT-MEDIUM BROWN, WELL GRADED; DRY TO SLIGHTLY MOIST		SM							
5	CALICHE-CEMENTED GRAVEL ZONE @ 4-6'									
10	SILTY SAND; FINE-COARSED GRAINED; CALICHE CEMENTED GRAVELLY ZONE @ 9-14'		SM							EARTHY OR MUSTY ODOR NOTED DURING DRILLING
15	SILTY SAND AS ABOVE; BECOMING MODERATELY MOIST @ 18'									
20	SILTY CLAY; LT. BROWN, SLI. TO MODERATELY MOIST, STIFF, OCC. FINE TO MED. SAND GRAINS		CL							
25										
30										
35	SILTY CLAY AS ABOVE; SATURATED, MOD. PLASTIC									
40										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; CALICHE; _____

DATE DRILLED	5/4-5/93
PAGE	1 of 2
DRILLING METHOD	HOLLOW STEM AUGER
DRILLED BY	WESTERN TECH.
LOGGED BY	T. REED
EXISTING GRADE ELEVATION (FT AMSL)	~1800'
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY CHEMICAL	LOCATION HENDERSON, NV	BORING NUMBER M-92 (CONT)

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
45			CL							
	TD 45.5'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

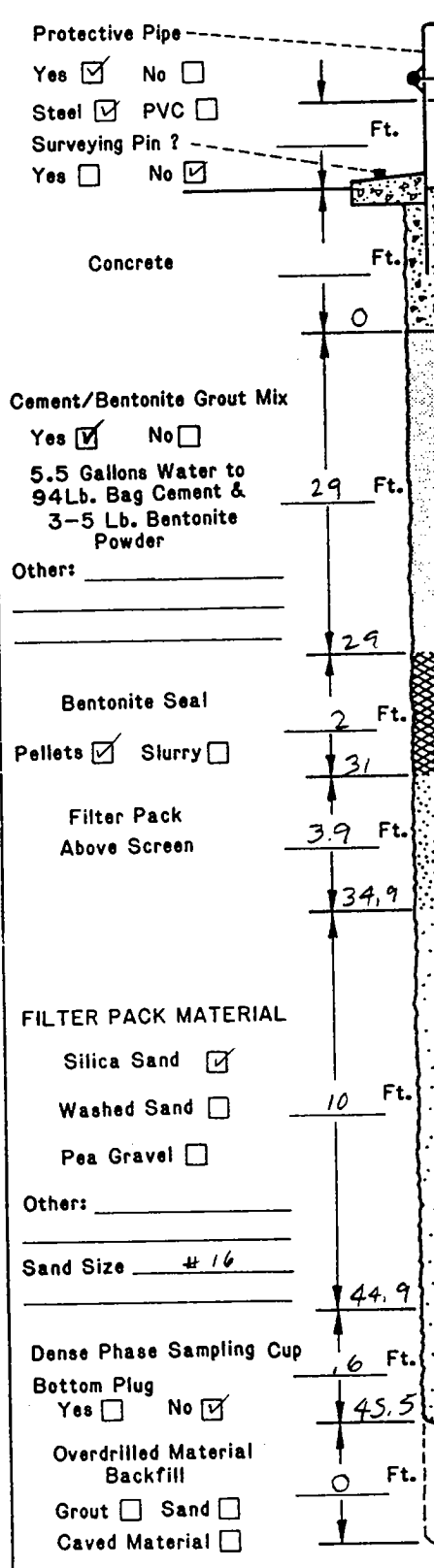
GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND · _____ · _____

DATE DRILLED	PAGE
5/4-5/93	1 of 2

DRILLING METHOD: HOLLOW STEM AUGER
DRILLED BY: WESTERN TECH.
LOGGED BY: T. REED
EXISTING GRADE ELEVATION (FT AMSL): ~1800'
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



Casing Cap Vent ? Yes ☑ No ☐

Lock ? Yes ☐ No ☑

Weep Hole ? Yes ☐ No ☑

Concrete Pad 3 Ft. x 3 Ft. x 2 Inches

DEPTH FROM BELOW GRADE / FROM TOP OF CASING

DRILLING INFORMATION:

1. Borehole Diameter= 8.5 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☑
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☑
3. Was Outer Steel Casing Used ? Yes ☐ No ☑
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☑ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☑ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☑ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: .010
6. Type of Screen Perforation: Factory Slotted ☑
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☑ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☑ Pumping ☐
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   30 / 1 Minutes/Hours
3. Approximate Water Volume Removed ? 50 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☐ Opaque ☑
5. Water Clarity After Development ? Clear ☐
   Turbid ☑ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☑
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☑ No ☐
   If Yes , Describe LT. BROWN

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling _____ Ft. Date _____

Before Development _____ Ft. Date _____

After Development _____ Ft. Date _____

Driller/Firm T. HIGH / WESTERN TECH. Drill Rig Type MOBILE B-80 Date Installed 5/5/93

Drill Crew T. HIGH / T. BROWN Well No. M-92 Kerr-McGee Hydrologist T. REED

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY CHEMICAL	LOCATION HENDERSON, NV.	BORING NUMBER M-93

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
1	GRAVEL FILL				0					
	SILTY SAND, LT TO MED. BROWN, DRY. ASD. GRAVEL 1-6'		SM		0					
5	SILTY SAND AS ABOVE, GRAVEL AND COBBLES COMMON FROM 6-10'				0					NO HYDROCARBON ODOR
					0					
10	SILTY SAND AS ABOVE, BECOMING SLI. MOIST; CALICHE-CEMENTED GRAVELLY ZONE FROM 14-15'				0					
					0					
15			SM		0					
					0					
20					0					
					0					
23.5					0					
25	SILTY CLAY, LT. BROWN, SLI. MOIST; STIFF; SAND LENS COMMON		CL		0					
					0					
30					0					
	SILTY CLAY SATURATED @ 33'		▽		0					NO HYDROCARBON ODOR
33					0					
35					6					
					0					
40					0					

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- CALICHE
- ☐ _____

DATE DRILLED	5/5/93
PAGE	1 of 2
DRILLING METHOD	HOLLOW STEM AUGER
DRILLED BY	WESTERN TECH.
LOGGED BY	T. REED
EXISTING GRADE ELEVATION (FT. AMSL)	~1798'
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY CHEMICAL	LOCATION HENDERSON, NV.	BORING NUMBER M-93 (CONT.)

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
45			CL		0 0 0					
	TD 46'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

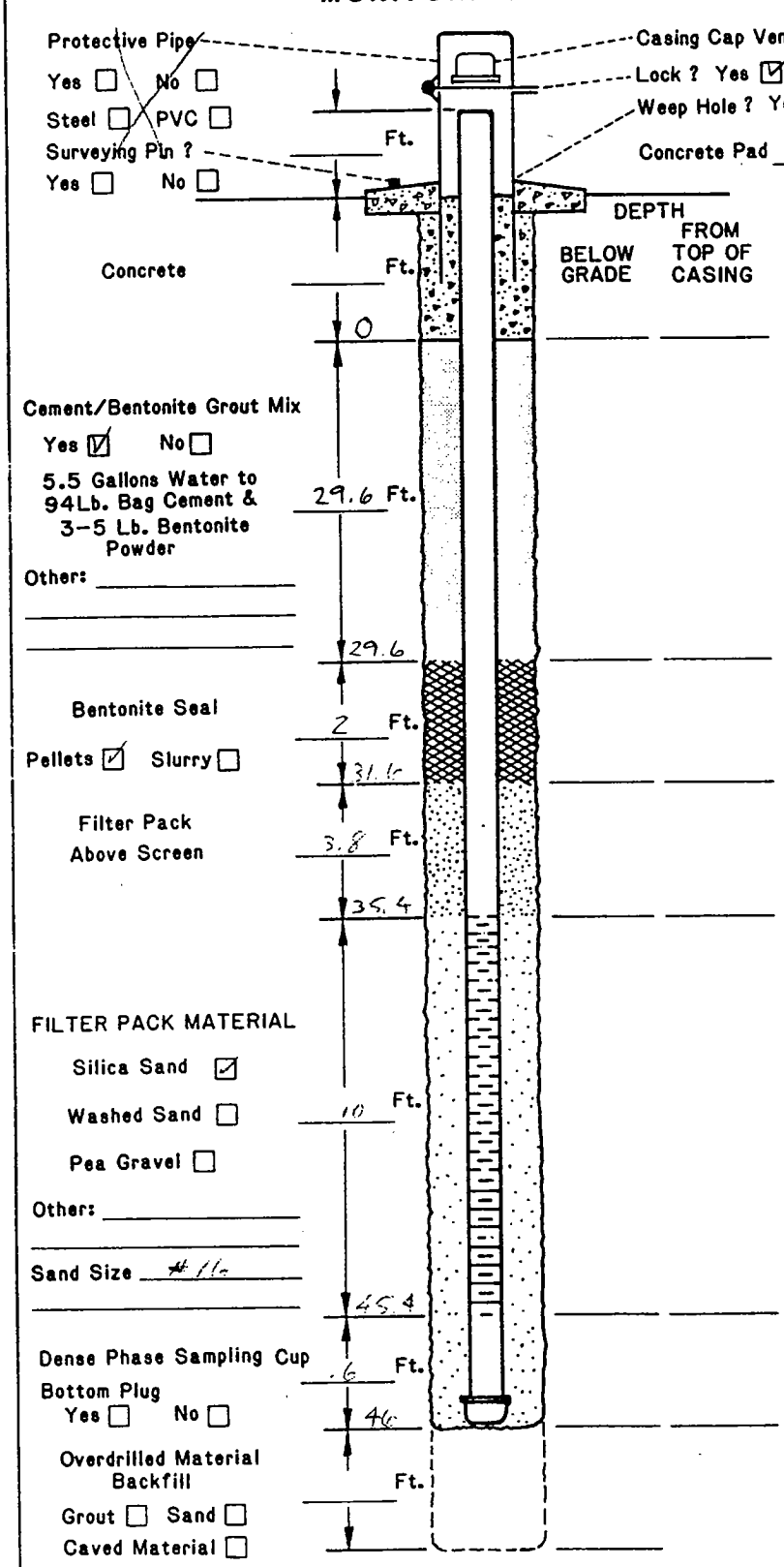
GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC PEAT · SANDY CLAY · CLAYEY SAND · ____ · ____

DATE DRILLED	PAGE
5/5/93	1 of 2

DRILLING METHOD: HOLLOW STEM AUGER
DRILLED BY: WESTERN TECH.
LOGGED BY: T. REED
EXISTING GRADE ELEVATION (FT. AMSL): ~1798'
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



FLUSH MOUNT WELL

DRILLING INFORMATION:

1. Borehole Diameter= 8.5 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☑
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☑
3. Was Outer Steel Casing Used ? Yes ☐ No ☑
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☑ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☑ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☑ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: .010
6. Type of Screen Perforation: Factory Slotted ☑
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☑

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☑ Pumping ☐
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   20 / 1 Minutes/Hours
3. Approximate Water Volume Removed ? 50 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☐ Opaque ☑
5. Water Clarity After Development ? Clear ☐
   Turbid ☑ Opaque ☐
6. Did Water have Oder ? Yes ☐ No ☑
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☑ No ☐
   If Yes , Describe LT. BROWN

WATER LEVEL INFORMATION:

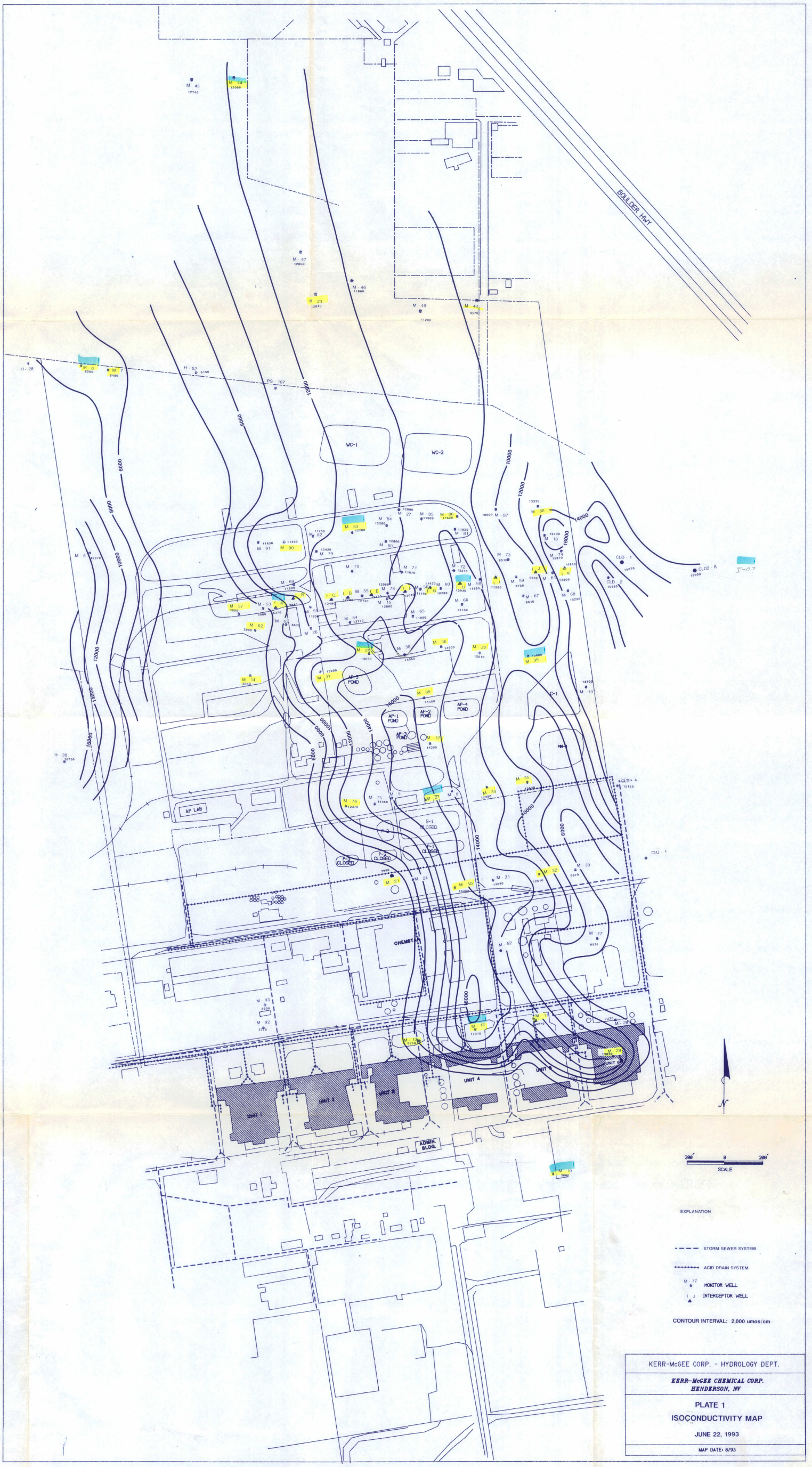
Water Level Summary (From Top of Casing)

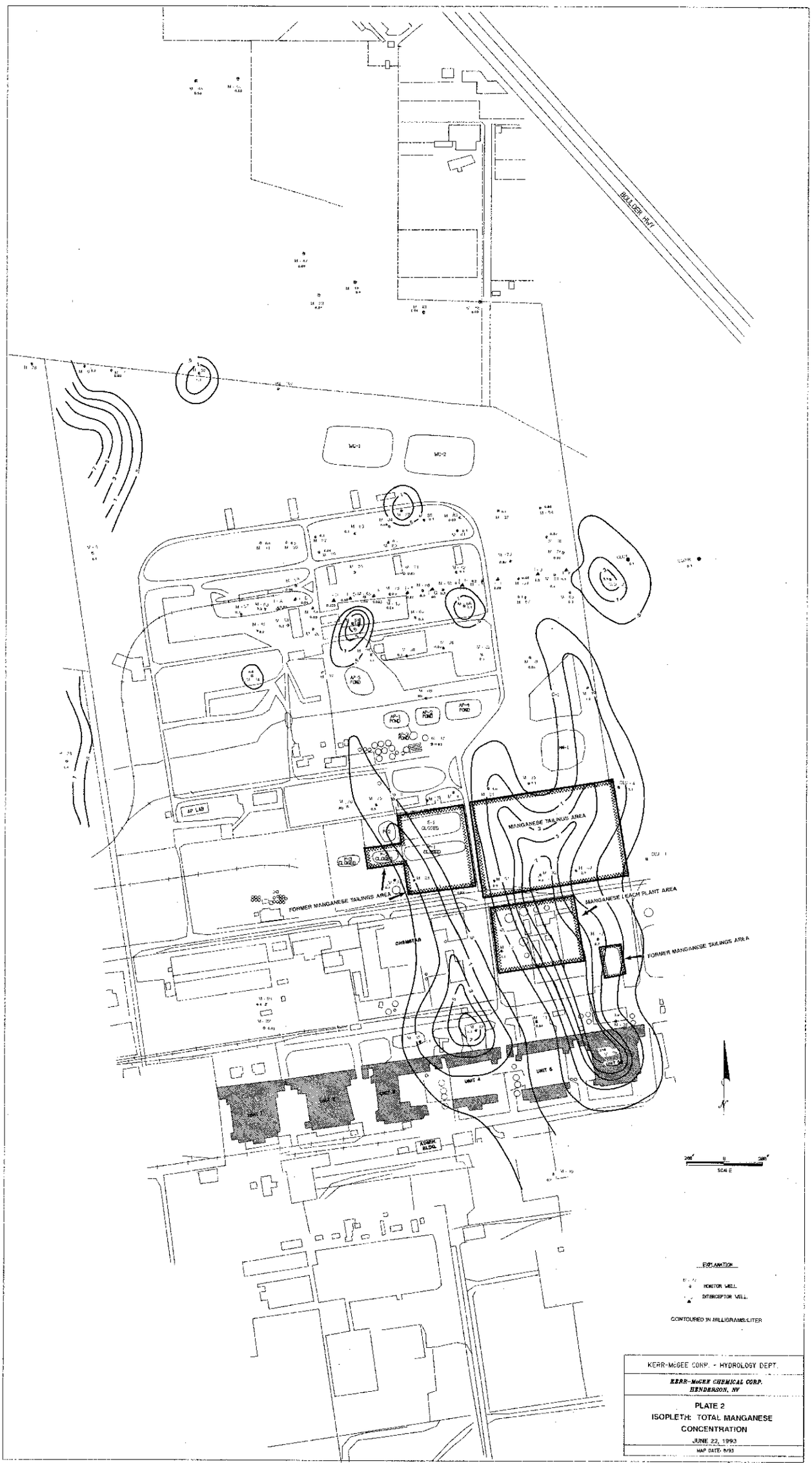
During Drilling _____ Ft. Date _____
Before Development _____ Ft. Date _____
After Development _____ Ft. Date _____

Driller/Firm T. HIGH / WESTERN TECH Drill Rig Type MOBILE B-80 Date Installed 5/5/93
Drill Crew T. HIGH / T. BELL Well No. M-93 Kerr-McGee Hydrologist T. REED

18

PLATES


BOULDER HWY
WC-1
WC-2
AP-1 POND
AP-2 POND
AP-3 POND
AP-4 POND
AP LAB
CHEMBT
UNIT 1
UNIT 2
UNIT 3
UNIT 4
ADMIN. BLDG.
S-1 CLOSED
P-1 CLOSED
P-2 CLOSED
P-3
6000
8000
10000
12000
14000
16000
SCALE
EXPLANATION
STORM SEWER SYSTEM
ACID DRAIN SYSTEM
MONITOR WELL
INTERCEPTOR WELL
CONTOUR INTERVAL: 2,000 umos/cm
KERR-McGEE CORP. - HYDROLOGY DEPT.
KERR-McGEE CHEMICAL CORP.
HENDERSON, NV
PLATE 1
ISOCONDUCTIVITY MAP
JUNE 22, 1993
MAP DATE: 8/93



KERR-McGEE CORP. - HYDROLOGY DEPT.

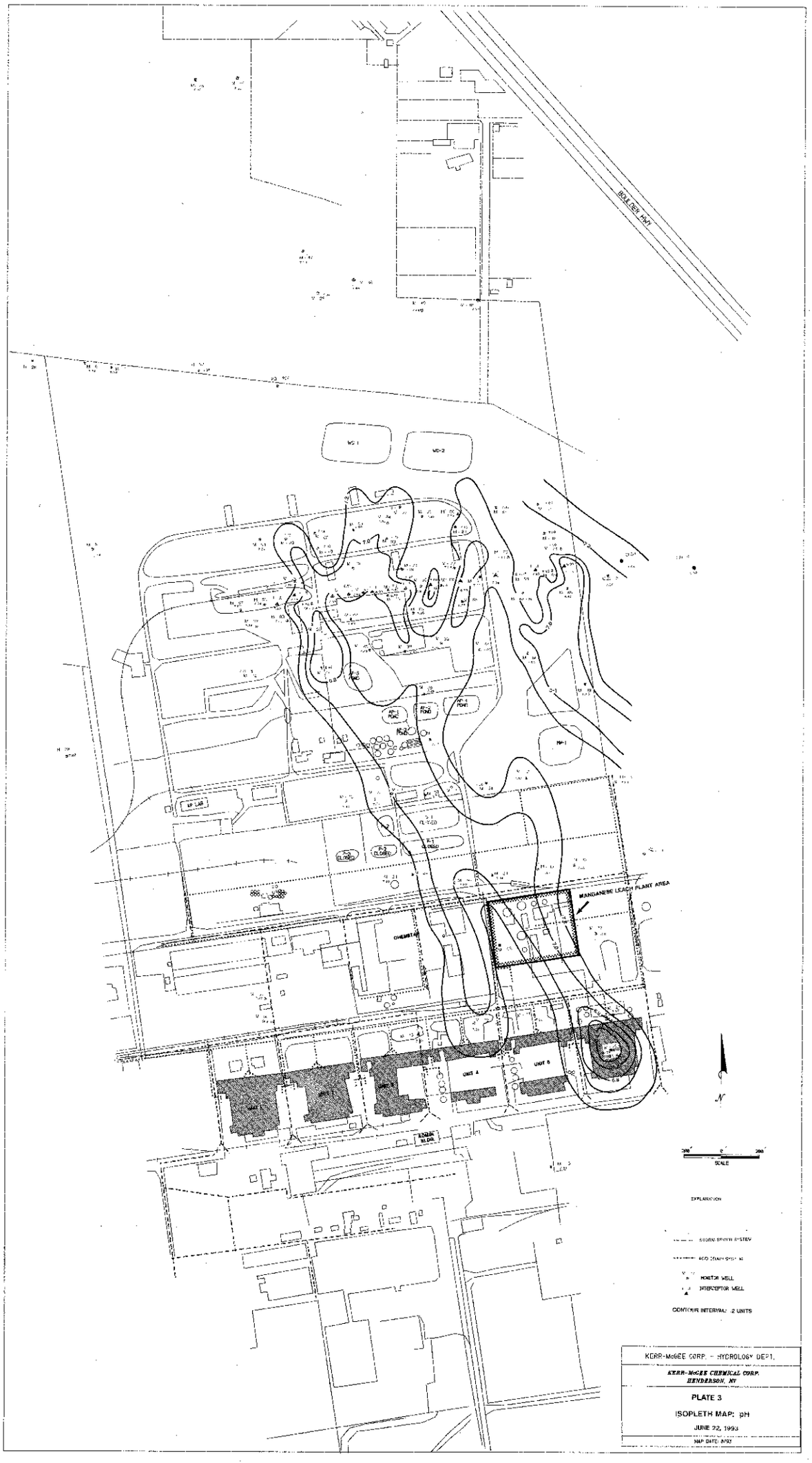
KERR-McGEE CHEMICAL CORP.
HENDERSON, NV

PLATE 2

ISOPLETH: TOTAL MANGANESE CONCENTRATION

JUNE 22, 1993

MAP DATE: 6/93



KERR-McGEE CORP. - HYDROLOGY DEPT.

KERR-McGEE CHEMICAL CORP.
HENDERSON, NV

PLATE 3

ISOPLETH MAP: pH

JUNE 22, 1993

MAP DATE: 6/93