Texas Commission on Environmental Quality

RADIOACTIVE MATERIAL LICENSE

Pursuant to the Texas Radiation Control Act, Texas Commission on Environmental Quality, (TCEQ or commission) and Title 30 of the Texas Administrative Code (30 TAC), and in reliance on statements and representations heretofore made by the Licensee, a license is hereby issued authorizing the Licensee to receive, possess, use, store, dispose and transfer radioactive material listed below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations and orders of the Texas Commission on Environmental Quality now or hereafter in effect and to any conditions specified below.

LICENSEE	This license is issued in response to an original application dated: August 3, 2004 Signed by: Dean Kunihiro	
Customer Number CN600616890 1. Name WASTE CONTROL SPECIALISTS, LLC ATTN: KEVIN DOODY, CHP 2. Address THREE LINCOLN CENTER 5430 LBJ FREEWAY, SUITE 1700 DALLAS, TEXAS 75240	3. License Number R04100	4. Amendment Number 00
	4a. License Expiration Date 15 years from the Date of Issuance	

RADIOACTIVE MATERIAL AUTHORIZED

5. Radioisotope	6. Form of Material	7. Maximum Volume and Total Radioactivity	8. Authorized Use
A. Low-level radioactive waste as defined at Texas Health and Safety Code §401.004. B. Low-level radioactive waste is limited to Compact Waste and Federal Facility Waste as defined at Texas Health and Safety Code §401.2005. C. Carbon-14 for the Compact Waste Disposal Facility not to exceed 600 curies total radioactivity for facility life. D. Carbon-14, technetium-99, and iodine-129 for the Federal Facility Waste Disposal Facility not to exceed 180, 35, 0.15 curies, respectively, total radioactivity for facility life. E. Above ground possession of source material not to exceed 30,000,000 grams. F. Above ground possession of special nuclear material not to exceed 350 grams total of uranium-235, 200 grams of uranium-233, or 200 grams of plutonium or any combination of these provided the sum of the ratios of the quantities does not exceed unity.	A. Dry packaged low-level radioactive waste, except as authorized in this license.	A. For the Compact Waste Disposal Facility: Total volume not to exceed 2,310,000 cubic feet or total radioactivity not to exceed 3,890,000 curies. B. For the Federal Facility Waste Disposal Facility: Total volume of federal facility waste limited to 26,000,000 cubic feet or total radioactivity not to exceed 5,600,000 curies of totals, not more than a total volume of 8,100,000 cubic feet (or 300,000 cubic yards) and total radioactivity of 5,500,000 curies of Class A Containerized, Class B, and Class C low-level radioactive waste, collectively.	A. Receipt of low-level radioactive waste from other persons for near-surface land disposal. B. Receipt is limited to Compact Waste and Federal Facility Waste as defined at Texas Health and Safety Code §401.2005.

GENERAL REQUIREMENTS

9. This license authorizes the disposal of low-level radioactive waste, except Greater Than Class C low-level radioactive waste. No other material shall be accepted under this license. The receipt and/or disposal of spent fuel, high-level radioactive waste, by-product material, as defined in 30 TAC §336.2(16)(B), naturally-occurring radioactive material, hazardous waste, industrial solid waste, municipal solid waste, liquid waste, explosive or pyrophoric materials are specifically prohibited. Low-level radioactive waste intended for disposal shall be received, possessed, and disposed only at:

Regulated Entity Number	Location
RN101702439	9998 West Highway 176, Andrews, Texas, 79714 - One mile north of State Highway 176; 250 feet east of the Texas and New Mexico State Line (30 miles west of Andrews, Texas).

10. The Licensee shall comply with the provisions of Title 30 Texas Administrative Code (30 TAC) Chapter 37; Chapter 39, Subchapters A, H, and M; Chapter 50; Chapter 55, Subchapter G; Chapter 60; Chapter 281, Subchapter A; Chapter 305, Subchapters A, B, C, D, and F; and Chapter 336, Subchapters A, B, C, D, E, G, H, and J.

11. Words and terms used in this license are defined in 30 TAC Chapter 336. The following words and terms, when used in this license, shall have the following meaning:

    A. Buffer Zone – A portion of the disposal site that is controlled by the Licensee and that lies under the disposal units and between the disposal units and the boundary of the disposal site.

    B. Bulk Waste – Material that is soil or soil-like in its physical form.

    C. Canister – A rectangular or cylindrical reinforced concrete container as defined in Appendix 3.0-1 of the application.

    D. Commencement of Major Construction – Any clearing of land, excavation, or other substantial action that would adversely affect the environment of a land disposal facility. The term does not mean disposal site exploration, necessary roads for disposal site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the disposal site or the protection of environmental values.

    E. Commission – The Commissioners of the Texas Commission on Environmental Quality acting in their official capacity.

    F. Compact – The Texas Low-Level Radioactive Waste Disposal Compact established under Texas Health and Safety Code §403.006 and Texas Low-Level Radioactive Waste Disposal Compact Consent Act, Public Law Number 105-236 (1998) (Texas Compact).

    G. Compact Waste Disposal Facility – The low-level radioactive waste land disposal facility licensed by the commission for the disposal of Compact Waste.

    H. Compact Waste – Low-level radioactive waste that is generated in Texas or a party state; or is not generated in Texas or a party state, but has been approved for importation to Texas by the Compact Commission under §3.05 of the Compact established under Texas Health and Safety Code §403.006.

    I. Containerized – To be emplaced within a canister.

    J. Disposal Site – That portion of a land disposal facility which is used for disposal of waste. It consists of disposal units and a buffer zone.

    K. Disposal Units – A discrete portion of the land disposal facility into which waste is placed for disposal. For near-surface disposal as authorized by this license, the disposal unit is a trench in which is emplaced.

GENERAL REQUIREMENTS

11. (Continued)

L. Excavation – Those subset of activities comprising construction that involve the removal of native materials (e.g., soils) at the site for the construction of the Land Disposal Facility features, such as, the disposal units, receiving pad, contact water storage pad, decontamination building, or any other structure.

M. Executive Director – The executive director of the Texas Commission on Environmental Quality, or any authorized individual designated to act for the executive director in the administration of the license and the rules of the TCEQ (for example, reporting, inspection, emergency response).

N. Federal Facility Waste – Low-level radioactive waste that is the responsibility of the federal government under the Low-Level Radioactive Waste Policy Act, as amended by the Low-Level Radioactive Waste Policy Amendments Act of 1985 (42 United States Code §2021b - 2021j). Excluded from this definition is low-level radioactive waste that is classified as greater than Class C as defined in 30 TAC §336.362.

O. Federal Facility Waste Disposal Facility – The low-level radioactive waste land disposal facility for the disposal of Federal Facility Waste.

P. Land Disposal Facility – All land, buildings and structures, and equipment which are intended to be used for the disposal of low-level radioactive wastes into the subsurface of the land. For the purposes of the license, the term shall mean both the Compact Waste Disposal Facility and Federal Facility Waste Disposal Facility.

Q. Low-Level Radioactive Waste (LLRW) – Radioactive material that is discarded or unwanted and is not exempt by a Texas rule adopted under the Texas Health and Safety Code §401.106; is waste, as that term is defined by Title 10 Code of Federal Regulations (CFR) §61.2; and is subject to: concentration limits and disposal criteria established in 30 TAC Chapter 336. Low-level radioactive waste does not include: high-level radioactive waste defined by 10 CFR §60.2; spent nuclear fuel as defined by 10 CFR §72.3; transuranic waste as defined in 30 TAC §336.2(138); by-product material as defined in 30 TAC §336.2(16)(B); naturally-occurring radioactive material (NORM) waste as defined in 30 TAC §336.2(83); or oil and gas NORM waste.

R. Operations – The receipt and transfer of low-level radioactive waste for disposal from other persons and/or the emplacement of low-level radioactive waste into a disposal unit and any other activities associated with the receipt and emplacement of low-level radioactive waste. A land disposal facility is in operation from the day that low-level radioactive waste is first received until the day final closure begins.

S. Restricted Area – An area, access to which is limited by the Licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. For the purpose of this license, the Land Disposal Facility is designated as the Restricted Area.

T. Site – The contiguous land area where the land disposal facility or disposal activity is physically located or conducted including adjacent land used in connection with the land disposal facility or disposal activity, and includes soils and groundwater contaminated by radioactive material. Activity includes the receipt, storage, processing, or handling of radioactive material for purposes of disposal at a land disposal facility.

U. Waste – Has the same meaning as Low-Level Radioactive Waste.

12. The following are related to the designated Radiation Safety Officer under this license:

A. The individual designated as the Radiation Safety Officer (RSO) for activities covered by this license is Kevin Doody, CHP.

B. The RSO shall be the primary contact between the Licensee and the TCEQ for all matters relating to this license and radiation safety.

GENERAL REQUIREMENTS

12. (Continued)

C. Any request for amendment of the license shall be submitted under the signature of the RSO.

D. The Licensee shall provide a resolution from its board of directors, attested by the secretary of the corporation that the Licensee has delegated to the radiation safety officer position the authority to act for and on behalf of the Licensee in all matters relating to radiation safety matters and this radioactive material license.

E. The Licensee shall revise an organizational chart and the description of the duties, responsibilities and authorities of the RSO submitted in the application to depict and specify that the designated RSO has a direct line of communication with the Licensee's President on all matters pertaining to radiation safety and compliance with the conditions of this license and the applicable rules.

F. The Licensee shall require and document the following minimum qualifications of any person to be designated to serve as the RSO for this license:

(1) A bachelor's degree in the physical or biological sciences, industrial hygiene, or engineering from an accredited college or university or an equivalent combination of education and relevant experience in uranium recovery, waste processing, or production facility radiation protection. Two (2) years of relevant experience is considered equivalent to one (1) year of academic study.

(2) At least one (1) year of work experience relevant to low-level radioactive waste management and disposal operations in applied health physics, radiation protection, industrial hygiene, or similar work. This experience should involve directly working with radiation detection and measurement equipment, not strictly administrative work. This experience should be in addition to any experience that is used to meet the educational requirement.

(3) At least four (4) weeks of specialized classroom training in health physics specifically applicable to low-level radioactive waste management and disposal operations.

(4) The RSO should attend refresher training on low-level radioactive waste management and disposal operations related to health physics every two (2) years.

G. The RSO shall ensure that the radiation safety program provides, as a minimum, the same qualifications and same training as is provided to radiation safety technicians for all other positions at the land disposal facility involved with the administration and/or execution of the radiation safety program.

13. Copies of all documents and records required by this license must be maintained for the executive director's review at 9998 West Highway 176, Andrews, Texas, 79714.

14. This license may be revoked, suspended, or modified, in whole or in part, for any material false statement in the application or any statement of fact required under provisions of the Texas Radiation Control Act (TRCA), or because of conditions revealed by any application or statement of fact or any report, record, or inspection or other means that would warrant the commission to refuse to grant a license on the original application, or for failure to operate the facility in accordance with the terms of the license, or for any violation of or failure to observe any of the terms and conditions of the TRCA or other applicable law or the license or of any rule or order of the commission.

15. The Licensee must restrict possession and disposal of low-level radioactive waste to the locations and purposes authorized in the license.

16. The Licensee shall maintain records of the types, forms, and quantities of low-level radioactive waste and hazardous waste disposed at the site. This information shall be used during decommissioning and to update the dose modeling prior to license

GENERAL REQUIREMENTS

16. (Continued)
termination. This information shall be retained throughout disposal facility operations and throughout the closure and post-closure periods. Upon license transfer, the records of the types, forms, and quantities of low-level radioactive waste and hazardous waste disposed at the site shall be transferred to the custodial agency.

17. The Licensee must notify the executive director within seven (7) days of receipt of a citation, petition, summons, warrant or other notice of a civil, administrative, or criminal proceeding by a city, county, state, or federal authority relating to the site, land disposal facility, activities, Licensee, managers, or employees at the site.

18. The Licensee must notify the executive director within four (4)-hours of any temporary or permanent closure of the facility or the occurrence of any event that causes the site to be closed beyond the regular schedule of operation.

19. The Licensee may not transfer the real property on which the Federal Facility Waste Disposal Facility is located except to the federal government. The Licensee may not use the property on which the land disposal facilities are located as security or collateral or otherwise subject the real property to foreclosure or possession by a person who is not the state or federal government or the Licensee.

20. Upon issuance of this license, the Licensee shall convey all right, title and interest in land and buildings for the Compact Waste Disposal Facility to the State of Texas together with requisite rights of access to the property.

21. The Licensee must cease any activity authorized under this license when directed to do so by the executive director or the resident inspector as necessary to protect the public health and safety and the environment.

22. The Licensee must submit an annual report to the executive director on the status of the land disposal facilities, including the facilities' projected future capacity.

23. The Licensee shall comply with all license conditions. Failure to comply with any license condition is a violation of the license and statutes under which the license is issued and is grounds for enforcement action, for license amendment, revocation, or suspension, or for denial of a license renewal application or an application for a license or permit for another facility.

24. For the purpose of coordination, communication, and efficiency of submitted document reviews, project-phased schedules shall be required to be submitted as follows:

    A. A comprehensive Pre-Construction Schedule shall be submitted to the executive director no later than 60 days from the authorized date of the approved license. The Pre-Construction Schedule shall include, but is not limited to, the requirements in the following license conditions: 20, 22, 50, 51, 52, 53, 54, 55, 57, 58, 59, 60, 61, 62, 63, 163, 165, 168, 170, 171, 172, 173, 174, 176, 179, 180, and 192.

    B. A comprehensive Construction and Operations Schedule shall be submitted to the executive director no later than 60 days from date of authorized construction. The Construction and Operations Schedule shall include, but is not limited to, the requirements in the following license conditions: 64, 68, 69, 70, 71, 76, 77, 81, 82, 86, 87, 92, 97, 101, 112, 117, 119, 120, 121, 125, 129, 131, 135, 137, 138, 152, 153, 165, 166, 167, 168, 171, 174, 175, 176, 179, 180, and 192.

    C. One (1) year from the predicted date of site closure, a Closure Schedule shall be submitted to the executive director. The Closure Schedule shall include, but is not limited to, the requirements in the following license conditions: 165, 166, 167, 168, 171, 175, 176, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, and 192.

GENERAL REQUIREMENTS

25. The Licensee shall note that it is not a defense in an enforcement action, that it would have been necessary to halt or reduce the licensed activity to maintain compliance with the license conditions.

26. The Licensee must take all reasonable steps to minimize or prevent any discharge, disposal, or other license violation which has a reasonable likelihood of adversely affecting human health or the environment.

27. The Licensee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) installed or used by the Licensee to achieve compliance with the license conditions.

28. The Licensee must furnish to the executive director, upon request and within a reasonable time, any information to determine whether cause exists for amending, revoking, suspending, or terminating the license, and copies of records required to be kept by the license.

29. This provision is related to indemnification of TCEQ:

    A. Upon license issuance, to the fullest extent permitted by law, the Licensee shall indemnify and hold harmless the TCEQ and its officers, employees, agents, principals and assigns from and against all fines, penalties, claims, damages, losses, demands, judgments, settlements, punitive damages, costs of suit, attorneys' fees and delays to other contractors, whether arising in tort or otherwise, whether arising under the Texas Tort Claims Act or otherwise, and whether or not the parties are individually or jointly responsible for any damages, that arise out of or result from:

        (1) Work performed in connection with this license by the Licensee or any of its agents, employees, subcontractors, or suppliers or their agents or employees, whether or not such work is negligently or recklessly performed;

        (2) Licensee's handling of a hazardous substance or performance of an inherently hazardous activity;

        (3) The negligent, reckless, or intentional acts or omissions of Licensee or any of its agents, employees, subcontractors, or suppliers or their agents or employees;

        (4) The Licensee's failure to comply with any license requirement, covenant, warranty, or representation;

        (5) Any claim against the TCEQ relating to its issuing or not issuing this license, or regulatory enforcement or lack of enforcement of this license, or including or not including any terms, provisions, or requirements in this license;

        (6) Personal injury or bodily injury (including death) to the Licensee's own employees, contractor's, or contractors' employees, subcontractors, or subcontractor's employees, suffered as a result of the Licensee's performance or lack of performance of any activities related to this license;

        (7) The acts or omissions of negligence of commission or any of TCEQ's officers or employees;

        (8) The acts or omissions of gross negligence of any TCEQ officer or employee arising out of or in connection with the Licensee's performance of any activities related to this license; or

        (9) Any condition of tangible property on or related to the site, whether or not TCEQ owns or has control over the site or any of the conditions at the site.

    B. This indemnity obligation shall not be apportioned according to contribution, in negligence or otherwise, but shall apply to the entire such claim, damage, loss, demand, judgment, expense, or attorneys fees, regardless of whether it is caused in whole or in part by a party indemnified hereunder (including the negligent act or omission of the TCEQ or its employees).

GENERAL REQUIREMENTS

29. (Continued)
    C. This indemnity obligation shall survive termination of the license. The Licensee must give notice to the executive director before physical alterations or additions to the licensed facility if such alterations or additions would require a license amendment or result in a violation of license requirements.

30. Authorization from the commission is required before beginning any change in the licensed facility or activity that would result in noncompliance with other license requirements.

31. Unless subject to a different reporting requirement in this license or under 30 TAC §336.335 (Reporting Requirements for Incidents), the Licensee must report any noncompliance to the executive director which may endanger human health or safety or the environment. Such information must be provided orally within 24-hours from the time the Licensee becomes aware of the noncompliance. A written submission must also be provided within five (5) days of the time the Licensee becomes aware of the noncompliance. The written submission must contain a description of the noncompliance and its cause; the potential danger to human health or safety, or the environment; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance, and to mitigate its adverse effects.

32. Inspection and entry must be allowed under Texas Water Code, Chapters 26 - 28 and 32, Texas Health and Safety Code §§361.032, 361.033, 361.037, and 401.063, and 40 CFR §122.41(i). The statement in Texas Water Code §26.014, that executive director entry of a facility must occur in accordance with an establishment's rules and regulations concerning safety, internal security, and fire protection is not grounds for denial or restriction of entry to any part of the facility, but merely describes the executive director's duty to observe appropriate rules and regulations during an inspection.

33. The license may not be transferred except on approval of the commission.

34. All reports and other information requested by and submitted to the executive director must be signed by the person and in the manner required by 30 TAC §305.128. All information submitted to the executive director must comply with the applicable requirements of the Texas Engineering Practice Act, the Texas Geoscience Practice Act, and the Texas Professional Land Surveying Practices Act.

35. This license may be amended, suspended and reissued, or revoked for cause. The filing of a request by the Licensee for a license amendment, suspension and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any license condition.

36. This license does not convey any property rights of any sort, or any exclusive privilege.

37. Monitoring results must be provided at the intervals specified in the license.

38. When the Licensee becomes aware that it failed to submit any relevant facts in a license application, or submitted incorrect information in an application, or in any report to the executive director, it must promptly submit such facts or information.

39. At any time before termination of the license, the Licensee must submit written statements under oath upon request of the commission or the executive director to enable the commission to determine whether or not the license should be modified, suspended, or revoked.

40. The license or portion thereof will be transferred to the custodial agency only on the full implementation of the final closure plan as approved by the commission, including post-closure observation and maintenance.

41. No waste may be received or disposed of until all information required to be submitted under this license is submitted and the executive director has inspected the facility and has found it to be in conformance with the description, design, and

GENERAL REQUIREMENTS

41. (Continued)
construction described in the application and as modified by this license. No waste may be received for disposal at the site until the executive director has approved financial assurance and disposal site ownership arrangements.

42. The commission may incorporate in this license at the time of issuance, or thereafter, by appropriate rule or order, additional requirements and conditions with respect to the Licensee's receipt, possession, and disposal of wastes as it deems appropriate or necessary in order to: (1) protect the health and safety of the public and the environment; or (2) require reports and recordkeeping and to provide for inspections of activities under the license that may be necessary or appropriate to effectuate the purposes of the Texas Radiation Control Act and the commission's rules.

43. Ninety (90) days prior to the receipt of federal facility waste, the Licensee must indemnify the commission, the state, and its officers and agents for any liability imposed on the commission or state under state or federal law for damages, removal, or remedial action with respect to the land, the facility, or the federal waste accepted, stored, or disposed of. The Licensee may not receive federal facility waste until the executive director approves the indemnification in writing.

44. Notice of Bankruptcy.

    A. The Licensee must notify the executive director, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of Title 11 (Bankruptcy) of the United States Code (11 USC) by or against:

        (1) The Licensee;

        (2) An entity (as that term is defined in 11 USC §101(14)) controlling the Licensee or listing the license or Licensee as property of the estate;

        (3) An affiliate (as that term is defined in 11 USC §101(2)) of the Licensee; or

        (4) Valhi, Inc.

    B. This notification must indicate:

        (1) The name of the Licensee;

        (2) The License number(s);

        (3) The bankruptcy court in which the petition for bankruptcy was filed; and

        (4) The date of filing of the petition.

45. Any leases, contracts, or other arrangements between the Licensee and the commission with respect to the ownership and use of the property on which the Compact Waste Disposal Facility is located are subject to the laws of the State of Texas and are independent of the regulatory and administrative processes applicable to low-level radioactive waste disposal. By granting this license, the commission does not waive any rights with respect to the ownership and use of the property on which the Compact Waste Disposal Facility is located.

46. The Licensee shall not receive or dispose of any waste with physical, chemical, and radiological characteristics not evaluated in the application.

GENERAL REQUIREMENTS

46. (Continued)

A. The Licensee shall not receive or dispose uranium enrichment waste, uranium conversion waste, or uranium deconversion waste, including uranium hexafluoride, and large quantities of depleted uranium or similar material.

B. The Licensee shall not receive or dispose waste streams containing depleted uranium in concentrations greater than ten (10) nanocuries per gram. All depleted uranium or similar waste in concentrations less than ten (10) nanocuries per gram (<10nCi/g) shall be disposed consistent with the provisions specified in License Condition 102.

C. In order to accept any additional waste streams, information on complete waste profiles, radionuclide information, total radioactivity, radionuclide concentrations, chemical constituents, and analysis of any impacts to members of the public and the environment must be submitted as an application for amendment to this license.

47. The Licensee shall provide, on or near the required signs and labels, additional information, as appropriate, to make individuals aware of potential radiation exposures and ways to minimize the exposures.

48. The Licensee must use any reasonable means, including but not limited to, fencing and security personnel, to prevent unauthorized entry into the restricted area of the site.

49. Upon submission of an application for license renewal and/or amendment, or upon the request of the executive director, the Licensee must furnish the executive director with an updated map and cross-referenced list of adjacent landowners.

PRECONSTRUCTION REQUIREMENTS

50. Prior to commencement of major construction, the Licensee shall perform and submit to the executive director for review:

A. A Site-specific Data Assessment and Management Plan (S-DAMP). The S-DAMP shall describe the collection and refinement of existing and new data related to the characteristics at the site and the schedule for submitting new data to the executive director. Parameters in the S-DAMP requiring refinement include, but are not limited to, water levels, matric potential, geo-physical resistivities, erosion, hydraulic conductivities, porosities, and k_d distribution coefficients. The S-DAMP must include a method for well purging and well sampling to assure that well samples are taken from groundwater in the formation, particularly for low-flowing systems and not from condensation in the well and that the samples are representative of the water in the zone that is sampled. The S-DAMP must include a method for determining the source of water found below the well screen. The S-DAMP must include age-dating techniques for the development and validation of the site hydrogeologic conceptual model, including the use of age-dating for characterization of connectivity, history and flow paths of groundwater within the Ogallala-Antlers-Gatuña (OAG) materials at the site and in the vicinity of the land disposal facility. The S-DAMP must specify the frequency, methods, and all well locations that will be used for age-dating. Discussion and refinement of any other parameters anticipated for use in models or codes must also be included in this plan. Prior to any investigation, sample locations and a schedule of activities are required to be submitted as a precursor to S-DAMP for review by the executive director. The licensee must provide all previously collected sampling data for surface water, soil, air, plant and animal samples to the executive director in an electronic format within 30 days of the final approval of the license. Sampling data submitted must include the latitude and longitude location for each sample taken, identification number of the sampled well or other monitoring device, screen depths of sampled wells, water levels of sampled wells, and elevation of the casing of a sampled well. Positional data submitted to the executive director must comply with OPP 8.11.01 Geographic Information Systems Positional Data, as amended, and OPP 8.12.01 Global Positioning System, as amended. The licensee must submit the data in an electronic format specified by the executive director. These requirements apply to all data required by the S-DAMP.

B. A Performance Assessment Maintenance Plan. The plan shall incorporate the conditions of this license, including the most current waste characterization data, and demonstrate compliance with the performance objectives of 30 TAC

PRECONSTRUCTION REQUIREMENTS

50. B. (Continued)

§336.723. The plan shall include, but not be limited to, an explanation of how data will be used for demonstrating compliance, how the data was collected, development of a conceptual model consistent with validated characterization data, defining scenarios and pathways, selection of appropriate mathematical models and codes, calibration methods of the models/codes and the data output from execution of the codes, methods for sensitivity and uncertainty analyses, and approaches for determination of site characterization in meeting the performance objectives.

(1) In demonstrating compliance with the performance objectives, the plan shall provide for the use of a more realistic and flexible dose modeling code and site specific estimates of the magnitudes and the variability in the models or codes to provide a greater level of confidence in the results. The use of models or codes should be consistent with the site conceptual model and be capable of addressing the inherent complexity at the site. Any subsequent data collected at the site shall be utilized in the code as well as any other parameters required by the code that were not previously submitted.

(2) The plan shall address all plausible release and accident scenarios as they relate to the performance objectives including, but not limited to, protection of individuals from releases after closure, protection of workers and the public during normal operations and from accidents, protection of individuals from inadvertent intrusion, and long-term stability of the disposal site after closure. The accident scenarios must be submitted for review by the executive director prior to initiating revision of the performance assessment. The plan must address the submission of an updated performance assessment to the executive director prior to the acceptance of waste that incorporate the additional data collection, appropriate modeling, analyses, and results consistent with conditions of this license.

C. A Fracture Analysis Plan. The plan must adhere to the following requirements:

(1) Within 60 days following license issuance, a fracture analysis plan and schedule is required to be submitted to the executive director. Proposed boring and well locations must be submitted prior to conducting an investigation. Possible fracture and faults must be investigated within and down-gradient of land disposal facility using techniques that may range from simple extrapolation of surface observations to geophysics methods, such as seismic and electromagnetic soundings, and single-bore or borehole-to-borehole analysis. Wells must be installed where possible faults, fractures or lineaments have been located, and if possible, where the maximum number of these features intersects.

(2) Installation of new borings and monitoring wells must be used initially for the sole purpose of completing pressurized tests capable of measuring the hydraulic conductivities in those Dockum materials of greatest relevance to the performance assessment. No water sampling may be performed during these tests. All wells must have transducers during the entire length of the hydraulic conductivity test, especially during the critical first half of the test.

(3) During installation of the wells, core samples shall be collected from all zones in the wells and utilized for grain size analysis, determining porosity values, and in site specific determination of distribution coefficients (k_d) for a suite of radionuclides. Batch contact tests, rather than column tests, must be used to estimate the sorption isotherm over an appropriate range of concentrations. Samples must also be collected from the 225-zone and utilized for laboratory analysis of hydraulic conductivity from all borings.

(4) Arrays of wells with packers must be installed to identify possible hydraulic connectivity of the fracture system using pressurized air. An array must be located in the footprint of the Federal Facility Waste Disposal Facility to evaluate fracture connectivity in the zone from between the Ogallala-Antlers-Gatuña (OAG) contact and the bottom of the proposed disposal unit. Additional arrays must be located immediately adjacent to the footprint of

PRECONSTRUCTION REQUIREMENTS

50. C. (4) (Continued)

the Federal Facility Waste Disposal Facility to evaluate fracture connectivity in the zone from between the 125-foot zone and the 180-foot zone and between the 180-foot zone and the 225-foot zone.

D. A Hydrogeologic Properties Report. A site hydrogeologic properties report and study must also conduct statistical analyses of spatial distribution of measured hydraulic conductivities and porosities. These analyses must include, but are not limited to, hydraulic conductivity contour maps, block estimating, correlation arguments for conductivities upgradient of the disposal units, hypothesis tests for log-normality, and textural comparisons between the 125-, 180-, and the 225-foot layers. The results of the age-dating and confirmation of the new model are to be reported within this document.

51. Prior to commencement of major construction, the Licensee shall submit to the executive director for review the following studies or plans:

A. Installation and sampling of eight (8) additional borings inside the perimeter of the Compact Waste Disposal Facility, to verify unsaturated conditions immediately outside the disposal unit. These borings must be located as follows: one (1) at each corner of the Compact Waste Disposal Facility, and one (1) additional boring evenly spaced along each side of the disposal site, and to a depth of at least the upper one (1) foot of the Dockum formation.

The measurement methods selected should provide for verification of unsaturated conditions prior to construction, and for annual verification, thereafter. Should any of these measurements indicate saturated conditions, operations must cease to accommodate additional sampling, verification, or testing.

B. Installation and sampling of eight (8) additional borings inside the perimeter of the Compact Waste Disposal Facility, to verify unsaturated conditions immediately outside the disposal unit. These borings must be located as follows: one (1) at each corner of the Compact Waste Disposal Facility, and one (1) additional boring evenly spaced along each side of the disposal site, and to a depth of at least within one (1) foot of the bottom of the disposal unit as provided in this license.

The measurement methods selected should provide for verification of unsaturated conditions prior to construction, and for annual verification, thereafter. If any of these measurements indicate saturated conditions, then operations must cease to accommodate additional sampling, verification, or testing.

C. Installation and sampling of 12 additional borings inside the perimeter of the Federal Facility Waste Disposal Facility, to verify unsaturated conditions immediately outside the disposal unit. These borings must be located as follows: one (1) at each corner of the Federal Facility Waste Disposal Facility, and two (2) additional borings evenly spaced along each side of the disposal site, and to a depth of at least the upper one (1) foot of the Dockum formation.

The measurement methods selected should provide for verification of unsaturated conditions prior to construction, and for annual verification, thereafter. If any of these measurements indicate saturated conditions, then operations must cease to accommodate additional sampling, verification, or testing.

D. Installation and sampling of 12 additional borings inside the perimeter of the Federal Facility Waste Disposal Facility, to verify unsaturated conditions immediately outside the disposal unit. These borings must be located as follows: one (1) at each corner of the Federal Facility Waste Disposal Facility, and two (2) additional borings evenly spaced along each side of the disposal site, and to a depth of at least within one (1) foot of the bottom of the disposal unit as provided in this license.

PRECONSTRUCTION REQUIREMENTS

51. D. (Continued)

The measurement methods selected should provide for verification of unsaturated conditions prior to construction, and for annual verification, thereafter. If any of these measurements indicate saturated conditions, then operations must cease to accommodate additional sampling, verification, or testing.

E. Verification of the previous resistivity study including a new resistivity survey to re-establish as closely as possible the original study, and extend to the south beyond the planned location of the land disposal facility. Borings must be installed and logged to calibrate the resistivity survey. The resistivity study should address further definition of the Dockum surface in the surveyed area. If the survey indicates that saturation in the Ogallala-Antlers-Gatuña (OAG) formation is located over the proposed facility, additional sampling, verification or testing must be proposed.

F. Verification by engineering reports to the executive director within 270 days of the issuance of this license, and no later than 60 days prior to the start of waste disposal operations in the Federal Facility Waste Disposal Facility Non-Containerized Disposal Unit. Reports must include an evaluation of the expected effectiveness of water spraying, with and without chemical additives, in controlling particulate air emissions from the exposed waste face in the Federal Facility Waste Disposal Facility Non-Containerized Disposal Unit. The report must address the emissions control effectiveness during both average seasonal wind velocity and high wind velocity events taken from National Weather Service recorded data from the past 25 years for Midland/Odessa, Texas. The report must include an evaluation of the ability to apply water sprays in winds exceeding 25 miles per hour, given the tendency for wind erosion of the waste surfaces, and droplet entrainment at higher wind speeds. The evaluation must be based upon new testing, or documented performance testing under similar conditions from prior studies, which may include spraying systems manufacturers' performance data.

G. A particulate air emissions study for the Federal Facility Waste Disposal Facility Non-Containerized Disposal Unit which is to include wind erosion of the exposed waste face as a mass air emissions rate factor in the air dispersion modeling. High wind velocity events are to be taken from National Weather Service data for Midland/Odessa Texas from the past 25 years, and are to be used in computing wind erosion mass air emissions for one (1)-hour, 24-hour, seven (7)-day, 30-day, and annual averaging periods. Maximum wind gusting velocities, as well as average sustained wind velocities must be considered in the analysis. Any credit taken for emissions control due to the sheltering effect of subsurface disposal must be validated by modeling, or by documented performance testing under similar conditions from prior studies. Any credit taken for emissions control by water spraying of the exposed-waste face must be consistent with the evaluation of this method provided in the license. The study must include an estimate of the total annual mass loss of Class A bulk low-level radioactive waste from the Federal Facility Waste Disposal Facility Non-Containerized Disposal Unit, due to particulate air emissions, under anticipated average, and high wind operating conditions.

H. Installation of spill control (containment features such as vaults, double walled tanks, sumps, etc.) and monitoring measures (monitoring wells for groundwater and soil stations for soil) from the surface to the top of the caliche caprock around surface structures where a spill or leak could possibly occur, to facilitate remediation of possible spills. Surface structures include the decontamination building and the water storage and disposal structures, fuel tanks, storage facilities, processing structures, re-packaging areas, etc. Incorporate a plan for these controls and measures into the Radiological Environmental Monitoring Program and re-submit to the executive director for review prior to construction.

I. Tracer studies to determine the proper location and installation of monitor wells in the Ogallala-Antlers-Gatuña (OAG) formation (above and below the caprock). Tracer studies must be utilized to further delineate contaminant migration in the shallow groundwater and allow for better placement of monitoring stations. Groundwater pathways to springs and playas should be determined using tracers in order to protect and monitor these features from spills and releases. Both the work plans and the subsequent results for the tracer studies must be submitted to the executive director.

PRECONSTRUCTION REQUIREMENTS

51. (Continued)

J. Verification that salt dissolution will not impact the land disposal facility by placing one (1) boring and collecting core samples near the proposed land disposal facility from the lower part of Dockum Group and into the salt-bearing section of the Salado Formation.

K. Verification and evaluation of the location of faulting nearest to the land disposal facility.

52. Prior to commencement of major construction, the Licensee shall:

A. Verify the elevations of the top of Dockum Group within the site area with sufficient spatial resolution to support any modeling relying upon these elevations.

B. Evaluate the condition of the central industrial well, including the necessary geophysical logs to evaluate the condition of cement behind pipe on the well, condition of the well casing, and the screened interval(s). Based on the condition of the well, the executive director may require appropriate remedial action including plugging and abandonment. The Licensee shall also monitor and report to the executive director any operating changes or change of use for active oil and gas wells adjacent to the facility.

C. Demonstrate that the possibility for water to flow from the Ogallala-Antlers-Gatuña (OAG) formation to the lateral drainage layer of the final constructed cover will not affect the performance of the Compact Waste Disposal Facility and Federal Facility Waste Disposal Facility.

D. Verify and provide to the executive director data demonstrating the geotextile fabric materials ability to function as a filter. The ability of the geotextile fabric located between the sand filter material and the bio-barrier layer to retain its integrity during installation must be confirmed.

E. Measure matric potential of the subsurface Dockum formation at the land disposal facility to locate the top of the zone of saturation. The Licensee must allow for observation by the executive director of any verification measurements or testing, and provide data and interpretation of the results in a report to the executive director.

F. Reconcile the differences in the descriptions of site drainage and site soils between the surficial geology report and the floodplain report provided in the license application. The reconciliation must be submitted for review by the executive director.

G. Identify and report any changes to the 100-year, the 500-year, and the Probable Maximum Precipitation (PMP) floodplains anticipated as a result of future climatic conditions described in the license application. The reports must be submitted for review by the executive director.

H. Verify and modify according to design changes in this license, the geographical coordinates of the area centroid and each of the four (4) corners of each proposed disposal unit using global positioning system (GPS) with sub-meter accuracy.

I. Verify the depictions of all existing and planned improvements on the site and revise the topographic maps relied upon accordingly.

J. Verify the adequacy of the leachate collection system, including but not limited to rise in hydraulic head of the drainage pipe at the center of the disposal unit in relation to the mounding equation used. Any design modification of the leachate collection system necessitated by the verification process, must use the 100-year, 24-hour precipitation event as the design basis for the leachate collection system in accordance with the application. The revised analysis and design must be submitted for review by the executive director.

PRECONSTRUCTION REQUIREMENTS

53. Prior to commencement of major construction, the Licensee must submit modeling to:

    A. Demonstrate that the buffer zones established for the land disposal facility will be unsaturated at all times. The representative current and future climatic parameters in the license application must be incorporated into the modeling.

    B. Predict hydrological conditions to assure that unsaturated conditions remain in the buffer zone at all times. The modeling shall incorporate sensitivity studies and uncertainty analyses of the locations of the Ogallala-Antlers-Gatuña (OAG) formation "dry line" and the Dockum Group water table.

    C. Provide input parameters for native materials, including but not limited to, the lower boundary condition of the infiltration computer models, Hydrologic Evaluation of Landfill Performance (HELP) and Variable Saturated Two-Dimensional Infiltration (VS2DI). Sensitivity analysis must be included in any simulations incorporating all relevant parameters. Any revised sensitivity analysis must be submitted for review by the executive director.

    D. Include soil samples in a refined sampling grid to provide a better assessment of the regional erosion patterns. The erosion modeling must include sensitivity analysis. The modeling must be submitted for review by the executive director.

54. Prior to commencement of major construction, the Licensee must develop site-specific erosion rates. The Licensee must install, maintain, and monitor erosion pin arrays on the north side of the Federal Facility Waste Disposal Facility as close to the disposal site as possible.

    A. Quarterly measurements of erosion made at the pins shall be taken and reported to the executive director.

    B. If this data indicates erosion is greater than the expected erosion as provided in the application over the operational life of the facility, the Licensee must submit a license amendment to establish the final cover design and closure plans to address the observed erosion rate.

    C. The Licensee shall install a weather/climate station in the immediate proximity of the erosion monitoring in Ranch House Draw and in any other location of additional erosion pin arrays.

55. Prior to commencement of major construction, the Licensee shall:

    A. Complete seismic analyses demonstrating the structural stability of bulk and containerized waste during the operational phase of waste disposal, when the disposal units are open.

    B. Complete equivalency demonstration under 30 TAC §336.730(b), regarding the containment structure. This demonstration must include:

        (1) An analysis of the chemical resistance of the proposed shotcrete liner;

        (2) The development of the long-term strength of the shotcrete;

        (3) An analysis of whether an elastomer coating should be applied to the shotcrete;

        (4) An analysis accounting for degradation and creep in the shotcrete; and

        (5) An analysis of the shotcrete liner using Structural Analysis Program (SAP).

PRECONSTRUCTION REQUIREMENTS

56. Prior to commencement of major construction, the Licensee shall ensure that all applicable information submitted to the executive director is in compliance with the Texas Engineering Practice Act, the Texas Geoscience Practice Act, and the Texas Professional Land Surveying Practices Act.

57. Prior to commencement of major construction, the Licensee must provide calculations originally contained in Appendix 3.0-3.14 of the application and implement this design, in order to reduce the possibility of localized erosion. The calculations must use a design basis of the Probable Maximum Precipitation (PMP).

58. Prior to commencement of major construction, the Licensee must:

    A. Design a diversion ditch for "Area 1" and the seven (7) acre area that drains to the Compact Waste Disposal Facility in Volume 21, Appendix 3.0-3.1 of the application.

    B. Re-design the other surface water diversion ditches to include run-off from "Area 1" and Compact Waste Disposal Facility. All ditches must be designed to insure at least one (1) foot of freeboard and use riprap gravel to provide sufficient protection from scour.

    C. Design ledge ditches on all sides of the disposal unit sized to account for the 100-year, 24-hour precipitation event.

    D. The revised designs must be submitted for review by the executive director.

59. Prior to commencement of major construction, the Licensee shall ensure stormwater from the Federal Facility Waste Disposal Facility does not commingle with stormwater from the Compact Waste Disposal Facility. The Licensee's stormwater management plan should include drainage to a sedimentation pond sized to retain the 100-year storm event and an estimated volume of sediment produced by erosion over a ten (10) year period. The revised analysis and design of the various stormwater conveyances must be submitted for review by the executive director.

60. Prior to commencement of major construction, the Licensee must submit a fully compliant respiratory protection program to the executive director for review. The program shall include the following procedures:

    A. Air monitoring;

    B. Personnel breathing zone monitoring;

    C. Medical surveillance;

    D. Respiratory protection program audits;

    E. Maintaining breathing quality;

    F. Training on the use of respirators;

    G. Fit-testing;

    H. Respirator selection;

    I. Inventory and control;

    J. Storage and issuance;

PRECONSTRUCTION REQUIREMENTS

60. (Continued)

K. Maintenance, repair, testing, and quality assurance;

L. Record keeping; and

M. Periods of respirator use and relief from respirator use.

61. The Licensee must cure all title defects for the Section 25, Block A-49, Public School Land Survey, Andrews County, Texas mineral estate prior to commencement of major construction.

62. The Licensee must provide an abstract of title for the Section 25, Block A-49, Public School Land Survey, Andrews County, Texas mineral estate prior to commencement of major construction.

63. The Licensee shall submit final construction documents to the executive director no later than 60 days prior to the planned commencement of facility construction. Construction may not commence without the prior written approval of the executive director. Construction documents shall include, but are not limited to, all final design plans, elevations, and detail drawings; all final written design specifications and supporting calculations; all equipment vendor data sheets and drawings; all materials specifications and data sheets; construction schedules; construction quality assurance plans; engineering reports addressing compliance with applicable design codes and standards; and any other documents related to the construction of the facility. Construction documents shall address, but are not limited to, the following aspects of the facility:

A. Design and configuration of the Compact Waste Disposal Facility disposal units and Federal Facility Waste Disposal Facility disposal units;

B. Design of interim and final covers, including vegetative layers, for the Compact Waste Disposal Facility disposal units and Federal Facility Waste Facility disposal units;

C. Disposal facility site grading plan, including topographic maps, surface water diversion structure, and stormwater control features;

D. Engineering evaluation of rainwater capture under anticipated 24-hour, 100-year precipitation event and expected accumulation rates as static liquid head over the primary liners, based upon the design of the leachate collection, detection, and removal systems, as applicable for the Compact Waste Disposal Facility disposal units and Federal Facility Waste Disposal Facility disposal units; and

E. Design and re-location of any waste staging building, including all equipment and facilities to be installed within the building.

SITE DESIGN AND CONSTRUCTION REQUIREMENTS

64. The base of the disposal units within the Federal Facility Waste Disposal Facility must have a final elevation of no lower than 3,370 feet mean sea level. The base of the disposal units is the lowest point at which waste will be disposed. The northernmost edge of the Federal Facility Waste Disposal Facility will be relocated to be at least 50 feet further from the Ogallala-Antlers-Gatuña (OAG) formation "dry line" presented in the application. A revised design must be submitted for review by the executive director.

65. The Licensee shall maintain an individual buffer zone for both the Compact Waste Disposal Facility and the Federal Facility Waste Disposal Facility in a lateral perimeter of at least 100 feet around all disposed waste to allow monitoring for early detection of releases and to allow for remediation, if necessary. In the event that saturated conditions are detected in the buffer zone, the Licensee shall cease all waste disposal operations and notify the executive director immediately.

SITE DESIGN AND CONSTRUCTION REQUIREMENTS

66. The Licensee shall maintain an individual buffer zone for both the Compact Waste Disposal Facility and the Federal Facility Waste Disposal Facility under the lowest point of disposed waste of adequate size to allow monitoring for early detection of releases and to allow for remediation, if necessary. In the event that saturated conditions are detected in the buffer zone, the Licensee shall cease all waste disposal operations and notify the executive director immediately.

67. The Compact Waste Disposal Facility and Federal Facility Waste Disposal Facility design and construction shall be in accordance with the application and specifications as modified by this license, and any applicable conditions of this license.

68. During excavation and construction of the disposal site, the Licensee shall provide weekly written reports and photographs to accommodate the executive director's inspection and observation of all excavation and construction activities and include a discussion of future construction activities. Particular attention must be directed to fractures, faults, any evidence of collapse features or groundwater flow, or unanticipated geologic features encountered. The Licensee shall cease excavation and construction when directed to do so by the executive director in order to sample, verify, or test.

69. During excavation and construction of the disposal site, the Licensee shall perform geotechnical studies, sampling, and laboratory analysis, and allow for observation by the executive director, to verify original geotechnical conditions by continuously monitoring parameters and features including, but not limited, to: soil moisture, bearing capacity, slope stability, and permeable soil stringers as construction progresses. The Licensee shall report verification results to the executive director and provide certification of geotechnical studies by a qualified geotechnical professional. The Licensee shall cease excavation and construction when directed by the executive director in order to sample, verify, or test.

70. The Licensee must conduct water level elevation measurements monthly, including during excavation and construction, on all wells within the site boundary completed in the Ogallala-Antlers-Gatuña (OAG) formation, and report, in writing, these elevations to the executive director within ten (10) days, to monitor movement in the Ogallala-Antlers-Gatuña (OAG) formation "dry line" as presented in the application. If the water level elevations are at or higher than the top of the Dockum at the facility, excavation shall cease in order to sample, verify, or test. For the purpose of observing seasonal variations in water levels, water tables and potentiometric surfaces, continuous data recordings for the water levels shall be required and transducers shall be installed in a justified percentage of the wells being monitored for each layer. Geostatitical support for the spacial location of each transducer/well location used for each formation shall be provided.

71. The Licensee shall verify input parameters during excavation of materials and construction of disposal unit liners and covers of the infiltration computer models, HELP and VS2DI. Any revised analysis must be reviewed by the executive director.

72. Disposal units under construction and partially filled units must be bermed to prevent water from entering the disposal unit. Low-level radioactive waste may not be placed into disposal units with standing water.

73. All changes to the Compact Waste Disposal Facility and Federal Facility Waste Disposal Facility design must be authorized by the executive director. The executive director will review all the requests submitted by the Licensee for changes to the operations and facilities. The commission may approve the changes by amending the license, as necessary.

74. The Licensee must obtain written authorization from the executive director prior to changing, adding, or deleting the codes and standards used for the design and construction of the facility as listed in the license application.

75. The Licensee must use American Water Works Association (AWWA) D102-06 for the inside coating and cathodic protection of all the leachate tanks serving the Compact Waste Disposal Facility and the Federal Facility Waste Disposal Facility.

76. The Licensee must provide additional thickness to the native conditioned layer in the evapotranspiration cover in order to support vegetation and store water as well as provide long term stability and protection from erosion. The revised cover design must be submitted for review by executive director prior to construction.

SITE DESIGN AND CONSTRUCTION REQUIREMENTS

77. A minimum density of 85 percent (%) of the standard Proctor maximum dry density is specified for the native fine material layer in the evapotranspiration cover. The Licensee must specify a maximum density to ensure that the layer is not too dense to inhibit plant growth, including deeper rooted plants.

78. Any precipitation falling on the land disposal facility must be managed and monitored under all applicable state and federal requirements, including 30 TAC §336.359, Appendix B, Table II. Discharges leaving the land disposal facility may not exceed the values in Table II, 30 TAC §336.359, Appendix B.

79. The Licensee must measure hydraulic conductivities of the performance cover by taking at least one (1) measurement performed per 100 cubic yards of fill material. The Licensee must also measure standard density of the performance cover by taking at least one (1) measurement performed per 200 cubic yards of fill material.

80. The Licensee must adhere to the design bases listed for all applicable design features and structures.

81. Sixty (60) days prior to the receipt of waste for disposal in the applicable disposal unit, the Licensee shall provide a final geotechnical report and "as-built" construction drawings for review by the executive director. A Registered Professional Engineer licensed to practice in Texas shall certify that the applicable disposal unit has been constructed in accordance with the license application and the conditions of this license, or as amended. Any deviation in the as-built drawings from the design and construction proposed in the license application must be explained and submitted for review by the executive director. Deviations may require an amendment of this license.

82. The Licensee must install moisture content and pressure head monitors in and below the Compact Waste Disposal Facility and the Federal Facility Waste Disposal Facility liners and the covers. The monitoring system must be automated and capable of continuously transferring data. The monitoring system must be maintained and not be abandoned, so that it may be used for long-term monitoring. Selection and placement of these monitors must be submitted for review by the executive director.

83. If a water level is found to exist in any well(s) on the site considered previously dry from the last measurement event, the executive director must be notified in writing within ten (10) days of the first occurrence of this condition, otherwise the reporting period must be quarterly.

84. Except as specifically provided for in this license, the Licensee is prohibited from further modifying surface water characteristics of the watershed including but not limited to placement of materials in the large playa to the north of the Federal Facility Waste Disposal Facility. Any modifications or alterations of site characteristics or natural drainage conditions as depicted in the application and as modified by this license must be approved by license amendment.

85. The Licensee shall design and construct the Compact Waste Disposal Facility to minimize groundwater infiltration and mitigate impact from the remaining portion of the small playa located on the eastern edge of the Compact Waste Disposal Facility.

86. The Licensee must verify that the hydraulic conductivity used in technical specifications is representative of the native fine material layer. Specifications must be verified by measurement during construction.

RECEIPT, ACCEPTANCE, AND INSPECTION REQUIREMENTS

87. Prior to accepting waste and by March 31 of each year thereafter, the Licensee shall conduct an updated performance assessment, consistent with the Performance Assessment Maintenance Plan, and provide to the executive director technical and environmental analysis to demonstrate that performance objectives of 30 TAC Chapter 336 Subchapter H will be met. The updated performance assessment shall incorporate the conditions of this license, include the most current waste characterization data, and demonstrate compliance with the performance objectives of 30 TAC §336.723:

RECEIPT, ACCEPTANCE, AND INSPECTION REQUIREMENTS

87. (Continued)

A. The updated performance assessment must evaluate the impacts or activities of nearby facilities, including any off-site surface impoundments or water management retention/detention ponds required by this license, in order to ensure that the performance objectives of 30 TAC §336.723 will continue to be met after closure.

B. The updated performance assessment must evaluate the impact on the Performance Assessment of saturating the drainage layer in the cover in the event of future water level increases in the Ogallala-Antlers-Gatuña (OAG) formation.

C. The annual performance assessment report must be prepared in accordance with the approved Performance Assessment Maintenance Plan. The annual updates must be based on changes of conditions, assumptions, received source term, or any information needed to benchmark against the original performance assessment, the collection and refinement of existing and new data, refinement of assumptions or the refinement or replacement of models in order to minimize uncertainty in the dose modeling results.

88. The Licensee shall not commingle compact waste and federal facility waste. The Compact Waste Disposal Facility and Federal Facility Waste Disposal Facility must have separate receipt, acceptance, and disposal units. Compact waste may only be received, accepted, and disposed in the Compact Waste Disposal Facility. Federal facility waste may only be received, accepted, and disposed in the Federal Facility Waste Disposal Facility.

89. Prior to accepting federal facility waste, the Licensee must provide an agreement signed by the Secretary of the United States Department of Energy, and acceptable to the executive director, that the federal government will assume all right, title, and interest in land and buildings for the disposal of federal facility waste.

90. The Licensee shall not accept waste at the Federal Facility Waste Disposal Facility until the Licensee has begun accepting waste in compliance with this license at the Compact Waste Disposal Facility.

91. No shipment may be accepted for disposal unless it has been inspected by the executive director's resident inspector. The Licensee shall notify the executive director's resident inspector within 24-hours of any shipments that do not comply with applicable law or this license.

92. Prior to accepting waste, the Licensee must provide updated, detailed procedures for receipt, inspection, and tracking of onsite waste; for acceptance of large package waste shipments; rejection and return of unacceptable packages; and verification of waste packages and bulk waste at the Compact Waste Disposal Facility or the Federal Facility Disposal Waste Facility. The procedures must specify a minimum frequency of testing to verify package contents. The procedures must be submitted for review by the executive director before waste shipments are accepted. Prior to acceptance of waste, the Licensee shall submit detailed procedures for rejection and return of unaccepted waste.

93. The Licensee must maintain records for each shipment of waste disposed of at the land disposal facility. The records must conform to the requirement of 30 TAC §336.740(a). All records and reports required by the license, rules, or orders must be complete and accurate.

94. The Licensee, during the operational period, shall maintain records of the types, forms, and quantities of radioactive waste and hazardous waste disposed at the land disposal facility. This information shall be used during decommissioning and to update the dose modeling prior to license termination. This information must be retained throughout the operating life of the land disposal facility and upon license transfer, transferred to the custodial agency.

RECEIPT, ACCEPTANCE, AND INSPECTION REQUIREMENTS

95. The Licensee shall not accept any waste by rail that is intended for disposal at the Compact Waste Disposal Facility or the Federal Facility Waste Disposal Facility. In order for waste to be shipped by rail, the Licensee must submit an application for amendment of this license that includes an evaluation and procedures for the receipt, handling, off-loading, and acceptance of waste into the land disposal facility.

96. The Licensee may not accept low-level radioactive waste for storage or disposal that is in excess of 75 cubic feet unless the shipper of low-level radioactive waste has given the Licensee written notice of the shipment at least 72-hours before shipment to the Compact Waste Disposal Facility or the Federal Facility Waste Disposal Facility. The Licensee shall notify the executive director upon receiving written notification of any waste shipment.

97. Sixty (60) days prior to accepting waste for disposal, the Licensee shall provide an inventory of any waste being stored at adjacent facilities that is intended for disposal in the Compact Waste Disposal Facility or the Federal Facility Waste Disposal Facility. During operations, the Licensee is prohibited from using any area outside of the land disposal facility for staging or managing waste intended for disposal.

98. The Licensee must follow all applicable Facility Operating Procedures, Radiation Safety Procedures, ALARA (as low as reasonably achievable) Program, Quality Assurance Plan, and Waste Acceptance Procedures and Plans as provided in the application. The Licensee may not revise these programs, plans, and procedures without amendment to this license.

99. The Licensee must maintain all records and shipment manifests pertinent to the transportation, receipt, and disposal of low-level radioactive waste of each shipment, until authorization is given by the executive director for transfer or disposal of such records.

100. Upon acceptance for disposal of each waste shipment, the Licensee must:

    A. Acknowledge receipt of the waste as soon as practicable, but no later than seven (7) days following its acceptance for disposal, by returning a signed copy or equivalent documentation of the shipment manifest to the shipper. The return copy must indicate any discrepancy between noted waste descriptions listed on the manifest and the waste materials received; and

    B. Dispose of waste within 24 hours of receipt. If contingencies require that the licensee implement emergency storage, notice to the executive director must occur within 24 hours. Waste requiring verification sampling may be stored in the staging building for up to 30 days.

101. The Federal Facility Waste Disposal Facility may only accept mixed low-level radioactive waste, as defined in 30 TAC Chapter 336, in compliance with 40 CFR Part 268 (Land Disposal Restrictions). This license does not authorize the processing, treatment, storage, or disposal of hazardous waste.

    A. Prior to accepting waste for disposal in the Federal Facility Waste Disposal Facility, the Licensee shall submit a plan that demonstrates how the requirements of 30 TAC Chapter 335 (Industrial Solid Waste and Municipal Hazardous Waste) will be met.

    B. The Licensee may not store, process, or dispose of mixed low-level radioactive waste defined in 30 TAC §336.2(80) unless authorized by a TCEQ hazardous waste permit in accordance with 30 TAC Chapter 335.

102. The Federal Facility Waste Disposal Facility Non-Containerized Disposal Unit may only accept Class A low-level radioactive waste that meets the Waste Acceptance Plan except as provided by this license. The Licensee is prohibited from disposal of bulk waste in the Non-Containerized Disposal Unit consisting of radionuclides with half-lives of greater than 35 years, including depleted uranium and waste consisting of transuranic radionuclides in concentrations less than ten (10) nanocuries per gram (<10nCi/g), unless specifically authorized by the executive director.

RECEIPT, ACCEPTANCE, AND INSPECTION REQUIREMENTS

103. The Licensee is authorized to accept low-level radioactive waste for disposal at the Federal Facility Waste Disposal Facility Non-Containerized Disposal Unit that meets all the following criteria:

    A. Soil and soil-like Class A low-level radioactive waste as defined by 30 TAC §336.362(a)(2). Soil and soil-like waste must meet the classification as a Group A-1-A through A-4 soil in accordance with American Society for Testing and Materials (ASTM) D-3282;

    B. The average, in-place organic content does not exceed five percent (5%) and the average, as received organic content of any individual waste shipment does not exceed ten percent (10%) by using ASTM D-2974;

    C. No debris is present in any waste shipment other than incidental items (no more than one percent (1%)) that conform with the limitations applicable to bulk debris;

    D. Dose rates are less than 100 millirem per hour at 30 centimeters;

    E. No free liquids are present; and

    F. Soil and soil-like mixed waste must comply with 40 CFR Part 268.

104. All rubble and debris federal facility waste may only be disposed in the Federal Facility Waste Disposal Facility Containerized Disposal Unit and must be in concrete canisters.

105. The Licensee must notify the shipper and the executive director's resident inspector when it has been determined that a low-level radioactive waste shipment or part of a shipment cannot be accepted for disposal and that waste is returned to an authorized facility. The Licensee must notify the waste generator/shipper before the end of the next business day if a shipment has failed to arrive at the land disposal facility within the 24-hour time frame indicated in the advance notification or manifest.

106. Disposal of soil and soil-like waste in the Federal Facility Waste Disposal Facility Non-Containerized Disposal Unit must meet the following requirements so that long-term volumetric stability is achieved:

    A. Soil and soil-like waste will be placed in lifts no thicker than 12 inches and lift lots of no greater area than 10,000 square feet;

    B. Except for Group A-1-a materials, soil-like waste will be compacted to 90 percent (%) of Modified Proctor maximum density with moisture between plus or minus two percent (±2%) of optimum per American Society for Testing and Materials (ASTM) D1557;

    C. Density actually achieved will be determined with nuclear density gauge measurements per ASTM D-2922 at the rate of one (1) nuclear density gauge measurements per 1,000 square feet placed and compacted within a given lift but not less than one (1) such measurement per lift;

    D. Sand cone test will be performed according to ASTM D1556 at the rate of one (1) sand cone density test for every five (5) nuclear density gauge measurements;

    E. For the use of nuclear density gauge measurements and sand cone testing, the Licensee will conduct the following additional testing:

RECEIPT, ACCEPTANCE, AND INSPECTION REQUIREMENTS

106. E. (Continued)

(1) Modified proctor tests per ASTM D1557 to determine the actual moisture/density relationship at the specific location where density is an issue;

(2) Nuclear density gauge measurements per ASTM D2922 and sand cone test per ASTM D1556 repeated at the location; and

(3) Rework the deficient waste disposal lift and repeat verification testing until satisfactory results are achieved.

F. The Licensee must submit a quarterly report to the executive director verifying soil and soil-like disposal requirements.

107. Compaction of bulk waste using hand-operated tools or equipment is prohibited.

108. The following provisions are related to potential weather conditions:

A. The placement of lifts of soil-like waste is prohibited if the temperature of the lift is less than 32 degrees Fahrenheit;

B. Once weather conditions return that allow current placement operations to resume, supplemental nuclear density gauge measurements will be performed on lift areas already placed before further placement of waste is undertaken; and

C. Emplaced bulk waste will be re-compacted, should supplemental nuclear density gauge measurements indicate unacceptable compaction after freezing conditions cease.

RADIATION SAFETY REQUIREMENTS

109. Void spaces within the bulk waste must be reduced to the extent practicable through all the following actions:

A. Voids are either exposed so they can be backfilled or are eliminated;

B. Waste is placed loose in lifts no thicker than one (1) foot;

C. Voids are backfilled with granular soils or soil-like waste; and

D. Each lift, including backfill, is compacted to at least 90 percent (%) of maximum density.

110. Any changes to the Radiation Safety Program must be approved by amendment to this license.

111. The Radiation Safety Officer will designate radiation staff authorized to handle radioactive material. All radiation staff must successfully complete a radiation safety course that has been submitted for review by the executive director. Documentation verifying successful completion of the training for authorized staff will be maintained by the licensee for inspection by the executive director.

112. Written procedures incorporating operating instructions and appropriate safety precautions for licensed activities must be maintained and available for inspection at the licensed facility. The written procedures established must include the activities of the radiation safety program, the employees training program, operational procedures, analytical procedures and instrument calibrations. At least annually, the Licensee must review all procedures to determine their continued applicability.

113. Unless otherwise specified in the license, the Licensee may not change internal safety audit processes, ALARA procedures, waste acceptance criteria, or health and safety procedures provided in the application or required by this license without amendment to this license.

RADIATION SAFETY REQUIREMENTS

114. The Radiation Safety Officer, or his or her designee, must conduct and document weekly inspections of site operations and the restricted areas of the site for compliance with applicable conditions of this license.

115. The Licensee will document and maintain records of all accidental or unplanned releases of low-level radioactive waste during operations at the facility. Documentation of the events must be maintained for inspection until the site is transferred to the custodial agency.

116. In the event of an accidental or unplanned release of low-level radioactive waste, the Licensee must implement the emergency plan in the application and provide immediate notification to the executive director.

117. Records produced by the Quality Assurance and Quality Control programs must be reviewed by the Quality Assurance Manager at least annually. Deficiencies in the Quality Assurance and Quality Control program must be identified, documented, and corrected promptly. Records related to deficiencies must be available to the executive director upon request.

118. The Licensee may not use nuclear density gauge equipment for soil compaction testing without an appropriate license. Only authorized Licensees may perform the required compaction testing needed for compliance to the rules for surface compaction and moisture measurements. This license does not provide regulatory authorization for use and possession of nuclear density gauge equipment.

119. The Licensee must provide an orientation and safety program for visitors and contractors and issue dosimeters before allowing entrance into the land disposal facility. The Licensee must submit to the executive director the orientation and safety program prior to beginning operations. The Licensee shall maintain and document compliance with the orientation and safety program for visitors and contractors.

120. The Licensee must conduct an updated bioassay program for all employees to conform to license conditions. Prior to allowing employees into the restricted area, a whole body count and bioassay must be conducted on all employees. Thereafter, bioassays must be conducted monthly for occupationally exposed workers and quarterly for administrative staff, managers and site contractors. Annual whole body counts, in addition to monthly urinalysis and fecal analysis will be employed for occupationally exposed workers. All radioisotopes authorized for disposal in the land disposal facility must be evaluated in these bioassays.

121. The Licensee must submit an annual report summarizing bioassay results for all employees. If any bioassay result exceeds ten percent (10%) of the occupational dose limit provided in 30 TAC Chapter 336, the Licensee shall notify the executive director within 30 days of receiving the results.

122. The Licensee must comply with the following regarding training and operations:

    A. Visitors to Compact Waste Disposal Facility or Federal Facility Waste Disposal Facility shall be escorted by personnel trained in the facility's safety procedures. A maximum of five (5) visitors may be escorted by a single trained person.

    B. All clerical and office support staff shall be given safety training which may be an abridged version of that given to operations personnel. If any one (1) of these employees transfers to other duties, the employee shall be given appropriate radiation safety training for his or her new assignments.

    C. All female employees shall be given instruction concerning prenatal radiation exposure.

    D. The Licensee shall make a record of the training provided to all of the above. The record shall indicate the name of the individual receiving the training or instructions, the date the training or instruction is provided, the results of examinations for course material retention, and the name of the training course provider or instructor.

RADIATION SAFETY REQUIREMENTS

123. The Licensee must comply with the following regarding personnel dosimetry:

    A. The Licensee must provide personnel dosimetry to all employees and contractors who enter the land disposal facility. Thermoluminescent dosimeters (TLDs) or optically-stimulated luminescence dosimeters (OSLs) must be worn by all employees. A second badge will be issued to workers undergoing medical diagnostic or therapeutic procedures. This badge will be worn in addition to the individual's usual badge during the period of elevated body radiation levels.

    B. The Licensee shall revise the procedures to include an instruction to the users of personnel dosimetry that personnel dosimetry must be worn at all times in the land disposal facility.

    C. The Licensee shall comply with the following regarding the storage of dosimeters issued to employees when the dosimeters are not in use:

        (1) The Licensee shall provide a place for storage of dosimeters issued to personnel when personnel exit the restricted area;
        (2) The place for storage of issued dosimeters (when not in use) shall be in an area determined to be of natural-background radiation;
        (3) A control dosimeter shall be located in the issued dosimeter storage area; and

        (4) The control dosimeter for the issued dosimeter storage area shall be exchanged and processed at the same frequency as the dosimeters issued to personnel.

124. The laboratory conducting the bioassays must be National Environmental Laboratory Accreditation Conference (NELAC) certified. The laboratory's quality assurance program must be submitted for review in writing by the executive director.

125. The Licensee must conduct a respiratory protection program that has been submitted for review by the executive director. Employees working with non-containerized low-level radioactive waste must wear breathing zone monitors and appropriate respiratory protection.

126. Respirators made available for re-issuance or reuse must show no removable contamination in access of 100 disintegrations per minute (dpm) per 100 square centimeters (cm^2) alpha, or in excess of 1,000 dpm per100 cm^2 beta-gamma (as determined by standard swipe or smear techniques), and no fixed beta-gamma contamination in access of 0.2 milliRoentgen per hour (mR/hr) above background on contact.

127. Eating, drinking, or smoking shall not be allowed within the restricted area or in any area where radioactive material is handled, transferred, or processed.

128. The Licensee shall designate any area where the total airborne alpha radioactivity, as determined by air sampling, exceeds $5x10^{-13}$ microcuries per milliliter total radioactivity as an airborne radioactivity area.

129. The Licensee must conduct monthly surveys for fixed and removable alpha, beta, or gamma contamination, by standard swipe or smear technique, in all eating areas, shower and change areas, administrative offices, control rooms, and laboratories in accordance with Table 1 below. Any positive results in swipes taken in these areas must elicit an immediate investigation as to cause. Surfaces which have removable contamination greater than the limits stated in 30 TAC §336.364, Appendix G must be decontaminated.

RADIATION SAFETY REQUIREMENTS

129. (Continued)

Table 1: Contamination Surveys		
A. Gamma Radiation Levels	Laboratory	Weekly
	Office Area(s)	Weekly
	Lunch/Change Area(s)	Weekly
	Transport Vehicles	Upon vehicle arrival at site and before departure
	Low-Level Radioactive Waste Holding Area(s)	Weekly
	Decontamination Facilities	Weekly
B. Contamination Swipes	Laboratory	Weekly
	Office Area(s)	Weekly
	Lunch/Change Area(s)	Weekly
	Transport Vehicles	Once before release
	Decontamination Facilities	Weekly
	Low-Level Radioactive Waste Holding Area(s)	Weekly
C. Employee and Personnel Survey	Skin and Personal Clothing	Prior to exiting restricted area
D. Gamma Survey	Administrative Building(s)	Quarterly

130. Step-off pads shall be located outside of the restricted area and must be surveyed every four (4)-hours during operating hours. Surface levels more than twice background beta-gamma or removable contamination greater than the limits stated in 30 TAC §336.364, Appendix G must be considered contaminated and replaced.

131. Gamma surveys must be conducted quarterly at all work stations and areas that contain or have contained low-level radioactive waste.

132. Each employee (including temporary and contract workers) who works in areas where contact with low-level radioactive waste is possible must be surveyed before leaving the work site. Removable contamination greater than the limits stated in 30 TAC §336.364, Appendix G must be decontaminated.

133. All radiation workers must receive at least 40-hours of classroom training following the Technical Topics listed in the application.

134. The outer surfaces of each shipping container must be swipe-tested for removable contamination upon receipt. Each shipping container must also be surveyed individually to assess the external radiation fields present and a record made of the readings.

135. Radiation Safety Meetings must be held monthly with all employees. Unannounced RSO employee reviews will be conducted monthly. The RSO shall conduct audits of the radiation safety program in accordance with the following:

    A. At intervals not to exceed 12 months;

    B. Include all of the items listed in the procedures provided in the application as activities conducted to evaluate specific components of an audit; and

    C. Include observation of the performance of radiation safety procedures as a part of an audit of the radiation safety program.

RADIATION SAFETY REQUIREMENTS

136. Any material to be released for unrestricted use from the land disposal facility must be surveyed for contamination. Contamination may not exceed the limits specified by the 30 TAC §336.364 and §336.356.

137. The Radiation Safety Officer (RSO) must review the following areas of the Radiation Safety Program at least quarterly:

    A. Health physics authority and responsibility;

    B. Operating procedures (involving the receipt, handling, and disposal activities);

    C. Audits, inspections, and surveys conducted by the facility RSO (for timeliness and the resolution of any problems);

    D. Radiation protection including employee exposure records; bioassay procedures and results; quarterly, semiannual, and annual surveys and inspections; radiological survey, and sampling data; and any changes in operating procedures;

    E. Radiation safety training;

    F. Respiratory protection program;

    G. Facility and equipment design including ventilation rates within various portions of the facility, and fire control;

    H. Control of airborne low-level radioactive wastes;

    I. Compliance with applicable federal and state regulations and the conditions of this license; and

    J. Audit of receipt procedures.

138. The RSO must prepare an annual report summarizing the reviews and audit. The report must be submitted for review by the executive director within 30 days after completion of the audit.

139. Along with complying with all confined space entry requirements and before any work, including maintenance, repair, cleaning, dismantling or other such activities, is performed within closed tanks on the land disposal facilities which may contain or have contained radioactive materials, radiation work permits (or their equivalent) shall be submitted to the RSO. The RSO or his or her designee shall survey all tank interiors using radiological measuring and detection instruments and swipe methods to determine if contamination is present prior to any work being performed. If contamination exceeding 220,000 dpm per 100 cm^2 is found or if the RSO does not perform such a survey, then protective clothing and respiratory protection shall be worn by employees during the performance of operations.

GENERAL PACKAGING

140. The following are minimum requirements for all classes of waste to be received and disposed at the land disposal facility:

    A. Waste may not be packaged for disposal in cardboard or fiberboard or wood boxes.

    B. Liquid waste must be solidified or packaged in sufficient absorbent material to absorb twice the volume of the liquid.

    C. Waste containing liquid must contain as little free-standing and non-corrosive liquid as is reasonably achievable, but in no case must the liquid exceed one percent (1.0%) of the volume.

GENERAL PACKAGING

140. (Continued)

D. Waste may not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures or of explosive reaction with water.

E. Waste may not be pyrophoric. Pyrophoric materials contained in waste must be treated, prepared, and packaged to be nonflammable.

F. Waste may not contain, or be capable of generating, quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste. This does not apply to radioactive gaseous waste packaged at an absolute pressure that does not exceed one and a half (1.5) atmospheres at 20 degrees Celsius. Total radioactivity may not exceed 100 curies per container.

G. Waste containing hazardous, biological, pathogenic, or infectious material must be treated to reduce to the maximum extent practicable the potential hazard from the non-radiological materials. In addition, waste containing biological, pathogenic, or infectious material shall be doubly packaged as follows:

(1) The inner container with the capacity of 55-gallon or less, shall have a water-tight liner at least four (4) mils thick and be hermetically sealed after filling;

(2) The biological material shall be thoroughly layered in the inner container in a ratio of 30 parts biological material to at least one (1) part slaked lime and ten (10) parts absorbent, which shall be agricultural grade four (4) vermiculite or medium grade diatomaceous earth, or other absorbents that have received approval by the executive director by volume. The addition of formaldehyde is prohibited.

(3) The closure on the inner container shall be a standard lid with securely attached ring and bolt. Lever locks are prohibited.

(4) Unless otherwise authorized by the executive director, the outer container, which must have a volume of at least one and one-half (1.5) times the inner container, must be filled initially with at least four inches (4") of absorbent material, the inner container placed in an upright position, and the remaining volume filled with the absorbent material, then securely closed and properly sealed.

H. The maximum weight percent of chelating agent is eight percent (8%) for all waste streams.

I. Sealed sources and special form radioactive material are prohibited, in any form, for disposal in the Federal Facility Waste Disposal Facility Non-Containerized Disposal Unit. All sealed sources or special form radioactive material disposed of in the Federal Facility Waste Disposal Facility Canister Disposal Unit or the Compact Waste Disposal Facility shall be doubly-packaged and encased in concrete or similar inert material within the outer package. For waste classification purposes the activity will be averaged over the entire package in accordance with the United States Nuclear Regulatory Commission "Final Branch Technical Position on Concentration Averaging and Encapsulation, Revision in Part to Waste Classification Technical Position, January 17, 1995."

141. Low-level radioactive waste must be packaged in such a manner that waste containers received at the land disposal facility are not deformed to the extent that, there is a loss or dispersal of contents, there is an increase in the external radiation levels as recorded on the manifest (within instrument tolerances), or there is degradation due to chemical, physical or radiological reaction which could result in a loss of container integrity.

142. The Licensee may not open any package or shipping container except for the following purposes:

A. Inspecting to insure compliance with this license and/or confirming package contents;

GENERAL PACKAGING

142. (Continued)
   B. Repairing or repackaging damaged containers; or

   C. Returning outer shielding or shipping containers.

143. Void spaces within the waste and between the waste and its package must be reduced to the extent practicable in accordance with 30 TAC §336.362(b)(2)(C). Void spaces between the modular concrete containers must be reduced to the maximum extent practicable.

144. If a shipping container is dented, damaged or defective when received, the Licensee shall, if necessary, repair or repackage the shipping container and shall contact the generator or processor to perform required remedial action. Shipping containers that fail to comply with United States Department of Transportation and Texas Department of State Health Services transportation regulations are prohibited from being released for shipment.

145. Waste accepted for disposal shall not be removed from the land disposal facility except as authorized in writing by the executive director for the purposes of repackaging or reprocessing or as provided in 30 TAC Chapter 336.

146. All low-level radioactive waste must be packaged and transported in accordance with applicable statutes and regulations of United States Department of Transportation, United States Nuclear Regulatory Commission, United States Environmental Protection Agency, Texas Department of State Health Services, and the requirements of this license.

WASTE CHARACTERISTICS AND WASTE FORMS

147. Above ground possession of waste that contains special nuclear material (SNM), as defined in 30 TAC §336.2(127), is limited to quantities not sufficient to form a critical mass - uranium enriched in the radioisotope 235 in quantities not exceeding 350 grams of contained uranium-235; uranium-233 in quantities not exceeding 200 grams; plutonium in quantities not exceeding 200 grams; or any combination of these in accordance with the following formula. For each kind of SNM, determine the ratio between the quantity of that special nuclear material and the quantity specified above for the same kind of special nuclear material. The sum of such ratios for all of the kinds of special nuclear material in combination may not exceed one (1).

148. In accordance with 30 TAC §336.229, no person may reduce the concentration of radioactive constituents by dilution to meet exemption levels established under the Texas Health and Safety Code §401.106, or change the waste's classification or disposal requirements. Low-level radioactive waste that has been diluted as a result of processing, stabilization, mixing, or treatment, including, but not limited to, 40 CFR Part 268, or for any other reason, must be subject to the disposal regulations it would have been subject to prior to dilution.

149. The Licensee may not dispose unstable waste in the Compact Waste Disposal Facility or the Federal Facility Waste Disposal Facility Containerized Disposal Unit that does not meet the requirements of 30 TAC §336.362(b)(2). Unstable soil or soil-like Class A low-level radioactive waste, excluding waste containing radionuclides with half-lives greater than 35 years or transuranics in concentrations less than ten (10) nanocuries per gram, may only be disposed in the Federal Facility Waste Disposal Facility Non-Containerized Disposal Unit.

150. The Licensee may not accept low-level radioactive waste that contains hazardous listed chemicals or exhibits hazardous characteristics as defined by 40 CFR Part 261 (Identification and Listing of Hazardous Waste) for disposal at the Compact Waste Disposal Facility. Unless otherwise authorized by executive director, the Licensee is authorized to accept only the following waste streams in Table 2 below, and as described in the license application, at the Compact Waste Disposal Facility:

WASTE CHARACTERISTICS AND WASTE FORMS

150. (Continued)

Table 2: Authorized Waste Streams			
Waste Source	Waste Stream Description	Waste Group	Classification
Utility	Condensate Filter Sludge	CONDFSL	A and B
Utility and Non-utility	Compactible Trash	COTRASH	A
Utility	Decontamination Resins	DECONRS	A
Utility	Floor Drain Filter Sludge	FLDRFSL	A
Utility	Fuel Pool Skimmer Filter Sludge	FPFILSL	A and C
Utility	Non-Compactible Trash	NCTRASH	A
Utility	Non-Fuel Reactor Components	NFRCOMP	C
Utility	Process Filters	PROCFIL	C
Utility	Reactor Water Cleanup Resins	RWCUPRS	B
Utility	Reactor Water Demineralization Resins	RWDMRES	A and B
Utility	Secondary System Resins	SSYSRES	A
Non-utility	Absorbed Liquids	ABSLIQD	A
Non-utility	Biological Wastes	BIOWAST	A
Non-utility	High Radioactivity Waste	HIGHACT	A
Non-utility	Low Radioactivity Waste	LOWASTE	A
Non-utility	Non-Compactible Trash	NCTRASH	A and B
Non-utility	Sealed Sources	SOURCES	A, B, and C
Reactor Decommissioning	Decommission Waste	D&D	A, B, and C

DISPOSAL OPERATIONS

151. The Licensee must manage all stormwater and wastewaters that come in contact with waste, during operations and the post-closure period in accordance with the application and the Effluent Concentration Limits specified in 30 TAC §336.359, Appendix B, Table II for radionuclides and a Texas Pollutant Discharge Elimination System permit for all other regulated constituents.

152. A monthly site receipt and disposal activities report must be submitted no later than the seventh (7th) day of month for the previous month's activities to the executive director.

153. The Licensee may not exhume previously buried waste unless specifically authorized by the executive director.

154. The top of the all disposed Containerized Class A, Class B, and Class C low-level radioactive waste must be a minimum of five (5) meters below the top surface of the cover or must be disposed of with intruder barriers that are designed to protect against an inadvertent intrusion for at least 500 years in accordance with 30 TAC §336.730(b)(3).

155. The Licensee may only accept Class A, Class B, and Class C low-level radioactive compact waste for disposal in reinforced modular concrete canisters and inside an additional reinforced concrete barrier in the Compact Waste Disposal Facility. Large components (e.g., steam generators, reactor vessels, reactor primary system components) that will not fit into the reinforced modular concrete canisters as provided in the application must be evaluated by the executive director on a case-by-case basis prior to disposal. Large components must be backfilled with sand, or grout, if necessary, to ensure the voids are filled.

156. The Licensee may only dispose of debris, rubble, Containerized Class A, Class B, and Class C low-level radioactive federal facility waste in the Federal Facility Waste Disposal Facility Containerized Disposal Unit by placement in reinforced modular

DISPOSAL OPERATIONS

156. (Continued)
concrete canisters and inside an additional reinforced concrete barrier. Large components that will not fit into the reinforced modular concrete canisters as provided in the application must be evaluated by the executive director on a case-by-case basis prior to disposal. Large components must be backfilled with sand, or grout, if necessary, to ensure the voids are filled.

157. The Licensee must implement measures to reduce the potential for desiccation and cracking of the performance cover during operation and closure, with special emphasis on areas not overlain by a geomembrane. The Licensee must conduct periodic surveillance to verify that the measures are effective.

158. During operations and closure, the Licensee shall measure the geotechnical properties of the cover system materials to verify the initial design values. The Licensee shall report any deviations and propose any necessary design modifications that may affect cover system performance to the executive director.

159. The Licensee shall minimize the introduction of water into the disposal units. The Licensee must manage all stormwater on the land disposal facility. This management of stormwater must include, but is not limited to, the collection and conveyance of all stormwater and wastewater, and be subjected to the radionuclide effluent concentration limits, as specified in 30 TAC §336.359, Appendix B, Table II.

160. The Licensee must sample and perform radionuclide analyses on all precipitation, stormwater, and leachate planned for re-use. Precipitation, stormwater, and leachate with radionuclide concentrations greater than those listed 30 TAC §336.359, Appendix B, Table II must treated and disposed as low-level radioactive waste and may not be used for dust suppression or any other activity that increases the risk to human health or the environment.

161. The Licensee must initiate an investigation as to the nature, extent, and cause of any leachate collected from the leachate collection system, in which the radionuclide concentrations are 50 percent (%) of the effluent concentration limits specified in 30 TAC §336.359, Appendix B, Table II and take appropriate corrective action. The Licensee will notify the executive director within ten (10) days of any such occurrence.

162. The Licensee shall not handle, store, or dispose of waste, or engage in any waste-related activities in any buffer zone. The Licensee shall only conduct environmental monitoring and routine maintenance in the buffer zone; any other activity in any buffer zone shall require written approval of the executive director.

163. For the Compact Waste Disposal Facility and the Federal Facility Waste Disposal Facility Containerized Disposal Unit, the Licensee shall:

    A. Pre-position concrete canisters in the disposal unit for emplacement of waste packages. After waste packages have been placed in the concrete canister, grout shall be placed around the packages to reduce voids. Packages shall be emplaced to permit voids between packages to be filled with grout. Temporary lids shall be placed on canisters until they are filled and the permanent canister lid has been cast in place. Once canisters are filled, grouted and the canister lids are constructed, native backfill consisting of dry, free-flowing, cohesionless natural material shall be placed around the canisters.

    B. Apply an elastomer coating (described in technical specification, 07 14 16, of the application) to all concrete disposal canisters. The complete specification for this coating, including the design life of the coating shall be submitted to the executive director for review prior to the commencement of major construction.

164. The Licensee shall handle and emplace waste in the disposal units in a manner that maintains disposal package integrity. Waste packages and concrete canisters shall be protected from any land disposal facility operations which may cause damage or otherwise impact the integrity of packages and canisters.

ENVIRONMENTAL SURVEILLANCE

165. The Licensee must conduct environmental surveillance of the facilities as follows:

A. General Provisions. The Licensee must conduct the radiological and non-radiological environmental monitoring specified in this license. The Data Quality Objective (DQO) Process, established by the United States Environmental Protection Agency (US EPA), must be used to establish performance or acceptance criteria, which serve as the basis for designing any of the monitoring plans for the facility for collecting data of sufficient quality and quantity to support the goals of each plan (pre-operational, operational, and post-operational). The Licensee must use the DQO Process, which consists of seven (7) iterative steps in development of a data collection design that specifies the type, number, location, and physical quantity of samples and data, as well as the quality assurance and quality control activities that will ensure that sampling design and measurement errors are managed sufficiently to meet the performance or acceptance criteria specified in the DQOs. These outputs of the DQO Process must be used to develop a Quality Assurance Project Plan and for performing Data Quality Assessment for the pre-operational, operational, and post-operation phases that have not been completed to date. The DQO document and Quality Assurance Project Plan must be submitted to the executive director for review within six (6) months of the next major sampling event performed at the site.

B. Sampling and analysis plans for the REMP sampling events described in Attachment A and B shall be submitted under the Site-specific Data Assessment and Management Plan (S-DAMP) and to the executive director for review. For Attachment A, the plan shall be submitted no less than 60 days after the authorized date of the license. For Attachment B, the plan shall be submitted 60 days after the authorized date to construct.

C. Environmental samples shall be analyzed by a NELAC certified laboratory. As part of radiological sample analysis, all runs performed by a laboratory, must include blanks, matrix spikes, and duplicates.

D. Duplicate Samples. The Licensee must provide the executive director an opportunity to obtain duplicate samples concurrently with the Licensee's data collection schedule.

E. Monitoring Records. The Licensee must maintain records of all monitoring activities.

F. Monitoring Well Installation. All monitoring wells must be constructed and maintained in accordance with the requirements of the Texas Occupations Code, Chapter 1901 and in accordance with ASTM D 4448-85a (1992). Monitor well clusters will consist of one (1) well screened in the Ogallala-Antlers-Gatuña (OAG) formation, one (1) well screened at the top of the 225-foot layer, one (1) well screened at the bottom of the 225-foot layer, and one (1) well screened at the bottom in the 125-foot layer. Testing must be performed on unfiltered samples and samples filtered with a 0.45 micron membrane filter.

G. Evaluation of Data. The Licensee must evaluate monitoring data using a two (2)-tiered environmental monitoring response system. Investigation levels and action levels will be specified as described in the license application. The results of the evaluations conducted during each calendar year.

H. The following procedures must be used when monitoring all groundwater zones and be described in the Site-specific Data Assessment and Management Plan (S-DAMP) and the Quality Assurance Project Plan (QAPP):

(1) Water sampling must be in accordance ASTM D 4448-85a. Prior to sampling, wells must be pumped down to the point at which the conductivity equilibrates. Samples must then be acquired from the well by lowering and filling a sample bailer with well water and then transferring the water to a sample container. All parameter readings must be recorded during purging.

(2) For water wells that cannot be sampled according to ASTM D 4448-85 because of low-flow conditions in the well, sampling method ASTM D6771-02 Standard Practice for Low-Flow Purging and Sampling for Wells and

ENVIRONMENTAL SURVEILLANCE

165. H. (2) (Continued)

Devices Used for Ground-Water Quality Investigations or US EPA technical guidance on Low-Flow Purging and Sampling (1996) must be used for sampling methodologies. All parameters readings will be recorded.

(3) In addition, water levels must also be measured prior to sample collection.

(4) The S-DAMP must include a method or methods for well purging and well sampling, including wells in low flow conditions, to assure that well samples are representative of the groundwater in the zone that is sampled.

(5) For the purpose of observing seasonal variations in water levels, water tables and potentiometric surfaces, the Licensee must establish a network of wells as required in license condition 70 that is representative of each water-bearing zone and monitor using continuous transducers where possible.

(6) Water must be sampled whenever the water is at or above the screen in a well as described above. The S-DAMP must include a method for well sampling to assure that well samples are taken from groundwater in the formation and not from condensation in the well.

(7) For all radiochemical analysis, water samples will not be filtered and immediately acidified in the field prior to shipping to the laboratory. Containers type and size will also be determined by the analytical method.

(8) For all chemical analysis, water samples must be filtered and preserved according to the analytical method requirements. Container type and size will also be determined by the analytical method.

(9) The Licensee shall provide a semi-annual environmental monitoring report to the executive director to be submitted before March 31 and September 30 of the preceding six (6) months. The semi-annual report shall include the results of all environmental media samples for all facilities at the Waste Control Specialists, LLC, Andrews County, site. The Annual Meteorological Report should be submitted prior to or included in the March 31 semi-annual environmental monitoring report. The Licensee shall follow the requirements of 30 TAC Chapter 25 (Environmental Testing Laboratory Accreditation and Certification,) and provide the executive director with acceptable analytical data provided by an accredited environmental testing laboratory unless extenuating conditions exist as specified under 30 TAC §25.6 (Conditions Under Which the Commission May Accept Analytical Data).

(10) All of the above information must be reported in the semi-annual environmental monitoring report.

I. In the event the 125-foot zone becomes saturated, the Licensee shall notify the executive director with ten (10) days. Within 60 days of the event, the Licensee shall submit a plan for the installation of monitoring wells in the 180-foot zone and monitoring of the 180-foot zone in accordance with Attachment B.

166. The Licensee must provide a report on site topography including maps and all supporting data to the executive director every five (5) years.

167. The Licensee must provide to the executive director every five (5) years written documentation from the Texas Parks and Wildlife Department and the United States Fish and Wildlife Service regarding the presence of threatened or endangered species occurring near the site.

168. The Licensee must recognize Baker Spring as a perennial water body and conduct appropriate aquatic surveys to establish baseline conditions and to identify the supported species, including aquatic and benthic invertebrates. In addition, routine sampling of Baker Spring must be incorporated into the Ecological Monitoring Plan for determination of potential site impacts to species and for evaluation of surface water and sediment quality.

ENVIRONMENTAL SURVEILLANCE

169. Before the Licensee takes any action regarding site playas, the Licensee shall obtain and provide to the executive director a site-specific "no jurisdiction" determination from the United States Army Corps of Engineers.

170. Regarding the Ecological Monitoring Plan, the Licensee must use the most recent update of the TCEQ ecological risk assessment guidance that contains the screening levels for non-radiological constituents in surface water, sediment, and soil.

171. The Licensee shall implement the following radiological environmental monitoring programs:

    A. At a minimum, conduct the Modified Natural Radiation Monitoring Program, specified in Attachment A of this license. The Modified Natural Radiation Monitoring Program may be run concurrently with the Pre-Operational Monitoring Program, specified in Attachment B of this license. These programs must be conducted for a minimum of 12 consecutive months. No low-level radioactive waste may be received at the Compact Waste Disposal Facility or the Federal Facility Waste Disposal Facility until these programs are concluded, and the evaluation of the program reviewed by the executive director.

    B. Previous monitoring performed at the site, in addition to the proposed modified natural radiation monitoring program and the pre-operational environmental monitoring program as defined in license conditions, will be used to establish a modified baseline. This monitoring must also be used to detect any significant masking that may occur due to nearby or adjacent facilities or activities.

    C. Chemical constituents listed in HW-50358 Permit Application, Attachment VI, Appendix 6.62, Table 1, as amended, must also be evaluated on all soil, vegetation, surface water, and monitor well samples for a 12-month consecutive period before low-level radioactive waste can be received at the site for disposal. Thereafter, all sampling will be conducted annually, except the monitor well chemical constituents will be sampled quarterly or other monitoring frequency specifically required by this license.

    D. The Licensee must conduct a Pre-Operational, Construction, and Operational Environmental Monitoring Program specified in Attachment B of this license. Concentrations of the radionuclides listed in the application will be evaluated. The Pre-Operational Monitoring Program will continue at least 12 consecutive months.

    E. The Licensee must submit a report presenting and analyzing all data collected in the Modified Natural Radiation Monitoring Program and the Pre-Operational Monitoring Program within 60 days after the completion of the programs.

172. Prior to beginning the Modified Natural Radiation Monitoring Program, the Licensee must submit the revised figures to the executive director for review to add new upgradient and down-gradient Ogallala-Antlers-Gatuña (OAG) formation wells. The new wells must be spaced no more than 150 feet apart.

173. The Licensee must sample and analyze parameters in the Modified Natural Background Environmental Monitoring Program as described in Attachment A of this license.

174. The Licensee must conduct a Pre-Operational, Construction, and Operational Environmental Monitoring Program as described in Attachment B of this license.

175. The Licensee must ensure that State of Texas Well Reports are provided to the Texas Department of Licensing and Regulation for all new piezometers, monitoring wells, and other water wells installed at the site pursuant to this License. Copies will also be provided to the executive director within 60 days of well completion.

176. The Licensee must continue erosion monitoring and report annually to the executive director after the commencement of major construction. Prior to the commencement of major construction, quarterly measurements of erosion shall be taken and

ENVIRONMENTAL SURVEILLANCE

176. (Continued)
reported to the executive director. The Licensee must also install a weather/climate station in the immediate proximity of erosion monitoring in Ranch House Draw and the location of additional erosion pin arrays.

177. The Licensee must include the use of high-volume air samplers in air monitoring.

178. The Licensee must provide for a transitional environmental monitoring period whenever program components, including sampling locations, equipment, techniques, or laboratories, are changed. This transitional period must include parallel monitoring with both the old and new conditions for at least one (1) sampling period or as directed by the executive director.

179. Using the data quality objective process, the Licensee must develop control charts or nonparametric prediction limits which will be used to determine investigation levels and action levels for each environmental medium. For whichever statistical method is used, it will require one (1) year of data for each parameter under review as approved by the executive director. The specific methods and sample analyses for each baseline measurement must be incorporated into the charts. The final control charts must be submitted to the executive director prior to accepting waste.

180. The Licensee shall operate an on-site monitoring station to collect the following meteorological data on a 15-minute averaging period with 90 percent (%) minimum data retrieval: two (2)-meter data collection: precipitation, barometric pressure, solar radiation, scalar wind speed, vector wind direction, temperature, and relative humidity; and ten (10) meter data collection: scalar wind speed, vector wind direction, and relative humidity. The Licensee must submit to the executive director annual meteorological reports updated to include data from the previous year. The report must be submitted no later than March 31 of the following year.

CLOSURE REQUIREMENTS

181. Prior to closure and license termination, the Licensee shall:

    A. Re-evaluate the impacts or activities of nearby facilities in order to ensure that the performance objectives of 30 TAC §336.723 will continue to be met after closure; and

    B. Evaluate the impacts to workers in the disposal unit area during the closure of a facility. An analysis of worker doses shall be submitted to the executive director prior to initiating closure.

182. General requirements for closure of the facilities are listed as follows:

    A. During closure of the Federal Facility Waste Disposal Facility, the Licensee may not store, process, or dispose of mixed wastes defined in 30 TAC §336.2(80) unless authorized by a TCEQ hazardous waste permit in accordance with 30 TAC Chapter 335.

    B. During closure of the Federal Facility Waste Disposal Facility, in addition to the compliance with the decommissioning standards in 30 TAC Chapter 336, Subchapter G, the Licensee must comply with the closure requirements of a TCEQ hazardous waste permit in accordance with 30 TAC Chapter 335.

    C. Changes made to the Decommissioning and Site Closure Plan included in the license application may only be made through a license amendment authorized by the commission.

    D. After completion of the final cover for each disposal unit(s), the Licensee must submit certification of proper construction of the final cover, signed, sealed, and dated by a Texas licensed professional engineer. Each final cover certification must be accompanied by a certification report which contains the results of all tests performed to verify proper construction. The Licensee must conduct whatever tests, inspections, or measurements are necessary in the

CLOSURE REQUIREMENTS

182. D. (Continued)

judgment of the professional engineer to certify that the final cover has been constructed in conformance with the design and construction specifications of this license and associated license application. The certification report must, at a minimum, contain the following engineering plans and test results:

(1) Scaled plan-view and east-west and north-south cross-sections which accurately depict the area boundaries and dimensions of the cover; surrounding natural ground surface elevations; minimum, maximum, and representative elevations of the base on which the interim cover was placed; minimum, maximum, and representative elevations of the upper surface of the interim and final covers; thickness, extent, and materials of component parts of the cover system; and

(2) All observations, tests, and analyses required to ensure that the installation has been completed with the terms of this license and the incorporated design plans.

E. One (1) year before final closure of the disposal site, or as otherwise directed by the executive director, the Licensee must submit an application to amend the license for closure. The amended closure application must include a final revision and specific details of the disposal site closure plan and decommissioning plan included as part of the license application submitted under 30 TAC §336.708(a) that includes each of the following in accordance with 30 TAC §336.719(a):

(1) Any additional geological, geochemical, hydrological, or other site data obtained during the operational period pertinent to the long-term containment of emplaced wastes;

(2) The results of tests, experiments, or any other analyses relating to backfill of excavated areas, closure and sealing, waste migration and interaction with emplacement media, or any other tests, experiments, or analyses pertinent to the long-term containment of emplaced waste within the land disposal facility;

(3) Any proposed revision of plans for decontamination or dismantlement;

(4) Decontamination and dismantlement of surface facilities;

(5) Backfilling of excavated areas;

(6) Stabilization of the land disposal facility for post-closure care; and

(7) Any significant new information regarding the environmental impact of closure activities and long-term performance of the land disposal facility.

F. Upon review and consideration of an application to amend the license for closure submitted in accordance with subsection 30 TAC §336.719(a), the commission may issue an amendment authorizing closure if there is reasonable assurance that the long-term performance objectives of 30 TAC §336.723 will be met.

G. The Licensee shall address the impact of ongoing disposal activities on closed disposal unit stability. An analysis of the stability of the disposal unit on disposal activities shall be submitted to the executive director for review.

183. Temporary disposal unit boundary markers and disposal unit identification markers shall be erected upon completion of backfill operations until permanent markers are installed.

184. Permanent monuments shall be installed within 120 days of the disposal unit closure and completion of the disposal unit cover. The information below shall be inscribed on each monument:

CLOSURE REQUIREMENTS

184. (Continued)

A. Total radioactivity in curies, excluding source material;

B. Total amount of source material in pounds;

C. Total amount of special nuclear material in grams;

D. Disposal unit number or other means of identification;

E. Date of opening and closing the disposal unit;

F. Volume and class of waste in the disposal unit; and

G. Dimensions of the disposal unit.

185. General requirements for post-closure are as follows:

A. The Licensee must perform post-closure care for the Compact Waste Disposal Facility in accordance with the license application and 30 TAC §336.720(a).

B. The Licensee must perform post-closure care for the Federal Facility Waste Disposal Facility in accordance with the license application and 30 TAC §336.720(a) and §335.174.

C. In addition to compliance with license conditions for environmental surveillance specified in Attachments A and B to this license, the Licensee must comply with the following conditions:

(1) Maintain all storm water conveyance structures in good functional condition.

(2) Maintain the cover on the Compact Waste Disposal Facility and Federal Facility Waste Disposal Facility such that the cover promotes drainage, prevents ponding, minimizes surface water infiltration, and minimizes erosion of the cover. Any desiccation cracks, settlement, erosion, gullying, or other damage must be repaired upon observance.

(3) Maintain the cover to promote natural growth of native vegetation.

(4) Maintain all benchmarks at the land disposal facility.

(5) Maintain the land disposal facility perimeter fence, manned or locked gates, and warning signs in good functional condition.

(6) Ensure that all entrances to the land disposal facility have manned or locked gates.

(7) Ensure that the executive director has access to the land disposal facility.

(8) Perform all post-operational radiological and non-radiological monitoring in accordance with the license application's Radiological Environmental Monitoring Plan and Non-Radiological Environmental Monitoring Plan, respectively, with the following exceptions:

CLOSURE REQUIREMENTS

185. C. (8) (Continued)

a. In addition to monitoring wells shown in the license application, the Licensee must install additional wells as provided in Attachment B to this license.

b. Annual fauna samples must be collected.

(9) Collect and remove pumpable liquids in the leak detection and leachate collection system sumps to minimize the head on the bottom of the liner.

(10) Manage all liquids removed from the leachate collection and leak detection systems in accordance with this license and 30 TAC Chapters 335 and 336.

(11) Maintain a record of the amount of liquids removed from each leak detection system sump at least monthly during the post-closure period, except that the Licensee may record the amount of liquids removed from the each leak detection system sump quarterly during the post-closure period, after the final cover is installed, provided that the liquid level in the sump stays below the pump operating level for two (2) consecutive months.

(12) If at any time during the post-closure period the pump operating level is exceeded at units on quarterly recording schedules, the Licensee must return to monthly recording of amounts of liquids removed from each leak detection system sump until the liquid level again stays below the pump operating level for two (2) consecutive months.

(13) The Licensee must install moisture content and pressure head monitors in the Compact Waste Disposal Facility and the Federal Facility Waste Disposal Facility liners and the covers. The monitoring system must be automated and capable of continuously transferring data. The monitoring system must be maintained and not be abandoned, as to be used for long term monitoring after closure. Selection and placement of these monitors must be submitted for review by the executive director prior to construction.

(14) The licensee shall conduct walkover surveys during the institutional control period on a semiannual basis.

(15) Visual inspections must be performed quarterly during operations and closure, and annually thereafter.

D. The following requirements apply to disposal units receiving mixed waste as defined 30 TAC §336.2(80):

(1) The Licensee must establish an Action Leakage Rate (ALR) pursuant to 40 CFR §264.302. The Licensee must determine if the ALR, given in gallons per acre per day, for each sump has been exceeded by converting the weekly or monthly flow rate from the monitoring data obtained to an average daily flow rate in gallons per acre per day for each sump. The Licensee must calculate the average daily flow rate for each landfill sump on a weekly basis during the active life and closure period.

(2) Prior to receipt of waste, the Licensee must have in place an approved Response Action Plan (RAP) which meets the requirements of 40 CFR §264.304. The RAP must set forth the actions to be taken if the ALR is exceeded.

(3) The Licensee must determine if the ALR, established in accordance with license, has been exceeded by converting the monthly flow rate from the monitoring data obtained under the license, to an average daily flow rate in gallons per acre per day for each sump. The Licensee must calculate the average daily flow rate for each sump on a monthly basis during the post-closure care period.

(4) If the ALR is exceeded at any time during the post-closure period, the Licensee must perform the following activities.

CLOSURE REQUIREMENTS

185. D. (4) (Continued)

a. Notify the executive director in writing of the exceedence within seven (7) days of the determination;

b. Submit a preliminary written assessment to the executive director within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

c. Determine to the extent practicable the location, size, and cause of any leak;

d. Determine whether any waste should be removed from the unit for inspection, repairs, or controls;

e. Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

f. Within 30 days after the notification that the ALR has been exceeded, submit to the executive director the results of the evaluations specified in the license, the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the Licensee must submit to the executive director a report summarizing the results of any remedial actions taken and actions planned.

(5) To make the leak or remediation determinations in the license, the Licensee must:

a. Assess the source of liquids and amounts of liquids by source;

b. Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

c. Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

d. Document why such assessments are not needed.

186. Prior to closure and license transfer, the Licensee, as part of decommissioning, must decontaminate all ancillary facilities, surfaces, and equipment in accordance with 30 TAC §336.364 (Acceptable Surface Contamination Limits). The results of all surveys and decontamination activities must be included in the decommissioning plan.

A. Prior to license transfer, the licensee must dispose of any facilities, surfaces, or equipment that has not been decontaminated, at a licensed low-level radioactive waste disposal facility.

B. The decommissioning plan must include the revised source term in the dose modeling reflecting any onsite disposal of facilities, surfaces, or equipment.

187. The Licensee shall complete and submit the following:

A. A Decommissioning and Site Closure Plan prior to construction that includes updated cost estimates;

B. An updated Decommissioning and Site Closure Plan prior to commencement of closure of each disposal unit. The Licensee shall conduct a review and revise, if necessary, the decommissioning and site closure plan following closure of each disposal unit and submit any revisions to the executive director at that time, or annually, whichever occurs first; and

C. A license amendment for any periodic or final revisions made to the decommissioning and site closure plan.

CLOSURE REQUIREMENTS

188. The Licensee must apply for an amendment to transfer the license to the commission upon fulfillment of all applicable requirements under laws for closure and for post-closure observation and maintenance.

189. The Licensee is exempted from the requirements of 30 TAC §336.724(a) for disposal of federal facility waste at the Federal Facility Waste Disposal Facility as authorized by this license. The Licensee must own the land and minerals in fee for the Federal Facility Waste Disposal Facility until transferred to the federal government. Upon completion of all decommissioning requirements and before the transfer of the license can occur, the Licensee shall convey to the federal government all right, title and interest in land and buildings of the Federal Facility Waste Disposal Facility and convey all right, title and interest in federal facility waste to the federal government.

190. Upon application to transfer the license, the Licensee shall acknowledge the conveyance to the State of Texas of all right, title and interest in compact waste located in the Compact Waste Disposal Facility.

FINANCIAL ASSURANCE AND QUALIFICATIONS

191. The Licensee must provide all cost estimates and supporting analysis when requesting any changes to financial assurance.

192. Sixty (60) days prior to accepting waste, the Licensee shall provide financial assurance in an amount described below and in a form acceptable to the executive director. Financial assurance acceptable to the executive director in amount and form shall be maintained until license termination has been approved by the commission and the United States Nuclear Regulatory Commission, except for the financial assurance for corrective action and for institutional control.

    A. Financial assurance in the amount of $79,912,000 in 2008 dollars for decommissioning and closure, $10,256,000 in 2008 dollars for post-operational surveillance, and $21,000,000 in 2008 dollars for institutional control must be provided initially by the Licensee to the executive director. These amounts must be converted to current dollars, by use of the methodology cross-referenced in 30 TAC Chapter 37, Subchapter T (Financial Assurance for Near-Surface Land Disposal of Radioactive Waste) prior to receipt of low-level radioactive waste and posting of financial assurance with the executive director. Upon demonstration by the Licensee and approval by the executive director, the amount of financial assurance for closure and decommissioning may be reduced to reflect the cost estimates for on-site discharge of leachate that include decommissioning costs of an authorized on-site wastewater treatment facility, costs for disposal of treatment residuals and contaminated treatment media, and costs that would be incurred if an independent contractor were hired to operate and decommission the on-site wastewater treatment facility. An additional technical demonstration would be required to be submitted with cost estimates to evaluate a plan for on-site discharge of leachate.

    B. The financial assurance amount of $25,300,000 in 2008 dollars for corrective action must be provided initially by the Licensee to the executive director as an amount sufficient to address unplanned events that pose a risk to public health, safety and the environment that may occur after the decommissioning and closure of the land disposal facility. The amount must be converted to current dollars, by use of the methodology cross-referenced in 30 TAC Chapter 37, Subchapter T, prior to receipt of low-level radioactive waste and posting of financial assurance with the executive director. At least 60 days prior to the anniversary date of the first establishment of the financial assurance mechanism, this amount shall be increased as acceptable to the executive director to account for the cumulative waste received at the land disposal facility each successive year. This annual additional amount shall not be less than $3,350,000.

    C. The Licensee shall annually increase the cost estimates for inflation as described in 30 TAC Chapter 37, Subchapter B (Financial Assurance Requirements for Closure, Post Closure, and Corrective Action). In addition, the Licensee shall submit a revision to the cost estimates along with supporting documentation for the land disposal facility to the commission for approval on the anniversary date of the financial assurance mechanism each year, and upon amendment to the license. Commission approval may be demonstrated by either amendment of this license or by order of the

FINANCIAL ASSURANCE AND QUALIFICATIONS

192. C. (Continued)

commission to specify the current dollar amount. Within 60 days of the commission's approval of the amount for license condition 192. A. and B., the Licensee shall change the level of funding of the financial assurance and submit the revised financial assurance mechanism for approval.

D. The Licensee shall provide financial assurance for bodily injury and property damage to third parties caused by sudden and non-sudden accidental occurrences arising from operations of the Compact Waste Disposal Facility and the Federal Facility Waste Disposal Facility in a manner that meets the requirements of 30 TAC Chapter 37, Subchapter T.

ADDITIONAL REQUIREMENTS

193. Except as specifically provided otherwise by this license, the Licensee must possess and dispose of low-level radioactive waste authorized by the license in accordance with statements, representations, and procedures contained in the following:

Original application dated August 3, 2004, and subsequent revisions.

194. All written submissions to the executive director as required by this license shall be made to the following:

A. For submissions by U. S. Postal Service:

Attn: Susan Jablonski, P.E., Director
Radioactive Materials Division
Texas Commission on Environmental Quality
Mail Code – 233
P. O. Box 13087
Austin, Texas 78711-3087

B. For Submissions by facsimile transmission, the transmission should be addressed to the attention of the Radioactive Material Licensing Section, Radioactive Materials Division and sent to the following number:

(512) 239-6464

C. For submission of portable document file (pdf) documents by electronic mail, address to the following:

sjablons@ tceq.state.tx.us

If there is a conflict between a condition of this license, statements contained in the application materials, applicable provisions of Title 30 of the Texas Administrative Code, the most stringent provision shall prevail.

Issued and Effective On

Date: SEP 10 2009

For The Commission

Attachment A

Modified Natural Radiation Monitoring Program

Sample	Station/Location Reference	Method	Frequency	Type of Analysis
Air - Particulate	6 - Northwest facility fence line 27 - Southeast of facility 31 - West of facility	High-volume Sampler	Continuous sampling with weekly or more frequent changes as required due to dust loading with analyses of composite samples by location each month	Gross alpha, Gross beta, Alpha isotopic [1], Gamma spectroscopy [2], Liquid scintillation [3]
Air - Tritiated water vapor	6 - Northwest facility fence line 27 - Southeast of facility 31 - West of facility		Continuous with monthly changes	Tritium (hydrogen-3)
Air - Other vapor, gases	6 - Northwest facility fence line 27 - Southeast of facility 31 - West of facility	Cartridge	Continuous with weekly changes	Carbon-14, Iodine-129, Krypton-85
Precipitation (radiological)	Ranch house draw weather station	Grab	Monthly when quantity is sufficient for analysis	Gamma spectroscopy [2]
Precipitation (meteorological)	Ranch house draw weather station		Continuous	As per license
Radon	6 - Northwest facility fence line 27 - Southeast of facility 31 - West of facility	Track-etch detector	Quarterly	Radon
Ambient radiation/ Direct radiation	6 - Northwest facility fence line 27 - Southeast of facility 31 - West of facility	TLD and survey readings	Quarterly	Ambient and direct gamma radiation measurements taken at each location
Soil (radiological)	6 - Northwest facility fence line 27 - Southeast of facility 31 - West of facility	Grab at 0-6 inches, at 6-12 inches	Quarterly	Gross alpha, Gross beta, Alpha isotopic [1], Gamma spectroscopy [2], Liquid scintillation [3]
Soil (chemical)	6 - Northwest facility fence line 27 - Southeast of facility 31 - West of facility	Grab at 0-6 inches	Quarterly	Chemical analysis (per HW-50358 application Attachment VI, Appendix 6.6-2, Table 1, Revision 6, January 20, 2005)
Vegetation (radiological)	6 - Northwest facility fence line 27 - Southeast of facility 31 - West of facility	Grab	Semi-annually when quantity is sufficient for analysis	Gross alpha, Gross beta, Alpha isotopic [1], Gamma spectroscopy [2], Liquid scintillation [3]
Vegetation (chemical)	6 - Northwest facility fence line 27 - Southeast of facility 31 - West of facility	Grab	Semi-annually when quantity is sufficient for analysis	Chemical analysis (per HW-50358 application Attachment VI, Appendix 6.6-2, Table 1, Revision 6, January 20, 2005)
Surface Water (radiological)	Baker Spring	Grab	Quarterly when quantity is sufficient for analysis	Gross alpha, Gross beta, Alpha isotopic [1], Gamma spectroscopy [2], Liquid scintillation [3]

Attachment A				
Modified Natural Radiation Monitoring Program				
Sample	Station/Location Reference	Method	Frequency	Type of Analysis
Surface Water (chemical)	Baker Spring	Grab	Quarterly when quantity is sufficient for analysis	Chemical analysis (per HW-50358 application Attachment VI, Appendix 6.6-2, Table 1, Revision 6, January 20, 2005
Sediment	Baker Spring	Grab	Quarterly	Gross alpha, Gross beta, Alpha isotopic [1], Gamma spectroscopy [2], Liquid scintillation [3]
Fauna	General Site Area	Grab	Annually	Gross alpha, Gross beta, Alpha isotopic [1], Gamma spectroscopy [2], Liquid scintillation [3]
Soil (radiological)	17 off-site locations surrounding the disposal facility as per application Revision 12c, Appendix 2.10.1-2, Addendum 1, Revision 2, Table 11A	Grab at 0-6 inches, 6-12 inches	Quarterly for twelve consecutive months	Gross alpha, Gross beta, Alpha isotopic [1], Gamma spectroscopy [2], Liquid scintillation [3]
Soil (chemical)	50-meter grid of entire site	Grab 0-6"	One (1) time	Chemical analysis as per HW-50358 application Attachment VI, Appendix 6.6-2, Table 1, Revision 6, January 20, 2005
Monitor well clusters (radiological) Ogallala-Antlers-Gatuña (OAG) wells, 225-foot zone top 225-foot zone bottom 125-foot zone top 125-foot zone bottom	All OAG wells PM-01/PM-02/PM-03 – East of facility One (1) upgradient well at north fence line and one down-gradient well at south fence line (locations to be determined)	Grab	Quarterly [4] when quantity sufficient for analysis is present	Gross alpha, Gross beta, Alpha isotopic [1], Gamma spectroscopy [2], Liquid scintillation [3]
Monitor well clusters (chemical) Ogallala-Antlers-Gatuña (OAG) wells, 225-foot zone top 225-foot zone bottom 125-foot zone top 125-foot zone bottom	All OAG wells PM-01/PM-02/PM-03 – East of facility One (1) upgradient well at north fence line and one (1) down-gradient well at south fence line (exact locations to be determined)	Grab	Quarterly [4] when quantity sufficient for analysis is present	Chemical analysis as per HW-50358 application Attachment VI, Appendix 6.6-2, Table 1, Revision 6, January 20, 2005

1. Alpha isotopic analyses must include, but not be limited to, radium-226, thorium-230, thorium-232, plutonium-238, plutonium-239/240, uranium-238, uranium- 235, and uranium-234.
2. Gamma spectroscopy analyses must include, but not be limited to, cesium-137 and lead-210.
3. Liquid scintillation analyses must include, but not be limited to, stronium-90, hydrogen-3, technetium-99, iodine-129, carbon-14, plutonium-241, and radium-228.
4. Sampling and analysis procedures to be submitted for review by the executive director. This information must be included in the Site-specific Data Assessment and Management Plan (S-DAMP) and the Quality Assurance Project Plan (QAPP).

Attachment B				
Pre-Operational, Construction, and Operational Environmental Monitoring				
Sample	Station/Location Reference	Method	Frequency	Type of Analysis
Air - Particulate	61 - Northwest corner Federal Facility Waste Disposal Facility (FWF) 60 - Northwest FWF 59 - North-center FWF 58 - Northeast corner FWF 63 - Southeast FWF 62 - Southwest FWF 11 - West FWF 65 - East FWF/West Compact Waste Disposal Facility (CWF) 55 - Northwest CWF 54 - Northeast CWF 50 - South CWF 1 - East of guard house 4 - Southwest corner of FWF 6 - Northwest of facility fence line 7 - North fence line center of RCRA permit area 9 - Control station 26 - East of facility fence line 27 - Southeast of facility 31 - West of the facility	High-volume sampler	Continuous sampling with weekly or more frequent changes as required due to dust loading with analyses of composite samples by location each month	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation[3]
Air - Tritiated water vapor	61 - Northwest corner FWF 60 - Northwest FWF 59 - North-center FWF 58 - Northeast corner FWF 63 - Southeast FWF 62 - Southwest FWF 11 - West FWF 65 - East FWF/West CWF 55 - Northwest CWF 54 - Northeast CWF 50 - South CWF 1 - East of guard house 4 - Southwest corner of FWF 6 - Northwest of facility fence line 7 - North fence line center of RCRA permit area 9 - Control station 26 - East of facility fence line 27 - Southeast of facility 31 - West of the facility		Continuous with monthly changes	Liquid scintillation for tritium (hydrogen-3)

Attachment B				
Pre-Operational, Construction, and Operational Environmental Monitoring				
Sample	Station/Location Reference	Method	Frequency	Type of Analysis
Air - Other vapor, gases	61 - Northwest corner FWF 60 - Northwest FWF 59 - North-center FWF 58 - Northeast corner FWF 63 - Southeast FWF 62 - Southwest FWF 11 - West FWF 65 - East FWF/West CWF 55 - Northwest CWF 54 - Northeast CWF 50 - South CWF 1 - East of guard house 4 - Southwest corner of FWF 6 - Northwest of facility fence line 7 - North fence line center of RCRA permit area 9 - Control station 26 - East of facility fence line 27 - Southeast of facility 31 - West of facility	Cartridge	Continuous with weekly changes	Liquid scintillation for Carbon-14, Iodine-129, Krypton-85
Precipitation (radiological)	Ranch house draw weather station	Grab	Monthly when quantity sufficient for analysis is collected	Gamma spectroscopy [2]
Precipitation (meteorological)	Ranch house draw weather station		Continuous	As per license
Direct radiation / Ambient radiation	61 - Northwest corner FWF 60 - Northwest FWF 59 - North-center FWF 58 - Northeast corner FWF 63 - Southeast FWF 62 - Southwest FWF 11 - West FWF 65 - East FWF/West CWF 55 - Northwest CWF 54 - Northeast CWF 50 - South CWF 1 - East of guard house 4 - Southwest corner of FWF 6 - Northwest of facility fence line 7 - North fence line center of RCRA permit area 9 - Control station 26 - East of facility fence line 27 - Southeast of facility 31 - West of facility	TLD, Survey reading	Quarterly	Ambient and direct gamma radiation measurements taken at each location

Attachment B				
Pre-Operational, Construction, and Operational Environmental Monitoring				
Sample	Station/Location Reference	Method	Frequency	Type of Analysis
Soil (radiological)	Air monitoring station locations	Grab at 0-6 inches and Grab 6-12 inches (pre-operational only)	Quarterly at air monitoring stations	Gross alpha, Gross beta, Alpha isotropic[1], Gamma spectroscopy[2], Liquid scintillation [3]
Soil (chemical)	Air monitoring station locations	Grab at 0-6 inches	Semi-annually at air monitoring stations	Chemical analysis as per HW-50358 application Attachment VI, Appendix 6.6-2, Table 1, Revision 6, January 20, 2005
Vegetation (radiological)	Air monitoring station locations GW-1 -Stock pond GW-2 -Baker Spring GW-3- Playa west of by-product material facility GW-4- Playa north of FWF GW-5 - Playa northeast of CWF GW-6 - Playa east of CWF	Grab	Semi-annually when quantity sufficient for analysis is present	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation [3],
Vegetation (chemical)	Air monitoring station locations GW-1 -Stock pond GW-2 -Baker Spring GW-3- Playa west of by-product material facility GW-4- Playa north of FWF GW-5 - Playa northeast of CWF GW-6 - Playa east of CWF	Grab	Semi-annually when quantity sufficient for analysis is present	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation [3],
Surface Water (radiological)	GW-1 -Stock pond GW-2 -Baker Spring GW-3- Playa west of by-product material facility GW-4- Playa north of FWF GW-5 - Playa northeast of CWF GW-6 - Playa east of CWF Sedimentation pond as per license	Grab	Quarterly when quantity sufficient for analysis is present[5]	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation [3]
Surface Water (chemical)	GW-1 -Stock pond GW-2 -Baker Spring GW-3- Playa west of by-product material facility GW-4- Playa north of FWF GW-5 - Playa northeast of CWF GW-6 - Playa east of CWF Sedimentation pond as per license	Grab	Annually when quantity sufficient for analysis is present[5]	Chemical analysis as per HW-50358 application Attachment VI, Appendix 6.6-2, Table 1, Revision 6, January 20, 2005

Attachment B				
Pre-Operational, Construction, and Operational Environmental Monitoring				
Sample	Station/Location Reference	Method	Frequency	Type of Analysis
Aquatic Eco-receptor	GW-1 -Stock pond GW-2 -Baker Spring GW-3 -Playa west of by-product material facility GW-4 -Playa north of FWF GW-5 -Playa northeast of CWF GW-6 -Playa east of CWF	Grab	Annually, if present	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation [3]
Sediment	GW-1 -Stock pond GW-2 -Baker Spring GW-3 -Playa west of by-product material facility GW-4 -Playa north of FWF GW-5 -Playa northeast of CWF GW-6 -Playa east of CWF Sedimentation pond as per license	Grab	Quarterly	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation [3]
Fauna	General site area	Grab	Annually	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation [3]
Septic, process water	All buildings on site	Grab, solids and liquids	Quarterly and prior to disposal off-site	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation [3]
Perimeter monitor well clusters[6] (radiological) Ogallala-Antlers-Gatuña (OAG) wells, 225-foot zone top, 225-foot zone bottom, 125-foot zone top, 125-foot zone bottom	FWF-1, FWF-2, FWF-3, FWF-4, FWF-5, FWF-6, FWF-7, FWF-8, FWF-9, FWF-10, FWF-11, FWF-12, FWF-13, and FWF-14 - Along southern perimeter of FWF from southwest corner to southeast corner at an approximately spacing of 150 feet FWF-15 - Southern end of FWF east perimeter FWF-16, FWF-17, and FWF-18 - Center portion of FWF eastern perimeter FWF-19 - Northwest corner FWF FWF-20 - Eastern end of northern FWF perimeter FWF-21 and FWF-22 - North center FWF perimeter FWF-23 - Western portion of FWF northern perimeter FWF-24 - Northwest corner FWF FWF-25, FWF 26, and FWF-27 - Center portion of FWF western perimeter FWF-28 - Southern end of FWF west perimeter CWF-1, CWF-2, CWF-3, CWF-4, CWF-5, CWF-6, and CWF-7 - Along southern perimeter of CWF from southwest corner to southeast corner at an approximate spacing of 150 feet CWF-8 - East center CWF perimeter	Grab	Quarterly gauging and sample collection when water sufficient for sampling	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation [3],

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Pre-Operational, Construction, and Operational Environmental Monitoring				
Sample	Station/Location Reference	Method	Frequency	Type of Analysis
	CWF-9 - Northeast corner CWF CWF-10 - North center CWF perimeter CWF-11 - Northwest corner CWF CWF-12 - West center CWF perimeter All RCRA monitor wells			
Ogallala-Antlers-Gatuña (OAG) monitor wells[7] (radiological) Top and bottom of zone	OAG-1, OAG-2, OAG-3 and OAG-4 - Center portion of FWF eastern perimeter OAG-5 - Northern end of FWF east perimeter OAG-6, OAG-7 and OAG-8 - Eastern end of northern FWF perimeter OAG-9 , OAG 10, and OAG-11 - North center FWF perimeter OAG-12, OAG 13, and OAG-14 - Western end of northern FWF perimeter OAG-15 - Northern end of FWF west perimeter OAG-16, OAG-17, and OAG-18 - Center portion of FWF western perimeter OAG-19 - Southern end of FWF west perimeter OAG-20 and OAG-21 - Southern end of CWF east perimeter OAG-22 and OAG-23 - Northern end of CWF east perimeter OAG-24 and OAG-25 - Eastern end of CWF north perimeter OAG-26 and OAG-27 - Western end of CWF north perimeter OAG-30 - Southern end of CWF west perimeter GW-1 - Stock pond GW-2 - Baker Spring GW-3 - Playa west of by-product material facility GW-4 - Playa north of FWF GW-5 - Playa northeast of CWF GW-6 - Playa east of CWF All RCRA monitor wells	Grab	Quarterly [8] (when quantity sufficient for analysis is present)	Gross alpha, Gross beta, Alpha isotopic[1], Gamma spectroscopy[2], Liquid scintillation [3]
Perimeter monitor well clusters [6], (chemical) Ogallala-Antlers-Gatuña (OAG), 225-foot zone top, 225-foot zone bottom, 125-foot zone top, 125-foot zone bottom	FWF-1, FWF-2, FWF-3, FWF-4, FWF-5, FWF-6, FWF-7, FWF-8, FWF-9, FWF-10, FWF-11, FWF-12, FWF-13, and FWF14 - Along southern perimeter of FWF from southwest corner to southeast corner at an approximately spacing of 150 feet FWF-15 - Southern end of FWF east perimeter FWF-16, FWF-17, and FWF-18 - Center portion of FWF eastern perimeter FWF-19 - Northwest corner FWF FWF-20 - Eastern end of northern FWF perimeter FWF-21 and FWF-22 - North center FWF perimeter FWF-23 - Western portion of FWF northern perimeter FWF-24- Northwest corner FWF	Grab	OAG and 125-foot wells - Quarterly gauging and sample collection when water sufficient for sampling 225-foot wells – Quarterly (when quantity sufficient for analysis is present)	Chemical analysis as per HW-50358 application Attachment VI, Appendix 6.6-2, Table 1, Revision 6, January 20, 2005

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Pre-Operational, Construction, and Operational Environmental Monitoring				
Sample	Station/Location Reference	Method	Frequency	Type of Analysis
	FWF-25, FWF-26, and FWF-27 - Center portion of FWF western perimeter FWF-28 - Southern end of FWF west perimeter CWF-1, CWF-2, CWF-3, CWF-4, CWF-5, CWF-6, and CWF-7 - Along southern perimeter of CWF from southwest corner to southeast corner at an approximate spacing of 150 feet CWF-8 - East center CWF perimeter CWF-9 - Northeast corner CWF CWF-10 - North center CWF perimeter CWF-11 - Northwest corner CWF CWF-12 - West center CWF perimeter All RCRA monitor wells			
Ogallala-Antlers-Gatuña (OAG) monitor wells[7] (chemical) Top and bottom of zone	OAG-1, OAG-2, OAG-3, and OAG-4 - Center portion of FWF eastern perimeter OAG-5 - Northern end of FWF east perimeter OAG-6, OAG-7, and OAG-8 - Eastern end of northern FWF perimeter OAG-9, OAG-10, and OAG-11 - North center FWF perimeter OAG-12, OAG-13, and OAG-14 - Western end of northern FWF perimeter OAG-15 - Northern end of FWF west perimeter OAG-16, OAG-17, and OAG-18 - Center portion of FWF western perimeter OAG-19 - Southern end of FWF west perimeter OAG-20 and OAG-21 - Southern end of CWF east perimeter OAG-22 and OAG-23 - Northern end of CWF east perimeter OAG-24 and OAG-25 - Eastern end of CWF north perimeter OAG-26 and OAG-27 - Western end of CWF north perimeter OAG-30 - Southern end of CWF west perimeter GW-1 - Stock pond GW-2 - Baker Spring GW-3 - Playa west of by-product facility GW-4 - Playa north of FWF GW-5 - Playa northeast of CWF GW-6 - Playa east of CWF	Grab	Quarterly (when quantity sufficient for analysis is present)	Chemical Analysis as per HW-50358 Application Attachment VI, Appendix 6.6-2, Table 1, Revision 6, January 20, 2005
Combined facilities background wells Top and bottom of zone	A-16 - OAG well located southeast of CWF [8] PM-01 - OAG well located in northeast portion of RCRA permit area [8] PM-07 - OAG well located in eastern portion of RCRA permit area, northwest of old ranch house [8] TP-14 - OAG well located northeast of FWF [8] TP-18 - OAG well located just outside the northeast corner of FWF [8]	Grab	Quarterly [8] (when quantity sufficient for analysis is present)	Gross alpha, Gross beta, Alpha isotopic [1,] Gamma spectroscopy [2, 9,] Liquid scintillation[3,]

Attachment B				
Pre-Operational, Construction, and Operational Environmental Monitoring				
Sample	Station/Location Reference	Method	Frequency	Type of Analysis
	TP-19 - OAG well located north of the CWF [8] TP-20 - OAG well just north of RCRA permit area, between stations 7 and 16 [8] TP-31 - OAG well located at Baker Spring [8] TP-46 - OAG well located south of the FWF [8] A-22 - Well in the 225-foot zone located southeast of the CWF and A-16 [8] A-24 - Well in the 225-foot zone located south-east of the CWF and west of A-22 [8] MW3A - Well in the 225-foot zone located north of the by-product material facility [8] 11B - Well in the 225-foot zone located south of the by-product material facility [8] 5E-A - Well in the 225-foot zone"located south of the FWF [8] DW35A - Well in the 225-foot zone located south of the RCRA landfill PM-03 - Well in the 225-foot zone located in northeast portion of RCRA permit area [8] PM-06 - Well in the 225-foot zone located northeast of CWF [8]			

1. Alpha isotopic analyses during the pre-operational monitoring period must include, but not be limited to, radium-226, americium-241, neptunium-237, plutonium-238, plutonium-239, plutonium-242, curium-242, and curium-243; and thorium and uranium radionuclides (such as thorium-232, uranium-234, uranium-235, uranium-238). Alpha isotopic analyses during the construction and operational period is performed only if confirmed gross alpha (initial result and re-analysis) exceeds investigation limit (IL) and will include the same radionuclides.
2. Gamma isotopic analysis must include, but not be limited to, short-lived, long-lived and primordial isotopes (beryllium-7, sodium-22, potassium-40, chromium-51, manganese-54, cobalt-56, cobalt-57, cobalt-58, iron-59, cobalt-60, zinc-65, yttrium-88, niobium-94, niobium-95, zirconium-95, ruthenium-106, silver-110m, antimony-124, antimony-125, iodine-129, barium-133, barium-140, cerium-141, cesium-134, cesium-136, cesium-137, promethium-144, promethium-146, europium-152, europium-154, europium-155, cerium-144, neodymium-147, iridium-192, mercury-203, thallium-208, lead-210, bismuth-212, lead-212, bismuth-214, lead-214, thorium-234, uranium-235, uranium-238, neptunium-239, americium-241, americium-243, and curium-243).
3. Liquid scintillation analysis during the pre-operational monitoring period must include, but not be limited to, hydrogen-3, carbon-14, nickel-59, nickel-63, strontium-90, technetium-99, plutonium-241, iodine-129, radium-228 (actinium-228).
4. Liquid scintillation analysis during the operational monitoring period must include, but not be limited to, hydrogen-3, carbon-14, technetium-99 and iodine-129; analysis for nickel-59, nickel-63 and strontium-90 will also be performed if gross beta exceeds IL. Liquid scintillation analysis for plutonium-241 will be performed during the operational monitoring period if americium-241, americium-243, or curium-243 are detected via gamma spectroscopy.
5. Ephemeral playa locations will be recorded using Global Positioning System (GPS) coordinates. Sampling locations are dependent on weather conditions and may vary from monitoring event to monitoring event.
6. Perimeter monitoring well clusters will be installed as the disposal units are developed. Initial construction of perimeter monitoring well clusters for pre-operational monitoring will consist of the following well clusters: FWF-1, FWF-6, FWF-10, FWF-14, FWF-16, FWF-17, FWF-19, FWF-21, FWF-23, FWF-24, FWF-26, FWF-27, CWF-1, CWF-4, CWF-7, CWF-8, CWF-9, CWF-10, CWF-11, and CWF-12. Well clusters to be installed prior to waste receipt consist of: FWF-2, FWF-3, FWF-12, FWF-13, FWF-18, FWF-20, FWF-22, CWF-2, CWF-3, CWF-5, CWF-6, and CWF-13.
7. The perimeter OAG wells (those that are not part of a well cluster) will be installed prior to waste receipt.
8. Sampling and analysis procedures to be submitted for review by the executive director. This information must be included in the Site-specific Data Assessment and Management Plan (S-DAMP) and the Quality Assurance Project Plan (QAPP).
9. These wells will be monitored under this license for the duration of their lifetime. As the RCRA landfill is advanced, these wells will require decommissioning and possible replacement, as they are within the area that will be disturbed by RCRA landfill construction.

Attachment C
Additional Engineering Design Requirements

The Licensee shall submit verification, and any necessary modifications, of the following specifications relating to the construction of the land disposal facility to the executive director for review.

A. The following are required specifications for the mechanical aspects of the buildings:

(1) The Licensee shall ensure that all buildings where waste may be present have a minimum classification of Type II in accordance with the National Fire Protection Association 220 titled, "Standard Types of Building Construction."

(2) The Licensee must verify that the operation of the air handling system in the general lab area contains and isolates any airborne contamination.

(3) The Licensee must resolve the conflict in the placement of the fire service entrance and domestic water booster pump and filtration system shown on the north wall and the lab equipment shown on the architectural drawings.

(4) The outdoor 500-gallon above grade tempered water storage tank is insulated, but not heat-traced. The Licensee shall provide for freeze protection and tempered water. The same requirement applies to all above grade tempered water storage tanks.

(5) An acid neutralization tank is required for sanitary waste.

(6) The Licensee must control the variable air volume (VAV) system, including the sequence of operations on the VAV boxes and air handling unit, AHU-1. A DDC system with an Operator's Workstation must be provided to assist the Operations and Maintenance staff in monitoring, adjusting set-points and troubleshooting the system.

(7) The calculated load of the RTU-1 Unit is 18.8 tons, which will require a nominal 20 ton unit. This is a big enough load that a true VAV unit can be specified, instead of a VVT type of system that bypasses supply air back to the unit but keeps the supply fan volume column. The Licensee shall account for true VAV savings by being able to turn the supply fan speed down when in heating mode, typically down to 50 percent (%). Since the fan horsepower is a cubic function of the fan speed, a 50 percent (%) turn down in fan speed will reduce the fan energy by 88 percent (%).

(8) The terminal box schedule provided in the application shows many of the VAV boxes with a minimum cubic foot per minute (CFM) of zero (0). The Licensee shall set the minimum CFM to correspond to the airflow required for heating, which is typically 50 percent (%) of the maximum airflow. The sequence of operation for the VAV box should modulate the box to its minimum position upon a fall in space temperature, and upon a further fall in space temperature for the electric heating coil to stage as required to maintain space temperature. This allows the terminal box to always provide enough CFM for heating, as well as ensure ventilation is always being provided.

(9) The terminal box schedule does not show any heating coils with the VAV boxes. The Licensee must specify how the boxes will provide individual comfort control.

(10) The Licensee shall ensure that the sanitary piping under the slab of the buildings shall not run through the spread footings. The Licensee shall encase the pipe in concrete if the pipe is running under the footer. The same requirement holds for the water service to the buildings.

(11) The Licensee shall provide a redundant fire pump.

(12) The Licensee shall require the VFD, in drawings M1.1 and M2.1 of the application, to be maintained at a differential pressure of 0.10 inches.

(13) The Licensee shall send water from the decontamination truck bay to a holding tank. The type of filter shall be provided.

(14) Engineering drawings M1.5 and M2.6 indicate that the 12,000 gallon holding tank scales to a 6-foot by 4-foot footprint. Because a 12,000 gallon tank is much larger, the Licensee shall confirm that a 12,000 gallon holding tank is being utilized.

(15) The Licensee shall not allow water to be used from the on-site fire protection storage tank for potable water. The Licensee shall keep these systems separated.

Attachment C
Additional Engineering Design Requirements

(16) Engineering drawings M2.9 and M2.10 currently indicate that the building is not heated. Appendix 3.3, Fire Hazards Analysis of On-Site Facilities, 3.2.1 Heating, Ventilating, and Air Conditioning (HVAC), p. 16 states heat will not be provided. The Licensee shall require heating for operator comfort and freeze protection.

(17) Specification 23 06 90 refers to a paragraph that describes water balancing for Phases 1, 2, and 3. It appears the HVAC equipment in each building is DX and electric heat. The Licensee shall balance any HVAC hydronic systems.

(18) Specification 23 37 18 refers to the schedule that indicates cooling for the makeup air units. The Licensee shall provide cooling (DX coil, condensing unit) in the specification.

(19) Regarding Specification 23 31 00, Section 2.2.A requires all ductwork to be galvanized steel. However, Appendix 3.0-1, WCS LLRW Disposal Engineering Report, Mechanical Narrative, p. 2 describes stainless steel ductwork for certain exhaust systems. The Licensee shall reconcile this conflict prior to construction.

(20) Regarding Specification 23 09 01, the control specification does not provide information on what type of control system is required (DDC with operator workstation, standalone DDC, electric/electronic with panel mounted operator interface at the HVAC control panel). The Licensee shall specify the level of control required to assist in operating and maintaining the system.

(21) Specification 23 09 90 notes the Drawings and Schedules required for the sequence of operations. References were found in the notes on the plan drawings to thermostatic control and interlocks. The Licensee shall include specifications for alarms, status lights, and HOA switches.

(22) Regarding Volume 23, Appendix 3.0-3.36, not all of the values in the table on page 4 of the Calculation Detail seem to match the values in the preceding calculations on page 3-4. The Licensee shall correct this inconsistency.

B. The following requirements pertain to the electrical aspects of the buildings:

(1) Appendix 3.2 (Codes and Standards) refers to a 2003 National Electrical Code (NEC). The last two NEC codes have been 2002 and 2005. The Licensee shall follow the 2005 code for this project.

(2) Specification 26 2913 (Motor Controllers), Paragraph 1.1B has an incorrect reference to Division 15 which does not exist. The Licensee shall correct this reference.

(3) Regarding the Electrical Load Calculations (Calc No. 032-MF-E001), there appears to be an error in calculating the total facility load amps. However, the selection of 200 amp overhead service cable is acceptable. The Licensee shall correct the calculation to 43 amps.

(4) Regarding Specification 26 09 00 (Control Devices), the Licensee shall add the level switches in this section consistent with the model numbers on the drawings.

C. The facility buildings or structures were reviewed for structural design compliance with the International Building Code 2003. The following requirements pertain to the structural aspects of the buildings:

(1) Regarding Appendix 3.2, Table 3.2-1 (References), the Licensee shall add "MBMA, Metal Building Manufacturer's Association".

(2) Regarding the Architectural Drawings, A0.02 thru A0.07 for the Administration Building, the Licensee shall add building code data including but not limited to: Use Group Classification; Type of Construction; Allowable Floor Area; Largest Actual Floor Area; Roof Area, Number of Stories, Allowed; Number of Stories, Actual; Building Height, Allowable; Building Height, Actual; Occupant Load, Allowed; Occupant Load, Actual; Separation Required; Fire Suppression System Provided; and Public Access.

Attachment C
Additional Engineering Design Requirements

(3) Regarding Structural Drawing S0.2, this is a Pre-Engineered Metal Building (PEMB). The Licensee shall show design loads assumed for design of foundations from PEMB. These will be compared to actual loads from building selected during construction.

(4) Regarding Architectural Drawings, A0.02 thru A0.15, A1.02 thru A1.12, and A2.02 thru A2.23, the Licensee shall add the building code data on the drawings.

(5) It appears that all of the on-site buildings are PEMB. The Licensee shall show design loads assumed for design of foundations from PEMB.

D. The following requirements pertain to the pavement design:

(1) The calculation of the equivalent 18,000 pound (18-kip) single axle load is incorrect in the design. For example, the design calculation for the access road at the entrance shows that each application of a HS 20-44 vehicle would result in an 18-kip equivalency factor of 0.61. This is inconsistent with common engineering practice. A HS 20-44 design vehicle has 1 single axle of 8-kip and 2 tandem axles of 32-kip each. Furthermore, the 18-kip traffic equivalency factors for the aforementioned single and tandem axles are 0.036 and 0.843, individually using 1993 AASHTO guide. As a result, the 18-kip equivalency factor of one (1) application of a HS 20-44 truck is equal to 1.72 (= 1 x 0.036 + 2 x 0.843). The existing thickness design underestimates damages caused by HS 20-44 trucks. Therefore, the Licensee shall verify the design thickness and re-design if necessary.

(2) The Licensee shall verify that the design is appropriate for the daily traffic (i.e. the anticipated daily applications of HS 20-44 trucks).

(3) The Licensee shall verify the design section of asphalt concrete pavement (i.e. four (4) inches asphalt concrete plus 12 inches crushed stone base course) using the 1993 AASHTO guide for design of pavement structures. The submitted calculations show that an older AASHTO Interim Guide (1972) was used in the design.

(4) The Licensee shall provide calculations for the thickness design of gravel roads. The design thickness is based on an assumed design input (i.e. a structure number). The design procedures of aggregated-surfaced roads are covered in the 1993 AASHTO guide. It is recommended to use the section of low-volume road design to confirm that the proposed thickness (i.e. 12 inches crushed stone) of gravel road is properly designed.

(5) Regarding specification 31 80 00 (page 4), no requirements of sodium sulfate soundness loss, flat and elongated particles, and Los Angeles abrasion etc. are specified. Aggregates of suitable angularities and durability must be used in the base course. The Licensee shall provide these requirements in the specification.

(6) Regarding specification 32 12 00 (page 2), the Licensee shall take a minimum of three (3) samples for acceptance tests of density and thickness.

(7) Regarding specification 32 12 00 (page 6), it is unclear to state that "don't overheat the material or cause thermal damage." The Licensee shall specify the temperature limits of hot asphalt mix (HMA) directly in the specification.

(8) Regarding specification 32 12 00 (page 8), the maximum lift thickness of HMA for compaction is not specified. The Licensee shall provide a maximum of four (4) inch lift thickness in the specification, if the revised design thickness of asphalt concrete is over four (4) inches.

(9) For the common site layout (drawing #C0.01), the roadway width shown is inconsistent with the width indicated on the typical section (drawing #C0.06). The Licensee shall revise the typical section.

(10) For the Compact Waste Facility site layout (drawing #C1.01), the roadway width shown is inconsistent with the width indicated on the typical section (drawing #C1.02). The Licensee shall revise the typical section.