Permit Mod

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

MODIFICATION OF AN ISSUED UIC PERMIT FOR

Kerr-McGee Chemical Corporation
P.O. Box 367
Trona, California 93562
Permit Number CAS000000002
EPA ID Number CAD048456941

Pursuant to the Safe Drinking Water Act, as amended (42 U.S.C. 300f et seq.), and the Underground Injection Control (UIC) regulations (40 CFR Parts 124, 144, 146, and 147), the following sections of the above UIC permit are hereby modified:

1) Page 12: Part II, Section B, Item 1
2) Page 13: Part II, Section C, Item 4
3) Page 13A: Part II, Section C, Item 4 cont.
4) Attachment Q - Plugging and Abandonment Plan

Well construction, operation, monitoring requirements and other conditions set forth in Parts I and II and incorporated attachments of the original permit not being modified, herein, are still in effect.

This permit modification shall become effective on August 12, 1986.

Signed on August 12, 1986.

For the Regional Administrator,

Richard C. Coddington

Frank M. Covington
Director, Water Management Division

B. OPERATIONS

1. Injection Formation.

Injection shall be limited to the Mixed Layer Formation in the interval between 220 ft. and 600 ft. below land surface and the Upper and Lower Salt Structures wherever they occur within the area of review.

2. Injection Pressure Limitation [40 CFR 146.33(a)(1)].

Except during well stimulation injection pressure at the wellhead shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case, shall injection pressure initiate fractures in the confining zone or cause the migration of injection or formation fluids into an underground source of drinking water.

3. Additional Injection Limitation [40 CFR 146.33(a)(2)].

Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

4. Authorization to inject [40 CFR 144.33(a)(3)].

The authorization under this permit pertains only to injection wells within the project area which are owned or operated by the permittee.

5. Hazardous waste restriction [40 CFR 144.33(a)(4)].

The permittee is not authorized to inject hazardous waste.

C. MONITORING

1. Monitoring Requirements [40 CFR 144.51(j)(1) and 144.52(a)(5)].

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the fluid to be analyzed and the procedure for analysis of the sample shall be:

- Grab samples shall be collected at the sampling valve at the wellhead and used for laboratory analysis for physical and chemical characteristics.

- Temperature, annulus pressure, and injection pressure shall be measured at the wellhead.

- The permittee shall identify the types of tests and methods used to generate the monitoring data as specified by 40 CFR 136.3 or Appendix III of 40 CFR 261. When the analytical method for a particular parameter is not specified in either 40 CFR 136.3 or Appendix III of 40 CFR 261, the permittee must obtain EPA approval of the types of tests and methods used to generate the monitoring data.

2. Injection fluid analysis [40 CFR 146.33(b)(1)].

The permittee shall provide to the Director a qualitative analysis and ranges in concentrations of all constituents of injected fluids at least once within the first year of authorization and thereafter whenever the injection fluid is modified to the extent that the initial data are incorrect or incomplete. The owner or operator may request Federal confidentiality as specified in 40 CFR Part 2. If the information is proprietary the owner or operator may in lieu of the ranges in concentrations choose to submit maximum concentrations which shall not be exceeded. In such a case the owner or operator shall retain records of the undisclosed concentrations and provide them upon request to the Regional Administrator as part of any enforcement investigation.

3. Modification of Injection Fluid [40 CFR 146.33(b)(1)].

Whenever the injection fluid is modified to the extent that the analysis required by 40 CFR 146.34(a)(7)(iii) is incorrect or incomplete, a new analysis as required by 40 CFR 146.34(a)(7)(iii) shall be provided to the Director.

4. Monitoring Frequency [40 CFR 146.33(b)(2) and (4)].

Monitoring of the individual wells shall be conducted no less frequently than indicated for the parameters listed below:

Parameter	Monitoring Frequency	Sample Type
injection fluid, rate	continuous	Gauge
injection fluid, total volume	continuous	Totalizer
injection pressure, psig	monthly	Gauge
produced fluid, total volume	continuous	Totalizer

Monitoring at the injection pump shall be conducted no less frequently than indicated for the parameters listed below:

Parameter	Monitoring Frequency	Sample Type
injection fluid, rate	continuous	Recorder
injection fluid, total volume	continuous	Totalizer
injection temperature, °F	continuous	Recorder
injection fluid, pH	monthly	Grab

Attachment Q

Plugging and Abandonment Plan

Kerr-McGee Chemical Corporation will perform the following plugging and abandonment at the conclusion of its Searles Lake Operations or earlier as conditions warrant. A similar commitment has been made to the USGS/BLM, which appears in the KMCC Mining and Reclamation Plan.

Plugging and Abandonment Procedure for Mixed Layer Wells

When injection wells are permanently abandoned, the casing will be filled with concrete or cement grout from the bottom of the casing to the surface. The casing then will be cut off below the salt's surface.

To properly plug a well, the following steps will be implemented.

1) A 2-inch, 5.02 lb/ft, 0.218 inch wall, schedule 80 grout pipe will be run from the surface to the same depth as the casing.

2) A mud pump will be connected to the grout pipe and a small amount of native brine will be pumped to make sure that the grout pipe is open. Then the mud pump will be discontinued.

3) A commercial grout pump will be used to pump the concrete or cement grout down the pipe, and pumping will continue until the casing has filled with cement and surface returns are observed.

4) When using concrete as a plugging material, a Type II, 5 sack, minus one inch rock mix will be used. When pumping cement slurry a Type II, 8 sack grout mix will be used. The concrete or cement slurry will be delivered to the location in a Ready Mix truck.

5) The amount of concrete/cement slurry used will vary from well to well depending on casing sizes and depths. A typical injection well will take approximately 4 cubic yards, based on typical casing specifications and depth of well.

Attachment Q
(Continued)

Cost Estimate for Plugging A Typical Injection Well

2-inch grout pipe (450 ft @ $2/ft)	$900.00
4 yd^3 concrete/cement slurry ($70/$yd^3$)	280.00
Grout pump charge	300.00
Labor	250.00
Total	1,730.00

Mixed Layer Injection Wells

1)600	11)611	21)618	31)625	41)630
2)601	12)612	22)619	32)626	42)631
3)602	13)613	23)619A	33)626A	43)632
4)604	14)613A	24)620	34)626B	
5)605	15)614	25)620A	35)627	
6)606	16)614A	26)621	36)627A	
7)607	17)615	27)622	37)628	
8)608	18)616	28)623	38)629	
9)609	19)617	29)624	39)629A	
10)610	20)617A	30)624A	40)629B	

Plugging and Abandonment Procedure for Upper and Lower Salt Wells

No formal plugging of the Upper and Lower Salt Wells is required due to prevailing hydrogeologic conditions within the area of review.

STATEMENT OF BASIS

Application for Modification of
Underground Injection Control Permit
for Class III Wells at
Kerr-McGee Chemical Corporation

Date: June 25, 1986

Facility Identification No. CAD048456941
Permit Identification Nos. CAS000000002

Name and Mailing
Address of Applicant

Kerr-McGee Chemical Corporation
P.O. Box 367, 13200 Main Street
Trona, California 93562

Name and Facility
Address of Applicant

Searles Lake Mining Operation
P.O. Box 367, 13200 Main Street
Trona, California 93562
Location: Twp 25, Rge 43, Sec 22, SE 1/4

BACKGROUND

The issued area permit is for the injection of undersaturated brines into the Mixed Layer Formation of the Searles Lake Basin for the purpose of recharge and eventual extraction of various soluble inorganic chemicals from the sedimentary deposit found in the basin.

The proposed permit modification includes injection into the Upper and Lower Salt Structures. The injection into the Upper and Lower Salt Structures is proposed to take place at this time in the San Bernardino Borax (SBB) project and the Solar Ponds Project.

The SBB project consists of a system of injection wells, production wells, and pipelines for the production of high carbonate brine for the Argus Manufacturing facility. The zones of interest will be the Upper and Lower Salt Structures which contain a high trona content. The injectate will consist of a blend of brackish water and low grade Argus brine which will be injected into the Upper and Lower Salt. Production will take place from a separate line of production wells.

The Solar Ponds project consists of a series of storage wells which are alternately used for production of stored brines. These brines are stored during summer months and then pumped to the manufacturing facilities during the cooler months.

Mineral extraction from the Searles Lake brine has taken place since 1873. Early operations included surface mining of borax and trona deposits. Operations were expanded after 1914 to include potash, salt cake, and soda ash.

Present day operations include withdrawal of highly mineralized brine saturated with dissolved salts from Searles Lake.

The brine is pumped to the Trona, Argus, and Westend facilities for extraction of the various inorganic chemicals such as sodium carbonate, sodium sulfate, potash, and borax. After processing, the spent brine is discharged to Searles Lake for recharge and eventual reintroduction into the extraction process.

The Searles Lake Valley is a geologically and hydrologically closed basin filled with alluvium and non-marine evaporites. Annual precipitation in the basin is approximately 2.7 inches per year. Estimated potential evaporation is from 51 to 77 inches per year. Due to the depositional environment and present day climatic conditions, there are no known USDWs within the area of review, although peripheral aquifers exist in the alluvial fans bordering the playa.

GEOLOGICAL DATA ON INJECTION AND CONFINING ZONES

Regional Geology

Searles Valley is located approximately 130 miles northeast of Los Angeles in Townships 25 and 26 south, Ranges 43 and 44 east, Mount Diablo baseline and meridian. The basin is about 10 miles across, east to west, and about 20 miles from north to south. Occupying the lowest part of the depression is Searles Dry Lake playa, which is approximately 10 miles from north to south and 6 miles from east to west.

Lake Sediment Description

Searles Valley is a closed structural basin filled with alluvium and non-marine evaporites. The thickness of the fill ranges from 0 feet at the periphery to 3,000+ feet in the deeper portions.

Mixed Layer (Injection Zone)

The Mixed Layer (Pleistocene-Illinoian) is a series of mud and saline beds that total 600 to 700 feet in thickness. The Mixed Layer consists of mud beds with combinations of pirssonite, aragonite, northupite, trona, halite, sulfohalite, and gaylussite and saline beds with combinations of halite, trona, nahcolite, sulfohalite tychite and thenardite.

Bottom Mud (Confining Zone)

The Bottom Mud (Pleistocene-Wisconsin) is underlain by a Mixed Layer zone and overlain by the Lower Salt. The Bottom Mud is 100 feet or more in thickness. The unit is composed of clay layers with gaylussite, dolmite, calcite, halite, thenardite, mirabilite, trona, and borax.

Lower Salt

The Lower Salt (Pleistocene-Wisconsin) is underlain by the bottom Mud and overlain by the Parting Mud. The thickness ranges from approximately 40 feet in the center of the lake to zero feet at the lake's edge.

Parting Mud

The Parting Mud (Pleistocene-Wisconsin) is underlain by the Lower Salt and overlain by the Upper Salt in the central part of the lake. It is in contact with the Bottom Mud and Overburden Mud on the periphery. The bed is 10 feet thick in the center of the lake and thickens towards the outer edges to 25 feet or more.

Upper Salt

The Upper Salt (Recent) is underlain by the Parting Mud and overlain by the Overburden Mud (near the playa periphery). It ranges in thickness from 75 feet at the lake center to zero feet along the edge.

Overburden Mud

The Overburden Mud (Recent) is underlain by the Upper Salt. It ranges in thickness from zero feet to 20 feet above the Upper Salt zero isopach at the edge of the lake. The unit is in contact with the Parting Mud at the lake periphery. The clay-sized material and salines of the Overburden Mud grade laterally towards the edge of the basin into silt, sand and gravel.

INJECTION ZONE

Searles Lake Operations

Injection is limited to the Mixed Layer Formation in the interval between 220 ft and 600 ft. below land surface and the Upper and Lower Salt Structures wherever they occur within the area of review.

Depth to USDW

The Federal Underground Injection Control (UIC) definition of an underground source of drinking water (USDW) is an aquifer or its portion:

- Which supplies any public water system; or
- Which contains a sufficient quantity of groundwater to supply a public water system; and
- Currently supplies drinking water for human consumption; or
- Contains fewer than 10,000 mg/l total dissolved solids; and
- Which is not an exempted aquifer.

There are no known USDW's within the area of review. Salinities within the Searles Lake Basin are typically greater than 300,000 mg/l TDS.

Outside the area of review, brackish water is found in the City of Trona. Water ranging from 3,000 to 15,000 mg/l TDS is found at Valley Wells, north of the playa.

Due to the poor quality of water in the valley, fresh water is piped into Searles Valley from Indian Wells Valley for domestic and industrial use.

WELL SPECIFIC CONDITIONS REQUIRED UNDER THE TERMS OF THE PERMIT

Construction Requirements

In the existing permit the permittee is authorized to construct, convert, or plug and abandon wells within the project area providing that:

- The Director is notified at least 30 days prior to such construction, conversion, or plugging.
- All new wells are sited within the defined project area.
- All new wells are cased and cemented to protect USDWs.

- Electric logs are run on all new wells to provide the Director with salinity profiles.

- The injectate is not a RCRA hazardous waste.

Specific construction details were submitted by Kerr-McGee who has requested that those details be regarded as confidential in accordance with 40 CFR 2.204. EPA has tentatively granted confidentiality to those details pending a complete confidentiality determination.

Monitoring Requirements

As the UIC regulations require (see proposed permit modification for section citations), the permittee is required to provide the Director with a qualitative analysis of all constituents of the injected fluids within the first year of the permit and, thereafter, whenever the injected fluid is modified significantly. In addition, monitoring injection fluid rate, volume, pressure, and temperature is required, along with production volume. A monitoring well network is to be maintained, with periodic monitoring of fluid levels, temperature, and salinity.

Operational Requirements

The injection formation is limited to the Mixed Layer Formation between 220 feet and 600 feet below land surface and the Upper and Lower Salt Structures wherever they occur within the area of review. Injection pressure is limited to avoid migration of fluids into USDWs. Injection between the casing and well bore into USDW's is prohibited.

Summary of Permit Conditions

EPA has proposed to modify the existing area permit to Kerr-McGee Chemical Corporation for the in situ mining of inorganic chemicals in the Searles Lake Basin to include injection into the Upper and Lower Salt Structures. Conditions in the permit are intended to assure that injection practices do not contaminate any USDW. No USDW's have been identified in the project area. The permittee is being required to run electric logs on all new wells to substantiate the absence of USDW's as the operation grows throughout the project area. Should the project encroach upon previously unknown USDW's, the permit conditions are written to protect that USDW from contamination.

FINANCIAL RESPONSIBILITY

The applicant has submitted a financial statement as the demonstration of financial responsibility. This demonstration is required by federal regulations to assure the availability of financial resources to properly plug and abandon the wells.

Under the terms of the permit, the permittee will be required to send updated information to the Regional Administrator within 90 days after the close of each succeeding fiscal year. The Regional Administrator may require reports of financial condition at any time from the permittee.

ADMINISTRATIVE PROCEDURES:

The Administrative Record

The Administrative Records, including the applications, proposed permit modification, statement of basis, public notice, and additional information, are available for review or copying at the EPA Library, 6th floor, 215 Fremont Street, San Francisco, California, 94105, during business hours, Monday through Friday. Documents can be requested by contacting EPA, Region 9. The statement of basis and proposed permit modification is also available at the Trona Branch Public Library, 82805 Mountain View Street, Trona California.

Reference Documents

All documents used in the preparation of the proposed permit modifications are available at EPA, Region 9. Information regarding these materials may be obtained from the person listed below.

EPA Contact

Patrick Chan
(415) 974-8105

PROCEDURES FOR THE FORMULATION OF FINAL DETERMINATIONS:

Comment Period

Any written comments on or objections to the proposed permit modification and requests for a public hearing, pursuant to 40 CFR 124.11 must be received no later than July 28, 1986. Comments or requests for a public hearing must be mailed to the EPA address below.

Environmental Protection Agency
Underground Injection Control Section
215 Fremont Street
San Francisco, California 94105
Attn: Patrick Chan (W-5-1)

Public Hearing

Requests for a public hearing must state the nature of the issues to be raised at the hearing. Pursuant to 40 CFR 124.12, the Regional Adminstrator will hold a public hearing if she finds, on the basis of requests, a significant degree of public interest in the proposed permit modification or if she determines that a hearing might clarify one or more issues involved in the permit decision. If the Regional Administrator decides to hold a public hearing, a notice of the date, time and place of the hearing will be made at least 30 days prior to the hearing.

Permit Determination

A final decision to issue the proposed permit modification, or to deny the request for modification , will be made after all comments have been considered. Notice of the final decision will be sent to each person who has sent or delivered written comments or requested notice of the final permit decision. If issued, the modification will become effective 30 days from the date of issuance unless:

1. a later effective date is specified in the permit;

2. an administrative review is requested under 40 CFR 124.19; or

3. there are no comments requesting a change to the proposed permit modification, in which case the final decision will become effective 3 days upon issuance.

All persons are advised that they must raise all reasonably ascertainable issues and submit all reasonably available arguments and factual grounds supporting their position by the close of the comment period, pursuant to 40 CFR 124.13. In any review of the final permit decision, no issues may be raised that were not submitted to the administrative records unless good cause is shown for the failure to do so, pursuant to 40 CFR 124.76.

NOTICE OF PROPOSED MODIFICATION

by

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 9
215 Fremont Street (W-5-1)
San Francisco, CA 94105

To an Underground Injection Control Permit
Issued to Kerr-McGee Chemical Corporation

Public Notice Number CA-UIC-86-1-W

The Regional Administrator of the U.S. Environmental Protection Agency (EPA) Region 9 proposes to modify an Underground Injection Control (UIC) permit issued to the permittee named below, pursuant to the Safe Drinking Water Act, as amended (42 U.S.C. §300f et seq.), (SDWA) and its implementing regulations (40 C.F.R. Parts 124, 144, 146, and 147). Information regarding the permitted facility is listed below.

Name and Address of Permittee:

Permittee Address:	Kerr-McGee Chemical Corporation P.O. Box 367 Trona, California 93562
Facility Address:	Kerr-McGee Chemical Corporation Searles Lake Operations P.O. Box 367 Trona, California 93562
Well Location:	T25, R43, SE 1/4 Sec. 22 San Bernardino County, CA

The Searles Lake facility includes Mixed Layer injection and production and the Solar Ponds storage project and the proposed San Bernardino Borax (SBB) projects which inject into the Upper and Lower Salt Structures. The proposed permit modification permits injection into the Upper and Lower Salt Structures in addition to the Mixed Layer which was originally permitted.

As required by 40 CFR §124.9, the administrative record, which includes the proposed permit modification, and data submitted by the permittee, is available for public inspection at the EPA Region 9 Library, sixth floor, address above. The proposed permit modification and statement of basis are also available for review at the Trona Branch Public Library, 82805 Mountain View Street, Trona, California.

|_| PERMIT ISSUANCE ROUTING SLIP |_| DRAFT

|X| MODIFICATION ISSUANCE ROUTING SLIP |X| FINAL

Drafted by: Carol Boughton Date: June, 1986
Project Officer

Approved by: [signature] Date: 8/6/86
Team Leader

[signature] Date: 8/8/86
Chief, UIC Section

[signature] Date: 8/11/86
Chief, Drinking Water Branch

[signature] Date: 8/11/86
Director, Water Management Division

Return to Carole Truitt UIC Section (W-6-2) for mailing

Permittee Name: Kerr-McGee Chemical Corporation

Searles Lake Facility

UIC Permit #: CAS000000002

ENCLOSURE 3

U.S. ENVIRONMENTAL PROTECTION AGENCY

UNDERGROUND INJECTION CONTROL PERMIT: CLASS III

Permit Number CAS000000002

EPA ID Number CAD048456941

Pursuant to the Underground Injection Control regulations of the U.S. Environmental Protection Agency codified at Title 40 of the Code of Federal Regulations, Parts 124, 144, 146, and 147

Kerr-McGee Chemical Corporation
P. O. Box 367
Trona, California 93562

is hereby authorized to operate a Class III injection facility identified as

Searles Lake Operations

the approximate center of which is located at

T25, R43, SE 1/4 Sec. 22
Trona
San Bernardino County, California

with the full project area description appearing in Part II(A)(3), into Mixed Layer Formation, upon the express conditions that the permittee meet the restrictions set forth herein. Injection is authorized by rule pursuant to 40 CFR 144.21 until the effective date of this permit.

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective. The following attachments are incorporated into this permit: Attachment Q (Plugging and Abandonment Plan); Attachment R (Financial Responsibility).

This permit shall become effective on 30 OCT 1985

This permit and the authorization to inject shall continue for the operating lifetime of the injection operation, unless terminated, or until primary enforcement responsibility is delegated to the State of California, unless that State chooses to adopt this permit as a State permit.

The Director shall review this permit at least once every five years from the date of issuance to determine whether it should be modified, revoked and reissued, terminated, or a minor modification made as provided in 40 CFR 144.39, 144.40, and 144.41.

Signed on 30 SEP 1985

Frank M. Covington

Frank M. Covington, Director
Water Management Division
EPA Region 9

PART I

GENERAL PERMIT COMPLIANCE

A. EFFECT OF PERMIT

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit. The permittee, authorized by this permit, shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in this permit is prohibited. Compliance with this permit does not constitute a defense to any action brought under the SDWA, or any other common or statutory law or regulation. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this permit shall be construed to relieve the permittee of any duties under applicable regulations.

B. PERMIT ACTIONS

1. Modification, Revocation, Reissuance and Termination.

The Director may, for cause or upon request from the permittee, modify, revoke and reissue, or terminate this permit in accordance with 40 CFR 144.12, 144.39, and 144.40. Also, the permit is subject to minor modifications for cause as specified in 40 CFR 144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition. The Director may also modify, revoke and reissue, or terminate this permit in accordance with any amendments to the SDWA if the amendments have applicability to the conditions in this permit.

2. Transfer of Permits.

This permit is not transferrable to any person except in accordance with 40 CFR 144.38.

C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR Part 2 and 144.5, any information submitted to EPA pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 CFR Part 2 (Public Information). Claims of confidentiality for the following information will be denied:

1) The name and address of the permittee:

2) Information which deals with the existence, absence or level of contaminants in drinking water.

E. DUTIES AND REQUIREMENTS

1. Duty to Comply.

The permittee shall comply with all applicable UIC Program regulations and conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with 40 CFR 144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. Such non-compliance may also be grounds for enforcement action under RCRA.

2. Penalties for Violations of Permit Conditions.

Any person who violates a permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may be subject to the such actions pursuant to RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

3. State Continuation.

An EPA permit issued for the operating lifetime of the injection operation may continue in force at the time a State is authorized to assume primary enforcement authority, providing that the State has the authority to do so under State law, and that the State chooses to adopt and enforce the permit. Otherwise, the injection activity is operating without a Federal UIC permit from the time that the State assumes primacy until the effective date of the State-issued new permit.

4. Need to Halt or Reduce Activity not a Defense.

It shall not be a defense, for permittee in an enforcement action, that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Duty to Mitigate.

The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

6. Proper Operation and Maintenance.

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

7. Duty to Provide Information.

The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

8. Inspection and Entry.

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by SDWA, any substances or parameters at any location.

9. Records.

(a) The permittee shall retain records and all monitoring information, including all calibration and maintenance records and all original instrumented recordings for continuous monitoring and copies of all reports required by this permit for a period of at least five years from the date of the sample, measurement or report.

(b) The permittee shall maintain records of all data required to complete the permit application form for this permit and any supplemental information submitted under 40 CFR 144.31 for a period of at least five years from the date the application was signed. These periods may be extended by request of the Director at any time.

(c) The permittee shall retain records concerning the nature and composition of all injected fluids until three years after the completion of plugging and abandonment which has been carried out in accordance with the attached plugging and abandonment plan, and is consistent with 40 CFR 146.10.

(d) The permittee shall continue to retain such records after the retention period specified by paragraphs (a) to (c) above, unless he delivers the records to the Director or obtains written approval from the Director to discard the records.

(e) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) A precise description of both sampling methodology and the handling (custody) of samples;

(4) The date(s) analyses were performed;

(5) The names of individual(s) who performed the analyses;

(6) The analytical techniques or methods used; and

(7) The results of such analyses.

10. Monitoring.

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring results shall be reported at the intervals specified in Part II, Paragraphs C and D, of this permit.

(a) Monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 CFR 136.3 or in Appendix III of 40 CFR Part 261 or in certain circumstances by other methods that have been approved by the Administrator.

(b) The permitee shall submit, to the Director, all reports as required in Part II, Sections C and D of this permit. The permittee shall prepare a report describing the intended procedures that will be used for sample collection, handling, and analysis. This report must be submitted for approval by EPA a minimum of 30 days prior to collecting samples for the first Quarterly Report and any time the sampling procedures are changed or modified for subsequent reporting periods.

11. Signatory Requirements.

All reports or other information, required to be submitted by this permit or requested by the Director, shall be signed and certified in accordance with 40 CFR 144.32.

12. Reporting Requirements.

(a) Planned Changes. The permittee shall give written notice to the Director, as soon as possible, of any planned physical alterations or additions to the permitted facility.

(b) Anticipated Noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.

(d) Twenty-four Hour Reporting.

(1) The permittee shall report to the Director any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. The following shall be included as information which must be reported orally within 24 hours:

(i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water.

(ii) Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between underground sources of drinking water.

(2) A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

(e) Other Noncompliance. The permittee shall report all other instances of noncompliance not otherwise reported at the time monitoring reports are submitted. The reports shall contain the information listed in Permit Condition 12(d)(2) above.

(f) Other Information. When the permittee becomes aware that he failed to submit any relevant facts in the permit application or submitted incorrect information in a permit application or in any report to the Director, the permittee shall submit such facts or information within 10 days.

(g) Report on Permit Review. Within thirty (30) days of receipt of this permit, the permittee shall report to the Director that he has read and is personally familiar with all terms and conditions of this permit.

F. PLUGGING AND ABANDONMENT

1. Notice of Plugging and Abandonment.

The permittee shall notify the Director no later than 45 days before conversion or abandonment of any well.

2. Plugging and Abandonment.

The permittee shall plug and abandon all injection wells consistent with 40 CFR § 146.10, as provided for in the attached plugging

and abandonment plan (which is hereby incorporated as a part of this permit). Within 60 days after plugging a well, or at the time of the next quarterly report (whichever is shorter), the permittee shall submit a report to the Director. The report shall be certified as accurate by the person who performed the plugging operation, and shall consist of either:

(a) A statement that the well was plugged in accordance with the plan previously submitted to the Director; or

(b) If the actual plugging differed from the approved plan, a statement defining the actual plugging and why the Director should approve such deviation. Any deviation from a previously approved plan may be cause for the Director to require the operator to replug the well.

3. Inactive Wells.

After a cessation of injection for two years the permittee shall plug and abandon the well in accordance with the plan unless he:

(a) Provided notice to the Director; and

(b) Described actions or procedures, which are deemed satisfactory by the Director, that the permittee will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived, in writing, by the Director.

G. MECHANICAL INTEGRITY

1. Standards.

All injection well(s) must have and maintain mechanical integrity consistent with 40 CFR 146.8.

2. Mechanical Integrity Request from Director.

The Director may, by written notice, require the permittee to demonstrate mechanical integrity at any time in order to show that there is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.

3. Loss Of Mechanical Integrity.

If the permittee or the Director finds that the well fails to demonstrate mechanical integrity during a test, or a loss of mechanical integrity which threatens to contaminate an underground source of drinking water becomes evident during operation, the operation shall be halted immediately and shall not be resumed until the Director gives approval to recommence injection.

I. FINANCIAL RESPONSIBILITY

1. Financial Responsibility.

The permittee is required to maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner consistent with the underground injection control regulations and the Attachment Q Plugging and Abandonment Plan. The financial responsibility mechanism shall be updated periodically, upon request of the Director.

An owner or operator must also notify the Director by certified mail of the commencement of voluntary or involuntary proceedings under Title 11 (Bankruptcy), U.S. Code naming the owner or operator as debtor, within 10 business days after the commencement of the proceeding. A guarantor of a corporate guarantee must make such a notification if he is named as debtor, as required under the terms of the guarantee.

2. Annual Financial Demonstration [40 CFR 144.63(f)(5)].

The permittee shall submit updated financial information to the Regional Administrator within ninety (90) days after the close of each fiscal year for the duration of this permit. The information to be submittted must consist of the following.

a) A letter signed by Kerr-McGee Chemical Corporation's chief financial officer and worded as specified in §144.70 (f); and

b) A copy of the independent certified public accountant's report on examination of Kerr-McGee Chemical Corporation's financial statements for the latest completed fiscal year; and

c) A special report from Kerr-McGee Chemical Corporation's independent certified public accountant to Kerr-McGee Chemical Corporation stating that:

- He has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

- In connection with that procedure, no matters came to his attention which caused him to believe that the specified data should be adjusted.

PART II

WELL SPECIFIC CONDITIONS FOR UIC PERMITS

A. CONSTRUCTION

1. Casing and Cementing [40 CFR 146.32(a)].

Notwithstanding any other provisions of this permit, the permittee shall case and cement the well to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of new wells shall be designed for the life expectancy of the wells.

2. Logs and Tests [40 CFR 146.32(b)].

Electric logs shall be conducted during the drilling and construction of new wells for the purpose of developing a salinity profile. A descriptive report interpreting the results of those logs which specifically relate to (1) an underground source of drinking water and the confining zone adjacent to it, and (2) the injection and adjacent formations shall be prepared by a knowledgeable log analyst and submitted to the Director.

3. Project Area [40 CFR 144.33(b)(1)].

The project area is the only area within which underground injection is authorized to take place. The project area for the purposes of this permit is defined as that delineated by the area of review boundary on Drawing EP-1 submitted in Attachment B of the Form 4 permit application.

4. Authorization to construct, operate, convert, or plug and abandon [40 CFR 144.33(c)].

The permittee is authorized to construct and operate, convert, or plug and abandon injection wells within the project area provided:

a) The permittee notifies the Director no less than thirty (30) days prior to such construction, conversion, or plugging and abandonment; and

b) The permittee shall provide the Director with the description and identification of any proposed wells no less than thirty (30) days prior to the construction of such wells; and

c) All new injection wells must be sited within the project area as defined in Part II, Section A(3) of this permit.

B. OPERATIONS

1. Injection Formation.

Injection shall be limited to the Mixed Layer Formation in the interval between 220 ft. and 600 ft. below land surface.

2. Injection Pressure Limitation [40 CFR 146.33(a)(1)].

Except during well stimulation injection pressure at the wellhead shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case, shall injection pressure initiate fractures in the confining zone or cause the migration of injection or formation fluids into an underground source of drinking water.

3. Additional Injection Limitation [40 CFR 146.33(a)(2)].

Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

4. Authorization to inject [40 CFR 144.33(a)(3)].

The authorization under this permit pertains only to injection wells within the project area which are owned or operated by the permittee.

5. Hazardous waste restriction [§144.33(a)(4)].

The permittee is not authorized to inject hazardous waste.

C. MONITORING

1. Monitoring Requirements [40 CFR 144.51(j)(1) and 144.52(a)(5)].

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the fluid to be analyzed and the procedure for analysis of the sample shall be:

- Grab samples shall be collected at the sampling valve at the wellhead and used for laboratory analysis for physical and chemical characteristics.

- Temperature, annulus pressure, and injection pressure shall be measured at the wellhead.

- The permittee shall identify the types of tests and methods used to generate the monitoring data as specified by 40 CFR 136.3 or Appendix III of 40 CFR 261. When the analytical method for a particular parameter is not specified in

either 40 CFR 136.3 or Appendix III of 40 CFR 261, the permittee must obtain EPA approval of the types of tests and methods used to generate the monitoring data.

2. Injection fluid analysis [40 CFR 146.33(b)(1)].

The permittee shall provide to the Director a qualitative analysis and ranges in concentrations of all constituents of injected fluids at least once within the first year of authorization and thereafter whenever the injection fluid is modified to the extent that the initial data are incorrect or incomplete. The owner or operator may request Federal confidentiality as specified in 40 CFR Part 2. If the information is proprietary the owner or operator may in lieu of the ranges in concentrations choose to submit maximum concentrations which shall not be exceeded. In such a case the owner or operator shall retain records of the undisclosed concentrations and provide them upon request to the Regional Administrator as part of any enforcement investigation.

3. Modification of Injection Fluid [40 CFR 146.33(b)(1)].

Whenever the injection fluid is modified to the extent that the analysis required by §146.34(a)(7)(iii) is incorrect or incomplete, a new analysis as required by §146.34(a)(7)(iii) shall be provided to the Director.

4. Monitoring Frequency [40 CFR 146.33(b)(2) and (4)].

Monitoring at the wellhead shall be conducted no less frequently than indicated for the parameters listed below:

Parameter	Monitoring Frequency	Sample Type
injection fluid, rate	continuous	Recorder
injection fluid, total volume	continuous	Totalizer
injection pressure, psig	monthly	Gauge
produced fluid, total volume	continuous	Totalizer

Monitoring at the injection pump shall be conducted no less frequently than indicated for the parameters listed below:

Parameter	Monitoring Frequency	Sample Type
injection fluid, rate	continuous	Recorder
injection fluid, total volume	continuous	Totalizer
injection temperature, °F	continuous	Recorder
injection fluid, pH	monthly	Grab

5. Monitoring wells [40 CFR 146.33(b)(5)]

The monitoring well network outlined by the permittee in Attachment P (Monitoring Program) of the Form 4 application shall be maintained as proposed. Whenever existing monitoring wells are abandoned or new monitoring wells are proposed, such changes to the monitoring network shall be submitted to the Director for approval within thirty (30) days prior to the proposed change.

Monitoring in the monitoring network shall be conducted in the wells designated in Attachment P for the following parameters and at the following frequency.

Parameter	Monitoring Frequency	Sample Type
Static Fluid level, feet above sea level	Weekly	Measured
Formation pressure, feet above sea level	Weekly	Gauge
Temperature, °F	Quarterly	Log
Brine sample, ppm TDS	Semiannually	Grab

D. REPORTING REQUIREMENTS [40 CFR 146.33(c)(1)]

1. Quarterly reports

The permittee shall submit accurate quarterly reports to the Director containing the following information:

(a) Results of the injection fluid analyses specified in Part II, Section C.

(b) Monthly average, maximum and minimum values for injection fluid rate, volume, pressure, and temperature, and pH, and produced fluid volume.

(c) Fluid levels, formation pressures, fluid temperature, and brine TDS as required for monitoring wells.

2. Reports on Well Tests and Workovers [40 CFR 146.13(c)(2)]. In the first quarterly report after the activity the permittee shall report to the Director the results of the following:

(a) Mechanical integrity tests;

(b) Other tests required by this permit;

(c) Any well workover.

3. Reporting of Monitoring Results.

All pH values shall be reported to the nearest 0.1 pH unit. Observation and recording of parameters specified to be monitored periodically shall be done over equal time intervals over a 24 hour period. When computing a daily or monthly average value, as defined in the section of Definitions, for those parameters read once every 2 hours during periods of injection. The reporting of daily average, daily maximum, and daily minimum values shall be in a format acceptable to the Director.

Monitoring results obtained during each calendar month shall be summarized for each month and reported on EPA Form 7520-8. Forms shall be submitted for the reporting periods by the respective due dates as listed below:

Reporting Period	Report due
July, Aug, Sept	Oct 28
Oct, Nov, Dec	Jan 28
Jan, Feb, Mar	Apr 28
Apr, May, June	Jul 28

The report shall also include the following information:

1. date and time of sample collection;

2. name of individual(s) who performed the sampling;

3. type of containers used and how samples were treated and preserved prior to transporting to the lab;

4. method of transportation to the lab;

5. name and location of the lab analyzing the samples;

6. the procedures used by the lab for analysis; (Note: If the procedures were different from the information submitted as required in Part I, Section E, item 10(b) of this permit, indicate these differences.) and

7. reference to established, published criteria should be made wherever possible.

Copies of the monitoring results required by the conditions set forth in this permit shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Region 9
Water Management Division
Underground Injection Control Section (W-6-2)
215 Fremont Street
San Francisco, California 94105

Definitions

1. BPD

   BPD means barrels per day.

2. Daily Average of Parameters Monitored Continuously

   Daily Average of Parameters Monitored Continuously means the sum of values observed and recorded periodically as specified in Part II, Section C of this permit, divided by the total number of values observed and recorded during the day.

3. Daily Average of Parameters Not Monitored Continuously

   Daily Average of Parameters Not Monitored Continuously means the sum of all daily observed and recorded values divided by the total number of values observed and recorded during that day.

4. Daily or Monthly Maximum Value

   Maximum Value means the highest value recorded during the day or month, respectively. For continuously monitored parameters the highest value recorded is the highest instantaneous value for the continuous monitoring record.

5. Daily or Monthly Minimum Value

   Minimum Value means the lowest value recorded during the day or month, respectively. For continuously monitored parameters the lowest value recorded is the lowest instantaneous value from the continuous monitoring record.

6. GPM

   GPM means gallons per minute.

7. Grab Sample

   Grab Sample means a single portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the monitored activity.

8. Injection Tubing or Tubing

   Injection Tubing means a system of pipes, of appropriate material, inserted into the well through the casing to convey the injection fluid to the injection zone and to prevent casing degradation.

9. Monthly Average of Parameters Monitored Continuously

Monthly Average of Parameters Monitored Continuously means the sum of values observed and recorded periodically as specified in Part II, Section C, item 1, divided by the total number of values observed and recorded during that month.

10. Monthly Average of Parameters Monitored Daily

Monthly Average of Parameters monitored Daily means the sum of all daily observed and recorded values divided by the total number of values observed and recorded during that month.

11. PSIG

PSIG means pounds per square inch gauge.

Attachment Q
(Continued)

Mixed Layer Injection Wells

1)600	11)611	21)618	31)625	41)630
2)601	12)612	22)619	32)626	42)631
3)602	13)613	23)619A	33)626A	43)632
4)604	14)613A	24)620	34)626B	
5)605	15)614	25)620A	35)627	
6)606	16)614A	26)621	36)627A	
7)607	17)615	27)622	37)628	
8)608	18)616	28)623	38)629	
9)609	19)617	29)624	39)629A	
10)610	20)617A	30)624A	40)629B	

Attachment Q

Plugging and Abandonment Plan

Kerr-McGee Chemical Corporation will perform the following plugging and abandonment at the conclusion of its Searles Lake Operations or earlier as conditions warrant. A similar commitment has been made to the USGS/BLM, which appears in the KMCC Mining and Reclamation Plan.

Plugging and Abandonment Procedure for Mixed Layer Wells

When injection wells are permanently abandoned, the casing will be filled with concrete or cement grout from the bottom of the casing to the surface. The casing then will be cut off below the salt's surface.

To properly plug a well, the following steps will be implemented.

1) A 2-inch, 5.02 lb/ft, 0.218 inch wall, schedule 80 grout pipe will be run from the surface to the same depth as the casing.

2) A mud pump will be connected to the grout pipe and a small amount of native brine will be pumped to make sure that the grout pipe is open. Then the mud pump will be discontinued.

3) A commercial grout pump will be used to pump the concrete or cement grout down the pipe, and pumping will continue until the casing has filled with cement and surface returns are observed.

4) When using concrete as a plugging material, a Type II, 5 sack, minus one inch rock mix will be used. When pumping cement slurry a Type II, 8 sack grout mix will be used. The concrete or cement slurry will be delivered to the location in a Ready Mix truck.

5) The amount of concrete/cement slurry used will vary from well to well depending on casing sizes and depths. A typical injection well will take approximately 4 cubic yards, based on typical casing specifications and depth of well.

Cost Estimate for Plugging A Typical Injection Well

2-inch grout pipe (450 ft @ $2/ft)	$900.00
4 yd3 concrete/cement slurry ($70/yd3)	280.00
Grout pump charge	300.00
Labor	250.00
Total	1,730.00

Attachment R

Financial Responsibility

The permittee has submitted Kerr-McGee Chemical Corporation's Consolidated Financial Statements as of December 31, 1984, together with an auditor's report as demonstration of financial responsibility. The permittee was found to have met the criteria necessary to pass the financial test in accordance with the requirements of 40 CFR 144.63(f)(1).

In addition, the permittee is being required to submit updated financial information to the Regional Administrator within ninety (90) days after the close of each fiscal year for the duration of the permit.