

# STATE OF COLORADO

Bill Owens, Governor  
Douglas H. Benevento, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

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APR 20 2005

ROCKY MOUNTAIN LLW BOARD



Colorado Department  
of Public Health  
and Environment

April 18, 2005

Leonard C. Slosky, Executive Director  
Rocky Mountain Low-Level Radioactive Waste Compact  
1675 Broadway, Suite 1400  
Denver, CO 80202-4614

Application For Rocky Mountain Low-Level Radioactive Waste Compact  
Approval of a Low Level Waste Disposal Facility

Dear Mr. Slosky:

The Colorado Department of Public Health and Environment (Department) is reviewing an application for a radioactive materials license for the Clean Harbors Deer Trail facility for the disposal of certain low level waste from Colorado, New Mexico and Nevada. As required by the Rocky Mountain Low-Level Radioactive Waste Compact (Compact) rules, CRS 24-60-2202 Article 4, and 42 USC 2021b Article IV, we are requesting Board approval of the facility as a Regional Disposal Facility for wastes from the mining, milling, smelting, or similar processing of ores or mineral bearing materials primarily for radium.

For your inspection, we have included two documents in this package:

- Application for a Regional Facility, and
- Radioactive Materials License Application, Volume 1, from Clean Harbors Deer Trail, LLC, dated January 2005.

The Department is currently reviewing the Clean Harbors license application and may choose to adjust the requested authorization amounts and place certain conditions on the license prior to approval. The process of Department questions and Clean Harbors' responses and other correspondence will be documented on our web site at <http://www.cdphe.state.co.us/hm/hwy36.htm>.

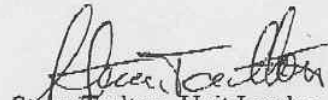
Concurrent with the above processes, the Colorado Board of Health will be reviewing the final rate schedules, as required by our statute and regulations. Once the Board's approval is received, the final rates will be provided to the Compact Board for final approval. We have included a preliminary rate evaluation in our application. We do expect to implement a Host State Surcharge at the facility consistent with CRS 24-60-2208.

Leonard C. Slosky, Executive Director  
April 18, 2005  
Page 2

We have also considered your March 28, 2005 comments on the draft application, and have incorporated those items into the application where possible. Although we also provided the draft application to New Mexico and Nevada representatives for comment, we have not received comments from them at this time. We expect to respond to any comments received from them upon receipt, and will copy you on the comments and our response.

As required, a check for \$50,000 in compensation for the Board review is being transmitted to you under separate cover from Clean Harbors. Additional comments or questions can be directed to me at 303-692-3423 ([steve.tarlton@state.co.us](mailto:steve.tarlton@state.co.us)) or to Jennifer Opila at 303-692-3403 ([Jennifer.opila@state.co.us](mailto:Jennifer.opila@state.co.us)).

Sincerely,



Steve Tarlton, Unit Leader  
Radiation Management Unit

cc: Phillip G. Retallick, Clean Harbors

att: (2)

APR 20 2005

ROCKY MOUNTAIN LLW BOARD

**APPLICATION FOR REGIONAL FACILITY**  
**ROCKY MOUNTAIN LOW-LEVEL RADIOACTIVE WASTE COMPACT**

The following application was prepared for submittal to the Rocky Mountain Low-Level Radioactive Waste Board for authorization for the disposal of wastes from the mining, milling, smelting, or similar processing of ores or mineral bearing materials primarily for radium at the Clean Harbor Deer Trail, LLC Hazardous Waste Disposal Facility located near Deer Trail, Colorado. This application was prepared in conformance with Section 3.3 of the Rules of the Rocky Mountain Low-Level Radioactive Waste Board, using information provided by Clean Harbors and currently being reviewed by the Colorado Department of Public Health and Environment under the radioactive materials license process.

**A. Name Address and telephone number of the owner and/or the operator of the proposed facility and the property upon which it will be located.**

Clean Harbors Deer Trail, LLC is an existing permitted hazardous waste treatment, storage, transfer, and disposal facility. The owner and operator of the facility and the property is:

Clean Harbors Deer Trail, LLC  
108555 East US Highway 36  
Deer Trail, CO 80105  
Telephone No. (970) 386-2293

The property is located approximately 70 miles east of Denver and 7 miles west of Last Chance, Colorado on the north side of US Highway 36, as shown in Figure 1, attached. The facility is located in Adams County, Colorado.

**B. Ownership, legal description and map showing the location of the property on which the proposed facility will be located.**

The property is owned by Clean Harbors Deer Trail, LLC. Clean Harbors owns a total of 5,760 acres. The disposal facility has been and will be constructed on 325 acres of this property. The 325-acre facility is located in the southwest quarter of Section 25 and the

northwest quarter of Section 36, Township 3 South, Range 57 West of the sixth prime meridian. The following is a legal description of the property:

*All of Sections 25 and 36, Township 3 South, Range 57 West of the sixth prime meridian, Adams County, Colorado; except an apparent utility easement across Sections 25 and 36 and except an easement and right-of-way for the purpose of constructing, reconstructing, operating, and maintaining a 6 inch oil pipeline, granted to Arapahoe Pipeline Company by the State of Colorado, acting by and through the State Board of Land Commissioners, affecting Sections 25 and 36, excepting right-of-way for ditches or canals, reserved in United States patents recorded in Book 106, page 201, affecting the north half of Section 25; also Book 99, page 201, affecting the south half of Section 25; and excepting the east 30.00 feet of Section 25; also excepting the east 30.00 feet of Section 36 to be dedicated to Adams County, and except the south 100.00 feet of Section 36.*

A map and layout of the proposed facility is included in the enclosed Volume 1 of the license application.

**C. Type of facility for which approval is being sought (e.g., land burial, incinerator, etc.) and a description of the manner in which the wastes will be treated.**

Approval is sought for the land burial of wastes from the mining, milling, smelting, or similar processing of ores or mineral bearing materials primarily for radium at the Clean Harbors Deer Trail, LLC hazardous waste disposal facility. The Deer Trail facility is an existing permitted hazardous waste treatment, storage, transfer, and/or disposal facility and is well suited for the disposal of these types of materials. Chemical treatment of these materials is not anticipated; however, physical stabilization may be required for stability purposes. Currently, Clean Harbors stabilizes materials with fly ash or kiln dust.

**D. Types of waste(s) that are to be managed at the proposed facility.**

Approval is sought to dispose of wastes from the mining, milling, smelting, or similar processing of ores or mineral bearing materials primarily for radium. The limited concentrations proposed in this application comprise a total activity of less than 2,000

picocuries per gram (pCi/g) (natural uranium and thorium decay chain products only), with a maximum <sup>226</sup>Ra concentration less than 400 pCi/g. These materials will have external dose rates that are generally less than 100 microrentgens per hour ( $\mu$ R/hr), exclusive of background. These values are under review as a part of the license review process, and final authorization may be less than that requested in the license application. This application does not include radioactive waste in the broader definition of low-level radioactive waste, including other licensed forms of manmade radioactive materials.

The strategy of the Clean Harbors license application is to limit the concentrations of radionuclides so that workers will be considered members of the public and radiation exposures will be limited to no more than 100 millirem per year (mrem/yr), with a goal of 25 mrem/yr or less. The ALARA (As Low As Reasonably Achievable) philosophy/process will be applied to limit potential doses. If worker dosimetry results indicate that selected worker doses could exceed 25 mrem/yr, an assessment will determine the potential for other exposures for these workers to ensure that maximum individual doses will not exceed 100 mrem/yr. Rather than hypothetical members of the public, this assessment will consider real individuals working at Deer Trail because they will have the highest potential for exposure.

**E. Projected capacity and number of years that the proposed facility will be operational.**

As stated earlier, the Clean Harbors Deer Trail, LLC facility is an existing and operational hazardous waste disposal facility. Deer Trail has approximately 30,000 cubic yards of remaining permitted capacity in its open landfill cell, and has approximately 2,195,000 cubic yards of permitted disposal capacity, that is excavated, but not yet lined. The materials covered by this license would be disposed within the permitted capacity. The capacity approved in the hazardous waste permit would accommodate thirty years of hazardous waste at the original generation rate. Since the hazardous waste generation rate has been and is currently expected to be significantly lower than originally estimated, Clean Harbors expects that waste received under the license and waste received under the hazardous waste permit could be accommodated for thirty years. No decision has yet

been made as to the acceptable capacity of the permitted cells for radioactive wastes; however, it is clearly sufficient for the initial five year license period.

**F. Proposed schedule for the development of the proposed facility, including phasing, if any, and a date by which it is anticipated the proposed facility will be operational.**

The Deer Trail facility is an existing and operational hazardous waste facility and, as such, Clean Harbors does not anticipate the construction of any new infrastructure to manage the specified waste materials. Deer Trail would expect to be able to accept these wastes immediately following the receipt of all the necessary regulatory approvals.

**G. Initial charges which the operator intends to impose on waste managed at the proposed facility, exclusive of state and compact surcharges, as defined in Article 5 of the compact.**

Clean Harbors proposes to charge rates at the Deer Trail facility that are competitive with currently-charged rates for similar materials. Some of these rates will be determined through competitive bidding processes, and others will result from specifics of the material and its location. Clean Harbors often provides both transportation and disposal as a package service, so disposal costs may be blended with transportation costs in some cases.

Clean Harbors has estimated the relative costs of transportation and disposal at the currently-licensed disposal sites used by Colorado:

<u>Facility</u>	<u>Transportation*</u>	<u>Disposal</u>	<u>Total</u>
Envirocare – Utah	\$100-225/ton	\$750-\$3,000/ton	\$850-\$3225/ton
US Ecology - Idaho	\$100 -225/ton	\$55-\$200/ton	\$155-\$425/ton
US Ecology - Richland, WA	\$150-250/ton	\$3,000/ton	\$3150-\$3250/ton
Clean Harbors - Deer Trail, CO	\$50-150/ton	\$75-\$200/ton	\$125-\$350/ton

\*Transportation within the Rocky Mountain States includes:

<u>Rail</u>	<u>Truck</u>
1. Front end drayage (initial truck)	1. End Dump or Roll-Off
2. Bag Costs	2. Roll off drop fees
3. Transfer to Rail car	3. Roll off rental
4. Rail costs	
5. Transfer to truck for backend drayage	
6. Back End drayage	

The cost of disposal also varies depending upon:



- Size of project
- Density of material
- Waste codes, Constituents, and Concentrations
- State and Local Taxes and fees

**H. A statement describing the need for and a projection of the demand for the proposed facility.**

A limited Compact Designation for the Clean Harbors Deer Trail facility that will allow it to accept certain wastes from the mining, milling, smelting, or similar processing of ores or mineral bearing materials primarily for radium is sought. Radium was used for commercial purposes in the early 1900s. Ore processing facilities in Denver provided a domestic source of radium. The radium industry collapsed in the 1920s, leaving numerous locations with radioactive residues. The residues were often used as fill or paving materials, or abandoned in place. The Denver Radium Site was added to the Superfund National Priorities List in 1983. It consists of 65 properties throughout Denver that were contaminated by radioactive soils and debris as a result of radium processing in the early 1900s. The properties are divided into 11 Operable Units. Pursuant to Record of Decisions, issued in 1986 and 1987, removal and/or disposal of the OU3 and OU7 material began last summer.

Clean Harbors Deer Trail is proposing that the City of Denver and the State of Colorado consider using the Deer Trail facility for disposal of remediation waste from the next phases of the OU3 and OU7 cleanup, which is expected to generate on the order of 20,000 cubic yards of material. The Deer Trail option may offer distinct cost savings and risk reduction benefits when compared with the current out-of-state disposal options. This Compact Designation application seeks authority for Deer Trail to receive only those Denver Radium Site wastes that are below the concentration thresholds described in Part D, above.

In our review, the Department will determine the appropriate authorization amount for the first five-year license period; however, as noted in Part E, the physical capacity of the

landfill significantly exceeds the currently identified amount of radium processing waste requiring disposal.

**I. A statement describing what the economic consequences would be on existing regional facilities, if any, of the proposed facility.**

There are no existing regional facilities in the Rocky Mountain Low-Level Radioactive Waste Compact. Therefore, there will be no economic consequences to an existing regional facility.

**J. Documentation that the state has complied with Article 3 Section D of the compact, along with copies of all such comment and any written responses thereto.**

As discussed, the Deer Trail facility is fully licensed and permitted by the Colorado Department of Public Health and Environment and the USEPA to manage a wide variety of hazardous and industrial wastes. USEPA has also granted the Deer Trail facility CERCLA Off-Site Disposal Approval, allowing the facility to accept waste from Superfund Remedial Actions. In parallel with the original RCRA permit approval process for the Deer Trail facility, the Colorado Geologic Survey (CGS), Department of Natural Resources, conducted an evaluation to find suitable low-level radioactive waste disposal sites in Colorado.

The CGS 1986 study identified Colorado-owned sites underlain by Pierre Shale with minimal but appropriate surficial materials for cell construction. For its evaluation, the CGS used a comprehensive process to identify and select candidate areas and representative sites based on a detailed technical analysis of geologic, geohydrologic, and geotechnical parameters important to radioactive waste disposal. The evaluation gave primary emphasis to natural mechanisms that would promote long-term isolation of the waste from man and the environment. It identified areas of Colorado that had stable geology, with thick layers of relatively impermeable shale containing little, if any, useable ground water. While in the immediate vicinity of the state-owned sites so identified, as a privately owned site, Deer Trail was not identified specifically, although it exhibits at an optimal level the characteristics of the nearby best state-owned sites (e.g.



near-surface outcropping of 4,000 ft of Pierre Shale underlying the site, ability to bottom cells into unweathered Pierre shale, and clayey surficial material of high density/low porosity). Indeed, the site was included in an optimal area for hazardous waste disposal in a previous study co-authored by an author (Jeff Hynes) of the 1986 CGS report, as well.

In connection with the facility's RCRA siting and permitting, both the State of Colorado and the Environmental Protection Agency conducted numerous studies of the property, including site engineering, hydrology, meteorology and climate. The results of these studies were summarized in an initial two-volume report developed by the previous site owners, Browning-Ferris Industries, Inc., in 1981, entitled Chemical Waste Treatment/Solidification & Disposal Facility Plan. According to this report, the Deer Trail facility was determined to be the most appropriate location for a TSD facility based on a number of findings including:

- Suitable geologic conditions;
- Convenient location near waste sources;
- Sparsely populated area;
- Good transportation access;
- No anticipated environmental impacts;
- Availability of utilities;
- Land availability and site size requirements;
- No nearby airports;
- Favorable topography;
- Soils suitable for liner material;
- Not within corridor growth (i.e., remote location);
- Not within fault zone;
- Not within 100-year floodplain;
- Not within a wetland area;
- No impact on endangered or threatened species and critical habitat;
- Extensive buffer zone;
- Not within an aquifer recharge zone; and
- Favorable evaporation rates with minimal rainfall.

BFI submitted the 1981 reports to Adams County and the State of Colorado for review and evaluation pursuant to the regulations of the Colorado Solid Waste Act (30-20 C.R.S. 1973, as amended). In response to the request for review, the Colorado Department of Health established a technical review group consisting of nine State agencies, with an emphasis on intensive public input. The lead agency was the Colorado Department of

Health, Waste Management Division. Representatives of this division conducted or attended 11 public meetings across Eastern Colorado, and collected 231 questions that were submitted to BFI for response. The original submittal and comment responses from BFI completed the application package, which was sent to the Department of Health for a Finding of Fact from the State. In a letter dated March 19, 1982, the Waste Management Division determined that (CDH 1982b):

*the site proposed by Browning-Ferris Industries would be able to comply with the regulations adopted by the Board of Health pursuant to Section 25-15-208 of the Hazardous Waste Act C.R.S. 1973 as amended, if it was constructed and operated in accordance with the designs and procedures contained in the application documents...*

Following this Finding of Fact from the State, BFI revised, updated, and resubmitted the 1981 plans and reports in final form to Adams County and the State of Colorado. The Adams County Community Development Department then requested that the Waste Management Division provide a final Finding of Fact regarding the proposed BFI Chemical Waste Treatment/Solidification and Disposal facility to determine if the facility design and operation would be in compliance with the regulations adopted by the Board of Health pursuant to the Hazardous Waste Act (25-15-208 C.R.S. 1973, as amended). Again, the Waste Management Division led a technical review group consisting of nine State agencies, with an emphasis on public input. Throughout the technical review, the Division conducted or attended 14 public meetings across Eastern Colorado. In a letter dated January 17, 1983, the Waste Management Division again issued a Finding of Fact from the State that determined that the site would be able to comply with the regulations adopted pursuant to the Hazardous Waste Act. Further, the Division stated that its Finding of Fact is buttressed by the evaluations of independent consultants retained by the Environmental Protection Agency, Adams County, and the City of Aurora.

On August 15, 1983, at a regular meeting of the Adams Board of County Commissioners, the Board unanimously adopted a resolution granting the application for a Certificate of

Designation and Conditional Use Permit to operate the Adams County hazardous waste treatment and disposal facility, subject to a set of conditions.

After issuance of these Findings of Fact, the EPA received and reviewed extensive hydrogeologic information for the Adams County site, and met with the State of Colorado and the owner/operator. Based on the additional information, Marcia Williams, Director of the EPA Office of Solid Waste, wrote a Memorandum on November 14, 1986 to Robert L. Duprey, Director of EPA Region VIII, indicating:

*Based on this additional information, we now believe that the site has been adequately characterized in terms of its geology and hydrogeology for purposes of permit issuance. Since the hydrogeological characterization is now complete, it does not represent an impediment to final permit issuance.*

On November 23, 1986, Robert L. Duprey, EPA Region VIII, sent final EPA comments to the Colorado Waste Management Division, stating:

*In general, our review has shown that your Division, while faced with writing a very complex and precedent setting permit, was able to meet the challenge and has drafted a permit which is well designed and protective of human health and the environment.*

On November 12, 1987, Adams County, Colorado, officially issued a Certificate of Designation for the Hazardous Waste Disposal Site.

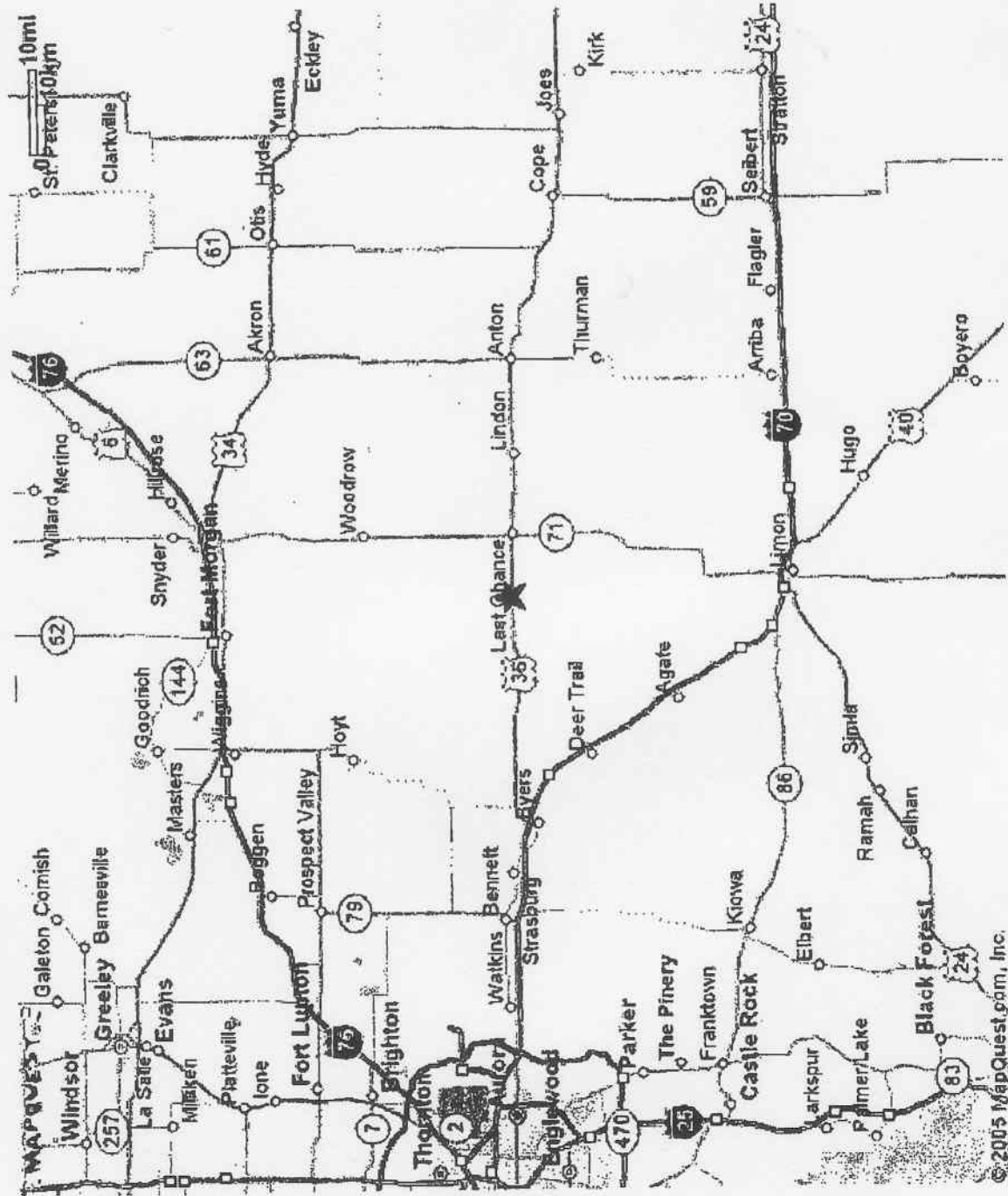
The process used to site and permit the Deer Trail facility under RCRA was largely based on the process prescribed for the disposal of uranium tailings, which is also consistent with current requirements for the licensing of low-level radioactive waste disposal facilities. Accordingly, the process used by the State of Colorado to site and permit the facility under RCRA is as thorough and complete as the process used to site and license radioactive waste disposal facilities under the State's existing regulations.

The Department review of Clean Harbors' license application is currently underway, but a license, if granted, could be issued concurrent with Compact approval. If a license is issued, the State will ensure by its own laws, and corresponding federal laws, the protection of public health and safety in the siting, design, development, licensure operation, closure, decommissioning and long-term care of the regional facility within the State.

Going forward, the State will perform the following in accordance with Article 3, Section D of the Compact:

- (1) The Department solicited comments on March 4, 2005 from Compact representatives from New Mexico and Nevada, and Board staff. Staff comments were received on March 28, 2005.
- (2) The Department will work with the Licensee and the Colorado Board of Health to determine the appropriateness of the facility's final rate structure and submit this to the Compact Board for approval.
- (3) The Department will submit an annual report to the board that contains projections of the anticipated future capacity and availability of the regional facility, along with any other information requested by the Board.
- (4) The Department will notify the Board immediately if any exigency arises requiring the possible temporary or permanent closure of this regional facility at a time earlier than was projected in the State's most recent annual report to the Board.

Figure 1: Clean Harbors Deer Trails Facility Location (Last Chance)



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Check Date: 28.Jan.2005

Check No. 672822

Invoice Number	Invoice Date	Voucher ID	Gross Amount	Discount Available	Paid Amount
CKREQ011905	19.Jan.2005	00001852	50,000.00	0.00	50,000.00

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ROCKY MOUNTAIN LLW BOARD

Vendor Number	Name		Total Discounts		
0000044814	ROCKY MOUNTAIN LOW-LEVEL RADIOACTIVE		50.00		
Check Number	Date	Total Amount	Discounts Taken	Total Paid Amount	
672822	28.Jan.2005	\$50,000.00	50.00	\$50,000.00	

CC28412 B104



Clean Harbors Environmental Services

1501 Washington Street

Braintree, MA 02184

FLEET BANK

Fleet Bank

Hartford, CT 06115

672822

51-44/119

Date 28 Jan 2005

Pay Amount \$50,000.00\*\*\*

Pay

\*\*\*FIFTY THOUSAND AND XX / 100 US DOLLAR\*\*\*

Non-Negotiable after 180 Days

To The

ROCKY MOUNTAIN LOW-LEVEL RADIOACTIVE

Order Of

WASTE BOARD

1675 BROADWAY, STE 1400  
DENVER, CO 80202

Co-Signature Required over \$25,000.00

*[Signature]*  
Authorized Signature



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ROCKY MOUNTAIN LLW BOARD

Colorado Department  
of Public Health  
and Environment

May 5, 2005

Mr. Leonard C. Slosky, Executive Director  
Rocky Mountain Low-Level Waste Board  
1675 Broadway, Suite 1400  
Denver, CO 80202-4606

Response to May 2, 2005 Comments Regarding  
The April 15, 2005 Regional Facility Application

Dear Mr. Slosky:

The Colorado Department of Public Health and Environment (Department) has received your May 2, 2005 comments regarding the April 15 Regional Facility Application for the Clean Harbors Deer Trail facility. We have addressed your comments below:

*Item 1: Please provide the projected capacity of the proposed facility for Radium Processing Wastes. Please also provide the number of years that the proposed facility is expected to operate to dispose of Radium Processing Wastes.*

A specific set-aside in capacity has not been identified for Radium Processing Wastes. The risk assessment was based on a bounding scenario that assumed the total capacity of the facility (2,374,000 cubic yards) was at the specified maximum concentrations. Additional estimates used anticipated volumes of approximately 25 per cent (593,500 cubic yards) of the available capacity. It is unlikely that the region would generate that volume of Radium Processing Wastes, thus the facility capacity is far in excess of the amount that could be generated. Clean Harbors has estimated that the facility has a minimum 30 years life expectancy.

*Item 2: Please provide initial charges that will not be exceeded.*

Initial charges will not exceed \$300 per ton for disposal of designated waste.

*Item 3: Please provide an estimate of the total quantity (cubic yards or tons) of Radium Processing Wastes that the proposed facility is estimated to receive from July 1, 2005 through June 30, 2006 and from July 1, 2006 through June 30, 2007.*

Mr. Leonard C. Slosky, Executive Director

May 5, 2005

Page 2

Current estimates for Radium Processing Wastes are as follows:

July 1, 2005 thru June 30, 2006 - 3,000 tons

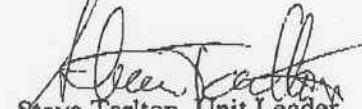
July 1, 2006 thru June 30, 2007 - 25,000 tons

We look forward to working with you regarding your estimates of the amount of Radium Processing Wastes to be generated throughout the region, as offered in your comments on the draft application.

Those discussions will assist in refining estimates for future-year Radium Processing Waste generation.

Please let me know if you require additional information.

Sincerely,



Steve Tarlton, Unit Leader  
Radiation Management Unit