RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

PERMIT TO STORE, HANDLE, TREAT, RECYCLE, AND RE-USE CERTAIN NON-HAZARDOUS OIL AND GAS WASTES

AMENDED
Permit No. MR-0024
Supersedes permit dated
August 17, 2018

BOLDWATER ENV SOLUTIONS, LLC
SUITE E
11810 CYPRESS N HOUSTON RD
CYPRESS TX 77429

Based on information contained in the original application submitted dated May 15, 2012; the amendment requests dated September 9, 2013, and September 8, 2015, the transfer request dated June 14, 2016, the amendment request dated October 11, 2016, and subsequent information received to date, you are hereby authorized to store, handle, treat, recycle and re-use certain oil and gas wastes as specified below for the following load-bearing structures: lease roads, drilling pads, tank battery pads, compressor station pads and for road base in the below referenced locations.

Permit Type: On-Lease Mobile Recycling
Authorization for On-Lease Commercial Solid Oil and Gas Waste Recycling
State of Texas
RRC Districts 01, 02, 03, 04, 05, 06, 7B, 7C, 08, 8A, 09, and 10

NARRATIVE DESCRIPTION OF PROCESS

The permittee will treat oil and gas waste generated on the same oil or gas leases for reuse. Untreated waste will be stored in a reserve pit, a bermed and lined surface storage cell on natural grade, or in above-ground storage tanks or water-tight roll-off containers. Untreated solid waste shall be loaded from the storage location into a mixing hopper where it is mechanically mixed with a stabilizing agent. Partially treated waste will then be staged or stored on a storage cell and sampled for the required analytical parameters. Waste that has passed testing parameters will be marked as recyclable product (roadbase) until used as a lease pad or as roadbase. Waste that has not passed the parameter limitations will be returned to the mixing cycle or disposed of in an authorized manner.

Authority is granted to receive, store, handle, and treat oil and gas wastes in accordance with Texas Administration Code (TAC) Title 16, Part 1, Chapter 3.8 (Statewide Rule 8), and Chapter 4, Subchapter B and is subject to the following minimum conditions:

I. GENERAL PERMIT CONDITIONS

A. The effective date of this permit is **May 28, 2019.**

B. The authority granted by this permit expires on **August 16, 2023.**

C. This permit may be considered for administrative renewal upon review by the RRC. Any application for renewal must be received at least 60 days prior to the permit expiration date to have the permit continue during the renewal process.

D. This permit is not transferable without the written consent of the RRC. Any request for transfer of this permit should be filed with Technical Permitting in Austin at least 60 days before the permittee wishes the transfer to take place.

E. Any deviation from this permit must be approved by amendment from Technical Permitting in Austin before implementation.

F. This permit does not authorize the discharge from the treatment site of any oil and gas waste, including contaminated or contact stormwater.

G. The untreated, partially treated, and treated oil and gas waste must be mixed, stored, handled, and applied in such a manner that the treated waste will not migrate off the site or enter any drainage ditch, dry creek, flowing creek, river or any surface water body or sensitive area as defined by 16 TAC §3.91.

H. Safety Data Sheets (SDS) must be submitted to the Technical Permitting in Austin for any chemical or biological agents proposed to be used in the treatment of waste at the facility. Use of the compound is contingent upon RRC approval.

I. Any soil, media, or other debris contaminated by a spill of waste or any other materials at any well sites must be containerized immediately and processed through the recycling unit or disposed of in an authorized manner.

J. Unless otherwise required by conditions of this permit, construction, use, and maintenance of the treatment site must be in accordance with the information represented in the permit application and attachments thereto.

K. The permittee shall notify the appropriate District Office prior to construction of the mobile treatment area including the construction of containment dikes, and again upon the completion of the construction.

L. All chemical laboratory analyses required to be performed in accordance with this permit must be performed using appropriate Environmental Protection Agency (EPA) methods or Standard Methods by an independent, National Environmental Laboratory Accreditation Program (NELAP) certified laboratory neither owned nor operated by the permittee. Any sample collected for laboratory analysis must be collected and preserved in a manner appropriate for that analytical method as specified by 40 CFR, Part 136. All geotechnical testing is to be performed utilizing tests standardized by the American Society for Testing and Materials (ASTM) and certified by a Texas licensed Professional Engineer.

M. The permittee is responsible for, but not limited to the following obligations:

1. Ensuring the proper management of any untreated or partially treated oil and gas waste throughout the treatment process until custody is transferred to a buyer or treated or partially treated waste is disposed of in an authorized manner;
2. Managing recyclable product (roadbase) generated by the recycling unit until custody of the roadbase product is either transferred to a buyer for reuse or is disposed of in an authorized manner.
3. Proper management of all bioremediation and chemical stabilization agents or compounds as identified in Permit Condition II.B
4. Remediating any soil, surface water or ground water affected by spills or leaks resulting from activities associated with the recycling unit; and
5. Diverting surface flow of stormwater away from the treatment area and collecting and disposing of any stormwater that is contaminated as a result of contact with untreated oil and gas waste, partially treated oil and gas waste, or finished product generated by the recycling unit prior to transferal of custody of the roadbase to a buyer for reuse.

N. The permittee must make all records required by this permit available for review and copying upon request of RRC personnel.

O. The permittee shall submit a Quarterly Report containing the following information:

1. The report shall contain applicable information as required in Condition III.A. of this permit.
2. The Quarterly reporting periods shall be January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31 of each year.
3. The reports shall be submitted to Technical Permitting in Austin and the appropriate District Office no later than the 31st day of the month following each reporting period, or each April 30th, July 31st, October 31st and January 31st, respectively.
4. An Executive Summary shall be included that describes permitted operations and relevant activities that occurred during the specified quarter.
5. Data tables presenting volumes or amounts of treated and untreated solid waste on-site at the end of each quarter shall be included.
6. The laboratory analytical reports and the corresponding chain of custody shall be provided for all chemical analyses specified in Permit Condition IV.D.2. For compressive strength analyses, each test report shall contain the testing method used and an explanation of why a specific test method was selected for each sample of final treated material.

P. Failure to comply with any provision of this permit will be cause for modification, suspension or termination of this permit. This permit may be canceled if the RRC determines that the permittee is in violation of the conditions of this permit or if the permitee's operations pursuant to the permit are causing or allowing pollution of surface or subsurface water.

II. AUTHORIZED WASTES

A. Only oil and gas wastes subject to the jurisdiction of the RRC that are non-hazardous according to Subtitle C (Resource Conservation and Recovery Act (RCRA)) may be received. You may receive, store, handle, treat and process only the following non-injectable, non-reclaimable oil and gas wastes:

1. Water-based drilling fluids and associated cuttings
2. Oil-based drilling fluids and associated cuttings
3. Soils contaminated with produced water, crude oil, or condensate

B. Fresh water, non-aromatic asphalt emulsion, inert aggregate, calcium oxide, calcium hydroxide, calcium carbonate, magnesium hydroxide, magnesium oxide, magnesium carbonate, fly ash, lime, kiln dust, cement kiln dust, and Portland cement may be stored in aboveground storage tanks or bins as appropriate at any treatment site as required in the manufacturing of roadbase at any active treatment site.

C. No asbestos-containing material regulated under the Clean Air Act or polychlorinated biphenyls (PCB)-containing material regulated under the Toxic Substances Control Act may be accepted for processing at any well site.

D. No oil and gas Naturally Occurring Radioactive Material (NORM) waste as defined in 16 TAC §4.603 (Oil and Gas NORM) or waste from a facility that is licensed by the Texas Department of State Health Services to process or treat oil and gas NORM waste may be received at any well site.

III. RECORDKEEPING AND REPORTING REQUIREMENTS

A. Records must be kept of all waste treated for a period of three (3) years from the date of treatment. These records must include the following:

1. Name of the generator;
2. Source of the waste (lease number or gas I.D. number and well number, API number, or pipeline T-4 number and county);
3. Date the waste is treated at the drill site;
4. Volume of the waste treated at the drill site;
5. Latitude and longitude in decimal degrees of each mobile treatment site, accurate to four decimal places using the WGS 84 datum;
6. Date roadbase product is removed from the treatment site;
7. Volume of roadbase product removed from the treatment site;
8. Name of the carrier;
9. Latitude and longitude in decimal degrees of each site where processed material is used including a topographic map showing the location of the area;
10. Documentation that the landowner of the receiving location has been notified of the use of the processed material on the landowners' property if used on private land;

11. Documentation that the lease operator has approved the recycling operations specified on their lease and assumes responsibility for the use of the recycled material in a manner consistent with its authorized use or its disposal in the timeframe specified in Permit Condition V.A if the recyclable product is used on an oil or gas lease;
12. Documentation that the County Commissioners have approved the use of the processed material for roadbase on the appropriate county roads if the recyclable product is used on county roads; and
13. Copies of laboratory analytical reports and chain of custody demonstrating that the roadbase has met the limitations specified in Permit Condition IV.D.2.

IV. SITING, CONSTRUCTION, OPERATION AND PROCESS CONTROL

A. SITING

1. The storage cells at the treatment sites and the location at the receiving sites must not be located:
   a. Within a 100-year floodplain;
   b. In a streambed; or
   c. In a sensitive area as defined by 16 TAC §3.91.
2. The storage cells at the treatment sites and the location at the receiving sites must be located:
   a. Above the top of the seasonal high-water table;
   b. At least 150 feet from surface water; and
   c. At least 150 feet from public, domestic, or irrigation water wells.

B. CONSTRUCTION

1. The storage and staging cells located at the treatment sites must be designed to prevent stormwater runoff from entering the area.
2. All processing or treatment cells are to be constructed with a berm that completely surrounds the cell to a height of at least two feet above the holding pad floor. The slope of the berm wall may not exceed a one to three (vertical to horizontal) ratio on the pad side as well as the natural grade side of the berm.
3. Berms or containment structures must be constructed around all waste management units. All earthen dikes surrounding pits and constructed as perimeter berms must be compacted or constructed of material that meets 95% Standard Proctor (ASTM D698) or 90-92% Modified Proctor (ASTM D1557) density and meet a permeability of 1×10^{-7} cm/sec or less when compacted. During construction, successive lifts should not exceed nine inches in thickness, and the surface between lifts should be scarified to achieve a good seal. Each berm shall maintain a slope no steeper than a one to three (vertical to horizontal) ratio, unless constructed of concrete or equivalent material (firewalls). These structures must be used to divert non-contact storm water around the waste management areas and contain and isolate contact storm water within the waste management units.

C. OPERATION

1. The permittee shall notify the appropriate RRC District Office following operations commencing at each lease location. Notification must include the following:

   a. Location of the site in latitude and longitude in decimal degrees accurate to four decimal places using the WGS 84 datum; and the

   b. Waste generator information including lease number or gas i.d. number and well number, American Petroleum Institute (API) Number, or Pipeline T-4 Number.

   The permittee may commence operations under the permit 72 hours after written notice has been submitted to the appropriate RRC District Office.

2. The permittee must obtain written permission from the surface owner of the lease upon which recycling will take place and from the surface owner where the processed roadbase is to be placed if received by a private property owner or from a County Commissioner of the County taking possession of the roadbase.

3. Waste generated from no more than six wells may be treated at any one site.

4. The combined volume of untreated waste, partially treated waste and roadbase product must not exceed 10,000 cubic yards at each individual treatment site.

5. Treatment and re-use may only occur on the surface of oil and gas leases owned by the same operator who generated the mud and cuttings; or may be received on county roads as approved by the appropriate County Commissioners or for one of the approved uses with written permission of property owner.

6. Untreated waste and partially treated waste must be stored or staged in lined above ground storage pads or pits as authorized by Statewide Rule 8, Chapter 4 Subchapter B, or by this permit. Reserve pits authorized by Statewide Rule 8 cannot store waste generated outside of the well site. The structures must meet one of the following specifications:

   a. High Density Polyethylene (HDPE) liner with a thickness of at least 30 mils; overlain by at least 18 inches of clay compacted to 95% Standard Proctor (ASTM D698); or 92% Modified Proctor dry density (ASTM D1557); with berms constructed to the requirements specified in Permit Condition IV.B.

   b. Concrete liner with a thickness of at least six inches;

   c. Compacted clay liner with thickness of at least two feet, compacted to 95% Standard Proctor (ASTM D 698) or 92% Modified Proctor dry density (ASTM D 1557); with berms constructed to the requirements specified in Permit Condition IV.B.

   d. Cement stabilized base with a thickness of two feet compacted to 95% Standard Proctor compaction; or 92% Modified Proctor; and berms constructed to the requirements specified in Permit Condition IV.B. The cement stabilized base thickness may be reduced to 12 inches if used in conjunction with a 30 mil HDPE liner that meets or exceeds a permeability of 1×10^{-7} cm/s.

7. Pretreated oil and gas waste must be mixed and stabilized at the treatment site with appropriate amounts or mixtures of non-volatile asphalt emulsion, inert aggregate, calcium oxide, calcium hydroxide, calcium carbonate, magnesium hydroxide, magnesium oxide, magnesium carbonate, fly ash, lime, kiln dust, cement kiln dust, and/or Portland cement. Mixing must be done mechanically with a trackhoe, dozer, pug mill, and/or comparable machinery.
8. Excess contact rainwater collected within a bermed waste management area must be used in the process or, removed and disposed of in an authorized manner.
9. There must be at least five feet of spacing between the fully processed roadbase lots and the partially treated waste or untreated waste lots. Each 800-cubic-yard lot of roadbase product must be labeled with a sign identifying its unique lot identification number and corresponding laboratory analysis number. As compliant test data is received, the words "*OK FOR USE*" will be placed on the appropriate lot number sign for each compliant lot.
10. Appropriate measures must be taken to control dust.
11. Inspections must be conducted weekly during recycling operation. If an inspection indicated a leak in any tank, bin or berm, it must be repaired immediately.

D. PROCESS CONTROL

1. Bench scale tests shall be performed as needed to determine optimum mixing composition. If the composition mixture changes from the material produced during the Trail Run the material must be analyzed for wetting and drying durability by ASTM 559-96, modified to provide samples that are compacted and molded from finished processed material. Total weight loss after 12 cycles may not exceed 15%.
2. A sample of the final treated material must be tested for the parameters listed below for every 800 cubic yards of material produced. The 800-cubic-yard lot sample must be composed of a composite of four sub-samples obtained at 200-cubic-yard intervals. **The loose composite samples must be collected and sent to the laboratory for preparation and analysis.** Each 800-cubic-yard lot sample must have a complete chain-of-custody and must be analyzed for the following parameters:

PARAMETER	**LIMITATION**
Minimum Compressive Strength by *ASTM D 698, ASTM D 1557, or TxDOT Methods Tex-113-E, Tex-120-E, Tex 121-E, Tex 117-E, or equivalent*	35 psi
Synthetic Precipitation Leaching Procedure (SPLP) *EPA Method 1312*	
Metals *EPA Method /6010/6020/7471A*	
Arsenic	$\leq$ 5.00 mg/L
Barium	$\leq$ 100.00 mg/L
Cadmium	$\leq$ 1.00 mg/L
Chromium	$\leq$ 5.00 mg/L

PARAMETER	LIMITATION
Lead	≤ 5.00 mg/L
Mercury	≤ 0.20 mg/L
Selenium	≤ 1.00 mg/L
Silver	≤ 5.00 mg/L
Zinc	≤ 5.00 mg/L
Benzene	≤ 0.50 mg/L
EPA Method 1312/8021/8260B	
1:4 Solid: Solution 7 Day Leachate Test*	
Total Chlorides	≤ 700 mg/L
Total Petroleum Hydrocarbons (TPH)	≤ 100 mg/L
pH	6 – 12.49 s.u.

3. Any material not meeting the limitations specified in Permit Condition IV.D.2. shall be returned to the mixing cycle and reprocessed or disposed of in an authorized manner.
4. Processed material meeting Process Control parameters, listed in Permit Condition IV.D.2., is a recycled product (roadbase) and is suitable for reuse as roadbase on lease roads, drilling pads, tank batteries, compressor station pads, and county roads as approved by the appropriate County Commissioners.

V. SITE CLOSURE

A. The recycling unit may operate at a single treatment site for no longer than one year. Within the 60 days that follow the recycling unit relocation, all processing equipment must be removed; all untreated waste, partially treated waste, fluid waste, and all contact stormwater shall be disposed of in an authorized manner; and the final grading and site restoration activities must be completed.

B. All recycled product must be applied and re-used for lease or county roads, drilling pads, tank battery pads, or compressor station pads, or must be disposed of in an authorized manner.

C. All storage or staging cells, pads, pits and berms must be backfilled as necessary, contoured to original grade, and revegetated with ground cover appropriate for the geographic region.

D. All treating equipment and materials brought on-site for the purpose of recycling oil and gas waste must be removed from each site and any dikes leveled or removed.

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* Louisiana Administrative Code (LAC 43: XIX. Subpart 1). If the hydraulic conductivity of the molded sample is less than $1x10^{-6}$ cm/sec, a leachate liquid formed by leaching the molded sample itself with four times the molded sample volume of distilled water may be tested for chlorides, TPH, and pH.

E. The contents of any vessels, above ground storage tanks, related bins or other containers must be disposed of in an authorized manner.

F. Upon final closure, the appropriate District Office and Technical Permitting in Austin shall be notified in writing.

This authorization is granted subject to review and cancellation should investigation show that such authorization is being abused.

APPROVED AND ISSUED ON **May 28, 2019**

Tiffany Humberson, Manager
Environmental Permits & Support
Technical Permitting

Notes:

1. Updated the permit language to be consistent with current permitting standards.

cc: RRC Districts 01, 02, 03, 04, 05, 06, 7B, 7C, 08, 8A, 09, and 10