

NEW MEXICO ENVIRONMENT DEPARTMENT
GROUND WATER QUALITY BUREAU

DRAFT GROUND WATER DISCHARGE PERMIT DP-200 RENEWAL
AND MODIFICATION

DRAFT FOR PUBLIC REVIEW

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I. Introduction

The New Mexico Environment Department (NMED) herein renews and modifies Discharge Permit DP-200 (DP-200) issued to Homestake Mining Company of California (HMC) pursuant to the New Mexico Water Quality Act (WQA), NMSA 1978 §§ 74-6-1 through 74-6-17 (2009), and the New Mexico Water Quality Control Commission (WQCC) Regulations, 20.6.2 NMAC. This permit authorizes discharges associated with ongoing closure activities and with abatement of contaminated ground water impacted by former HMC uranium mill operations. The Site, as regulated under DP-200, comprises all surface facilities utilized in ongoing ground water abatement activities, as well as all ground water that has been impacted by mill operations.

Ground water contamination from HMC's prior uranium milling operations was first discovered in 1974. Portions of the Site were added to the National Priorities List under the Comprehensive Environmental Response, Compensation, and Liability Act (*i.e.*, 42 CFR 103) in 1983. Under a Memorandum of Understanding effective December 14, 1993 between the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA) [59 FR 3740], the NRC has primary federal regulatory authority over ongoing surface reclamation and ground water remediation through administration of HMC's corrective action program (last revised in March 2012) through NRC Source Materials License SUA-1471 (last amended July 19, 2013 [amendment 47]), while the EPA has review and oversight authority over these activities. NMED regulates Site activities relating to ground water abatement and closure activities under this Discharge Permit pursuant to the WQA.

NMED's purposes in renewing and modifying this Discharge Permit, and in imposing the requirements and conditions specified herein, are to abate ground water contamination that has resulted from HMC mill operations, and to control the discharge of water contaminants from the Site into ground and surface water, so as to protect ground and surface water for present and potential future use as domestic and agricultural water supply, and to protect public health and property. In issuing this Discharge Permit, NMED has determined that the requirements of 20.6.2.3109.C NMAC have been met. Pursuant to Section 20.6.2.3104 NMAC, it is the responsibility of the Permittee to comply with the terms and conditions of this Discharge Permit; failure may result in an enforcement action(s) by NMED (20.6.2.1220 NMAC).

DEFINITIONS

The following terms are utilized in this renewal/modification of DP-200:

- Alluvial aquifer hydraulic control area: An area of contaminated Alluvial aquifer in which HMC maintains a reversal of the ground water gradient through injection and infiltration in order to hydraulically control and drive contaminated Alluvial aquifer ground water toward collection wells that are located generally around the eastern, southern, and western toe of the tailings impoundments.

- Applicable Site ground water standards: Background concentrations of certain contaminants of concern, as shown in **Table 1**, are applicable Site ground water standards for ongoing ground water abatement activities. The applicable Site ground water standards for all other contaminants are the respective numerical values listed in 20.6.2.3103 NMAC.
- Approved Plots: This DP-200 renewal/modification authorizes HMC to land-apply ground water for a period not to exceed two years from the Effective Date of this Discharge Permit renewal/modification under conditions specified herein to two plots where land application has occurred previously: a 100-acre area in Section 28 via center-pivot, and a 120-acre area in Section 34 via flood irrigation (Township 12 North, Range 10 West). Two additional plots in which land-application of contaminated ground water has occurred previously (*i.e.*, 150-acre center pivot and 174-acre flood irrigation plots in Section 33, Township 12 North, Range 10 West) are expressly excluded from this definition.
- Contaminated ground water: Ground water that is subject to abatement due to impacts from contamination derived from seepage and/or mill operational discharges, such that one or more contaminant concentrations exceed applicable Site ground water standards for the aquifer in which the ground water occurs.
- Contaminated fluids: Any liquid in which one or more contaminant concentrations exceed any applicable Site ground water standards. As used in this document, this term includes process waste effluents that are produced from operation of ground water treatment systems (*e.g.*, brine from Reverse Osmosis [RO] treatment system operations) as well as contaminated ground water.
- Freshwater: Water that is utilized as injectate in Site ground water abatement activities, the quality of which meets applicable Site ground water standards with respect to the receiving aquifer. Freshwater utilized at the Site can be derived from a variety of sources, including but not limited to:
 - ground water that is extracted from areas of aquifers underlying the Site that either are not impacted by seepage and/or former mill operational discharges, or the quality of which meets applicable Site ground water standards;
 - contaminated ground water that has been withdrawn and treated *ex-situ* to meet all applicable Site ground water standards (*e.g.*, product water derived from RO, zeolite bed, and electrocoagulation [EC] treatment system).
- Impacted aquifers: Volumes of aquifers that have been contaminated by seepage from the HMC mill tailings impoundments and/or mill operations.
- Low-concentration injectate: Alluvial aquifer ground water, which has been impacted by seepage and/or discharge from mill operations such that the concentrations of molybdenum, selenium, and/or uranium exceed the respective applicable Alluvial aquifer Site ground water standards in **Table 1** but are less than or equal to the respective concentrations in **Table 3**. Low-concentration

injectate, which is injected into the Alluvial aquifer within the Alluvial aquifer hydraulic control area, is effective in the initial phase of contaminated ground water abatement to sweep contaminated Alluvial aquifer ground water toward collection wells while reducing the use of freshwater from the San Andres aquifer.

- **Site:** The area comprising any surface impacts from HMC former mill operations and any ground water where the quality has been impacted by seepage and/or other discharges from mill operations such that applicable ground water standards are exceeded.

DESCRIPTION OF SITE FACILITIES

The Site is located approximately five miles north of the City of Milan in Cibola County, New Mexico. The Site is situated at 35.15 degrees North latitude and 107.52 degrees West longitude, in Sections 25, 26, 27, 28, 33, 34, 35, Township 12 North, Range 10 West; and Sections 2 and 3, Township 11 North, Range 10 West. Tailings from two uranium recovery mills were discharged to two unlined tailings impoundments from 1958 to 1990. Milling operations ceased in 1990, whereupon the milling facilities were decommissioned and demolished as part of the millsite reclamation work required under the NRC Source Materials License SUA-1471. HMC constructed the synthetically-lined East Collection Pond (ECP) and West Collection Pond (WCP) in 1986, Evaporation Pond 1 (EP-1) in 1990, Evaporation Pond 2 (EP-2) in 1996, and Evaporation Pond 3 (EP-3) in 2010. Additional facilities currently at the millsite include two tailings impoundments, a tailings flushing and dewatering system, ground water collection and injection systems, a reverse osmosis (RO) water treatment plant, two pilot zeolite bed treatment systems, two pilot tripolyphosphate injection (TPP) treatment systems, four land application areas, and associated equipment and structures.

DESCRIPTION OF THE DISCHARGE

Ongoing leachate seepage from the two tailings impoundments and discharges from mill operations has resulted in contamination of ground water within the Alluvial aquifer, as well as within three underlying ground water aquifers within the Chinle Formation (e.g., Upper, Middle, and Lower Chinle aquifers) that are hydrologically-connected to the Alluvial aquifer through stratigraphic subcrops. Impacted ground water exceeds ground water quality standards under Section 20.6.2.3103.A NMAC for nitrate, selenium, uranium, and combined radium-226 plus radium-228; standards under Section 20.6.2.3103.B NMAC for chloride, sulfate and total dissolved solids (TDS); and standards under Section 20.6.2.3103.C NMAC for molybdenum, as well as existing background concentrations as shown in **Table 1**.

Activities and operational facilities associated with ongoing ground water abatement activities that produce discharges, which may move directly or indirectly into ground water, include operation of contaminated ground water collection systems, an RO water treatment plant, five existing collection and evaporation ponds, and alternate water treatment technology facilities to treat contaminated ground water; flushing of the Large

Tailings Pile (LTP) to reduce source contaminant concentrations; injection to impacted areas of the Alluvial and three Chinle aquifers to drive contaminated ground water toward collection wells; and land application of ground water to Approved Plots. Each of these components is discussed in more detail below:

- Contaminated ground water collection systems: The collection of contaminated ground water for treatment or disposal is currently the primary Site activity. The majority of collected contaminated ground water is transported by pipeline for treatment by RO, discharge to evaporation ponds, or seasonal discharge to the land surface of the Approved Plots. In addition, some contaminated ground water from the Alluvial aquifer, which meets concentration limits specified herein, is injected within the Alluvial aquifer hydraulic control area to assist with initial abatement of areas in which current ground water concentrations of uranium, molybdenum, and/or selenium are much higher.
- RO water treatment plant operation: The Site's RO water treatment plant consists of lime/caustic treatment, sand filtration, two 300-gallons per minute (gpm) low-pressure RO units, and one 75-gpm high-pressure RO unit. Currently HMC is testing a micro-filtration unit to address persistent performance problems with the sand filter unit. After pre-treatment, contaminated ground water recovered from collection wells is conveyed to one of the low-pressure units. RO product water from the No. 1 low-pressure unit is routed to the high-pressure RO unit for further treatment; the second low-pressure RO unit is a single-stage system. RO product water, which meets all Site ground water standards (*i.e.*, Freshwater), is discharged into injection wells and trenches to drive contaminated ground water toward collection wells. Blowdown sludge from the pretreatment system is discharged to the West Collection Pond (WCP), while miscellaneous flows and blowdown from the RO plant also are pumped to this pond for subsequent recycle through the RO plant. RO process brine is discharged to the evaporation ponds. The design capacity of the existing RO plant is 600 gpm. The waste discharge rate from the existing RO plant when operated at design capacity is 160 to 170 gpm, which comprises the sum of brine and blowdown discharge.
- Collection and evaporation ponds: HMC currently utilizes two synthetically-lined collection ponds and three synthetically-lined evaporation ponds for evaporative disposal of contaminated fluids. Additional details for these ponds are shown in **Table 2**. Evaporation within the evaporation ponds is enhanced by high-pressure spray systems. The existing evaporation system has a capacity of approximately 220 gpm of average annual evaporation. The maximum discharges to the existing evaporation ponds from all waste water sources are restricted by the requirement herein to maintain at least two feet of freeboard at all times.
- Alternate water treatment technology pilot facilities: NMED previously granted HMC temporary permission to construct and operate two pilot facilities within the Alluvial aquifer hydraulic control area to evaluate the feasibility of implementing *in-situ* uranium immobilization by TPP injection. Currently HMC operates a 50 gpm pilot zeolite bed treatment system and a 300 gpm pilot zeolite bed treatment system on the LTP, and a 100 gpm pilot EC treatment system adjacent to the RO

plant to evaluate the feasibility of these technologies primarily to remove uranium as well as other constituents from contaminated ground water. HMC has proposed to increase use of the zeolite bed and EC treatment systems.

- **LTP flushing:** HMC injects ground water into the LTP to flush residual contaminants in the tailings towards collection wells and toe drains. Some of this injected water is sourced from Alluvial aquifer wells that are located upgradient of the Site, which reduces the amount of upgradient Alluvial ground water entering the Site. Additionally, treated water effluent from the pilot zeolite bed and electrocoagulation treatment systems also is injected into the LTP.
- **Injection into impacted aquifers:** A series of well lines and infiltration trenches that are oriented generally along the western, southern, and eastern perimeters of the tailings piles inject Freshwater into the Alluvial aquifer to form the Alluvial aquifer hydraulic control area through localized reversal of the natural hydraulic gradient. The injection activity drives contaminated Alluvial aquifer ground water toward collection wells, which are located closer to the tailings impoundments, for withdrawal and subsequent treatment and/or disposal. Additionally, some Alluvial aquifer ground water from “L-line” wells and other nearby wells in this vicinity south of the Small Tailings Pile is injected into areas of much higher contaminant concentrations within the Alluvial aquifer hydraulic control area (*i.e.*, “low-concentration injectate”); the contaminant concentrations in this reinjected water does not meet applicable water quality standards but cannot exceed the concentrations shown in **Table 3** under this Discharge Permit.

HMC also currently injects Freshwater into localized Site-impacted areas of the Alluvial, Upper and Middle Chinle aquifers to drive contaminated ground water toward collection wells.

- **Land application of ground water:** With this renewal/modification of DP-200, HMC is authorized to land-apply ground water for two years from the Effective Date of this Discharge Permit renewal/modification to the Approved Plots. Land application of ground water after this timeperiod is prohibited and shall be replaced by ground water treatment methods.

GROUND WATER CHARACTERISTICS

The Site is located within the San Mateo alluvial system (“Alluvial aquifer”), which extends from the Mt. Taylor and Ambrosia Lake mining areas northeast of the Site and joins the Rio San Jose alluvial system to the south and west of the HMC property and the Rio Lobo alluvial system to the south and east of the HMC property. The depth of Alluvial aquifer ground water below the tailings impoundments ranges from approximately 25 to 50 feet below ground surface. Ground water in the Alluvial aquifer naturally flows from the north-northeast, merging with the Rio San Jose alluvial system south of the Site. The Chinle Formation in the vicinity of the Site includes three aquifers, which are separated by shale units. Contaminants in the Alluvial aquifer have entered into the Chinle aquifers through various subcrop areas. The San Andres aquifer, which is comprised of the hydrologically-continuous San Andres and underlying Glorieta formations, is present at depth beneath the Site and is an important regional

water supply. Available ground water quality data indicate that this aquifer has not been impacted by contaminants from tailings seepage or mill operations. HMC utilizes water from the San Andres aquifer to supplement injection into the overlying contaminated aquifers to hydraulically-control contaminated ground water.

REGULATORY SUMMARY

DP-200 was first issued on May 10, 1984, and subsequently renewed with modifications on July 27, 1989, and November 15, 1995. NMED approved an amendment to DP-200 on February 4, 1999 to incorporate testing of *in-situ* biological ground water remediation of uranium. HMC submitted a timely renewal/modification application dated July 14, 2000, an updated application for renewal/modification dated February 8, 2010, and additional information submitted as part of the renewal/modification process.

DP-725, which addresses operational discharges to the five existing collection and evaporation ponds, was last renewed on April 12, 2010, and subsequently amended on October 27, 2010. HMC submitted a discharge permit application, which NMED designated as Discharge Permit DP-1751, for continued seasonal land application of ground water and the potential implementation of alternate contaminated water treatment technologies to be employed during the non-irrigation season. This discharge permit application was not acted upon; the activities that were outlined in this application are to be regulated under the renewal/modification of this discharge permit.

PERMIT MODIFICATIONS

DP-200 addresses the operational conditions under which HMC shall conduct activities to abate ground water contamination at the Site until ground water quality standards are achieved in accordance with 20.6.2.4000 NMAC. This renewal of DP-200 includes the following modifications:

- Authorization to increase the total treatment capacity to 5,500 gpm, including increased RO capacity, and to implement full-scale alternate ground water treatment technologies, including zeolite bed and EC, subject to prior NMED approval of pilot testing results and implementation plans;
- Incorporation of the requirements of Discharge Permit DP-725, which is subsumed within DP-200;
- Authorization for continuation of LTP flushing to reduce the ground water contaminant source term;
- Authorization to land-apply ground water for a limited timeperiod, which NMED formerly authorized by Temporary Permission to discharge under 20.6.2.3106.B NMAC;
- Requirements to implement ground water treatment methods to fully replace land application of ground water within two years of the Effective Date of this permit renewal/modification;

- Authorization to continue ongoing pilot testing of alternate ground water treatment technologies, including *ex-situ* zeolite bed and EC, and *in-situ* TPP uranium fixation;
- Authorization to increase evaporative capacity.

II. Findings

In issuing this Discharge Permit renewal and modification, NMED finds:

1. Effluent or leachate from former Site operations has moved directly or indirectly into ground water within the meaning of 20.6.2.3104 NMAC, resulting in exceedance of ground water standards promulgated in 20.6.2.3103 NMAC within the Site covered under this Discharge Permit;
2. Ground water that has been impacted by the movement of such effluent or leachate from the former Site operations has an existing concentration of total dissolved solids that is equal or less than 10,000 milligrams per liter within the meaning of 20.6.2.3101.A NMAC;
3. Discharge from the former Site operations is not subject to any of the exemptions of 20.6.2.3105 NMAC;
4. HMC is required to abate ground water contamination pursuant to 20.6.2.3107.A.(11) NMAC and 20.6.2.3109.E.(1) NMAC because the discharges of effluent or leachate from the former Site operations have contaminated ground water of the State of New Mexico, which has an existing concentration of 10,000 mg/l or less of TDS, and which is at a place of withdrawal for present or reasonably foreseeable future use above the standards and requirements in 20.6.2.3103 NMAC.

III. Discharge Authorizations

HMC shall discharge from its operations as follows:

1. HMC is authorized to treat contaminated ground water and discharge Freshwater from RO, zeolite bed, and/or EC treatment systems at a total maximum combined rate of 5,500 gpm.
2. HMC is authorized to inject Freshwater and effluent from pilot zeolite bed and EC treatment systems into the LTP at a maximum rate of 450 gpm in order to reduce contaminant concentrations within the LTP.
3. HMC is authorized to inject TPP and calcium solutions at each of two existing *in-situ* pilot treatment facilities that are located within the Alluvial aquifer hydraulic control area until a maximum concentration of 1,000 mg/l TPP is achieved at the dose response wells.
4. HMC is authorized to discharge contaminated fluids to the five existing collection and evaporation ponds, limited by the requirement to maintain at least two feet of freeboard in all ponds at all times.
5. HMC is authorized to discharge to future additional evaporation ponds, limited by the requirement to maintain freeboard of at least two feet at all times, upon NMED approval of design and siting documents, and construction in accordance with the approved documents.

6. HMC is authorized to inject low-concentration injectate only into the contaminant-impacted Alluvial aquifer within the Alluvial aquifer hydraulic control area.
7. HMC is authorized to land-apply an annual maximum total of 129 million gallons of ground water with the maximum concentration of contaminants as specified in **Condition 20**, to Approved Plots for a maximum of two years following the Effective Date of this renewal/modification.

IV. Specific Permit Conditions

HMC shall comply with the following conditions, which are enforceable by NMED:

ABATEMENT

1. As provided in this discharge permit renewal/modification, HMC shall continue to abate ground water contamination at the Site through operation of all existing and future permitted abatement systems to control and collect contaminated ground water from areas of the Alluvial and Chinle aquifers that have been impacted by seepage from on-Site tailings piles and from historical discharges from mill operations. HMC shall continue operation of these systems until HMC achieves compliance with applicable Site ground water standards. [20.6.2.3103; 20.6.2.3107.C; 20.6.2.3109.E NMAC]
2. Following the completion of activities associated with ground water abatement, HMC shall demonstrate compliance with applicable Site ground water standards through submittal to NMED of post-closure ground water monitoring results documentation from a period of at least eight consecutive quarters (*i.e.*, two years) [see **Condition 66**]. [20.6.2.4103.D NMAC]

OPERATIONS

General Sitewide Operations

3. HMC shall manage discharges under this Discharge Permit renewal/modification, including but not limited to the following: [20.6.2.3109 NMAC]
 - a. Contaminated ground water influent to collection and evaporation ponds;
 - b. Contaminated ground water influent to treatment systems;
 - c. Contaminated fluids from treatment systems to collection and evaporation ponds;
 - d. Low-concentration injectate to the contaminated Alluvial aquifer only within the Alluvial aquifer hydraulic control area;
 - e. Ground water discharged to the Approved Plots permitted herein only for two years following the Effective Date of this Discharge Permit;
 - f. Injectates to contaminated ground water associated with *in-situ* pilot treatment systems within the Alluvial aquifer hydraulic control area.
4. Upon discontinuing the use of any conveyance pipeline that has transported contaminated fluids, all fluids within the pipeline shall be released to an authorized discharge location or otherwise properly contained, transferred, or disposed of in a manner that does not result in discharges to non-authorized areas. After emptying,

the conveyance pipeline shall be rinsed, or sectioned and thoroughly drained, to ensure that residual contaminants are removed. [20.6.2.3109 NMAC]

Alternate Ground Water Treatment Technologies

5. Subject to NMED approval of pilot study reports, HMC shall submit for NMED approval prior to implementation, designs and other documentation specified herein for any proposed full-scale alternate ground water treatment system units. Alternate ground water treatment technologies include, but are not limited to, *ex-situ* zeolite bed and EC, and *in-situ* TPP treatment. Documents that HMC shall submit for NMED review must include, but are not limited to, the following specific information: [20.6.2.3107.A.(2), 20.6.2.3107.A.(8), 20.6.2.3107.A.(9), and 20.6.2.3107.A.(10) NMAC]
 - a. For all proposed alternate treatment technology unit implementations:
 - i. siting, design and operational plans;
 - ii. system monitoring and other evaluative criteria to assess remedial technology efficacy and limitations;
 - iii. contingency planning for potential upset conditions;
 - iv. waste stream quantity and disposition, as appropriate;
 - v. associated ground water quality monitoring frequency and sample analytical suites, as appropriate;
 - vi. expected rate of treated water discharge, as appropriate.
 - b. For proposed implementations of *in-situ* ground water treatment technology units (e.g., uranium precipitation by TPP injection):
 - i. demonstration of long-term efficacy and stability during post-closure;
 - ii. associated ground water quality monitoring frequency and sample analytical suites.
6. Following NMED approval of documentation specified in **Condition 5**, HMC shall notify NMED of its intention to operate individual treatment system units at least 14 days in advance of implementation. Notifications shall include, but not be limited to: [20.6.2.3107.A.(2), 20.6.2.3107.A.(8) and 20.6.2.3107.A.(9) NMAC]
 - a. Contaminated ground water influent supply wells and associated ground water quality;
 - b. Associated ground water quality monitoring locations;
 - c. Location and mode of disposition for treated water discharge, as appropriate;
 - d. Location and mode of waste stream treatment or disposal, as appropriate;
 - e. For *in-situ* ground water treatment technologies: locations of injection.
7. Pilot testing of any *in-situ* alternate treatment technology shall be permitted only within the Alluvial aquifer hydraulic control area. [20.6.2.3109 NMAC]

Reverse Osmosis

8. HMC shall collect contaminated fluids from the RO and other treatment systems (e.g., blow down sludge, brine wastewater, and miscellaneous overflow) for disposal to the collection and/or evaporation ponds. [20.6.2.3109 NMAC]

Injection of Freshwater into Contaminated Aquifers

9. Sitewide injection of Freshwater into contaminated aquifers is authorized under this Discharge Permit without quantity limit. However, injection of Freshwater with the sole purpose or effect of diluting ground water contaminant concentrations is expressly prohibited. Injection is authorized under this permit to hydraulically control the movement of contaminated ground water in order to preclude further spread of contamination, either within the same aquifer into which injection is occurring or into other aquifers that are hydraulically-connected to the injected aquifer. [20.6.2.3109.D and 20.6.2.5004.A.(4).(b) NMAC]

Large Tailings Pile Seepage and Flushing

10. HMC is permitted to inject Freshwater and effluent from pilot alternate treatment systems into the LTP at a maximum rate of 400 gpm to flush contaminants from the LTP towards toe drains and collection wells, thereby reducing ground water contaminant source concentrations. [20.6.2.3109.D and 20.6.2.5004.A.(4).(b) NMAC]
11. HMC shall collect contaminated fluids that drain from the LTP, including but not limited to tailings seepage and ground water contaminated by flushing operations, through the associated sump and toe drain collection system and extraction wells, and from collection wells that are completed within impacted aquifers. The collected contaminated ground water either shall be treated by treatment systems or shall be discharged to collection and/or evaporation ponds. [20.6.2.3109 NMAC]

Collection and Evaporation Ponds Operation and Maintenance

12. HMC shall maintain a minimum of two feet of freeboard in all collection and evaporation ponds at all times. If at any time HMC projects that continued operation and/or expansion of its ground water abatement systems require additional evaporative pond capacity, HMC shall submit a corrective action plan for NMED approval to modify the management of discharge volumes, including the construction of evaporation ponds (see **Condition 14**). [20.6.2.3107 NMAC; 20.6.2.3109 NMAC]
13. In the event that solids buildup in ponds is limiting ground water treatment capacity, HMC shall notify NMED at least 14 days in advance of actions to remove and dispose of these solids. [20.6.2.3106.C.(7) NMAC]
14. If HMC determines that additional evaporative capacity is needed to manage contaminated fluids from its ground water remedial systems, HMC shall submit detailed plans and specifications for design, siting, construction, operation, and monitoring of additional evaporation ponds to NMED for prior approval. Plans and specifications shall bear the signature and seal of a licensed New Mexico professional engineer, and include, but not be limited to, adequate detail for the following: [20.6.2.3106.C NMAC]
 - a. Subgrade Alluvial aquifer and surface water hydrogeology and hydrochemistry at the proposed location(s);
 - b. Proposed maximum and operational capacities in gallons;

- c. Double synthetic liners, specifying liner material thickness and composition;
 - d. Leak detection/collection system details, including operational protocols, interliner instrumentation, and designation of existing monitoring wells or proposed installation of new monitoring wells to monitor for leakage.
15. HMC shall maintain signs at the facility entrance and areas around all collection and evaporation ponds where public contact is possible, indicating that the water in these ponds is not potable. All signs shall remain visible and legible for the duration of the abatement and closure process. [20.6.2.3109 NMAC]
16. HMC routinely shall inspect and maintain all structures, conveyance pipelines, and equipment related to the collection and evaporation ponds, whose failure may impact ground water. Such inspection and maintenance shall include, but is not limited to, pond berms and liners, leak detection systems, conveyance pipelines, and pumps. [20.6.2.3109 NMAC]
17. HMC shall operate any forced spray evaporation systems such that the spray remains within the confines of the pond area to the extent practicable and in compliance with the approved operational plan. [20.6.2.3104 NMAC]

Low-concentration injectate

18. The quality of low-concentration injectate shall not exceed concentrations of uranium, molybdenum, and selenium listed in **Table 3**, or of any other contaminant concentration as listed in 20.6.2.3103 NMAC. [20.6.2.4101 NMAC]
19. The injection of low-concentration injectate with the sole purpose of diluting contaminant concentrations is expressly prohibited; injection is authorized under this permit only to facilitate the collection of contaminated ground water by collection wells within the Alluvial aquifer hydraulic control area. [20.6.2.3109.D and 20.6.2.5004.A.(4).(b) NMAC]

Land application of ground water

20. At least 15 days prior to any annual land application discharge, HMC shall identify to NMED any Freshwater source well(s) that will be utilized for blending during that year, with a tabulation of water quality sample results from such well(s) for up to five years immediately preceding the proposed discharge. [20.6.2.3109.D and 20.6.2.4101 NMAC]
21. The contaminant concentrations of water that is land-applied under this Discharge Permit shall not exceed the values specified in **Table 4** for constituents identified therein, and in 20.2.6.2.3103 NMAC for all other constituents. HMC may blend contaminated ground water with Freshwater prior to land application in order to achieve the water quality constituent concentrations stipulated herein. Blending with ground water sourced from HMC well "951" is expressly prohibited. [20.6.2.3106 NMAC]
22. HMC shall restrict the application rate of land-applied ground water so as to preclude any discharge outside of the Approved Plots. [20.6.2.3106 NMAC]

23. HMC is permitted to continue land application of ground water for a maximum of two years from the Effective Date of this DP-200 renewal/modification. HMC shall design and construct additional contaminated ground water treatment capacity and/or additional collection and evaporation pond capacity for implementation by the end of the two-year timeperiod to fully replace the annual discharge via land application of 129 million gallons of ground water that is authorized by **Discharge Authorization 6** herein, subject to this Discharge Permit and NMED's prior approval of proposed design, siting, operational, and monitoring documents, and facility construction not addressed in this Discharge Permit. [20.6.2.4101 NMAC]

ADDITIONAL STUDIES

24. Within 90 days of the Effective Date of this Discharge Permit renewal/modification, HMC shall submit to NMED for approval a workplan and implementation schedule to evaluate the integrity of all of its wells that are completed within the San Andres aquifer. The objective of this study shall be to determine if cross-contamination from overlying aquifers to the San Andres aquifer is occurring through any existing wells. Following NMED approval, HMC shall implement this workplan, and submit a summary report at the conclusion of activities under this workplan. If wells causing cross-contamination are identified through implementation of this study, HMC shall include in the report a proposal for corrective action and associated implementation schedule to address such faulty completions. [20.6.2.3107.A.(2) NMAC]
25. Within 120 days of the Effective Date of this Discharge Permit renewal/modification, HMC shall submit to NMED a proposed final location for a repository for contaminated sediments accumulated from ground water treatment, and a demonstration that disposal at that location will be protective of ground water quality following closure. [20.6.2.3107.A.(2) NMAC]
26. Within 180 days of the Effective Date of this Discharge Permit renewal/modification, HMC shall submit to NMED a report evaluating the expansion of the ground water abatement system components. The report shall include, but not be limited to, the following information: [20.6.2.4109.F NMAC]
- a. A discussion of Site-specific geohydrologic properties for each impacted aquifer relating to injection and extraction rates, and well spacing;
 - b. A discussion of the correlation of activities to increase injection and extraction rates for each impacted aquifer, and to implement additional contaminated ground water treatment systems design capacity;
 - c. A summary of activities planned during the remainder of the calendar year to increase injection/extraction rates and ground water treatment capacity, including a discussion of associated NRC permitting requirements.

MONITORING AND INSPECTIONS

Discharge Quantity Monitoring

27. HMC shall record the following monthly remedial process flows in gallons with totalizing flow meters that shall be calibrated to within 10% of actual flow and kept operational at all times: [20.6.2.3107.A and 20.6.2.3109.C.(3).(c) NMAC]
- a. Collection and evaporation pond influents, for each individual pond;
 - b. Treatment system contaminated ground water influents, for each separate treatment system implementation;
 - c. Treatment system contaminated fluid effluents, including both pre-treatment and process reject, for each separate treatment system implementation;
 - d. Treatment system treated water effluents for each separate treatment system implementation;
 - e. *In-situ* treatment system injectate, for each separate treatment system implementation;
 - f. Total LTP flushing injectate;
 - g. Total LTP flushing and dewatering effluent recovered in toe drains and sumps;
 - h. Freshwater injection, totaled by aquifer for each area of ground water abatement activities;
 - i. Contaminated ground water collection, totaled by aquifer for each area of ground water abatement activities;
 - j. Total injected low-concentration injectate;
 - k. Land-applied ground water totaled for each Approved Plot, as applicable.

Ground Water Abatement Quality Monitoring and Progress Reporting

28. Unless otherwise approved in writing by NMED, HMC shall conduct all sampling and analyses in accordance with the most recent edition of the following documents: [20.6.2.3107.B NMAC]
- a. American Public Health Association, Standard Methods for the Examination of Water and Wastewater.
 - b. U.S. Environmental Protection Agency, Methods for Chemical Analysis of Water and Waste.
 - c. U.S. Geological Survey, Techniques for Water Resource Investigations of the U.S. Geological Survey.
 - d. American Society for Testing and Materials, Annual Book of ASTM Standards, Part 31, Water.
 - e. Latest methods published for monitoring pursuant to Resource Conservation and Recovery Act regulations, Federal Register.
 - f. U.S. Geological Survey, et al., National Handbook of Recommended Methods for Water Data Acquisition.
29. HMC shall notify NMED in writing at least 14 days in advance of any change in the location of injection wells and/or infiltration lines that define the boundary of the Alluvial aquifer hydraulic control area. [20.6.2.3107.A.(6) NMAC]

30. HMC shall provide NMED with at least 30 days written notification of the anticipated plugging and abandonment of any monitoring wells required under DP-200. In the event of unintentional well destruction or damage requiring well abandonment, HMC shall notify NMED as soon as possible. The notification shall include a description of monitoring well abandonment procedures and proposal of a replacement well location for NMED approval. Monitoring well construction and abandonment shall be performed in accordance with NMED, March 2011, "Monitoring well construction and abandonment guidelines (rev. 1.1)" and the regulations in 19.27.7 NMAC that have been issued by the New Mexico Office of the State Engineer, unless an alternative method is approved. A report documenting well abandonment details, including volumes of materials used, composition of plugging material, and methods shall be submitted to NMED within 30 days of well abandonment completion. [20.6.2.3107 NMAC]
31. Following completion of ground water abatement activities in remediated areas of the impacted aquifers, HMC shall implement post-closure monitoring of ground water quality in accordance with its approved post-closure monitoring plan (see **Condition 66**) until data from at least eight consecutive quarters indicate that applicable Site ground water standards have been achieved (see **Condition 2**) [20.6.2.4103.D NMAC]. After two years of monitoring, HMC may request to amend the monitoring frequency, location, and analytical parameters or other measurements. [20.6.2.3107.A.(11) NMAC]

Treatment System Monitoring

32. HMC shall sample treated water from the existing and future RO systems on a quarterly schedule for the constituents listed in **Table 1** until the termination of the respective system operation. [20.6.2.3107.A.(1) NMAC]
33. Following HMC's implementation of any full-scale alternate ground water treatment unit system, including but not limited to the zeolite bed and EC ground water treatment systems, HMC shall monitor the quality of treated effluent from these systems for constituents listed in **Table 1** on a weekly basis for a period of at least three months when the treated effluent is to be used as injectate to areas of Site-impacted aquifers outside of the Alluvial aquifer hydraulic control area. After HMC has collected and submitted to NMED three months of treated effluent quality data from any full-scale ground water treatment system, HMC may request NMED to reduce the frequency of treated effluent quality monitoring to no less than a quarterly basis. [20.6.2.3107.A.(1) NMAC]

Collection and Evaporation Pond Monitoring

34. HMC shall record the freeboard level of each collection and evaporation pond every week, and maintain these records on-Site. [20.6.2.3107 NMAC]
35. HMC shall collect and analyze quarterly samples of pond water from ECP, WCP, EP-1, EP-2, and EP-3, as well as any future collection or evaporation ponds as specified in **Table 5**. [20.6.2.3107 NMAC]

36. HMC shall analyze quarterly samples from the following monitoring wells as shown in **Table 5**: [20.6.2.3107 NMAC]
- a. Monitoring well X as the monitoring point for ECP, WCP, EP-1, and EP-2;
 - b. Monitoring wells DD and DD-2 as the monitoring points for EP-3.
37. HMC shall inspect all pond leak collection systems in each cell of EP-2 and EP-3 every week to ensure that the component pumps are conveying all liquids that are collected in the leak collection sumps directly back into the respective pond. The pump-back system shall minimize the amount of liquid in the interstitial space to the maximum extent possible. If inspections of any leak collection system indicate a leakage rate that exceeds the pump capacity of the pump-back system, HMC shall notify NMED, and identify and repair the leak(s) within 30 days. [20.6.7.3107.A.(10) NMAC]
38. HMC shall visually inspect all collection and evaporation ponds and surrounding berms on a weekly basis to ensure proper maintenance. Any conditions that could damage a pond liner or affect the structural integrity of a pond shall be corrected as soon as possible. [20.6.2.3107.A.(10) NMAC]

Monitoring for Land Application of Ground Water

39. HMC shall record individually the monthly total volumes of Freshwater and contaminated ground water that are applied to each individual Approved Plot during annual land application discharge activities. [20.6.2.3107.A.(6) and 20.6.2.3109.C.(3).(c).(i) NMAC]
40. During land application operations as stipulated under **Conditions 20** through **23** herein, HMC shall collect weekly water quality samples of the discharged water, which shall be analyzed for all contaminant concentrations listed in **Table 4**. [20.6.2.3109.C.(3).(c).(i) NMAC]
41. At the midpoint of annual land application activities, HMC shall collect and analyze a sample of the discharged water for total radium-226 and radium-228 concentration. [20.6.2.3109.C.(3).(c).(i) NMAC]
42. HMC shall maintain heat dissipation sensors and co-installed time domain reflectometry sensors at approximately five-foot intervals to depths of 15 feet below the ground surface in the Section 34 Approved Plot, and at approximately two-foot intervals to depths between four and eight feet below the ground surface in the Section 28 Approved Plot. HMC shall monitor this instrumentation monthly during active land application discharge, and on a quarterly schedule during all other times. [20.6.2.3107.A.(8) NMAC]
43. HMC shall maintain suction lysimeters in each of the Approved Plots. If technically feasible, HMC shall collect pore water samples from the lysimeters for analyses of contaminant concentrations listed in **Table 4** both prior to the inception, and again at the conclusion, of annual land application discharge. HMC shall monitor this instrumentation monthly during active land application discharge, and on a quarterly schedule during all other times. [20.6.2.3107.A.(8) NMAC]

44. HMC shall collect and analyze ground water samples from the monitoring wells designated in **Table 5** in accordance with the indicated schedule. [20.6.2.3107.A.(8) NMAC]
45. HMC shall collect soil samples at one-foot intervals to five feet below land surface, and two-foot composited samples to the depth of the water table in the Section 34 Approved Plot, and to the depth of underlying basalt in the Section 28 Approved Plot at the conclusion of annual land application discharge for analysis of contaminants in **Table 4**; analysis of conductivity shall be substituted for TDS in these analyses. [20.6.2.3107.A.(8) NMAC]
46. HMC shall maintain and continue monitoring and data collection from installed instrumentation associated with all areas in which land application has been conducted until NMED has approved HMC's demonstration that no long-term impacts to human health and the environment will result from this activity. [20.6.2.3107.A.(8) NMAC]

Facilities Monitoring and Inspections

47. HMC shall record water levels for each Reversal Well pair every week. [20.6.2.3107.A.(8) NMAC]
48. HMC shall monitor Site-specific meteorological conditions. At a minimum, meteorological data recorded shall include precipitation amounts and dates of occurrence, air temperature, relative humidity, wind speed, wind direction, net solar radiation, and evaporation potential. HMC shall maintain records of these data on-Site. [20.6.2.3107.(6) NMAC]
49. HMC shall inspect and maintain all structures, facilities, contaminated fluid pipelines and equipment whose failure may impact ground- or surface water quality. Any significant maintenance activities that are performed under this Condition must be reported semiannually. Inspections and maintenance shall include but are not limited to: [20.6.2.3107.A.(9) NMAC]
 - a. Monthly inspections of all water treatment and remediation system facilities, and drainage diversion structures;
 - b. Daily inspections of pumps and pipelines conveying contaminated fluids while in service;
 - c. Quarterly inspections of the entire length of all storm- and surface water diversion channels;
 - d. Inspections for evidence of erosion or other damage following storm events of one inch or greater in any 24-hour period of drainage channels, diversion structures and channels, retention ponds, auxiliary erosion control features and tailings impoundment covers.
50. Inspection of drainage channels, diversion structures, retention ponds, tailings impoundment covers, and auxiliary erosion control features in accordance with professionally recognized standards (e.g., Natural Resource Conservation Service Standards). NMED may require HMC to take additional actions to repair or otherwise mitigate the erosion. Any significant maintenance activities that are

performed under this Condition must be reported semiannually (see **Conditions 16** and **58.a.iii**). [20.6.2.3107.A.(6) NMAC]

REPORTING AND NOTIFICATIONS

General

51. HMC shall submit to NMED one paper copy and one electronic copy of all reports that are required under its NRC Source Material License SUA-1471 on the same schedule as required under the referenced license. [20.6.2.3107.A.(6) NMAC]
52. HMC shall verbally report evidence of major rill, gully, sheet erosion, or other significant erosional damage on any reclaimed area or tailings impoundment within 24 hours of discovery to NMED. HMC shall provide a written report within 30 days of the discovery describing the nature and extent of erosion and the activities taken to repair such erosion. Additionally, any such maintenance activities also must be reported in the semiannual performance report (see **Condition 58.a.iii**). [20.6.2.3107.A.(6) NMAC]
53. HMC shall verbally-notify NMED of any exceedances of the land-application ground water quality standards detailed in **Condition 21** immediately upon receipt of sample results, with follow-up documentation in writing to explain the operational reason for the exceedance and corrective actions that HMC will undertake to prevent recurrence of such exceedance. [20.6.2.3107.A.7 NMAC]
54. Prior to transferring the Site to the U.S. Department of Energy (DOE) for long-term surveillance and monitoring, HMC shall submit a closure report to NMED that documents all closure activities performed. [20.6.2.4112 NMAC]

Quarterly Reports

55. HMC shall submit one electronic copy of a quarterly report to NMED that contains information specified in **Condition 56**. The submittal schedule for these reports shall be as follows: [20.6.2.3107.A.(6) NMAC]
 - a. April 30th, for information collected between January 1st and March 31st;
 - b. July 31st, for information collected between April 1st and June 30th;
 - c. October 30th, for information collected between July 1st and September 30th;
 - d. January 30th, for information collected between October 1st and December 31st.
56. The quarterly report shall comprise the following information by which NMED will update the Underground Injection Control (UIC) inventory: [20.6.2.3107.A.(6) NMAC]
 - a. For the first quarterly report only following the Effective Date of this DP-200 renewal/modification, a comprehensive inventory of all active, inactive, and potential injection wells including all UIC well inventory information required on the form comprising **Figure 1** in Microsoft Excel®-compatible format;
 - b. For all subsequent quarterly reports, status updates for only those existing wells for which the UIC status is anticipated to change within the following quarterly period, and all UIC well inventory information required on the form

comprising **Figure 1** in Microsoft Excel®-compatible format for new wells.

Semiannual Reports

57. HMC shall submit one electronic copy and one paper copy of a semiannual report to NMED that contains information specified in **Condition 58**. HMC shall submit the semiannual report no later than July 31st with the required information collected between January 1st and June 30th and no later than January 30th with the required information collected between July 1st and December 31st [20.6.2.3107.A.(6) NMAC].
58. The semiannual report shall include, but not be limited to, the following information from the semiannual timeperiod addressed: [20.6.2.3107.A.(6) NMAC]
- a. A narrative summary of all operational activities related to discharges during the preceding six months, such as:
 - i. Significant changes in discharge volume and daily flow rates from the preceding semiannual report;
 - ii. A summary of discharges from conveyance pipelines to non-authorized areas reportable under 20.6.2.1203 NMAC, and corrective actions taken (see **Condition 63**);
 - iii. A summary of any conditions requiring maintenance that are documented during inspections of pond leak detection systems, pond liners, and berms, and maintenance activities undertaken to address such conditions (see **Conditions 16** and **50**);
 - iv. Any significant observations, and planned or implemented maintenance activities pursuant to inspection activities that are conducted under **Conditions 49, 50** and **52**;
 - v. Well drilling and closure;
 - vi. Pipeline movements, removals, repairs or closure, including the date, approximate location and length of the affected pipeline.
 - b. Tabulation of all water level data collected from all Reversal Well pairs within the Alluvial aquifer hydraulic control area (see **Condition 47**).
 - c. Tabulations of the following fluid flow information, reported in gallons:
 - i. Weekly freeboard levels for each collection and evaporation pond (see **Condition 34**);
 - ii. Monthly influents to collection and evaporation ponds, totaled for each individual pond (see **Condition 27.a**);
 - iii. Monthly contaminated ground water influent volumes to treatment systems, totaled for each treatment system implementation (see **Condition 27.b**);
 - iv. Monthly contaminated fluids volumes that are discharged from treatment systems, reported for each treatment system implementation (see **Condition 27.c**);
 - v. Monthly treated water effluent volumes that are discharged from treatment systems, reported for each treatment system implementation (see **Condition 27.d**);

- vi. Monthly injectate volumes to each aquifer from *in-situ* treatment systems, reported separately for each *in-situ* treatment system implementation (see **Condition 27.e**);
 - vii. Monthly total LTP flushing injectate volume (see **Condition 27.f**);
 - viii. Monthly total LTP effluent volume that is recovered at toe drains and sumps (see **Condition 27.g**);
 - ix. Monthly Freshwater injection volumes, exclusive of LTP flushing injectate, totaled separately for each aquifer in each area of ground water abatement activities (see **Condition 27.h**);
 - x. Monthly contaminated ground water collection volumes, totaled separately for each aquifer within each area of ground water abatement activities (see **Condition 27.i**);
 - xi. Monthly total volume of low-concentration injectate that has been injected to the Alluvial aquifer hydraulic control area, (see **Condition 27.j**);
 - xii. Monthly land-applied ground water volume, reported in gallons (see **Condition 27.k**)
- d. Tabulations of the water quality data associated with collection and evaporation ponds monitoring (see **Conditions 35 and 36**);
 - e. Tabulation of Freshwater effluent quality analyses from treatment systems (see **Conditions 32 and 33**);
 - f. A summary of the treatment processes and rates that were utilized during the reporting period;

Annual Reports

59. HMC shall submit one electronic copy and two paper copies of an annual report by March 31st of each year for the preceding calendar year period; in lieu of submitting a separate annual report to NMED, HMC may satisfy this Condition through submittal of the annual Corrective Action Program performance review report required by HMC's NRC Source Material License SUA-1471, Condition 35E, if that report includes all of the information required in **Condition 60** herein. [20.6.2.3107.A.(5) and (6) NMAC]
60. The annual report shall include, but is not limited to, annual compilations of the following information: [20.6.2.3107.A.(6) NMAC]
- a. A narrative summary of ground- and surface water monitoring activities and analytical results;
 - b. Narrative summaries and interpretations of annual ground water quality and potentiometric surface changes for each impacted aquifer;
 - c. Separate maps for each aquifer monitored, depicting:
 - i. potentiometric surfaces compiling the most recent water level data from all wells that have been monitored throughout the year;
 - ii. isopleths for contaminants of concern concentrations representing the most recent analyte concentration for the year from all monitoring wells that have been sampled throughout the year, with analyte concentrations that exceed applicable water quality standards highlighted in **bold** text;

- d. Cross-sections that are constructed to scale and utilize actual monitoring well data highlighting geohydrologic features significant to ground water abatement activities;
- e. Plots of ground water contaminant concentrations over time for critical monitoring well data that best illustrate:
 - i. areal ground water contaminant concentration trends due to abatement activities;
 - ii. anomalous ground water contaminant concentration trends;
- f. Tabulations, provided in both paper and Excel®-compatible electronic formats, of all ground water quality analytical data and ground water level data from all monitoring wells that have been sampled during the calendar year period. The format of these tables shall be as follows:
 - i. Monitoring wells and associated data shall be grouped and tabulated separately by the aquifer of completion;
 - ii. Monitoring wells shall be listed in the first column;
 - iii. Water level and sample analytical values shall be listed in successive columns;
 - iv. Values exceeding an applicable standard shall be bolded;
 - v. The value for any constituent for which an analysis is not provided shall be shown as "NA;"
 - vi. Any monitoring well for which a water level is not provided shall be shown as "NM" with an associated reason for the data omission;
 - vii. Any monitoring well for which data are not provided shall be shown as "NS" with an associated reason for the data omission;
 - viii. Data presented in the Excel®-compatible electronic tabulations shall be cumulative over the entire timeperiod for which data are available;
- g. Calculations of the mass of recovered contaminants of concern for each aquifer for the reporting period;
- h. An accounting for contaminant of concern mass capture that is flushed from the LTP;
- i. Data pertaining to the structural stability of the LTP during flushing operations;
- j. Diagrammatic and tabular summaries of annual fluid movements and discharge volumes relating to ground water abatement activities;
- k. A tabular summary of monthly meteorological data, including but not limited to the following information:
 - i. Precipitation;
 - ii. Maximum, minimum and mean air temperature, wind speed, and relative humidity values;
 - iii. Net solar radiation and evaporation potential;
 - iv. An annual wind rose.
- l. A summary of land application operations for each Approved Plot, which includes, but is not limited, to the following information:

- i. The total volumes of Freshwater and contaminated ground water, in gallons, that was applied each month to each Approved Plot (see **Condition 39**);
- ii. Tabulated weekly discharged water quality monitoring results (see **Condition 40**);
- iii. Analytical results for vanadium, thorium-230, and radium-226 and -228 concentrations in land-applied water (see **Condition 41**);
- iv. Data collected from monitoring of heat dissipation sensors and co-installed time domain reflectometry sensors (see **Condition 42**);
- v. Analytical results from samples collected from suction lysimeters, as available (see **Condition 43**);
- vi. Pre- and post-annual land application ground water monitoring well sample analytical results (see **Condition 44**);
- vii. Soil contaminant concentrations from post-annual land application samples (see **Condition 45**).
- viii. Analysis and discussion of all data collected from each Approved Plot, including but not limited to soil moisture concentration data in comparison to modeled contaminant transport rates for TDS, sulfate, chloride, uranium, and selenium analytical and monitoring results;
- ix. System inspection results and maintenance activities.
- m. A detailed status summary of any ongoing studies related to Site closure;
- n. A summary of implemented *ex-situ* contaminated ground water treatment design capacity, by individual ground water treatment technology;
- o. A discussion of abatement activities planned for implementation during the next calendar year to achieve maximum ground water treatment efficiency.

CONTINGENCIES

61. Within 60 days of the Effective Date of this Discharge Permit renewal/modification, HMC shall submit to NMED for approval a modification of its Site contingency plan to address potential leakage from conveyance piping that transport contaminated fluids throughout the Site. If NMED or HMC identifies any failure of other Site remedial systems that is not addressed by HMC's current contingency plan, NMED may require HMC to develop and submit to NMED for approval additional contingency plans and schedules to address such failures. [20.6.2.3107.A.(10) NMAC]
62. In the event of a pipeline break, pump failure, or other system failure at the facility, all discharge water shall be contained, pumped and transferred to areas of the facility that pose minimal potential impacts to ground water quality. Failed components shall be repaired or replaced as soon as possible and no later than 72 hours from the time of failure, unless parts are not available within this timeframe. In this case, discharges to areas service by the failed component shall not be placed back into service until repairs are made. [20.6.2.3107.A.(10) NMAC]
63. This Discharge Permit authorizes only those discharges specified herein. In the event of a spill or release that is not authorized under this Discharge Permit, HMC

shall initiate the notifications and corrective actions as required in 20.6.2.1203 NMAC. HMC shall take immediate corrective action to contain and remove or mitigate any damage caused by the discharge. Within 24 hours after the discovery of the unauthorized discharge, HMC shall verbally notify NMED and provide the information required by 20.6.2.1203.A.(1) NMAC. Within seven days of discovering the unauthorized discharge, HMC shall submit a written report to NMED verifying the oral notification and providing any additional information or changes. HMC shall submit a corrective action report within 15 days after the discovery of the discharge. [20.6.2.1203 NMAC]

SITE CLOSURE AND POST-CLOSURE MONITORING

64. Within 60 days of the Effective Date of this Discharge Permit renewal/modification, HMC shall submit to NMED for approval a closure plan for the four land application plots. [20.6.2.3107.A.(11) NMAC]
65. HMC shall perform Site closure activities in accordance with the most current Decommissioning and Reclamation Plan approved by the NRC, regulations promulgated in 20.6.2.5000 NMAC, and any additional conditions that NMED may impose. [20.6.2.3107.A.(11) NMAC]
66. Within 120 days of the Effective Date of this Discharge Permit renewal/modification, HMC shall submit to NMED for approval a post-closure ground water monitoring plan for the Site. The plan shall detail ground water monitoring activities to demonstrate compliance with applicable Site ground water standards prior to termination of this Discharge Permit (see **Conditions 2 and 31**). [20.6.2.3107.A.(11) NMAC]
67. If HMC discovers a significant increase in ground water contaminant concentrations during post-closure monitoring (see **Condition 31**), HMC shall notify NMED within five days of its receipt of such data. If confirmation sampling confirms the increased contaminant concentration, HMC shall submit to NMED for approval an abatement plan, including an implementation schedule, to address source control and abatement of the contamination in accordance with 20.6.2.4000 NMAC. Upon NMED approval, HMC shall implement the abatement plan in accordance with the associated approved schedule. [20.6.2.3109.F NMAC]
68. Following notification from NMED that post-closure monitoring may cease, HMC shall plug and abandon all monitoring wells in accordance with NMED, March 2011 "Monitoring well construction and abandonment guidelines (rev. 1.1)" or the most current version, and the regulations in 19.27.7 NMAC that have been issued by the New Mexico Office of the State Engineer. [20.6.2.3107.A.(11) and 4107.C NMAC]
69. When all post-closure requirements have been met, including but not limited to post-closure ground water quality monitoring (see **Condition 2**), HMC may request to terminate this Discharge Permit. [20.6.2.3107.(A).11 NMAC]

FINANCIAL ASSURANCE

70. Within 60 days of NMED approval of HMC's closure plan for the four land application areas (see **Condition 64**), HMC shall submit to NMED for approval either a financial surety proposal for closure activities and post-closure monitoring relating solely to the four land application plots, or documentation that such financial surety already is included within financial surety that is held by NRC. [20.6.2.4104.C NMAC]
71. Within 120 days of the Effective Date of this Discharge Permit renewal/modification, HMC shall submit to NMED a cost breakdown of the current financial surety bond that is held by NRC. Specific unit costs associated with reclamation, ground water treatment, reporting, and post-closure monitoring shall be included in the submittal. Subsequent submittals shall be transmitted to NMED when the financial assurance bond is updated during the annual NRC review cycle. [20.6.2.4104.C NMAC]
72. If future Site conditions result in additional measures that are required by NMED and/or are beyond the scope of the NRC annual surety update prior to termination of this Discharge Permit, HMC shall establish financial assurance with NMED in an amount sufficient to cover the cost of a third party to implement the additional measures. [20.6.2.4104.C NMAC]

GENERAL TERMS AND CONDITIONS

Recordkeeping

73. HMC shall maintain at its facility a written record of all data and information on monitoring of ground water, surface water, seepage, and meteorological conditions pursuant to this Discharge Permit, which shall include, but not be limited to, the following: [20.6.2.3107.A.(7) NMAC]
- The date, exact time, and exact location of each sample collection or field measurement;
 - The name and job title of the person who performed each sample collection or field measurement;
 - The date of the analysis of each sample;
 - The name and address of the laboratory and the name and job title of the person that reviewed the analysis of each sample;
 - The analytical technique or method used to analyze each sample or take each field measurement;
 - The results of each analysis or field measurement, including the field sheets;
 - A description of the quality assurance and quality control procedures used.
74. HMC shall maintain the data and information specified in **Condition 73** for all split and duplicate samples, spike and blank samples, and repeat samples. [20.6.2.3107.A.(7) NMAC]
75. HMC shall maintain a written record of any spills, seeps, or leaks of leachate or effluent not authorized by this Discharge Permit. [20.6.2.3107.A.(7) NMAC]

76. Notwithstanding any company record retention policy to the contrary, until such time as NMED determines that all closure measures have been completed in accordance with the requirements of this Discharge Permit, HMC shall retain copies of all data, records, reports, and other documents generated pursuant to this Discharge Permit. Such record retention period may be increased by NMED at any time upon written notice to HMC. [20.6.2.3107.A.(7) NMAC]

Inspection and Entry

77. HMC shall allow the Secretary or an authorized representative of NMED, upon the presentation of credentials, to perform the following activities: [20.6.2.3107.D NMAC]

- a. Enter any property or premises owned or controlled by HMC at reasonable times upon HMC's premises or at another location where records are kept under the conditions of this Discharge Permit or any federal or state regulation;
- b. Inspect and copy, at reasonable times, records required to be kept under the conditions of this Discharge Permit or pursuant to state or federal regulations;
- c. Inspect, at reasonable times, any facility, equipment (including monitoring and control equipment for treatment works), practices, or operations regulated or required under this Discharge Permit or under any federal or state regulations;
- d. Sample or monitor at reasonable times any effluent, water contaminant, or receiving water at any location before or after the discharge for the purpose of assuring compliance with this Discharge Permit or as otherwise authorized by the New Mexico Water Quality Act.

78. Nothing in this Discharge Permit shall be construed as limiting in any way the inspection and entry authority of NMED under the WQA, the WQCC Regulations, or any other applicable law or regulation. [20.6.2.3107.D NMAC]

Duty to Provide Information

79. Within a reasonable time after a request from NMED, which time may be specified by NMED, HMC shall provide NMED with any relevant information to determine whether cause exists for modifying, terminating, or renewing this Discharge Permit, or to determine whether HMC is in compliance with this Discharge Permit. [20.6.2.3107.D NMAC]

80. Nothing in this Discharge Permit shall be construed as limiting in any way the information-gathering authority of NMED under the WQA, the WQCC Regulations, or any other applicable law or regulation. [WQA §74-6-9; 20.6.2.3106.F and 3107.D NMAC]

Spills, Leaks and Other Unauthorized Discharges

81. This Discharge Permit authorizes only those discharges specified herein. Any discharge not authorized by this Discharge Permit or any other HMC Discharge Permit is a violation of the WQCC Regulations at 20.6.2.3104 NMAC. HMC must

report any such discharge to the NMED, and it must take corrective action to contain and remove or mitigate the damage caused by the discharge in accordance with Section 2.6.2.1203 NMAC. [20.6.2.1203 NMAC]

Modifications/Amendments

82. Pursuant to 20.6.2.3109.E NMAC, NMED reserves the right to modify permit requirements in the event NMED determines that the requirements of 20.6.2 NMAC are being or may be violated, or that the standards of 20.6.2.3103 NMAC are being or may be violated at a place of withdrawal of water for present or reasonably foreseeable future use due to a discharge regulated under this Discharge Permit. This may include a determination by NMED that operational practices approved under this Discharge Permit are not protective of ground and surface water quality, and that a modification is necessary to protect water quality or abate water pollution. Issuance of this Discharge Permit does not relieve HMC of its responsibility to comply with all conditions or requirements of the WQA, WQCC regulations, and any other applicable federal, state and/or local laws and regulations such as zoning requirements and nuisance ordinances.
83. HMC shall notify NMED of any changes to its leachate, or wastewater collection or disposal systems, including any changes in the flow rate or the volume of storage, or of any other changes to its operations or processes that would result in any significant change in the discharge of water contaminants. HMC shall obtain NMED approval, as a modification to this Discharge Permit pursuant to 20.6.2.3109.E, F, or G NMAC, prior to any increase in the quantity discharged, or any increase in the concentration of water contaminants discharged, above those levels approved in this Discharge Permit. [20.6.2.3107.C NMAC]

Enforcement

84. Any violation of the requirements and conditions of this Discharge Permit, including any failure or refusal to allow NMED to enter and inspect records or facilities, or any refusal or failure to provide NMED with records or information, may subject HMC to an enforcement action. Pursuant to WQA §74-6-10.A and B, such action may include a compliance order requiring compliance immediately or in a specified time, assessing a civil penalty, modifying or terminating the Discharge Permit, or any combination of the foregoing; or an action in district court seeking injunctive relief, civil penalties, or both. Pursuant to the WQA §§74-6-10.C and 74-6-10.1, civil penalties of up to \$15,000 per day of noncompliance may be assessed for each violation of the WQA §74-6-5, WQCC regulations adopted pursuant to that section, or this Discharge Permit, and civil penalties of up to \$10,000 per day of non-compliance may be assessed for each violation of any other provision of the WQA, or any regulation, standard, or order adopted pursuant to such other provision. For certain violations specified in the WQA §74-6-10.2, criminal penalties may also apply. In any action to enforce this Discharge Permit, HMC waives any objection to the admissibility as evidence of any data generated pursuant to this Discharge Permit. [74-6 WQA]

Compliance with Other Laws

85. Nothing in this Discharge Permit shall be construed in any way as relieving HMC of its obligation to comply with all applicable federal, state, and local laws, regulations, permits, or orders. [20.6.2 NMAC]

Right to Appeal

86. HMC may file a petition for a hearing before the WQCC on this Discharge Permit. Such petition must be made in writing to the WQCC within thirty days after HMC receives this Discharge Permit. Unless a timely petition for a hearing is made, the decision of NMED shall be final. [§74-6-5.0]

Transfer

87. Pursuant to 20.6.2.3111 NMAC, prior to any transfer of ownership, control, or possession of the permitted facility or any portion thereof, HMC shall notify the proposed transferee in writing of the existence of this Discharge Permit and include a copy of this Permit with the notice. HMC shall deliver or send by certified mail to NMED a copy of the notification and proof that such notification has been received by the proposed transferee. [20.6.2.3111 NMAC]

Term

88. The term of this Discharge Permit is five years; the Permit will automatically expire five years from the date it is issued. To renew this Discharge Permit, HMC must submit an application for renewal at least 120 days before that date. [20.6.2.3109.H.(4) NMAC]

ISSUED this _____ day of _____, 2014

Under authority delegated by the Secretary of the New Mexico Environment Department

DRAFT FOR REVIEW

JERRY SCHOEPNER, Chief
Ground Water Quality Bureau
New Mexico Environment Department

JS/dlm

Table 1: Site background ground water quality concentrations for Site contaminants of concern

Site Contaminants of Concern	Site background ground water quality concentrations				
	Alluvial Aquifer	Chinle Aquifer Mixing Zone	Upper Chinle Aquifer Non-Mixing Zone	Middle Chinle Aquifer Non-Mixing Zone	Lower Chinle Aquifer Non-Mixing Zone
Uranium (mg/l)	0.16	0.18	0.09	0.07	0.03
Selenium (mg/l)	0.32	0.14	0.06	0.07	0.32
Sulfate (mg/l)	1500	1750	914	857	2000
Chloride (mg/l)	250	250	412	250	634
TDS (mg/l)	2734	3140	2010	1560	4140
Nitrate (mg/l)	12	15	10*	10*	10*

*HMC's ground water abatement compliance standard enforceable under state regulation is equal to the numerical value promulgated under 20.6.2.3103 NMAC. The numerical standards promulgated in Section 20.6.2.3103 NMAC apply for all other constituents.

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Table 2: Collection and evaporation pond details

<u>Pond</u>	<u>Year constructed</u>	<u>Liner type</u>	<u>Surface area (acres)</u>	<u>Maximum volume (acre-feet)</u>
ECP	1986	Single synthetic (90 mil)	2.4	12
WCP	1986	Single synthetic (90 mil)	2.4	12
EP-1	1990	Single synthetic (90 mil)	26.3	320.2
EP-2	1996	Double synthetic (60 mil over 40 mil)	17.5	265.7
EP-3	2010	Double synthetic (60 mil over 40 mil)	26.5	265.7
TOTALS			75.1	875.6

Table 3: Maximum contaminant concentration standards for low-concentration injectate

Constituent	Maximum allowable concentration (mg/l)
Uranium	1.0
Selenium	0.5
Molybdenum	2.0

The concentrations of all other analytes in low-concentration injectate must comply with the higher value of **Table 1** or those promulgated in 20.6.2.3103 NMAC.

Table 4: Maximum allowable constituent concentrations for land-applied ground water

Constituent	Maximum concentration in discharge (mg/l)
Uranium	0.16
Selenium	0.1
Sulfate	900
Chloride	250
TDS	2000
Nitrate	12
Molybdenum	0.1

The concentrations of all other analytes of land-applied contaminated ground water must comply with the higher value of **Table 1** or those promulgated in 20.6.2.3103 NMAC.

Table 5: Compliance monitoring for DP-200

<u>Well or Location</u>	<u>Monitoring and Analytes</u>	<u>Monitoring Frequency</u>
<i>Collection and evaporation ponds and associated monitoring wells</i>		
Ponds ECP, WCP, EP-1, EP-2, EP-3	<u>Freeboard</u> <u>Field parameter</u> pH <u>General chemistry (mg/l)</u> Sulfate Chloride TDS <u>Metals (total and dissolved; mg/l)</u> Uranium Selenium Molybdenum	Quarterly
	<u>Field parameter</u> pH <u>General chemistry (mg/l)</u> Alkalinity-carbonate Calcium Chloride Bicarbonate Magnesium Potassium Sodium Sulfate Total dissolved solids Nitrate <u>Metals (total and dissolved; mg/l)</u> Manganese Selenium Molybdenum Uranium <u>Radionuclides (pCi/l except as noted)</u> Radium-226 + radium-228 Uranium activity	Annual
Monitoring wells X, DD, DD-2	<u>Field parameters</u> Water level temperature pH electrical conductivity <u>General chemistry (mg/l)</u> Chloride Sulfate Total dissolved solids	Quarterly

<u>Well or Location</u>	<u>Monitoring and Analytes</u>	<u>Monitoring Frequency</u>
	<u>Metals</u> (dissolved; mg/l) Selenium Molybdenum Uranium	
	Water level <u>Field parameters</u> pH Temperature Electrical conductivity <u>General chemistry</u> (mg/l) Alkalinity-carbonate Calcium Chloride Bicarbonate Magnesium Potassium Sodium Sulfate Total dissolved solids Nitrate <u>Metals</u> (dissolved; mg/l) Manganese Selenium Molybdenum Uranium <u>Radionuclides</u> (pCi/l except as noted) Radium-226 + radium-228 Uranium activity	Annual
Existing RO plant		
Effluent	Table 1 analytes	Quarterly
Future ground water treatment system(s)		
Effluent	Table 1 analytes	Weekly for at least first six months of operation
Reversal wells		
Reversal wells	Water level	Quarterly

Contaminated ground water land application system		
Discharged water	Selenium Uranium Molybdenum TDS Sulfate Chloride Nitrate	Weekly
Monitoring wells associated with Section 28 Approved Plot: 881 882 884 886 893	Selenium Uranium Molybdenum TDS Sulfate Chloride Nitrate	<ul style="list-style-type: none"> • Seven days prior to inception of annual contaminated ground water land application • Within seven days of the conclusion of annual contaminated ground water land application
Monitoring wells associated with Section 34 Approved Plot: 555 556 557 844 845	Sulfate Chloride Nitrate	<ul style="list-style-type: none"> • Annually

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Figure 1: NMED Underground Injection Control well inventory reporting form



New Mexico Environment Department
 Ground Water Quality Bureau

**Ground Water Quality Bureau –
 Pollution Prevention Section
 Underground Injection Control (UIC) Well Inventory
 Attachment**

1. Name and Address of owner/operator (if different from contact information provided on Notice of Intent form:

Name	Work Phone
Address	Cell/Home Phone
	Fax
	Email

2. Facility Location (latitude and longitude to six decimal degrees for main building or structure, facility entrance, or the center of the facility:

Latitude	Longitude	Method of Collection (e.g., GPS, Google Earth)	Datum (e.g., NAD 83, WGS-84)	Accuracy (m) (if unknown, enter "10")	Coordinate Description (Main Building, Main Structure, Entrance, Center)

3. UIC Well Inventory (use additional forms as necessary):

Designation	Well Type	Latitude	Longitude	Method of Collection (e.g., GPS)	Datum (e.g., NAD 83, WGS-84)	Accuracy (m) (if unknown, enter "10")	Total Depth (m)	Current operating status	Anticipated date of operation

4. Please include plans and specifications signed and stamped by a New Mexico professional engineer for the infiltration/injection system, grading and drainage plan, overall site diagram (if major features of site are missing from drainage plan), and summary of bases and calculations used to estimate the discharge volume and sizing of the system.

Please return this form to:
 NMED Ground Water Quality Bureau
 P.O. Box 5469
 Santa Fe, New Mexico 87502-5469

Telephone: 505-827-2900
 Fax: 505-827-2965