STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

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

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
Located in Glendale, Colorado

http://www.cdphe.state.co.us

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

Colorado Department
of Public Health
and Environment

OCT 2 3 2012

Clean Harbors Deer Trail, LLC
108555 East U.S. Highway 36
Deer Trail, Colorado 80105-9611

Attention: Clyde E. Christman, Radiation Safety Officer

Re: Colorado Radioactive Materials License Number Colo. 1102-01

This letter acknowledges receipt of your annual report demonstrating proof of the value of your existing financial assurance warranty. Your submission meets the requirements of Parts 3.9.5.6 and 3.9.5.7 of the Regulations. Please be aware that Section 3.9.5.6 of the Regulations requires the annual report to be submitted to the Department no later than June 30th of each calendar year.

Your adjustment to the financial surety amount due to annual inflation has been approved and is reflected in the enclosed license amendment, Radioactive Materials License Number Colo.1102-01, Amendment No. 12. Please review this document thoroughly.

Please note that the mailing address, use location(s), maximum quantities of radioactive materials, and the radiation safety officer are specific conditions of your license. If you have questions about making changes to your licensed activities, please contact the Radioactive Materials Unit to discuss the requirements for an amendment of your license.

If you have any questions regarding this letter or your license please contact Chas Etherton at 303-692-3382 or chastiti.etherton@state.co.us. Additional questions or comments can be directed to me at 303-692-3403 or jennifer.opila@state.co.us.

Jennifer T. Opila

Jennifer T. Opila, Unit Leader
Radioactive Materials Unit
Hazardous Materials and Waste Management Division

STATE OF COLORADO
RADIOACTIVE MATERIALS LICENSE

Colorado Department of Public Health and Environment

Pursuant to the *Colorado Radiation Control Act*, Title 25, Article 11, *Colorado Revised Statutes*, and the State of Colorado *Rules and Regulations Pertaining to Radiation Control* (the Regulations) and in reliance on statements and representations heretofore made by the licensee designated below; a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material(s) designated below; and to use such radioactive material(s) for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations, and orders now or hereafter in effect of the Colorado Department of Public Health and Environment and to any conditions specified below.

1. Licensee: Clean Harbors Deer Trail, LLC

2. Mailing Address: 108555 East U.S. Highway 36, Deer Trail, Colorado 80105-9611

3. License Number: Colo. 1102-01, Amendment Number 12

4. Expiration date: December 31, 2015

5. Authorized Storage/Use Location: 108555 East U.S. Highway 36, Deer Trail, Colorado 80105-9611

6. Designated Radiation Safety Officer: Clyde E. Christman
   Designated Alternate Radiation Safety Officers: Kirk Baker and Tracy A. Ikenberry, CHP

7. Radiation Safety Officer Contact Number: (970) 386-2293

8. Fee Category: 4.A

9. Reference Number:

CONDITIONS

10. **Authorized Radioactive Material and Uses:**

A. The licensee is authorized to receive, possess, analyze, store, process, and dispose of waste materials containing naturally occurring radioactive material (NORM), technologically enhanced naturally occurring radioactive material (TENORM), and radium contamination resulting from activities involving purposefully concentrated radium-226. The specific radionuclides are limited to K-40 and all of the radionuclides in the decay series for U-238, U-235, and Th-232. The summed activity of all radionuclides per gram contained in such waste materials shall not exceed 2000 pCi (74 Bq). Additionally, the Ra-226 activity per gram shall not exceed 222 pCi (8.214 Bq). The physical form of the material includes but is not limited to soils, sludges, process residues, resins, and filters that are compatible with the design and operational criteria required by the CHWA permit.

B. In addition to the limits established in Item 10.A, the total uranium and thorium content shall be less than 0.05% by weight (500 μg per gram) of the materials received for disposal.

C. In addition to the limits established in items 10.A and 10.B the licensee shall limit the total of all waste materials containing radioactive material to a total volume not to exceed 480,240 cubic yards.

D. The licensee is prohibited from receiving low-level wastes, as defined by the Rocky Mountain Low Level Waste Compact Board, from outside the Compact Region without written authorization from the Rocky Mountain Low Level Waste Compact Board.

E. For the purposes of this license and as used in the application, regulated waste refers to any waste received, handled, processed or disposed of at the site containing radioactive material including: a) NORM/TENORM radionuclides in solid waste; b) NORM/TENORM radionuclides in material licensed by CDPHE; c) NORM/TENORM radionuclides mixed with Colorado Hazardous Waste Act (CHWA) hazardous wastes; d) radium processing wastes; and e) radium contamination resulting from activities involving purposely concentrated Radium-226.

F. Pursuant to its authority over all radioactive materials at the facility, the Department may at any time impose additional requirements and/or license conditions regarding the receipt, processing, analysis, storage or disposal of these materials as may be necessary to ensure health and safety of workers, protection of the environment and compliance with any applicable rules, regulations and statutes.

G. Should the licensee become aware of radioactive materials that were not identified in any waste characterization or manifest that are present in waste materials received or buried at the site, the licensee shall maintain a record of these and shall provide immediate notification to the Department for any materials that are not specifically authorized on the license.

11. Authorized Radioactive Material Users:

A. Radioactive material authorized in License Conditions 10.A through 10.C shall only be received, stored, handled, analyzed, processed or disposed by or under the supervision of the Radiation Safety Officer, the Alternate Radiation Safety Officer, or the following individuals: Leresa Atwood, Ismael Hernandez, Steve Hickman, John (Jack) Kehoe, Randall Musgrave, Terry Musgrave, Daniel O'Brien, Debra Phillabaum, Joseph Sanchez, and Robert (Bob) Shaw.

B. One or more authorized users identified in License Condition 11.A of this license shall be physically present at the facility at all times when radioactive materials are being received, stored, handled, analyzed, processed or disposed. The number of authorized users present on site at any one time shall be sufficient to ensure adequate supervision of all persons within the restricted area.

C. The Radiation Safety Officer shall be on-site sufficient to ensure protection of workers and compliance with this license and the Rules and Regulations.

D. Temporary contract laborers and members of the public shall be escorted throughout the restricted area under the direct supervision and in the physical presence of an authorized user listed in License Condition 11.A. Temporary contract laborers shall sign in and out of the facility each day. The sign-in, sign-out logs for the facility shall be maintained in the Operating Record.

E. Contract laborers and consultants who have successfully completed the radiation safety training as described in the Radiation Protection Program may work throughout the restricted area without continuous direct supervision by Clean Harbors personnel.

F. The Radiation Safety Officer, Alternate Radiation Safety Officer, or persons specifically listed in License Condition 11.A shall physically observe the day-to-day activities of contract laborers and consultants who work without constant supervision. The extent of these observations shall be sufficient to ensure that contract laborers and consultants are complying with established procedures and the requirements of this license.

12. General Requirements:

A. The licensee shall comply with the provisions of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*: Part 3, "Licensing of Radioactive Material"; Part 4, "Standards for Protection Against Radiation"; Part 10, "Notices, Instructions and Reports to Workers: Inspections"; Part 11, "Special Land Ownership Requirements"; Part 14, "Licensing Requirements for Land Disposal of Low Level Radioactive Wastes"; Part 15, "Colorado Low-Level Radioactive Waste Rate Regulations"; and Part 17, "Transportation of Radioactive Material."

B. The licensee shall not transfer possession and/or control of radioactive materials or items contaminated with radioactive material except: by transfer of waste to an authorized recipient; by transfer to a specifically licensed recipient; or, as provided otherwise by specific condition of this license pursuant to the requirements of Part 3, Section 3.22 of the Regulations.

C. Radioactive material authorized by Condition 10 of this license shall be stored and used in a manner that will preclude use by unauthorized personnel.

D. The licensee shall ensure that information listed in this license is correct and accurate. The licensee shall notify the Department in writing within ten (10) days whenever the information contained in Items 1 through 7 above is no longer current or determined to be incorrect.

E. The licensee may transport radioactive material or deliver radioactive material to a carrier for transport in accordance with the provisions of Part 17 of the Regulations and the requirements of U.S. Department of Transportation (49 CFR).

F. The licensee shall not make any false statement, representation, or certification in any application, record, report, plan, or other document regarding radiation levels, tests performed or radiation safety conditions or practices.

13. Occupational Dose Monitoring:

A. All users of radioactive material must be equipped with personnel monitoring devices capable of detecting both beta and gamma radiation.

B. Each person receiving an occupational dose at the facility is deemed to require monitoring pursuant to Section 4.18 of the Regulations.

C. The Radiation Safety Officer shall maintain training and dose monitoring records for each worker at the site who receives an occupational dose. These records shall show the initial hire date, the specific training received, the date training was successfully completed, the date when dose monitoring was initiated, the date when employment terminated, and a copy of the annual total dose assessment for each year the individual works at the site.

D. The licensee shall determine occupational doses on a quarterly basis, with the final determination being completed within 60 days from the end of each quarter.

E. The licensee shall determine occupational doses (total effective dose equivalent (TEDE), committed effective dose equivalent (CEDE), and deep dose equivalent (DDE) within 90 days from the end of each calendar year.

14. Specific Radiation Safety Requirements:

A. The licensee shall not make any substantial modification to the facility, equipment, process, or procedures used in the receipt, storage, handling, processing or disposal of waste containing radioactive materials without first evaluating and documenting the impact of such changes to workers, the environment, and members of the public. The licensee shall obtain written authorization from the Department, including a license amendment, if deemed necessary by the Department prior implementing the proposed changes. The Radiation Safety Officer shall maintain documentation of all such evaluations for review by the Department.

B. Characterization and approval of regulated waste streams shall be performed in accordance with the Radioactive Materials Acceptance SOP 15.WAC.01, Revision 6. All records of characterization and approval of regulated waste streams shall be maintained by the licensee for review by the department.

C. The licensee shall implement and maintain Department-approved controls for limiting the release of radon and radioactive particulates from all waste repositories and processing facilities.

D. The licensee shall conduct an air sampling program sufficient to demonstrate compliance with the public and occupational dose limits specified in Part 4 of the Regulations.

E. Samples collected for the assessment of doses to members of the public, occupational doses, and samples collected for verification of characterization of wastes or environmental contamination levels shall be analyzed by radiochemistry laboratory that is appropriately licensed for the type of analysis being performed.

F. The licensee shall collect a random sample from 1 shipment out of every 20 shipments from each waste stream from each generator as described in the Radioactive Materials Acceptance SOP 15.WAC.01, Revision 6. The random sample shall be sent to an off-site laboratory for analysis including: Gamma Spectrum, Gross Alpha Activity/g, Gross Beta Activity/g, Total Uranium Mass/g, Total Thorium Mass/g and Total Radium Activity/g. Isotopic Uranium, Isotopic Thorium, and Isotopic Radium analyses (reported in activity/g) may be used in lieu of Total Uranium, Total Thorium, and Total Radium. The results of this analysis shall be compared to the initial characterization data for the waste stream. If the results differ significantly from the profile, the RSO, general manager, compliance manager, or their designee shall contact the waste generator and attempt to resolve the discrepancy. If the results cannot be reconciled, the waste stream shall be deactivated until it can be resolved. All records from the random sampling program shall be maintained for review by the Department. Specific waste streams may be exempted from this requirement by the Department on a case-by-case basis.

G. The licensee shall conduct sufficient radiation surveys on materials and equipment to ensure that contamination levels do not exceed Department-approved criteria prior to release to unrestricted areas or for unrestricted use. The results of each survey shall be recorded and maintained on file for review by the Department for three (3) years after the record is made in accordance with RH 4.42.

15. Special License Requirements:

A. The licensee shall maintain in effect a financial warranty acceptable to the Department in accordance with the requirements of Part 3, Section 3.9.5 of the Regulations.

B. The licensee shall provide in writing to the Department no later than June 30th of each calendar year, any proposed changes to the financial assurance warranties, including updated decommissioning fund plans.

C. The licensee shall maintain all equipment and facilities, essential to operations governed by this license, in good working condition. This includes but is not limited to process equipment, process tanks, dust suppression equipment, air sampling equipment, water monitoring wells, radiation detection equipment, survey instruments, gates, fences, waste impoundments, security systems, safety equipment, and emergency systems and equipment.

D. The licensee's management and radiation safety officer shall take prompt and appropriate action to correct known deficiencies in the facility's procedures, processes, equipment, and site conditions. These deficiencies and the corrective actions shall be documented and records maintained for review by the Department for three (3) years.

E. The licensee shall document and implement a system of routine preventive maintenance so that safety equipment is checked for proper working order according to a regular schedule.

F. The license shall post individual areas of the facility and the entrances to each building or room that contains radioactive materials, with a conspicuous sign bearing the radiation symbol and the words, "Caution – Radioactive Materials".

G. Prior to closure of each landfill cell, the licensee shall submit an analysis of the adequacy of the cap design to the Department for approval. The cap design must provide reasonable assurance of control of radiological hazards to be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years. Additionally, the cap design must be sufficient such that the release of Radon-222 does not exceed 20 pCi per square meter per second averaged over the surface area of the cell. This analysis shall include radon flux measurements and an analysis of the amount and concentration of radon producing materials disposed in the cell.

H. Upon closure of each landfill cell containing radioactive material, the licensee shall record with the Adams County clerk and recorder a deed annotation as required in Section 11.3.5.

I. Following the construction of a new landfill liner system or a landfill final cover system, the licensee shall provide the Department with "as-built" drawings of the landfill liner system or final cover system.

J. The licensee shall provide the Department with an annual report by April 1 of each calendar year. That report shall contain the following items:

i. specification of each quantity of radioactive contaminants released to unrestricted areas in liquid and in airborne effluents;
ii. the results of the environmental monitoring program;
iii. a summary of licensee disposal unit radiation survey and maintenance activities;
iv. a summary of activities and quantities of radionuclides disposed of;
v. any instances in which the observed site characteristics were significantly different from those described in the application for a license;
vi. estimated doses to members of the public from the licensee's activities. This includes TEDE (total effective dose equivalent) and TODE (total organ dose equivalent) for both the nearest resident and the maximally exposed member of the public (if they are not the same person). The calculation of public doses shall be in accordance with Department approved methods, sampling frequencies, and dose modeling assumptions. Dose estimates shall be accompanied by appropriate supporting data including an electronic copy of the lab results, spreadsheets, computer model inputs, and modeling results/outputs;
vii. a summary of Occupational Doses (total effective dose equivalent (TEDE), committed effective dose equivalent (CEDE), and deep dose equivalent (DDE));
viii. a copy of the annual ALARA program audit;
ix. a summary of anticipated activities for coming year;
x. an evaluation of the existing decommissioning warranty to ensure that the available funds are sufficient to account for inflation, current site conditions, and projected activities for the coming year; and
xi. an evaluation of the existing decommissioning funding plan to ensure that the licensee will have sufficient funds for the licensee to complete site decommissioning activities.

K. The licensee shall maintain security measures to prevent unauthorized access to the site's facilities and radioactive materials.

L. Records of waste disposal shall be maintained in accordance with Section 4.48.

M. The licensee's facility management and the radiation safety officer shall thoroughly review the content and requirements of this license. The licensee shall promptly notify the Department whenever it identifies an error in license authorizations or it has identified a specific license condition or technical requirement established in this license that is not achievable given the current state of technology or site conditions.

N. If statements in referenced documents conflict, the most recent document listed below shall prevail unless otherwise specified in this license.

O. For wastes under the jurisdiction of the Rocky Mountain Low-Level Radioactive Waste Board, the licensee shall provide rate review documentation to the Department pursuant to Sections 15.16, 15.17, 15.18 and 15.19.

i. Semiannual reports shall be submitted by July 31st and January 31st of each year.
ii. Annual reports shall be submitted by April 1st of each year.

16. Licensee Commitments and Reference Documents:

The State of Colorado *Rules and Regulations Pertaining to Radiation Control* shall govern unless the licensee's statements, representations, and procedures contained in the application and correspondence are more restrictive than the Regulations. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material described in Condition 10 of this license in accordance with the statements, representations, and procedures contained in:

A. the application and attachments dated May 31, 2010; and

B. the CHWA Subtitle C Permit dated December 2005, and as renewed; and

C. financial assurance arrangements for decommissioning and long term care (Steadfast Insurance Policy Number ENC 5254333-02 - Closure Cost: $5,329,221.34, Post Closure Cost: $5,514,287.63); and

D. the decommissioning funding plan dated December 20, 2005; and

E. the Rocky Mountain Low-Level Radioactive Waste Board Designation as a Limited Regional Disposal Facility, as amended; and

F. the Standard Operating Procedures as follows:

i. Standard Operating Procedure 15.RPP.01, Radiation Protection Plan, Revision 2;
ii. Standard Operating Procedure 15.RPP.02, Radiation Safety Training, Revision 1;
iii. Standard Operating Procedure 15.RPP.03, Worker Protection Records, Revision 2;
iv. Standard Operating Procedure 15.RPP.04, Individual and Area Dosimetry, Revision 2;
v. Standard Operating Procedure 15.RPP.05, Estimating Inhalation Doses, Revision 2;

vi. Standard Operating Procedure 15.RPP.06, Emergency Response, Revision 0;
vii. Standard Operating Procedure 15.RPP.07, ALARA, Revision 1;
viii. Standard Operating Procedure 15.RPP.08, Radiation Work Permits, Revision 1;
ix. Standard Operating Procedure 15.RPP.09, Personal Protective Equipment, Revision 0;
x. Standard Operating Procedure 15.RPP.10, Determination of Prior Occupational Dose, Revision 0;
xi. Standard Operating Procedure 15.WAC.01, Radioactive Materials Acceptance, Revision 6;
xii. Standard Operating Procedure 15.WAC.02, Waste Tracking, Revision 2;
xiii. Standard Operating Procedure 15.OPS.01, Landfill Operations, Revision 1;
xiv. Standard Operating Procedure 15.OPS.02, Contamination Control During Waste Treatment Operations, Revision 2;
xv. Standard Operating Procedure 15.OPS.03, Operation of Portable Gamma Spectroscopy Unit, Revision 2;
xvi. Standard Operating Procedure 15.OPS.04, Operation of Alpha-Beta Smear Counter, Revision 2;
xvii. Standard Operating Procedure 15.OPS.05, Operation of Gate Monitor Detectors, Revision 2;
xviii. Standard Operating Procedure 15.OPS.06, Operation of Digital Waste Monitor, Revision 1;
xix. Standard Operating Procedure 15.OPS.07, Operation of Exposure Rate/Dose Rate Meters, Revision 1;
xx. Standard Operating Procedure 15.OPS.08, Operation of Alpha-Beta Scintillation Detector, Revision 0;
xxi. Standard Operating Procedure 15.OPS.09, Operation of GM Pancake Probe, Revision 0;
xxii. Standard Operating Procedure 15.OPS.10, Operation of Gamma Scintillation Detectors, Revision 0;
xxiii. Standard Operating Procedure 15.OPS.11, Routine Contamination Surveys, Revision 1;
xxiv. Standard Operating Procedure 15.OPS.12, Personnel Contamination Surveys, Revision 2;
xxv. Standard Operating Procedure 15.OPS.13, Equipment and Vehicle Release Surveys, Revision 2;
xxvi. Standard Operating Procedure 15.OPS.14, Spill Surveys, Revision 1;
xxvii. Standard Operating Procedure 15.OPS.15, Air Monitoring for Radioactive Materials, Revision 2;
xxviii. Groundwater Sampling Standard Operating Procedure 15.Env.2 dated September 1, 2006;
xxix. Standard Operating Procedure 15.OPS.17, Volumetric and Material Sampling; Revision 0;
xxx. Standard Operating Procedure 15.OPS.18, Decontamination of Surfaces and Equipment, Revision 1;
xxxi. Standard Operating Procedure 15.OPS.19, Decontamination of Personnel, Revision 0;
xxxii. Standard Operating Procedure 15.OPS.20, Handling of Liquids, Revision 2;
xxxiii. Standard Operating Procedure 15.OPS.21, Package Receipt Surveys, Revision 1; and

G. the Decommissioning Plan dated December 21, 2005; and

H. the Environmental Covenant granted by the licensee to the Colorado Department of Public Health and Environment on January 5, 2006 and as may be amended from time to time; and

I. the correspondence and attachments dated November 24, 2010; December 3, 2010; December 9, 2010 (e-mail); December 14, 2010 (e-mail); and September 10, 2012.

FOR THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Date: October 23, 2012 By: Jennifer T. Opila