State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Dylan Fuge
Acting Cabinet Secretary

Albert C.S. Chang, Director
Mining and Minerals Division

Dylan Fuge
Deputy Secretary

Electronic Transmission

February 28, 2024

Andrew Watson
Lancaster Resources Inc.
2569 Marine Drive
West Vancouver, BC Canada

RE: Agency Review Comments and MMD Technical Review on Permit Application Package, Alkali Flats Lithium Brine Phase 1, Permit No. HI023EM – Hidalgo County, New Mexico

Mr. Watson,

The New Mexico Mining and Minerals Division (MMD) has reviewed the Permit Application Package (PAP), for a minimal impact exploration permit for the Alkali Flats Lithium Brine Phase 1 Project, submitted by Lancaster Resources Inc. (Lancaster), under Subpart 3 of the New Mexico Mining Act Rules (Rules). The PAP consists of the September 26, 2023 Application and the following attachments:

Attachment 1 – LCR BLM Mineral Claims LCR Alkali Flats P3
Attachment 2 – Area Overview LCR Alkali Flats P3
Attachment 3 – WD-08 Well plugging Plan of Operations
Attachment 3 – WD-07 Application for Permit to drill a well with no water right
Attachment 4 – Extended Response LCR Alkali Flats P3
Revised Alkali Flats BLM Plan of Operations December 13, 2023
LCR EMNRD (HI023EM) Supplemental Oct 20

On October 30, 2023, MMD determined the PAP to be administratively complete and sent request for comment letters to state and federal agencies. MMD granted several agencies time extensions, at their request, and MMD received all agency comments by February 27, 2024.

MMD has conducted a technical review of the PAP and, in accordance with 19.10.3.302.I NMAC, provided the PAP to, and requested comments from: the New Mexico Environment Department (NMED), the New Mexico Office of the State Engineer (NMOSE), the New Mexico Department of Game and Fish (NMDGF), the New Mexico Department of Cultural Affairs - Historic Preservation Division (NMDCA/HPD), New Mexico State Forestry Division (NMSFD), the Federal Bureau of Land Management (BLM), and the New Mexico Department of Transportation (NMDOT).

Because this exploration project is proposed to take place on BLM lands, Lancaster is required to follow the approved BLM Plan of Operations in conjunction with MMD's Minimal Impact Exploration Permit (Permit). Copies of the comments received from these state agencies are attached (Attachment B).

General Comments:

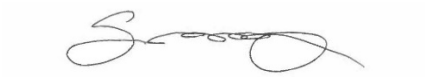
Please find comments from MMD based on review of this application attached in Attachment A. MMD reviewed the PAP and found it to be *technically incomplete* pending receipt of acceptable responses including supplemental information identified in these comments.

The following attachments are included:

Attachment A: MMD Technical Comments
Attachment B: Agency Comment letters
Attachment C: DOT provided EPA Mining Best Management Practices

Please review and respond to all MMD technical comments (Attachment A) and review attached comments from other state agencies (Attachment B) within 30 days of receipt of this letter. Should you have any questions, comments, or require additional information concerning this letter or any enclosures, please call (505) 216-8945, or email samantha.rynas@emnrd.nm.gov.

Sincerely,



Samantha Rynas
Permit Lead, HI023EM
Mining Act Reclamation Program (MARP)
New Mexico Mining and Minerals Division

Attachments:

A: MMD Technical Comments
B: Agency Comment letters
C. DOT provided EPA Mining Best Management Practices

CC: DJ Ennis, Program Manager, MARP/MMD
Carmen Rose, Supervisor, MARP/MMD
Mine File (HI023EM)

Attachment A: MMD Technical Comments

Alkali Flats Lithium Brine Phase 1
Permit No. HI023EM
Date: February 27, 2024

OVERVIEW

Name of Operator: Lancaster Resources **Permit Update:** Application for Exploration Permit

Agency Responses: *Attached for review and comment as Attachment B*

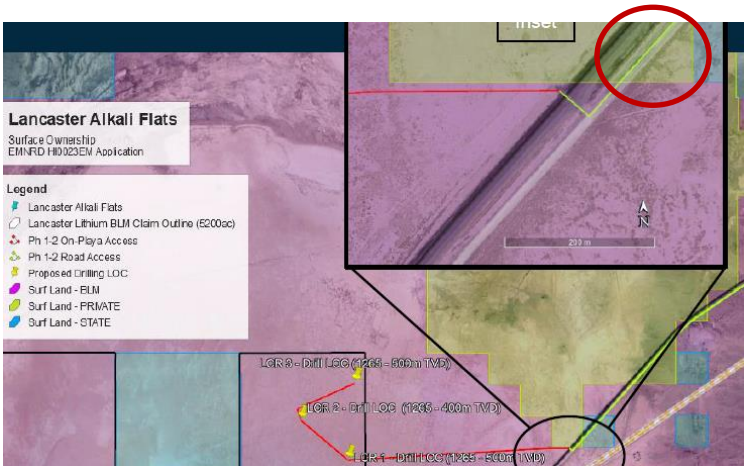
New Mexico Department of Cultural Affairs (NMDCA/HPD) Submitted November 15, 2023
New Mexico Department of Game and Fish (NMDGF) Submitted November 20, 2023
New Mexico Environment Department (NMED) Submitted February 13, 2024
New Mexico Department of Transportation (NMDOT) Submitted November 16, 2023
EMNRD - Forestry Division (NMSFD) Submitted November 17, 2023
New Mexico Office of the State Engineer (NM OSE) Submitted February 27, 2024
Bureau of Land Management (BLM) MMD requested but did not receive formal comments from the BLM. However, BLM is Permitting this project separately under a Plan of Operations ("PoO") and their comments on this Permit will be addressed through the BLM process. The BLM must approve the PoO before MMD will be able to issue a MMD Permit.

MMD Comments

1. Section 2.D. As mentioned in the EMNRD Forestry comment letter, a plant survey between April-August is recommended.

   Operator response: and/or see attachment:

2. Section 3.C. Access. Confirm that the access road when exiting I10 is a public road as concerns that it is in private land were expressed by State Land Office. See the **RED** circle below as the green line crosses over the yellow shaded private land.



   Operator response: and/or see attachment:

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
Mining and Minerals Division
1220 St. Francis Dr.
Santa Fe, New Mexico 87505
Telephone: (505) 476-3400

3. Section 3.B. Map Attachment. MMD is requesting a more detailed permit area map. This map must outline the areas of disturbance to include the overland travel and drill pad/pit locations. Additionally, please include an acreage calculation with this map to confirm estimated disturbance of the project.

   Operator response: and/or see attachment:

4. Section 4.C. Mud/Fluid drilling. Provide the mud pit dimensions to be used, unless a closed loop system is planned. The pits should be lined and sized to avoid overtopping during precipitation. *See also comment 7*.

   Operator response: and/or see attachment:

5. Section 4.D Disposal of drill cuttings. Please confirm if you are disposing of drill cuttings in one location or at each drill pad.

   Operator response: and/or see attachment:

6. Section 6.D. Borehole Abandonment. *See also NMED and OSE comment letters*. Option 1 (Cement) will need to be required for Wet hole abandonment.

   Operator response: and/or see attachment:

7. Section 6.F. *See NM Surface Water and DGAF comment letters.* To protect the surface water of the Playa to the greatest extent possible, MMD recommends the use of a closed loop system to avoid any brine from contaminating the surface.

   Operator response: and/or see attachment:

8. Section 7.B. Erosion Control. *See the New Mexico Department of Transportation comment letter (Attachment B) and attached EPA BMP Guidelines, Attachment C*.
   MMD agrees with NMDOT concerns on travel over the Playa causing significant soil disturbance leading to additional wind and soil erosion issues.

   To minimize soil and wind erosions the below additional mitigation measures will be included as Permit Conditions:

   - Minimized vehicle speed.
   - Equipment will be washed to remove plant material before entering BLM administered land.
   - Onsite refueling must take place over spill mats.
   - No activities shall be performed during periods when soil is too wet to adequately support construction equipment. If equipment created ruts in excess of three inches deep, the soil has been deemed too wet to support construction equipment.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
Mining and Minerals Division
1220 St. Francis Dr.
Santa Fe, New Mexico 87505
Telephone: (505) 476-3400

Operator response: and/or see attachment:

9. Section 7.D. Reclamation details. MMD will require all Overland travel, pits and any other disturbances be seeded with a MMD and BLM approved seed mix and mulched with a certified weed-free mulch as part of reclamation. If requested, MMD and BLM can provide a recommended seed mix.

   Operator response: and/or see attachment:

10. Section 8.A. Financial Assurance ("FA"). MMD will require Financial Assurance to include reclamation of overland travel, drill pads and borehole plugging. BLM and MMD will hold joint FA under this Permit as the project takes place on BLM land. Your application lists you would like to use a letter of credit as your FA mechanism. Below is the current reclamation cost estimate (based off your updated disturbance listed in table 1 of the BLM PoO) and amount of FA that MMD will require for this project with calculations:

HI023EM---Alkali Flats Lithium Brine			
Subsurface Plugging and Abandonment Financial Assurance			
$ Cost/Ft.	Ft.	Number of Holes	Total
17	656	2	22304
17	2600	1	44200
Surface Reclamation Financial Assurance			
Category	$Cost/Acre	Number of Acres	Total
First acre or less	8900	1	8900
Additional acres	4900	0.97	4753
		Total FA ($)	$80,157.00

Operator response: and/or see attachment:

Permit Lead: *Samantha Rynas* **DATE:** 2/27/2024

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
Mining and Minerals Division
1220 St. Francis Dr.
Santa Fe, New Mexico 87505
Telephone: (505) 476-3400

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Cabinet Secretary

Laura McCarthy, State Forester
Forestry Division

October 12, 2023

Samantha Rynas
Reclamation Specialist
Mining and Minerals Division
Mining Act Reclamation Program
1220 S. St. Francis Drive
Santa Fe, NM 87505

RE: Request for Comments on Alkali Flats Lithium Brine Phase 1 Exploration Project, Permit No. HI0023EM, Lancaster Resources Inc.

Thank you for the opportunity to comment on the above referenced project. I do not anticipate impacts to New Mexico State Endangered Plants as a result of this project, as described in the application. However, there is a low probability of occurrence of the State Endangered plant species *Peniocereus greggii* var. *greggii* (Night-blooming cereus) and *Pediomelum pentaphyllum* (Chihuahua scurf pea) within the project area. As such, a plant survey at the appropriate time of year (April – August) is recommended to determine if the species listed above are present. If individuals of either species are present and activities from the project exploration are determined to coincide with species locations, a permit from the New Mexico Forestry Division may be required. More information on permits and State Endangered plant species can be found at the following website: https://www.emnrd.nm.gov/sfd/rare-plants/request-a-collection-permit/.

Please let me know if I can be of further help.

Sincerely,

Erika Rowe
State Botanist/Endangered Plant Program Coordinator
EMNRD-Forestry Division
1220 S. St. Francis Dr.
Santa Fe, NM 87505
erika.rowe@emnrd.nm.gov / http://www.emnrd.state.nm.us/SFD/
cell: (505) 699-6371

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DEPARTMENT OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION
BATAAN MEMORIAL BUILDING
407 GALISTEO STREET, SUITE 236
SANTA FE, NEW MEXICO 87501
PHONE (505) 827-6320 · NM.SHPO@DCA.NM.GOV

November 15, 2023

Samantha Rynas
Permit Lead
Mining and Minerals Division
1220 South St. Francis Drive
Santa Fe, New Mexico

VIA EMAIL ONLY

RE: HPD Log #121074—Alkali Flats Lithium Brine Phase 1 Exploration Project, Permit No. HI0023EM, Lancaster Resources Inc.

Dear Ms. Rynas,

Thank you for submitting the information for the proposed Alkali Flats Lithium Brine Phase 1 Exploration Project, Permit No. HI0023EM, Lancaster Resources Inc. Our office received the information on November 1, 2023, via email. The New Mexico State Historic Preservation Office (SHPO) reviewed the proposed project under 19.10.3.302 NMAC, Minimal Impact Exploration Operations.

No known cemeteries, burial grounds, or cultural resources listed on, or eligible to, either the National Register of Historic Places or the State Register of Cultural Properties are within the proposed exploration project area. As such, the SHPO has no comment.

If you have any questions, please contact me at 505-476-1341 or via email at cortney.wands@dca.nm.gov.

Sincerely,

Cortney Wands
Archaeological Reviewer

GOVERNOR
Michelle Lujan Grisham

DIRECTOR AND SECRETARY
TO THE COMMISSION
Michael B. Sloane

STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

One Wildlife Way, Santa Fe, NM 87507

Tel: (505) 476-8000 | Fax: (505) 476-8180

For information call: (888) 248-6866

www.wildlife.state.nm.us

20 November 2023

Samantha Rynas, Permit Lead
Mining Act Reclamation Program
Mining and Minerals Division (MMD)
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Alkali Flats Lithium Brine Phase 1 Minimal Impact Exploration Project, Hidalgo County, New Mexico. Permit No. HI023EM; NMDGF Project No. NMERT-3005.

Dear Ms. Rynas,

The New Mexico Department of Game and Fish (Department) has reviewed the above referenced exploration project submitted by Lancaster Resources, Inc. (Lancaster). Lancaster is proposing to drill 3 exploratory holes at 3 drill pad sites. Hole depths will range from approximately 500-2,600 feet. The exploration project will be located on Bureau of Land Management (BLM) administered land in Section 15, Township 23S, Range 20W. The total area that will be disturbed is approximately 1.8 acres.

The permit application states that a mud/fluid drilling system will be used. For mud/fluid drilling the Department strongly recommends the use of a closed loop drilling system. Closed loop systems eliminate the need to build fences or install netting to exclude wildlife from mud pits, reduce the amount of surface disturbance associated with the drill pad site, and consume significantly less water. If Lancaster does use mud pits, the Department recommends netting or covering fenced mud pits to exclude birds and bats. If netting is used, the Department recommends extruded plastic, knit, or woven netting with a mesh size of three eighths inches to exclude smaller animals. The Department does not support the use of monofilament netting due to its tendency to ensnare wildlife, usually resulting in injury or death. Netting material must be held taught over a rigid and adequately supportive frame to prevent sagging into the mud pits.

It is important to prevent wildlife from entering and becoming trapped in stockpiled pipes used in the drilling process. The Department recommends capping drill pipes as the most effective way to prevent wildlife entry. At a minimum, each section of pipe should be visually inspected prior to use to verify that no wildlife, including small mammals or reptiles, are inside.

For site reclamation, Lancaster proposes to use a BLM native seed mix. The Department recommends that the BLM seed mix is appropriate for the playa's saline soil and promotes soil stability. The Department also recommends that only certified weed-free seed be used to avoid inadvertently introducing non-native species to the reclamation site. Any alternate plant species, used to substitute for primary plant species that are unavailable at the time of reclamation, should also be native. When possible, the Department recommends using seeds that are

sourced from the same region and habitat type as the reclamation site and suggests including seeds from a region that represents potential future climatic conditions at the site.

Thank you for the opportunity to review and comment on the proposed exploration project. If you have any questions, please contact Ron Kellermueller, Mining and Energy Habitat Specialist, at (505) 270-6612 or ronald.kellermueller@dgf.nm.gov.

Sincerely,

Matt Wunder, Ph.D.
Chief, Ecological and Environmental Planning Division
cc: USFWS NMES Field Office

New Mexico DEPARTMENT OF TRANSPORTATION
MOBILITY FOR EVERYONE

November 16, 2023

Samantha Rynas, Permit Lead
Mining Act Reclamation Program (MARP)
Mining and Minerals Division (MMD)

Re: **Request for Comments on Alkali Flats Lithium Brine Phase 1 Exploration Project, Permit No. HI0023EM, Lancaster Resources Inc.**

Dear Ms. Rynas,

The NMDOT, in coordination with the Federal Highway Administration, has been addressing the I-10 dust storm issue since 2014 with an array of safety upgrades within and outside of the NMDOT right-of-way. While a playa is a natural sink for sediment, our research, in coordination with the Natural Resources Conservation Service and the United States Department of the Interior Jornada Experimental Station, has determined that additional human disturbance of the soil surface leads to disturbed, loose soil and increases the severity of dust storms on I-10. Within the playa surface and watershed, the NMDOT has been coordination with the Bureau of Land Management and the New Mexico State Land Office to revegetate and stabilize bare soils, reduce erosion, and modify grazing practices to reduce the amount of disturbed soil. Thus far, our air quality research and reduced visibility-related crashes indicate that our efforts have yielded success in reducing the severity of dust storm-related visibility on I-10. The proposed mining permit has the potential to reverse that success by undermining the efforts conducted thus far as detailed below:

- The proposed project is within a previously-nominated Bureau of Land Management "Lordsburg Playa and Watershed Area of Critical Environmental Concern (ACEC)" which would require special management for reasons of public health to due over 40 fatalities in nearby I-10 due to dust originating from disturbed soils in this area. The playa and watershed qualify for the ACED under the Relevance Criteria: Natural Hazard (unstable soils); a natural process that has been exacerbated by human action and Importance Criteria: a) Has qualities which warrant highlighting in order to satisfy public or management concerns about safety and public welfare and b) Poses a significant threat to human life and safety or property. The area has been extensively studied and two sources of soil disturbance have been identified as contributing to the zero-visibility conditions during a dust storm: 1) Historical and modern grazing mis-management in the western watershed leading to severe erosion and 2) Disturbance of the playa surface by cattle and vehicles. Due to four dust-related fatalities in 1997, the BLM closed the entire playa to off-road vehicle use with the exception for administrative use (closure still in effect), which thus far has been rancher pickups. The development of a mining operation on the playa surface would exponentially increase the amount of soil disturbance.

- Lithium is extracted via water evaporation; the installation of evaporation ponds on the playa surface would effectively be making a new source of loose sediment that can be entrained by the wind during dust storms, exacerbating the problem.
- The proposed development would draw shallow groundwater levels lower; currently the inundation and saturation of the playa surface by accumulated runoff is what irrigates the fragile soils (NRCS) at the playas edge, a reduction in shallow groundwater would dry out this fragile soil areas, reduce vegetative cover, and any disturbance of those soils would lead to increased dust storm severity.
- The project as proposed does not include sufficient best management practices (BMPS) to ensure adequate protection of soils as required by the National Pollution Discharge Elimination System (NPDES). See attached EPA fact sheet for mining facilities.
- The proposed bore locations are within the actual playa that is inundated with standing water often for months of the year, and drilling could contaminate ground water.

The NMDOT encourages the EMNRD to strongly consider the dire conditions currently present on the playa when considering issuance of this permit. Over the past decade we have already witnessed several catastrophic multi-fatality crashes on I-10 due to dust storm visibility issues, and it is the responsibility of the state government to do what is possible to prevent this unnecessary loss.

Sincerely,

Trent Botkin
Environmental Bureau Manager (acting)
New Mexico Department of Transportation
1120 Cerillos Rd. Santa Fe, NM 87504
505-470-4195
Trent.Botkin@dot.nm.gov

Electronic Transmission

MEMORANDUM

Date: December 18, 2023

To: David Ennis, Program Manager, Mining Act Reclamation Program

Through: Anne Maurer, Mining Act Team Leader, Mining Environmental Compliance Section (MECS)

From: David Mercer, MECS
Susan Styer, Surface Water Quality Bureau (SWQB)
Sufi Mustafa, Air Quality Bureau (AQB)

Subject: **New Mexico Environment Department (NMED) Comments, Alkali Flats Lithium Brine Phase I Exploration Project, New Minimal Impact Exploration Permit Application, Landcaster Resources, Inc., Hidalgo County, New Mexico, Mining Act Permit No. HI023EM**

The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on November 6, 2023 requesting that NMED review and provide comments on the above-referenced MMD permitting action. Pursuant to the Mining Act, the Alkali Flats Lithium Brine Phase I Exploration Project is is a new minimal impact exploration permit. MMD requested comments on the application within 20 days of receipt of the request for comments. NMED requested an extension to submit comments by December 19, 2023. NMED has the following comments.

Background

Landcaster Resources, Inc. (applicant) proposes to disturb up to 1.893 acres of Bureau of Land Management (BLM) land. The applicant proposes to drill up to 3 boreholes on 3 drill pads, all approximately 500 to 2,600 feet below ground surface (bgs). This site is located approximately 11 miles southwest of Lordsburg, NM.

Air Quality Bureau

The Air Quality Bureau comments are attached.

Surface Water Quality Bureau

The Surface Water Quality Bureau comments are attached.

Mining Environmental Compliance Section (MECS)

The depth to groundwater is 150 feet bgs and the Total Dissolved Solids (TDS) concentration is reportedly very high based on a review of the application and a New Mexico Office of the State Engineer (NMOSE) well report. The applicant is proposing mud rotary as the drilling method. The MECS has the following comments:

1. The applicant states that the boreholes will be plugged using a bentonite clay product. It is NMED's understanding that bentonite clay should not be used if the groundwater has high TDS concentrations. High TDS concentrations in groundwater may prevent the bentonite clay to seal properly. NMED recommends consulting with the NMOSE to determine the appropriate well sealant.

NMED Summary Comment

NMED has determined that the activities proposed in the application will be protective of the environment.

If you have any questions, please contact Anne Maurer at (505) 660-8878.

cc: Joseph Fox, Program Manager, NMED-MECS
Shelly Lemon, Bureau Chief, NMED-SWQB
Elizabeth Bisbey-Kuehn, Bureau Chief, NMED-AQB
Samantha Rynas, EMNRD-MARP

MEMORANDUM

DATE: November 7, 2023

TO: Anne Maurer, Mining Act Team Leader, Mining Environmental Compliance Section, NMED

FROM: Sufi Mustafa, Staff Manager, Air Dispersion Modeling and Emission Inventory Section, Air Quality Bureau.

Request for Review and Comment, Alkali Flats Lithium Brine Phase 1 Exploration Project, New Minimal Impact Exploration Permit Application, Hidalgo County, New Mexico Mining Act Permit No. HI023EM

The New Mexico Air Quality Bureau (AQB) has completed its review of the above-mentioned mining project. Pursuant to the New Mexico Mining Act Rules, the AQB provides the following comments.

Details

Lancaster Resources has requested exploratory drilling for Lithium brine near Lordsburg in Hidalgo County. The minimal impact exploration will result in 3 drilled holes and construction of 3 drill pads. The total disturbance from the project will be less than 2 acres.

Air Quality Requirements

The New Mexico Mining Act of 1993 states that "Nothing in the New Mexico Mining Act shall supersede current or future requirements and standards of any other applicable federal or state law." Thus, the applicant is expected to comply with all requirements of federal and state laws pertaining to air quality.

20.2.15 NMAC, *Pumice, Mica and Perlite Processing*. Including 20.2.15.110 NMAC, *Other Particulate Control:* "The owner or operator of pumice, mica or perlite process equipment shall not permit, cause, suffer or allow any material to be handled, transported, stored or disposed of or a building or road to be used, constructed, altered or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne."

Paragraph (1) of Subsection A of 20.2.72.200 NMAC, *Application for Construction, Modification, NSPS, and NESHAP - Permits and Revisions*, states that air quality permits must be obtained by:

"Any person constructing a stationary source which has a potential emission rate greater than 10 pounds per hour or 25 tons per year of any regulated air contaminant for which there is a National or New Mexico Ambient Air Quality Standard. If the specified threshold in this subsection is exceeded for any one regulated air contaminant, all regulated air contaminants with National or New Mexico Ambient Air Quality Standards emitted are subject to permit review."

Further, Paragraph (3) of this subsection states that air quality permits must be obtained by:

"Any person constructing or modifying any source or installing any equipment which is subject to 20.2.77 NMAC, *New Source Performance Standards*, 20.2.78 NMAC, *Emission Standards for Hazardous Air Pollutants*, or any other New Mexico Air Quality Control Regulation which contains emission limitations for any regulated air contaminant."

Also, Paragraph (1) of Subsection A of 20.2.73.200 NMAC, *Notice of Intent*, states that:

"Any owner or operator intending to construct a new stationary source which has a potential emission rate greater than 10 tons per year of any regulated air contaminant or 1 ton per year of lead shall file a notice of intent with the department."

The above is not intended to be an exhaustive list of all requirements that could apply. The applicant should be aware that this evaluation does not supersede the requirements of any current federal or state air quality requirement.

Fugitive Dust

Air emissions from this project should be evaluated to determine if an air quality permit is required pursuant to 20.2.72.200.A NMAC (e.g. 10 lb/hour or 25 TPY). Fugitive dust is a common problem at mining sites and this project will temporarily impact air quality as a result of these emissions. However, with the appropriate dust control measures in place, the increased levels should be minimal. Disturbed surface areas, within and adjacent to the project area, should be reclaimed to avoid long-term problems with erosion and fugitive dust. EPA's *Compilation of Air Pollutant Emission Factors, AP-42, "Miscellaneous Sources"* lists a variety of control strategies that can be included in a comprehensive facility dust control plan. A few possible control strategies are listed below:

Paved roads: covering of loads in trucks to eliminate truck spillage, paving of access areas to sites, vacuum sweeping, water flushing, and broom sweeping and flushing.

Material handling: wind speed reduction and wet suppression, including watering and application of surfactants (wet suppression should not confound track out problems).

Bulldozing: wet suppression of materials to "optimum moisture" for compaction.

Scraping: wet suppression of scraper travel routes.

Storage piles: enclosure or covering of piles, application of surfactants.

Miscellaneous fugitive dust sources: watering, application of surfactants or reduction of surface wind speed with windbreaks or source enclosures.

Recommendation

The Air Quality Bureau has no objection to this request.

This written evaluation does not supersede the applicability of any forthcoming state or federal regulations.

If you have any questions, please contact me at 505 629 6186

MEMORANDUM

February 13, 2024

To: Anne Maurer, Mining Act Team Leader
Mining Environmental Compliance Section
Groundwater Quality Bureau (GWQB)

From: Davena Crosley
Watershed Protection Section
Surface Water Quality Bureau (SWQB)

Subject: **Request for Review and Comment, Minimal Impact Exploration Permit, Alkali Flats Lithium Brine Phase 1 Exploration Drilling, Hidalgo County, New Mexico, Mining Act Permit No. HI023EM**

On November 6, 2023, NMED received a request for comments regarding a modified minimal-impact exploration permit application submitted by Lancaster Resources Inc. ("Applicant"). The project is in Hildalgo County, approximately 12 miles west-southwest of Lordsburg on public lands managed by the Bureau of Land Management.

Summary of Proposed Action

The Applicant proposes to bore three 5-inch diameter holes to depths of no more than 2,600 feet from three drill pad locations. Each drill pad will require a cleared area approximately 50' x 75' with three separate unlined mud and fluid pits of undefined size. Disposal of the drill cuttings will be buried in a pit at each site location approximately 15' in length x 10' wide x 10' in depth. Existing roads and rights-of way will be utilized to access drill locations and total disturbance is estimated at 1.893 acres per the permit application but does not include the area of disturbance for the mud and fluid pits.

Relevant State and Federal Water Quality Regulations

Mine activities may affect Surface Waters of the State as defined in New Mexico's Standards for Interstate and Intrastate Surface Waters (20.6.4.7 NMAC), including precipitation dependent playa lakes within the mining operations, which are subject to 20.6.4.98 NMAC. Furthermore, operations must ensure compliance with New Mexico's water quality standards including General Criteria at 20.6.4.13 NMAC, which "*…are established to sustain and protect existing or attainable uses of surface waters of the State. These general criteria apply to all surface waters of the state at all times… Surface waters of the State shall be free of any water contaminant in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or unreasonably interfere with the public welfare or the use of property.*" (20.6.4.13 NMAC)

The Applicant is required to report all spills immediately to the NMED as required by the New Mexico Water Quality Control Commission regulations (20.6.2.1203 NMAC). For non-emergencies during normal business hours, call 505-428-2500. For non-emergencies after hours, call 866-428-6535 or 505-428-6535 (voice mail, twenty-four hours a day). For emergencies only, call 505-827-9329 twenty-four hours a day (NM Dept of Public Safety).

In addition to the above regulatory standards, SWQB recommends the following mitigation measures to avoid surface water contamination and to protect surface and groundwater quality during and after project activities:

- Implement Best Management Practice (BMPs) identified in the permit application to protect Surface Waters of the State. At no time should construction materials including fuel, oil, grease or other contaminants be staged or stored in flood prone areas during the summer monsoon season, typically July-September.

- Utilize a secondary containment system for fuel, oil, hydraulic fluid, lubricants, and other petrochemicals to prevent spills. During the summer monsoon seasons, typically July-September, store these materials outside of the flood-prone zone.

- Do not use pits and drill holes as disposal sites for oil, gas, grease or other potential contaminants to surface and ground water.

- Ensure appropriate spill clean-up materials such as absorbent pads are available on-site at all times during road construction, site preparations, drilling and reclamation to address potential spills.

- Contain process water within the closed-loop system or lined pits. Do not discharge process water to the ground or to the playa unless a discharge permit is secured from the USEPA and/or NMED.

- Minimize playa impacts by limiting the number of trips crossing the playa.

- Whenever possible, move drill holes, drill pads, mud/fluid pits out of the playa and provide a minimum 50-foot setback from any playas and other Surface Waters of the State to drill pads and staging areas.

- Perform all work in the dry season and postpone work during wet and muddy conditions. If vehicles and heavy equipment could create ruts in the playa, delay work to prevent damage to the playa. In general, if a precipitation event is equal to or greater than 0.25 inches within 24 hours occurs, delay work in the playa.

- Segregate and store distinct layers of soil as they are excavated from pits. Upon project completion, backfill pits with the segregated layers of soil, replicating the original soil layers. Restoring the playa's soil layers will help to protect its natural functions.

- Size pits to prevent overtopping during precipitation events. If stormwater controls are not implemented, stormwater will enter the playa and concentrate pollutants in the playa's basin. The playa that is located within the project area is a potential pathway to groundwater. Proper sizing of pits will help to protect both surface and groundwaters.

- Line pits to prevent transport of water contaminants to groundwater or surface water. Playas can concentrate pollutants because of their basin nature, but also serve as pathways to groundwater either by direct drainage below the playa or by fracture zones that connect the playa to underground flow.

- Utilize Best Management Practices to reduce soil compaction by stationary trucks and heavy equipment by using ground protection matting under tire areas.

- Re-grade the site to pre-construction elevation and topography during reclamation to preserve run-on hydrology to the playa.

- Record pre- and post-conditions of the playa in areas disturbed by the project operation with repeat photo points. Copy SWQB on final reports to MMD to confirm reclamation of the site to SWQB.

- Copy SWQB staff on notifications to MMD for project mobilization. Please copy Davena Crosley at davena.crosley@env.nm.gov.

To understand the site hydrology and better characterize the playa for maintenance and reclamation, SWQB recommends that the permittee conduct, the following studies prior to exploration activities:

- Map all playa(s) in the project area that may be impacted by drilling, drill pads, mud or fluid pits, or overland travel.
- Map all drainageways that drain to the playa(s) within the project area.
- Sample playa soils to determine shrink/swell clay content and depth.
- Sample vegetation as an indicator of playa inundation frequency.
- Install instrumentation to measure infiltration below playa and annulus.

If you have any questions, please contact Davena Crosley (NMED-SWQB) at 575-636-3425 or davena.crosley@env.nm.gov.

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
Hydrology Bureau

MMD REVIEW MEMORANDUM

DATE: February 26, 2024

TO: Samantha Rynas, Reclamation Specialist, Mining Act Reclamation Program (MARP), Mining and Minerals Division (MMD), Energy, Minerals and Natural Resources Department (EMNRD)

THROUGH: Katie Zemlick, Ph.D., Hydrology Bureau Chief KZ

FROM: Christopher E. Angel, PG, Senior Hydrologist, Hydrology Bureau CEA

SUBJECT: Alkali Flats Lithium Brine Phase 1 Exploration Project – New Minimal Impact, Alkali Flats, HI023EM, Hidalgo County

KEYWORD: Alkali Flats, District No. III, Hidalgo, Animas Underground Water Basin, Lordsburg, Basin Fill, Minimal Impact

ID: MMD_2024_002_HI023EM

INTRODUCTION

The New Mexico Office of the State Engineer (OSE) Hydrology Bureau received the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) Mining and Minerals Division's (MMD's) November 1, 2023, request for comments on the subject Alkali Flats Lithium Brine Phase 1 Exploration Drilling - New Minimal Impact Application (Alkali Flats). The MMD permit number is HI023EM. The application materials were downloaded from https://www.emnrd.nm.gov/mmd/hi023em-alkali-flats-lithium-brine-phase-1-exploration-project/.

The Alkali Flats application is requesting a permit to drill three mineral exploratory boreholes. These boreholes are to be drilled in the Animas Underground Water Basin of Hildago County, New Mexico. More specifically, the boreholes are to be drilled in Section 15, Township 23 South, Range 20 West. Each borehole is to be 5-inches (in) in diameter and penetrate to depths ranging between 500 and 2,600 feet below ground level (fbgl). Each borehole is to be plugged and not converted for use as water wells.

This review is to evaluate the area for possible hydrogeologic concerns and the materials used in plugging the boreholes.

COMMENTS

The NMOSE Hydrology Bureau has completed a review of the Alkali Flats - Minimal Impact Exploration Project (HI023EM) application and provides the following comments:

General Comments

Surface Water

Three exploratory boreholes are to be drilled in the Animas Underground Water Basin in the Alkali Flats. It is unlikely that the playa will be negatively affected by the drilling of these exploratory boreholes. However, the area may be negatively affected by improperly drilled or plugged boreholes.

Groundwater

Groundwater flow is to the north-northwest in the Animas Valley (O'Brien and Stone, 1981; O'Brien and Stone, 1983). Groundwater tends to be shallower at the alkali flat area and tends to precipitate halite and gypsum through evaporative process (Hibbs et al, 2000). The precipitation of halite and gypsum in alkali flats (Hibbs et al, 2000) indicate an increased salinity at the proposed drill sites.

An OSE exploratory permit was submitted with the MMD information. This application will need to be submitted to the OSE District III office in Deming, New Mexico for evaluation and permitting.

Borehole Abandonment

Dry Boreholes

Bentonite chips/pellets, neat cement, and topsoil are to be used in the abandonment of dry boreholes. The use of bentonite and cement cap is acceptable at this location. The bentonite will not likely remain hydrated as the arid climate and salts precipitating if the vadose zone will desiccate the material. The cement cap will act as the primary sealant preventing fluids from directly entering the subsurface.

Bentonite is to be placed from total depth to 12 fbgl. The bentonite chips/pellets shall be hydrated with five (5) gallons of fresh water per 50-pound (lb) sack/pail of bentonite chips/pellets (OSE, 2020). The water used must have a total hardness of less than 500 milligrams per liter (mg/L) and chlorides must be lower than 1,500 mg/L. If the manufacturer specifications are different from OSE (2020), then a written variance must be submitted to the OSE and is to include all documentation and justification for the variance. The OSE will respond in writing to all variance requests.

Each borehole is to be capped with 10 feet of neat cement. The type of cement is not documented in the application. As these boreholes are going to encounter high sulfate soils (gypsum precipitation) a high sulfate resistant cement (HSR) is required.

Wet Boreholes

The Alkali Flats MMD application indicates that they want to plug the borehole with "high density bentonite clay". This is **not** acceptable. Bentonite products are not acceptable for use in brines, high hardness, high chlorides etc. As this area is documented as precipitating halite and gypsum in the subsurface the only suitable plugging material is a HSR cement. There are many ways for a plugging material to be designated as HSR. The applicant will need to submit a HSR cement design for approval.

Miscellaneous Comments

The Alkali Flats minimal impact exploration application indicates the water to be used for this application is to be from the Town of Lordsburg. The Town of Lordsburg appears to have municipal water rights which would allow for the commercial sale of water. It is recommended that the District III Office of the State Engineer be contacted to determine if the specific source of water to be used in the drilling of the Alkali Flats exploratory boreholes is appropriately permitted.

REFERENCES

Keith M. O'Brien and William J. Stone. "A Two-Dimensional Hydrologic Model of the Animas Valley, Hidalgo County, New Mexico." New Mexico Bureau of Mines and Mineral Resources, January 1983. https://geoinfo.nmt.edu/publications/openfile/downloads/100-199/133/ofr_133.pdf.

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Lawton, T. F., N. J. McMillan, V. T. McLemore, and [Eds.] [Eds.], eds. "Some Notes on the Hydrogeology and Ground-Water Quality of the Animas Basinn System, Southwestern New Mexico." In *Southwest Passage: A Trip through the Phanerozoic*. New Mexico Geological Society, 2000. https://nmgs.nmt.edu/publications/guidebooks/downloads/51/51_p0227_p0234.pdf.

OSE. Guidelines. "Office of the State Engineer Sealant Guidelines for Well Construction and Plugging (for Use in Non-Contaminated Conditions)." Guidelines, June 9, 2020.

APPENDICES

Appendix A

GENERAL CONCERNS RELATED TO NMOSE REGULATION OF EXPLORATORY BOREHOLE DRILLING

Encountering Groundwater and Associated Plugging of Those Borings

Well drilling activities (including mineral exploration borehole drilling ("mine drill holes") that penetrate a water-bearing stratum) and well plugging, are regulated in part under 19.27.4 NMAC. Most recently promulgated in 6/30/2017, these regulations require any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the NMOSE (New Mexico Office of the State Engineer). Therefore, a New Mexico licensed Well Driller shall perform the drilling and plugging of exploratory boreholes that encounter groundwater.

Exploration drilling where any form of groundwater is encountered will be subject to pertinent sections of 19.27.4 NMAC, including but not limited to Sections 19.27.4.30.C NMAC for plugging and abandonment of non-artesian wells/borings; 19.27.4.31 NMAC for artesian wells/borings; and 19.27.4.36 NMAC for mine drill holes that encounter water. A complete version of the NMOSE 19.27.4 NMAC regulations can be found on the NMOSE website at: https://www.ose.state.nm.us/Statewide/wdRules.php.

MMD will likely place additional conditions on the drilling and plugging of all mineral exploration borings via the MMD project permit.

All onsite drilling and plugging activities where groundwater is encountered shall be conducted under the supervision of the New Mexico licensed Well Driller or a NMOSE-registered Drill Rig Supervisor under the direction of the licensed Well Driller.

Additional NMOSE filings will be required where it is requested that an exploratory borehole be converted to a water well. The well design and construction shall be subject to the provisions of NMOSE regulations 19.27.4 NMAC. Appropriation of water from such a conversion may require a water right. The MMD may disallow the conversions of exploratory borings to water wells if not permitted specifically in the MMD permit.

Use/Extraction of Temporary Casing

When drilling through overburden or caving, poorly consolidated, or karst geologic units, use of temporary casing may be desired. Any temporary casing should be installed with the full intention of its removal before borehole plugging, therefore temporary casing should be inserted into a borehole of sufficiently large diameter to allow easy extraction upon termination of drilling. NMAC 19.27.4 regulations dictate methodology for the installation of permanent well casing, including the installation of required annular seal, should that option be more prudent.

If temporary casing lacking a rule-compliant annular seal or casing grade becomes stuck in-place down hole, the potential for permanent commingling of aquifers or down hole surface water drainage may occur via an unsealed annulus. In these cases, staged casing cutting and extraction, or remedial casing perforation and squeeze-cementing will be required to the satisfaction of the State Engineer as part of final well decommissioning. Steps should be taken during drilling to prevent deleterious fall-in or drainage of cuttings/sediments into the annulus outside the temporary casing to best allow for full retrieval and proper borehole plugging.

When setting of temporary casing occurs or is expected, appropriate detail of the proposed casing extraction and borehole clean-out process prior to plugging will be required in the NMOSE Well Plugging Plan of Operations form. If exploratory drilling through stratified or artesian aquifer systems, filing a NMOSE Artesian Well Plan of Operations may be required to preemptively assess and address NMOSE concerns regarding best borehole decommissioning practices.

Exploratory Borehole Plugging

Terms of borehole plugging will be established jointly by the evaluation of the NMOSE Well Plugging Plan of Operations and the review of the relevant MMD application for water-bearing boreholes. Approved high-solids bentonite abandonment-grade sealants and/or approved cement slurries will be required for plugging as deemed hydrogeologically appropriate by the agencies. NMOSE-authorized cement slurries will be required for the decommissioning of flowing artesian boreholes. If the exploratory borings do not encounter groundwater, MMD plugging regulations (19.10.3 NMAC) prevail over those of 19.27.4 NMAC.

NMOSE well plugging regulations require tremie placement of the column of well sealant, which shall extend from the bottom of the borehole to ground surface. By regulation, pumping decommissioning sealants into the top of the borehole is not allowed. The NMOSE defers to the discretion of the MMD for the choice of sealant versus natural fill in the uppermost portion of a borehole plug to facilitate site restoration.

Required plugging of water-bearing exploratory borings shall occur within the timeframe specified by either the NMOSE or MMD to minimize cave-in and the potential for incomplete plugging due to blockages in the borehole.

Drill Rig Fuels, Oils and Fluids

Drill rigs contain and consume fuels, oil, and hydraulic fluids, and are subject to leaks. Drill rigs often remain in-place longer than other pieces of exploration equipment onsite, are frequently running, and are positioned immediately above and adjacent to the open borehole. As a standard practice to prevent contamination and reduce site cleanup activities, it may be beneficial to use bermed, impermeable ground sheeting under the drill rig. Consideration of bermed containment volume sufficient to accommodate a high-intensity precipitation event is also a good practice.

Industrial Stormwater

Fact Sheet Series

Sector G: Metal Mining (Ore Mining and Dressing) Facilities

U.S. EPA Office of Water
EPA-833-F-06-022
February 2021

What is the NPDES stormwater permitting program for industrial activity?

Activities, such as material handling and storage, equipment maintenance and cleaning, industrial processing or other operations that occur at industrial facilities are often exposed to stormwater. The runoff from these areas may discharge pollutants directly into nearby waterbodies or indirectly via storm sewer systems, thereby degrading water quality.

In 1990, the U.S. Environmental Protection Agency (EPA) developed permitting regulations under the National Pollutant Discharge Elimination System (NPDES) to control stormwater discharges associated with eleven categories of industrial activity. As a result, NPDES permitting authorities, which may be either EPA or a state environmental agency, issue stormwater permits to control runoff from these industrial facilities.

What types of industrial facilities are required to obtain permit coverage?

This fact sheet discusses stormwater discharges from metal mining (ore mining and dressing) facilities as defined by Standard Industrial Classification (SIC) Major Group 10. Metal mining is defined here as all ore mining and/or dressing and beneficiating operations performed at mills operated in conjunction with the mines served or at mills (i.e., custom mills) operated separately. Facilities and products in this group fall under the following categories, all of which require coverage under an industrial stormwater permit if discharges of stormwater have come into contact with any overburden, raw material, intermediate products, finished product, byproduct or waste products located on the site of such operations:

- Iron Ores (SIC 1011)
- Copper Ores (SIC 1021)
- Lead and Zinc Ores (SIC 1031)
- Gold Ores (SIC 1041)
- Silver Ores (SIC 1044)
- Ferroalloy Ores, Except Vanadium (SIC 1061)
- Uranium-Radium-Vanadium Ores (SIC 1094)
- Miscellaneous Metal Ores, Not Elsewhere Classified (SIC 1099)

Permit coverage is required of all phases of mining operations, whether active or inactive, as long as there is exposure to significant materials. This includes land disturbance activities such as the expansion of current extraction sites, active and inactive mining stages, and reclamation activities at those establishments primarily engaged in mining, developing mines, or exploring for metallic minerals (ores).

A stormwater permit generally is not appropriate for the following types of mines:

- Sites or parts of sites which are determined to cause or contribute to water quality standards violations
- Active facilities and those under reclamation, which have discharges subject to effluent limitation guidelines under NPDES, including other non-stormwater discharges such as from floor drains in maintenance buildings and preparation plant areas
- Pollutant seeps or underground drainage from inactive mines and refuse disposal areas that do not result from precipitation events.

For these types of sites, contact the EPA or state NPDES permitting authority to determine if and what type of discharge permit may be necessary.

What does an industrial stormwater permit require?

Common requirements for coverage under an industrial stormwater permit include development of a written stormwater pollution prevention plan (SWPPP), implementation of control measures, and submittal of a request for permit coverage, usually referred to as the Notice of Intent or NOI. The SWPPP is a written assessment of potential sources of pollutants in stormwater runoff and control measures that will be implemented at your facility to minimize the discharge of these pollutants in runoff from the site. These control measures include site-specific best management practices (BMPs), maintenance plans, inspections, employee training, and reporting. The procedures detailed in the SWPPP must be implemented by the facility and updated as necessary, with a copy of the SWPPP kept on-site. The industrial stormwater permit also requires collection of visual, analytical, and/or compliance monitoring data to determine the effectiveness of implemented BMPs. For more information on EPA's industrial stormwater permit and links to State stormwater permits, go to **www.epa.gov/npdes/stormwater** and click on "Industrial Activity."

What pollutants are associated with my facility's activities?

Pollutants conveyed in stormwater discharges from metal mining (ore mining and dressing) facilities will vary. There are a number of factors that influence to what extent industrial activities and significant materials can affect water quality.

- Geographic location
- Topography
- Hydrogeology
- Extent of impervious surfaces (e.g., concrete or asphalt)
- Type of ground cover (e.g., vegetation, crushed stone, or dirt)
- Outdoor activities (e.g., material storage, loading/unloading, vehicle maintenance)
- Size of the operation
- Type, duration, and intensity of precipitation events

Because of the land-disturbing nature of the ore mining and dressing industry, contaminants of concern generated by industrial activities include total suspended solids (TSS), total dissolved solids (TDS), turbidity, acid drainage, and heavy metals. Although there are many activities that occur at a facility, this fact sheet only covers those activities that occur outdoors and where activities or materials may be exposed to precipitation.

The activities, pollutant sources, and pollutants detailed in Table 1 are commonly found at metal mining (ore mining and dressing) facilities.

Table 1. Common Activities, Pollutant Sources, and Pollutants at Metal Mining (Ore Mining and Dressing) Facilities

Activity	Pollutant Source	Pollutant
Site preparation	Road construction	Dust, TSS, TDS, turbidity
	Removal of overburden	
	Removal of waste rock to expose the metal	
Mineral extraction	Blasting activities	Dust, TSS, nitrate/nitrite
Beneficiation activities	Milling	Dust, TSS, TDS, pH, turbidity, fines, heavy metals
	Flotation	Dust, TSS, TDS, pH, turbidity, fines, chemical reagents, acids, heavy metals
	Gravity concentration	TSS, TDS, pH, turbidity, heavy metals
	Amalgamation	Dust, TSS, TDS, pH, turbidity, heavy metals, mercury
	Waste rock storage	Dust, TSS, TDS, pH, turbidity, heavy metals
	Raw material loading	Dust, TSS, TDS, turbidity, heavy metals
	Process materials unloading	Diesel fuel, oil, gasoline, chemical reagents
	Raw waste material transportation	Dust, TSS, TDS, turbidity, heavy metals
Leaching	Heap leach piles	Dust, TSS, TDS, pH, turbidity, heavy metals, cyanide
Other activities	Sedimentation pond upsets	TSS, TDS, turbidity, pH, heavy metals
	Sedimentation pond sludge removal and disposal	Dust, TSS, TDS, turbidity, pH, heavy metals
	Air emission control device cleaning	Dust, TSS, TDS, turbidity, metals
Equipment/vehicle fueling and maintenance	Fueling activities	Gas/diesel fuel, oil
	Parts cleaning	Solvents, oil, heavy metals, acid/alkaline wastes
	Waste disposal of oily rags, oil and gas filters, batteries, coolants, and degreasers	Oil, heavy metals, solvents, acids
	Fluid replacement including hydraulic fluid, oil, transmission fluid, radiator fluids, and grease	Oil and grease, arsenic, lead, cadmium, chromium, chemical oxygen demand (COD), and benzene
Reclamation activities	Site preparation for stabilization	Dust, TSS, TDS, turbidity, heavy metals

Note: Activities may have additional pollutant sources that contain PFAS and can come into contact with stormwater discharges. Per and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that include PFOA, PFOS, GenX, and many other chemicals.

What BMPs can be used to minimize contact between stormwater and potential pollutants at my facility?

A variety of BMP options may be applicable to eliminate or minimize the presence of pollutants in stormwater discharges from metal mining facilities. You will likely need to implement a combination or suite of BMPs to address stormwater runoff at your facility. Your first consideration should be for pollution prevention BMPs, which are designed to prevent or minimize pollutants from entering stormwater runoff and/or reduce the volume of stormwater requiring management. Prevention BMPs can include regular cleanup, collection and containment of debris in storage areas, and other housekeeping practices, spill control, and employee training. It may also be necessary to implement treatment BMPs, which are engineered structures intended to treat stormwater runoff and/or mitigate the effects of increased stormwater runoff peak rate, volume, and velocity. Treatment BMPs are generally more expensive to install and maintain and include oil-water separators, wet ponds, and proprietary filter devices.

Sediment ponds, discharge diversion techniques, as well as methods of runoff dispersion, are control strategies often used to minimize impacts of significant materials on stormwater. For mine sites requiring additional sources of water for processing operations, rainfall events as well as stormwater run-on will be managed for use in dust suppression, processing, and washing activities. Many mine sites are already equipped with sedimentation ponds and other established process wastewater treatment methods in order to meet effluent limitation guidelines. Additional stormwater management practices used at metal mining facilities are described further in this fact sheet.

BMPs must be selected and implemented to address the following:

Good Housekeeping Practices

Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential pollution sources from coming into contact with stormwater. It includes establishing protocols to reduce the possibility of mishandling materials or equipment and training employees in good housekeeping techniques. Common areas where good housekeeping practices should be followed include trash containers and adjacent areas, material storage areas, vehicle and equipment maintenance areas, and loading docks. Good housekeeping practices must include a schedule for regular pickup and disposal of garbage and waste materials and routine inspections of drums, tanks, and containers for leaks and structural conditions. Practices also include containing and covering garbage, waste materials, and debris. Involving employees in routine monitoring of housekeeping practices has proven to be an effective means of ensuring the continued implementation of these measures. Industrial facilities can conduct activities that use, store, manufacture, transfer, and/or dispose of PFAS-containing materials. Successful good housekeeping practices to minimize PFAS exposure to stormwater could include inventorying the location, quantity, and method of storage; using properly designed storage and transfer techniques; providing secondary containment around chemical storage areas; and using proper techniques for cleaning or replacement of production systems or equipment.

Minimizing Exposure

Where feasible, minimizing exposure of potential pollutant sources to precipitation is an important control option. Minimizing exposure prevents pollutants, including debris, from coming into contact with precipitation and can reduce the need for BMPs to treat contaminated stormwater runoff. It can also prevent debris from being picked up by stormwater and carried into drains and surface waters. Examples of BMPs for exposure minimization include covering materials or activities with temporary structures (e.g., tarps) when wet weather is expected or moving materials or activities to existing or new permanent structures (e.g., buildings, silos, sheds). Even the simple practice of keeping a dumpster lid closed can be a very effective pollution prevention measure. Another example could include locating PFAS-containing materials and residues away from drainage pathways and surface waters.

Erosion and Sediment Control

BMPs must be selected and implemented to limit erosion on areas of your site that, due to topography, activities, soils, cover, materials, or other factors are likely to experience erosion. Erosion control BMPs such as seeding, mulching, and sodding prevent soil from becoming dislodged and should be considered first. Sediment control BMPs such as silt fences, sediment ponds, and stabilized entrances trap sediment after it has eroded. Sediment control BMPs should be used to back-up erosion control BMPs.

Because ore mining and dressing is largely a land disturbance activity, BMPs that minimize erosion and sedimentation will be most effective if installed at the inception of operations and maintained throughout active operations and reclamation of the site. From the construction of access and haul roads, to closure and reclamation activities, implementation of BMPs is often essential to minimizing long-term environmental impacts to an area.

A number of structural collection devices have been developed to remove sediment from runoff before it leaves the site. Several methods of removing sediment from site runoff involve diversion mechanisms previously discussed, supplemented by a trapping or storage device. Structural practices typically involve filtering diffuse stormwater flows through temporary structures such as straw bale dikes, silt fences, brush barriers, or vegetated areas.

Structural practices are typically low in cost yet require periodic removal of sediment to remain functional. As such, they may not be appropriate for permanent use at inactive mines. However, these practices may be effectively used as temporary measures during active operation and/or prior to the final implementation of permanent measures.

Management of Runoff

Your SWPPP must contain a narrative evaluation of the appropriateness of stormwater management practices that divert, infiltrate, reuse, or otherwise manage stormwater runoff so as to reduce the discharge of pollutants. Appropriate measures are highly site-specific, but may include, among others, vegetative swales, collection and reuse of stormwater, inlet controls, snow management, infiltration devices, and wet retention measures. Incorporating treatment like granular activated carbon may be helpful to remove certain pollutants like PFAS.

A combination of preventive and treatment BMPs will yield the most effective stormwater management for minimizing the offsite discharge of pollutants via stormwater runoff. Though not specifically outlined in this fact sheet, BMPs must also address preventive maintenance records or logbooks, regular facility inspections, spill prevention and response, and employee training.

All BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements, others are quite involved. You must regularly inspect all BMPs to ensure they are operating properly, including during runoff events. As soon as a problem is found, action to resolve it should be initiated immediately.

BMPs for Metal Mining Facilities

EPA has identified a wide variety of best management practices (BMPs) that may be used to mitigate discharges of contaminants at mines. Many of the practices focus on sediment and erosion control and are similar to BMPs used in the construction industry. These controls to prevent erosion and control sedimentation are the most effective if they are installed at the inception of operations and maintained throughout active operations and reclamation of the site. For more details on the use and implementation of these practices you are encouraged to obtain a copy of one or more of the many good sediment and erosion control books available on the market. The following categories describe best management practice options for reducing pollutants in stormwater discharges at metal mining facilities.

- **Discharge Diversions.** Discharge diversions provide the first line of defense in preventing the contamination of discharges, and subsequent contamination of receiving waters. Discharge diversions are temporary or permanent structures installed to divert flow, store flow, or limit stormwater run-on and runoff.

  These diversion practices have several objectives. First, diversion structures can be designed to prevent otherwise uncontaminated (or less contaminated) water from crossing disturbed areas or areas containing significant amounts of contaminated materials, where contact may occur between run-on and site materials. These source reduction measures may be particularly effective for metal mining facilities because they prevent run-on of uncontaminated discharges from contacting exposed materials and/or reduce the flow across disturbed areas, thereby lessening the potential for erosion. Second, diversion structures can be used to collect or divert waters for later treatment, if necessary. The usefulness of these control measures are limited by such factors as the size of the area to be controlled and the type and nature of materials exposed and nature of precipitation events.

Diversion dikes, curbs, and berms are temporary or permanent diversion structures that prevent runoff from passing beyond a certain point, and divert runoff away from its intended path. Dikes, curbs or berms may be used to surround and isolate areas of concern, diverting flow around piles of overburden, waste rock, and storage areas, to minimize discharge contact with contaminated materials and to limit discharges of contaminated water from confined areas.

- **Drainage/Stormwater Conveyance Systems.** Drainage or stormwater conveyance systems can provide either a temporary or a permanent management practice which functions to channel water away from eroded or unstabilized areas, convey runoff without causing erosion, and/or carry discharges to more stabilized areas. The use of drainage systems as a permanent measure may be most appropriate in areas with extreme slopes, areas subject to high velocity runoff, and other areas where the establishment of substantial vegetation is infeasible or impractical.

  For instance, several BMPs may be useful stormwater and erosion control methods. Some examples of drainage/stormwater conveyance systems include:

  - *Channels or gutters*
  - *Open top box culverts and waterbars*
  - *Rolling dips and road sloping*
  - *Roadway surface water deflector*
  - *Culverts*

- **Runoff Dispersion.** Drainage systems are most effective when used in conjunction with runoff dispersion devises designed to slow the flow of water discharged from a site. These devices also aid stormwater infiltration into the soil and flow attenuation. Some examples of velocity dissipation devices include:

  - *Check dams*
  - *Rock outlet protection*
  - *Level spreaders*
  - *Serrated slopes and benched slopes*
  - *Contouring*
  - *Drop structures*

- **Sediment Control and Collection.** Erosion and sediment controls limit movement and retains sediments, preventing transportation offsite. Several structural collection devices have been developed to remove sediment from runoff before it leaves the site. Several methods of removing sediment from site runoff involve diversion mechanisms previously discussed, supplemented by a trapping or storage device. Structural practices typically involve filtering diffuse stormwater flows through temporary structures such as straw bale dikes, silt fences, brush barriers or vegetated areas.

  Structural practices are typically low in cost. However, structural practices require periodic removal of sediment to remain functional. As such, they may not be appropriate for permanent use at inactive mines. However, these practices may be effectively used as temporary measures along haul roads and access roads. Several examples of sediment control and collection BMPs include:

  - *Gabions, riprap, and native rock retaining walls*
  - *Biotechnical stabilization*
  - *Straw bale barrier*
  - *Vegetated buffer strips*
  - *Silt fence/filter fence*
  - *Siltation berms*
  - *Brush sediment barriers*
  - *Sediment traps or catch basins*
  - *Sediment/settling ponds*

- **Vegetation Practices.** Vegetation practices involve establishing a sustainable ground cover by permanent seeding, mulching, sodding, and other such practices. A vegetative cover reduces the potential for erosion of a site by: absorbing the kinetic energy of raindrops which would otherwise impact soil; intercepting water so it can infiltrate into the ground instead of running off and carrying contaminated discharges; and by slowing the velocity of runoff to promote on-site deposition of sediment. These practices include:
  - *Topsoiling*
  - *Broadcast seeding and drill seeding*
  - *Willow cutting establishment*
  - *Plastic matting, plastic netting and erosion control blankets*
  - *Mulch-straw or wood chips*
  - *Compaction*

  Typically, the costs of vegetative controls are low relative to other discharge mitigation practices. Given the limited capacity to accept large volumes of runoff, and potential erosion problems associated with large concentrated flows, vegetative controls should typically be used in combination with other management practices.
- **Capping.** Capping or sealing of waste materials is designed to prevent infiltration, as well as to limit contact between discharges and potential sources of contamination. Ultimately, capping should reduce or eliminate the contaminants in discharges. In addition, by reducing infiltration, the potential for seepage and leachate generation may also be lessened.

  In some cases, the elimination of a pollution source through capping contaminant sources may be the most cost effective control measure for discharges from inactive ore mining and dressing facilities. Depending on the type of management practices chosen the cost to eliminate the pollutant source may be very high. Once completed, however, maintenance costs will range from low to nonexistent.
- **Treatment.** In some cases (e.g., low pH and/or high metals concentrations), BMPs, and sediment and erosion controls may not be adequate to produce an acceptable quality of stormwater discharge. Under those circumstances additional physical or chemical treatment systems may be necessary to protect the receiving waters. Treatment practices are those methods of control which normally are thought of as being applied at the "end of the pipe" to reduce the concentration of pollutants in stormwater before it is discharged. This is in contrast to many BMPs, where the emphasis is on keeping the water from becoming contaminated. Treatment practices may be required where flows are currently being affected by exposed materials and other BMPs are insufficient to meet discharge goals. These practices are usually the most resource intensive as they often require significant construction costs and monitoring and maintenance on a frequent and regular basis.

  Treatment options may involve a range of maintenance controls. High maintenance treatment techniques require manpower to operate and maintain the BMP. Low maintenance cost techniques have initial capital costs but operate with low long-term maintenance after being implemented. At a few sites, treatment measures other than high maintenance measures may be appropriate to address specific pollutants. Several examples of treatment BMPs include chemical or physical treatment, oil/water separators, and artificial wetlands.

  An example of a high maintenance technology that is found at many active metal mining facilities is chemical/physical treatment. The most common type of chemical/physical treatment involves the addition of lime or other such caustics to remove metals. Metals may be removed from stormwater by raising the pH of the stormwater to precipitate them out as hydroxides. After metals precipitation, the addition of some form of acid or carbon dioxide may be required to reduce the pH to acceptable levels. Polymer addition may be required to enhance the settling characteristics of the metal hydroxide precipitate. In general, this practice requires significant operator participation to ensure proper neutralization and/or precipitation and thus may not be cost effective for most stormwater discharges.

Another example of a high maintenance treatment technology is an oil/water separator. An American Petroleum Institute (API) oil/water separator or similar type of treatment device skims oil and settles sludge to remove oil from water. This type of BMP system can be effective for improving water quality either alone or in conjunction with other treatment practices.

The use of artificial wetlands is another method of treating process wastewater from inactive mines. There has been extensive research on the use of artificial wetlands as a means of mitigating acid mine drainage. They can be an effective system for improving water quality either alone or in conjunction with other treatment practices. The complex hydrologic, biological, physical, and chemical interactions that take place within a wetland result in a natural reduction and cleansing of influent pollutants. Wetland processes are able to filter sediments and absorb and retain chemical and heavy metal pollutant through biological degradation, transformation, and plant uptake.

Artificial wetlands are designed to maintain a permanent pool of water. Properly installed and maintained retention structures (also known as wet ponds) and artificial wetlands will be most cost-effective when used to control runoff from larger, intensively developed sites. These artificial wetlands are created to provide treatment but also provide a wildlife habitat, and may enhance recreation and landscape amenities.

BMPs for Site Activities

A number of sites and activities found at metal mining facilities require the implementation of BMPs to prevent the contamination of stormwater. Implementation of BMPs are required not only for mineral extraction sites and material piles, but for discharges from roads accessing these sites. Additionally, restabilization must occur with any disturbed areas. An overview of additional BMPs that may be applicable at haul or access roads; pits or quarries; overburden, waste rock, and raw material piles; and reclamation activities are discussed below.

- **Haul Roads and/or Access Roads.** Placement of haul roads or access roads should occur as far as possible from natural drainage areas, lakes, ponds, wetlands, or floodplains where soil will naturally be less stable for heavy vehicle traffic. If a haul road must be constructed near water, as little vegetation as possible should be removed from between the road and the waterway, as vegetation is a useful buffer against erosion and is an efficient sediment collection mechanism. The width and grade of haul or access roads should be minimal and designed to match natural contours of the area. Construction of haul roads should be supplemented by BMPs that divert runoff from road surfaces, minimize erosion, and direct flow to appropriate channels for discharge to treatment areas or other well-stabilized areas.
- **Equipment/Vehicle Fueling and Maintenance.** Fueling and maintenance activities should be conducted indoors or under cover on an impermeable surface. Berms, curbs, or similar means should be used to ensure that stormwater runoff from other parts of the facility does not flow over maintenance and fueling areas. Runoff from fueling and maintenance areas should be collected and treated or recycled. Proper waste management and spill prevention and response procedures should be implemented. Select good housekeeping procedures to minimize the amount of contaminated runoff generated (e.g. use dry cleanup methods, use drip pans, and drain parts of fluids before disposal). Conduct inspections of fueling areas to prevent problems before they occur.
- **Pits or Quarries.** Excavation of a pit or quarry must be accompanied by BMPs to minimize impacts to area surface waters. As little vegetation as possible should be removed from these areas during excavation activities to minimize exposed soils. In addition, stream channels and other sources of water that may discharge into a pit or quarry should be diverted around that area to prevent contamination.

  BMPs can be used to control total suspended solids levels in runoff from unvegetated areas. These can include sediment/settling ponds, check dams, silt fences, and straw bale barriers.

- **Overburden, Waste Rock, and Raw Material Piles.** Overburden, topsoil, and waste rock, as well as raw material and intermediate and final product stockpiles, should be located away from surface waters, other sources of water and from geologically unstable areas. In addition surface waters and stormwater should be diverted around the piles. As many piles as possible should be revegetated, (even if only on a temporary basis). At closure, remaining piles should be reclaimed.

  Reclamation Activities. When a mineral deposit is depleted and operations cease, a mine site must be reclaimed according to appropriate state or federal standards. Closure activities typically include restabilization of disturbed areas such as access or haul roads, pits or quarries, sedimentation ponds or work-out pits, and remaining waste piles. Overburden and topsoil stockpiles may be used to fill in a pit or quarry (where practical). Recontouring and revegetation should be performed to stabilize soils and prevent erosion.

  Major reclamation activities such as recontouring roads and filling in a pit or quarry can only be performed after operations have ceased. However, reclamation activities such as stabilization of banks, reseeding, and revegetation should be implemented in mined out portions, or inactive areas of a site as active mining moves to new areas.

EPA recognizes that quarries are frequently converted into reservoirs, or recreational areas, after the mineral deposit is depleted. However, this does not preclude the reclamation of disturbed areas above the quarry rim.

Typically, the costs of stabilization controls are low relative to other discharge mitigation practices. Given the limited capacity to accept large volumes of runoff, and potential erosion problems associated with large concentrated flows, stabilization controls should typically be used in combination with other management practices. These measures have been documented as particularly appropriate for mining sites.

BMPs for Various Extraction Techniques

Metals are recovered by three basic extraction techniques: surface mining; underground mining; and placer mining. Each type of extraction method may be followed by varying methods of beneficiation and processing. Due to similarities in mining operations for many of the minerals within this industry, activities, significant materials, and materials management practices are fairly uniform.

- **Surface mines.** Materials management practices at surface mines are typically designed to control dust emissions and soil erosion from extraction activities, and offsite transport of significant materials. Settling ponds and impoundments are commonly used to reduce TSS and other contaminants in process generated wastewaters. These controls may also be used to manage stormwater runoff and run-on with potentially few alterations to on-site drainage systems.

  Impoundments are used to manage tailings generated at facilities engaged in flotation or heavy media separation operations. These impoundments are used to manage beneficiation/ processing wastewaters generated at the facility and may also be used to manage stormwater runoff.
- **Underground mines.** Materials management practices for significant materials at the surface of underground mining facilities are similar to those materials management practices used at surface mining operations. However, waste rock or mill tailings are in some cases being returned to the mine as fill for the mined-out areas or may be directed to a disposal basin.
- **Placer mines.** Settling ponds are used to manage process wastewaters and are, in some cases, being used to manage contaminated stormwater runoff.
- **Inactive mines.** Inactive mine sites also require implementation of BMPs. Inactive ore mining and dressing operations are those where industrial activities are no longer occurring. When active, mineral extraction could have occurred from surface mines, solution mines, placer operations, or underground mines. These sites require permit coverage until reclaimed because

significant materials may remain on-site, and, if exposed, are potential sources of stormwater contamination. Due to the seasonal nature of this industry, mine sites can become temporarily inactive for extended periods of time. Temporarily inactive sites are not viewed the same as permanently inactive sites.

Implement BMPs, such as those listed below in Table 2 for the control of pollutants at metal mining facilities, to minimize and prevent the discharge of pollutants in stormwater. Identifying weaknesses in current facility practices will aid the permittee in determining appropriate BMPs that will achieve a reduction in pollutant loadings. BMPs listed in Table 2 are broadly applicable to metal mining facilities; however, this is not a complete list and you are recommended to consult with regulatory agencies or a stormwater engineer/consultant to identify appropriate BMPs for your facility.

Table 2. BMPs for Potential Pollutant Sources at Metal Mining (Ore Mining and Dressing) Facilities

Pollutant Source	BMPs
Haul Roads and/or Access Roads	❑ Construction of haul roads should be supplemented by BMPs that divert runoff from road surfaces, minimize erosion, and direct flow to appropriate channels for discharge to treatment areas. Examples of BMPs include: - Install dikes, curbs, and berms for discharge diversions. - Install conveyance systems such as channels, gutters, culverts, rolling dips and road sloping, and/or roadway water deflectors. - Use check dams, rock outlet protection, level spreaders, stream alternation and drop structures for runoff dispersion. - Install gabions, riprap, native rock retaining walls, straw bale barriers, sediment traps/catch basins, and vegetated buffer strips for sediment control and collection. - Keep as much vegetation as possible when building roads and seed as necessary. Stabilize soil via willow cutting establishment. ❑ Place as far as possible from natural drainage areas, lakes, ponds, wetlands, or floodplains ❑ Width and grade of roads should be as small as possible to meet regulatory requirements and designed to match the natural contours of the area. ❑ Frequently inspect all stabilization and structural erosion control measures and perform all necessary maintenance and repairs.
Pits/Quarries or Underground Mines	❑ Install dikes, curbs, and berms for discharge diversions. ❑ Install conveyance systems such as channels and gutters to control runoff and run-on. ❑ Use serrated slopes, benched slopes, contouring, and stream alteration to direct uncontaminated discharges away from a pit or quarry. ❑ Install sediment settling ponds, straw bale barrier, and siltation berms. ❑ Keep as much vegetation as possible when excavating and seed as necessary to minimize the amount of exposed soils.
Overburden, Waste Rock, and Raw Material Piles	❑ Overburden, topsoil, waste rock, raw material, or intermediate and final product stockpiles should be located away from surface waters and other sources of run-on, as well as geologically unstable areas. ❑ Install dikes, curbs, and berms for discharge diversions to control runoff and run-on. ❑ Install conveyance systems such as channels and gutters to control runoff and run-on. ❑ Use serrated slopes, benched slopes, contouring, and stream alteration around piles for sediment control and runoff dispersion. ❑ Install plastic matting, plastic netting, erosion control blankets, mulch straw, sediment/settling ponds, silt fences, siltation berms, and/or compaction for sediment control and collection. ❑ Stabilize and recontour piles as necessary.

Table 2. BMPs for Potential Pollutant Sources at Metal Mining (Ore Mining and Dressing) Facilities (continued)

Pollutant Source	BMPs
Reclamation	❑ Vegetate as many piles as possible (involves topsoiling, seedbed preparation, and/or seeding). ❑ Install dikes, curbs, and berms for discharge diversions. ❑ Install conveyance systems such as channels and gutters. ❑ Use check dams, rock outlet protection, level spreaders, stream alternation, drop structures, serrated slopes, drain fields, benched slopes, contouring, and stream alteration for runoff dispersion. ❑ Install gabions, riprap, native rock retaining walls, straw bale barriers, sediment traps/catch basins, biotechnical stabilization, silt fences, siltation berms, brush sediment barriers, and vegetated buffer strips for sediment control and collection. ❑ Recontouring and vegetation should be performed to stabilize soils and prevent erosion in mined out portions or inactive areas of the site as active mining moves to new areas (includes topsoiling, seedbed preparation, seeding, and willow cutting establishment). ❑ If a quarry is being converted into a reservoir or recreational area, disturbed areas above the quarry rim must still be reclaimed. ❑ Use overburden and topsoil stockpiles to fill in a pit or quarry (when practical).
Equipment/vehicle maintenance	Minimizing Exposure ❑ Perform all cleaning operations indoors or under covering when possible. Conduct the cleaning operations in an area with a concrete floor with no floor drainage other than to sanitary sewers or treatment facilities. ❑ If operations are uncovered, perform them on a concrete pad that is impervious and contained. ❑ Park vehicles and equipment indoors or under a roof whenever possible and maintain proper control of oil leaks/spills. ❑ Check vehicles closely for leaks and use pans to collect fluid when leaks occur. Management of Runoff ❑ Use berms, curbs, or other diversion measures to ensure that stormwater runoff from other parts of the facility do not flow over the maintenance area. ❑ Collect the stormwater runoff from the cleaning area and provide treatment or recycling. Discharge vehicle wash or rinse water to the sanitary sewer (if available and allowed by sewer authority), wastewater treatment, a land application site, or recycle on-site. DO NOT discharge washwater to a storm drain or to surface water. Inspections and Training ❑ Inspect the maintenance area regularly for proper implementation of control measures. ❑ Train employees on proper waste control and disposal procedures. Good Housekeeping ❑ Eliminate floor drains that are connected to the storm or sanitary sewer; if necessary, install a sump that is pumped regularly. Collected wastes should be properly treated or disposed of by a licensed waste hauler. ❑ Use drip pans, drain boards, and drying racks to direct drips back into a fluid holding tank for reuse. ❑ Drain all parts of fluids prior to disposal. Oil filters can be crushed and recycled. ❑ Promptly transfer used fluids to the proper container; do not leave full drip pans or other open containers around the shop. Empty and clean drip pans and containers. ❑ Dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers properly. ❑ Store batteries and other significant materials inside.

Table 2. BMPs for Potential Pollutant Sources at Metal Mining (Ore Mining and Dressing) Facilities (continued)

Pollutant Source	BMPs
Equipment/vehicle maintenance (continued)	Good Housekeeping (continued) ❑ Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries). ❑ Maintain an organized inventory of materials. ❑ Eliminate or reduce the number and amount of hazardous materials and waste by substituting nonhazardous or less hazardous materials. ❑ Clean up leaks, drips, and other spills without using large amounts of water. Use absorbents for dry cleanup whenever possible. ❑ Prohibit the practice of hosing down an area where the practice would result in the discharge of pollutants to a stormwater system. ❑ Clean without using liquid cleaners whenever possible. ❑ Do all cleaning at a centralized station so the solvents stay in one area. ❑ If parts are dipped in liquid, remove them slowly to avoid spills. ❑ Do not pour liquid waste into floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections.
Fueling activities	❑ Conduct fueling operations (including the transfer of fuel from tank trucks) on an impervious or contained pad or under a roof or canopy where possible. Covering should extend beyond spill containment pad to prevent rain from entering. ❑ When fueling in uncovered area, use a concrete pad (asphalt is not chemically resistant to the fuels being handled). ❑ Use drip pans where leaks or spills of fuel can occur and where making and breaking hose connections. ❑ Use fueling hoses with check valves to prevent hose drainage after filling. ❑ Use spill and overflow protection devices. ❑ Keep spill cleanup material readily available. Clean up spills and leaks immediately. ❑ Minimize/eliminate run-on into fueling areas with diversion dikes, berms, curbing, surface grading or other equivalent measures. ❑ Collect stormwater runoff and provide treatment or recycling. ❑ Use dry cleanup methods for fuel area rather than hosing down the fuel area. Follow procedures for sweeping up absorbents as soon as spilled substances have been absorbed. ❑ Perform inspection and preventive maintenance on fuel storage tanks to detect potential leaks before they occur. ❑ Inspect the fueling area to detect problems before they occur. ❑ Train personnel on fueling procedures in the SWPPP. ❑ Provide curbing or posts around fuel pumps to prevent collisions from vehicles. ❑ Discourage "topping off" of fuel tanks.

What if activities and materials at my facility are not exposed to precipitation?

The industrial stormwater program requires permit coverage for a number of specified types of industrial activities. However, when a facility is able to prevent the exposure of ALL relevant activities and materials to precipitation, it may be eligible to claim no exposure and qualify for a waiver from permit coverage.

If you are regulated under the industrial permitting program, you must either obtain permit coverage or submit a no exposure certification form, if available. Check with your permitting authority for additional information as not every permitting authority program provides no exposure exemptions.

Where do I get more information?

For additional information on the industrial stormwater program see **www.epa.gov/npdes/stormwater/msgp**.

A list of names and telephone numbers for each EPA Region or state NPDES permitting authority can be found at **www.epa.gov/npdes/stormwatercontacts**.

References

Information contained in this Fact Sheet was compiled from EPA's past and current Multi-Sector General Permits and from the following sources:

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