KERR-McGEE CHEMICAL CORPORATION
POST OFFICE BOX 55 • HENDERSON, NEVADA 89015

June 13, 1984

Mr. H. LaVerne Rosse, P.E.
Program Director, Waste Management Section
Nevada Division of Environmental Protection
Capitol Complex
Carson City, Nevada 89710

RE: Kerr-McGee Chemical Corporation
Henderson, Nevada
EPA I.D. No. NVD 008290330

Dear Mr. Rosse:

Transmitted herewith is the revised closure/post-closure plan for Kerr-McGee Chemical Corporation's (KMCC) hazardous waste landfill at the Henderson plant that we wish to close in accordance with RCRA interim status requirements. This plan supercedes all previous closure/post-closure plans for this landfill.

As you know, the subject landfill is the last of three existing HW management units at the Henderson plant that we wish to close. The closure/post-closure plans for two HW impoundments designated P-1 and S-1 were submitted to your office on April 9, 1984.

The single cell HW landfill was used for the disposal of low level chromium bearing mud from sodium chlorate production. In addition, bottom sludge, the membrane liner, and contaminated soil from around and beneath pond S-1 were placed in the HW landfill.

Disposal of these wastes in this landfill was completed before January 25, 1983, and the landfill has not received any hazardous waste since that date.

KMCC is prepared to begin closure of this landfill cell within 7 days after notification of your approval of the closure plan. KMCC wishes to keep its generator status and maintain less than 90 day storage for HW, which will be disposed of off-site.

Please contact Rick Stater or myself at (702) 565-8901 if you have any questions or comments.

Sincerely,

KERR-McGEE CHEMICAL CORPORATION

R. B. Chase, Jr.
Plant Manager

RBC:dg

Attachment

EMERY WORLDWIDE - RETURN RECEIPT REQUESTED

KERR-MCGEE CHEMICAL CORPORATION

HENDERSON, NEVADA FACILITY

CLOSURE AND POST-CLOSURE PLAN FOR HAZARDOUS WASTE LANDFILL

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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 ¼ to ½ mile away on the north and south. A location map is attached in Appendix I. The closest residence is approximately 5/8 mile north east of the landfill.

The plant has been in operation since 1945 and manufactures several electro-chemical 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 and Chemical Company, and has since been operated by KMCC.

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

- o Twenty-four air emission source permits issued by Clark County, Nevada, APCD.
- o Water discharge (NPDES) permit #NV0000078 for once-through non-contact cooling water. No discharge of process related water is permitted
- o Interim status Part A authorization for the management of hazardous wastes under RCRA, administered by the Nevada DEP and U.S. EPA Region 9.

Prior to January 25, 1983 the plant operated three on-site 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 is included in Appendix III. An on-site HW landfill was used for the disposal of low level chromium bearing mud from the sodium chlorate cells. Disposal of HW to this landfill occurred before January 25, 1983, and the landfill has not received any waste since that date. The locations of the landfill and impoundments S-2 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 off-site 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 plant.

A copy of EPA form 3510, Part A application, as amended dated July 13, 1982 is attached in Appendix II. A survey plat showing the location of the HW landfill cell and analytical data supporting the exclusion of ponds AP1, 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% slope in accordance with engineering design and construction specifications given in Appendix IV.
4. Install diversion berms around the cell cover sufficient to protect against 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 existance 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 off-site 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 410x45x20 feet including 2 feet of free-board. The 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 truck load (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 is 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 be 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 permability 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 4.7×10^{-8} cm/sec using the falling-head method for determining saturated hydraulic conductivity. The sample was compacted at 90% relative compaction of ASTM D-1557 with a calculated porosity of 88%. A grain size distribution was also performed by this outside consultant using ASTM D422. The permeability of this material falls within RCRA's Guideline of a saturated hydraulic conductivity of not more than 1×10^{-7} cm/sec. This clay will be spread in 6" lifts and compacted to 85% minimum relative compaction according to ASTM D-1557. The clay will extend five 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%.

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 six 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%.

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%.

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% slope 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 U.S.G.S. 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 ten 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"/24-hour (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.

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.

(1) Climatography of the U.S. #81, National Climatic Center, Asheville, N.C., August, 1973.

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 plant site 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.

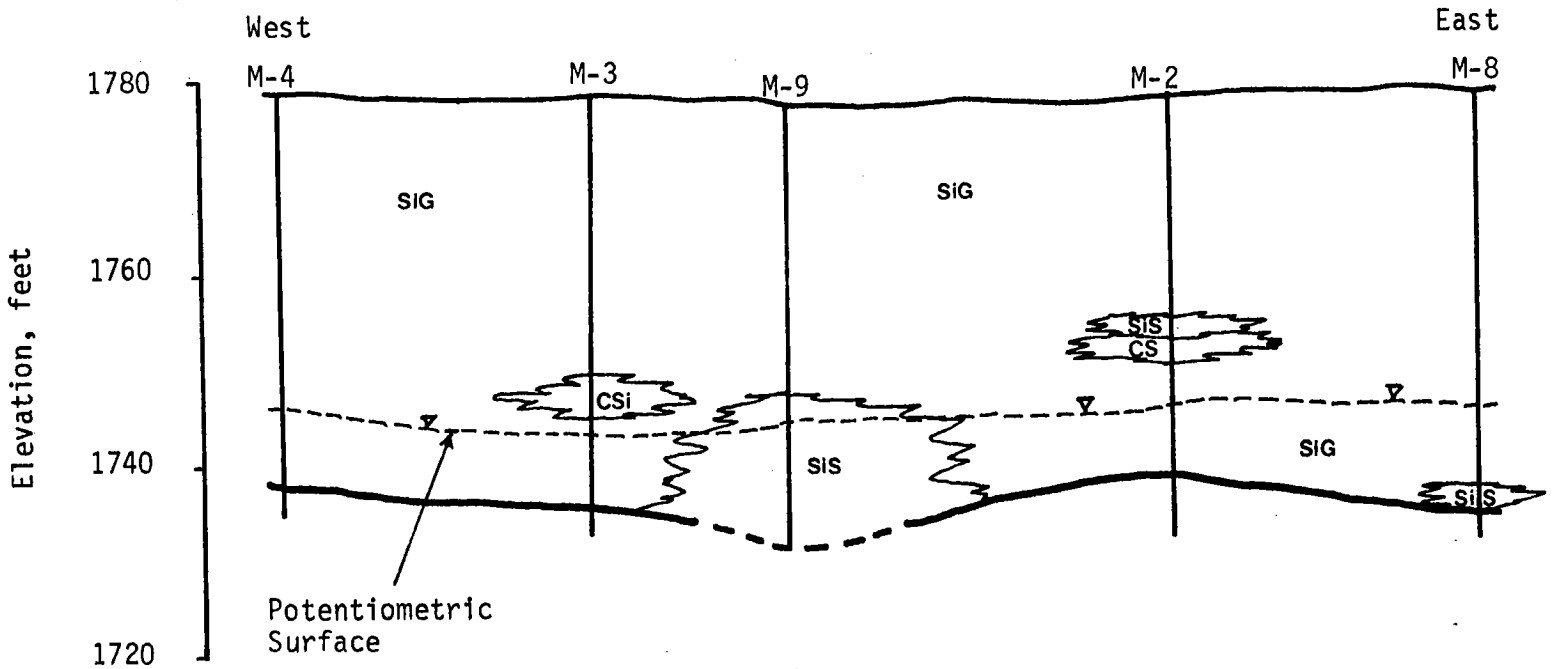
A distinct formation change between the alluvial sediments and the Muddy Creek formation generally does not exist. Normally, a 5 to 10 foot transitional zone occurs above the Muddy Creek where clay lenses are interbedded with sand and gravel.

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 plant site. Figure 2 represents a typical north-south profile through the Kerr-McGee plant site. Lithologic logs for the landfill area are enclosed in Figures 3 through 5 and Tables 1 through 4.

2. Hydrologic Setting

Ground water in the Las Vegas Valley occurs under artesian and semi-artesian conditions. Regionally, there are three principle 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 occuring in the surrounding mountains which infiltrates the alluvium along the valley margins. Rainfall (less than 5 inches annually)



EXPLANATION:

S = Sand/Sandy

C = Clay/Clayey

Si = Silt/Silty

G = Gravel/Gravelly

FIGURE 1: Generalized East-West Geological Cross-Section through the Kerr-McGee Henderson Facility.

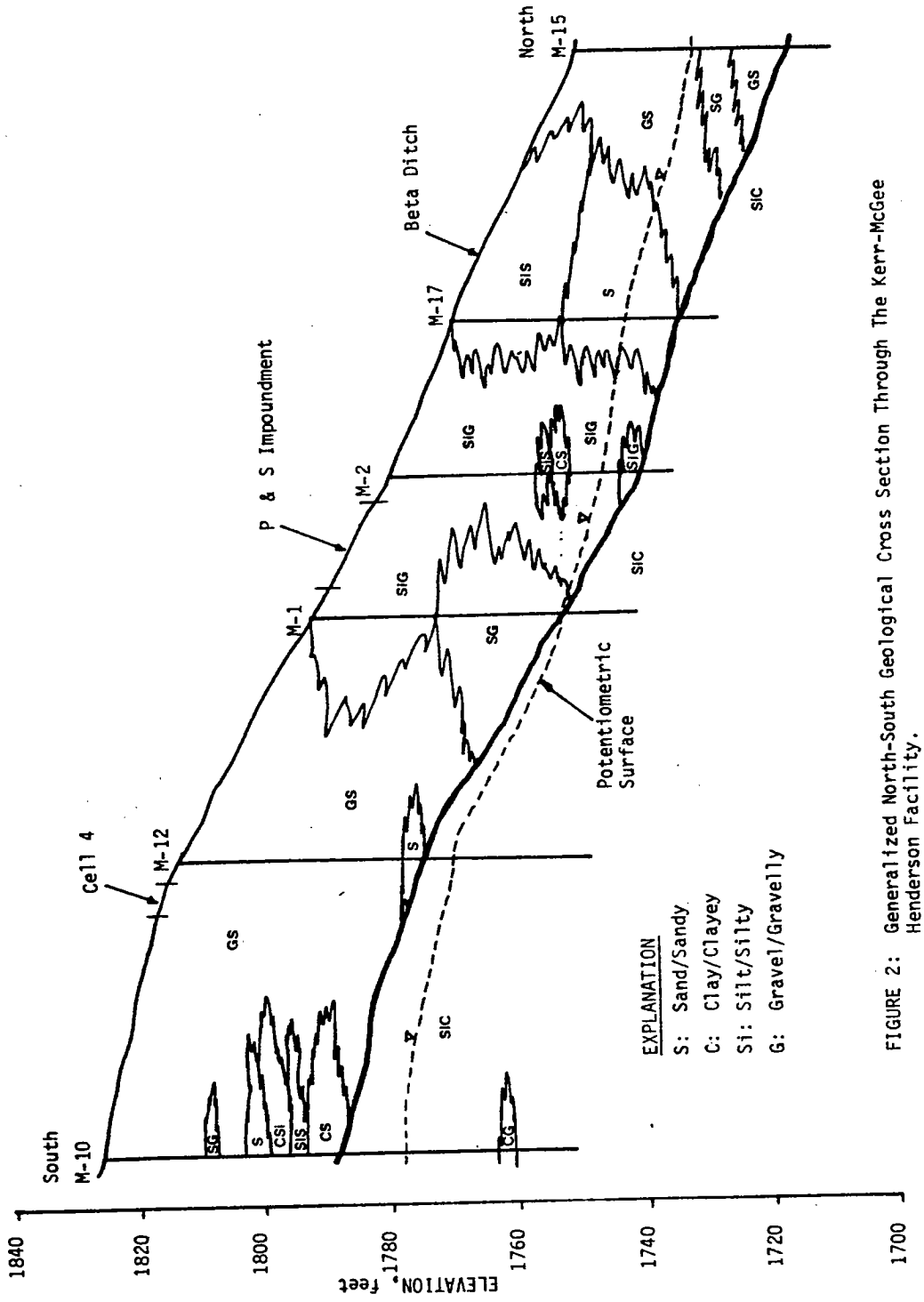
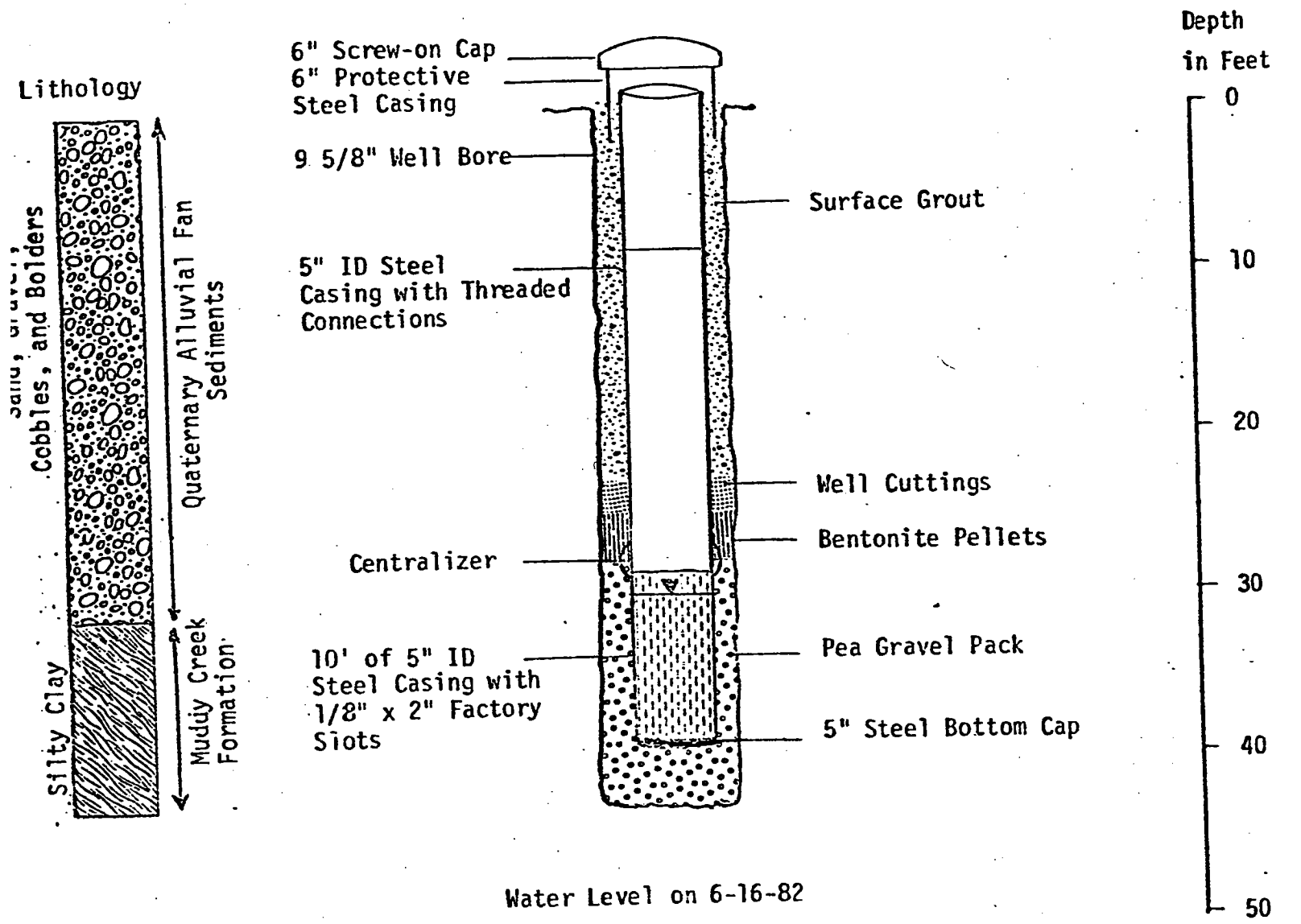


FIGURE 2: Generalized North-South Geological Cross Section Through The Kerr-McGee Henderson Facility.

FIGURE 3:
K-M Chemical Corporation
Henderson, Nevada Facility
Well No. M-5

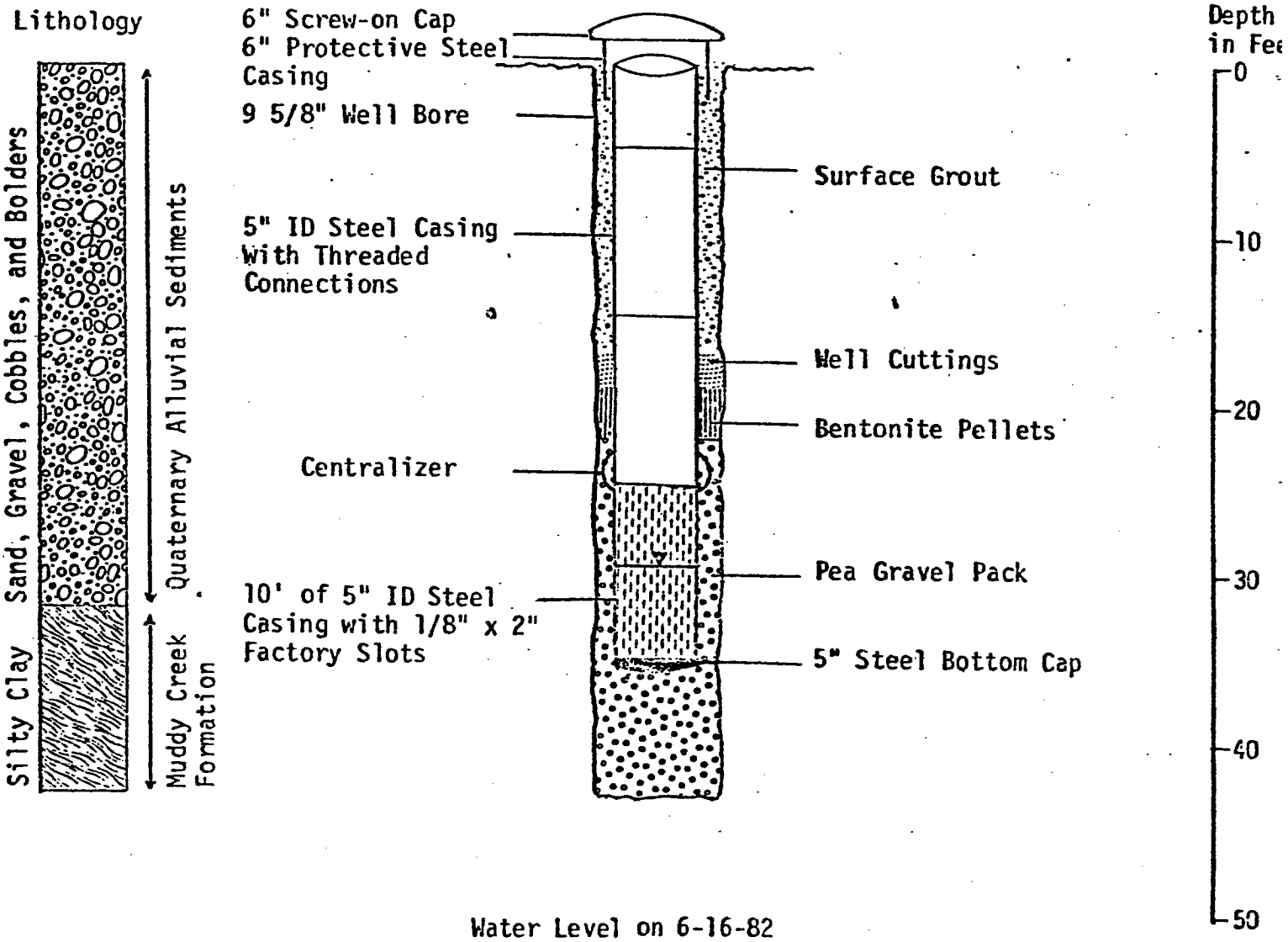


Water Level on 6-16-82

31' 4 3/8"

Measured from Top of Protective Casing

FIGURE 4:
K-M Chemical Corporation
Henderson, Nevada Facility
Well No. M-6

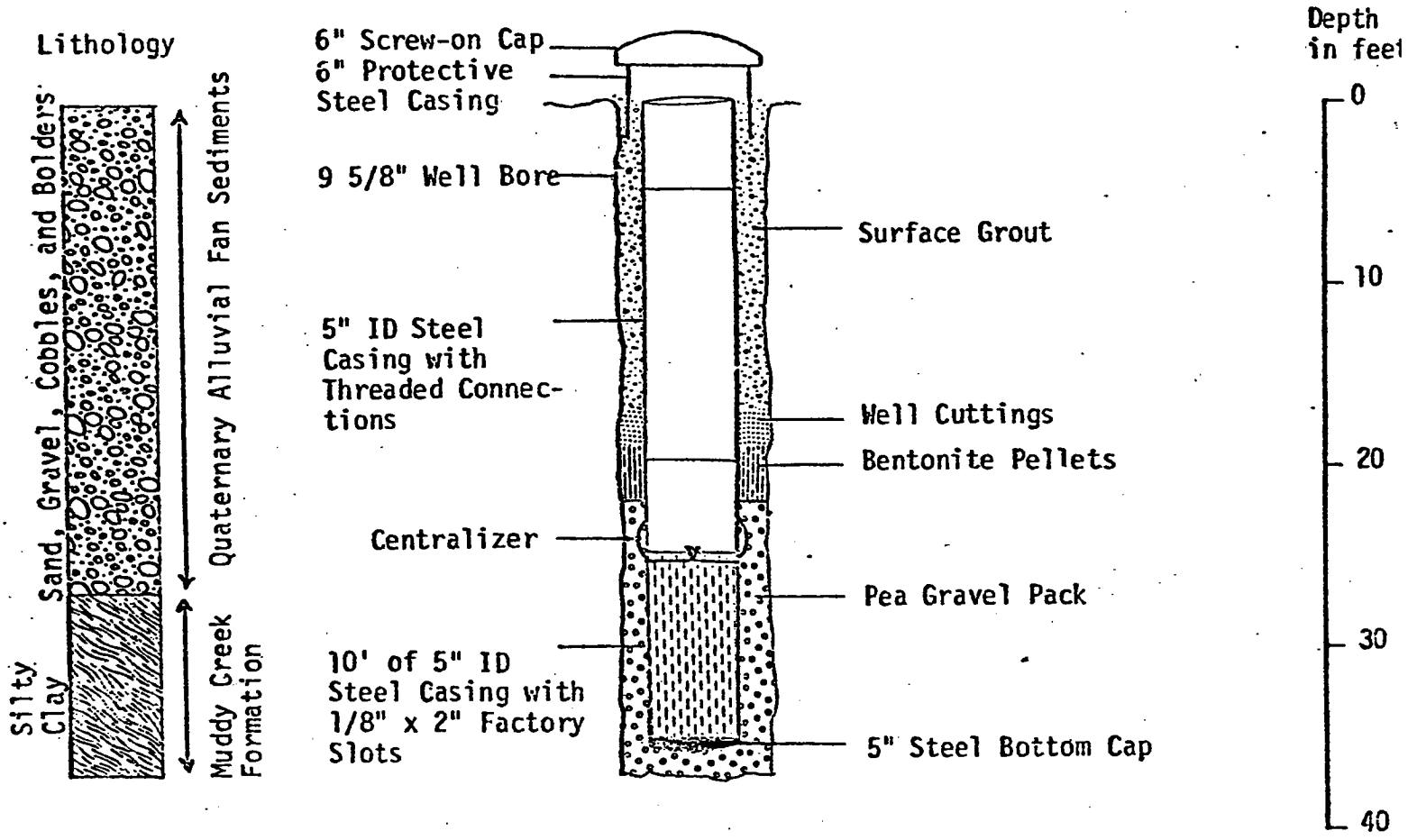


Water Level on 6-16-82

31' 4"

Measured from Top of Protective Casing

FIGURE 5:
K-M Chemical Corporation
Henderson, Nevada Facility
Well No. M-7



Water Level on 6-16-82

27' 11 3/4"

Measured from Top of Protective Casing

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. M-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 4: 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 - 44½
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)	44½ - 51

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

ocurring 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 waste-water discharges to unlined ditches.

Ground water from the shallow, middle, and deep aquifers are discharged from the system through springs and pumping wells in Las Vegas Valley. In the Henderson area, ground water from the near surface water-bearing alluvial deposits are 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 plant site, ground water 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 ground-water in the near-surface alluvial deposits occur at 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 ground-water 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 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 is currently conducting an extensive groundwater monitoring program that involves 8 RCRA monitoring wells, 15 other existing wells and 4 new wells. This is a separate program being conducted under Nevada State Groundwater Regulations. Semi-annual reports of progress and results are submitted, the next one being due in June, 1984.

This program will continue until a comprehensive assessment of the groundwater quality in the area has been completed to the satisfaction of the Nevada State agency. For further information on the scope and results of this monitoring program, the reviewer is referred to the Groundwater Protection Section, Nevada DEP.

should be included in closure plan.

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 inches 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% 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% maintained 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. Ground water quality parameters will include pH, specific conductance, TOC, TOH and Cr.

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

3. Facility Manager's Check List 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.

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.

4. Facility Contact

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

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

Rolfe B. Chase, Jr., is Plant 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)

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

When closure is completed the facility will be inspected by the P.E. to certify that it has been closed in accordance with the approved plan.

Certification of proper closure will be submitted by KMCC and the registered P.E. 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 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 on the procedure proposed in this plan and on 1984 costs. These estimated costs will be escalated by 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 given in Table 6. The cost for post-closure care is based on 1984 estimated 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 plant office.

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 cu. yd. clay x $15/cu. yd.	$30,000
Installation:	2,000 cu. yd. clay x $3/cu. yd.	$ 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 cu. yd. clay x $15/cu. yd.	$ 6,750
Installation:	450 cu. yd. clay x $2/cu. yd.	$ 900
	Total $ 7,650	
4. Final Cap - Drainage and Protective Layers		
Material:	1,750 cu. yd. native soil x $10/cu. yd.	$17,500
Installation:	1,750 cu. yd. native soil x $2/cu. yd.	$ 3,500
	Total $21,000	
5. Grading for Drainage		
	Total $10,000	
6. Miscellaneous Costs		
Installation of BM:		$ 1,500
P.E. Certification:		$ 500
Administrative:		$ 3,000
	Total $ 5,000	

Total Closure Cost:	$ 98,250
10% Contingency:	9,800
	$108,050

TABLE 6: COST ESTIMATE FOR POST CLOSURE CARE
(265.144)

1. Inspections and Record Keeping

   a) One per week 52

   b) Special events (precipitation, high winds, etc)
      Assume 10 = Total 62

      62 x ½ 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: $10,000/year

For 30 Years: $300,000

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 insurance for a HW facility provided by Harbor Insurance Co., 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

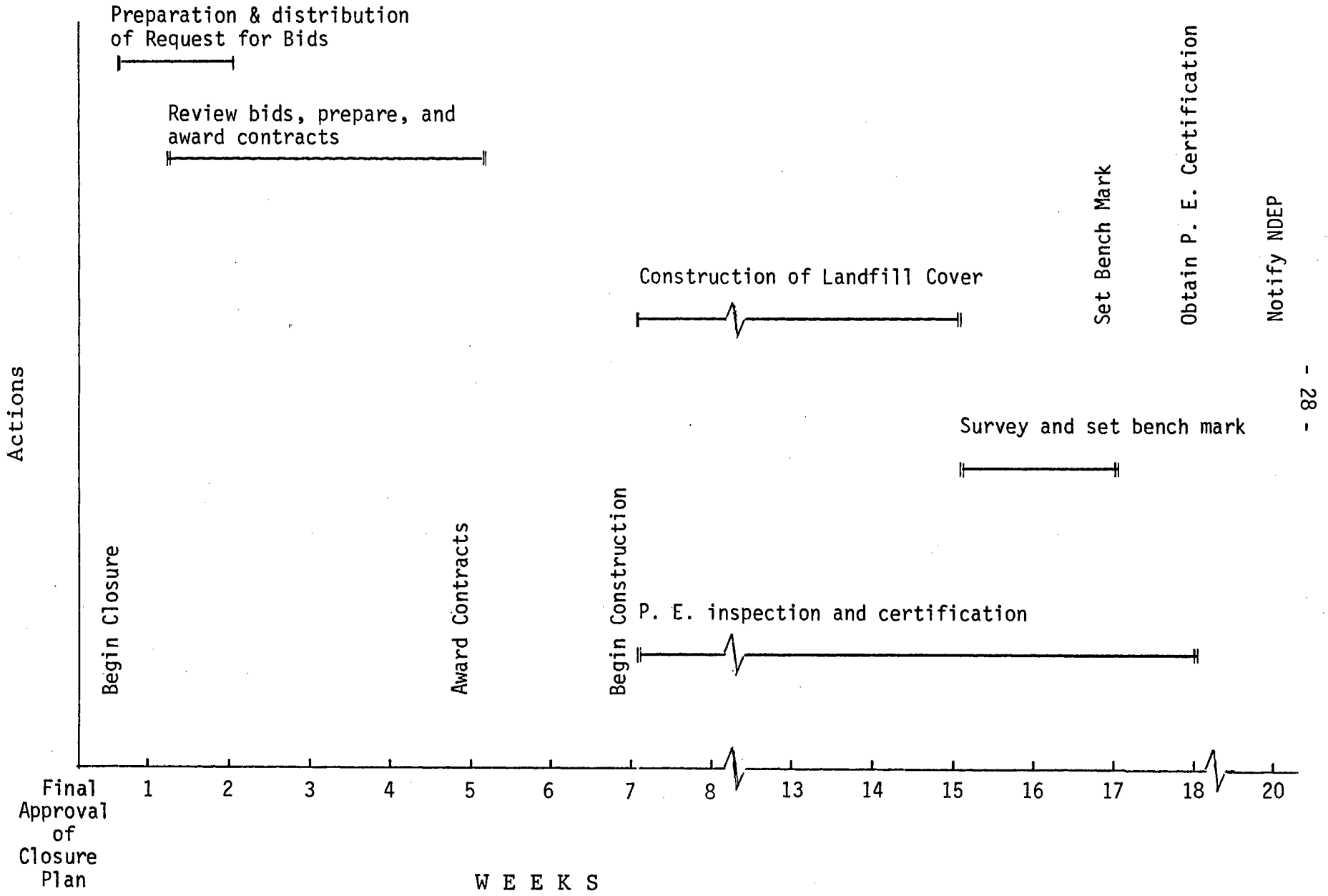
KMCC is prepared to begin closure within 7 days after notification of approval of the closure/post-closure plan by the NDEP.

The chronological listing and check points for increments of progress are listed below. A bar chart showing time versus activity follows in Figure 6 to show simultaneous activities that may occur.

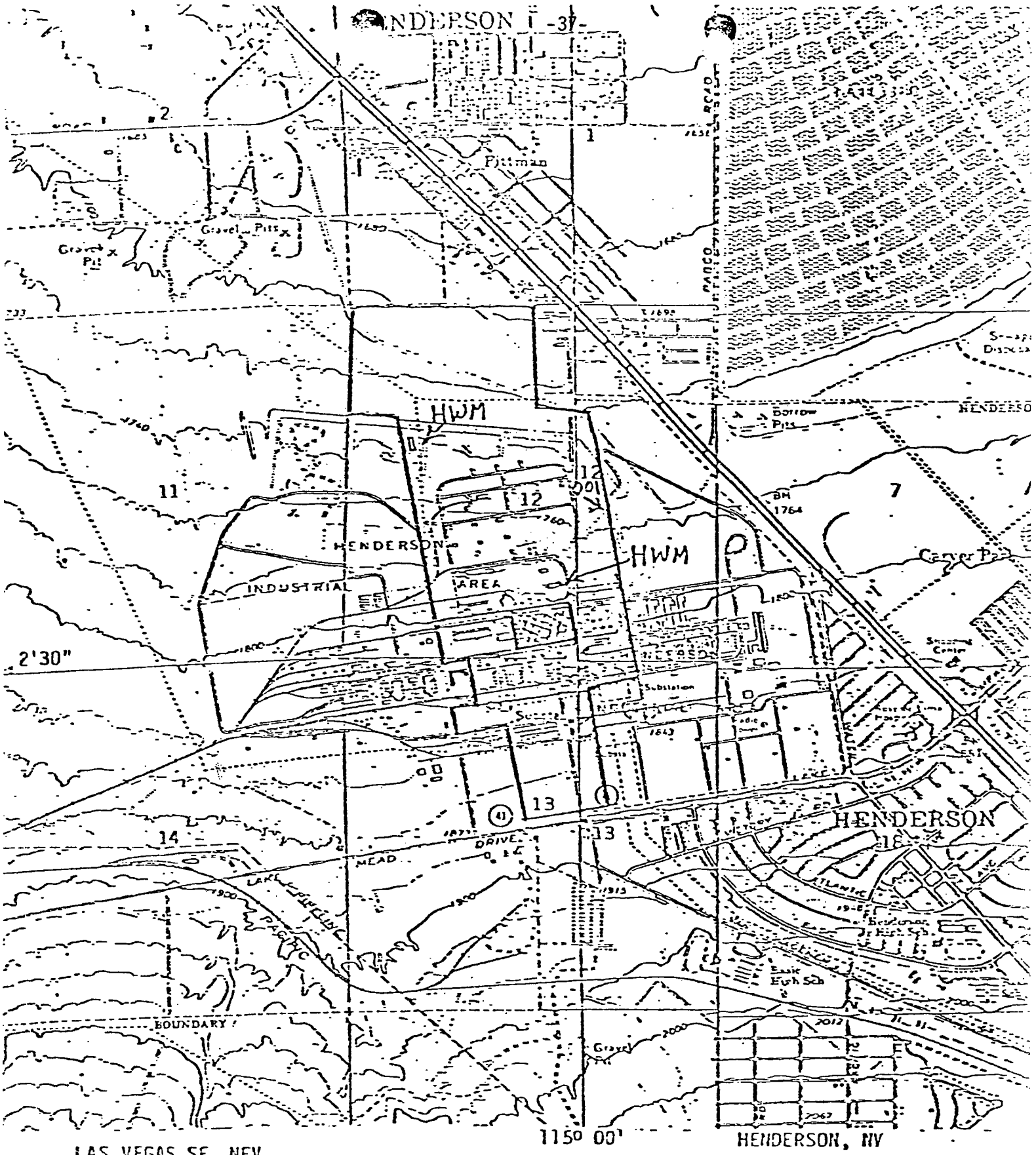
TIME FRAME	ACTION
0	1. Approval of Closure Plan
Within 1 week	2. Begin preparation of requests for bids for installation of cover, survey work, and P.E. services
Within 5 weeks	3. Award contracts
Within 7 weeks	4. Begin construction of landfill cover
Within 15 weeks	5. Completion of landfill cover
Within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

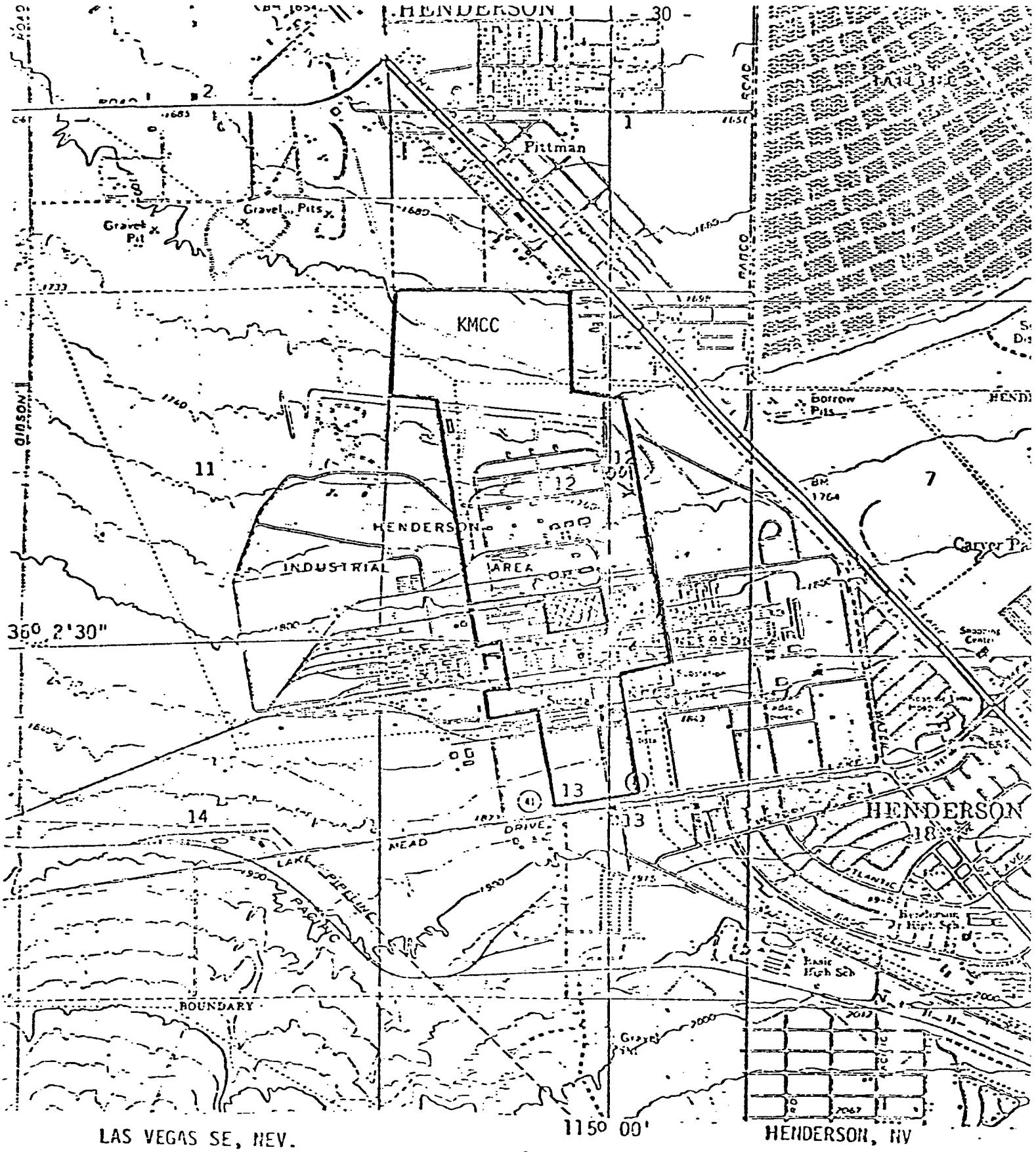
FIGURE 6:

LANDFILL CLOSURE TIME SCHEDULE



APPENDIX I


HWM
HWM
HENDERSON
INDUSTRIAL
AREA
HENDERSON
2'30"
1150 00'
LAS VEGAS SE, NEV.
HENDERSON, NV
N
SCALE 1:24,000
0
1 Mile



LOCATION MAP

FIGURE 1

LOCA[illegible] OF RCRA GROUND-WATER MONITOR WELLS
Kerr-McGee Chemical Corporation's Rende[illegible] Facility

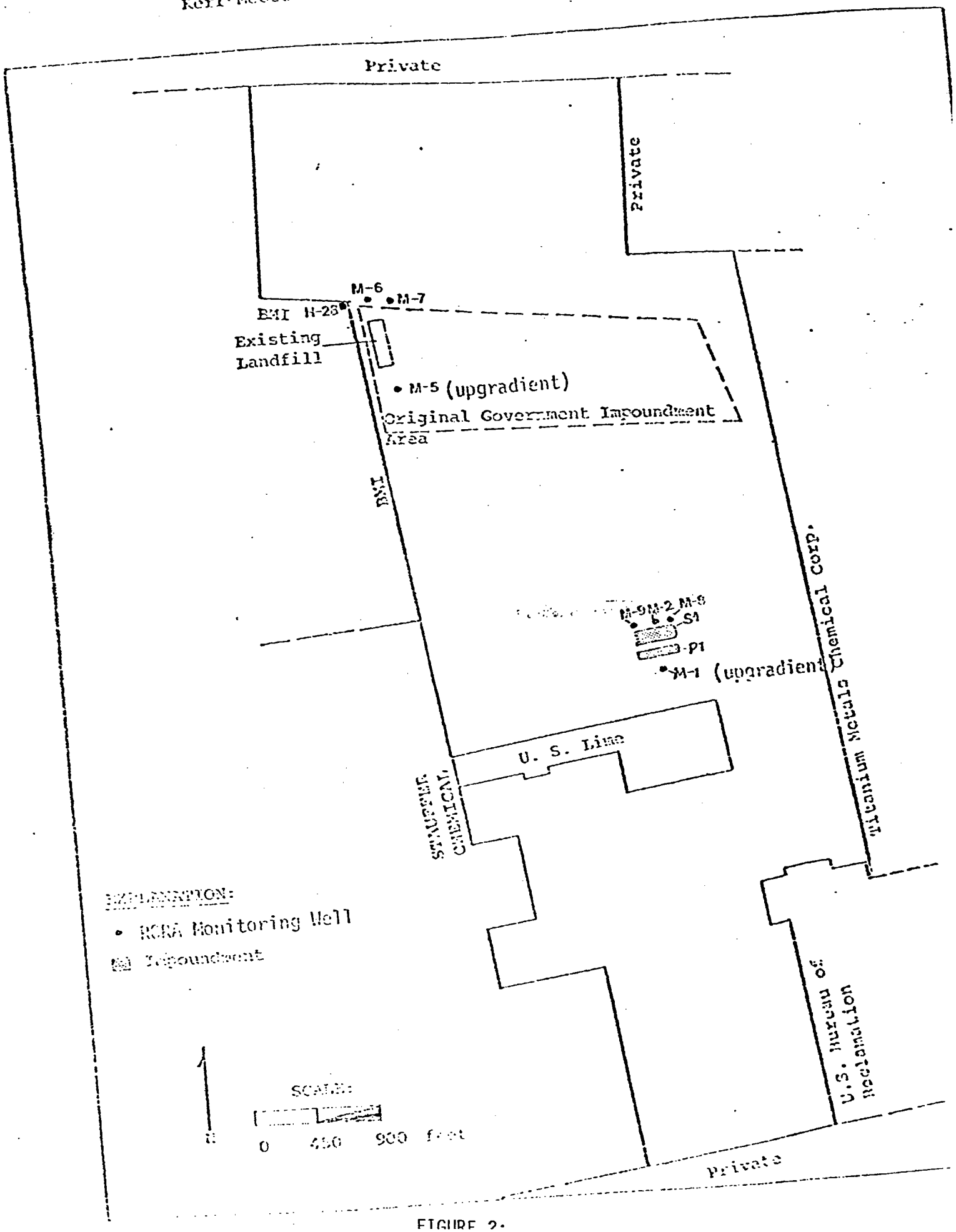


FIGURE 2.

APPENDIX II

KERR-McGEE CHEMICAL CORPORATION
POST OFFICE BOX 55 • HENDERSON, NEVADA 89015

July 14, 1982

CERTIFIED MAIL NO. P26 0233690

Mr. William D. Wilson, Chief
Technical Assessment Section and
Waste Management Division
U. S. Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

Subject: Revised Part A Permit Application
Kerr-McGee Chemical Corporation
EPA ID No. NVD 008290330

Dear Mr. Wilson:

On November 14, 1982, a Part A, *Application for a Hazardous Waste Permit*, was filed for Kerr-McGee Chemical Corporation's (KMCC) Henderson, Nevada operations. This application was filed, based on our understanding of the RCRA regulations then in force.

In this application to EPA, KMCC identified certain units incorrectly or unnecessarily as being subject to RCRA interim status requirements. Therefore, we are submitting a Part A application revised to incorporate these changes as follows:

Form 1 - pages 1 through 3 with USGS topographical map

Form 3 - pages 1 through 5, including a revised facility drawing

These revisions amend the original Part A application and reflect the latest regulatory changes to RCRA. It is our understanding that interim status will still be in effect for this facility after these revisions.

These changes are listed below:

1. Capacities of existing surface impoundments, P-1 and S-1, as shown on facility diagram are hereby corrected from 960,000 to 2,660,000 gallons.

2. A process tank used solely for neutralization of a corrosive liquid was incorrectly listed and has been deleted in the revised permit application.

3. The chlorate cell vacuum filtration unit from which liquids are recycled back to the facility was incorrectly listed as a hazardous waste processing unit and has been deleted in the revised permit application.

4. Lined ponds P-2 and P-3 receive dilute solutions from the sodium chlorate and perchlorate electrolytic cell buildings and recycle to chlorate process. These are not within the definition of solid waste and have been deleted from the revised permit application.

5. Other storage ponds (AP-1, AP-2, AP-4) were reported because preliminary in-house testing indicated they might contain Cr in excess of the EP toxicity test levels. Sampling and testing by the Desert Research Institute of the liquid and sludge in those ponds determined that all eight metals were well below the EP toxicity test limits (copy, summary attached).

Please contact me if you have any questions on this subject.

Sincerely,

C. B. Armstrong
Plant Manager

CBA:jc
Attachments

xc: H. LaVerne Rosse, PE Director
Waste Management Program
Nevada Dept. of Conservation
and Natural Resources
Carson City, NV 89710

bcc: EAAnglada-OKC
JRKelley-OKC
SHPia
JHStallings-OKC
RFWohletz

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION -35-

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: N V D 0 0 8 2 9 0 3 3 0

GENERAL

LABEL ITEMS

EPA I.D. NUMBER

I. FACILITY NAME

FACILITY MAILING ADDRESS

FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, af... it in the designated space. Review the info... ation carefully; if any of it is incorrect, cr... through it and enter the correct data in t... appropriate fill-in area below. Also, if any ... the preprinted data is absent *(the area to t... left of the label space lists the informati... that should appear)*, please provide it in t... proper fill-in area(s) below. If the label ... complete and correct, you need not comp... Items I, III, V, and VI *(except VI-B wh... must be completed regardless)*. Complete ... items if no label has been provided. Refer ... the instructions for detailed item descr... tions and for the legal authorizations un... which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X	
B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X		
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	
J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may effect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP: KERR-MCGEE CHEMICAL CORPORATION

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 ARMSTRONG, C. B., PLANT MANAGER	702 565 8901

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 P. O. BOX 55

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 HENDERSON	NV	89015

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 LAKE MEAD DRIVE

B. COUNTY NAME

CLARK

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 HENDERSON	NV	89015	

CONTINUE ON REVE...

A. FIRST		B. SECOND	
1 9	(specify) SEE ITEM XII BELOW	7	(specify)
C. THIRD		D. FOURTH	
	(specify)	7	(specify)

OPERATOR INFORMATION

A. NAME: ERR-MCGEE CHEMICAL CORPORATION

B. Is the name listed in Item VIII-A also the owner? XA YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)

FEDERAL / STATE / PRIVATE / M = PUBLIC (other than federal or state) / O = OTHER (specify)

P (specify)

D. PHONE (area code & no.): A 702 565 8901

E. STREET OR P.O. BOX: .O. BOX 55

F. CITY OR TOWN	G. STATE	H. ZIP CODE
HENDERSON	NV	89015

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

XISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)	
N NV0000078	9 P	
B. UIC (Underground Injection of Fluids)	E. OTHER (specify)	
U	9 AIR LOCAL	(specify) 22 Permits Issued by APCD, Clark County Health Dist.
C. RCRA (Hazardous Wastes)	E. OTHER (specify)	
R	9	(specify)

MAP

tach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste eatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface ater bodies in the map area. See instructions for precise requirements.

I. NATURE OF BUSINESS (provide a brief description)

anufacutre of industrial chemicals, including sodium chlorate, ammonium perchlorate, otassium perchlorate, manganese dioxide, boron trichloride, boron tribromide, elemental oron.

III. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
J. R. Kelley, Vice President/ Gen. Mgr. Electrolytic Products	J R Kelley	7-13-9?

COMMENTS FOR OFFICIAL USE ONLY

RCRA

HAZARDOUS WASTE PERMIT APPLICATION

Integrated Permits Program

(This information required under Section 3005 of RCRA.) -38-

I. EPA I.D. NUMBER: N V 0 0 0 8 2 9 0 3 3 0

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

I. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR.	MO.	DAY

☐ 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

YR.	MO.	DAY

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☒ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

II. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.

1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

DUP F/A C 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G		5				
X-2	T03	20	E		6				
1	S01	275	G		7				
2	D80	44	A		8				
3	D83	2,660,000	G		9				
4					10				

EPA Form 3510-3 (6-80)

CONTINUE ON REVERSE

SCRIPTION OF HAZARDOUS WASTES

HAZARDOUS WASTE NUMBER — Enter the four—digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you dle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four—digit number*(s)* from 40 CFR, Subpart C that describes the characteris- and/or the toxic contaminants of those hazardous wastes.

TIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual s. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste*(s)* that will be handled ch possess that characteristic or contaminant.

IT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate ies are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into ount the appropriate density or specific gravity of the waste.

OCESSES

PROCESS CODES:
For listed hazardous waste: For each listed hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
For non—listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed hazardous wastes that possess that characteristic or toxic contaminant.
Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

E: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by than one EPA Hazardous Waste Number shall be described on the form as follows:
. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

MPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002				included with above

E. Photocopy this page before completing if you have more than 26 wastes to list. — 40 —

Form Approved. OMB No. 158-S80024

EPA I.D. NUMBER (enter from page 1)

N	V	D	0	0	8	2	9	0	3	3	0

FOR OFFICIAL USE ONLY

W	DUP	12	DUP

V. DESCRIPTION OF HAZARDOUS WASTES (continued)

NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F001	25	P	S01	
2	F003	25	P	S01	
3	F005	25	P	S01	
4	D007	900	T	D80	landfill
5	D007	3,000	T	D83	S.F.
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

CONTINUE ON REVE

EPA I.D. NO. (enter from page 1)

V D 0 0 8 2 9 0 3 3 0 | Y/A | C | 6

FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
36 02 03 0	115 00 00 0

FACILITY OWNER

A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code & no.)

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
	C G		

OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

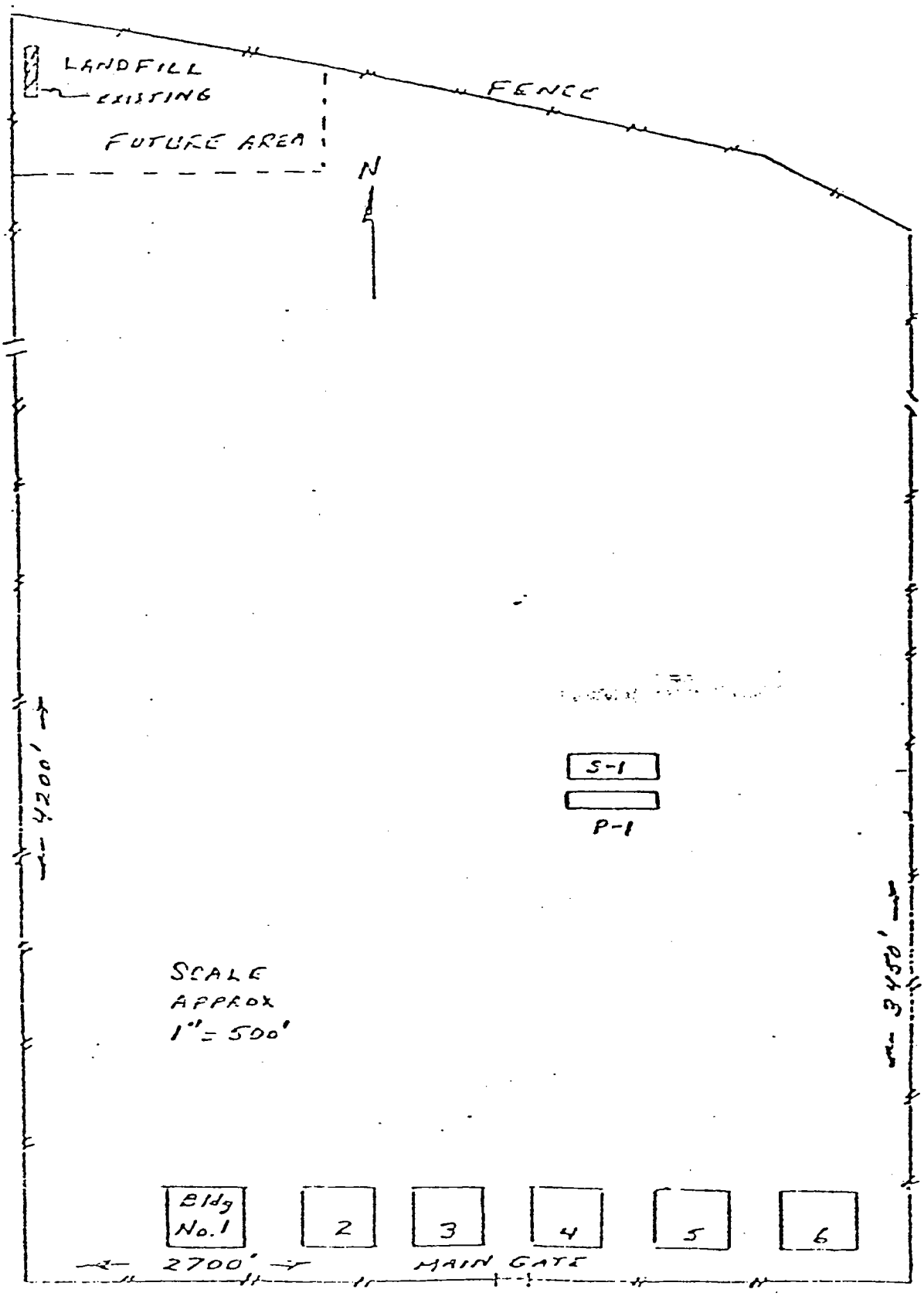
A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
J. R. Kelley, Vice President Electrolytic Division	J R Kelley	7-14-82

OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED

CONTINUE ON PAGE 5


LANDFILL
EXISTING
FUTURE AREA
FENCE
N
S-1
P-1
4200'
3450'
SCALE
APPROX
1" = 500'
Bldg
No. 1
2
3
4
5
6
2700'
MAIN GATE

Kerr-McGee Pond Sampling Program

By

E. N. Cooper
B. Elliott
R. H. French

May, 1982

Table 1: Summary of Laboratory Analyses

Sample Site	Sample Type	As mg/ℓ	Se mg/ℓ	Ba mg/ℓ	Cd mg/ℓ	Total Cr mg/ℓ	Cr^{+6} mg/ℓ	Ag mg/ℓ	Pb mg/ℓ	Hg mg/ℓ
AP1	Liquor	0.05<	0.04	0.8	0.05<	0.30	0.2<	0.32	0.5<	0.005<
	Sludge	0.05<	0.04<	0.5<	0.05<	0.30	0.2<	0.05<	0.5<	0.005<
AP2	Liquor	0.05<	0.06	0.8	0.08	0.48	0.2<	0.63	0.5<	0.005<
	Sludge	0.05<	0.04<	0.5<	0.05<	0.60	0.2<	0.05<	0.5<	0.005<
AP4	Liquor	0.05<	0.04<	0.6	0.05<	0.20	0.2<	0.15	0.5<	0.005<
	Sludge	0.05<	0.04<	0.6	0.05<	0.20	0.2<	0.05<	0.5<	0.005<

LAB # DATE	SAMPLE POINT	CR MG/L	AS MG/L	BA MG/L	CD MG/L	PB MG/L	HG MG/L
5608 8-MAR-83	POND SOLID SAMP. A	2.5	<.04	<.5	.74	<.5	<.002
5608 8-MAR-83	POND SOLID SAMP. B	2.4	<.04	<.5	<.05	<.5	<.002

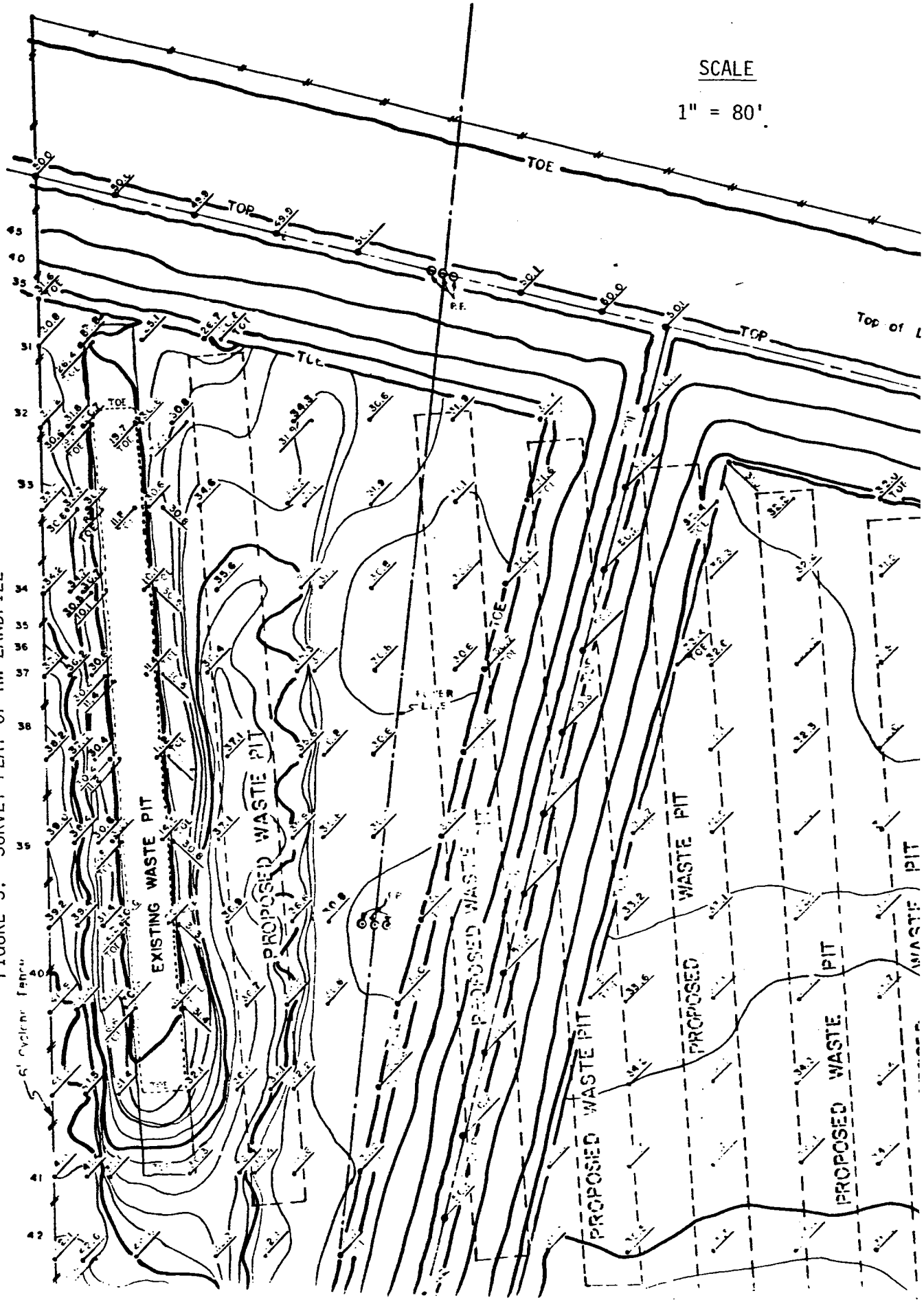


FIGURE 3: SURVEY PLAT OF HW LANDFILL

APPENDIX III

APPENDIX III

ANALYTICAL DATA ON S-1 BOTTOM SOIL

The following information was reported in the closure plan for Pond S-1 and is germane to the landfill closure because soil from below S-1 was disposed of in the landfill, and constitutes the upper several feet of the cell.

To demonstrate that all hazardous constituents were removed from S-1 pond area, the following sampling and analyses were conducted:

i) Six soil corings (to a dept of 4') were taken from the pond site area at locations shown in attachments.

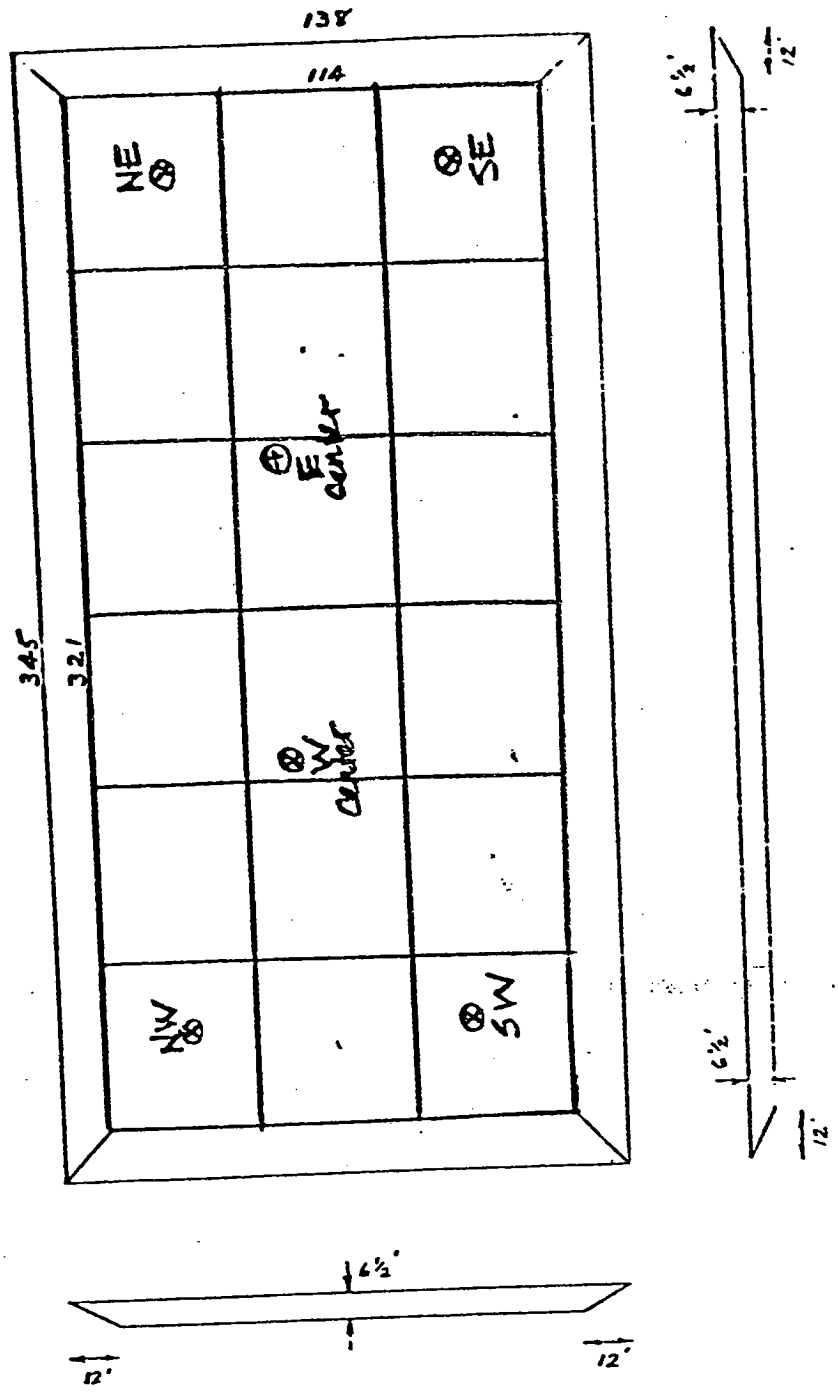
ii) To establish background, three soil corings (to a depth of 3') were taken from unaffected areas.

iii) A composite sample of each coring, made up of equal portions from each foot, was subjected to a total nitric acid extraction. The leachate was analyzed for total chromium.

iv) Statistical analysis (student-t test) was used to compare the background samples with those taken from the S-1 pond site.

As attachments indicate, the t value is much lower than the t value for 99 percent, which indicates all hazardous constituents have been removed.

background samples also contaminated; no evidence S-1 was observed below "background"



EVAPORATION POND S-1

Analyses Attached

Pond S-1

WATER ANALYSIS LABORATORY — REPORT DATE: 21-MAR-84
DESERT RESEARCH INSTITUTE — FILE NAME: 7714KG.TBL

LAB # / DATE	SAMPLE POINT	CR MG/KG
7714 2-MAR-84	S-1 NW CORNER	11.2
7715 2-MAR-84	S-1 SW CORNER	7.7
7716 2-MAR-84	S-1 W CENTER	7.8
7717 2-MAR-84	S-1 E CENTER	14.4
7718 2-MAR-84	S-1 NE CORNER	12.9
7719 2-MAR-84	S-1 SE CORNER	8.4
7720 2-MAR-84	M-1 BACKGROUND	19.0
7721 2-MAR-84	M-21 BACKGROUND	8.0
7722 2-MAR-84	M-4 BACKGROUND	7.5

DATA REPORTED ON A WET WEIGHT BASIS.

Calculated t value = 0.37

Compared with $t_{0.01}$ with 7 degrees of freedom = 2.998

Therefore no significant difference between background soils and S-1 pond bottom. Calculations follow:

S-1 STATISTICAL COMPARISON

Statistical comparison of chromium concentrations of soil corings taken from S-1 surface impoundment bottom and background soil corings. Soil corings were subjected to a total nitric acid extraction and the leachate was analyzed for total chromium. The sampling procedure is expanded in detail in the closure/post-closure plan.

Student t-test

$$t = \frac{\left| \bar{X}_1 - \bar{X}_2 \right|}{\sqrt{\frac{\sum (X_1 - \bar{X}_1)^2 + \sum (X_2 - \bar{X}_2)^2}{(N_1 - 1) + (N_2 - 1)} \times \left(\frac{N_1 + N_2}{N_1 N_2} \right)}}$$

Samples from S-1 (conc mg/kg)

N_1	X_1	$(X_1 - \bar{X}_1)$	$(X_1 - \bar{X}_1)^2$
1	11.2	11.2 - 10.4	0.64
2	7.7	7.7 - 10.4	7.29
3	7.8	7.8 - 10.4	6.76
4	14.4	14.4 - 10.4	16.00
5	12.9	12.9 - 10.4	6.25
6	8.4	8.4 - 10.4	4.00
	62.4		40.94 - $\sum (X_1 - \bar{X}_1)^2$

$$\bar{X}_1 = \frac{62.4}{6} = 10.4$$

Background Samples (conc mg/kg)

N_1	X_2	$(X_2 - \bar{X}_2)$	$(X_2 - \bar{X}_2)^2$
1	19.0	19.0 - 11.5	56.25
2	8.0	8.0 - 11.5	12.25
3	7.5	7.5 - 11.5	16.00
	34.5		84.50 - $\sum (X_2 - \bar{X}_2)^2$

$$\bar{X}_2 = \frac{34.5}{3} = 11.5$$

$$t = \frac{\left|10.4 - 11.5\right|}{\sqrt{\frac{40.94 + 84.50}{5 + 2} \times \left(\frac{9}{18}\right)}} = \frac{1.1}{\sqrt{\frac{125.44}{7} \times 1/2}} = \frac{1.1}{2.99}$$

$$t = 0.37$$

Degrees of Freedom:

$$N_1 + N_2 - 2 = d.f.$$

$$6 + 3 - 2 = 7$$

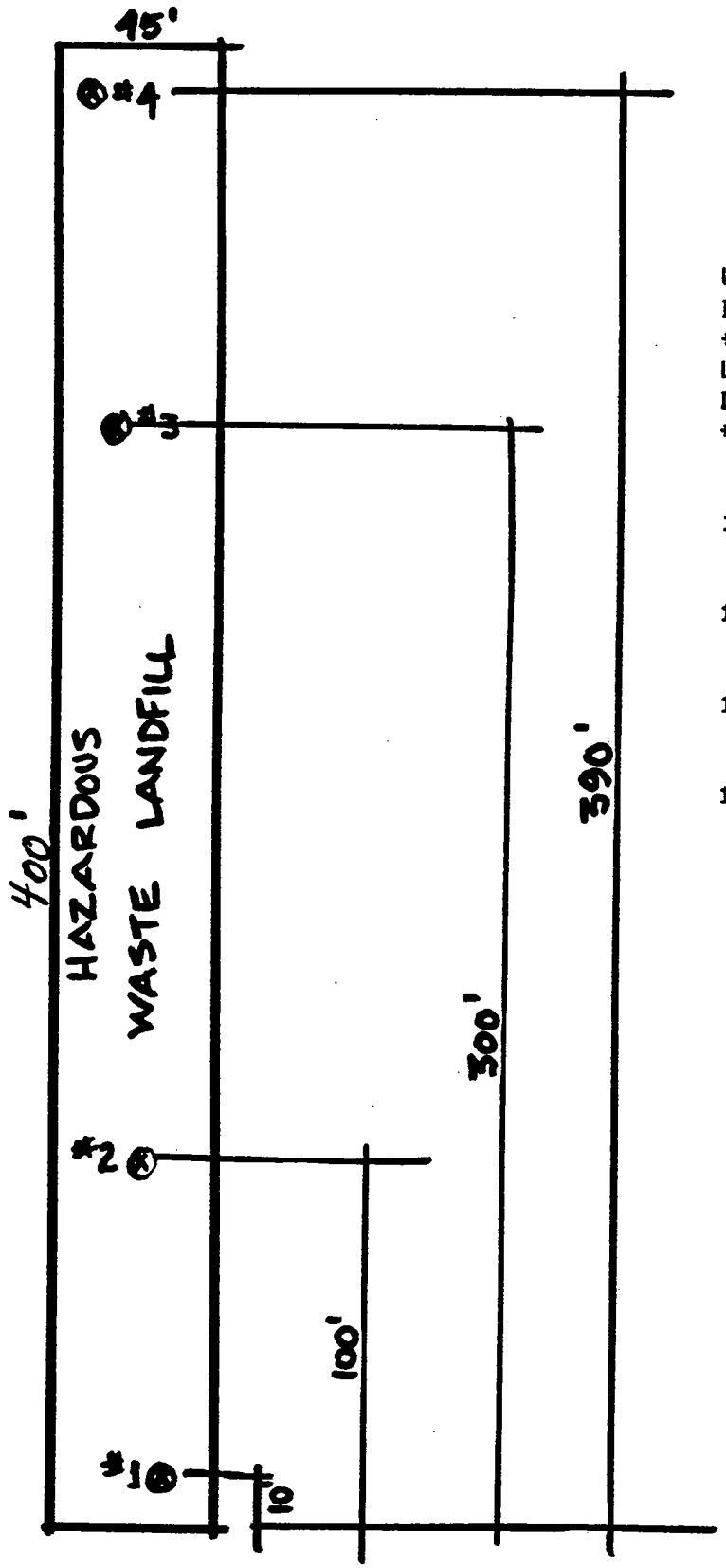
From Statistical Table t value

$t_{0.01}$ for 7 degrees of freedom = 2.998

0.37 is much less than 2.998.

Therefore, there is no statistically significant difference between background soil corings and soil corings from the bottom of the S-1 impoundment.

KMCC HAZARDOUS WASTE LANDFILL SURFACE ANALYSIS



"EP TOXICITY"
ANALYTICAL RESULTS

WATER ANALYSIS LABORATORY
DESERT RESEARCH INSTITUTE

LAB # / DATE	SAMPLE POINT	CR MG/L
8187 15-MAY-84	EP-TOX #1 SUR. 10' N	1.2
8188 15-MAY-84	EP-TOX #2 SUR. 100' N	0.23
8189 15-MAY-84	EP-TOX #3 SUR. 300' N	1.8
8190 15-MAY-84	EP-TOX #4 SUR. 390' N	0.06

APPENDIX IV