

US EPA ARCHIVE DOCUMENT

**Kennecott Eagle Minerals**

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HSE Manager  
504 Spruce Street  
Ishpeming, Michigan 49849  
(906) 486-1257

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March 19, 2010

Ms. Rebecca Harvey, Director  
Region 5, UIC Branch  
United States Environmental Protection Agency  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3507

Re: **Response to Inventory Request, Delivery of Dry Solids through Drilled Boreholes, Kennecott Eagle Minerals Company**

Dear Ms. Harvey:

In response to your letter dated February 5, 2010, please find attached a completed inventory for the delivery of dry solids through drilled boreholes to the underground Cemented Rockfill (CRF) Plant. This letter provides some additional detail about the delivery of solids through the boreholes. In addition, notwithstanding our enclosure of the requested inventory information, we have also provided some additional information regarding this activity in relation to UIC requirements.

**I. Additional Information about Delivery of Solids to Underground CRF Plant.**

Because the activity of delivering dry solids (i.e. cement and clean aggregate) to the CRF plant won't actually occur for at least another 3-4 years, finalized engineering details are simply not available. However, the basic configuration for this activity is anticipated to be as follows:

- Two boreholes are planned for construction: one borehole for delivery of dry cement and another for delivery of dry clean aggregate. It is worth noting that the borehole used to deliver cement will be steel lined along its entire length, from the surface and all the way to the cement hopper and into the CRF mixer. Cement will not contact the glacial fluvial aquifer, or the upper or lower bedrock units. The aggregate borehole will be concrete lined through the glacial fluvial aquifer and keyed into the upper portions of the bedrock and directly into the aggregate hopper, which feeds the CRF mixer via conveyor.
- Dry Portland Cement Type 1 will be sourced and delivered from a recognized cement vendor. A product information report and MSDS is attached from LaFarge, however Kennecott Eagle Minerals Company ("Kennecott") has not yet selected the vendor and source. Clean aggregate will likely be sourced locally, within a few miles of the project. The aggregate source will likely be derived from a shallow, near-surface Archean in age, non-mineralized, inert granite.

- There will be no water, fluids, slurry or mixture of water and solids of any kind discharged or injected. Dry cement and dry aggregate will be delivered to an underground CRF plant to be used in generating a product for geotechnical fill. Cement and aggregate will not be in contact with the glacial fluvial aquifer and once underground these materials are directed into a fully enclosed cement hopper that directly feeds the fully enclosed mixer. Aggregate is fed directly into a hopper and conveyed directly to the fully enclosed mixer. Aggregate and cement are loaded directly into an underground haul truck for direct placement as geotechnical fill.
- Portland Cement Type 1 is a widely used construction material for a binder in concrete and mortars. Use of cement is a common component of building foundations, pilings, underground tunnels, slurry walls, retaining walls, docks, great lakes ship terminals, etc...all poured or "injected" below the surface. (To our knowledge, these routine construction activities have never been subject to UIC requirements.) Similarly, clean aggregate is also a commonly and widely used construction material, often blended with cement for geotechnical fill in similar applications described above. The local source of clean aggregate will be sourced from a shallow surface location. It is rock that either is an aquifer or at the very least is in contact with precipitation and snowmelt that eventually flow into aquifers.

## II. The Delivery of Solids Through Lined Boreholes and UIC Requirements.

Kennecott does not understand how the planned delivery of dry solids through lined boreholes to an underground CRF plant is regulated under the federal UIC program. The UIC regulations define "underground injection" to mean "the subsurface emplacement of *fluids* through a well."<sup>1</sup> 40 C.F.R. § 144.3 (emphasis added). "Fluid means any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state." *Id.* Dry solids are not fluids. In interpreting its own regulations, the U.S. EPA has explained that the UIC program's reference to "subsurface emplacement of fluids" was not intended to address the subsurface delivery of solid materials. 64 Fed. Reg. 46,976, 47,004-05 (Aug. 27, 1999) ("[W]e have never interpreted our UIC regulations to include the subsurface emplacement of . . . solid materials that do not flow or move.").

Similarly, Congress intended the SDWA's regulatory scope to be limited to liquids and not to cover solids. The legislative history does state that "[t]he definition of 'underground injection' is intended to be broad enough to cover any contaminant which may be put below ground level and which flows or moves, whether the contaminant is in semi-solid, liquid, sludge, or any other form or state," H.R. Rep. No. 93-1185 (1974), but that does not mean that the UIC regulations apply whenever a person places anything underground through a well. *See* 64 Fed. Reg. at 47,004 (explaining that the definition of "fluid," although broad, is not unbounded, and concluding that the definition does not extend to "containerized materials *or solids*" (emphasis added)). Although "neither the statute nor the legislative history specifically address the

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<sup>1</sup> "Underground injection means a 'well injection.'" 40 C.F.R. § 144.3. "Well injection means the subsurface emplacement of fluids through a well." *Id.*

subsurface emplacement of . . . solids,” *id.* at 47,004, the legislative history does show that Congress intended regulated “fluids” to be limited to *liquids* that flow or move at the time they are emplaced into the ground: “the [UIC] regulations would cover all types of injection wells from industrial and nuclear disposal wells, oil and gas injection wells, solution mining wells, or any hole in the ground designed for the purpose of injecting *water or other fluids* below the surface.” *Id.* (quoting 126 Cong. Rec. 30,189 (Nov. 19, 1980)).

Consistent with Congressional intent and the EPA’s interpretation of its regulations, no court has held that the UIC program regulates delivery of dry solids underground. The U.S. Court of Appeals for the First Circuit has expressed concern that radiation itself might be considered a fluid within the meaning of the UIC program, but it did not hold that dry solids are fluids under the UIC program. *NRDC v. EPA*, 824 F.2d 1258 (1st Cir. 1987). And the EPA has expressly stated that it disagrees with the court’s suggestion that radiation might be a fluid. 64 Fed. Reg. at 47,005 (“We believe that radiation itself does not meet the UIC regulatory or statutory definition of ‘fluid.’”). Despite the court’s suggestion in the *NRDC* case, the EPA has clearly explained that if a material is a solid that will not flow or move at the time of emplacement underground, then it is not regulated under the UIC program, “even though [the] materials might eventually disintegrate or dissolve and release some radiation, liquids, or gases.” *Id.*

In addition, the UIC regulations themselves are written in a way that makes it clear they were not intended to regulate dry solids. For example, the UIC regulations have express provisions dealing with pressure buildup, pressure monitoring, and injection pressure. *E.g.*, 40 C.F.R. §§ 144.26, .28. The delivery of dry solids underground does not involve pressure buildup or injection pressure. Such regulatory requirements demonstrate that focus of the UIC program is on liquids. Those liquid-only requirements are meaningless as applied to delivery of dry solids through boreholes to an underground CRF plant.

This delivery of dry solids (i.e. cement, aggregate, shotcrete) (and even mixed cement) via boreholes (lined and unlined) occurs at numerous underground mines in the United States. In all cases we know of, these activities are not considered UIC and are not regulated as such. Likewise, Kennecott’s delivery of dry solids through steel-lined and cement-lined boreholes to an underground CRF plant is not injection of a fluid. The cement and clean aggregate delivered to the CRF plant are dry solids. They will stay in place at the time of emplacement underground. They are not liquids. They will not flow or move like a liquid at the time of emplacement underground.

### **III. Even if Delivery of Completely Dry Solid Materials Through Lined Boreholes did Implicate UIC Requirements, the EPA has, to Kennecott’s Knowledge, Never Required a Mine Owner or Operator to Obtain an Individual UIC Permit for a Class V Backfill Well.**

Even if Kennecott were legally obligated to submit a UIC inventory because transmission of solids is deemed to be use of “backfill wells,” it would be unprecedented for the EPA to require Kennecott to obtain a permit. Under the UIC program, this activity would be regulated as a Class V well injection. As a general matter, Class V wells are authorized by rule, and a

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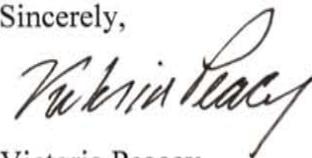
person may operate a Class V well under rule authorization until a permit is issued. 40 C.F.R. §§ 144.24, .26, .31(a), .84(b)(3); 10 U.S. EPA, The Class V Underground Injection Control Study 46 (1999) (“Authorization by rule terminates upon the effective date of a permit issued or upon proper closure of the well.”). “Because mining, sand, and other backfill wells (like other kinds of Class V wells) are authorized by rule, they do not have to obtain a permit unless required to do so by the UIC Program Director under 40 CFR 144.25.” *Id.* at 45–46.

There are thousands of Class V backfill wells in the United States *Id.* at 3; *see also* U.S. EPA, Report to Congress: Class V Injection Wells 4-188 to 4-189 (1987). Despite the large number of such wells, the EPA has, to Kennecott’s knowledge, never required a mine owner or operator to obtain an individual UIC permit for a Class V backfill well. This is to be expected, given that backfill wells are a relatively homogenous group of low-risk wells that are well suited for authorization by rule. They are protective of regulated drinking water aquifers, and they lack any unique factors justifying the exceptionally rare step of requiring the owner or operator to obtain a permit. *See id.* at 4-189, 4-196 to 4-197 (“Even though each well type performs a unique function, similar techniques and injected material are utilized. . . . Even though [mine backfill] wells inject for different purposes, the characteristics of the injected material are essentially the same. . . . Mine backfill wells, in general, have little negative impact on ground-water quality.”); 10 U.S. EPA, The Class V Underground Injection Control Study 35 (“None of the 23 states [that submitted inventory information and data on class V backfill wells] indicated documented cases in which mine backfill wells have caused contamination of a USDW.”).

In summary then, Kennecott encloses the requested inventory information on the delivery boreholes, but construction of and use of these types of boreholes has never been, to Kennecott’s knowledge, regulated as UIC activity or required an individual permit.

If you should have any further questions, or require additional information, please contact me directly at 906-486-1257.

Sincerely,



Victoria Peacey  
HSE Manager

## UNDERGROUND DISCHARGE SYSTEM (CLASS V) INVENTORY SHEET

(see instructions on back)

**Name of facility:** Kennecott Eagle Minerals Company

**Address of facility:** Section 11 T50N, R29 W 46° 44' 55" N, 43° 51' 43" W (Geographic Location)

**City/Town:** Marquette

**State:** MI

**Zip Code:**

**County:** Marquette

**Location:** 46° 44' 55" N, 87° 53' 43" W

**Contact Person:** Ms. Victoria Peacey, Manager of Environmental Affairs, Health and Safety

**Phone Number:** 906-486-1257

**Name of Owner or Operator:** Kennecott Eagle Minerals Company

**Address of Owner or Operator:** 504 Spruce Street

**City/Town:** Ishpeming

**State:** MI

**Zip Code:** 49855

**Type and Number of Systems:** X Drywell(s) Septic System(s) Other (description)

Delivery of dry solids (cement and clean aggregate) through boreholes to an underground cemented rockfill (CRF) plant.

**Attach a schematic of the system. Attach a map or sketch of the system at the facility:** The boreholes will be located at the proposed backfill facility. The following preliminary engineering drawings showing the system at the backfill facility have been included to provide information from surface and underground perspectives: Q6791, Q679-2, Q679-3 and Q697-4 (Attachment 1). It is worth noting that the cement borehole will be steel lined along its entire length, from the surface and all the way to the cement hopper. Cement will not contact the glacial fluvial aquifer, or the upper or lower bedrock units. The aggregate borehole will be concrete lined through the glacial fluvial aquifer and keyed into the upper portions of the bedrock and directly into the aggregate hopper, which feeds the CRF mixer via conveyor.

**Source of discharge into the system:** Dry Portland Cement Type 1 will be sourced and delivered from a recognized cement vendor. A product information report and MSDS is included from LaFarge (Attachment 2a and 2b), however KEMC has not yet selected the vendor and source. Clean aggregate will likely be sourced locally, within a few miles of the project. The aggregate source will likely be derived from a shallow, near-surface Archean in age, non-mineralized, inert granite.

**Fluids discharged:** There will be no fluids discharged. Dry cement and dry aggregate will be delivered to an underground CRF plant to be used in generating a product for geotechnical fill. Cement and aggregate will not be in contact with the glacial fluvial aquifer and once underground the dry cement is directed into a fully enclosed hopper that directly feeds the fully enclosed mixer. Aggregate is fed directly into a hopper and conveyed directly to the fully enclosed mixer. Aggregate and cement are loaded directly into an underground haul truck for direct placement as geotechnical fill.

**Treatment before discharge:** No treatment. Portland Cement Type 1 is a widely used construction material as a binder in concrete and mortars. As such cement is a routine and common component of building foundations, pilings, underground tunnels, slurry walls, retaining walls, docks, great lakes shipyards, etc...all poured or "injected" below the surface. Similarly, clean aggregate is also commonly and widely used construction material, often blended with cement for geotechnical fill in similar applications described above. The local source of clean aggregate will be sourced from a shallow surface location. It is rock that either is an aquifer or at the very least is in contact with precipitation and snowmelt that eventually flow into aquifers.

**Status of underground discharge system:** Proposed

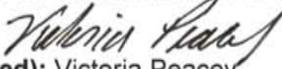
**Approved/Permitted by:** Kennecott Eagle Part 632 Nonferrous Metallic Mineral Mine Permit MP 01 2007 issued by the State of Michigan Department of Environmental Quality.

**Date Constructed:** Proposed. The activity of delivering dry cement and dry clean aggregate to the CRF plant won't actually occur for at least another 3-4 years, and as such firm engineering details and materials are simply not available. Please note that the information contained within this inventory should be considered provisional

and subject to change over the next 3-4 years or until such time as the details of this activity become finalized in light of future conditions.

#### CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

**Signature:** 

**Name (printed):** Victoria Peacey

**Official Title:** Manager of Environmental Affairs, Health and Safety

**Date:** March 19, 2010