NM1-5 Renewal Application and OCD's Tentative Decision to Approve Permit

State of New Mexico
Energy, Minerals and Natural Resources Department

Certified Mail Receipt # 7019 1640 0000 7986 3663

April 24, 2025

Mr. Jason Sandel
Basin Disposal, Inc.
200 Montana Street
Bloomfield, New Mexico 87413
Jason.Sandel@BasinDisposalinc.com

RE: Tentative Decision Regarding Permit Renewal Application for Surface Waste Management Facility Permit NM1-5, Basin Disposal, Inc.

Dear Mr. Sandel:

The Oil Conservation Division (OCD) has completed a review of Basin Disposal, Inc's (Basin) renewal application for surface waste management facility Permit NM1-5. The OCD has tentatively decided on permit approval with conditions. Attached is the draft permit with general and specific conditions. The OCD has posted this decision, along with the draft permit, on OCD's website.

Given OCD's determination, Basin is now required to issue a division-approved notice of this decision by:

1) Publishing notice in a newspaper of general circulation in San Juan County.
2) Giving written notice by certified mail, return receipt requested, of the division's proposed decision to surface owners within one-half mile of the facility boundary on or before publication of the newspaper notice;
3) Giving notice by first class mail or email to persons identified by the OCD who have requested notification of applications and to affected local, state, and tribal governmental agencies (see attached listing) on or before publication of the newspaper notice.

Note, this notice must include all the information required in 19.15.36.9.D NMAC and Basin must provide proof to the OCD that the public notice requirements of Subsections C and D of 19.15.36.9 NMAC have been met prior to the OCD scheduling a hearing pursuant to 19.15.36.10 NMAC or issuing the permit.

If you have any questions, please do not hesitate to contact me by telephone at (505) 795-1722 or by email at LeighP.Barr@emnrd.nm.gov. On behalf of the OCD, I wish to thank you and your staff for your cooperation during this process.

Respectfully,

Leigh Barr

Leigh Barr
Administrative Permitting Supervisor

SURFACE WASTE MANAGEMENT FACILITY PERMIT (NM1-5)
PERMIT RENWAL

1. GENERAL PROVISIONS.

A. PERMITTEE AND PERMITTED FACILITY: The Oil Conservation Division (Division) of the Energy, Minerals and Natural Resources Department issues this renewal surface waste management facility (SWMF) permit, **NM1-5** (Permit), to Basin Disposal, Inc. (Operator), located at 200 Montana Street, Bloomfield, New Mexico 87413 in San Juan County. The Facility is located approximately 3 miles north of the intersection of Highways 550 and 64.

The existing 28 acres ± commercial SWMF includes the following permitted units: 3 evaporation ponds, 18 receiving tanks, 4 oily water receiving tanks, 3 skimmed oil tanks, 3 oil heating tanks, 3 settling tanks, 9 oil sales tanks, 3 filtered water tanks, 4 bleach tanks, 1 concrete sludge stabilization station, 2 covered below-grade tanks, 2 separation tanks, and various support facilities including an office, a maintenance building, roads, and a storm water detention basin. Also, within the facility boundary, there is one UIC Class II injection well (which is permitted separately by Division order R-8524, API No. 30-045-26862) for the disposal of produced water.

B. SCOPE OF PERMIT: The Division regulates the disposition, handling, transport, storage, recycling, treatment and disposal of produced water during, or for reuse in, the exploration, drilling, production, treatment or refinement of oil or gas, including disposal by injection pursuant to authority delegated under the federal Safe Drinking Water Act, in a manner that protects public health, the environment and fresh water resources pursuant to authority granted in the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978) at Section 70-2-12(B)(15) NMSA 1978.

The Division regulates the disposition of nondomestic wastes resulting from the exploration, development, production or storage of crude oil or natural gas to protect the public health and the environment pursuant to authority granted in the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978) at Section 70-2-12(B)(21) NMSA 1978.

The Division regulates disposition of nondomestic wastes resulting from the oil field service industry, the transportation of crude oil or natural gas, the treatment of natural gas or the refinement of crude oil to protect public health and the environment pursuant to authority granted in the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978) at Section 70-2-12(B)(22) NMSA 1978.

This Permit does not convey any property rights of any sort or any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal or local laws, rules or regulations.

C. PERMIT CONDITIONS AND OPERATOR COMMITMENTS: The Operator must ensure all operations are consistent with the terms and conditions of this Permit and in conformance with all pertinent rules and regulations under the Oil & Gas Act. Furthermore, the Operator shall abide by the approval conditions contained herein, along with all commitments submitted in the March 2025 renewal permit application, including any attachments and/or amendments, all of which are incorporated into this Permit by reference.

D. MODIFICATIONS: The Operator must submit an application to the OCD in advance of any major or minor modifications for approval. A major modification means a modification of a SWMF that involves an increase in the land area that the permitted surface waste management facility occupies; a change in the design capacity or nature of the permitted oil field waste stream; addition of a new treatment process; an exception to, waiver of or change to a numerical standard provided in 19.15.36 NMAC; or other modification that the division determines is sufficiently substantial that public notice and public participation in the application process are appropriate. A minor modification means a modification of a SWMF that is not a major modification.

E. DEFINITIONS: Terms not specifically defined in this Permit shall have the same meanings as those in the Oil and Gas Act or the rules adopted pursuant to that Act, as the context requires.

F. GENERAL PERFORMANCE STANDARDS: The Operator shall operate in a manner as to prevent waste of oil and gas, prevent the contamination of fresh waters and so that oil and gas are not used wastefully or allowed to leak or escape from a natural reservoir or from wells, tanks, containers, pipe or other storage conduit or operating equipment.

G. EFFECTIVE DATE, EXPIRATION, RENEWAL, AND PENALTIES FOR OPERATING WITHOUT A PERMIT: This Permit is effective on **MONTH DAY, 2025** and will expire ten years thereafter on **MONTH DAY, 2035**. The Operator may submit an application for renewal to the OCD no later than 120 calendar days before the expiration date. If the operator submits such a renewal application before the required date and is in compliance with the existing permit, then that existing permit will not expire until the OCD approves or denies the renewal application. Operating with an expired permit will subject the Operator to civil and/or criminal penalties (see Section 70-2-31 NMSA 1978).

H. FINANCIAL ASSURANCE: The Operator shall provide financial assurance (FA) in a form approved by the Division for the commercial SWMF's estimated closure and post closure cost. The amount of FA required is $1,123,356.31. The FA must be submitted to the Division within 30-days of permit issuance.

The Operator shall also submit to the Division an updated closure/post-closure plan, including the associated cost estimates, to determine the adequacy of FA during every successive five-year term. The five-year term due date is **MONTH DAY, 2030** (i.e., 5-years from permit issuance).

I. TRANSFER OF PERMIT: The Operator shall not transfer this Permit without the Division's prior written approval. A request for transfer of a permit shall identify officers, directors and owners of twenty-five percent or greater in the transferee.

2. GENERAL FACILITY OPERATIONS.

A. LABELING: The Operator shall clearly label all tanks, drums, and containers to identify the contents and provide other emergency notification information in accordance with the tank numbering system as specified in Attachment III.1.F of Section 1, Volume 3 of the approved Application.

B. INSPECTIONS AND MAINTENANCE OF SECONDARY CONTAINMENT SYSTEMS: The Operator shall inspect all secondary containment systems and sumps at least monthly, unless otherwise specified more frequently in the approved Application, to ensure proper operation and to prevent over topping or system failure. The Operator shall empty all secondary containment systems of any fluids within 48 hours of discovery. The Operator shall keep written records of inspections using inspection form(s) as specified in its approved Application and keep written records of any fluid analyses.

i. **Evaporation Ponds:** If the Operator determines that fluids are present in the leak detection system at a notable level, the Operator shall collect a fluids sample, analyze the sample for TPH, Benzene, BTEX, and Chlorides, and submit a summary of the analytical sampling results, along with lab report, to the OCD within 14-days of laboratory receipt. If fluids are present in the leak detection system at a level of 2 feet or greater, the Operator shall initiate corrective actions as specified in Subsection 6.3 of Section 1, Volume II of the approved Application.

ii. **Below-grade Tanks, Sumps, and Sludge Stabilization Unit:** If the Operator determines that a secondary containment system has developed a leak, or if any penetration of the below-grade tank, sump or sludge stabilization unit has occurred below the liquid's surface, then the Operator shall remove all liquid above the damage or leak line within 48 hours of discovery, notify the Division, and repair the damage or replace the below-grade tank, sump, or sludge stabilization unit. The Operator shall inspect all secondary containment systems and sumps at least weekly as noted in the approved Application.

C. RELEASE REPORTING AND CORRECTIVE ACTION FOR RELEASES: The Operator shall comply with the spill/release reporting and corrective action provisions of 19.15.29 NMAC and 19.15.30 NMAC, as applicable.

D. ANNUAL REPORT: The Operator shall submit an annual report to the Division by May 17 of each year. The annual report shall include the following information for the preceding calendar year:

i. A summary of any noted deficiencies/issues determined from the inspections conducted as part of Table II.1.5 in Section 1, Volume II of the approved

Application. A copy of all inspection forms that indicate an issue with a sump and/or leak detection system, including any analytical results of fluids detected;

ii. A copy of the annual hydrogen sulfide (H_2S) monitoring results for tank batteries in accordance with permit condition 9H and the monitoring results for underground process and wastewater pipeline integrity tests in accordance with permit condition 6A;

iii. A copy of all facility training records;

iv. A copy of all complaint logs and resolutions;

v. Any issues/solutions identified relating to migratory birds and pond exposure; and

vi. A summary report that includes the nature and amount of any reportable releases pursuant to 19.15.29 NMAC, with a description of the disposition of any contaminated soil or water.

3. MATERIAL STORAGE.

A. DRUM AND CONTAINER STORAGE: The Operator shall store all drums and other containers, including empty drums and containers, on a curbed, impermeable pad. "Containers" include tote tanks, sacks, and buckets. The Operator shall store empty drums on their sides with the bungs in place and lined up on a horizontal plane. The Operator may store fresh water outside the drum and container, process, maintenance, material and waste storage areas without having a curbed, impermeable pad, liner, pavement, or curbing.

B. PROCESS, MAINTENANCE, AND MATERIAL STORAGE AREAS: The Operator shall pave and curb all process, maintenance, and material storage areas at the Facility, excluding all evaporation ponds, below-grade tanks, and sumps, or incorporate another appropriate spill collection device for these areas.

C. ABOVE GROUND TANKS: The Operator shall place above ground tanks on impermeable pads and surround the tanks with lined berms or other impermeable secondary containment system having a capacity at least equal to one and one-third times the capacity of the largest above ground tank, or, if the above ground tanks are interconnected, of all interconnected above ground tanks. The Operator may store fresh water outside the drum and container, process, maintenance, material and waste storage areas without having a curbed, impermeable pad, liner, pavement, or curbing.

4. WASTE MANAGEMENT.

A. WASTE STREAMS: This Permit authorizes the Operator to handle the RCRA exempt liquid waste streams as specified in Section 2, Volume II of the approved Application. The Operator must obtain the Division's approval to receive any waste stream not specified in

its approved Application for the collection, disposal, evaporation, remediation, reclamation, treatment, or storage**.**

B. **WASTE STORAGE:** The Operator shall store waste at the Facility only in clearly marked waste storage areas that have been specified in the approved Application, except that waste generated during emergency response operations may be stored elsewhere for no more than 72 hours. The Division may approve additional waste storage areas on a case-by-case basis.

The Operator shall not store oil field waste, as defined in 19.15.2.7.O(3) NMAC, generated at the Facility by the Operator on-site for more than 180 calendar days from the date that the container is filled without obtaining approval from the Division.

C. **CLASS V WELLS:** Leach fields and other wastewater disposal systems at Division-regulated facilities that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells, pursuant to 20.6.2.5002 NMAC. This Permit does not authorize the use of a Class V injection well for the disposal of industrial waste at the Facility. Other Class V wells, including wells used only for the injection of domestic wastes, must be permitted by the New Mexico Environment Department.

5. BELOW-GRADE TANKS AND SUMPS.

The Operator shall obtain the Division's approval before installing a new below-grade tank or sump. The Operator shall submit a proposed design plan that meets the design and construction specifications for below-grade tanks in 19.15.17.11 NMAC and which meets the definition for sumps specified in 19.15.17.7.Q NMAC to the Division at least 90 calendar days before installation of the new unit. Design plans for below-grade tanks/sumps shall incorporate secondary containment and/or leak detection. The Division will review and approve with or without conditions or deny the Operator's proposed design for a new below-grade tank or sump.

6. UNDERGROUND PROCESS AND WASTEWATER PIPELINES.

A. TESTING: The Operator shall test all underground process/wastewater pipelines at least once every five (5) years to demonstrate their mechanical integrity, except lines containing fresh water. The Operator shall test all pressure-rated pipelines to 150% of the normal operating pressure, if possible, or for atmospheric drain systems, to 3 pounds per square inch greater than normal operating pressure, and pressure held for a minimum of 30 minutes with no more than a 1% loss/gain in pressure. Due to safety concerns, the Operator may test the piping coming from the injection pumps to the UIC Class II injection well at a pressure of 1,600 psi for a minimum of 30 minutes to demonstrate that the pressure gain/loss is no more than 1%. The Operator may propose other test methods for the Division's review and approval. If the pipeline fails the integrity test, the Operator shall notify the Division within 72 hours and propose methods to either repair or replace the defective pipeline. The Operator shall also submit a Remediation Plan to the Division to

investigate and remediate any contamination pursuant to 19.15.29 NMAC. The Operator shall maintain the test results for inspection by the Division.

B. SCHEMATIC DIAGRAMS OR PLANS: The Operator shall maintain at the Facility all underground process and wastewater pipeline schematic diagrams or plans showing all drains, vents, risers, valves, underground piping, pipe type, rating, size, and approximate location.

C. NEW UNDERGROUND PIPEINES: The Operator shall notify the Division prior to installing any new underground pipelines. The Operator shall submit a design plan as specified in permit condition 6B to the Division for new underground pipelines at least 90 calendar days before commencement of construction. The Division shall determine whether any modifications to this Permit are necessary and appropriate based on the new underground pipelines.

7. STORM WATER.

The Operator shall implement and maintain storm water run-on and run-off plans and controls as specified in Sections 1 and 4 of Volume III of the approved Application, and shall comply with any additional commitments as specified in the Contingency Plan in Section 5 of Volume II of the approved Application. Also, the Operator shall inspect the berms and the outside walls of pond levees quarterly and after a major rainfall or windstorm, and maintain the storm water control features in such a manner as to prevent erosion.

8. CLOSURE/POST-CLOSURE.

A. In addition to the closure/post-closure plan in Section 4 of Volume II of the approved Application, the Operator shall complete the following action items during closure of the entire Facility:

i. The Operator shall close all portions of the Facility including the temporary soil storage area; and,

ii. Upon closure of the entire Facility, the Operator shall not accept any material for the collection, disposal, evaporation, remediation, reclamation, treatment, or storage.

B. If the Operator chooses to close part of the Facility while continuing to operate the other parts of the Facility, the Operator shall submit a partial closure plan to the Division. The Division will review and approve with or without conditions or deny the Operator's proposed partial closure plan.

9. ADDITIONAL SITE SPECIFIC CONDITIONS:

A. The Operator shall comply with all applicable requirements of the SWMF Rule (19.15.36 NMAC), the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978), all conditions specified in this Permit, and the commitments made in the approved Application.

B. The Operator shall include the SWMF permit number on the sign pursuant to 19.15.36.13.J NMAC.

C. At least 30 days prior to the start of pond construction, the Operator shall furnish the Division with a major milestone schedule for pond construction, a complete set of engineered construction drawings that substantially comply with the engineering design provided in the approved Application, and a summary/explanation for any notable design changes.

D. The Operator shall submit to and obtain approval from the Division a Liner Certification Report prior to use of Pond #2 and any other ponds that may be constructed after the issuance of this Permit.

E. The Operator shall clearly mark the liner of each existing pond to indicate a 3.5 foot freeboard within the term of this Permit. Also, the Operator shall clearly mark the liner of any newly constructed pond to indicate the required 3.5 foot freeboard prior to use. The Operator shall submit photo-documentation to the Division within 90 days upon completion of marking the liner(s).

F. The Operator shall within 24 hours of receiving notification from the Division or a concerned party that an objectionable odor has been detected or reported, implement the following response procedures:

i. Log date and approximate time of notice that an odor exists, including the name of the complainant and any contact information;

ii. Investigate the source of the odor and log steps taken, including date and time, and conclusions reached; and,

iii. Take actions to alleviate the odor, which may include adjusting chemical treatment, air sparging, solidification, or similar responses, and log the actions taken.

G. In addition to the commitments of the Hydrogen Sulfide (H_2S) Prevention and Contingency Plan in Section 3, Volume II of the approved Application, if a hydrogen sulfide (H_2S) reading of 10.0 ppm or greater is obtained at the facility boundary, then the Operator shall notify all persons residing within one-half mile of the facility boundary and assist public safety officials with evacuation as requested.

H. The Operator shall monitor at least once per year for H_2S at the vent of each covered tank or at the top of each open tank as specified in Attachment II.1.C of Section 1, Volume 2 of the

approved Application. The Operator shall include the results of the annual H_2S monitoring event in the required Annual Report. The Operator shall also comply with 19.15.11.12.E NMAC as applicable.

I. The Operator shall obtain Division approval prior to any design changes to the produced water receiving, treatment, and evaporation areas.

J. The Operator shall obtain Division approval prior to the installation of any wells or other structures within the boundaries of the Facility.

K. In addition to forms that are currently submitted to the Division, the Operator shall also file to the Division a copy of form C-118, Sheet 1, by the 15th of the next succeeding month and a copy of form C-120-A by the 15th of the second succeeding month.

L. In addition to the commitments of the Migratory Bird Protection Plan in Section 6, Volume II of the approved Application, the Operator shall conduct hourly inspections of the ponds noting any migratory bird activity. In the event of any migratory bird rescue, the Operator shall notify the Division within 48 hours of rescue. The Division reserves the right to amend the plan as necessary.

OCD Identified Entities for Notice by First Class Mail or E-mail in Accordance with 19.15.36.9.C (3) - (4) NMAC for Surface Waste Management Facilities

Mayor and City Council
PO Box 1839
Bloomfield, NM 87413

San Juan County Manager
100 South Oliver
Aztec, NM 87410

Field Supervisor
US Fish & Wildlife Service
2105 Osuna Road, Northeast
Albuquerque, NM 87113-1001

State Historic Preservation Officer
407 Galisteo, Suite 236
Santa Fe, NM 87501

Dr. Harry Bishara
PO Box 748
Cuba, NM 87013

Commissioner of Public Lands
New Mexico State Land Office
PO Box 1148
Santa Fe, NM 87504

Director
New Mexico Department of Game & Fish
1 Wildlife Way
Santa Fe, NM 87507

Secretary
Indian Affairs Department
1220 South Saint Francis Drive
Santa Fe, NM 87505

Director of Agriculture Programs and Resources Division
New Mexico Department of Agriculture
ddapr@nmda.nmsu.edu

Farmington District Office
Bureau of Land Management
6251 College Blvd., Suite A
Farmington, NM 87402

Director
NM State Parks
1220 South St. Francis Drive
Santa Fe, NM 87505

State Engineer
Office of the State Engineer
PO Box 25102
Santa Fe, NM 87504-5102

New Mexico Oil & Gas Association
PO Box 1864
Santa Fe, New Mexico 87504

Jay Lazarus
Glorieta Geoscience
lazarus@glorietageo.com

Randy Hicks
R.T. Hicks Consultants, Ltd
901 Rio Grande NW, Suite F-142
Albuquerque, NM 87104
r@rthicksconsult.com

Secretary
New Mexico Environment Department
PO Box 5469
Santa Fe, NM 87502-5469

Ground Water Quality Bureau Chief
New Mexico Environment Department
PO Box 5469
Santa Fe, NM 87502-5469

USDA Forest Service
333 Broadway Blvd. SE
Albuquerque, NM 87102

Hazardous Waste Bureau Chief
New Mexico Environment Department
2905 Rodeo Park Dr. E
Building 1
Santa Fe, NM 87505

Solid Waste Bureau Chief
New Mexico Environment Department
PO Box 5469
Santa Fe, NM 87502-5469

Surface Water Quality Bureau Chief
New Mexico Environment Department
PO Box 5469
Santa Fe, NM 87502-5469

Navajo Nation
PO Box 7440
Window Rock, AX 86515

Jicarilla Apache Nation
PO Box 507
Dulce, NM 87528

Claudette Horn
Public Service Company of New Mexico
claudette.horn@pnm.com

Executive Director
Independent Petroleum Association of New Mexico
P.O. Box 6101
Roswell, NM 88202

Attorney at Law
325 Paseo de Peralta
Santa Fe, NM 87501

Permit Application

FOR RENEWAL

Basin Disposal, Inc.
OCD Facility Permit No.: NM-1-0005
San Juan County, New Mexico

VOLUME I:
PERMIT APPLICATION TEXT

Submitted To:

New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505
505.476.3440

Prepared For:

Basin Disposal, Inc.
200 Montana Street
Bloomfield, NM 87413
505.632.8936

Prepared By:

Parkhill
333 Rio Rancho Blvd, Suite 400
Rio Rancho, NM 87124
505.867.6990

November 2019 (Updated March 2025)

Parkhill Project #: 01165722

Parkhill

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

For State Use Only:

Form C-137
Revised August 1, 2011

Submit 1 Copy to Santa Fe Office

APPLICATION FOR SURFACE WASTE MANAGEMENT FACILITY

A meeting should be scheduled with the Division's Santa Fe office Environmental Bureau prior to pursuing an application for a surface waste management facility in order to determine if the proposed location is capable of satisfying the siting requirements of Subsections A and B of 19.15.36.13 NMAC for consideration of an application submittal.

1 Application: ☐ New ☐ Modification ☒ Renewal

2. Type: ☒ Evaporation ☐ Injection ☐ Treating Plant ☐ Landfill ☐ Landfarm ☐ Other

3. Facility Status: ☒ Commercial ☐ Centralized

4. Operator: Basin Disposal, Inc.

Address: 200 Montana Street, Bloomfield, NM 87413

Contact Person: Mr. Jason Sandel, Vice President Phone: 505-632-8936

5. Location: NW 1 1/2 Section 3 Township 29 N Range 11 W

6. Is this an existing facility? ☒ Yes ☐ No If yes, provide permit number NM-01-0005

7. Attach the names and addresses of the applicant and principal officers and owners of 25 percent or more of the applicant. Specify the office held by each officer and identify the individual(s) primary responsible for overseeing management of the facility. (***SEE ATTACHED***)

8. Attach a plat and topographic map showing the surface waste management facility's location in relation to governmental surveys (quarter-quarter section, township and range); highways or roads giving access to the surface waste management facility site; watercourses; fresh water sources, including wells and springs; and inhabited buildings within one mile of the site's perimeter.

9. Attach the names and addresses of the surface owners of the real property on which the surface waste management facility is sited and surface owners of the real property within one mile of the site's perimeter.

10. Attach a description of the surface waste management facility with a diagram indicating the location of fences and cattle guards, and detailed construction/installation diagrams of pits, liners, dikes, piping, sprayers, tanks, roads, fences, gates, berms, pipelines crossing the surface waste management facility, buildings and chemical storage areas.

11. Attach engineering designs, certified by a registered professional engineer, including technical data on the design elements of each applicable treatment, remediation and disposal method and detailed designs of surface impoundments.

12. Attach a plan for management of approved oil field wastes that complies with the applicable requirements contained in 19.15.36.13, 19.15.36.14, 19.15.36.15 and 19.15.36.17 NMAC.

13. Attach an inspection and maintenance plan that complies with the requirements contained in Subsection L of 19.15.36.13 NMAC.

14. Attach a hydrogen sulfide prevention and contingency plan that complies with those provisions of 19.15.3.118 NMAC that apply to surface waste management facilities.

15. Attach a closure and post closure plan, including a responsible third party contractor's cost estimate, sufficient to close the surface waste management facility in a manner that will protect fresh water, public health, safety and the environment (the closure and post closure plan shall comply with the requirements contained in Subsection D of 19.15.36.18 NMAC).

16 Attach a contingency plan that complies with the requirements of Subsection N of 19.15.36.13 NMAC and with NMSA 1978, Sections 12-12-1 through 12-12-30, as amended (the Emergency Management Act).

17. Attach a plan to control run-on water onto the site and run-off water from the site that complies with the requirements of Subsection M of 19.15.36.13 NMAC.

18. In the case of an application to permit a new or expanded landfill, attach a leachate management plan that describes the anticipated amount of leachate that will be generated and the leachate's handling, storage, treatment and disposal, including final post closure options.

19. In the case of an application to permit a new or expanded landfill, attach a gas safety management plan that complies with the requirements of Subsection O of 19.15.36.13 NMAC

20. Attach a best management practice plan to ensure protection of fresh water, public health, safety and the environment.

21. Attach a demonstration of compliance with the siting requirements of Subsections A and B of 19.15.36.13 NMAC.

22. Attach geological/hydrological data including:

(a) a map showing names and location of streams, springs or other watercourses, and water wells within one mile of the site;

(b) laboratory analyses, performed by an independent commercial laboratory, for major cations and anions; benzene, toluene, ethyl benzene and xylenes (BTEX); RCRA metals; and total dissolved solids (TDS) of ground water samples of the shallowest fresh water aquifer beneath the proposed site;

(c) depth to, formation name, type and thickness of the shallowest fresh water aquifer;

(d) soil types beneath the proposed surface waste management facility, including a lithologic description of soil and rock members from ground surface down to the top of the shallowest fresh water aquifer;

(e) geologic cross-sections;

(f) potentiometric maps for the shallowest fresh water aquifer; and

(g) porosity, permeability, conductivity, compaction ratios and swelling characteristics for the sediments on which the contaminated soils will be placed.

23. In the case of an existing surface waste management facility applying for a minor modification, describe the proposed change and identify information that has changed from the last C-137 filing.

24. The division may require additional information to demonstrate that the surface waste management facility's operation will not adversely impact fresh water, public health, safety or the environment and that the surface waste management facility will comply with division rules and orders

25. CERTIFICATION

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name: Jason Sandel Title: Vice President

Signature: Date: 12/6/2022

E-mail Address: jason.sandel@basindisposalinc.com

Attachment to Form C-137

Question 7:

a. Names/Addresses/Positions of all Applicant, Basin Disposal, Inc. officers:

Mr. Jerry Sandel
President, Basin Disposal, Inc.
P.O. Box 100
Aztec, NM 87410

b. Names/Addresses of all owners of 25% or more of Applicant, Basin Disposal, Inc.:

Mr. Jerry Sandel
President, Basin Disposal, Inc.
P.O. Box 100
Aztec, NM 87410

c. Name of individual responsible for overseeing management of the proposed facility:

Mr. Michael Montano
General Manager, Basin Disposal, Inc.
P.O. Box 100
Aztec, NM 87410

STATE OF NEW MEXICO
DIRECTOR OF OIL CONSERVATION DIVISION

IN THE MATTER OF THE APPLICATION	**§**
FOR PERMIT RENEWAL FOR THE	**§**
BASIN DISPOSAL, INC. SURFACE	**§**
WASTE MANAGEMENT FACILITY	**§**
(PERMIT NO. NM-01-0005)	**§**

STATEMENT OF APPLICATION

The Permit Application Renewal submitted for the Basin Disposal, Inc. Surface Waste Management Facility located in San Juan County, New Mexico, was prepared by me and technical staff under our direct supervision. I provided input and review to each of the specialized consultants responsible for the preparation of the other technical reports. It is my opinion as licensed professional engineers in good standing with the State of New Mexico, that to the best of my knowledge and belief, the information contained in this Permit Application complies with the current New Mexico Oil and Gas Rules (19.15.36 NMAC).

MATTHEW W KINGSLEY
NEW MEXICO
25906
12/8/2022
PROFESSIONAL ENGINEER

Matthew W Kingsley, P.E.
New Mexico P.E. No. 25906
Principal

Environmental Consultant to and Representative of Applicant:
Parkhill
333 Rio Rancho Blvd., Suite 400
Rio Rancho, New Mexico 87124
505.867.6990

Applicant:
Basin Disposal, Inc.
P.O. Box 100
Aztec, New Mexico 87410
505.334.3013

Mr. Jason Sandel
Vice President

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

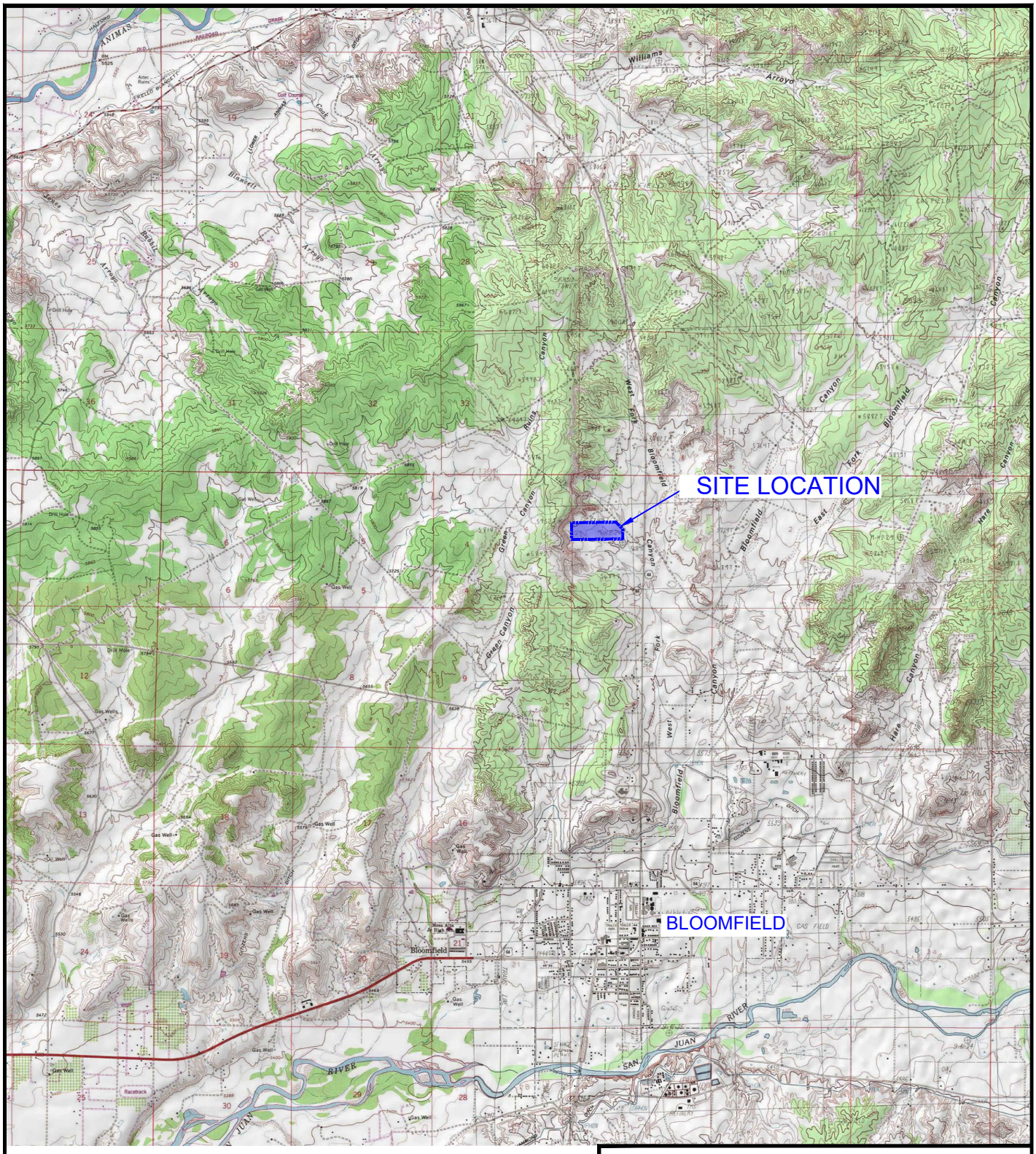
Basin Disposal, Inc. (BDI) is an existing Surface Waste Management Facility (SWMF) providing oil field waste liquids (OFWL) disposal services. The existing BDI is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.36 NMAC, administered by the Oil Conservation Division (OCD) of the New Mexico Energy, Minerals, and Natural Resources Department (NMEMNRD). This document is a component of the "Application for Permit Renewal" that proposes continued operations of the existing approved SWMF. The Facility is designed in compliance with 19.15.36 NMAC, and will continue to be operated in compliance with Facility Permit No. NM-01-005, issued by the OCD. The Facility is owned and operated by Basin Disposal, Inc.

BDI herein submits this Application for Permit Renewal (Application) for the existing Basin Disposal SWMF. No significant modifications from the existing permitted operation or infrastructure are proposed in this Application. This Application has been developed in order to address the specific standards of 19.15.36 NMAC. As a Surface Waste Management Facility per 19.15.2.7.S.11 NMAC, BDI will continue to meet the siting, design, and operating requirements of 19.15.36 NMAC, as detailed in this Application. More specifically, the Basin Disposal SWMF is a *"commercial facility"* as defined in Section 19.15.36.7.A(2) NMAC: *"… a surface waste management facility that is not a centralized facility."*

The existing facility includes areas for unloading, treatment, storage, evaporation, and subsequent disposal of produced water through means of an injection well. The adjacent injection well is permitted separately from the SWMF and is not addressed in this application. All systems have been designed and installed with the necessary components such as tank double containment and evaporation/storage pond leak detections systems. These systems have proven effective as no significant leaks or spills have been reported during the life of the permit.

1.1 Site Location

BDI is located in unincorporated San Juan County on 27.77 acres entirely within Section 3, Township 29 North, Range 11 West approximately 3 miles north of the intersection of Highway 550 and 64 (**Figure I.1**). Coordinates for the approximate center of the BDI site are Latitude 36°45'19.92" and Longitude -107°58'58.73". The site is situated approximately 4 miles north of the San Juan River, and approximately 4.7 miles south of the Animas River on Crouch Mesa, about 500 feet and 400 feet



NOTE:
1. GEOGRAPHIC CENTER, 36° 45' 19.92" N -107° 58' 58.73" W

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE LOCATION.dwg
Date/Time:Jul. 07, 2022-11:17:22

SITE LOCATION MAP

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: SITE LOCATION.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE I.1
APPROVED BY: MWK	www.parkhill.com	

in elevation above these respective river plains. The site occupies the West Fork of Bloomfield Canyon, an ephemeral drainage channel that drains south to the San Juan River. The site slopes gently to the east and southeast, from a maximum elevation of 5,750 feet to less than 5,700 feet. Detailed site characterization documentation is provided in **Volume IV**.

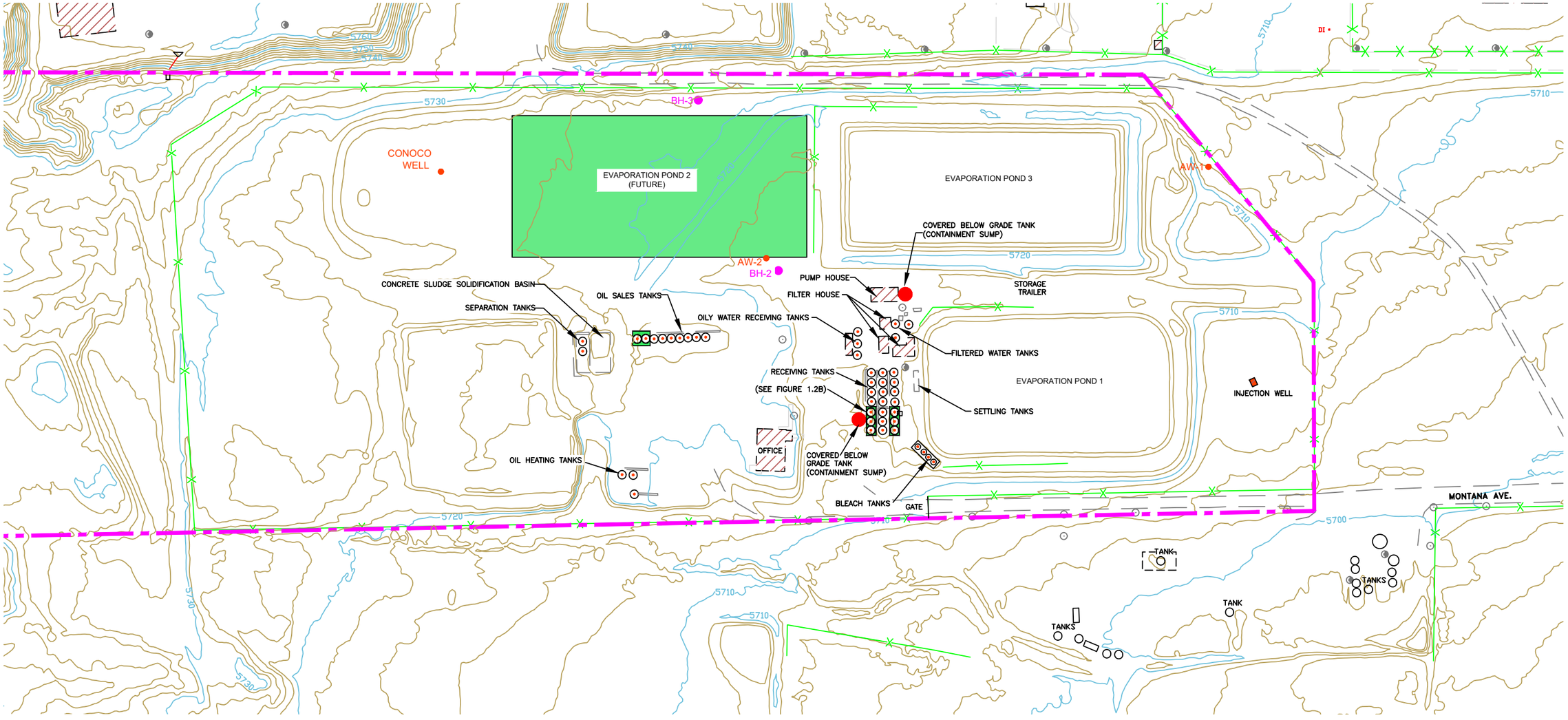
1.2 Facility Description

The existing BDI facility is comprised of 27.77 acres and is comprised of the following:

- 2 existing evaporation ponds (1 pending construction)
- 12 existing receiving tanks (6 pending construction)
- 4 existing oily water receiving tanks
- 3 existing skimmed oil tanks
- 3 existing oil heating tanks
- 3 existing settling tanks
- 7 existing oil sales tanks (2 pending construction)
- 3 existing filtered water tanks
- 4 existing bleach tanks
- 1 existing concrete sludge solidification basin
- 2 existing covered below grade tanks (containment sumps)
- 1 existing UIC Class II injection well for disposal of produced water
- 2 existing separation tanks
- Various support facilities including an office, a maintenance building, roads, and a storm water detention basin.

Oil field wastes are delivered to the BDI SWMF from oil and gas exploration and production operations in northwest New Mexico and southwest Colorado. The Site Plan provided as **Figure I.2A** and **Figure I.2B** depicts the locations of the Disposal facilities, evaporation/storage ponds, and all structures. The Facility is surrounded by commercial/industrial businesses on three sides and buffered by a natural bluff on the west side of the Facility. The closest permanent residence is located approximately 1/4 of a mile directly south of the facility. The Facility is not zoned as San Juan County does not have a zoning ordinance.

A Site Plan which identifies the layout of the existing structures as well as the undeveloped structures is provided as **Figure I.2 A** and **Figure I.2B**. Existing structures are summarized in **Table I.2**. Structures not yet developed were previously designed and permitted and are not being modified, removed or amended in this application. The undeveloped structures will be constructed as-needed and dictated by market demand, with appropriate notification to the department prior to construction. The current and estimated potential Facility operational rates are presented in **Table I.1.** Various support facilities at BDI include an office & maintenance facility, a waste acceptance & security station, roads, an emergency shower & eyewash station, and a stormwater detention basin (see **Permit Plans, Volume III.1**).



BOREHOLE LOCATIONS	
BH–2	LAT 36°45'20.54269"N (NAD 83) LONG 107°59'02.70950"W (NAD83) ELEV: 5717.98 (GROUND)
BH–3	LAT 36°45'22.92950"N (NAD 83) LONG 107°59'04.21563"W (NAD83) ELEV: 5727.46 (GROUND)
AW–1	LAT 36°45'22.01797"N (NAD 83) LONG 107°58'55.15402"W (NAD83) ELEV: 5717.85 (TOP OF CAP)
AW–2	LAT 36°45'20.58589"N (NAD 83) LONG 107°59'02.96163"W (NAD83) ELEV: 5722.20 (TOP OF CAP)

LEGEND

- PROPERTY BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 10 CONTOUR (EXISTING)
- ROADWAY (EXISTING)
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- STRUCTURE
- CONCRETE SLAB
- AW-1 ASSESSMENT WELL
- BH-3 BOREHOLE LOCATION
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)

NORTH

0 75' 150'

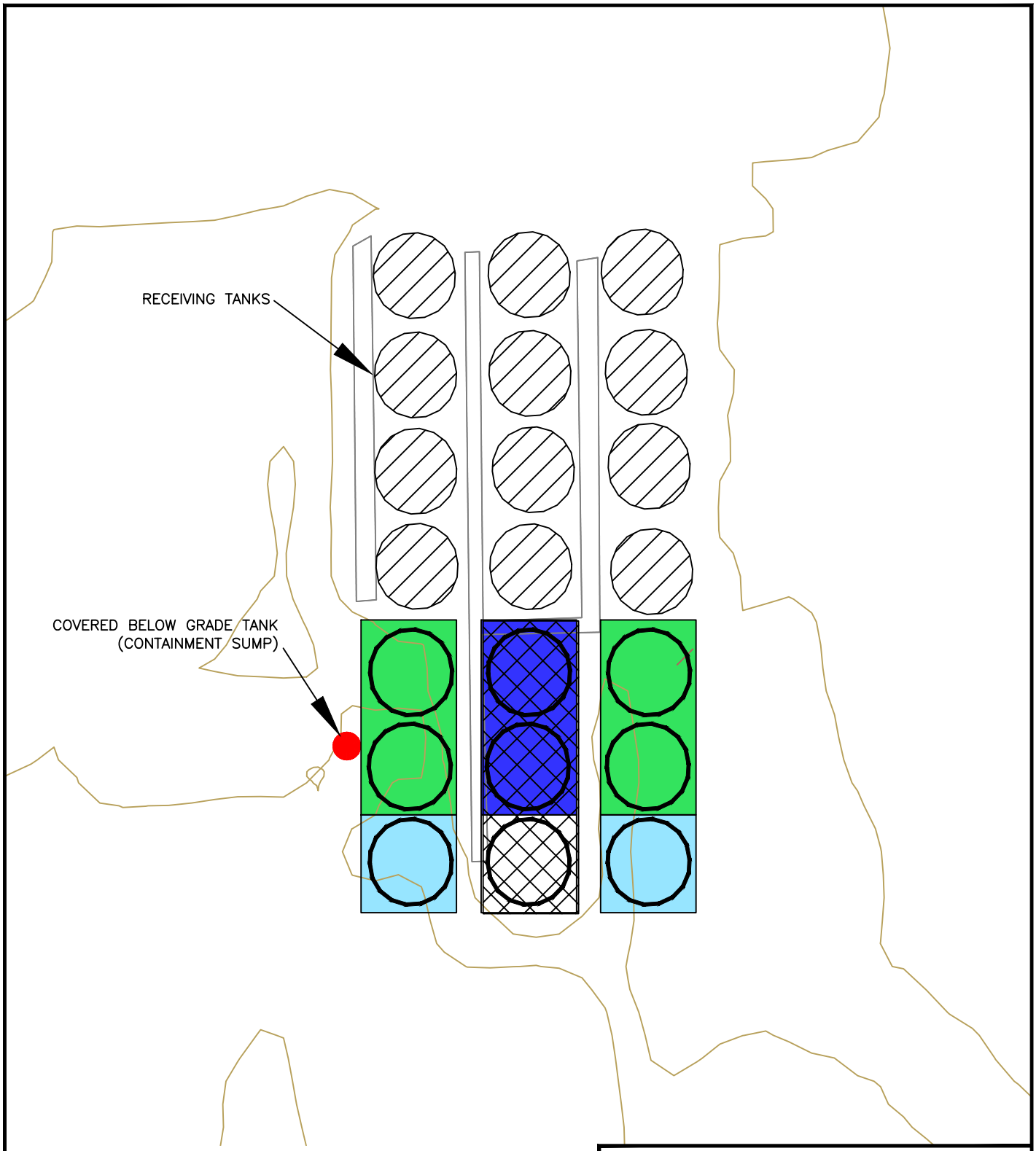
SITE PLAN

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/14/2025	CAD: SITE PLAN.dwg	PROJECT #: 1657.22	FIGURE I.2A
DRAWN BY: DMI	REVIEWED BY: AY		
APPROVED BY: AY	www.parkhill.com		

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\SITE PLAN.dwg
Date/Time:Jan. 15, 2025-09:19:42



LEGEND

- PERMITTED NOT CONSTRUCTED RECEIVING TANKS
- PERMITTED RECEIVING TANKS
- PERMITTED NOT CONSTRUCTED SKIMMED OIL TANKS
- EXISTING SKIMMED OIL TANKS

TANK LAYOUT

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/14/2025	CAD: TANK LAYOUT.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: AY	FIGURE I.2B
APPROVED BY: AY	www.parkhill.com	

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\TANK LAYOUT.dwg
Date/Time:Jan. 15, 2025-10:28:40

TABLE I.1 - Estimated Operational Rates[1]

Average Daily Liquid Operational Rate	10,000 bbl/day[2]
Maximum Daily Liquid Operational Rate	12,000 bbl/day[2]
Liquid Receiving and Storage Capacity	949,400 bbl[2]

Notes:
[1]Subject to change. The estimated operational rates are based on familiarity with local oil and gas industry operations; therefore this list may be modified in response to changes in waste streams, market conditions, technology, etc.
[2]bbl = barrels of oil

TABLE I.2 – Existing Structures

Description	No.
Injection Well	1
Water receiving tanks	12
Skimmed oil tanks	3
Bleach tanks	4
Evaporation ponds	2
Filtered water tanks	3
Oily water receiving tanks	4
Separation tanks	2
Oil sales tanks	7
Oil heating tanks	3
Covered below-grade tanks	2
Settling tanks	3
Pump and filter house	4
Concrete sludge solidification basin	1
Receiving tanks (permitted & undeveloped)	6
Evaporation pond (permitted & undeveloped)	1
Oil sales tanks (permitted & undeveloped)	2
Concrete Sludge Solidification basin	1

1.3 Permit Application Format

For ease of review and reference, this Application for Permit has been organized into a four-volume set, in the same order and format as the current Rules for Surface Waste Management Facilities (19.15.36 NMAC). OCD Form C-137 (*Application for Surface Waste Management Facilities*) is provided as a preface to this **Volume**. The Permit Application Text provided in **Volume I** addresses the applicable requirements of 19.15.36 NMAC, by restating each requirement (**in bold**) followed by the appropriate response (*in italics*).

The Facility Management Plans provided in **Volume II** address the development, operation and closure of storage tanks, evaporation ponds, and supporting infrastructure (i.e., stormwater management). Design data and supporting calculations in accordance with the applicable sections of 19.15.36 NMAC are presented in **Volume III**. **Volume IV** of this Application provides the results of focused environmental site characterization studies and hydrogeological investigations for the site.

In many cases, the technical response to a particular item is so sufficiently detailed or complex that a separate graphic, table, report, plan, or calculation has been prepared. The applicable technical documents in this Application are cross-referenced in the narrative responses to each of the individual regulatory requirements as delineated in **Volume I**. Each section of **Volumes I-IV** also includes, as applicable:

- Table of Contents
- List of Figures
- List of Tables
- List of Attachments

The Table of Contents for the entire four-volume (I-IV) Application is also included in each volume in order to assist in cross-referencing. The four-volume Application is provided in binders, and electronic format as directed by OCD. Each binder is divided by tabs which identify the Volume and Section as referenced in the master Table of Contents. **Table I.3** is a "List of Acronyms and Definitions" pertinent to the terminology used in this Application.

TABLE I.3 - List of Acronyms and Definitions
(1 of 3)

ASTM	***American Society for Testing and Materials***
BBL	***Barrels;*** 42 gallons (oil)
BDI	***Basin Disposal, Inc.***
BLM	***Bureau of Land Management***
Bgs	***Below ground surface***
BGT	***Covered below-grade tank (Containment Sump)***
BS&W	***Basic Sediments and Water***
BTEX	***Benzene, Toluene, Ethylbenzene, and Xylenes***
C/PC	***Closure/Post-Closure:*** C/PC refers to two independent steps following completion of facility operations: • Closure typically refers to capping the landfill and regrading the surface and repositioning of infrastructure to accommodate the post-closure care period. • Post-closure care refers to maintenance and monitoring after completion of closure.
cm/sec	***Centimeters per second***
CQA	***Construction Quality Assurance:*** CQA is the process of applying field and laboratory testing, and construction observation to confirm that environmental control systems (e.g., liners and covers) are installed according to the design, regulatory requirements, and current industry standards.
DAF	***Diffused Air Flotation***
DO	***Dissolved Oxygen***
FEMA	***Federal Emergency Management Agency,*** which administers the Flood Insurance Rate Map (FIRM) program.
FML	***Flexible Membrane Liner (or geomembrane):*** Geosynthetic plastic liners are the standard design for solid and liquid waste containment facilities.
GCL	***Geosynthetic Clay Liner:*** These are composite materials with geotextiles (fabrics) used in conjunction with dense bentonite clays, and are commonly used as the secondary (lower) liner in the liner system.

TABLE I.3 - List of Acronyms and Definitions

(2 of 3)

Geosynthetics	The family of man-made tools available to the design engineer for waste containment facilities, including geomembranes (FML's), geosynthetic clay liners (GCL's), geotextile (filters and cushions), geonets (drainage and cushions), geopipes, etc.
HDPE	***High Density Polyethylene:*** This geomembrane (plastic) is the preferred material for FML material for waste containment liners, and is typically installed in 40 – 100 mil thicknesses. HDPE is also used for leak detection and pipe systems.
H_2S	***Hydrogen Sulfide***
LEL	***Lower Explosive Limit*** is the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 77 degrees Fahrenheit and atmospheric pressure.
mcf	***Thousand Cubic Feet***
mg/l	***Milligrams Per Liter***
NMAC	***New Mexico Administrative Code***
NMDOT	***New Mexico Department of Transportation:*** The NMDOT is committed to providing safe and reliable transportation systems to the state of New Mexico. NMDOT also works closely with other state agencies on transportation related issues.
NMPM	***New Mexico Principal Meridian***
NOI	***Notice of Intent:*** Application to USEPA for stormwater discharges associated with industrial activity under the NPDES program. ***Notice of Inspection:*** The written record of a compliance inspection by a regulatory agency.
NORM	***Naturally Occurring Radioactive Material***
NPDES	***National Pollutant Discharge Elimination System:*** The federal permit program which requires point sources discharging pollutants to waters of the United States to obtain a permit.
NRCS	***Natural Resources Conservation Service:*** The federal agency with local offices that provide guidance on seeding of the final cover.
OCD	***Oil Conservation Division;*** a division of the New Mexico Energy, Minerals, and Natural Resources Department
OFWS	***Oil Field Waste Solids***

TABLE I.3 - List of Acronyms and Definitions

(3 of 3)

OSE	***Office of the State Engineer***
PE	***Licensed Professional Engineer***
PER	***Preliminary Engineering Report***
PVC	***Polyvinyl Chloride***
RAI	***Request for Additional Information;*** typically issued by a regulatory agency to an Applicant in response to an Application.
RCRA	***Resource Conservation and Recovery Act;*** the program administered by USEPA that sets national standards for solid waste management and disposal.
SLO	***State Land Office***
SWMF	***Surface Waste Management Facility***
SWPPP	***Stormwater Pollution Prevention Plan:*** Sites subject to the federal National Pollutant Discharge Elimination System (NPDES) regulations must prepare and implement a SWPPP. The Plan identifies potential pollutant sources and plans to mitigate/eliminate these sources.
TDS	***Total Dissolved Solids;*** a measure of water quality
TPH	***Total Petroleum Hydrocarbons***
USEPA	***United States Environmental Protection Agency:*** The federal entity responsible for administering the RCRA program. USEPA also sets national standards for air quality (NSPS) and stormwater quality (NPDES) protection.
USGS	***United State Geological Survey***
µm	***Micrometers***
UV	***Ultra-violet light;*** one component of sunlight
WQCC	***Water Quality Control Commission (NMWQCC);*** responsible for the protection of groundwater and surface water in New Mexico.

19.15.36.8 SURFACE WASTE MANAGEMENT FACILITY PERMITS AND APPLICATION REQUIREMENTS:

A. Permit required. No person shall operate a surface waste management facility (other than a small landfarm registered pursuant to Paragraph (1) of Subsection A of 19.15.36.16 NMAC) except pursuant to and in accordance with the terms and conditions of a division-issued surface waste management facility permit. The applicant for a permit or permit modification, renewal or transfer shall be the operator of the surface waste management facility. The operator is responsible for the actions of the operator's officers, employees, consultants, contractors and subcontractors as they relate to the operation of the surface waste management facility. Any person who is involved in a surface waste management facility's operation shall comply with 19.15.36 NMAC and the permit.

Basin Disposal, Inc. (BDI) will continue operating their existing Surface Waste Management Facility (SWMF) pursuant to and in accordance with the terms and conditions of a Surface Waste Management Facility Permit issued by the Oil Conservation Division (OCD) of the New Mexico Energy, Minerals and Natural Resources Department.

B. Permitting requirements. Except for small landfarms registered pursuant to Paragraph (1) of Subsection A of 19.15.36.16 NMAC, new commercial or centralized facilities prior to commencement of construction, and existing commercial or centralized facilities prior to modification or permit renewal, shall be permitted by the division in accordance with the applicable requirements of Subsection C of 19.15.36.8 NMAC and 19.15.36.11 NMAC.

BDI will continue operating their existing SWMF in accordance with their respective permit. It is requested that all undeveloped structures already designed and permitted remain in the permit renewal, as noted in Permit No. NM-01-005. These structures may be needed in the future to continue to meet market demand. This application provides the applicable information required in 19.15.36 NMAC.

C. Application requirements for new facilities, major modifications and permit renewals. An applicant or operator shall file an application, form C-137, for a permit for a new surface waste management facility, to modify an existing surface waste management facility or for permit renewal with the environmental bureau in the division's Santa Fe office. The application shall include:

(1) the names and addresses of the applicant and principal officers and owners of twenty-five percent or more of the applicant;

*The purpose of this Application is to request a Permit Renewal for the existing surface waste management facility. The completed Form C-137 is located as the preface to this **Volume**. The names and addresses of the Applicant and principal officers and owners of twenty-five percent or more of Basin Disposal, Inc. are listed on C-137.*

(2) a plat and topographic map showing the surface waste management facility's location in relation to governmental surveys (quarter-quarter section, township and range); highways or roads giving access to the surface waste management facility site; watercourses; fresh water sources, including wells and springs; and inhabited buildings within one-half mile of the site's perimeter based upon the records of the applicable county clerk or clerk's office;

*A Site Location Map depicting the BDI SWMF plotted on the most current United States Geological Survey (USGS) Quadrangle map is provided as **Figure I.1**. The Site Location Map shows the Facility and the surrounding area, and **Figure I.3** is a detailed Site Topography. A more detailed discussion of site characteristics and land use is provided in **Volume IV.1** (Siting Criteria). A Survey Plat and Warranty deed of the BDI site is provided as **Attachment I.C**, and the Permit Plans (**Volume III.1**) provide more detailed topographic data at the 2 ft contour level.*

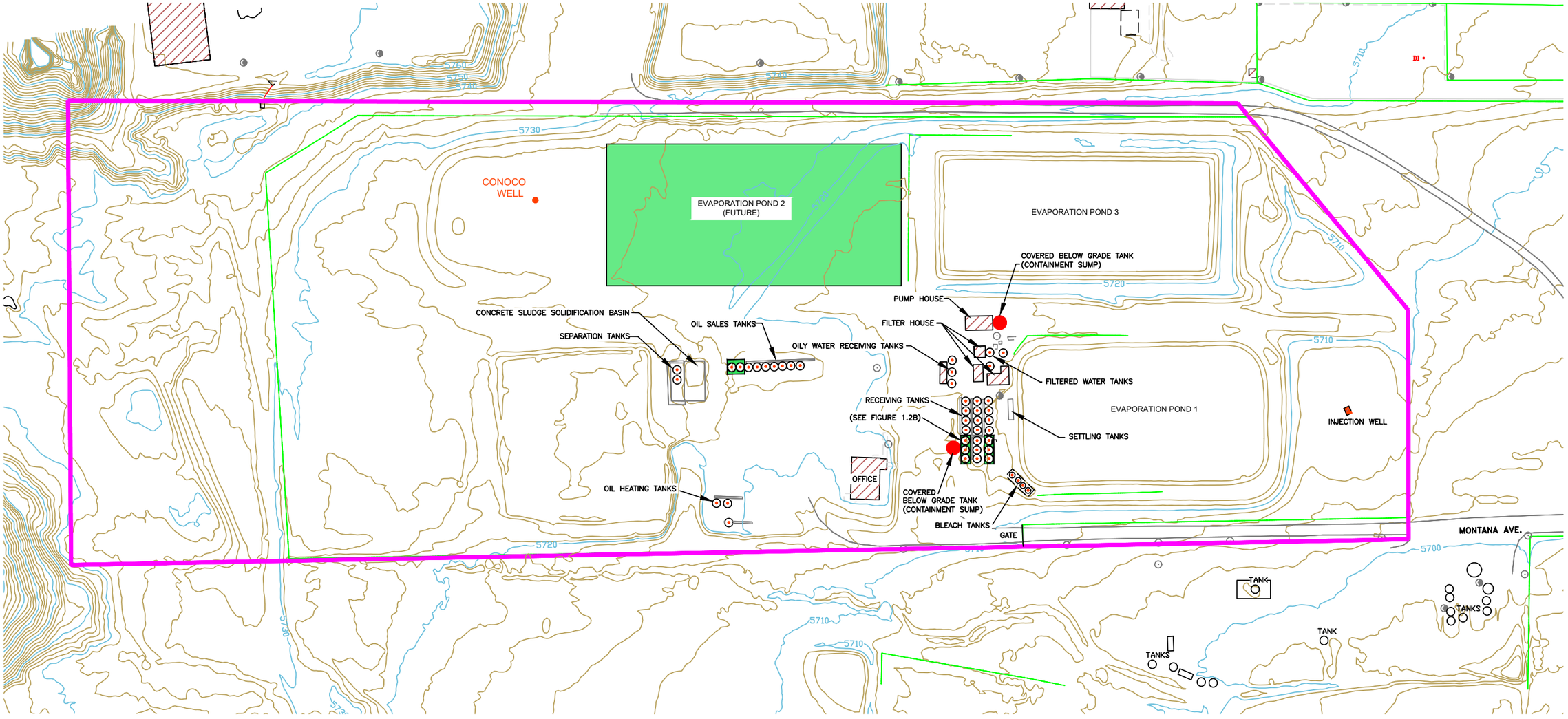
(3) the names and addresses of the surface owners of the real property on which the surface waste management facility is sited and surface owners of the real property within one mile of the site's perimeter;

The owner of the real property on which the Surface Waste Management Facility will be platted is:

Basin Disposal, Inc.
200 Montana Street
Bloomfield, NM 87413

*BDI owns the property for their use as a Surface Waste Management Facility, and the owners are listed on Form C-137 prefacing the Application. **Attachment I.A** (Public Notification) includes a list of the names and addresses of surface owners of the real property within one mile of the site's perimeter based on the most recent data available from the San Juan County Assessor's Offices.*

(4) a description of the surface waste management facility with a diagram indicating the location of fences and cattle guards, and detailed construction/installation diagrams of pits, liners, dikes, piping, sprayers, tanks, roads, fences, gates, berms, pipelines crossing the surface waste management facility, buildings and chemical storage areas;



LEGEND

- PROPERTY BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 — 10 CONTOUR (EXISTING)
- ROADWAY (EXISTING)
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- STRUCTURE
- CONCRETE SLAB
- AW-1 — ASSESSMENT WELL
- BH-3 — BOREHOLE LOCATION
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)

NORTH

0 75' 150'

SITE TOPOGRAPHY

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/15/2025	CAD: SITE TOPOGRAPHY.dwg	PROJECT #: 1657.22	FIGURE I.3
DRAWN BY: DMI	REVIEWED BY: AY		
APPROVED BY: AY	www.parkhill.com		

Drawing:\\lbk-syn-nas\NewformaArchives\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE TOPOGRAPHY.dwg
Date/Time:Jan. 15, 2025-11:04:46

Volume III.1 *(Engineering Design) includes a set of* ***Permit Plans*** *at a reduced scale. Within the* ***Permit Plans****, the Site Development Plan indicates the location of existing roads, pipeline crossings, fences and gates. The* ***Permit Plans*** *- Engineering Details provide construction and installation details on the leak detection system. Layout details for the processing area, which includes the produced water loadout tank farm, ponds, tanks and settling sludge stabilization/solidification area is depicted on the* ***Permit Plans****, Liquids Unloading & Processing Layout (Processing & Stabilization Area). The* ***Permit Plans****, Liquids Basin Details (Storage/Evaporation Ponds) provides construction and installation details for the storage/evaporation ponds including the spray aerators.*

(5) engineering designs, certified by a registered professional engineer, including technical data on the design elements of each applicable treatment, remediation and disposal method and detailed designs of surface impoundments;

The ***Permit Plans*** *included in* ***Volume III.1*** *are provided at a reduced scale and depict the originally permitted engineering design criteria for the Facility. The same drawings were submitted to the OCD with the December 2008 Application for Renewal and Modification as a full-size (24 x 36-inch) plan set, OCD approved the Application in May 2010. The List of* ***Permit Plans*** *is provided with the master Table of Contents. These* ***Permit Plans*** *were signed and sealed by a Professional Engineer (PE) registered in the state of New Mexico. The Certification Statement that prefaces this volume has been signed and sealed by a PE registered in the State of New Mexico. That engineer, who is a specialist in environmental engineering and waste containment design, is identified as follows:*

Matt Kingsley, P.E.
New Mexico Professional Engineer #25906
Parkhill
333 Rio Rancho Boulevard, Suite 400
Rio Rancho, NM 87124
505.867.6990 Phone
505.867.6991 Fax

These designs will be supplemented by "Construction Plans and Specifications" sealed by a qualified NM PE prior to installation of the currently undeveloped structures.

(6) a plan for management of approved oil field wastes that complies with the applicable requirements contained in 19.15.36.13 NMAC, 19.15.36.14 NMAC, 19.15.36.15 NMAC and 19.15.36.17 NMAC;

The Oil Field Waste Management Plan included as ***Volume II.2*** *provides the applicable information required in 19.15.36.13.A through H, 19.15.36.14, 19.15.36.15, and 19.15.36.17 NMAC.*

(7) an inspection and maintenance plan that complies with the requirements contained in Subsection L of 19.15.36.13 NMAC;

*The Operations, Inspection, and Maintenance Plan included as **Volume II.1** provides the applicable information required in 19.15.36.13.L. NMAC.*

(8) a hydrogen sulfide prevention and contingency plan that complies with those provisions of 19.15.11 NMAC that apply to surface waste management facilities;

*The Hydrogen Sulfide Prevention and Contingency Plan included as **Volume II.3** provides information to ensure that the regulatory thresholds in 19.15.11 NMAC are not exceeded. In addition, the Contingency Plan provided as **Volume II.5** addresses the requirements of 19.15.36.13.N NMAC outlining methods to respond to potential issues in order to minimize hazards to fresh water, public health, or the environment.*

(9) a closure and post closure plan, including a responsible third party contractor's cost estimate, sufficient to close the surface waste management facility in a manner that will protect fresh water, public health and the environment, and to comply with the closure and post closure plan requirements contained in Subsection A through F of 19.15.36.18 NMAC;

*The Closure/Post-Closure (C/PC) Plan is provided as **Volume II.4**. The C/PC Plan addresses the information required in this section as well as 19.15.36.18.D NMAC; and provides the estimated third-party C/PC cost estimate (**Attachment II.4.A**) to address the requirements in this section.*

(10) a contingency plan that complies with the requirements of Subsection N of 19.15.36.13 NMAC and with NMSA 1978, Sections 12-12-1 through 12-12-30, as amended;

*The BDI Contingency Plan prepared in compliance with 19.15.36.13.N NMAC and the NMSA 1978 as referenced, is provided as **Volume II.5**.*

(11) a plan to control run-on water onto the site and run-off water from the site that complies with the requirements of Subsection M of 19.15.36.13 NMAC;

***Volume III.1** provides the design for berms, conveyance channels, and a detention pond to control run-on/run-off during the peak discharge from a 25-year, 24-hour storm. The BDI facility is not required to obtain a permit under the Multi-Sector General Permit for Stormwater Discharges revised June 4, 2015 as the operation has not had a reportable spill as defined in Subpart I. The applicability*

*of the National Pollutant Discharge Elimination System (NPDES) and Oil Pollution Prevention regulations for potential stormwater discharges from the site is discussed in **Volume IV.1**.*

(12) in the case of an application to permit a new or expanded landfill, a leachate management plan that describes the anticipated amount of leachate that will be generated and the leachate's handling, storage, treatment and disposal, including final post closure options;

BDI does not operate a landfill. BDI only accepts liquid wastes.

(13) in the case of an application to permit a new or expanded landfill, a gas safety management plan that complies with the requirements of Subsection O of 19.15.36.13 NMAC;

BDI does not operate a landfill. BDI only accepts liquid wastes.

(14) a best management practice plan to ensure protection of fresh water, public health and the environment;

*Best management practices to ensure the protection of fresh water, public health, and the environment, are described in detail in the Operations, Inspection, and Maintenance Plan (**Volume II.1**) as well as on the **Permit Plans**.*

(15) geological/hydrological data including:

*Regional and site-specific hydrogeologic data is provided in **Volume IV.2**; Hydrogeology, in a report and supplements by John Shomaker & Associates (September 2008) entitled "subsurface and Groundwater Investigation in support of the Modification of a Surface Waste Management Facility, Basin Disposal, Inc. Bloomfield, New Mexico".*

(a) a map showing names and location of streams, springs or other watercourses, and water wells within one mile of the site;

*As described in **Volume IV.2**, the drawing provided as **Figure IV.2.9** shows terrain, wells, and any applicable streams, springs or other watercourses for the region within a one mile radius of the BDI property. No perennial streams or springs are present within one mile of the Facility. There are no water wells within one mile of the Facility. The closest water well in the vicinity of the Facility is located approximately 1.5 mile southeast of the site. Locations of site assessment wells and monitoring wells in the vicinity of the BDI site are shown in **Figure IV.2.9;** a summary of vicinity wells is also included in **Table IV.2.1.***

(b) laboratory analyses, performed by an independent commercial laboratory, for major cations and anions; BTEX; RCRA metals; and TDS of ground water samples of the shallowest fresh water aquifer beneath the proposed site;

*As described in **Volume IV.2**, four assessment soil borings were advanced to depths as great as 101 feet below land surface at the site in May 2008. Two of the borings penetrated thin and laterally discontinuous water saturations at or near the base of the shallow alluvium at depths ranging from 30 to 42 feet below grade. Assessment monitoring wells (AW-1 and AW-2) were installed in the two borings that penetrated shallow saturation and aqueous samples were collected from the wells on May 27, May 29 and October 30, 2008. The samples were tested for analytes set forth in 19.15.36.8.C.15(b) and analytical results are summarized in **Table IV.2.2.** Copies of laboratory reports on sample testing are included in **Attachment IV.2.D.** A copy of the summary report on site assessment boring, well installations, groundwater sampling and analysis is included in **Attachment IV.2.E.***

Analytical testing indicated that shallow saturation exceeds 10,000 mg/L Total Dissolved Solids (TDS) and is not protectable under NMWQCC regulations 20.6.3101.A NMAC. No subsequent sampling or groundwater monitoring has been performed at the Facility since the 2008 investigation.

(c) depth to, formation name, type and thickness of the shallowest fresh water aquifer;

*The shallowest potentially protectable fresh water aquifer in the vicinity of the site is the Ojo Alamo Sandstone, which is approximately 120 feet in thickness and is present at a depth of more than 650 feet below grade at the Facility. The Ojo Alamo Sandstone is artesian with a projected artesian pressure head of approximately 400 feet at the site. No wells completed in the Ojo Alamo Sandstone are present in the vicinity of the BDI site. Detailed descriptions of water-bearing zones, including depths and thicknesses, are provided in **Volume IV.2**.*

(d) soil types beneath the proposed surface waste management facility, including a lithologic description of soil and rock members from ground surface down to the top of the shallowest fresh water aquifer;

The shallowest fresh water aquifer at the Facility is the Ojo Alamo Sandstone, which is present at a depth of more than 650 feet below ground level at the site. Stratigraphic units above the Ojo Alamo Sandstone include approximately 620 feet of shale, siltstone and sandstone of the Nacimiento Formation and about 30 feet of unconsolidated alluvial sand, silt, gravel and clay.

*A summary of the soil test data obtained during the 2008 boring investigation is provided in **Table IV.2.3**. This table summarizes the results of engineering tests (i.e., moisture content, natural dry density, Atterberg limits; and permeability) of shallow alluvium soil samples obtained during the drilling program at the Facility. The soils laboratory testing was conducted in accordance with industry standards. The site geology is described in detail in **Volume IV.2** including lithologic descriptions of the soil borings installed at the site.*

(e) geologic cross-sections;

*As detailed in **Volume IV.2**, intermediate and shallow local hydrogeologic cross sections depicting stratigraphy and geometry of the water-bearing zones and potentiometric surface is included as **Figures IV.2.8** and **IV.2.11**, respectively.*

(f) potentiometric maps for the shallowest fresh water aquifer; and

*As described in **Volume IV.2**, a potentiometric surface map was prepared using water level data from area wells that penetrate shallow water-bearing zones in the alluvium and the Nacimiento Formation and is included in **Figure IV.2.10**.*

(g) porosity, permeability, conductivity, compaction ratios and swelling characteristics for the sediments on which the contaminated soils will be placed;

*Not Applicable – no contaminated soils will be placed or managed at the site. Descriptions of properties of the shallow alluvium are provided in **Volume IV.2**. Available properties of shallow alluvium are summarized in **Table IV.2.3**.*

(16) certification by the applicant that information submitted in the application is true, accurate and complete to the best of the applicant's knowledge, after reasonable inquiry; and

*The certification is located in the preface to this **Volume** of the Application (i.e., Form C-137).*

(17) other information that the division may require to demonstrate that the surface waste management facility's operation will not adversely impact fresh water, public health or the environment and that the surface waste management facility will comply with division rules and orders.

BDI will provide other applicable information reasonably requested by the OCD in order to demonstrate that the surface waste management facility's operation will not adversely impact fresh water, public health, or the environment. In addition, BDI will comply with applicable Rules and Orders issued by OCD.

D. Application requirements for minor modifications. Before making a minor modification, the operator of an existing surface waste management shall file a form C-137A with the environmental bureau in the division's Santa Fe office describing the proposed change. Minor modifications are not subject to Subsection C of 19.15.36.8 NMAC. If the division denies the application for a minor modification, the operator may request a hearing pursuant to Subsection B of 19.15.36.10 NMAC

At this time, BDI is not seeking a minor modification. BDI will comply with this requirement when applicable.

19.15.36.9 APPLICATION PROCESS AND NOTICE REQUIREMENTS FOR NEW SURFACE WASTE MANAGEMENT FACILITIES, MAJOR MODIFICATIONS OR RENEWALS AND ISSUANCE OF A TENTATIVE DECISION:

A. Submittal of application. The applicant shall submit three copies (two paper copies and one electronic copy) of the application to the division's Santa Fe office for consideration of approval. Upon receipt of an application for a new surface waste management facility, or a renewal or major modification of an existing permit, the division shall post a notice on the division's website that lists the type of facility, type of application, county or municipality where the facility is located and name of the applicant, and provides information on where the application can be viewed and whom to contact to be placed on a mailing list for notice regarding a proposed decision.

BDI has submitted two paper copies and one electronic copy of the application to the division's Santa Fe office for consideration of approval.

B. Division review: Within 90 days after the receipt of an application, the division shall review the application and determine if the application is approvable, approval with conditions or not approvable.

(1) Upon completion of the division's review, if the division determines the application is approvable, the division shall, within 30 days following such determination, prepare a proposed decision, which may include conditions, and mail notice of the proposed approval, together with a copy of the proposed decision, by certified mail, return receipt requested, to the applicant. The division shall post the proposed decision on the division's website.

(2) Upon completion of the division's review, if the division determines the application is not approvable, the division shall, within 60 days of such determination, mail a deficiency letter by certified mail, return receipt requested, to the applicant. The deficiency letter shall identify and address all of the division's concerns regarding the application in specific detail allowing the applicant the opportunity to correct the deficiencies by submitting a revised application.

(3) If the division issues a deficiency letter, the applicant shall have 60 days from the division's issuance of the deficiency letter to submit a revised application. The applicant may request, in writing, additional time to submit a revised application. The division shall grant additional time for good cause. The applicant may notify the division that it will not submit a revised application. Within 10 days of receipt of the notification the division shall deny the application without prejudice. If the applicant fails to timely submit a revised application or notify the division that it will not submit a revised application, the division shall deny the application without prejudice within 10 days after the 60 day time limit for the applicant to respond to the deficiency letter has expired.

(4) If the applicant timely submits a revised application, within 90 days of the receipt of the revised application the division shall review the revised application and determine if the revised application is approvable, approvable with conditions or not approvable. The division shall mail notice of denial or the proposed approval with or without conditions, together with a copy of the decision to deny or the proposed decision to approve with or without conditions, by certified mail, return receipt requested, to the applicant. A denial letter shall identify and address all of the division's reasons for denial of the revised application. The division shall post the decision to deny the application or the proposed decision to approve the application with or without conditions on the division's website.

(5) The process provided in Subsection B of 19.15.36.9 NMAC is not intended to limit informal informational exchanges during the application review period or prior to submission of an application. The process also does not prohibit an applicant from withdrawing an application and submitting a new application under Subsection A of 19.15.36.9 NMAC.

No response required.

C. Upon receipt of a proposed decision to approve an application with or without conditions, the applicant shall provide a division-approved notice of the proposed approval by:

(1) giving written notice, by certified mail, return receipt requested, of the division's proposed decision to approve the application with or without conditions to the surface owners within one-half mile of the surface waste facility;

(2) publishing in a newspaper of general circulation in the county or counties where the surface waste management facility is or will be located;

(3) mailing notice by first class mail or e-mail to persons, as identified to the applicant by the division, who have requested notification of applications generally, or of the particular application, and who have provided a legible return address or e-mail address; and

(4) mailing notice by first class or e-mail to affected local, state, federal or tribal governmental agencies, as determined and identified to the applicant by the division

*Draft Public Notification language is provided in **Attachment I.A**. The Draft Public Notification was prepared in accordance with 19.15.36.9.D(1) through (4) NMAC. Following OCD approval of the language, Public Notification will be provided in compliance with 19.15.36.9.C NMAC, to the surface owners of record located within one-half mile of the Facility. Owners of record, as determined by the San Juan County Assessor's Offices, are listed in **Attachment I.A**, and include the State Land Office (SLO) and Bureau of Land Management (BLM). Additionally, the Public Notification will be provided to the San Juan County Commissioners, the City of Bloomfield, the City of Aztec, the City of Farmington and the Navajo Nation.*

D. This notice issued pursuant to Subsection C of 19.15.36.9 NMAC shall include:

(1) the applicant's name and address;

(2) the surface waste management facility's location, including a street address if available, and sufficient information to locate the surface waste management facility with reference to surrounding roads and landmarks;

(3) a brief description including the type of facility (i.e. landfarm, landfill, treating plant, etc.) of the proposed surface waste management facility;

(4) the depth to, and TDS concentration of, the ground water in the shallowest aquifer beneath the surface waste management facility site;

(5) a statement that the division's proposed decision to approve the application with or without conditions is available on the division's website, or, upon request, from the division clerk, including the division clerk's name, address and telephone number;

(6) a division-approved description of alternatives, exceptions or waivers that may be under consideration in accordance with Subsection F of 19.15.36.18 NMAC or 19.15.36.19 NMAC; and

(7) a statement of the procedures for requesting a hearing on the application pursuant to 19.15.4 NMAC

No response required

E. The applicant shall mail notice that is required to be mailed on or before publication of the notice that is published in a newspaper of general circulation in the county or counties where the surface waste management facility is or will be located.

BDI will, upon receiving OCD's decision, comply with the notification requirements identified in 19.15.39.9.E NMAC. It is proposed that the display ad be published in the Albuquerque Journal, the Farmington Daily Times and the New Mexican, all of which are newspapers in general circulation in the State of New Mexico, and San Juan County specifically.

F. The applicant shall provide the division with proof that the public notice requirements of Subsections C and D of 19.15.36.9 NMAC have been met prior to the division scheduling a hearing pursuant to 19.15.36.10 NMAC or issuing the permit.

BDI will, upon receiving OCD's decision, issue Public Notification in compliance with this section and return proof of such notification to the OCD.

G. If after the applicant provides notice as required herein, no requests for hearing are timely filed with the division as provided by 19.15.36.10 NMAC, or any such requests for hearing are filed by persons the division determines lack standing, and the division does not otherwise schedule a hearing pursuant to 19.15.36.10 NMAC, the division's proposed decision to approve the application with or without conditions shall become final and the division shall issue the permit upon the applicant providing financial assurance as provided in 19.15.36.10 NMAC.

No response required.

19.15.36.10 COMMENTS AND HEARING ON APPLICATION:

A. A person who wishes to comment or request a hearing shall file comments or request a hearing on the proposed approval of an application with the division clerk within 90 days after the date of the newspaper publication provided in Subsection C of 19.15.36.9 NMAC. A request for a hearing shall be in writing and shall state specifically the reasons why a hearing should be held. The director may deny a request for hearing if the director determines the person requesting the hearing lacks standing.

B. If the division denies an application pursuant to Paragraphs (3) or (4) of Subsection B of 19.15.39.9 NMAC, the applicant may request a hearing within 30 days of the receipt of the notice of denial and the division shall schedule a hearing.

C. In addition to the requests for hearing provided in Subsections A and B of 19.15.36.10 NMAC, the division shall schedule a hearing on the application if:

(1) the division's proposed decision to approve the application includes conditions not expressly required by rule, and the applicant requests a hearing within 90 days of receipt of the notice of proposed approval;

(2) the director determines that there is significant public interest in the application;

(3) the director determines that comments have raised objections that have probable technical merit; or

(4) approval of the application requires that the division make a finding, pursuant to Paragraph (3) of Subsection F of 19.15.2.7 NMAC, whether a water source has a present or reasonably foreseeable beneficial use that contamination would impair.

D. If the division schedules a hearing on an application, the hearing shall be conducted according to 19.15.4 NMAC.

No response required.

19.15.36.11 FINANCIAL ASSURANCE REQUIREMENTS:

A. Centralized facilities. Upon notification by the division that it has approved a permit but prior to the division issuing the permit, an applicant for a new centralized facility permit shall submit acceptable financial assurance in the amount of $25,000 per centralized facility, or a statewide "blanket" financial assurance in the amount of $50,000 to cover all of that applicant's centralized facilities, unless such applicant has previously posted a blanket financial assurance for centralized facilities..

No response required, as BDI is an existing "Commercial Facility" per 19.15.36.7.A(2) NMAC with current financial assurance under their existing Permit No. NM-1-005.

B. New commercial facilities or major modifications of existing commercial facilities. Upon notification by the division that it has approved a permit for a new commercial facility or a major modification of an existing commercial facility but prior to the division issuing the permit, the applicant shall submit acceptable financial assurance in the amount of the commercial facility's estimated closure and post closure cost, or $25,000, whichever is greater. The commercial facility's estimated closure and post closure cost shall be the amount provided in the closure and post closure plan the applicant submitted pursuant to Paragraph (9) of Subsection C of 19.15.36.8 NMAC unless the division determines that such estimate does not reflect a reasonable and probable closure and post closure cost to implement the closure and post closure plan, in which event, the division shall determine the estimated closure and post closure cost and shall include such determination in its proposed decision. If the applicant disagrees with the division's determination of estimated closure and post closure cost, the applicant may request a hearing as provided in 19.15.36.10 NMAC. If the applicant so requests, and no other person files a request for a hearing regarding the proposed decision, the hearing shall be limited to determination of estimated closure and post closure cost.

Because BDI is not proposing any modifications to the existing permit, BDI proposes to continue utilizing its existing approved financial assurance mechanism. This amount represents the closure and post-closure care requirements required for the existing operations. Any future development that

is commenced pursuant to the permitted and undeveloped structures will require additional financial assurance prior to placing new structures into service.

C. Terms of financial assurance. The financial assurance shall be on division-prescribed forms, or forms otherwise acceptable to the division, payable to the energy, minerals and natural resources department, oil conservation division and conditioned upon the surface waste management facility's proper operation, site closure and post closure operations in compliance with state of New Mexico statutes, division rules, applicable division orders and the surface waste management facility permit terms. The division may require proof that the individual signing for an entity on a financial assurance document or any amendment thereto has the authority to obligate that entity.

BDI will comply with this requirement.

D. Forfeiture of financial assurance. The division shall give the operator 20 days' notice and an opportunity for a hearing prior to forfeiting financial assurance. All forfeitures the division demands pursuant to 19.15.36 NMAC shall be made payable to the energy, minerals and natural resources department, oil conservation division upon demand by the division.

No response required.

E. Forms of financial assurance. The division may accept the following forms of financial assurance.

(1) Surety bonds. A surety bond shall be executed and notarized by the applicant and by a corporate surety licensed by the superintendent of insurance to do business in the state. All surety bonds shall be non-cancelable and payable to the energy, minerals and natural resources department, oil conservation division within 45 days after demand is made by the division. All surety bonds shall be governed by the laws of the state of New Mexico.

(2) Letters of credit. A letter of credit shall be issued by a national or state-chartered banking association, shall be irrevocable for a term of not less than five years and shall provide for automatic renewal for successive, like terms upon expiration, unless the issuer has notified the division in writing of non-renewal at least 120 days before its expiration date. All letters of credit shall be governed by the laws of the state of New Mexico. If a letter of credit is not replaced by an approved financial assurance within 30 days of notice of non-renewal provided to the division, the division may demand and collect a letter of credit.

(3) Cash accounts. An operator may provide financial assurance in the form of a federally insured or equivalently protected cash account or accounts in a financial institution, provided that the operator and the financial institution shall execute as to each such account a collateral assignment of the account to the division, which shall provide that only the division may authorize withdrawals from the account. In the event of forfeiture pursuant to 19.15.36 NMAC, the division may, at any time and from time to time, direct payment of all or part of the balance of such account (excluding interest accrued on the account) to itself or its designee for the surface waste management facility's closure and

post closure. Any assignment of cash collateral shall be governed by the laws of the state of New Mexico and shall be on division-prescribed forms.

BDI is proposing modifications to the existing permit, BDI proposes to continue utilizing its existing approved financial assurance mechanism. Once the Permit is approved and prior to issuance, BDI will update this amount to represent the closure and post-closure care requirements required for operations. Documentation will be provided following OCD approval of the Application for Permit Renewal. Any future development that is commenced pursuant to the permitted and undeveloped structures will require additional financial assurance prior to placing new structures into service.

F. Replacement of financial assurance.

(1) The division may allow an operator to replace existing forms of financial assurance with other forms of financial assurance that provide equivalent coverage.

(2) The division shall not release existing financial assurance until the operator has submitted, and the division has approved, an acceptable replacement.

(3) Any time an operator changes the corporate surety, financial institution or amount of financial assurance, the operator shall file updated financial assurance documents on division-prescribed forms within 30 days. Notwithstanding the foregoing, if an operator makes other changes to its financial assurance documents, the division may require the operator to file updated financial assurance documents on division-prescribed forms within 45 days after notice to the operator from the division.

BDI will comply with this requirement.

G. Review of adequacy of financial assurance. The division may at any time not less than five years after initial acceptance of financial assurance for a commercial facility, or whenever the operator applies for a major modification of the commercial facility's permit, and at least once during every successive five-year period, initiate a review of such financial assurance's adequacy. Additionally, whenever the division determines that a landfarm operator has not achieved the closure standards specified in Paragraph (3) of Subsection G of 19.15.36.15 NMAC, the division may review the adequacy of the landfarm operator's financial assurance, without regard to the date of its last review. Upon determination, after notice to the operator and an opportunity for a hearing, that the financial assurance is not adequate to cover the reasonable and probable cost of a commercial facility's closure and post closure operations, the division may require the operator to furnish additional financial assurance sufficient to cover such reasonable and probable cost.

BDI will comply with this requirement.

H. Duty to report. Any operator who files for bankruptcy shall provide notice to the division, through the process provided for under the rules of the United States bankruptcy court, and the New Mexico attorney general.

BDI will comply with this requirement.

19.15.36.12 PERMIT APPROVAL, DENIAL, REVOCATION, SUSPENSION, MODIFICATION OR TRANSFER:

A. Granting of permit.

(1) The division may issue a permit for an new surface waste management facility or major modification upon finding that an acceptable application has been filed, that the conditions of 19.15.36.9 NMAC and 19.15.36.11 NMAC have been met and that the surface waste management facility or modification can be constructed and operated in compliance with applicable statutes and rules and without endangering fresh water, public health or the environment.

BDI is not a new facility and is not applying for a major modification in this Application.

(2) Each permit the division issues for a new surface waste management facility shall remain in effect for 10 years from the date of its issuance. If the division grants a permit for a major modification of a surface waste management facility, the permit for that surface waste management facility shall remain in effect for 10 years from the date the division approves the major modification.

BDI will comply with this requirement.

(a) A surface waste management facility permit may be renewed for successive 10-year terms. If the holder of a surface waste management facility permit submits an application for permit renewal at least 120 days before the surface waste management facility permit expires, and the operator is not in violation of the surface waste management facility permit on the date of its expiration, then the existing surface waste management facility permit for the same activity shall not expire until the division has approved or denied an application for renewal. If the division has not notified the operator of a violation, if the operator is diligently pursuing procedures to contest a violation or if the operator and the division have signed an agreed compliance order providing for remedying the violation, then the surface waste management facility permit shall continue in effect as above provided notwithstanding the surface waste management facility permit violation's existence. A surface waste management facility permit continued under this provision remains fully effective and enforceable.

BDI will continue to operate its existing surface waste management facility in compliance with Permit No. NM-1-005. This Application requests a Permit Renewal in accordance with 19.15.36.8 NMAC, and BDI plans to submit an Application for Permit Renewal at least 120 days before the new surface waste management facility permit expires.

(b) An application for permit renewal shall include and adequately address the information necessary for evaluation of a new surface waste management facility permit as provided in Subsection C of 19.15.36.8 NMAC. Previously submitted materials may be included by reference provided they are current, readily available to the division and sufficiently identified so that the division may retrieve them.

This Application requests a Permit in accordance with 19.15.36.8 NMAC.

(c) Upon receipt of a proposed decision to approve a renewal application, the operator shall give public notice in the manner prescribed by 19.15.36.9 NMAC. The division shall grant an application for renewal if the division finds that an acceptable application has been filed, that the conditions of 19.15.36.9 NMAC and 19.15.36.11 NMAC have been met and that the surface waste management facility can be operated in compliance with applicable statutes and rules and without endangering fresh water, public health or the environment.

BDI will continue to comply with the public notice requirements of 19.15.36.9 NMAC and the financial assurance requirements of 19.15.36.11 NMAC, as necessary to achieve Permit renewal. This Application provides the required plans and engineering calculations to continue operations of the Facility in compliance with applicable statutes and Rules that ensure fresh water, public health, and the environment will be protected.

(3) The division shall review each surface waste management facility permit at least once during the 10-year term, and shall review surface waste management facility permits to which Paragraph (2) of Subsection A of 19.15.36.12 NMAC does not apply at least every five years. The review shall address the operation, compliance history, financial assurance and technical requirements for the surface waste management facility. The division, after notice to the operator and an opportunity for a hearing, may require appropriate modifications of the surface waste management facility permit, including modifications necessary to make the surface waste management facility permit terms and conditions consistent with statutes, rules or judicial decisions.

BDI will make available necessary operational, compliance, financial assurance and other technical documentation to OCD at any time during the 10-year permit period for the completion of a mid-term review. BDI will respond to OCD requests for updates to address changes in regulatory standards.

B. Denial of permit. The division may deny an application for a surface waste management facility permit or modification of a surface waste management facility permit if it finds that the proposed surface waste management facility or modification may be detrimental to fresh water, public health or the environment. The division may also deny an application for a surface waste management facility permit if the applicant, an

owner of twenty-five percent or greater interest in the applicant or an affiliate of the applicant has a history of failure to comply with division rules and orders or state or federal environmental laws; is subject to a division or commission order, issued after notice and hearing, finding such entity to be in violation of an order requiring corrective action; or has a penalty assessment for violation of division or commission rules or orders that is unpaid more than 70 days after issuance of the order assessing the penalty. An affiliate of an applicant, for purposes of Subsection B of 19.15.36.12 NMAC, shall be a person who controls, is controlled by or under is common control with the applicant or a twenty-five percent or greater owner of the applicant.

No response required.

C. Additional requirements. The division may impose conditions or requirements, in addition to the operational requirements set forth in 19.15.36 NMAC, that it determines are necessary and proper for the protection of fresh water, public health or the environment. The division shall incorporate such additional conditions or requirements into the surface waste management facility permit.

BDI will comply with any reasonable additional requirements or conditions imposed by OCD intended to ensure protection of fresh water, public health, or the environment, and comply with any applicable permit conditions.

D. Revocation, suspension or modification of a permit. The division may revoke, suspend or impose additional operating conditions or limitations on a surface waste management facility permit at any time, for good cause, after notice to the operator and an opportunity for a hearing. The division may suspend a surface waste management facility permit or impose additional conditions or limitations in an emergency to forestall an imminent threat to fresh water, public health or the environment, subject to the provisions of NMSA 1978, Section 70-2-23, as amended. If the division initiates a major modification it shall provide notice in accordance with 19.15.36.9 NMAC. Suspension of a surface waste management facility permit may be for a fixed period of time or until the operator remedies the violation or potential violation. If the division suspends a surface waste management facility's permit, the surface waste management facility shall not accept oil field waste during the suspension period.

No response required.

E. Transfer of a permit. The operator shall not transfer a permit without the division's prior written approval. A request for transfer of a permit shall identify officers, directors and owners of twenty-five percent or greater in the transferee. Unless the director otherwise orders, public notice or hearing are not required for the transfer request's approval. If the division denies the transfer request, it shall notify the operator and the proposed transferee of the denial by certified mail, return receipt requested, and either the operator or the proposed transferee may request a hearing with 10 days after receipt of the notice. Until the division approves the transfer and the required financial assurance is in place, the division shall not release the transferor's financial assurance.

BDI will comply with this requirement.

19.15.36.13 SITING AND OPERATIONAL REQUIREMENTS APPLICABLE TO ALL PERMITTED SURFACE WASTE MANAGEMENT FACILITIES: EXCEPT AS OTHERWISE PROVIDED IN 19.15.36 NMAC.

*Siting documentation is detailed in **Volume IV.1** to demonstrate that the continued operation of the BDI SWMF will protect public health and the environment. This section confirms the remote location, absence of any residential housing within one-half mile of the BDI SWMF boundary, and absence of churches, schools, parks or other potentially affected land uses in the area. With open pasture and oil field production support facilities surrounding the BDI SWMF, the location is ideally suited for continued operation as a surface waste management facility.*

A. Depth to ground water.

(1) No landfill shall be located where ground water is less than 100 feet below the lowest elevation of the design depth at which the operator will place oil field waste.

(2) No landfarm that accepts soil or drill cuttings with a chloride concentration that exceeds 500 mg/kg shall be located where ground water is less than 100 feet below the lowest elevation at which the operator will place oil field waste. See Subsection A of 19.15.36.15 NMAC for oil field waste acceptance criteria.

(3) No landfarm that accepts soil or drill cuttings with a chloride concentration that is 500 mg/kg or less shall be located where ground water is less than 50 feet below the lowest elevation at which the operator will place oil field waste.

(4) No small landfarm shall be located where ground water is less than 50 feet below the lowest elevation at which the operator will place oil field waste.

Not applicable. The BDI Facility is not a landfill or landfarm.

(5) No other surface waste management facility shall be located where ground water is less than 50 feet below the lowest elevation at which the operator will place oil field waste.

*The regional ground water elevation at the facility is estimated to be at an elevation of 5600 feet. The lowest elevation in the ponds (Pond 3 Sump) is set at an elevation of 5707 feet, which provides more than 100' of separation distance, **therefore BDI is in compliance with this requirement.** A more thorough discussion of the subsurface hydrogeology can be found in **Volume IV.2**.*

B. No surface waste management facility shall be located:

(1) within 200 feet of a watercourse, lakebed, sinkhole or playa lake;

*The Facility **is not located within 200 feet of a lakebed, sinkhole or playa lake**. An ephemeral (intermittent) watercourse does exist immediately south of the facility fence line. Documentation regarding the locations of watercourses, lakebeds, sinkholes and playa lakes with respect to the BDI site is provided in **Volume IV.1,** including on-site reconnaissance by qualified experts. The operations, maintenance and inspections programs instituted at BDI provide protection of fresh water, public health, and the environment equivalent to the required separation from a watercourse, lakebed, sinkhole or playa described in this Part. Existing measures are proven to be effective in preventing runoff from the facility impacting the arroyo. Therefore, BDI is requesting an exception to the 200-foot separation requirements for watercourses (19.15.36.13.B(1) NMAC).*

(2) within an existing wellhead protection area or 100-year floodplain;

*The Facility is **not located within an existing wellhead protection area or 100-year floodplain**. Documentation regarding wellhead protection areas and 100-year floodplains is provided in **Volume IV.1**.*

(3) within, or within 500 feet of, a wetland;

*The Facility is **not located within, or within 500 ft of a wetland**. Documentation regarding wetlands in the vicinity of the BDI site is provided in **Volume IV.1**.*

(4) within the area overlying a subsurface mine;

*The Facility **is not located in an area overlying an existing subsurface mine.** Documentation of mines, mills, and quarries is provided in **Volume IV.1**.*

(5) within 500 feet from the nearest permanent residence, school, hospital, institution or church in existence at the time of initial application; or

*The Facility **is not located within 500 ft of the nearest permanent residence, school, hospital, institution, or church.** Land use setback documentation is provided in **Volume IV.1**.*

(6) within an unstable area, unless the operator demonstrates that engineering measures have been incorporated into the surface waste management facility design to ensure that the surface waste management facility's integrity will not be compromised.

*As documented in **Volume IV.1**, the BDI SWMF is not located in an unstable area.*

C. No surface waste management facility shall exceed 500 acres.

*The BDI SWMF is 27.77 acres, therefore the BDI SWMF does not exceed 500 acres within the surface waste management facility footprint. A copy of the Survey Plat for the BDI site is provided in **Attachment I.C**, and **Table I.1** provides details regarding site components and acreages.*

D. The operator shall not accept oil field wastes transported by motor vehicle at the surface waste management facility unless the transporter has a form C-133, authorization to move liquid waste, approved by the division.

*BDI will comply with this requirement. The Oil Field Waste Management Plan provided as **Volume II.2** requires that, prior to acceptance of any liquid waste, the transporter must provide the Facility with a Division-approved Form C-133*

E. The operator shall not place oil field waste containing free liquids in a landfill or landfarm cell. The operator shall use the paint filter test, as prescribed by the EPA (EPA SW-846, method 9095) to determine conformance of the oil field waste to this criterion.

Not Applicable. The BDI Facility is not a landfill or landfarm.

F. Surface waste management facilities shall accept only exempt or non-hazardous waste, except as provided in Paragraph (3) of Subsection F of 19.15.36.13 NMAC. The operator shall not accept hazardous waste at a surface waste management facility. The operator shall not accept wastes containing NORM at a surface waste management facility except as provided in 19.15.35 NMAC. The operator shall require the following documentation for accepting oil field wastes, and both the operator and the generator shall maintain and make the documentation available for division inspection.

*BDI will continue to comply with this requirement. The Oil Field Waste Management Plan (**Volume II.2**) provides a detailed description of oil field waste acceptance protocol. Included in this Plan are Form C-138 certification, certification frequency; and naturally occurring radioactive materials (NORM) acceptance requirements per 19.15.35 NMAC. BDI will maintain and make documentation of these data available for OCD inspection.*

(1) Exempt oil field wastes. The operator shall require a certification on form C-138, signed by the generator or the generator's authorized agent, that represents and warrants that the oil field wastes are generated from oil and gas exploration and production operations, are exempt waste and are not mixed with non-exempt waste. The operator shall have the option to accept such certifications on a monthly, weekly or per load basis. The operator shall maintain and shall make the certificates available for the division's inspection.

*BDI will continue to comply with this requirement. The Oil Field Waste Management Plan (**Volume II.2**) provides a detailed description of oil field waste acceptance protocol.*

(2) Non-exempt, non-hazardous, oil field wastes. The operator shall require a form C-138, oil field waste document, signed by the generator or its authorized agent. This form shall be accompanied by acceptable documentation to determine that the oil field waste is nonhazardous.

*BDI does not accept non-exempt, non-hazardous oil field wastes. The Oil Field Waste Management Plan (**Volume II.2**) provides a detailed description of oil field waste acceptance protocol.*

(3) Emergency non-oil field wastes. The operator may accept non-hazardous, non-oil field wastes in an emergency if ordered by the department of public safety. The operator shall complete a form C-138, oil field waste document, describing the waste, and maintain the same, accompanied by the department of public safety order, subject to division inspection.

BDI will comply with this requirement, including completion and archiving of Form C-138.

G. The operator of a commercial facility shall maintain records reflecting the generator, the location of origin, the location of disposal within the commercial facility, the volume and type of oil field waste, the date of disposal and the hauling company for each load or category of oil field waste accepted at the commercial facility. The operator shall maintain such records for a period of not less than five years after the commercial facility's closure, subject to division inspection.

*BDI will continue to comply with this requirement. The Oil Field Waste Management Plan (**Volume II.2**) provides a detailed description of oil field waste acceptance recordkeeping forms. The forms in this Plan include the information required in this subsection and will be maintained and retained for a period of not less than five years following Facility closure. BDI will make these records available for OCD inspection upon request.*

H. Disposal at a commercial facility shall occur only when an attendant is on duty unless loads can be monitored or otherwise isolated for inspection before disposal. The surface waste management facility shall be secured to prevent unauthorized disposal.

The BDI facility is operated 24 hours a day, 7 days a week. An attendant is on duty at all times during operation to inspect and monitor all incoming loads.

I. To protect migratory birds, tanks exceeding eight feet in diameter, and exposed pits and ponds shall be screened, netted or covered. Upon the operator's written application, the division may grant an exception to screening, netting or covering upon the operator's showing that an alternative method will protect migratory birds or that the surface waste management facility is not hazardous to migratory birds. Surface waste management facilities shall be fenced in a manner approved by the division.

*BDI herein requests an exception to 19.15.36.13.I NMAC. The Migratory Bird Protection Plan presented as **Volume II.6** describes an alternate methodology to the screening requirement of the storage ponds. This Plan describes visual inspections and migratory bird retrieval and clean-up procedures should bird(s) require decontamination. A records review and interviews with site personnel have confirmed no history of bird congregations or injuries resulting from the evaporation pond operation therefore the facility is in compliance with 19.15.36.13.I. NMAC.*

J. Surface waste management facilities shall have a sign, readable from a distance of 50 feet and containing the operator's name; surface waste management facility permit or order number; surface waste management facility location by unit letter, section, township and range; and emergency telephone numbers.

*The existing signs meet the requirements of this subsection, as demonstrated by **Figure I.4**.*

K. The operators shall comply with the spill reporting and corrective action provisions of 19.15.30 NMAC or 19.15.29 NMAC.

*The BDI SWMF is specifically located and designed to prevent pollutants from entering surface and groundwater, as demonstrated through the Facility Management Plans (**Volume II**), the Engineering Design and Calculations (**Volume III**), and the **Permit Plans** (**Volume III.1**) presented in this Application. Successful implementation of the engineering design and operational programs will ensure compliance with 19.15.30 NMAC. The BDI Contingency Plan (**Volume II.5**) is designed to comply with the notification and corrective action provisions as required in 19.15.29 NMAC.*

SITE SIGNS

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: SITE SIGNS.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE I.4
APPROVED BY: MWK	www.parkhill.com	

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE SIGNS.dwg
Date/Time:Jul. 07, 2022-11:53:14

L. Each operator shall have an inspection and maintenance plan that includes the following:

(1) monthly inspection of leak detection sumps including sampling if fluids are present with analyses of fluid samples furnished to the division; and maintenance of records of inspection dates, the inspector and the leak detection system's status;

(2) semi-annual inspection and sampling of monitoring wells as required, with analyses of ground water furnished to the division; and maintenance of records of inspection dates, the inspector and ground water monitoring wells' status; and

(3) inspections of the berms and the outside walls of pond levees quarterly and after a major rainfall or windstorm, and maintenance of berms in such a manner as to prevent erosion.

*The Operations, Inspection, and Maintenance Plan for BDI is provided as **Volume II.1.** The Plan describes in detail the methods and frequency for inspections, sampling, recordkeeping, and maintenance for the containment berms, leak detection features of the covered below-grade tanks (containment sumps), and the leak detection feature of the ponds. BDI has three existing leak detection sumps installed at the ponds, and two permitted but undeveloped sumps which will be constructed when Pond #2 is constructed. These leak detection sumps are utilized as part of the leak detection system in the evaporation ponds. Sump inspection frequency and recordkeeping details can be found in **Volume II.1;** Operations, Maintenance, and Inspection Plan.*

M. Each operator shall have a plan to control run-on water onto the site and run-off water from the site, such that:

(1) the run-on and run-off control system shall prevent flow onto the surface waste management facility's active portion during the peak discharge from a 25-year storm; and

(2) run-off from the surface waste management facility's active portion shall not be allowed to discharge a pollutant to the waters of the state or United States that violates state water quality standards.

***Volume III** (Engineering Design and Calculations) provides the design for conveyance channels, and the detention pond to control run-on/run-off for at least the peak discharge from a 25-year 24-hour storm. BDI will prevent discharge of pollutants to the waters of the State or United States in compliance with state water quality standards through adherence to the Operations, Inspection, and Maintenance Plan (**Volume II.1**). BDI is designed to capture runoff from processing areas for the design storm; and run-on is routed around the perimeter to a detention basin. The applicability of the National Pollutant Discharge Elimination System (NPDES) and Oil Pollution Prevention regulations for potential stormwater discharges from the site is discussed in **Volume IV.1**. However, pursuant to Section 8.I.1.1 of the NPDES MSGP Regulations:*

Discharges of stormwater runoff from field activities or operations associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities are exempt from NPDES permit coverage unless, in accordance with 40 CFR 122.26(c)(1)(iii), the facility:

- *Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at any time since November 16, 1987; or*
- *Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or*
- *Contributes to a violation of a water quality standard.*

Any stormwater discharges that require permit coverage as a result of meeting one of the conditions of 122.26(c)(1)(iii) may be covered under this permit unless otherwise required to obtain coverage under an alternative NPDES general permit or an individual NPDES permit as specified in Part 1.6.1.

BDI has not had a reportable quantity discharge or a violation of a water quality standard, and therefore is exempt from MSGP and NPDES permitting and reporting requirements.

N. Contingency plan. Each operator shall have a contingency plan. The operator shall provide the division's environmental bureau with a copy of an amendment to the contingency plan, including amendments required by Paragraph (8) of Subsection N of 19.15.36.13 NMAC; and promptly notify the division's environmental bureau of changes in the emergency coordinator or in the emergency coordinator's contact information. The contingency plan shall be designed to minimize hazards to fresh water, public health or the environment from fires, explosions or an unplanned sudden or non-sudden release of contaminants or oil field waste to air, soil, surface water or ground water. The operator shall carry out the plan's provisions immediately whenever there is a fire, explosion or release of contaminants or oil field waste constituents that could threaten fresh water, public health or the environment; provided that the emergency coordinator may deviate from the plan as necessary in an emergency situation. The contingency plan for emergencies shall:

(1) describe the actions surface waste management facility personnel shall take in response to fires, explosions or releases to air, soil, surface water or ground water of contaminants or oil field waste containing constituents that could threaten fresh water, public health or the environment;

(2) describe arrangements with local police departments, fire departments, hospitals, contractors and state and local emergency response teams to coordinate emergency services;

(3) list the emergency coordinator's name; address; and office, home and mobile phone numbers (where more than one person is listed, one shall be named as the primary emergency coordinator);

(4) include a list, which shall be kept current, of emergency equipment at the surface waste management facility, such as fire extinguishing systems, spill control equipment, communications and alarm systems and decontamination equipment, containing a physical description of each item on the list and a brief outline of its capabilities;

(5) include an evacuation plan for surface waste management facility personnel that describes signals to be used to begin evacuation, evacuation routes and alternate evacuation routes in cases where fire or releases of wastes could block the primary routes;

(6) include an evaluation of expected contaminants, expected media contaminated and procedures for investigation, containment and correction or remediation;

(7) list where copies of the contingency plan will be kept, which shall include the surface waste management facility; local police departments, fire departments and hospitals; and state and local emergency response teams;

(8) indicate when the contingency plan will be amended, which shall be within five working days whenever:

- **(a) the surface waste management facility permit is revised or modified;**
- **(b) the plan fails in an emergency;**
- **(c) the surface waste management facility changes design, construction, operation, maintenance or other circumstances in a way that increases the potential for fires, explosions or releases of oil field waste constituents that could threaten fresh water, public health or the environment or change the response necessary in an emergency;**
- **(d) the list of emergency coordinators or their contact information changes; or**
- **(e) the list of emergency equipment changes;**

(9) describe how the emergency coordinator or the coordinator's designee, whenever there is an imminent or actual emergency situation, will immediately;

- **(a) activate internal surface waste management facility alarms or communication systems, where applicable, to notify surface waste management facility personnel; and**
- **(b) notify appropriate state and local agencies with designated response roles if their assistance is needed;**

(10) describe how the emergency coordinator, whenever there is a release, fire or explosion, will immediately identify the character, exact source, amount and extent of released materials (the emergency coordinator may do this by observation or review of surface waste management facility records or manifests, and, if necessary, by chemical analysis) and describe how the emergency coordinator will concurrently assess possible hazards to fresh water, public health or the environment that may result from the release, fire or explosion (this assessment shall consider both the direct and indirect hazard of the release, fire or explosion);

(11) describe how, if the surface waste management facility stops operations in response to fire, explosion or release, the emergency coordinator will monitor for leaks, pressure buildup, gas generation or rupture in valves, pipes or the equipment, wherever this is appropriate;

(12) describe how the emergency coordinator, immediately after an emergency, will provide for treating, storing or disposing of recovered oil field waste, or other material that results from a release, fire or explosion at a surface waste management facility;

(13) describe how the emergency coordinator will ensure that no oil field waste, which may be incompatible with the released material, is treated, stored or disposed of until cleanup procedures are complete; and

(14) provide that the emergency coordinator may amend the plan during an emergency as necessary to protect fresh water, public health or the environment.

*The Contingency Plan included as **Volume II.5** provides detailed information in response to each required element of 19.15.36.13.N.1 through 14 NMAC.*

O. Gas safety management plan. Each operator of a surface waste management facility that includes a landfill shall have a gas safety management plan that describes in detail procedures and methods that will be used to prevent landfill-generated gases from interfering or conflicting with the landfill's operation and protect fresh water, public health and the environment. The plan shall address anticipated amounts and types of gases that may be generated, an air monitoring plan that includes the vadose zone and measuring, sampling, analyzing, handling, control and processing methods. The plan shall also include final post closure monitoring and control options.

Not Applicable. The BDI facility does not include a landfill.

P. Training program. Each operator shall conduct an annual training program for key personnel that includes general operations, permit conditions, emergencies proper sampling methods and identification of exempt and non-exempt waste and hazardous waste. The operator shall maintain records of such training, subject to division inspection, for five years.

BDI will comply with this requirement. ***Volume II.1, Operation, Maintenance, and Inspection Plan*** *describes in detail the annual training program for site personnel. The training records will be maintained for Division inspection for a period of not less than five years.*

19.15.36.17 SPECIFIC REQUIREMENTS APPLICABLE TO EVAPORATION, STORAGE, TREATMENT AND SKIMMER PONDS:

A. Engineering design plan. An applicant for a surface waste management facility permit or modification requesting inclusion of a skimmer pit; an evaporation, storage or treatment pond; or a below-grade tank shall submit with the surface waste management facility permit application a detailed engineering design plan, certified by a registered profession engineer, including operating and maintenance procedures; a closure plan; and a hydrologic report that provides sufficient information and detail on the site's topography, soils, geology, surface hydrology and ground water hydrology to enable the division to evaluate the actual and potential effects on soils, surface water and ground water. The plan shall include detailed information on dike protection and structural integrity; leak detection, including an adequate fluid collection and removal system; liner specifications and compatibility; freeboard and overtopping prevention; prevention of nuisance and hazardous odors such as H2S; an emergency response plan, unless the pit is part of a surface waste management facility that has an integrated contingency plan; type of oil field waste stream, including chemical analysis; climatological factors, including freeze-thaw cycles; a monitoring and inspection plan; erosion control; and other pertinent information the division requests.

The existing BDI facility has a current processing area design that includes 2 evaporation ponds, with the potential to install a third pond if waste volumes increase. ***Volume III*** *(Engineering Design and Calculations) and the* ***Permit Plans****, provide the detailed engineering design plan for the surface waste management facility, including:*

Volume II *(Facility Management Plans) describes:*

- *Operation and Maintenance Procedures*
- *Closure/Post-closure Plan*
- *H_2S Prevention and Contingency Plan*
- *emergency response plan*
- *monitoring and inspection plan*
- *oil field waste management plan*
- *Contingency Plan*
- *chemical analysis*

Volume III *(Engineering Design and Calculations) describes:*

- *liner details*
- *calculations detailing dike protection and structural integrity*
- *leak detection system*
- *liner specifications and compatibility documentation*
- *freeboard and overtopping (wave action) analysis*
- *erosion control*
- *fluid collection and removal system*

Volume IV *(Siting and Hydrogeology) describes:*

- *site topography*
- *soils characteristics*
- *geology*
- *surface hydrology*
- *groundwater hydrology*
- *climatology*

B. Construction, standards.

(1) In general. The operator shall ensure each pit, pond and below-grade tank is designed, constructed and operated so as to contain liquids and solids in a manner that will protect fresh water, public health and the environment.

*The Liner CQA Plan (**Volume II.7**) provides detailed procedures for the proper construction of the berms and liner systems in compliance with the **Permit Plans** (**Volume III.1**). The liner system and CQA plan are designed to protect fresh water, and the environment and are certified by a registered professional engineer specializing in geosynthetics.*

(2) Liners required. Each pit or pond shall contain, at a minimum, a primary (upper) liner and a secondary (lower) liner with a leak detection system appropriate to the site's conditions.

*BDI will comply with this requirement. **Volume III.1** provides the detail for the primary liner, secondary liner, and leak detection system in compliance with these requirements.*

(3) Liner specifications. Liners shall consist of a 30-mil flexible PVC or 60-mil HDPE liner, or an equivalent liner approved by the division. Synthetic (geomembrane) liners shall have a hydraulic conductivity no greater than 1 x 10^{-9} cm/sec. Geomembrane liners shall be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions. Liner materials shall be resistant to ultraviolet light, or the operator shall make provisions to protect the material from sunlight. Liner compatibility shall comply with EPA SW-846 method 9090A.

The liner system design for the Processing Area ponds has been designed and constructed in accordance with Section 19.15.36.17.B.(3) NMAC. The liner design employs the prescriptive 60-mil HDPE liner as the upper component and the lower component of the liner system. The leak detection system consists of a 200-mil HDPE geonet installed between the upper and secondary liner system that will drain to the sumps. HDPE is the preferred material for waste containment based on over 30 years of successful geotechnical applications.

*The liner system is shown on the **Permit Plans** (**Volume III.1**); and the Liner CQA Plan (**Volume II.7**) provides geosynthetics specifications. Compatibility documentation is demonstrated in **Volume III.6**.*

(4) Alternative liner media. The division may approve other liner media if the operator demonstrates to the division's satisfaction that the alternative liner protects fresh water, public health and the environment as effectively as the specified media.

The liner design employs the prescriptive 60-mil HDPE liner as the upper component and lower component of the liner system. The leak detection system consists of a 200-mil geonet installed between the upper and secondary liner system draining towards the sump.

(5) Each pit or pond shall have a properly constructed foundation or firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities, in order to prevent rupture or tear of the liner and an adequate anchor trench; and shall be constructed so that the inside grade of the levee is no steeper than 2H:1V. Levees shall have an outside grade no steeper than 3H:1V. The levees' tops shall be wide enough to install an anchor trench and provide adequate room for inspection and maintenance. The operator shall minimize liner seams and orient them up and down, not across a slope. The operator shall use factory seams where possible. The operator shall ensure field seams in geosynthetic material are thermally seamed (hot wedge) with a double track weld to create an air pocket for non-destructive air channel testing. A stabilized air pressure of 35 psi, plus or minus one percent, shall be maintained for at least five minutes. The operator shall overlap liners four to six inches before seaming, and orient seams parallel to the line of maximum slope, i.e., oriented along, not across, the slope. The operator shall minimize the number of field seams in corners and irregularly shaped areas. There shall be no horizontal seams within five feet of the slope's toe. Qualified personnel shall perform field seaming.

*The Engineering Design (**Volume III.1**) and Liner CQA Plan (**Volume II.7**) provide detailed specifications for the installation of geosynthetics in compliance with this section, including:*

- *Foundation (i.e., subgrade) preparation*
- *Maximum (3:1) and minimum slopes (2%)*
- *Thermal seaming and testing procedures*
- *Field seams that will be oriented parallel to the line of maximum slope*
- *Minimizing the number of field seams in corners and irregularly shaped areas*
- *No horizontal seams within five ft of the toe of slope*

All liner systems will be installed by qualified contractors with at least 10 million square ft of geosynthetics installation experience.

(6) At a point of discharge into or suction from the lined pit, the liner shall be protected from excessive hydrostatic force or mechanical damage, and external discharge lines shall not penetrate the liner.

*The liner details shown on the **Permit Plans** (**Volume III.1**) indicate the methods used to protect the liner.*

(7) Primary liners shall be constructed of a synthetic material.

See response to 19.15.36.17.B.(3) NMAC. The primary liner is designed and constructed of 60 mil High Density Polyethylene.

(8) A secondary liner may be a synthetic liner or an alternative liner approved by the division. Secondary liners constructed with compacted soil membranes, i.e., natural or processed clay and other soils, shall be at least three feet thick, placed in six-inch lifts and compacted to ninety-five percent of the material's standard proctor density, or equivalent. Compacted soil membranes used in a liner shall undergo permeability testing in conformity with ASTM standards and methods approved by the division before and after construction. Compacted soil membranes shall have a hydraulic conductivity of no greater than 1 x 10^{-8} cm/sec. The operator shall submit results of pre-construction testing to the division for approval prior to construction.

BDI is not proposing a secondary alternate liner constructed of a soil component. BDI utilizes a secondary liner option consisting of 60-mil HDPE. See response to 19.15.36.B.(4) NMAC.

(9) The operator shall place a leak detection system between the lower and upper geomembrane liners that consists of two feet of compacted soil with a saturated hydraulic conductivity of 1 x 10^{-5} cm/sec or greater to facilitate drainage. The leak detection system shall consist of a properly designed drainage and collection and removal system placed above the lower geomembrane liner in depressions and sloped so as to facilitate the earliest possible leak detection. Piping used shall be designed to withstand chemical attack from oil field waste or leachate; structural loading from stresses and disturbances from overlying oil field waste, cover materials, equipment operation or expansion or contraction; and to facilitate clean-out maintenance. The material placed between the pipes and laterals shall be sufficiently permeable to allow the transport of fluids to the drainage pipe. The slope of the interior sub-grade and of drainage lines and laterals shall be at least a two percent grade, i.e., two feet vertical drop per 100 horizontal feet. The piping collection system shall be comprised of solid and perforated pipe having a minimum diameter of four inches and a minimum wall thickness of schedule 80. The operator shall seal a solid sidewall riser pipe to convey collected fluids to a collection, observation and disposal system located outside the perimeter of the pit or pond. The operator may install alternative methods as approved by the division.

*BDI **designed and has installed** an alternative leak detection system consisting of a 200-mil geonet between the primary and secondary liners. The geocomposite will have a minimum k value of 10 cm/sec. Calculations, compatibility, demonstrations and technical properties of the leak detection system are included in **Volume III**. The **Permit Plans** (**Volume III.1**) provide design elements of the leak detection system including:*

- *Minimum 2% slope on the liner and leak detection system*
- *Solid and perforated pipe details*
- *Sump and riser pipe details*
- *Composite liner (i.e. FML/GCL) under each leak detection sump*

(10) The operator shall notify the division at least 72 hours prior to the primary liner's installation so that a division representative may inspect the leak detection system before it is covered.

BDI will provide a milestone schedule to OCD in advance of liner construction, and notify OCD at least 72 hours prior to geosynthetics installation.

(11) The operator shall construct pits and ponds in a manner that prevents overtopping due to wave action or rainfall, and maintain a three foot freeboard at all times.

BDI will comply with this requirement. ***Volume III*** *provides detailed calculations demonstrating compliance with wave action, rainfall, and freeboard analysis.*

(12) The maximum size of an evaporation or storage pond shall not exceed 10 acre-feet.

BDI will comply with this requirement. The undeveloped pond will be approximately 9.5 acre-ft in capacity, not including freeboard. ***Volume III.1****, Engineering Design provides detailed calculations regarding capacity.*

C. Operating standards.

(1) The operator shall ensure that only produced fluids or non-hazardous waste are discharged into or stored in a pit or pond; and that no measurable or visible oil layer is allowed to accumulate or remain anywhere on a pit's surface except an approved skimmer pit.

*The Oil Field Waste Management Plan (****Volume II.2****) provides detailed procedures to ensure that only produced fluids or non-hazardous waste are placed into or stored in a pit or pond, including load rejection procedures. The Operations, Inspection, and Maintenance Plan (****Volume II.1****) addresses measurable or visible oil layer.*

(2) The operator shall monitor leak detection systems pursuant to the approved surface waste management facility permit conditions, maintain monitoring records in a form readily accessible for division inspection and report discovery of liquids in the leak detection system to the division within 24 hours.

*BDI will comply with this requirement. The Operations, Inspection, and Maintenance Plan (****Volume II.1****) provides a more detailed description of monitoring, recordkeeping and procedures for management of liquids in the leak detection system.*

(3) Fencing and netting. The operator shall fence or enclose pits or ponds to prevent unauthorized access and maintain fences in good repair. Fences are not required if there is an adequate perimeter fence surrounding the surface waste management facility. The operator shall screen, net, cover or otherwise render non-hazardous to migratory birds tanks exceeding eight feet in diameter and exposed pits and ponds. Upon written application, the division may grant an exception to screening, netting or covering requirements upon the operator's showing that an alternative method will adequately protect migratory birds or that the tank or pit is not hazardous to migratory birds.

The entire perimeter of the BDI facility is enclosed with a six-foot high chain link fence and locking gates. ***The Permit Plans, Volume III.1*** *graphically describes the location of the perimeter fence. BDI requests an alternate method to the migratory bird screening requirement.* ***Volume II.6; Migratory Bird Protection Plan*** *describes the alternate methodology to the screening requirement of the storage ponds. This Plan describes visual inspections and migratory bird retrieval and clean-up procedures should bird(s) require decontamination.*

(4) The division may approve spray systems to enhance natural evaporation. The operator shall submit engineering designs for spray systems to the division's environmental bureau for approval prior to installation. The operator shall ensure that spray evaporation systems are operated so that spray-borne suspended or dissolved solids remain within the perimeter of the pond's lined portion.

*BDI currently utilizes spray aerators in the existing evaporation ponds. These spray aerators are designed to produce a minimal amount vertical water propulsion while enhancing evaporation and aeration while also providing H_2S control and deterrence of bird activity. Because the spray aerators are low-profile, they also minimize the chance for spray-borne suspended or dissolved solids to leave the lined pond. Further engineering details of the spray aerators can be found in the Operations, Inspection, and Maintenance Plan (****Volume II.1****).*

(5) The operator shall use skimmer pits or tanks to separate oil from produced water prior to water discharge into a pond. The operator shall install a trap device in connected ponds to prevent solids and oils from transferring from one pond to another unless approved in the surface waste management facility permit.

*BDI utilizes receiving tanks to process water received at the Facility that requires separation of oil from water as described in the Operations, Inspection, and Maintenance Plan (****Volume II.1****). In addition, a 20 um filter is placed inline from the first evaporation pond to the injection well. Prior to transfer from the primary receiving pond to the two additional ponds, or to the injection well, liquids are further*

treated with a 5 um filter. In combination, these filters prevent solids or oils from transferring from one pond to another.

D. Below-grade tanks and sumps.

(1) The operator shall construct below-grade tanks with secondary containment and leak detection. The operator shall not allow below-grade tanks to overflow. The operator shall install only below-grade tanks of materials resistant to the tank's particular contents and to damage from sunlight.

BDI will continue to comply with this requirement. BDI has and will continue to confirm visually the covered below-grade tanks' integrity and will maintain records of inspection and maintenance. The covered below-grade tanks construction approvals are attached as ***Attachment I.D****. These records will be made available for Division inspection upon request.* ***Volume II.1;*** *Operations, Maintenance, and Inspection Plan describes in detail the inspection and maintenance of the covered below-grade tanks.*

(2) The operator shall test sumps' integrity annually, and shall promptly repair or replace a sump that does not demonstrate integrity. The operator may test sumps that can be removed from their emplacements by visual inspection. The operator shall test other sumps by appropriate mechanical means. The operator shall maintain records of sump inspection and testing and make such records available for division inspection.

BDI has three existing leak detection sumps installed at the ponds, and two permitted but undeveloped sumps which will be constructed when Pond #2 is constructed. These leak detection sumps are utilized as part of the leak detection system in the evaporation ponds. Sump inspection frequency and recordkeeping details can be found in ***Volume II.1;*** *Operations, Maintenance, and Inspection Plan.*

E. Closure required. The operator shall properly close pits, ponds and below-grade tanks within six months after cessation of use.

*BDI will comply with this requirement. The Closure/Post-closure Plan (****Volume II.4****) describes closure timeframes in detail.*

19.15.36.18 CLOSURE AND POST CLOSURE:

A. Surface waste management facility closure by operator.

(1) The operator shall notify the division's environmental bureau at least 60 days prior to cessation of operations at the surface waste management facility and provide a proposed schedule for closure. Upon receipt of such notice and proposed schedule, the division shall review the current closure and post closure plan (post closure is not required for oil treating plants) for adequacy and inspect the surface waste management facility.

*BDI will comply with this requirement. The Closure/Post-closure Plan (**Volume II.4**) describes closure notification requirements in detail.*

(2) The division shall notify the operator within 60 days after the date of cessation of operations specified in the operator's closure notice of modifications of the closure and post closure plan and proposed schedule or additional requirements that it determines are necessary for the protection of fresh water, public health, or the environment.

No response required.

(3) If the division does not notify the operator of additional closure or post closure requirements within 60 days as provided, the operator may proceed with closure in accordance with the approved closure and post closure plan; provided that the director may, for good cause, extend the time for the division's response for an additional period not to exceed 60 days by written notice to the operator.

BDI will comply with this requirement.

(4) The operator shall be entitled to a hearing concerning a modification or additional requirement the division seeks to impose if it files an application for a hearing within 10 days after receipt of written notice of the proposed modifications or additional requirements.

BDI will comply with this requirement.

(5) Closure shall proceed in accordance with the approved closure and post closure plan and schedule and modifications or additional requirements the division imposes. During closure operations the operator shall maintain the surface waste management facility to protect fresh water, public health and the environment.

BDI will comply with this requirement.

(6) Upon completion of closure, the operator shall re-vegetate the site unless the division has approved an alternative site use plan as provided in Subsection F of 19.15.36.18 NMAC. Re-vegetation, except for landfill cells, shall consist of establishment of a vegetative cover equal to seventy percent of the native perennial vegetative cover (un-impacted by overgrazing, fire or other intrusion damaging to native vegetation) or scientifically documented ecological description consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintenance of that cover through two successive growing seasons.

*BDI will comply with this requirement. The Closure/Post-closure Plan (**Volume II.4**) describes in detail revegetation and maintenance plans for the Facility.*

B. Release of financial assurance.

(1) When the division determines that closure is complete it shall release the financial assurance, except for the amount needed to maintain monitoring wells for the applicable post closure care period, to perform semi-annual analyses of such monitoring wells and to re-vegetate the site. Prior to the partial release of the financial assurance covering the surface waste management facility, the division shall inspect the site to determine that closure is complete.

*The Closure/Post-closure Plan (**Volume II.4**) provides the estimated amount, in current dollars, required for Post-Closure care and maintenance.*

(2) After the applicable post closure care period has expired, the division shall release the remainder of the financial assurance if the monitoring wells show no contamination and the re-vegetation in accordance with Paragraph (6) of Subsection A of 19.15.36.18 NMAC is successful. If monitoring wells or other monitoring or leak detection systems reveal contamination during the surface waste management facility's operation or in the applicable post closure care period following the surface waste management facility's closure the division shall not release the financial assurance until the contamination is remediated in accordance with 19.15.30 NMAC and 19.15.29 NMAC, as applicable.

BDI will comply with this requirement.

(3) In any event, the division shall not finally release the financial assurance until it determines that the operator has successfully revegetated the site in accordance with Paragraph (6) of Subsection A of 19.15.36.18 NMAC, or, if the division has approved an alternative site use plan, until the landowner has obtained the necessary regulatory approvals and begun implementation of the use.

No response required.

C. Surface waste management facility and cell closure and post closure standards. The following minimum standards shall apply to closure and post closure of the installations indicated, whether the entire surface waste management facility is being closed or only a part of the surface waste management facility.

(1) Oil treating plant closure. The operator shall ensure that:

(a) tanks and equipment used for oil treatment are cleaned and oil field waste is disposed of at a division-approved surface waste management facility (the operator shall reuse, recycle or remove tanks and equipment from the site within 90 days of closure);

(b) the site is sampled, in accordance with the procedures specified in chapter nine of EPA publication SW-846, test methods for evaluating

solid waste, physical/chemical methods, for TPH, BTEX, major cations and anions and RCRA metals, in accordance with a gridded plat of the site containing at least four equal sections that the division has approved; and

(c) sample results are submitted to the environmental bureau in the division's Santa Fe office.

BDI will comply with this requirement.

(2) Landfill cell closure.

(a) The operator shall properly close landfill cells, covering the cell with a top cover pursuant to Paragraph (8) of Subsection C of 19.15.36.14 NMAC, with soil contoured to promote drainage of precipitation; side slopes shall not exceed a twenty-five percent grade (four feet horizontal to one foot vertical), such that the final cover of the landfill's top portion has a gradient of two percent to five percent, and the slopes are sufficient to prevent the ponding of water and erosion of the cover material.

(b) The operator shall re-vegetate the area overlying the cell with native grass covering at least seventy percent of the landfill cover and surrounding areas, consisting of at least two grasses and not including noxious weeds or deep rooted shrubs or trees, and maintain that cover through the post closure period.

BDI is not a landfill or landfarm.

(3) Landfill post closure. Following landfill closure, the post closure care period for a landfill shall be 30 years.

(a) A post closure care and monitoring plan shall include maintenance of cover integrity, maintenance and operation of a leak detection system and leachate collection and removal system and operation of gas and ground water monitoring systems.

(b) The operator or other responsible entity shall sample existing ground water monitoring wells annually and submit reports of monitoring performance and data collected within 45 days after the end of each calendar year. The operator shall report any exceedance of a ground water standard that it discovers during monitoring pursuant to 19.15.29 NMAC.

BDI is not a landfill or landfarm.

(4) Landfarm closure. The operator shall ensure that:

(a) disking and addition of bioremediation enhancing materials continues until soils within the cells are remediated to the standards provided in Subsection F of 19.15.36.15 NMAC, or as otherwise approved by the division;

(b) soils remediated to the foregoing standards and left in place are re-vegetated in accordance with Paragraph (6) of Subsection A of 19.15.36.18 NMAC;

(c) landfarmed soils that have not been or cannot be remediated to the standards in Subsection F of 19.15.36.15 NMAC are removed to a division-approved surface waste management facility and the landfarm remediation area is filled in with native soil and re-vegetated in accordance with Paragraph (6) of Subsection A of 19.15.36.18 NMAC;

(d) if treated soils are removed, the cell is filled in with native soils and re-vegetated in accordance with Paragraph (6) of Subsection A of 19.15.36.18 NMAC;

(e) berms are removed;

(f) buildings, fences, roads and equipment are removed, the site cleaned-up and tests conducted on the soils for contamination;

(g) annual reports of vadose zone and treatment zone sampling are submitted to the division's environmental bureau until the division has approved the surface waste management facility's final closure; and

(h) for an operator who chooses to use the landfarm methods specified in Subsection H of 19.15.36.15 NMAC, that the soil has an ECs of less than or equal to 4.0 mmhos/cm (dS/m) and a SAR of less than or equal to 13.0.

BDI is not a landfill or landfarm.

D. Pond and pit closure. The operator shall ensure that:

(1) liquids in the ponds or pits are removed and disposed of in a division-approved surface waste management facility;

(2) liners are disposed of in a division-approved surface waste management facility;

(3) equipment associated with the surface waste management facility is removed;

(4) the site is sampled, in accordance with the procedures specified in chapter nine of EPA publication SW-846, test methods for evaluating solid waste, physical/chemical methods for TPH, BTEX, metals and other inorganics listed in Subsections A and B of 20.6.2.3103 NMAC, in accordance with a gridded plat of the site containing at least four equal sections that the division has approved; and

(5) sample results are submitted to the environmental bureau in the division's Santa Fe office.

*BDI will comply with this requirement. The Closure/Post-closure Plan (**Volume II.4**) describes in detail facility decommissioning, including liquid, liner and equipment disposal; as well as sampling, testing, and reporting when closure of the Facility is implemented.*

E. Landfarm and pond and pit post closure. The post-closure care period for a landfarm or pond or pit shall be three years if the operator has achieved clean closure. During that period the operator or other responsible entity shall regularly inspect and maintain required revegetation. If there has been a release to the vadose zone or to ground water, then the operator shall comply with the applicable requirements of 19.15.30 NMAC and 19.15.29 NMAC.

BDI will comply with this requirement.

F. Alternatives to re-vegetation. If the landowner contemplates use of the land where a cell or surface waste management facility is located for purposes inconsistent with re-vegetation, the landowner may, with division approval, implement an alternative surface treatment appropriate for the contemplated use, provided that the alternative treatment will effectively prevent erosion. If the division approves an alternative to re-vegetation, it shall not release the portion of the operator's financial assurance reserved for post-closure until the landowner has obtained necessary regulatory approvals and begun implementation of such alternative use.

BDI, if applicable, will comply with this requirement.

G. Surface waste management facility closure initiated by the division. Forfeiture of financial assurance.

(1) For good cause, the division may, after notice to the operator and an opportunity for a hearing, order immediate cessation of a surface waste management facility's operation when it appears that cessation is necessary to protect fresh water, public health or the environment, or to assure compliance with statutes or division rules and orders. The division may order closure without first having a hearing in the event of an emergency, subject to Section 70-2-23 NMSA 1978, as amended.

No response required.

(2) If the operator refuses or is unable to conduct operations at a surface waste management facility in a manner that protects fresh water, public health and the environment; refuses or is unable to conduct or complete an approved closure and post closure plan; is in material breach of the terms and conditions of its surface waste management facility permit; or the operator defaults on the conditions under which the division accepted the surface waste management facility's financial assurance; or if disposal operations have ceased and there has been no significant activity at the surface waste management facility for six months the division may take the following actions to forfeit all or part of the financial assurance:

(a) send written notice by certified mail, return receipt requested, to the operator and the surety, if any, informing them of the decision to close the surface waste management facility and to forfeit the financial assurance, including the reasons for the forfeiture and the amount to be

forfeited, and notifying the operator and surety that a hearing request or other response shall be made within 20 days of receipt of the notice; and

(b) advise the operator and surety of the conditions under which they may avoid the forfeiture; such conditions may include but are not limited to an agreement by the operator or another party to perform closure and post closure operations in accordance with the surface waste management facility permit conditions, the closure and post closure plan (including modifications or additional requirements imposed by the division) and division rules, and satisfactory demonstration that the operator or other party has the ability to perform such agreement.

BDI will collaborate with OCD concerning this requirement and does not foresee any instance in which the Facility will not be operated in compliance with the Permit or Permit Conditions.

(3) The division may allow a surety to perform closure and post closure if the surety can demonstrate an ability to timely complete the closure and post closure in accordance with the approved plan.

No response required.

(4) If the operator and the surety do not respond to a notice of proposed forfeiture within the time provided, or fail to satisfy the specified conditions for non-forfeiture, the division shall proceed, after hearing if the operator or surety has timely requested a hearing, to declare the financial assurance's forfeiture. The division may then proceed to collect the forfeited amount and use the funds to complete the closure and post closure, or, at the division's election, to close the surface waste management facility and collect the forfeited amount as reimbursement.

(a) The division shall deposit amounts collected as a result of forfeiture of financial assurance in the oil and gas reclamation fund.

(b) In the event the amount forfeited and collected is insufficient for closure and post closure, the operator shall be liable for the deficiency. The division may complete or authorize completion of closure and post closure and may recover from the operator reasonably incurred costs of closure and post closure and forfeiture in excess of the amount collected pursuant to the forfeiture.

(c) In the event the amount collected pursuant to the forfeiture was more than the amount necessary to complete closure and post closure, including remediation costs, and forfeiture costs, the division shall return the excess to the operator or surety, as applicable, reserving such amount as may be reasonably necessary for post closure operations and re-vegetation in accordance with Paragraph (6) of Subsection A of 19.15.36.18 NMAC. The division shall return excess of the amount retained over the actual cost of post closure operations and re-vegetation to the operator or surety at the later of the conclusion of the applicable post closure period or when the site re-vegetation in

accordance with Paragraph (6) of Subsection A of 19.15.36.18 NMAC is successful.

No response required. The conditions listed are not anticipated.

(5) If the operator abandons the surface waste management facility or cannot fulfill the conditions and obligations of the surface waste management facility permit or division rules, after notice and an opportunity for hearing, the state of New Mexico, its agencies, officers, employees, agents, contractors and other entities designated by the state shall have all rights of entry into, over and upon the surface waste management facility property, including all necessary and convenient rights of ingress and egress with all materials and equipment to conduct operation, termination and closure of the surface waste management facility, including but not limited to the temporary storage of equipment and materials, the right to borrow or dispose of materials and all other rights necessary for the surface waste management facility's operation, termination and closure in accordance with the surface waste management facility permit and to conduct post closure operations.

No response required. The conditions listed are not required.

19.15.36.19 EXCEPTIONS AND WAIVERS:

A. In a surface waste management facility permit application, the applicant may propose alternatives to requirements of 19.15.36 NMAC, and the division may approve such alternatives if it determines that the proposed alternatives will provide equivalent protection of fresh water, public health and the environment.

BDI is requesting to continue the use of the existing alternatives to the requirements consistent with the flexibility provided for:

- *Bird Control Alternatives per 19.15.36.13.I and 19.15.36.17.C(3) NMAC (**Volume II.6**)*
- *Evaporation, Storage, Treatment, and Skimmer pond construction standards 19.15.36.17.B(9). to utilize a 200 mil geonet instead of a two (2) foot thick compacted soil leak detection system (**Volume III, Sections 1 and 3**).*
- *Distance to a watercourse, lakebed, sinkhole or playa lake per 19.15.36.13.B(1) NMAC to request a variance from the 200-foot separation distance from a watercourse (**Volume I, Section 1.2 and Volume IV.1, Subsection 2.2**).*

Demonstrations and justifications have been provided in the referenced sections and associated technical documentation.

B. The division may grant exceptions to, or waivers of, or approve alternatives to requirements of 19.15.36 NMAC in an emergency without notice or hearing. The operator requesting an exception or waiver, except in an emergency, shall apply for a surface waste management facility permit modification in accordance with Subsection C of 19.15.36.8 NMAC. If the requested modification is a major modification, the operator shall provide notice of the request in accordance with 19.15.36.9 NMAC.

BDI will comply with this requirement.

19.15.36.20 TRANSITIONAL PROVISIONS:

Existing permitted facilities. Surface waste management facilities in operation prior to the effective date of 19.15.36 NMAC pursuant to division permits or orders may continue to operate in accordance with such permits or orders, subject to the following provisions.

A. Existing surface waste management facilities shall comply with the financial assurance, operational, monitoring, waste acceptance and closure and post closure requirements provided in 19.15.36 NMAC, except as otherwise specifically provided in the applicable permit or order, or in a specific waiver, exception or agreement that the division has granted in writing to the particular surface waste management facility.

BDI will continue to comply with this requirement.

B. The division shall not require financial assurance for a commercial facility permitted prior to the effective date of 19.15.36 NMAC that exceeds $250,000 until such time as:

(1) the division reviews the commercial facility's permit pursuant to Paragraph (3) of Subsection A of 19.15.36.12 NMAC, at which time the division may require the operator to submit a closure and post closure plan; which shall include a responsible third party contractor's cost estimate to complete closure and post closure of the surface waste management facility pursuant to the requirements of Subsections A through F of 19.15.36.18 NMAC:

(a) if the division determines that such estimate does not reflect a reasonable and probable closure and post closure cost, the division shall determine the estimated closure and post closure cost and shall provide its determination of estimated closure and post closure cost to the operator;

(b) if the operator disagrees with the division's determination of estimated closure and post closure cost, the operator may request a hearing, which shall be conducted according to 19.15.4 NMAC; or

(2) the commercial facility applies for a major modification.

C. Major modification of an existing surface waste management facility and a new landfarm cells constructed at an existing surface waste management facility shall comply with the requirements provided in 19.15.36 NMAC.

*BDI is an existing Surface Waste Management Facility, that was subject to a major modification approval in 2010 (**Attachment I.E**) and this application proposes the renewal of Permit NM1-005. Documentation for the 2010 Major Modification Permit Conditions is provided as **Attachment I.B**. The 2015 Minor Modification Permit Application and Division approval is provided as **Attachment I.F**.*

ATTACHMENT I.A
PUBLIC NOTIFICATION

NOTICE OF APPLICATION
BASIN DISPOSAL, INC. (BDI) – SURFACE WASTE MANAGEMENT FACILITY

Pursuant to 19.15.36, Oil Conservation Division Surface Waste Management Facilities regulations, Basin Disposal, Inc. (BDI) is providing notice that the Oil Conservation Division (OCD) has completed its technical review of the Application for Permit Renewal to an existing Surface Waste Management Facility Permit NM-01-0005 submitted by BDI. OCD has tentatively decided on Permit Approval (with conditions), and will be posting this decision along with the draft Permit on its website [*https://www.emnrd.nm.gov/OCD/applications-permits-notifications/*].

1. **Applicant's name and address**: Mr. Jerry Sandel, President Basin Disposal, Inc., P.O. Box 100, Aztec, NM 87410. Contact Mr. Brett Lanier, General Manager, Telephone: 505.632.8936
2. **Facility location and address**: The Basin Disposal, Inc. Facility is located approximately 3 miles north of the intersection of State Roads 550 and 64, 200 Montana Street, Bloomfield, NM 87413
3. **Brief description of surface waste management facility**: The existing 27.77 acre facility includes Evaporation Ponds #1 and #3, 12 receiving tanks, 4 oily water receiving tanks, 3 skimmed oil tanks, 3 oil heating tanks, 2 separation tanks, 3 settling tanks, 7 oil sales tanks, 3 filtered water tanks, 4 bleach tanks, 1 concrete solidification basin, 2 covered below-grade tanks, 1 injection well, various support facilities including office, maintenance building, roads, and detention basin. Future facilities, previously approved but not yet constructed, include an additional evaporation pond (approximately 2 acres) constructed with 60-mil high density polyethylene (HDPE) primary liner, leak detection, and secondary liner systems. In addition, 6 additional oil field waste liquid receiving tanks and 2 oil sales tanks will be installed at the facility.
4. **Depth and quality of shallowest aquifer**: The depth to the perched water zone beneath the site ranges from 29.25 feet in assessment well (AW) AW-1 to 42 feet in AW-2 with the total dissolved solids (TDS) determined to be 38,000 mg/l and 24,000 mg/l, respectively. Fresh water beneath the site is projected at a depth of at least 105' below the lowest elevation on-site. The on-site monitor wells are completed within the Nacimiento Formation. Chemical analyses from these wells generally indicate a total dissolved solids concentration of approximately 24,000 milligrams per liter (mg/L) and a maximum concentration of approximately 38,000 mg/L.
5. **The Division's Proposed Decision**: (with conditions as appropriate) is made available on the Division's website [*https://www.emnrd.nm.gov/OCD/applications-permits-notifications/*]; and can be requested from the Division Clerk at:

   Ms. Freya Tschantz
   Oil Conservation Division
   1220 S. St. Francis Drive
   Santa Fe, NM 87505
   505.469.5527
   Freya.tschantz@emnrd.nm.gov

   Interested parties may contact Ms. Leigh Barr, Administrative Permitting Program Supervisor, Oil Conservation Division at 505.795.1722 or via email at leighp.barr@emnrd.nm.gov for further information.
6. The following list is a description, considered by the Division, of **alternatives, exceptions** or waivers in accordance with 19.15.36.19 NMAC *"Exceptions and Waivers"*:

   A. In a surface waste management facility permit application, the applicant may propose alternatives to requirements of 19.15.36 NMAC, and the division may approve such alternatives if it determines that the proposed alternatives will provide equivalent protection of fresh water, public health and the environment.

   Basin Disposal, Inc. is requesting to continue the use of the following alternatives:
   - Bird Control Alternatives per 19.15.36.13.I and 19.15.36.17.C(3) NMAC (**Volume II.6**):

     BDI requests an exemption to not place screening material over ponds for migratory bird protection. BDI will inspect the evaporation ponds daily for birds and Should BDI discover migratory bird activity, inspection and scare tactics frequency will be increased to alleviate the roosting of the birds. Should migratory bird landings become an ongoing concern, BDI will implement more aggressive techniques, such as netting or screening, after review and discussion with OCD and qualified wildlife experts.

- Evaporation, Storage, Treatment, and Skimmer pond construction standards 19.15.36.17.B(9) NMAC (Volume III, Sections 1 and 3):
  BDI requests to utilize a 200 mil geonet instead of a 2-foot-thick compacted soil leak detection system. With a design transmissivity of 1 x 10^{-3} m^2/sec, it will provide fluid flow potential superior to the prescriptive leak detection layer of 2 ft of pervious soils
- Setback to Watercourse Criteria 19.15.36.13.B(1) NMAC (Volume IV, Section 1):
  An ephemeral (intermittent) watercourse does exist immediately south of the facility fence line. Documentation regarding the locations of water courses, lakebeds, sinkholes, and playa lakes with respect to the BDI site is provided in Volume IV.1 of the Application, including on-site reconnaissance by qualified experrts. The operations maintenance and inspections program instituted at BDI provide protection of fresh water, public health and the environment equivalent to the required separation from a watercourse, lakebed, sinkhole or playa described in 19.15.36.13.B(1). Existing measures are proven to be effective in preventing runoff from the facility impacting the arroyo. Therefore, BDI is requesting an exception to the 200-foot separation requirements for watercourses.

Demonstrations and justifications have been provided in the referenced sections and associated technical documentation.

7. The procedures for requesting a hearing on the Application are outlined in 19.15.4 NMAC, as enumerated below:

TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 15 OIL AND GAS
PART 4 ADJUDICATION

19.15.4.1 ISSUING AGENCY: Oil Conservation Commission.
[19.15.4.1 NMAC - Rp, 19.15.14.1 NMAC, 12/1/2008; A, 6/26/2018]

19.15.4.8 INITIATING AN ADJUDICATORY HEARING:

A. The division, attorney general, an operator or producer or other person with standing may file an application with the division for an adjudicatory hearing. The director, upon receiving a division examiner's recommendation, may dismiss an application for an adjudicatory proceeding upon a showing that the applicant does not have standing. The person applying for the hearing or an attorney representing that person shall sign the application requesting an adjudicatory hearing. The application shall include:
(1) the applicant's name;
(2) the applicant's address, or the address of the applicant's attorney, including an e-mail address and fax number if available;
(3) the name or general description of the common source or sources of supply or the area the order sought affects;
(4) briefly, the general nature of the order sought;
(5) a proposed legal notice for publication; and
(6) any other matter division rules or a division order requires.

B. Applicants for adjudicatory hearings shall file written applications with the division clerk at least 30 days before the application's scheduled hearing date.

[19.15.4.8 NMAC - Rp, 19.15.14.1206 NMAC, 12/1/2008]

TABLE I.A.1 - List of Property Owners within 0.5-mile to Whom Notice was Mailed

OWNER	ADDRESS	CITY	STATE	ZIP	PARCEL NO.	MAP NO.
Basin Disposal, Inc.	PO BOX 100	Aztec	NM	87410	2063173396280	1
					2063173396306	2
					2063173396322	3
					2063173414247	71
					2063173477214	75
					2063173434215	76
					2063173384217	77
					2063173371207	78
					2063173396181	83
Foutz and Bursom Const CO, Inc.	PO BOX 187	Bloomfield	NM	87413	2063173396339	4
					2063173396355	5
					2063173396372	6
					2063173396387	7
Western Refining Wholesale, Inc.	POX BOX 592809 TX1-047	San Antonio	TX	78259	2063173396410	8
RE Pool I LLC	25528 Genesee Trail Rd.	Golden	CO	80401	2063173288467	9
Doud Dory Beth	25529 Genesee Trail Rd.	Golden	CO	80401	2063173331467	10
					2063173386466	11
Wallis Jeffrey T and Laura A	203 Murray Road	Albuquerque	NM	87105	2063173469467	12
					2063173458492	19
Deherrera Rocky L	8906 S 92nd E Place	Tulsa	OK	74133	2063173469467	13
					2063173403493	18
					2063173507493	20
MW Electric, Inc.	13155 Noel Rd STE 100	Dallas	TS	75240-5050	2063173276491	14
Pascetti Investments LLC	10600 Holly NE AVE	Albuquerque	NM	87122	2063173292490	15
					2063173307490	16
					2063174379070	21
					2063174343023	23
					2063174308045	28
Haulrite Of Four Corners, Inc.	35 Valley Court	Durango	CO	91301	2063173344493	17
AFI Properties LLC	PO BOX 1270	Aztec	NM	87410	2063174348096	22
Crane Lee Anne and Lee M JR*	3695 N 1st ST	Bloomfield	NM	87413	2063174290099	24
Crane Lee M Trust	125 S Pollard	Aztec	NM	87410-2073	2063174317094	25
					2063174317077	26
					2063174297086	27

TABLE I.A.1 - List of Property Owners within 0.5-mile to Whom Notice was Mailed

OWNER	ADDRESS	CITY	STATE	ZIP	PARCEL NO.	MAP NO.
DB Property Management LLC	3601 N 1st ST STE E	Bloomfield	NM	87413	2063174311012	29
Hollar Betty	3650 N 1st	Bloomfield	NM	87413	2063174233099	30
					2063174230080	31
Schaffer Family Trust	PO Box 23	Aztec	NM	87410	2063174240032	32
					2063174235057	33
					2063174211060	34
					2063174210045	35
					2063174209027	36
					2063174206011	37
Yocum Donald P and Sue Trust*	203 Utah St	Bloomfield	NM	87413	2063174164101	38
Mcconnel William E and Jerilyn R Trust	200 Utah St	Bloomfield	NM	87413-5331	2063174164033	39
Eavenson Roy J and Misty M	16858 US 550	Aztec	NM	87410	2063173220388	40
Jicarilla Apache Energy Corporation	PO BOX 710	Dulce	NM	87528	2063173220372	41
Stinson Johnny R and Machelle A	13420 Road 38.9	Mancos	CO	81328	2063173228346	42
Intermountain Crain LLC ATTN Bryn Burke	2730 N Nellis Blvd	Las Vegas	NV	89115-4507	2063173220312	43
D and C Properties LLC	PO BOX 1735	Eunice	NM	88231	2063173220280	44
					2063173220247	45
					2063173159312	55
					2063173159279	56
					2063173159247	57
Yoakum Robert L	615 Smith Ln	Bloomfield	NM	87413	2063173236228	46
Ajac Enterprises	8359 Corona Loop NE STE 100	Albuquerque	NM	87113-1614	2063173231208	47
Cash For Contracts INC	PO BOX 16134	Las Cruces	NM	88004	2063173197223	48
Estrada Francisco J	42 Road 5415	Bloomfield	NM	87413-9727	2063173234190	49
Windham Properties LLC	320 Kempton Court	Alpharetta	GA	30022	2063173224183	50
					2063173194183	51
Raney Kenneth N and Rose A	PO BOX 2122	Bloomfield	NM	87413-2122	2063173221150	52
Gurule Rey Pena Maclovia Maxie Trust	4703 Hilltop Ct	Farmington	NM	87402	2063173159380	53
Lindsay Delaws And Cheryl R	PO BOX 2775	Bloomfield	NM	87413	2063173159346	54
Benny Alvin Et Al	PO BOX 1044	Bloomfield	NM	87413-1044	2063173159215	58
Mcdaniel Gary C and T Joy	PO BOX 2225	Bloomfield	NM	87413-2225	2063173157196	59
Beal Jerry W and Gail L	PO BOX 14816	Albuquerque	NM	87191	2063173159180	60
Begay Arthur C Jr	2758 Nevada	Bloomfield	NM	87413	2063173177150	61

TABLE I.A.1 - List of Property Owners within 0.5-mile to Whom Notice was Mailed

OWNER	ADDRESS	CITY	STATE	ZIP	PARCEL NO.	MAP NO.
Holmes Barbara	8 Apache Plume Dr	Santa Fe	NM	87508	2063173172137	62
					2063173151153	63
Lewis Dee Wayne	2755 Nevada	Bloomfield	NM	87413	2063173147143	64
Litke Family Trust Attn: Doris Litke	2751 Nevada	Bloomfield	NM	87413	2063173145137	65
Huntington Investment LLC	793 Road 104	Hesperus	CO	81326	2063173198066	66
D J Simmons Co LTD Partnership*	1009 Ridgeway Pl STE 200	Farmington	NM	87401	2062172195510	67
Old and Bold LLC*	PO BOX 190	Aztec	NM	87410	2062172068485	68
AAAARRRR Industries LLC	9321 N 136 E Ave	Owasso	OK	74055	2063173329287	69
Petrolite Corp	PO BOX 4740	Houston	TX	77210	2063173288280	70
Natco Petroleum Inc	PO BOX 445	Bloomfield	NM	87413	2063173345270	72
Roth Family Trust	4910 Rio St	Farmington	NM	87402	2063173309247	73
Byars Raymond M Etal Turnbaugh Michael J and Kim L Trust	9321 N 136 E Ave	Owasso	OK	74055	2063173284247	74
Cummins Burner Fuel INC	201 Michigan Ave	Bloomfield	NM	87413	2063173351217	79
Fortner William A Investments LLC C/O: Detrick Services LLC	PO BOX 655	Bloomfield	NM	87413	2063173330217	80
Davis Donald L C/O: Cummins Timothy D and Jana L	PO BOX 655	Bloomfield	NM	87413	2063173316215	81
Mantle Enterprises LLC	5310 Hallmarc Dr	Farmington	NM	87401	2063173284214	82
Cruz Ben A and Pauline N	33 Road 5290 NO 3027B	Farmington	NM	87401	2063173491148	84
BDI Land LLC	PO BOX 1618	Aztec	NM	87410	2063173441152	85
BDI Land LLC	PO BOX 100	Aztec	NM	87410	2063173386140	87
					2063173335158	90
Henson Riley and Pauline	PO BOX 1441	Bloomfield	NM	87413	2063173415157	86
Martinez Leroy M And Abeyta Dolores C	PO BOX 685	Bloomfield	NM	87413	2063173362157	88
					2063173360140	89
Harrison Danny	611 Sagewood	Chapparral	NM	88081	2063173333140	91
Drake Twana And Lorraine	PO BOX 448	Flora Vista	NM	87415	2063173296157	92
					2063173301140	93
Bloomfield Economic Development LLC	7615 Indian School Road NE	Albuquerque	NM	87110	2063173497117	94
					2063173492042	95
					2063173391117	97
					2063173333052	101
					2063173289052	102
Pyramid Landmark Corporation	1400 Woodloch Forst Dr STE 410	The Woodlands	TX	77380	2063173432117	96
4 Rivers Properties Bloomfield LLC	924 11th Street	Greenley	CO	80631	2063173337116	98
Spanier Childrens Trust	1359 E 26th ST	Tulsa	OK	74114	2063173279117	99

TABLE I.A.1 - List of Property Owners within 0.5-mile to Whom Notice was Mailed

OWNER	ADDRESS	CITY	STATE	ZIP	PARCEL NO.	MAP NO.
Wagner Equipment Attn Facilities Department	18000 Smith Rd	Aurora	CO	80011	2063173404050	100
Phillips Jim R and Laura V Trust	791 N Newby Ln	Bloomfield	NM	87413-6755	2063172462502	103
Harper Linda M and Garcia Freddie*	318 Moore St	Bloomfield	NM	87413	2063172383521	104
Coury John J Jr and Candace M*	6651 US 64	Bloomfield	NM	87413	2063172357521	105
					2063172383504	107
SFT LLC*	PO BOX 25865	Albuquerque	NM	87125	2063172307518	106
					2063172307502	109
Quintana Jaime ET AL Quintana Anthony*	200 Kentucky	Bloomfield	NM	87413-1173	2063172357504	108

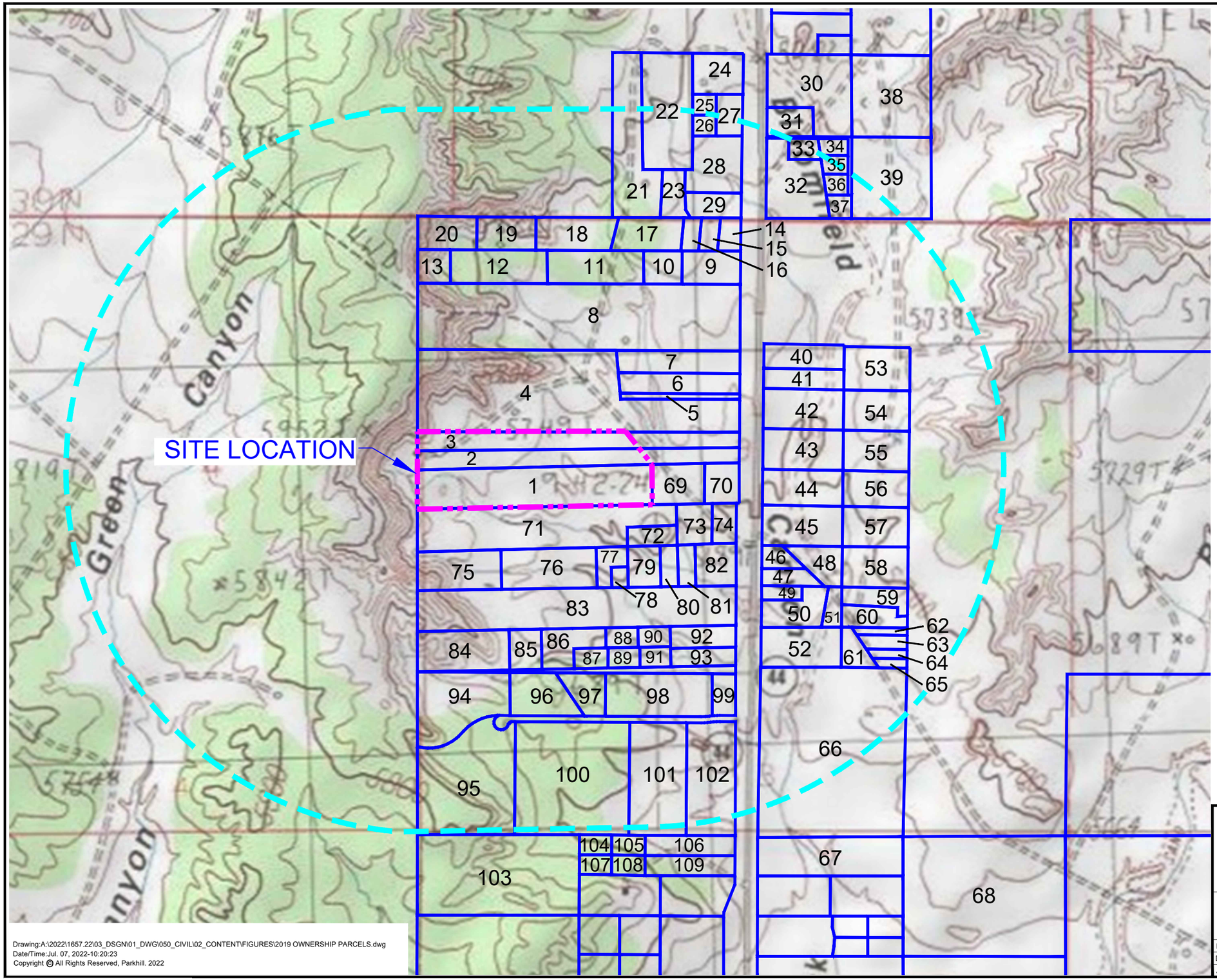
Note:

1. San Juan County, NM Ownership data obtained from: https://webmaps.sjcounty.net/portal/apps/webappviewer/index.html?id=c1ff5e7d1d1d4bd3aec95fa861ba8ecf

*2. * Notice sent as courtesy to some property owners not within the 0.5-mile radius*

TABLE I.A.2 - List of Government Entities within 10 Miles To Whom Notice was Mailed

NAME	ADDRESS	CITY	STATE	ZIP
San Juan County	100 South Oliver Drive	Aztec	NM	87410
City of Bloomfield	915 N 1st St	Bloomfield	NM	87413
City of Aztec	201 W. Chaco St	Aztec	NM	87410
City of Farmington	800 Municipal Dr	Farmington	NM	87401
Bureau of Land Management, State office	301 Dinosaur Trail	Santa Fe	NM	87508
BLM, Farmington District Office	6251 College Blvd Suite A	Farmington	NM	87402
New Mexico State Land Office	310 Old Santa Fe Trail	Santa Fe	NM	87501
Navajo Nation	P.O. Box 9000	Window Rock	AZ	86515
US Fish and Wildlife Service	2105 Osuna Road	Albuquerque	NM	87113-1001
State Historic Preservation Officer	407 Galisteo St	Sante Fe	NM	87501
UTE Mountain UTE Tribe	PO BOX KK	Towaoc	CO	81334
Southern UTE Tribe	P.O. Box 737	Ignacio	CO	81137
Huerfano Navajo Chapter	PO BOX 968	Bloomfield	NM	87413
Upper Fruitland Navajo Chapter	P.O. Box 1257	Fruitland	NM	87416



LEGEND

SITE BOUNDARY

1/2 MILE RADIUS

PARCEL BOUNDARY

39 PARCEL REFERENCE NUMBER (SEE TABLE I.A.1)

*PROPERTY OWNERSHIP AND PARCEL BOUNDARY DATA PROVIDED BY SAN JUAN COUNTY ASSESSORS OFFICE.

*ALL DATA CURRENT AS OF 9/26/2019.

NORTH

0 400' 800'

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\2019 OWNERSHIP PARCELS.dwg
Date/Time:Jul. 07, 2022-10:20:23

LAND OWNERSHIP MAP

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: 2019 OWNERSHIP.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	ATTACHMENT I.A
APPROVED BY: MWK	www.parkhill.com	

ATTACHMENT I.B

2010 MAJOR MODIFICATION PERMIT CONDITIONS DOCUMENTATION

ATTACHMENT I.B - 2010 Major Modification Permit Conditions Documentation

	Additional Site Specific Conditions (May 19, 2010)	Response
B	The Owner/Operator shall include the surface waste management facility permit number on the sign pursuant to 19.15.36.13.J NMAC.	BDI maintains compliance with this requirements as provided on Figure I.4.
E	The Owner/Operator shall clearly mark the liner of each existing pond (i.e., Pond #1) to indicate a 3-foot freeboard within the term of this Permit. A 3-foot freeboard in Pond #1 shall be required at that time. Also, the Owner/Operator shall clearly mark the liner of any newly constructed pond to indicate the required 3-ffot freeboard prior to use.	BDI has marked both ponds with freeboard markers. Pictures of these markers are found attached to this.
F	The Owner/Operator shall, within 24 hours of receiving notification from the Division's Environmental Bureau or a concerned party that an objectionable odor has been detected or reported, implement the following response procedures: i. Log date and approximate time of notice that an odor exists, include the name of the complainant and any contact information; ii. Investiate the source of the odor and log investigative steps taken, including date and time, and conclusions reached; and, iii. Take actions to alleviate the odor, which may include adjusting chemical treatment, air sparging, solidfication, or similar responses, and log the actions taken.	BDI has not received any notifications from a concerned party or the Division's Environmental Bureau regarding objectionable odors.
G	In addition to the commitments of the Hydrogen Sulfide (H_2S) Prevention and Contingency Plan in Section 3 of Volume II of the appoved Application, if a hydrogen sulfide (H_2S) reading of 10.0 ppm or greater is obtained at the facility boundary, then the Owner/Operator shall notifiy all persons residing within one-half mile of the facility boundary and assist public safety officials with evacution as requested.	BDI has not obtained a reading of 10.0 ppm or greater at the facility boundary.
H	In addition to the commitments of the Hydrogen Sulfide (H_2S) Prevention and Contingency Plan in Section 3 of Volume II of the appoved Application, the Owner/Operator shall monitor at least once per year for hydrogen sulfide (H_2S) at the vent of covered tanks or at the topof open tanks as specified in Attachment III.1.F of the approved Application. The Owner/Operator shall comply with 19.15.11.12E NMAC as required. The Owner/Operator shall include the results of the annual hydrogen sulfide monitoring event in its Annual Report.	BDI monitors for hydrogen suflide at the vent of each covered tank annually. The last monitoring event was conducted on September 10, 2021. The resultsof this monitoring are attached hereto.
K	In addition to forms that are currently submitted to the Division, the Owner/Operator shall also file to the Division's Environmental Bureau a copy of form C-118, Sheet 1 by the 15th of the next succedding month and a copy of form C-120-A by the 15th of the second succeeding month.	BDI submits form C-118 and C-120-A on a monthly basis through the OCD portal.

Attachment I.B – 2010 Major Modification Permit Conditions Documentation

Pond #3 Freeboard Markers

Attachment I.B – 2010 Major Modification Permit Conditions Documentation

Pond #1 Freeboard Marker

Attachment I.B – 2010 Major Modification Permit Conditions Documentation

Annual Tank H_2S Measurement (2022)

BASIN DISPOSAL, INC. Basin Operations/SOPS/Daily Inspection

ANNUAL TANK H2S MEASUREMENTS

YEAR 2022 MONTH _____ WEEK BEGINNING _____

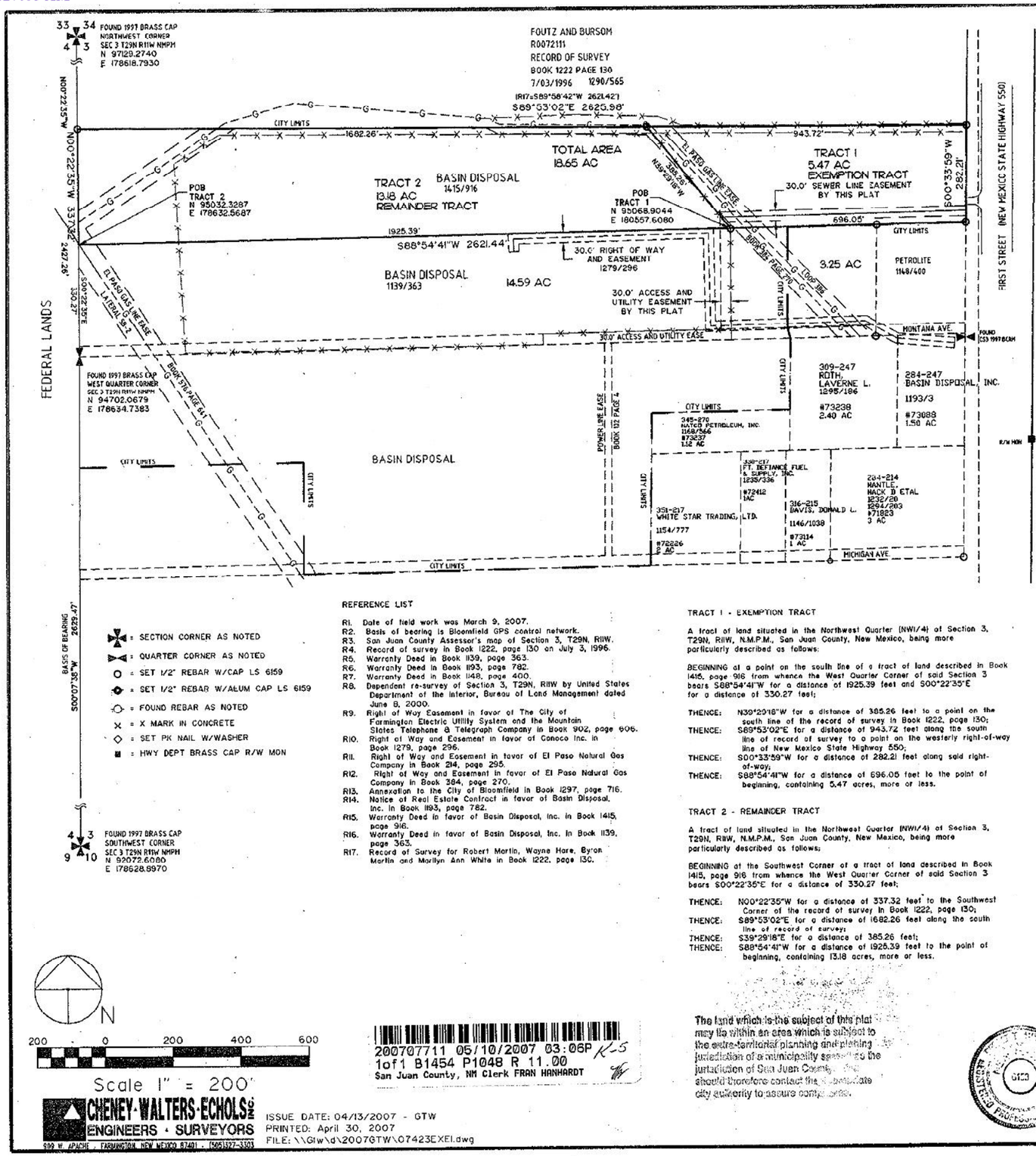
Permit Condition 9.H, At least once per year test H2S in tanks

RECEIVING TANKS				SKIMMED OIL TANKS			
Old Number	New Number	H2S PPM		Old Number	New Number	H2S PPM	
1	R1	0		9	R1	0	
A	A	0		10	A	0	
B	B	0		11	B	0	
2	R2	0					
A	A	0		POSITIVE HEAD TANKS			
B	B	0		15	P1	0	
3	R3	0		16	P2	0	
A	A	0		13	P3	0	
B	B	0					
4	R4	0		OIL HEATING TANKS			
A	A	0		17	H1	0	
B	B	0		18	H2	0	
	R5	not installed		19	H3	0	
	A	not installed					
	B	not installed		OIL SALES TANKS			
	R6	not installed		8	S1	0	
	A	not installed		7	S2	0	
	B	not installed		6	S3	0	
12	R7	0		5	S4	0	
A	A	0		20	S5	0	
B	B	0		21	S6	0	
Amigo	Amigo	0		22	S7	0	
					S8	not installed	
SEPERATION TANKS					S9	not installed	
14	T1	0		Manager Verification			
14.5	T2	0		Intials and Time	MM. 9-10-21		

Annual Tank H2S

ATTACHMENT I.C

SURVEY PLAT AND WARRANTY DEED



EXEMPTION SURVEY

LYIN IN THE
NW1/4 SECTION 3, T29N, R11W, N.M.P.M.
SAN JUAN COUNTY, NEW MEXICO
FOR
BASIN DISPOSAL, INC., A NEW MEXICO CORPORATION

OWNERS CERTIFICATE OF INTENT

WE, BASIN DISPOSAL, INC., A NEW MEXICO CORPORATION, CLAIM AN EXEMPTION FROM THE REQUIREMENTS OF THE NEW MEXICO SUBDIVISION ACT AND THE SAN JUAN COUNTY SUBDIVISION REGULATIONS FOR THE FOLLOWING REASON(S). WE CERTIFY THAT THIS TRANSACTION INVOLVES:

THE SALE, LEASE OR OTHER CONVEYANCE OF A SINGLE PARCEL FROM A TRACT OF LAND, EXCEPT FROM A TRACT WITHIN A PREVIOUSLY APPROVED SUBDIVISION, WITHIN ANY FIVE (5) YEAR PERIOD; PROVIDED THAT A SECOND OR SUBSEQUENT SALE, LEASE OR OTHER CONVEYANCE FROM THE SAME TRACT OF LAND WITHIN FIVE (5) YEARS OF THE FIRST SALE, LEASE OR OTHER CONVEYANCE SHALL BE SUBJECT TO THE PROVISIONS OF THE NEW MEXICO SUBDIVISION ACT AND THESE REGULATIONS; PROVIDED FURTHER THAT A SURVEY SHALL BE FILED WITH THE COUNTY CLERK INDICATING THE FIVE (5) YEAR HOLDING PERIOD FOR BOTH THE ORIGINAL TRACT AND THE NEWLY CREATED TRACT.

WE FURTHER CERTIFY THAT THE INFORMATION PROVIDED IN THIS CLAIM OF EXEMPTION PLAT IS TRUE AND ACCURATE AND THAT ALL DOCUMENTS PRESENTED IN SUPPORT OF MY APPLICATION FOR AN EXEMPTION ARE ORIGINALS OR ARE TRUE, COMPLETE AND CORRECT COPIES OF THE ORIGINALS.

Jerry Sandel, President
Basin Disposal, Inc.

State of New Mexico)
) ss:
County of San Juan)

The foregoing was acknowledged before me by Jerry Sandel, President of Basin Disposal, Inc., the 1st day of May, 2007.

My Commission Expires:
11/22/09

Notary Public

ACCEPTANCE - SAN JUAN COUNTY

The Claim of Exemption shown hereon was duly submitted to the San Juan County Subdivision Review Officer/Real Estate Specialist and is hereby approved and accepted for recording, this 10th day of May, 2007.

Approval of this plat does not restrict any regulatory official from thereafter requiring a correction of errors.

Signed: Allison R. Krueger
Subdivision Review Officer/
Real Estate Specialist

The land which is the subject of this plat may lie within an area which is subject to the extra-territorial planning and platting jurisdiction of a municipality as well as the jurisdiction of San Juan County. You should therefore contact the appropriate city authority to assure compliance.

ACCEPTANCE BY THE CITY OF BLOOMFIELD

This re-plat/lot-split/land-split, shown hereon was duly submitted to the City of Bloomfield, New Mexico, Planning/Zoning Administrator and is hereby approved and accepted for recording this 8 day of May, 2007.

Planning and Zoning Administrator
City of Bloomfield, New Mexico

Seal:
OFFICIAL SEAL
City of Bloomfield
STATE OF NEW MEXICO

TRACT 1 - EXEMPTION TRACT

A tract of land situated in the Northwest Quarter (NW1/4) of Section 3, T29N, R11W, N.M.P.M., San Juan County, New Mexico, being more particularly described as follows:

BEGINNING at a point on the south line of a tract of land described in Book 1415, page 916 from whence the West Quarter Corner of said Section 3 bears S88°54'41"W for a distance of 1925.39 feet and S00°22'35"E for a distance of 330.27 feet;

THENCE: N39°29'16"W for a distance of 385.26 feet to a point on the south line of the record of survey in Book 1222, page 130;
THENCE: S89°53'02"E for a distance of 943.72 feet along the south line of record of survey to a point on the westerly right-of-way line of New Mexico State Highway 550;
THENCE: S00°33'59"W for a distance of 282.21 feet along said right-of-way;
THENCE: S88°54'41"W for a distance of 696.05 feet to the point of beginning, containing 5.47 acres, more or less.

TRACT 2 - REMAINDER TRACT

A tract of land situated in the Northwest Quarter (NW1/4) of Section 3, T29N, R11W, N.M.P.M., San Juan County, New Mexico, being more particularly described as follows:

BEGINNING at the Southwest Corner of a tract of land described in Book 1415, page 916 from whence the West Quarter Corner of said Section 3 bears S00°22'35"E for a distance of 330.27 feet;

THENCE: N00°22'35"W for a distance of 337.32 feet to the Southwest Corner of the record of survey in Book 1222, page 130;
THENCE: S89°53'02"E for a distance of 1682.26 feet along the south line of record of survey;
THENCE: S39°29'16"E for a distance of 385.26 feet;
THENCE: S88°54'41"W for a distance of 1925.39 feet to the point of beginning, containing 13.18 acres, more or less.

The land which is the subject of this plat may lie within an area which is subject to the extra-territorial planning and platting jurisdiction of a municipality as well as the jurisdiction of San Juan County. You should therefore contact the appropriate city authority to assure compliance.

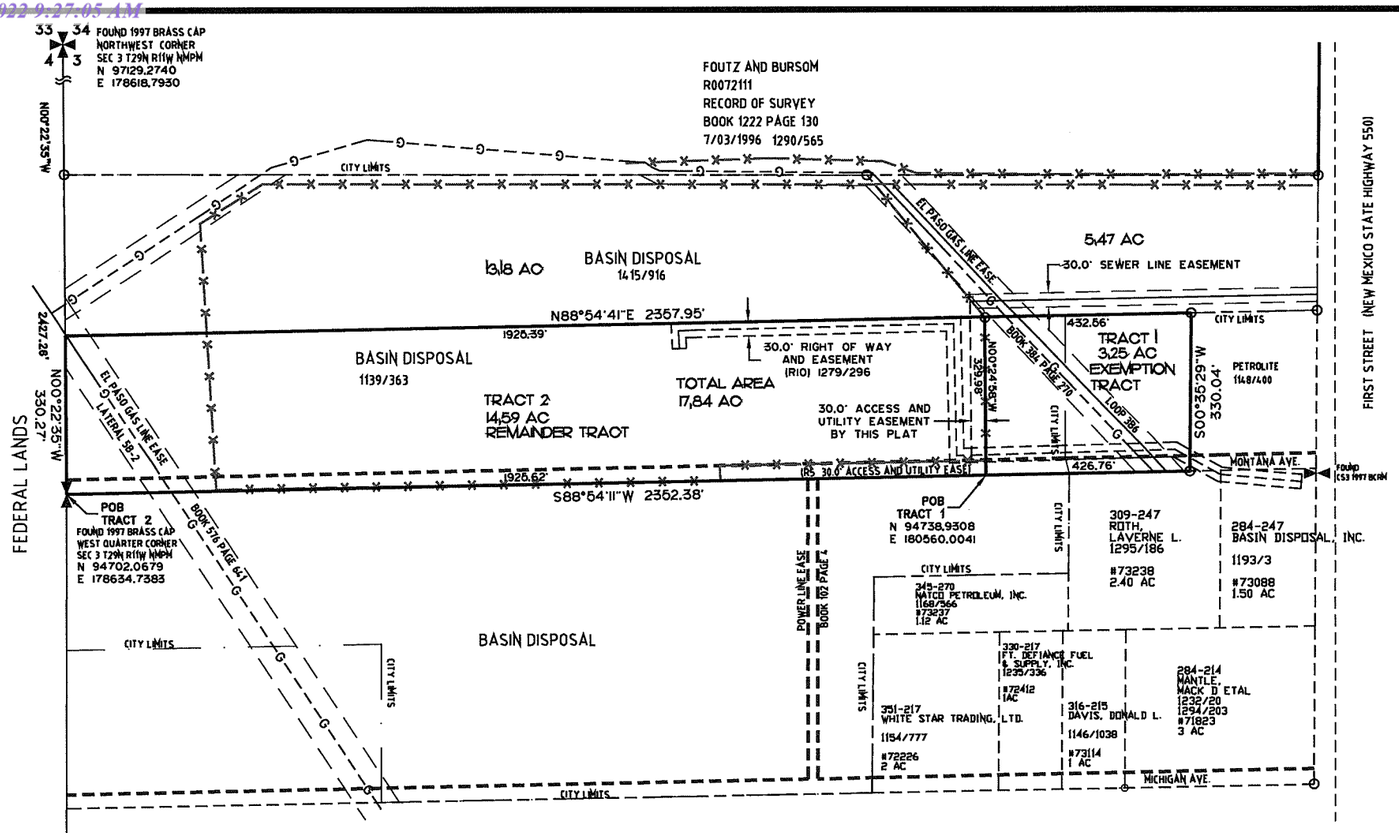
CERTIFICATION

I, George T. Walters, a New Mexico Professional Surveyor certify that I conducted and am responsible for this Survey Plat, that this Survey is true and correct to the best of my knowledge and belief and that this Survey Plat meets the Minimum Standards for Surveying in New Mexico.

I further certify that this is not a subdivision as defined in the New Mexico Subdivision Act and that this is an exempt division of land.

5-1-07
Date

George T. Walters
Professional Land Surveyor No. 6159
State of New Mexico



EXEMPTION SURVEY

LYIN IN THE
NW1/4 SECTION 3, T29N, R11W, N.M.P.M.
SAN JUAN COUNTY, NEW MEXICO
FOR
BASIN DISPOSAL, INC., A NEW MEXICO CORPORATION

OWNERS CERTIFICATE OF INTENT

WE, BASIN DISPOSAL, INC., A NEW MEXICO CORPORATION, CLAIM AN EXEMPTION FROM THE REQUIREMENTS OF THE NEW MEXICO SUBDIVISION ACT AND THE SAN JUAN COUNTY SUBDIVISION REGULATIONS FOR THE FOLLOWING REASON(S). WE CERTIFY THAT THIS TRANSACTION INVOLVES:

THE SALE, LEASE OR OTHER CONVEYANCE OF A SINGLE PARCEL FROM A TRACT OF LAND, EXCEPT FROM A TRACT WITHIN A PREVIOUSLY APPROVED SUBDIVISION, WITHIN ANY FIVE (5) YEAR PERIOD; PROVIDED THAT A SECOND OR SUBSEQUENT SALE, LEASE OR OTHER CONVEYANCE FROM THE SAME TRACT OF LAND WITHIN FIVE (5) YEARS OF THE FIRST SALE, LEASE OR OTHER CONVEYANCE SHALL BE SUBJECT TO THE PROVISIONS OF THE NEW MEXICO SUBDIVISION ACT AND THESE REGULATIONS; PROVIDED FURTHER THAT A SURVEY SHALL BE FILED WITH THE COUNTY CLERK INDICATING THE FIVE (5) YEAR HOLDING PERIOD FOR BOTH THE ORIGINAL TRACT AND THE NEWLY CREATED TRACT.

WE FURTHER CERTIFY THAT THE INFORMATION PROVIDED IN THIS CLAIM OF EXEMPTION PLAT IS TRUE AND ACCURATE AND THAT ALL DOCUMENTS PRESENTED IN SUPPORT OF MY APPLICATION FOR AN EXEMPTION ARE ORIGINALS OR ARE TRUE, COMPLETE AND CORRECT COPIES OF THE ORIGINALS.

_____
Jerry Sondel, President
Basin Disposal, Inc.

State of New Mexico)
) ss:
County of San Juan)

The foregoing was acknowledged before me by Jerry Sondel, President of Basin Disposal, Inc., the _____ day of _____, ____.

My Commission Expires:

_____ _____
Notary Public

ACCEPTANCE - SAN JUAN COUNTY

The Claim of Exemption shown hereon was duly submitted to the San Juan County Subdivision Review Officer/Real Estate Specialist and is hereby approved and accepted for recording, this _____ day of _____, ____.

Approval of this plat does not restrict any regulatory official from thereafter requiring a correction of errors.

Signed: _____
Subdivision Review Officer/
Real Estate Specialist

REFERENCE LIST

R1. Date of field work was March 9, 2007.
R2. Basis of bearing is Bloomfield GPS control network.
R3. San Juan County Assessor's map of Section 3, T29N, R11W.
R4. Record of survey in Book 1222, page 130 on July 3, 1996.
R5. Warranty Deed in Book 1139, page 363.
R6. Warranty Deed in Book 1193, page 782.
R7. Warranty Deed in Book 1148, page 400.
R8. Dependent re-survey of Section 3, T29N, R11W by United States Department of the Interior, Bureau of Land Management dated June 8, 2000.
R9. Right of Way Easement in favor of The City of Farmington Electric Utility System and the Mountain States Telephone & Telegraph Company in Book 902, page 606.
R10. Right of Way and Easement in favor of Conoco Inc. in Book 1279, page 296.
R11. Right of Way and Easement in favor of El Paso Natural Gas Company in Book 214, page 295.
R12. Right of Way and Easement in favor of El Paso Natural Gas Company in Book 384, page 270.
R13. Annexation to the City of Bloomfield in Book 1297, page 716.
R14. Notice of Real Estate Contract in favor of Basin Disposal, Inc. in Book 1193, page 782.
R15. Warranty Deed in favor of Basin Disposal, Inc. in Book 1415, page 916.
R16. Warranty Deed in favor of Basin Disposal, Inc. in Book 1139, page 363.
R17. Record of Survey for Robert Martin, Wayne Hare, Byron Martin and Marilyn Ann White in Book 1222, page 130.
R18. Right of Way Easement in favor of The City of Farmington Electric Utility System and the Mountain States Telephone & Telegraph Company in Book 996, page 154.
R19. Right of Way Easement in favor of The City of Farmington Electric Utility System and the Mountain States Telephone & Telegraph Company in Book 1029, page 558.

TRACT 1 - EXEMPTION TRACT

A tract of land situated in the Northwest Quarter (NW1/4) of Section 3, T29N, R11W, N.M.P.M., San Juan County, New Mexico, being more particularly described as follows:

BEGINNING at a point on the south line of a tract of land described in Book 1139, page 363 from whence the West Quarter Corner of said Section 3 bears S88°54'11"W for a distance of 1925.62 feet;

THENCE: N00°24'58"W for a distance of 329.98 feet;
THENCE: N88°54'41"E for a distance of 432.56 feet;
THENCE: S00°35'29"W for a distance of 330.04 feet;
THENCE: S88°54'11"W for a distance of 426.76 feet to the point of beginning, containing 3.26 acres, more or less.

TRACT 2 - REMAINDER TRACT

A tract of land situated in the Northwest Quarter (NW1/4) of Section 3, T29N, R11W, N.M.P.M., San Juan County, New Mexico, being more particularly described as follows:

COMMENCING at the West Quarter Corner of said Section 3, the southwest corner of a tract of land described in Book 1139, page 363 and the Point of Beginning of said tract;

THENCE: N00°22'35"W for a distance of 330.27 feet;
THENCE: N88°54'41"E for a distance of 1926.39 feet;
THENCE: S00°24'58"E for a distance of 329.98 feet to a point on the south line of a tract of land described in Book 1139, page 363;
THENCE: S88°54'11"W for a distance of 1925.62 feet to the point of beginning, containing 14.69 acres, more or less.

ACCEPTANCE BY THE CITY OF BLOOMFIELD

This re-plat/lot-split/land-split, shown hereon was duly submitted to the City of Bloomfield, New Mexico, Planning/Zoning Administrator and is hereby approved and accepted for recording this _____ day of _____, ____.

_____ Seal:
Planning and Zoning Administrator
City of Bloomfield, New Mexico

CERTIFICATION

I, George T. Walters, a New Mexico Professional Surveyor certify that I conducted and am responsible for this Survey Plat, that this Survey is true and correct to the best of my knowledge and belief, and that this Survey Plat meets the Minimum Standards for Surveying in New Mexico.

I further certify that this is not a subdivision as defined in the New Mexico Subdivision Act and that this is an exempt division of land.

_____ _____
Date
George T. Walters
Professional Land Surveyor No. 6159
State of New Mexico

CHENEY·WALTERS·ECHOLS INC
ENGINEERS ▲ SURVEYORS
NEW MEXICO 87401 · (505)327-3303

ISSUE DATE: 04/13/2007 - GTW
PRINTED: January 16, 2020
FILE: \\Wdmycloudex4\public\TeraStation2\GTW\2007GTW\07423EXE2.dwg

9113973 363

SF - 1 SHORT FORM WARRANTY DEED—Rev. 5-75—New Mexico Statutory Form THE VALLIANT CO. ALBUQUERQUE, N. M.

WARRANTY DEED

RICHARD I. LEDBETTER and LAURA L. LEDBETTER, husband and wife, and LaVEL BAIRD and SHIRLEY BAIRD, husband and wife, and GORDON N. CRANE and DORCAS A. CRANE, husband and wife, for consideration paid, grant to BASIN DISPOSAL, INC., a New Mexico corporation,

whose address is Box 358, Farmington, New Mexico 87499,

the following described real estate in San Juan County, New Mexico:

The South 330 feet of the Northwest Quarter (NW¼) of Section Three (3), in Township Twenty-Nine (29) North of Range Eleven (11) West, N.M.P.M.,
RESERVING to Owner herein, their heirs and/or assigns, an easement for utility and access over the South 30 feet of subject property, and the right to extend a water line across subject property;

SUBJECT TO taxes for the year 1985 and thereafter; mineral reservations and/or conveyances heretofore made, and any and all easements and servitudes, public or private, of whatsoever kind or nature, in existence at the date hereof;

with warranty covenants.

WITNESS OUR hand S and seal S this 1st day of August, 1985

Richard I. Ledbetter by Gordon N. Crane his Attorney in Fact (Seal)

Laura L. Ledbetter by Gordon N. Crane her Attorney in Fact. (Seal)

LaVel Baird by Gordon N. Crane his Attorney in Fact. (Seal)

Shirley Baird by Gordon N. Crane her Attorney in Fact.

Dorcas A. Crane by Gordon N. Crane her Attorney in Fact. (Seal)

ACKNOWLEDGMENT FOR NATURAL PERSONS

Gordon N. Crane

STATE OF NEW MEXICO
COUNTY OF San Juan } ss.

The foregoing instrument was acknowledged before me this 15th day of August, 1985,
by GORDON N. CRANE, individually and as Attorney in Fact on behalf of Richard I. Ledbetter and Laura L. Ledbetter, husband and wife, and LaVal Baird and Shirley Baird, husband and wife
(Name or Names of Person or Persons Acknowledging)
and Dorcas A. Crane, his wife

My commission expires: April 23, 1988 (Seal)

Notary Public

FOR RECORDER'S USE ONLY

FILED OR RECORDED
BOOK 1139 PAGE 363
SAN JUAN COUNTY, NEW MEXICO
DEC 0 2 1991
AT 2:08 O'CLOCK P M
COUNTY CLERK
DEPUTY Vera B. Brown
REC. $ 20.00 DOC. $ 5.00

ACKNOWLEDGMENT FOR CORPORATION

STATE OF NEW MEXICO
COUNTY OF } ss.

The foregoing instrument was acknowledged before me this
day of, 19,
by (Name of Officer),
(Title of Officer) of (Name of Corporation Acknowledging),
(State of Incorporation) corporation, on behalf of said corporation.

My commission expires:

(Seal)

Notary Public

ATTACHMENT I.D

COVERED BELOW-GRADE TANKS CONSTRUCTION APPROVALS

BASIN DISPOSAL, INC.
"SPECIALIZING IN DISPOSAL OF PRODUCED WATER AND DRILLING MUD"
P.O BOX 100 - AZTEC, NEW MEXICO 87410 - PHONE: (505) 334-3013

RECEIVED OCD
2010 OCT -4 P 1:15

30 September 2010

Brad Jones
EMNRD/OCD
Environmental Bureau
1220 South St. Francis Dr.,
Santa Fe, New Mexico 87505

RE: Plan of Retrofitting Loading Area Sump in Accordance with NM-1-005 Permit Condition 5A

Mr. Jones;

Please find below Basin Disposal's plan for retrofitting the current single walled sump at the loading area with a double walled sump with leak detection.

Condition 5A of Permit NM-1-005

The plan is submitted pursuant to Condition 5A of Permit NM-1-005 which states:

"*The Owner/Operator shall retrofit existing below-grade tanks and sumps that lack secondary containment and/or leak detection to meet the design and construction specifications of 19.15.17.11 NMAC. The Owner/Operator shall submit a retrofit plan for the below-grade tank which includes procedures and protocols for addressing any releases discovered during the retrofit operation to Division's Environmental Bureau no later than one year from the date of issuance of the Permit.*"

Requirements of Subsection D of 19.15.17.12 NMAC

Basin Disposal currently has in place a single wall below grade tank as the loading area sump. Per the permit and 19.15.17.12 NMAC D (6) "*The operator of a below-grade tank constructed and installed prior to June 16, 2008 that is single walled and where any portion of the tank sidewall is below the ground surface and not visible shall equip or retrofit the below-grade tank to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC, or close it, within five years after June 16, 2008. If the existing below-grade tank does not demonstrate integrity, the operator shall promptly remove that below-grade tank and install a below-grade tank that complies with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC. The operator shall comply with the operational requirements of 19.15.17.12 NMAC*

As such, Basin Disposal plans to remove the current single wall below grade tanks and install a below-grade tank that complies with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC.

Requirements of Subsection I of 19.15.17.11 NMAC

(1) *The operator shall ensure that a below-grade tank is constructed of materials resistant to the below-grade tank's particular contents and resistant to damage from sunlight.*

The tank proposed to be installed shall be constructed of 6 gauge steel and shall be painted to protect the steel from corrosion.

(2) *A below-grade tank system shall have a properly constructed foundation consisting of a level base free of rocks, debris, sharp edges or irregularities to prevent punctures, cracks or indentations of the liner or tank bottom.*

The foundation shall be constructed using smooth fill dirt free of rocks or debris to ensure that there are no sharp edges or irregularities so as to prevent punctures, cracks or indentions of the tank bottom.

(3) *The operator shall construct a below-grade tank to prevent overflow and the collection of surface water run-on.*

The below grade tank shall be placed so as to maintain the top of the tank approximately 2-3 inches above the grade of the ground surface to prevent collection of surface water run-on.

The liquid level in the below grade tank shall be checked daily every morning and emptied, if liquids are present, daily every afternoon. Both events are documented on the attached Daily H_2S and Sump Inspection Form.

(4) *An operator shall construct a below-grade tank in accordance with one of the following designs.*
(b) All other below-grade tanks, in which the side walls are not open for visible inspection for leaks shall be double walled with leak detection capability.

Basin Disposal proposes to construct and install a double walled below grade tank with leak detection capability. The interior tank shall be a 71 inch diameter, 70 inch deep tank. The exterior tank shall be a 82 inch diameter, 72 inch deep tank. This will result in a 2" deep separation at the bottom for leak detection. The interior tank shall be affixed to the exterior tank at the top with a solid plate and along the sides with welded supports. The interior tank will have a 3" diameter pipe going from the top to the bottom for removing liquids. The exterior tank will have a 4" diameter pipe going from the top to the bottom so the tank can be inspected for leaks of the interior tank. The top of the interior tank will be constructed of a reinforced mesh to prevent wildlife from being able to enter the tank.

Requirements of Subsection E of 19.15.17.13 NMAC

(1) The operator shall remove liquids and sludge from a below-grade tank prior to implementing a closure method and shall dispose of the liquids and sludge in a division-approved facility.

All liquids and sludge from the existing single walled below-grade tank shall be removed. Liquids shall be disposed of at Basin Disposal and sludges shall be disposed of at Envirotech.

(2) *The operator shall remove the below-grade tank and dispose of it in a division-approved facility or recycle, reuse, or reclaim it in a manner that the appropriate division district office approves.*

Basin Disposal proposes to wash the single wall tank to remove any residual oil and gas waste, disposing of that generated liquid at Basin Disposal, and taking the metal tank to a scrap metal yard for recycling.

(3) If there is any on-site equipment associated with a below-grade tank, then the operator shall remove the equipment, unless the equipment is required for some other purpose.

Any equipment associated with the single wall tank will be used with the double walled tank.

(4) *The operator shall test the soils beneath the below-grade tank to determine whether a release has occurred. The operator shall collect, at a minimum, a five point, composite sample; collect individual grab samples from any area that is wet, discolored or showing other evidence of a release; and analyze for BTEX, TPH and chlorides to demonstrate that the benzene concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 0.2 mg/kg; total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 50 mg/kg; the TPH concentration, as determined by EPA method 418.1 or other EPA method that the division approves, does not exceed 100 mg/kg; and the chloride concentration, as determined by EPA method 300.1 or other EPA method that the division approves, does not exceed 250 mg/kg, or the background concentration, whichever is greater. The operator shall notify the division of its results on form C-141. The division may require additional delineation upon review of the results.*

Basin Disposal shall test the soils beneath the single walled tank upon removal. A five point composite sample shall be collected. If any areas are wet, discolored, or showing other evidence of release individual grab samples shall be collected from those areas. All samples shall be analyzed for:
Benzene: EPA SW-846 method 8021B or 8260B
BTEX: EPA SW-846 method 8021B or 8260B
TPH: EPA method 418.1
Chlorides: EPA method 300.1
Basin Disposal shall notify the division of the results.

If the analytical results are less than the following:
Benzene: 0.2 mg/kg
Total BTEX: 50 mg/kg
TPH: 100 mg/kg
Chlorides: 250 mg/kg
Basin Disposal will conduct no further remediation action.

(5) *If the operator or the division determines that a release has occurred, then the operator shall comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.*

If any of the analytical results above are greater than the limits listed, Basin Disposal shall comply with 19.15.29 NMAC and 15.15.30 NMAC, as appropriate.

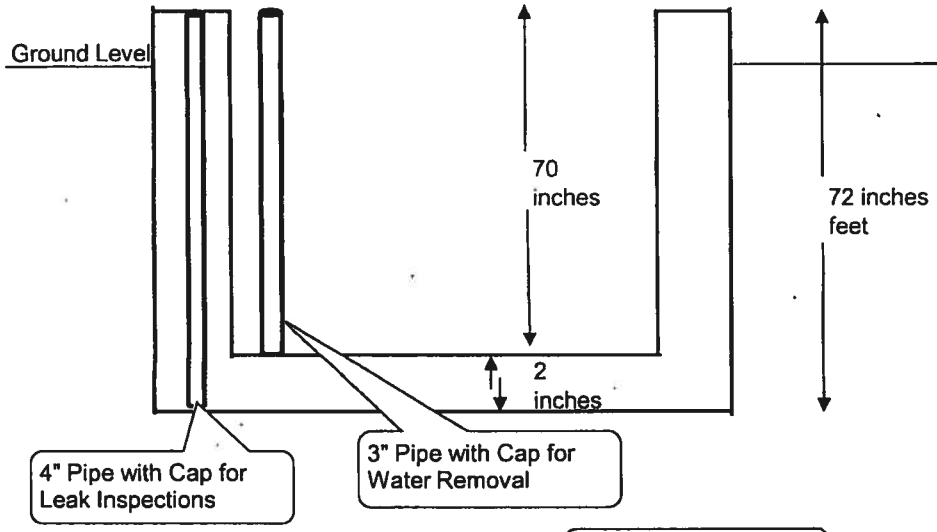
If any further information is needed, please feel free to contact me at via phone at 505-320-2840 or email at jvolkerding@aztecwell.com.

Sincerely;

John Volkerding
General Manager

LOADNIG AREA SUMP SECONDARY CONTAINMENT PROPOSAL

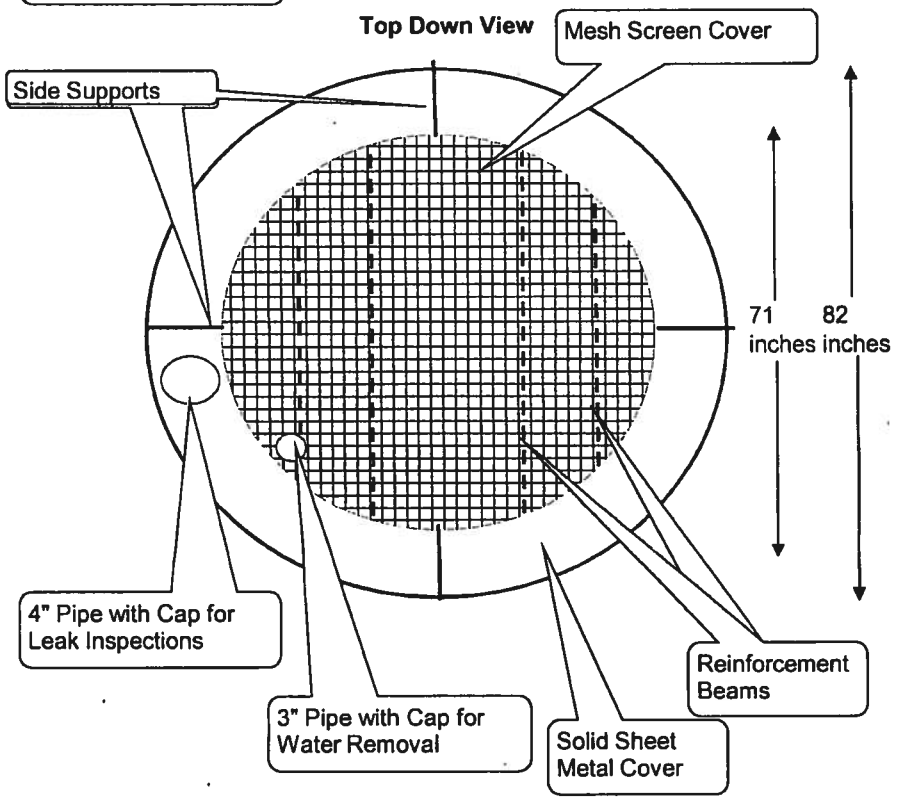
Side View



Tank Raised to prevent Stormwater Entering Tank

70 inches= 5.8 feet
72 inches= 6.0 feet

Top Down View



71 inches= 5.9 feet
82 inches= 6.8 feet

BASIN DISPOSAL, INC.
DAILY H2S AND SUMP INSPECTION

YEAR 2010 MONTH _____ WEEK BEGINNING _____

AMBIENT AIR WIND SPEED/DIRECTION (Initials & Time)
A AM READINGS
B PM READINGS

SUMP LEVELS (Initials & Time)
C PUMP HOUSE SUMP CHECKED AM & PM
D LOADING AREA SUMP CHECKED AM & PM, EMPTY DAILY AT 4PM
E CONCRETE SLAB, NOTE WHEN EMPTOED

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Ambient Air H2S (AM)							
H2S Reading (ppm)							
Wind Speed (mph)							
Wind Direction							
Initials and Time							
Ambient Air H2S (PM)							
H2S Reading (ppm)							
Wind Speed (mph)							
Wind Direction							
Initials and Time							
Sump Levels							
AM Cement Slab Sump (ft)							
AM Loading Area (ft)							
AM Pump House Sump (ft)							
Intials and Time							
Empty Cement Slab (Initial/Date)							
4 PM EMPTY THE SUMPS							
PM Loading Area Sump (ft)							
PM Pump House Sump (ft)							
Intials and Time							
Stormwater Control							
Strutural Defect (Y,N)							
Action Taken							
Initials and Time							
Manager Verification							
Intials and Time							

New Mexico Energy, Minerals and Natural Resources Department

November 2, 2010

Mr. John Volkerding
General Manager
Basin Disposal, Inc.
P.O. Box 100
Aztec, NM 87410

RE: Basin Disposal, Inc. – Compliance with Condition 5A of Permit Major Modification
Commercial Surface Waste Management Facility Permit NM-1-005
Facility Location: SE/4 NW/4 of Section 3, Township 29 North, Range 11 West NMPM, San Juan County, New Mexico

Dear Mr. Volkerding:

The Oil Conservation Division (OCD) has received and reviewed Basin Disposal Inc.'s (Basin) request, dated September 30, 2010, for approval of a plan to retrofit or replace an existing below-grade tank (referred to as a "sump" in the request) in accordance with Condition 5A of the permit major modification dated May 19, 2010. The plan satisfies the requirements specified within Condition 5A of the permit major modification.

The OCD hereby approves the plan to retrofit or replace an existing below-grade tank with the following condition(s):

- Basin shall submit a summary report of the activities completed under the below-grade tank retrofit/replacement plan. The summary report shall include photo documentation of the soils beneath the existing below-grade tank after removal, a copy of the analytical results of the soils beneath the existing below-grade tank, and photo documentation of the installation of the new below-grade tank design. Basin shall submit the summary to the OCD within 60 days of the completion of the retrofit/replacement activities.

Please be advised that OCD approval does not relieve Basin of responsibility should their operations fail to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not

relieve Basin of responsibility for compliance with any other federal, state, or local laws and/or regulations

If there are any questions regarding this matter, please do not hesitate to contact me at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Brad A. Jones
Environmental Engineer

BAJ/baj

cc: OCD District III Office, Aztec

ATTACHMENT I.E

2010 PERMIT APPROVAL

SURFACE WASTE MANAGEMENT FACILITY PERMIT (NM1-005)
MAJOR MODIFICATION

1. GENERAL PROVISIONS.

A. PERMITTEE AND PERMITTED FACILITY: The Oil Conservation Division (Division) of the Energy, Minerals and Natural Resources Department issues this surface waste management permit, including a major modification, **NM1-005**, (Permit) to Basin Disposal, Inc. (Owner/Operator), P.O. Box 100, Aztec, New Mexico 87410, located at 200 Montana Street, Bloomfield, New Mexico 87413 to construct, operate, and close the Basin Disposal, Inc, Surface Waste Management Facility (Facility) located in Section 3, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. The Facility is located approximately 3 miles north of the intersection of Highways 550 and 64.

The existing 28 acres ± commercial surface waste management facility includes an evaporation pond, 12 receiving tanks, 3 oily water receiving tanks, 3 skimmed oil tanks, 3 oil heating tanks, 2 sludge settling tanks, 7 oil sales tanks, 3 filtered water tanks, 4 bleach tanks, 1 concrete sludge stabilization station, 2 covered below-grade tanks, and various support facilities including an office, a maintenance building, roads, and a storm water detention basin. Also, within the facility boundaries is an UIC Class II injection well (which is permitted separately by Division order R-8524, API No. 30-045-26862) for the disposal of produced water at the Facility. The major modification includes the addition of 2 evaporation ponds (approximately 2 acres each) constructed with 60-mil high density polyethylene (HDPE) primary liner, leak detection, and secondary liner systems. In addition, 6 additional oil field waste liquid receiving tanks and 2 oil sales tanks will be installed at the Facility.

B. SCOPE OF PERMIT: The Division regulates the disposition of water produced or used in connection with the drilling for or producing of oil or gas or both and to direct surface or subsurface disposal of the water in a manner that will afford reasonable protection against contamination of fresh water supplies designated by the state engineer pursuant to authority granted in the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978) at Section 70-2-12(B)(15) NMSA 1978.

The Division regulates the disposition of nondomestic wastes resulting from the exploration, development, production or storage of crude oil or natural gas to protect the public health and the environment pursuant to authority granted in the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978) at Section 70-2-12(B)(21) NMSA 1978.

The Division regulates disposition of nondomestic wastes resulting from the oil field service industry, the transportation of crude oil or natural gas, the treatment of natural gas or the refinement of crude oil to protect public health and the environment pursuant to authority granted

in the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978) at Section 70-2-12(B)(22) NMSA 1978.

This Permit does not convey any property rights of any sort or any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal or local laws, rules or regulations.

C. PERMIT CONDITIONS: By signing this Permit, the Owner/Operator agrees to the specific provisions set out in this document, and the commitments made in the approved Permit Major Modification Application of June 11, 2009 and the attachments to that application (as deemed complete on October 20, 2009), which are incorporated into this Permit by reference.

D. DEFINITIONS: Terms not specifically defined in this Permit shall have the same meanings as those in the Oil and Gas Act or the rules adopted pursuant to that Act, as the context requires.

E. GENERAL PERFORMANCE STANDARDS: The Owner/Operator shall operate in accordance with the permit conditions, to comply with the Oil and Gas Act and the rules issued pursuant to that Act, to protect public health and the environment [see Sections 70-2-12(B) (15), (21) and (22) NMSA 1978]; and to prevent waste of oil and gas, prevent the contamination of fresh waters and so that oil and gas are not used wastefully or allowed to leak or escape from a natural reservoir or from wells, tanks, containers, pipe or other storage conduit or operating equipment. See 19.15.2.8 NMAC.

F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A PERMIT: This Permit is effective when the Division's Environmental Bureau receives the signed Permit from the Owner/Operator. This Permit will expire on **May 19, 2020.** This Permit supersedes the Permit Major Modification of May 17, 1999, and any subsequent permit minor modifications to date. The Owner/Operator shall submit to the Division's Environmental Bureau an application for renewal no later than 120 calendar days before **May 19, 2020**, pursuant to 19.15.36.12A(2)(a) NMAC. If an Owner/Operator submits a renewal application at least 120 calendar days before the Permit expires and is in compliance with the approved Permit, then the existing Permit will not expire until the Division's Environmental Bureau has approved or disapproved the renewal application. See 19.15.36.12A(2)(a) NMAC. Operating with an expired Permit may subject the Owner/Operator to civil and/or criminal penalties. See Section 70-2-31 NMSA 1978.

G. FINANCIAL ASSURANCE: The Owner/Operator shall provide financial assurance in a form approved by the Division's Environmental Bureau for the commercial surface waste management facility's estimated closure and post closure cost. See 19.15.36.11 NMAC. The amount of financial assurance required is $147,099.00 in addition to the current financial assurance of $140,000.00 for a total amount of $287,099.00. This Permit cannot be issued until the total amount ($287,099.00) of financial assurance has been submitted to the Division's Environmental Bureau. The UIC Class II injection well located at the Facility is subject to the financial assurance requirements for well plugging specified at in 19.15.8.9 NMAC.

2. GENERAL FACILITY OPERATIONS.

A. LABELING: The Owner/Operator shall clearly label all tanks, drums, and containers to identify the contents and provide other emergency notification information in accordance with the tank numbering system as specified in Attachment III.1.F of the approved Application.

B. INSPECTIONS AND MAINTENANCE OF SECONDARY CONTAINMENT SYSTEMS: The Owner/Operator shall inspect all secondary containment systems and sumps at least monthly, unless otherwise specified, to ensure proper operation and to prevent over topping or system failure. The Owner/Operator shall empty all secondary containment systems of any fluids within 48 hours of discovery. The Owner/Operator shall keep written records of its inspections using the inspection form as specified in its approved Application and keep written records of any fluid analyses.

i. **Evaporation Ponds:** If the Owner/Operator determines that fluids are present in the leak detection system in excess of 2 feet, the Owner/Operator shall initiate corrective actions as specified in Section 1 of Volume II of the approved Application. The Owner/Operator shall inspect all secondary containment systems and sumps at least every two weeks.

ii. **Below-grade Tanks, Sumps, and Sludge Stabilization Unit:** If the Owner/Operator determines that a secondary containment system has developed a leak, or if any penetration of the below-grade tank, sump or sludge stabilization unit has occurred below the liquid's surface, then the Owner/Operator shall remove all liquid above the damage or leak line within 48 hours, notify the Division's Environmental Bureau within 48 hours of the discovery and repair the damage or replace the below-grade tank, sump or sludge stabilization unit as specified in Section 1 of Volume II of the approved Application.

C. RELEASE REPORTING AND CORRECTIVE ACTION FOR RELEASES: The Owner/Operators shall comply with the spill reporting and corrective action provisions of 19.15.30 NMAC or 19.15.29 NMAC.

D. ANNUAL REPORT: The Owner/Operator shall submit an annual report to the Division's Environmental Bureau by May 17 of each year. The annual report shall include the following information for the preceding calendar year:

i. A copy of all inspections forms including facility inspections and inspections conducted of leak detection systems and analytical results of fluids if fluids were detected;

ii. A copy of the annual hydrogen sulfide (H_2S) monitoring results for tank batteries in accordance with permit condition 9H and the monitoring results for underground

process and wastewater pipeline integrity tests in accordance with permit condition 6A;

iii. A copy of all facility training records;

iv. A copy of all form C-138s for waste generated by the Owner/Operator;

v. A copy of all complaint logs and resolutions; and,

vi. In addition to reporting releases as specified in the contingency plan of Section 5 of Volume II of the approved Application and pursuant to 19.15.29 NMAC, a summary report that includes the nature and amount of any reportable releases pursuant to 19.15.29 NMAC, with a description of the disposition of any contaminated soil or water.

3. MATERIAL STORAGE.

A. DRUM AND CONTAINER STORAGE: The Owner/Operator shall store all drums and other containers, including empty drums and containers, on a curbed, impermeable pad. "Containers" include tote tanks, sacks, and buckets. The Owner/Operator shall store empty drums on their sides with the bungs in place and lined up on a horizontal plane. The Owner/Operator may store fresh water outside the drum and container, process, maintenance, material and waste storage areas without having a curbed, impermeable pad, liner, pavement, or curbing.

B. PROCESS, MAINTENANCE, AND MATERIAL STORAGE AREAS: The Owner/Operator shall pave and curb all process, maintenance, and material storage areas at the Facility, excluding all evaporation ponds, below-grade tanks, and sumps, or incorporate another appropriate spill collection device for these areas.

C. ABOVE GROUND TANKS: The Owner/Operator shall place above ground tanks on impermeable pads and surround the tanks with lined berms or other impermeable secondary containment system having a capacity at least equal to one and one-third times the capacity of the largest above ground tank, or, if the above ground tanks are interconnected, of all interconnected above ground tanks. The Owner/Operator may store fresh water outside the drum and container, process, maintenance, material and waste storage areas without having a curbed, impermeable pad, liner, pavement, or curbing.

4. WASTE MANAGEMENT.

A. WASTE STREAMS: This Permit authorizes the Owner/Operator to handle the RCRA exempt liquid waste streams as specified in Section 2 of Volume II of the approved Application. The Owner/Operator must obtain the Division's Environmental Bureau's approval to receive any waste stream not specified in its approved Application for the collection, disposal, evaporation, remediation, reclamation, treatment, or storage.

B. WASTE STORAGE: The Owner/Operator shall store waste at the Facility only in clearly marked waste storage areas that have been specified in its approved Application, except that waste generated during emergency response operations may be stored elsewhere for no more than 72 hours. The Division's Environmental Bureau may approve additional waste storage areas on a case-by-case basis.

The Owner/Operator shall not store oil field waste, as defined in 19.15.2.7O(3) NMAC, generated at the Facility by the Owner/Operator on-site for more than 180 calendar days from the date that the container is filled without obtaining approval from the Division's Environmental Bureau.

C. CLASS V WELLS: Leach fields and other wastewater disposal systems at Division-regulated facilities that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells, pursuant to 20.6.2.5002B NMAC.

This Permit does not authorize the use of a Class V injection well for the disposal of industrial waste at the Facility. The Owner/Operator shall close any Class V industrial waste injection wells at the Facility that inject non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.,* septic systems, leach fields, dry wells, *etc.*) pursuant to 20.6.2.5005 NMAC within 90 calendar days of the issuance of this Permit. Other Class V wells, including wells used only for the injection of domestic wastes, must be permitted by the New Mexico Environment Department.

5. BELOW-GRADE TANKS AND SUMPS.

A. EXISTING BELOW-GRADE TANKS AND SUMPS: Below-grade tanks and sumps must have secondary containment systems with leak detection. The Owner/Operator shall retrofit existing below-grade tanks and sumps that lack secondary containment and/or leak detection systems to meet the design and construction specifications of 19.15.17.11 NMAC. The Owner/Operator shall submit a retrofit plan for the below-grade tank which includes procedures and protocols for addressing any releases discovered during the retrofit operation to the Division's Environmental Bureau no later than one year from the date of issuance of this Permit. The Division's Environmental Bureau shall review and approve, approve with conditions, or deny the Owner/Operator's retrofit plan. The approved plan for retrofitting existing below-grade tanks and sumps shall be incorporated into any permit renewal.

The Owner/Operator shall test existing below-grade tanks that lack secondary containment and leak detection annually or as specified herein. The Owner/Operator may propose various methods for testing such as pressure testing to 3 pounds per square inch greater than normal operating pressure and/or visual inspection of cleaned tanks and/or sumps, or other Division-approved methods. The Owner/Operator shall maintain the test results for inspection by the Division's Environmental Bureau.

B. NEW BELOW-GRADE TANKS AND SUMPS: The Owner/Operator shall obtain the Division's Environmental Bureau's approval before installing a new below-grade tank

or sump. The Owner/Operator shall submit a proposed design plan that meets the design and construction specifications for below-grade tanks at 19.15.17.11 NMAC and which meets the definition for sumps specified at 19.15.17.7H NMAC, to the Division's Environmental Bureau to install a new below-grade tank or sump at least 90 calendar days before it intends to install the new unit. Design plans for below-grade tanks shall incorporate secondary containment and/or leak detection. The Division's Environmental Bureau will review and approve, approve with conditions, or deny the Owner/Operator's proposed design for a new below-grade tank or sump.

6. UNDERGROUND PROCESS AND WASTEWATER PIPELINES.

A. TESTING: The Owner/Operator shall test all underground process/wastewater pipelines at least once every five (5) years to demonstrate their mechanical integrity, except lines containing fresh water. The Owner/Operator shall test all pressure-rated pipelines to 150% of the normal operating pressure, if possible, or for atmospheric drain systems, to 3 pounds per square inch greater than normal operating pressure, and pressure held for a minimum of 30 minutes with no more than a 1% loss/gain in pressure. The Owner/Operator may propose other test methods for the Division's Environmental Bureau's review and approval. If the pipeline fails the integrity test, then the Owner/Operator shall notify the Division's Environmental Bureau within 72 hours and propose methods to either repair or replace the defective pipeline. The Owner/Operator shall also submit a Remediation Plan to the Division's Environmental Bureau to investigate and remediate any contamination pursuant to 19.15.29 NMAC. The Owner/Operator shall maintain the test results for inspection by the Division's Environmental Bureau.

B. SCHEMATIC DIAGRAMS OR PLANS: The Owner/Operator shall maintain at the Facility all underground process and wastewater pipeline schematic diagrams or plans showing all drains, vents, risers, valves, underground piping, pipe type, rating, size, and approximate location.

C. NEW UNDERGROUND PIPEINES: The Owner/Operator shall notify the Division's Environmental Bureau prior to installing any new underground pipelines. The Owner/Operator shall submit a design plan as specified in permit condition 6B to the Division's Environmental Bureau for new underground pipelines at least 90 calendar days before it intends to begin construction. The Division's Environmental Bureau shall determine whether any modifications to this Permit are necessary and appropriate based on the new underground pipelines.

7. STORM WATER: The Owner/Operator shall implement and maintain storm water run-on and run-off plans and controls as specified in Sections 1 and 4 of Volume III of the approved Application, and shall comply with any additional commitments as specified in the Contingency Plan in Section 5 of Volume II of the approved Application.

The Owner/Operator shall inspect the berms and the outside walls of pond levees quarterly and after a major rainfall or windstorm, and maintain the storm water control features in such a manner as to prevent erosion.

8. CLOSURE / POST-CLOSURE: In addition to the closure / post-closure plan of Section 4 of Volume II of the approved Application, the Owner/Operator shall complete the following action items during closure of the entire Facility:

A. The Owner/Operator shall close all portions of the Facility including the temporary soil storage area.

B. Upon closure of the entire Facility, the Owner/Operator shall not accept any material for the collection, disposal, evaporation, remediation, reclamation, treatment, or storage.

If the Owner/Operator chooses to close part of the Facility while continuing to operate the other parts of the Facility, it shall submit a partial closure plan to the Division's Environmental Bureau. The Division's Environmental Bureau will review and approve, approve with conditions, or deny the Owner/Operator's proposed partial closure plan.

9. ADDITIONAL SITE SPECIFIC CONDITIONS:

A. The Owner/Operator shall comply with all applicable requirements of the Surface Waste Management Facilities Rules (19.15.36 NMAC), the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978), and all conditions specified in the Permit, and shall construct, operate and close the Facility in accordance with the approved Permit Major Modification application of June 11, 2009, as deemed administratively complete on October 20, 2009, and all conditions specified in the Permit.

B. The Owner/Operator shall include the surface waste management facility permit number on the sign pursuant to 19.15.36.13J NMAC.

C. At least 30 days prior to the start of pond construction, the Owner/Operator shall furnish the Division's Environmental Bureau with a major milestone schedule for pond construction.

D. The Owner/Operator shall submit to and obtain approval from the Division's Environmental Bureau of a Liner Certification Report prior to use of Pond #2 and any other ponds that it may construct after the issuance of this Permit.

E. The Owner/Operator shall clearly mark the liner of each existing pond (i.e., Pond #1) to indicate a 3-foot freeboard within the term of this Permit. A 3-foot freeboard in Pond #1 shall be required at that time. Also, the Owner/Operator shall clearly mark the liner of any newly constructed pond to indicate the required 3-foot freeboard prior to use.

F. The Owner/Operator shall, within 24 hours of receiving notification from the Division's Environmental Bureau or a concerned party that an objectionable odor has been detected or reported, implement the following response procedures:

i. Log date and approximate time of notice that an odor exists, including the name of the complainant and any contact information;

ii. Investigate the source of the odor and log investigative steps taken, including date and time, and conclusions reached; and,

iii. Take actions to alleviate the odor, which may include adjusting chemical treatment, air sparging, solidification, or similar responses, and log the actions taken.

G. In addition to the commitments of the Hydrogen Sulfide (H_2S) Prevention and Contingency Plan in Section 3 of Volume II of the approved Application, if a hydrogen sulfide (H_2S) reading of 10.0 ppm or greater is obtained at the facility boundary, then the Owner/Operator shall notify all persons residing within one-half mile of the facility boundary and assist public safety officials with evacuation as requested.

H. In addition to the commitments specified in the Hydrogen Sulfide (H_2S) Prevention and Contingency Plan in Section 3 of Volume II of the approved Application, the Owner/Operator shall monitor at least once per year for hydrogen sulfide (H_2S) at the vent of covered tanks or at the top of open tanks as specified in Attachment III.1.F of the approved Application. The Owner/Operator shall comply with 19.15.11.12E NMAC as required. The Owner/Operator shall include the results of the annual hydrogen sulfide monitoring event in its Annual Report.

I. The Owner/Operator shall obtain Division's Environmental Bureau approval prior to any design changes to the produced water receiving, treatment and evaporation area.

J. The Owner/Operator shall obtain Division's Environmental Bureau approval prior to the installation of any wells or other structures within the boundaries of the Facility.

K. In addition to forms that are currently submitted to the Division, the Owner/Operator shall also file to the Division's Environmental Bureau a copy of form C-118, Sheet 1 by the 15th of the next succeeding month and a copy of form C-120-A by the 15th of the second succeeding month.

10. SCHEDULE OF COMPLIANCE:

A. The Owner/Operator shall sign and return this Permit to the Division's Environmental Bureau within 30 days of its receipt of this Permit.

B. The Owner/Operator shall provide financial assurance in a form approved by the Division's Environmental Bureau for the commercial surface waste management facility's estimated closure and post closure cost within 30 days of its receipt of this Permit. The amount of financial assurance required is $147,099.00 in addition to the current financial assurance of $140,000.00 for a total amount of $287,099.00.

C. The Owner/Operator shall clearly mark the liner of each existing pond (Pond #1) to indicate a 3-foot freeboard in accordance with permit condition 9E within the term of this Permit. A 3-foot freeboard in Pond #1 shall be required at that time. Also, the Owner/Operator shall clearly mark the liner of any newly constructed pond to indicate the required 3-foot freeboard prior to use. The Owner/Operator shall submit photo-documentation to the Division's Environmental Bureau within 90 days upon completion marking the liner.

D. The Owner/Operator shall submit a plan for the retrofitting of below-grade tanks and sumps in accordance with permit condition 5A to the Division's Environmental Bureau no later than one year from the date of issuance of this Permit.

E. The Owner/Operator shall submit an annual report pursuant to permit condition 2C to the Division's Environmental Bureau by May 17 of each year.

F. At least 30 days prior to the start of pond construction, the Owner/Operator shall furnish the Division's Environmental Bureau with a major milestone schedule for pond construction pursuant to permit condition 9C.

11. CERTIFICATION: (OWNER/OPERATOR) by the officer whose signature appears below, acknowledges receipt of this Permit, and has reviewed its terms and conditions.

Basin Disposal Inc.
Company Name - print name above

Terry Sandel
Company Representative - print name

Terry Sandel
Company Representative - Signature

Title: President

Date: 5-20-10

ATTACHMENT I.F

2015 MINOR MODIFICATION APPLICATION AND APPROVAL

State of New Mexico
Energy, Minerals and Natural Resources Department

May 23, 2016

John Volkerding, General Manager
Basin Disposal, Inc.
PO Box 100
Aztec, New Mexico 87410

RE: **Permit Modification**
Commercial Waste Management Facility Permit NM1-5
NW ¼ of Section 3, Township 29 North, Range 11 West NMPM, San Juan County, New Mexico

Dr. Volkerding,

The Oil Conservation Division (OCD) has reviewed the application dated 5/13/16 filed on behalf of Basin Disposal, Inc. (Basin) by Price, LLC (Price) for proposed modification of your existing surface waste management facility. Specifically, for connection to a pipeline which would convey liquid wastewater to the Basin facility for disposal from Enterprise Products' Blanco plant which would otherwise be delivered via trucks. It is OCD's understanding based upon this submittal and discussion with Price that the proposed modification does not involve any increase in the land area the facility occupies (offsite piping is the responsibility of Enterprise Products), does not change the facility's capacity, does not change the nature of the incoming waste stream, nor does it require the addition of any new treatment process. No exceptions, waivers, or changes to numeric standards have been requested. As such, the OCD deems the proposed change to be a minor modification under 19.15.36 NMAC.

Basin is hereby allowed to connect to the pipeline as soon as practicable. However, Basin must comply with the following within the timeframes provided:

1. Within 90 days Basin must provide the OCD with an updated closure plan for the entire facility including any new piping which resides within the facility footprint. If the OCD agrees with the updated plan, Basin must thereafter provide a third party estimate to implement such a plan which may lead to adjustments to the existing financial assurance.

2. Within 90 days Basin must provide an updated contingency plan for the facility including the new piping which complies with Subsection N of 15.15.36 NMAC and NMSA 1978, Sections 12-12-1 thru 12-12-30, as amended.

3. Within 90 days Basin must provide an updated plan of best management practices to ensure protection of fresh water, public health, safety, and the environment.

If you have any questions, please feel free to contact me at (505) 476-3465 or via email at *jim.griswold@state.nm.us*.

Respectfully,

Jim Griswold
Environmental Bureau Chief

STATE OF NEW MEXICO
DIRECTOR OF OIL CONSERVATION DIVISION

IN THE MATTER OF THE
APPLICATION OF BASIN DISPOSAL,
INC. FOR A MINOR PERMIT MODIFICATION

APPLICATION FOR MINOR MODIFICATION
BASIN DISPOSAL, INC.
OCD Permit # NM-01-0005

JULY 2015

Prepared By:
Basin Disposal, Inc.
200 Montana Street
Bloomfield, NM 87413
(505) 334-3013

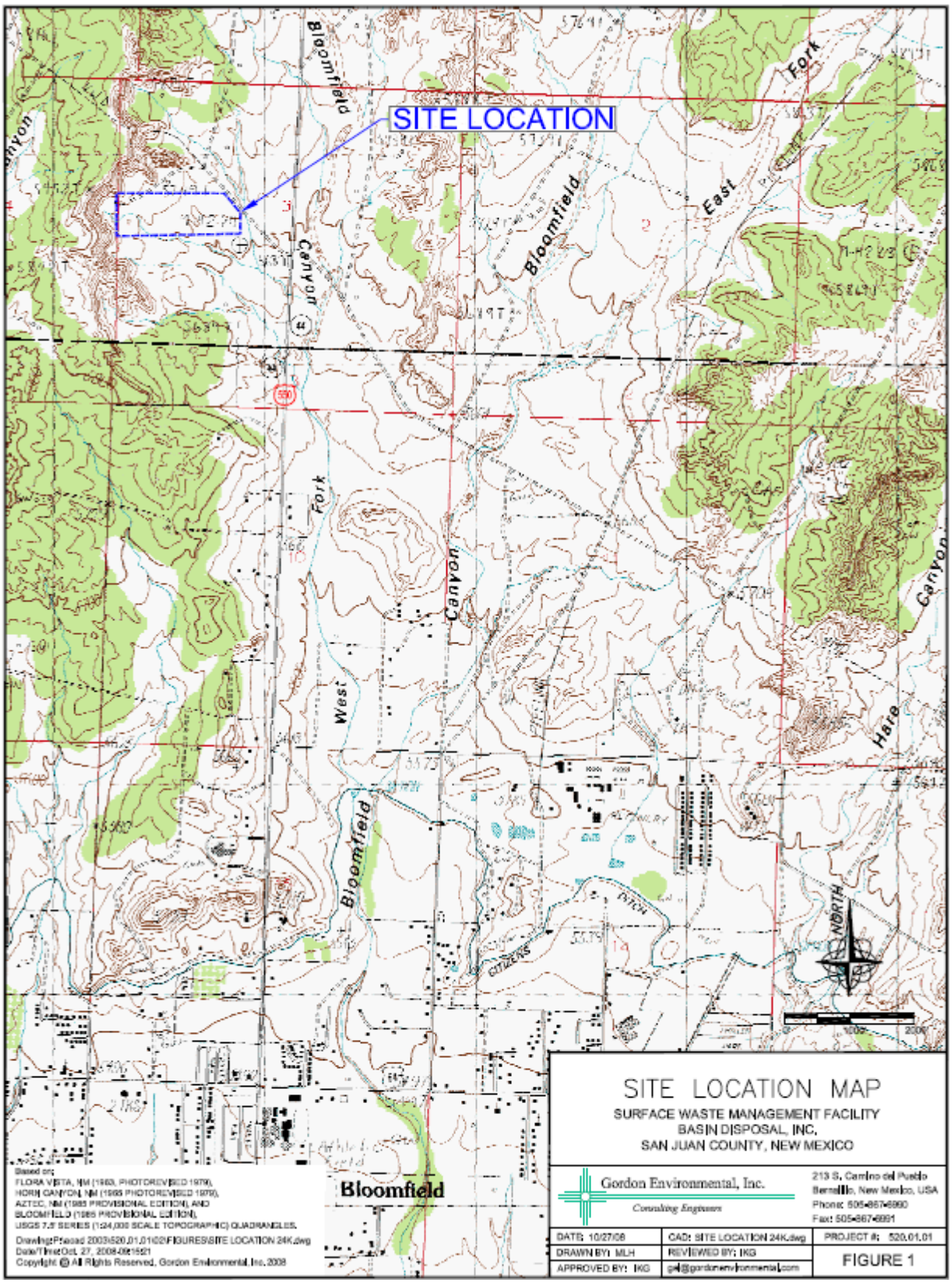
Submitted To:
New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505
(505) 476-3440

Paragraph 7 of C137: *Attach the names and addresses of the applicant and principal officers and owners of 25 percent or more of the applicant. Specify the office held by each officer and identify the individual(s) primary responsible for overseeing management of the facility.*

Jerry Sandel is currently the only owner having 25 percent or more of the shares in the company. The current officers of the company are listed below and both have primary responsibility for overseeing management of the facility

President:	Vice President:	Treasurer:	Secretary
Jerry Sandel	John Volkerding	Jason Sandel	Michelle Cao
P.O. Box 100	P.O. Box 100	PO Box 100	PO Box 100
Aztec, NM 87410	Aztec, NM 87410	Aztec, NM 87410	Aztec, NM 87410

Paragraph 8 of C137: *Attach a plat and topographic map showing the surface waste management facility's location in relation to governmental surveys (quarter-quarter section, township and range); highways or roads giving access to the surface waste management facility site; watercourses; fresh water sources, including wells and springs; and inhabited buildings within one mile of the site's perimeter.* ***No Changes Noted since 2010 Permit Application***



Paragraph 9 of C137:

Jerry Sandel
P.O. Box 100
Aztec, NM 87410

Exhibit 1, **Updated surface owners of the real property within one mile of the site's perimeter per San Juan County Assessor November 2014**

Paragraph 10 of C137 *Attach a description of the surface waste management facility with a diagram indicating the location of fences and cattle guards, and detailed construction/installation diagrams of pits, liners, dikes, piping, sprayers, tanks, roads, fences, gates, berms, pipelines crossing the surface waste management facility, buildings and chemical storage areas.*

Currently Permitted Equipment

- Pond # 1
- Pond # 2
- Pond # 3 (not constructed)
- 18 receiving tanks (12 are constructed and in use)
- 3 oily water receiving tanks
- 3 skimmed oil tanks
- 3 oil heating tanks
- 2 sludge settling tanks
- 9 oil sales tanks (7 are constructed and in use)
- 3 filtered water tanks
- 4 bleach tanks
- 2 sludge pit and sumps
- 1 existing injection well
- Various support facilities including office, maintenance building, roads, & detention basin

Proposed Change

1. **Pipeline**

Currently Enterprise Products disposes of approximately 300,000 barrels (bbl) of produced water from their operations, which is hauled by truck from their facilities.

In an effort to reduce expenses and impact to the environment from transportation air emissions, the minor modification is to allow Enterprise Products to connect a pipeline from their Blanco Gas Plant directly to existing permitted skimmer tanks at Basin Disposal. The produced water to be received is identical to the current produced being received; this the nature of the permitted nature of the oil field waste stream is not changing. The pipeline will simply connect to existing permitted equipment; thus no design capacity change, increase in land area, or new treatment process is being requested.

Assuming an annual volume of 300,000 bbls being delivered via pipeline instead of diesel trucks, which each have a capacity between 80 and 120 bbls, approximately 3,000 trips are eliminated. The distance between the Blanco Plant and Basin Disposal is approximately 6 miles round trip; thereby eliminating approximately 18,000 annual miles and associated air emissions.

The pipeline will be a 4" steel pipeline (the path of which is noted in red in **Figure 23.1**).

The pipeline will connect to and water will enter the currently permitted 400 bbl tank of R7 (**Figure 23.2**). The water will then flow through the currently permitted Tanks A and B to remove solids and oils.

The pipeline will exit the ground at the edge of the lined and bermed area surrounding Tank R7. At this point there will be a MC II Flow Analyzer or equivalent to monitor the incoming volume. The volume will be read and recorded on a daily basis.

After the meter, the water will be piped to the top of Tank R7 and empty into the tank from the top. The piping for the Enterprise water will run parallel to the existing piping used for truck unloading. This will ensure there is no back pressure on the line and no valves to open so water will be able to flow freely into Tank R7 anytime Enterprise Products engages their pump and ensure the Enterprise water will be handled by the currently permitted equipment and processes.

2. Sludge Settling Tanks

The 2010 Permit application listed two sludge settling tanks with a combined volume of 320 bbls

Number	Volume	Location
T3	80 bbls	West side of Pond 1
T4	240 bbls	West side of Pond 1

For the following purposes

i. The water will be discharged into the pond.
ii. The solids taken to the OCD permitted IEI (i.e. JFJ) Landfarm.
iii. The Settling Tanks are set on concrete blocks on top of a lined bermed impermeable pad that drains into the pond

To allow for greater operational flexibility, this application requests that **total volume of sludge settling tanks remain the same, no new process are being added,** but modified as listed below

Number	Volume	Location
T3	80 bbls	North side of Pond 1
T4	120 bbls	North side of Pond 1
T5	120 bbls	West side of Pond 1

The purpose and set up will remain unchanged

i. The water will be discharged into the pond.
ii. The solids taken to the OCD permitted IEI (i.e. JFJ) Landfarm.
iii. The Settling Tanks are set on concrete blocks on top of a lined bermed impermeable pad that drains into the pond

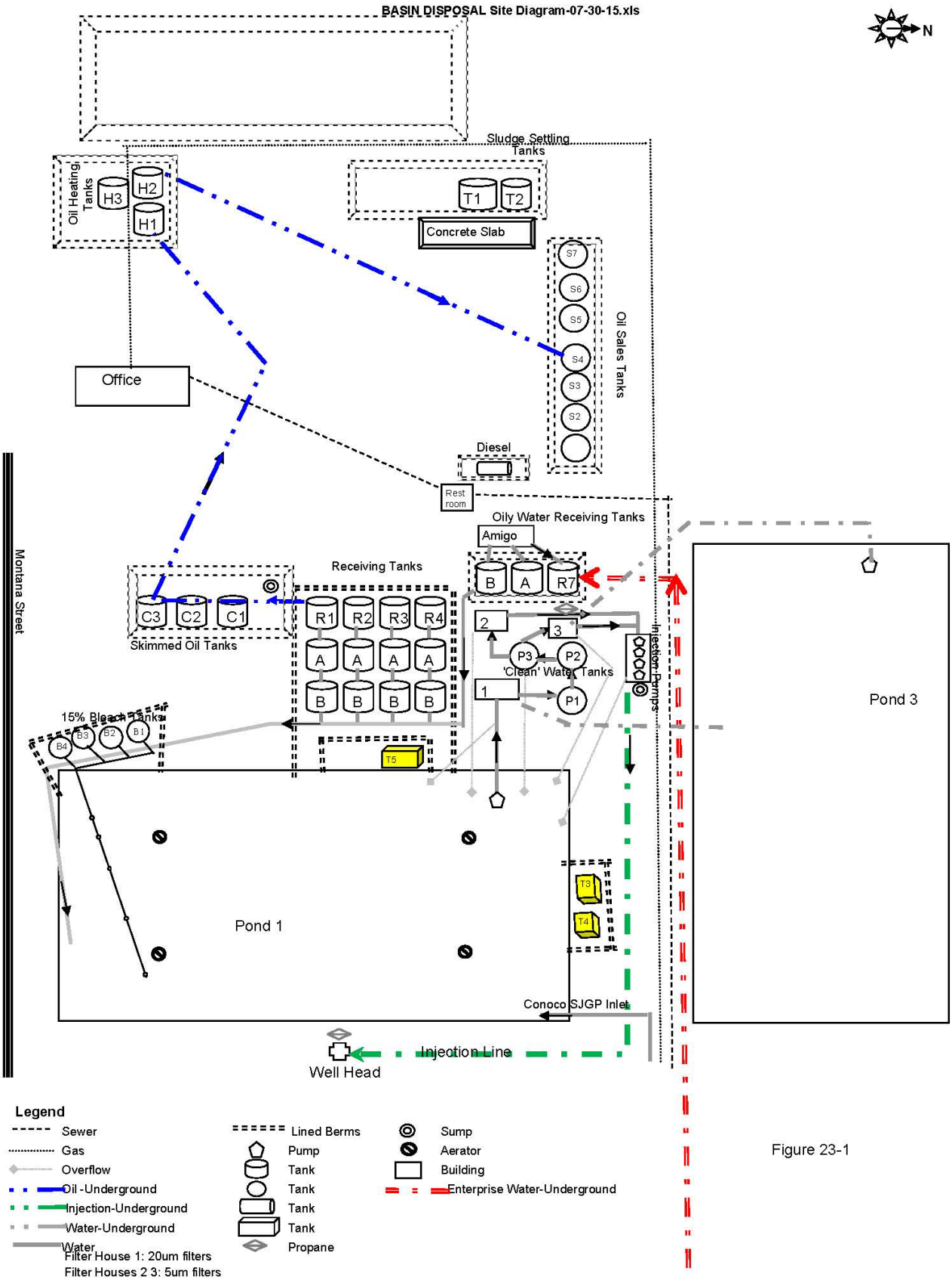

BASIN DISPOSAL Site Diagram-07-30-15.xls
N
Sludge Settling Tanks
Oil Heating Tanks
H3
H2
H1
T1
T2
Concrete Slab
S7
S6
S5
S4
S3
S2
Oil Sales Tanks
Office
Diesel
Rest room
Oily Water Receiving Tanks
Amigo
B
A
R7
Receiving Tanks
C3
C2
C1
Skimmed Oil Tanks
R1
R2
R3
R4
A
A
A
A
B
B
B
B
2
3
P3
P2
'Clean' Water Tanks
1
P1
Injection Pumps
Montana Street
15% Bleach Tanks
B4
B3
B2
B1
T5
Pond 1
Pond 3
T3
T4
Conoco SJGP Inlet
Injection Line
Well Head
Legend
Sewer
Gas
Overflow
Oil -Underground
Injection-Underground
Water-Underground
Water
Filter House 1: 20um filters
Filter Houses 2 3: 5um filters
Lined Berms
Pump
Tank
Tank
Tank
Tank
Propane
Sump
Aerator
Building
Enterprise Water-Underground

Figure 23-1

Figure 23-2, Tank R7

The red line depicts the location of the Enterprise pipeline entering the top of Tank R7, parallel to the current produced water line entering the tank from unloading trucks all of which is inside the berm

Paragraph 11 of C137 *Attach engineering designs, certified by a registered professional engineer, including technical data on the design elements of each applicable treatment, remediation and disposal method and detailed designs of surface impoundments.*

No changes to treatment, remediation, disposal method or surface impoundments is being considered in this application

Paragraph 12 of C137 *Attach a plan for management of approved oil field wastes that complies with the applicable requirements contained in 19.15.36.13, 19.15.36.14, 19.15.36.15 and 19.15.36.17 NMAC.*

Paragraph 13 of C137 *Attach an inspection and maintenance plan that complies with the requirements contained in Subsection L of 19.15.36.13 NMAC.*

Paragraph 14 of C137 *Attach a hydrogen sulfide prevention and contingency plan that complies with those provisions of 19.15.3.118 NMAC that apply to surface waste management facilities.*

Paragraph 15 of C137 *Attach a closure and post closure plan, including a responsible third party contractor's cost estimate, sufficient to close the surface waste management facility in a manner that will protect fresh water, public health, safety and the environment (the closure and post closure plan shall comply with the requirements contained in Subsection D of 19.15.36.18 NMAC).*

Paragraph 16 of C137 *Attach a contingency plan that complies with the requirements of Subsection N of 19.15.36.13 NMAC and with NMSA 1978, Sections 12-12-1 through 12-12-30, as amended (the Emergency Management Act).*

Paragraph 17 of C137 *Attach a plan to control run-on water onto the site and run-off water from the site that complies with the requirements of Subsection M of 19.15.36.13 NMAC.* **No changes to the plan to control run-on water onto the site and run-off water from the site are being considered in this application**

Paragraph 20 of C137 *Attach a best management practice plan to ensure protection of fresh water, public health, safety and the environment.* **No changes to the best management practice plan are being considered in this application**

Paragraph 21 of C137 *Attach a demonstration of compliance with the siting requirements of Subsections A and B of 19.15.36.13 NMAC.* ***No Siting Changes are being proposed***

Paragraph 22 of C137 *Attach geological/hydrological data including:*

(a) a map showing names and location of streams, springs or other watercourses, and water wells within one mile of the site;
(b) laboratory analyses, performed by an independent commercial laboratory, for major cations and anions; benzene, toluene, ethyl benzene and xylenes (BTEX); RCRA metals; and total dissolved solids (TDS) of ground water samples of the shallowest fresh water aquifer beneath the proposed site;
(c) depth to, formation name, type and thickness of the shallowest fresh water aquifer;
(d) soil types beneath the proposed surface waste management facility, including a lithologic description of soil and rock members from ground surface down to the top of the shallowest fresh water aquifer;
(e) geologic cross-sections;
(f) potentiometric maps for the shallowest fresh water aquifer; and
(g) porosity, permeability, conductivity, compaction ratios and swelling characteristics for the sediments on which the contaminated soils will be placed.
No changes to the site geological/hydrological data is being considered

Paragraph 23, FORM C137

19.15.36.8 SURFACE WASTE MANAGEMENT FACILITY PERMITS AND APPLICATION REQUIREMENTS: D. Application requirements for minor modifications. An existing surface waste management facility applying for a minor modification shall file a form C-137 with the environmental bureau in the division's Santa Fe office **describing the proposed change and identifying information that has changed from its last C-137 filing.**

The proposed change at Basin Disposal's surface waste management facility will not involve any
- an increase in the land area that the permitted surface waste management facility occupies; or
- a change in the design capacity or nature of the permitted oil field waste stream; or
- addition of a new treatment process; or
- an exception to, waiver of or change to a numerical standard provided in 19.15.36 NMAC;

And thus does not meet the definition of "Major Modification" in 19.15.36.7 Paragraph (9) "Major modification" and thus per 19.15.37.7 Paragraph (10) which states "Minor modification" means a modification of a surface waste management facility that is not a major modification. This proposed change is a minor modification.

Proposed Change

3. **Pipeline**

Currently Enterprise Products disposes of approximately 300,000 barrels (bbl) of produced water from their operations, which is hauled by truck from their facilities.

In an effort to reduce expenses and impact to the environment from transportation air emissions, the minor modification is to allow Enterprise Products to connect a pipeline from their Blanco Gas Plant directly to existing permitted skimmer tanks at Basin Disposal. The produced water to be received is identical to the current produced being received; this the nature of the permitted nature of the oil field waste stream is not changing. The pipeline will simply connect to existing permitted equipment; thus no design capacity change, increase in land area, or new treatment process is being requested.

Assuming an annual volume of 300,000 bbls being delivered via pipeline instead of diesel trucks, which each have a capacity between 80 and 120 bbls, approximately 3,000 trips are eliminated. The distance between the Blanco Plant and Basin Disposal is approximately 6 miles round trip; thereby eliminating approximately 18,000 annual miles and associated air emissions.

The pipeline will be a 4" steel pipeline (the path of which is noted in red in **Figure 23.1**).

The pipeline will connect to and water will enter the currently permitted 400 bbl tank of R7 (**Figure 23.2**). The water will then flow through the currently permitted Tanks A and B to remove solids and oils.

The pipeline will exit the ground at the edge of the lined and bermed area surrounding Tank R7. At this point there will be a MC II Flow Analyzer or equivalent (Operating Manual as **Attachment 23.A**) to monitor the incoming volume. The volume will be read and recorded on a daily basis.

After the meter, the water will be piped to the top of Tank R7 and empty into the tank from the top. The piping for the Enterprise water will run parallel to the existing piping used for truck unloading. This will ensure there is no back pressure on the line and no valves to open so water will be able to flow freely into Tank R7 anytime Enterprise Products engages their pump and ensure the Enterprise water will be handled by the currently permitted equipment and processes.

4. **Sludge Settling Tanks**

The 2010 Permit application listed two sludge settling tanks with a combined volume of 320 bbls

Number	Volume	Location
T3	80 bbls	West side of Pond 1
T4	240 bbls	West side of Pond 1

For the following purposes

i. The water will be discharged into the pond.
ii. The solids taken to the OCD permitted IEI (i.e. JFJ) Landfarm.
iii. The Settling Tanks are set on concrete blocks on top of a lined bermed impermeable pad that drains into the pond

To allow for greater operational flexibility, this application requests that **total volume of sludge settling tanks remain the same, no new process are being added,** but modified as listed below

Number	Volume	Location
T3	80 bbls	North side of Pond 1
T4	120 bbls	North side of Pond 1
T5	120 bbls	West side of Pond 1

The purpose and set up will remain unchanged

i. The water will be discharged into the pond.
ii. The solids taken to the OCD permitted IEI (i.e. JFJ) Landfarm.
iii. The Settling Tanks are set on concrete blocks on top of a lined bermed impermeable pad that drains into the pond

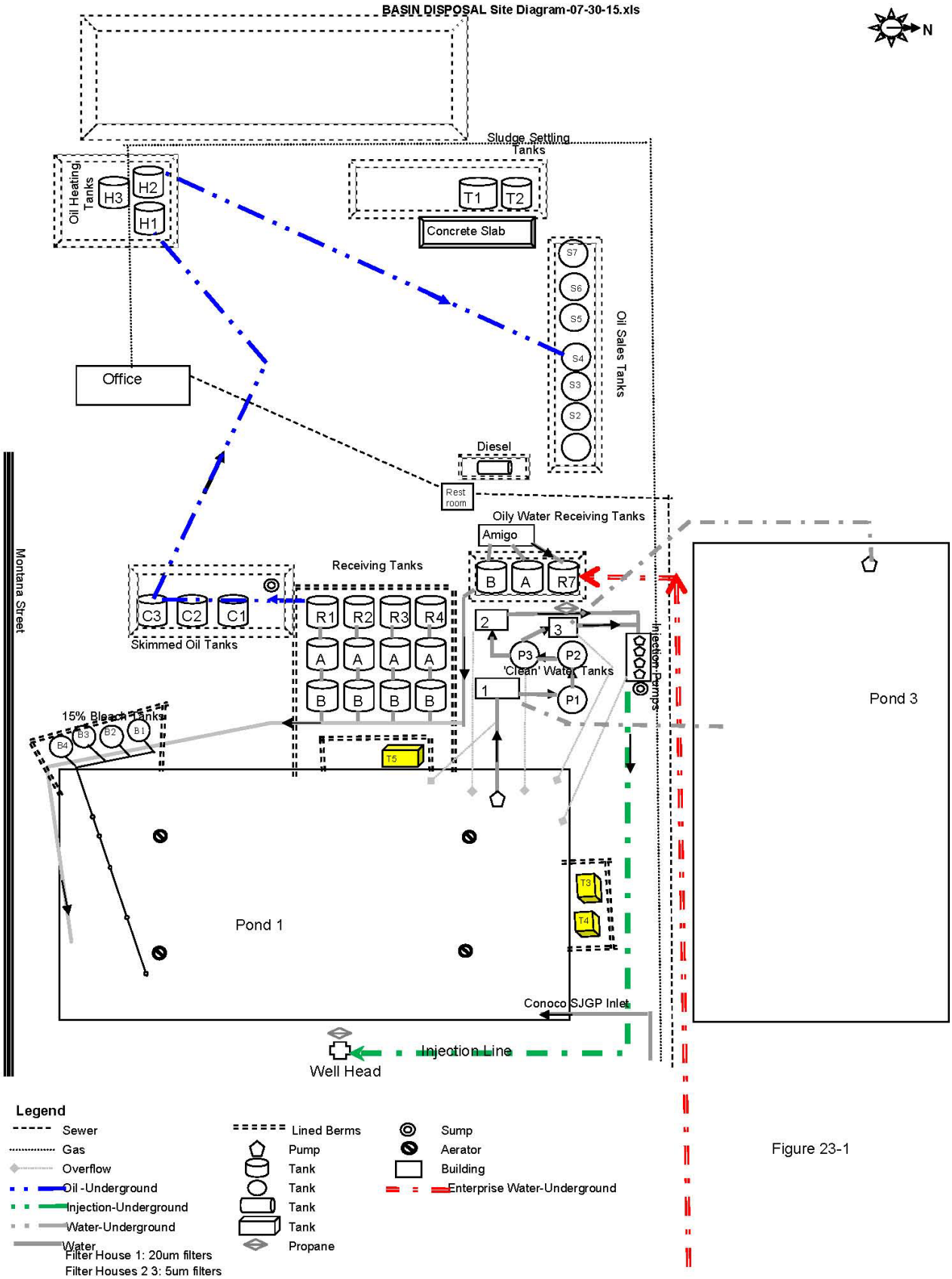

BASIN DISPOSAL Site Diagram-07-30-15.xls
N
Sludge Settling Tanks
Oil Heating Tanks
H3
H2
H1
T1
T2
Concrete Slab
S7
S6
S5
S4
S3
S2
Oil Sales Tanks
Office
Diesel
Rest room
Oily Water Receiving Tanks
Amigo
B
A
R7
Receiving Tanks
C3
C2
C1
Skimmed Oil Tanks
R1
R2
R3
R4
A
B
2
3
P3
P2
'Clean' Water Tanks
1
P1
Injection Pumps
Montana Street
15% Bleach Tanks
B4
B3
B2
B1
T5
Pond 1
Pond 3
T3
T4
Conoco SJGP Inlet
Injection Line
Well Head
Legend
Sewer
Gas
Overflow
Oil -Underground
Injection-Underground
Water-Underground
Water
Filter House 1: 20um filters
Filter Houses 2 3: 5um filters
Lined Berms
Pump
Tank
Tank
Tank
Tank
Propane
Sump
Aerator
Building
Enterprise Water-Underground

Figure 23-1

Figure 23-2, Tank R7

The red line depicts the location of the Enterprise pipeline entering the top of Tank R7, parallel to the current produced water line entering the tank from unloading trucks all of which is inside the berm

Information that has Changed from the Last C-137 filing

Paragraph 7 of C137:

names and addresses of the applicant and principal officers and owners of 25 percent or more of the applicant. Specify the office held by each officer and identify the individual(s) primary responsible for overseeing management of the facility.

Previous Information

President:	*Vice President:*
Jerry Sandel	*David Turner*
P.O. Box 100	*P.O. Box 358*
Aztec, NM 87410	*Farmington, NM 87401*

At the time of the last C-137 submittal only Jerry Sandel and David Turner had ownership of 25 percent or more in the company.

Current Information

Jerry Sandel is currently the only owner having 25 percent or more of the shares in the company. The current officers of the company are listed below and both have primary responsibility for overseeing management of the facility

President:	*Vice President:*
Jerry Sandel	*John Volkerding*
P.O. Box 100	*P.O. Box 100*
Aztec, NM 87410	*Aztec, NM 87410*

Paragraph 15 of C137:

Attach a closure and post closure plan, including a responsible third party contractor's cost estimate, sufficient to close the surface waste management facility in a manner that will protect fresh water, public health, safety and the environment (the closure and post closure plan shall comply with the requirements contained in Subsection D of 19.15.36.18 NMAC).

Permit Application

FOR RENEWAL

Basin Disposal, Inc.
OCD Facility Permit No.: NM-1-0005
San Juan County, New Mexico

VOLUME II:
FACILITY MANAGEMENT PLANS

Submitted To:

New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505
505.476.3440

Prepared For:

Basin Disposal, Inc.
200 Montana Street
Bloomfield, NM 87413
505.632.8936

Prepared By:

Parkhill
333 Rio Rancho Blvd, Suite 400
Rio Rancho, NM 87124
505.867.6990

November 2019 (Updated March 2025)

Parkhill Project #: 01165722

Parkhill

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ATTACHMENTS

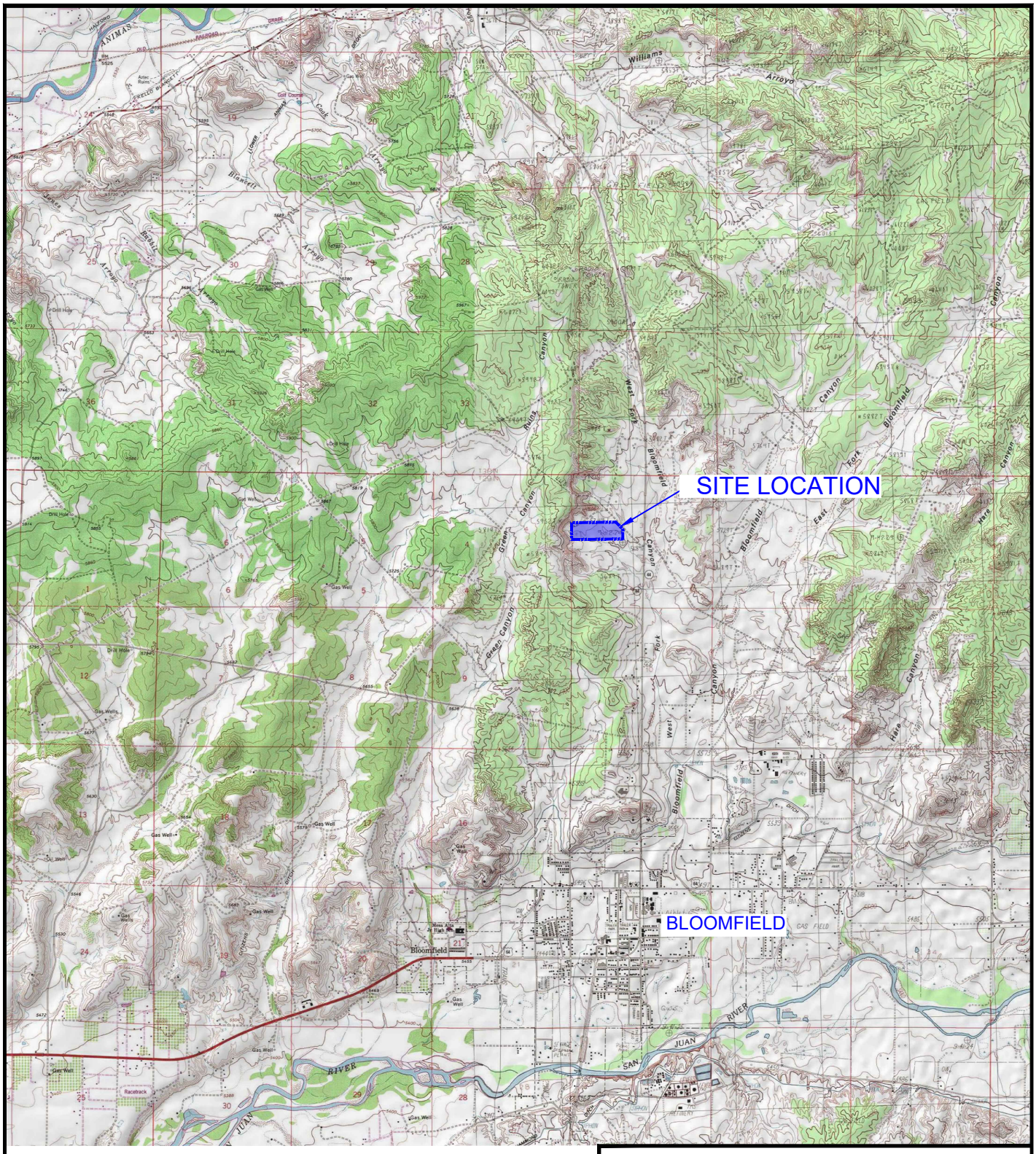
1.0 INTRODUCTION

Basin Disposal, Inc. (BDI) is an existing Surface Waste Management Facility (SWMF) providing oil field waste liquids (OFWL) disposal services. The existing BDI facility is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.36 NMAC, administered by the Oil Conservation Division (OCD) of the NM Energy, Minerals, and Natural Resources Department (NMEMNRD). This document is a component of the "Application for Permit Renewal" that proposes continued operations of the existing approved waste processing and disposal capabilities. The Facility is designed in compliance with 19.15.36 NMAC, and is operated in compliance with a Surface Waste Management Facility Permit issued by the OCD. The Facility is owned and operated by, Basin Disposal Inc.

BDI only accepts liquid waste from the production and exploration of oil fields in northwest New Mexico and the surrounding areas. The existing facility is organized in a pattern that allows for specific liquid waste acceptance, treatment, evaporation, or injection of clean liquid.

1.1 Site Location

BDI is located in unincorporated San Juan County on 27.77 acres entirely within Section 3, Township 29 North, Range 11 West approximately 3 miles north of the intersection of Highway 550 and 64 (**Figure II.1.1**). Coordinates for the approximate center of the BDI site are Latitude 36°45'19.92" and Longitude -107°58'58.73". The site is situated approximately 4 miles north of the San Juan River, and about 4.7 miles south of the Animas River on Crouch Mesa, about 500 feet and 400 feet in elevation above these respective river plains. The site occupies the West Fork of Bloomfield Canyon, an ephemeral drainage channel that drains south to the San Juan River. The site slopes gently to the east and southeast, from a maximum elevation of 5,750 feet to less than 5,700 feet. Detailed site characterization documentation is provided in **Volume IV**.



SITE LOCATION MAP

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

NOTE:
1. GEOGRAPHIC CENTER, 36° 45' 19.92" N -107° 58' 58.73" W

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE LOCATION.dwg
Date/Time:Jul. 07, 2022-11:21:49

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: SITE LOCATION.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.1.1
APPROVED BY: MWK	www.parkhill.com	

1.2 Facility Description

The existing BDI facility is comprised of 27.77 acres and is comprised of the following:

- 2 existing evaporation ponds (1 pending construction)
- 12 existing receiving tanks (6 pending construction)
- 4 existing oily water receiving tanks
- 3 existing skimmed oil tanks
- 3 existing oil heating tanks
- 3 existing settling tanks
- 7 existing oil sales tanks (2 pending construction)
- 3 existing filtered water tanks
- 4 existing bleach tanks
- 1 existing concrete sludge solidification basin
- 2 existing covered below grade tanks (containment sumps)
- 1 existing UIC Class II injection well for disposal of produced water
- 2 existing separation tanks
- Various support facilities including an office, a maintenance building, roads, and a storm water detention basin.

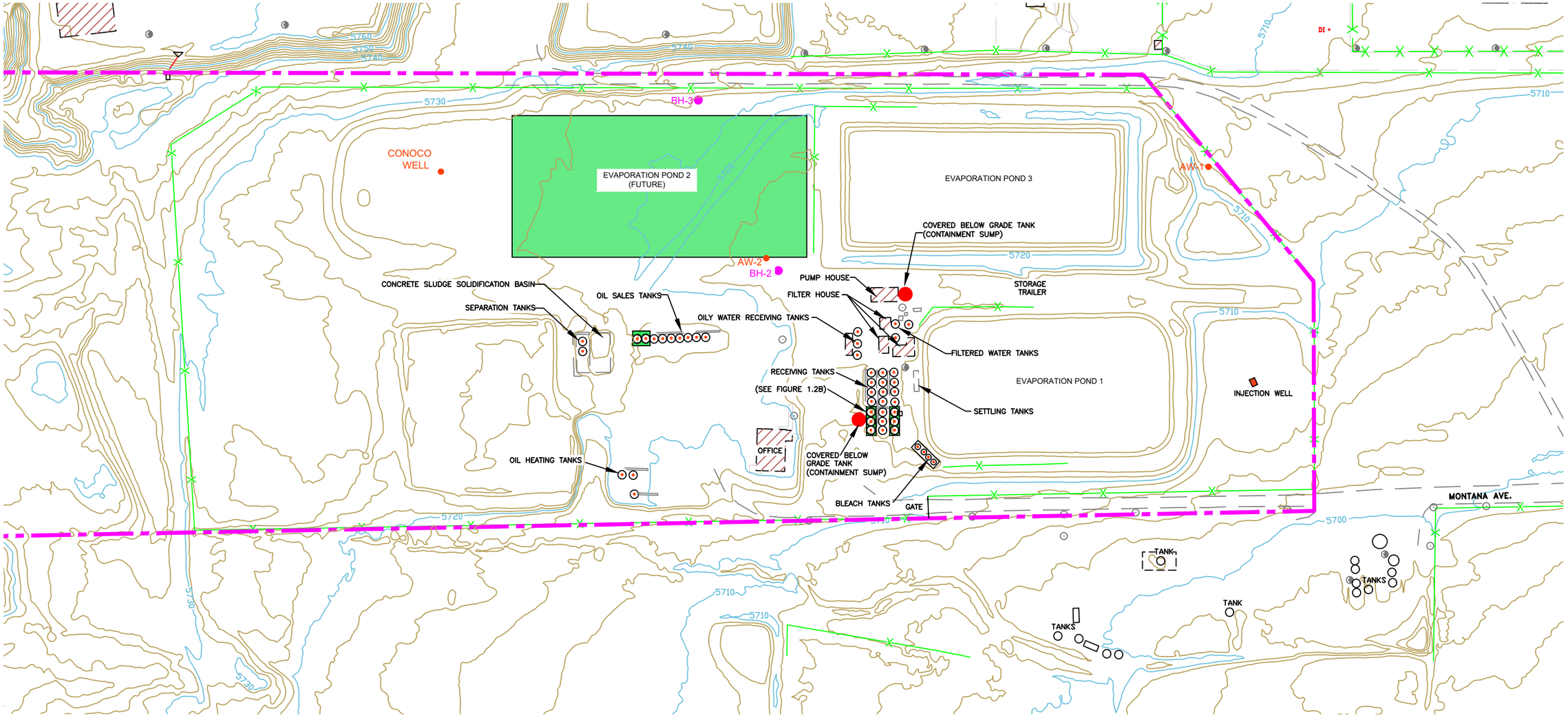
Oil field wastes are delivered to the BDI SWMF from oil and gas exploration and production operations in northwestern New Mexico and southwest Colorado. The Site Plan provided as **Figure II.1.2** identify the locations of the Disposal facilities, evaporation/storage ponds, and all structures. Perimeter of the site is surrounded by commercial/industrial businesses on three sides and buffered by a bluff on the west side of the Facility.

1.3 Purpose

The purpose of this Operations, Inspection & Maintenance Plan (the Plan) is to provide guidance to the BDI staff in the daily operational procedures that have been established in compliance with 19.15.36.8 and 19.15.36.13 NMAC with the purpose of providing protection of fresh water, public health, and the environment. **Table II.1.1** (OCD Requirements) provides an outline of the specific 19.15.36 NMAC requirements addressed by this Plan.

TABLE II.1.1 - OCD Requirements [19.15.36 NMAC]

19.15.36.8.C(4)	*a description of the surface waste management facility with a diagram indicating the location of fences and cattle guards, and detailed construction/installation diagrams of pits, liners, dikes, piping, sprayers, tanks, roads, fences, gates, berms, pipelines crossing the surface waste management facility, buildings and chemical storage areas;*
19.15.36.8.C(7)	*an inspection and maintenance plan that complies with the requirements contained in Subsection L of 19.15.36.13 NMAC;*
19.15.36.8.C(14)	*a best management practice plan to ensure protection of fresh water, public health, and the environment;*
19.15.36.13.L	*Each operator shall have an inspection and maintenance plan that includes the following:* ***(1)*** *monthly inspection of leak detection sumps including sampling if fluids are present with analyses of fluid samples furnished to the division; and maintenance of records of inspection dates, the inspector and the leak detection system's status;* ***(3)*** *inspections of the berms and the outside walls of pond levees quarterly and after a major rainfall or windstorm, and maintenance of berms in such a manner as to prevent erosion.*



BOREHOLE LOCATIONS	
BH–2	LAT 36°45'20.54269"N (NAD 83) LONG 107°59'02.70950"W (NAD83) ELEV: 5717.98 (GROUND)
BH–3	LAT 36°45'22.92950"N (NAD 83) LONG 107°59'04.21563"W (NAD83) ELEV: 5727.46 (GROUND)
AW–1	LAT 36°45'22.01797"N (NAD 83) LONG 107°58'55.15402"W (NAD83) ELEV: 5717.85 (TOP OF CAP)
AW–2	LAT 36°45'20.58589"N (NAD 83) LONG 107°59'02.96163"W (NAD83) ELEV: 5722.20 (TOP OF CAP)

LEGEND

- PROPERTY BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 10 CONTOUR (EXISTING)
- ROADWAY (EXISTING)
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- STRUCTURE
- CONCRETE SLAB
- AW-1 ASSESSMENT WELL
- BH-3 BOREHOLE LOCATION
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)

NORTH

0 75' 150'

SITE PLAN

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/14/2025	CAD: SITE PLAN.dwg	PROJECT #: 1657.22	
DRAWN BY: DMI	REVIEWED BY: AY	FIGURE II.1.2	
APPROVED BY: AY	www.parkhill.com		

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\SITE PLAN.dwg
Date/Time:Jan. 15, 2025-10:10:23

2.0 GENERAL FACILITY INFORMATION

2.1 Land Use and Zoning

BDI is located within a 27.77 acre ± tract in unincorporated San Juan county, approximately 3 miles north of Bloomfield, NM (**Figure II.1.1**). The site is surrounded by commercial/industrial business on three sides and buffered by a bluff on the west side of the facility. The closest permanent public residence is located approximately 1/4 of a mile directly south. San Juan County does not have zoning on land use.

2.2 Access Control

Access control for BDI is provided by a six-foot high chain link fence; locking gates; and employee presence when open for waste receipts. No oil field waste is accepted unless an attendant is on duty. The Facility is a 24-hour 7 day a week operation. The Site Location Map is plotted on the most recent United States Geological Survey (USGS) map (**Figure II.1.1**) and shows the Facility location in relation to state roads and adjacent features. The Site Plan, provided as **Figure II.1.2,** provides a plan view of the Facility showing the layout.

2.3 Site Signs

A sign is posted at the Facility entrance which identifies the location of the site, emergency telephone numbers, the operator's name, the facility permit number, and accepted materials. Additional site rules that are applicable to both BDI personnel and customers are be posted at the receiving areas; warning signs are posted throughout the facility and along the perimeter fencing. Example signs are provided in **Figure II.1.3**.

2.4 Traffic

Traffic arrives at BDI by traveling east or west on US Highway 550, turning west on Montana and traveling approximately .25 miles to the site entrance. Vehicles accessing the Facility, including staff, currently average 100 vehicles per day (vpd). Each load is checked at an inspection station adjacent to the office prior to unloading. On-site traffic flow for the BDI Facility is depicted on **Figures II.1.4**.

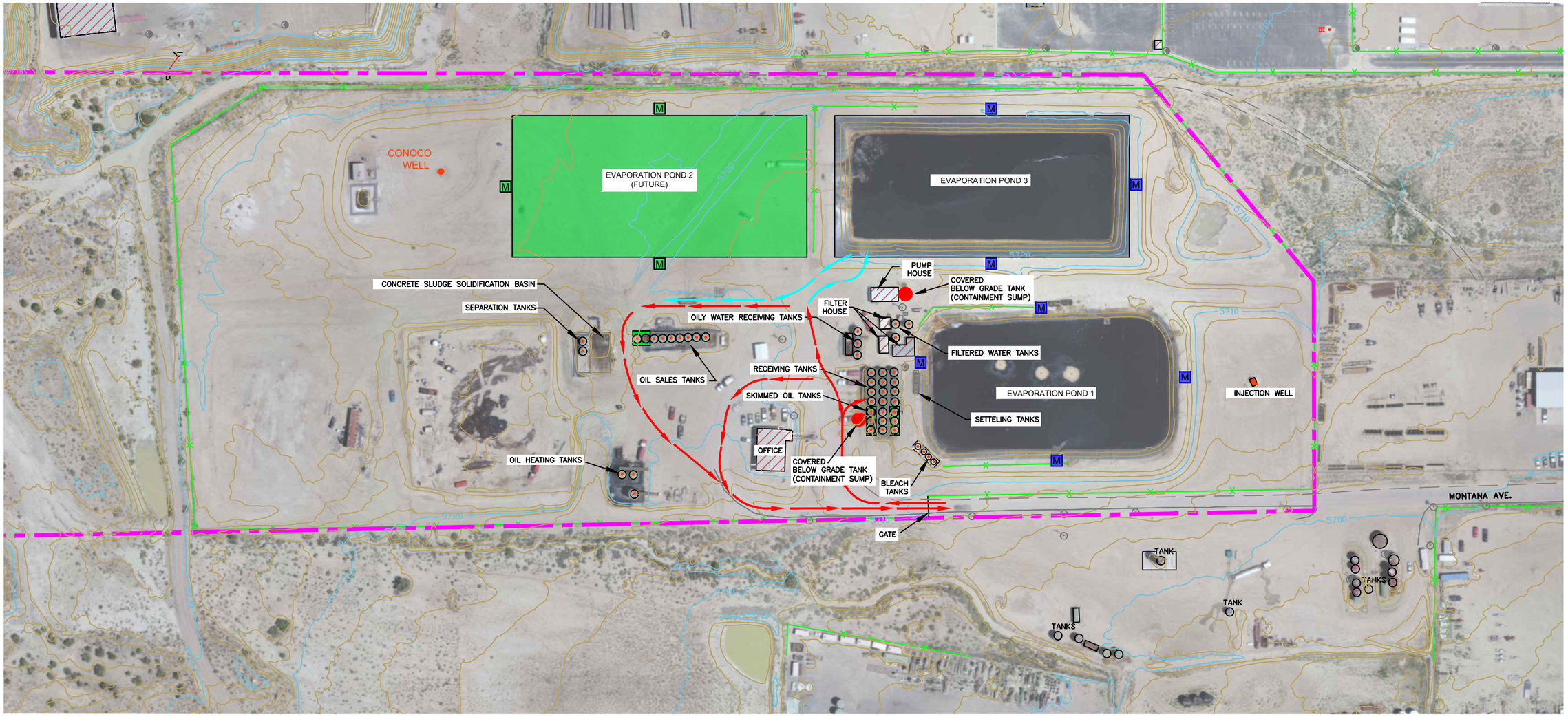
SITE SIGNS

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: SITE SIGNS.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.1.3
APPROVED BY: MWK	www.parkhill.com	

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE SIGNS.dwg
Date/Time:Jul. 07, 2022-11:54:23



LEGEND

- PROPERTY BOUNDARY
- 2' CONTOUR (EXISTING)
- 10 CONTOUR (EXISTING)
- ROADWAY (EXISTING)
- TRAFFIC FLOW
- ALTERNATIVE TRAFFIC FLOW
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- STRUCTURE
- CONCRETE SLAB
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)

NORTH

0 75' 150'

TRAFFIC FLOW

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/27/2025	CAD: TRAFFIC FLOW.dwg	PROJECT #: 43912.24	
DRAWN BY: DMI	REVIEWED BY: AY	FIGURE II.1.4	
APPROVED BY: AY	www.parkhill.com		

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\TRAFFIC FLOW.dwg
Date/Time:Jan. 27, 2025-08:11:04

3.0 FACILITY PERSONNEL

3.1 Requirements and Duties

Daily operations at the Facility are supervised by the BDI management team officed onsite (**Table II.1.2**). Management and administrative support are provided by BDI personnel routinely on-site. Disposal operations are only conducted when an attendant is on duty. Acceptance criteria for the oil field waste are described in the Oil Field Waste Management Plan (**Volume II.2**). The general staffing list for the Facility is provided in **Table II.1.2**, subject to adjustment in response to changes in incoming waste volumes, market demands, technology updates, etc.

TABLE II.1.2 - Facility Staffing List[1]

Description	Number
General Manager	1
Plant Supervisor	1-2
Equipment Operator	5-6
General Laborer	3-5

[1] *Subject to adjustment*

3.2 Training Requirements

Annual training for personnel will include health and safety protection, waste screening, fire prevention, emergency response, etc. Emergency Coordinators for the Facility are identified in the Contingency Plan (**Volume II.5**). A trained operator or designated representative with full knowledge of the 19.15.36 NMAC Rules and the BDI Permit requirements will be present at all times while the facility is in operation. BDI staff will be required to read this Plan, the Oil Field Waste Management Plan (**Volume II.2**), the Hydrogen Sulfide (H_2S) Prevention and Contingency Plan (**Volume II.3**), the Contingency Plan (**Volume II.5**) and the Migratory Bird Protection Plan (**Volume II.6**). Signature sheets acknowledging that this requirement has been met will be retained in the Facility Operating Record in accordance with the Safety Communications Program (**Attachment II.1.A**). BDI personnel are encouraged to take outside training as well (e.g., NMED/MOLO).

4.0 FACILITY OPERATIONAL PROCEDURES

The operational procedures for BDI are designed to maximize the efficiency of waste receiving, processing, and disposal; and to protect the health and safety of facility staff, delivery personnel, and the public. Detailed operational procedures are enumerated in each of the applicable sections of this Plan for oil field waste stream acceptance processing, contingency planning, recordkeeping, personnel training, etc. Oil field waste disposal operations will be conducted in a safe and environmentally sound manner in accordance with 19.15.36 NMAC.

4.1 Noise Control

There are two permanent residences approximately 1,050 feet south and 1,500 feet southeast of the BDI office. Surrounding lands are commercial/industrial business on three sides with a bluff adjacent and west of BDI. In addition, mechanical equipment, such as pumps and the injection well, are in fully enclosed buildings. To date, no noise complaints have been logged with the facility.

4.2 Odor Control

Prior to oil field waste acceptance, vehicles will be screened for the presence of hydrogen sulfide (H_2S). If H_2S is detected above 10 parts per million (ppm), the load will be treated with sodium hypochlorite (NaOCl), otherwise known as bleach, to lower the H_2S to acceptable levels prior to unloading operations. At least 1,000 gallons of chemicals such as bleach will be maintained on-site to control H_2S and its associated odors originating from the evaporation ponds. BDI logs all complaints, and there have been no odor control complaints in over two years.

4.3 Dust Control

The access roads and active areas within BDI will be treated with water or approved recycled waters as needed to reduce dust. The posted speed limit will be 15 miles per hour (mph) inside the property which will assist in limiting the amount of dust generated by onsite traffic. Routine operations listed on **Table II.1.3** are the most likely sources of dust, along with recommended primary and secondary control measures:

TABLE II.1.3- Dust Control

A water truck will be available to apply water or approved recycled waters to the access roads and active areas within the BDI SWMF as needed to reduce dust. In addition, the posted speed limit will be 15 mph inside the property. Listed below are routine operations that are the most likely sources of dust, along with recommended primary and secondary control measures:

- **Disposal Operations -**
  - Primary Control Measure: Apply water to unpaved roads as necessary, enforce speed posted limit on-site.
  - Secondary Control Measure: Apply dust palliatives to unpaved portions of the Facility, provide additional pavement as necessary to high-traffic areas.
- **Excavations -**
  - Primary Control Measure: Water areas prior to and during excavation. Water areas of excavation and haul roads during and at the end of each day to form a dust-binding soil crust.
  - Secondary Control Measure: Phase work to reduce the amount of disturbed surfaces, apply additional water, work at lower elevations when wind velocity is high.
- **Track out extending onto public roadways –**
  - Primary Control Measure: Pave permanent on-site entrance roadways, sweep as necessary.
  - Secondary Control Measure: Apply recycled asphalt, caliche/gravel pads or similar materials at the transition from unpaved to paved roadways.
- **Unpaved roadways and parking areas –**
  - Primary Control Measure: Limit vehicle speed via posting speed limits; apply water, use aggregate or caliche.
  - Secondary Control Measure: Apply water and surfactants to unpaved roads and parking lots, as needed, provide additional pavement.

4.4 Minor Spills/Releases

The spill or release of a potentially hazardous material at BDI is most likely to involve fuel or various vehicle fluids (i.e., engine oil, hydraulic oil, antifreeze, etc.). Other materials likely to present a concern as a result of normal operations include petroleum products and petroleum wastes delivered to the facility. Spills involving these types of materials could occur during fueling, routine maintenance operations or during unloading for processing/disposal of waste. These minor spills will be cleaned up immediately upon discovery.

BDI maintains spill clean-up kits on-site that include absorbent materials, shovels, and small containment buckets. Waste materials resulting from minor spills and clean-up will be managed and disposed of in accordance with the Oil Field Waste Management Plan (**Volume II.2**). Although highly unlikely, large spill/releases from onsite ponds and tanks may occur. The response procedures for this type of release are detailed in the Contingency Plan (**Volume II.5**).

5.0 LIQUID WASTE PROCESSING

5.1 Operational Rate

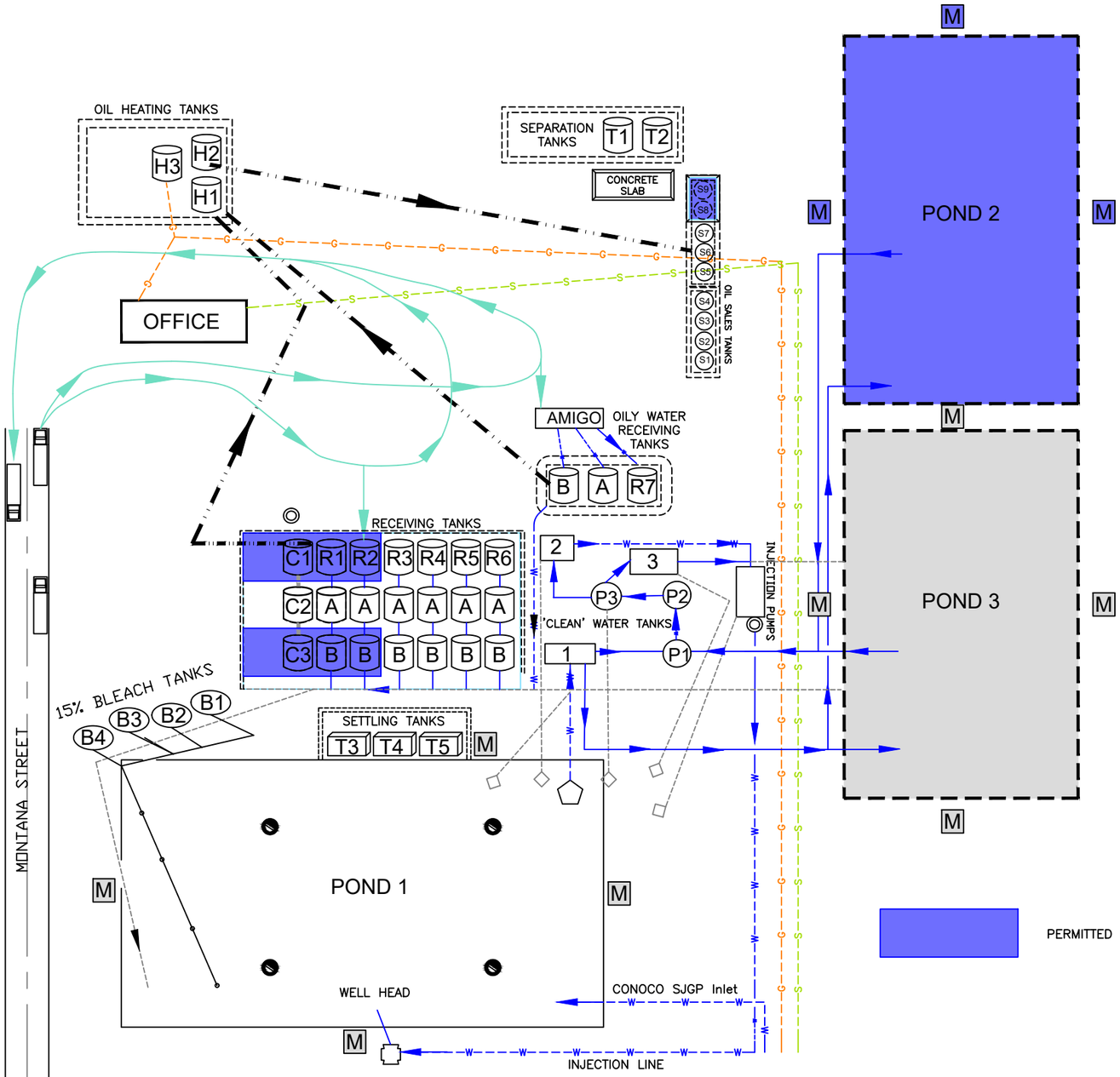
Liquid oil field wastes (produced water) will be accepted for processing at BDI. The average operational rate for the BDI SWMF is approximately 10,000 barrels per day (bbl/day) of liquid oil field waste. The operational rate may increase to over 12,000 bbl/day dependent upon market conditions and the rate of generator facilities development.

5.2 Processing

The equipment used for liquid oil field waste processing is listed in **Table II.1.4**. Oil field waste receiving and processing activities will take place within the fenced facility (**Figures II.1.2** and **II.1.5**). The location of the liquid waste processing facilities at BDI is provided on the Processing Flow Diagram is provided as **Figure II.1.5**. Depending on the evaporation rate in the ponds and the operational rate of the injection well, if operations warrant, and when tanks and ponds are at capacity, acceptance of oil field waste will be temporarily suspended. BDI may also proceed with the construction (with proper notices to NMOCD) of additional permitted but undeveloped structures to meet sustained increases in market volumes. BDI may increase capacity by installing additional temporary tanks in the case of a temporary surge in market volumes after receiving NMOCD approval for a major modification request.

TABLE II.1.4 - Processing Equipment

Description	No.	Capacity
Injection Well	1	11,000 bbl/day
Water receiving tanks	12	400 bbl each
Skimmed oil tanks	3	400 bbl each
Bleach tanks	4	B#1, B#3, B#4: 80 bbl B#2: 60 bbl
Evaporation ponds	2	Pond #1: 109,860 bbl Pond #3: 73,932 bbl
Filtered water tanks	3	400 bbl each
Oily water receiving tanks	4	400 bbl each
Settling tanks	3	T#3: 80 bbl T#4: 240 bbl T#5: 240 bbl
Separation tanks	2	T#1-T#2: 210 bbl
Oil sales tanks	7	400 bbl each
Oil heating tanks	3	H#1-H#2: 500 bbl H#3: 400 bbl
Covered below grade tank (containment sump)	2	28 bbl each
Pump and filter house	4	N/A
Concrete sludge solidification station	1	N/A
Water receiving tanks (permitted & undeveloped)	6	400 bbl each
Evaporation pond (permitted & undeveloped)	1	Pond #2: 73,932 bbl
Oil sales tanks (permitted & undeveloped)	2	400 bbl each



LEGEND

- SEWER
- GAS
- OIL
- WATER
- PROCESS FLOW DIRECTION
- DELIVERY VEHICLE ROUTE
- OVERFLOW
- LINED BERMS
- M — H_2S MONITORING LOCATION PERMITTED NOT YET CONSTRUCTED
- M — H_2S MONITORING LOCATION (EXISTING)
- AERATOR
- PUMP
- EXISTING RECEIVING TANK
- EXISTING TANK
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)
- STRUCTURE

NOTE: ELEMENTS ARE LABELED IN ACCORDANCE WITH THE UPDATED NOMENCLATURE (11/08, ATTANCHMENT III.1.F)

PROCESS FLOW DIAGRAM

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/14/2025	CAD: PROCESS FLOW.dwg	PROJECT #: 1657.22	FIGURE II.1.5
DRAWN BY: DMI	REVIEWED BY: AY		
APPROVED BY: AY	www.parkhill.com		

The produced water processing rate is highly dependent upon evaporation, which is also influenced by climate, seasonal fluctuations, and equipment efficiency. When tanks and ponds are approaching capacity, acceptance of liquid oil field waste may be temporarily suspended. Specifications for the treatment equipment, including the receiving tanks, bleach additive tanks, boilers, aerators, and mechanical evaporation systems are included in **Attachment II.1.B**. Receiving and storage tanks used at the Facility are leak-proof; compatible with the waste stream; and manufactured of non-biodegradable materials (e.g., fiber reinforced plastics or steel).

Produced Water will be received through the Produced Waste Load-Out stations and transferred to the Receiving Tanks. Oil, water and sediments will be removed as the Produced Water passes through a series of these tanks. Water discharge from the tanks will flow through a pipeline and into the storage/evaporation ponds where it is then treated with a bleach additive as needed to control H_2S. Oil that accumulates in the ponds will be skimmed and removed for additional processing. Oil collected from the Produced Water Receiving Tanks will be transferred to the Heating/Treatment Oil Receiving Tanks for processing prior to storage in the Oil Sales Tanks. Liquids within the ponds may be aerated via mechanical aerators in the storage/evaporation ponds as needed.

6.0 FACILITY INSPECTION AND MAINTENANCE

General inspection of the overall physical condition of BDI SWMF, including pond operations, tanks, evaporation spray system, sludge solidification basin, and the injection well will be conducted on an ongoing basis by BDI personnel when operations are active. Additional formal inspections will be conducted and recorded on the appropriate recordkeeping forms as listed in **Table II.1.5**. Templates for the inspection forms are provided as **Attachments II.1.C,** and will include the inspection date, and the name and signature of the inspector. Inspections and maintenance operations will be completed in compliance with 19.15.36.13.L NMAC. The following sections describe the formal inspections for each component of the BDI SWMF.

6.1 Aeration System

The storage/evaporation ponds include mechanical aerators to enhance the rate of evaporation of the overall system. The aeration system will be inspected on a daily basis when operations are active, ***with maintenance performed on an as-needed basis. The inspections will be documented on the*** Inspection Forms included as **Attachment II.1.C**. At a minimum, the mechanical evaporation system will be checked during the daily inspection.

TABLE II.1.5 - Facility Inspections

Section	Component/Details	Frequency[1]	Recording Form
7.1	**Evaporation Spray System** Weather station Plume height Over spray	Daily	Facility Inspection Form (Attachment II.1.C)
7.2	**Tank Farm, Processing Area, and Pump System** Containment berm Tank condition Tank leak test (annual) Signage Pipe and valve condition Sump condition	Weekly	Facility Inspection Form (Attachment II.1.C)
7.3	**Pit and Pond Operation** Depth of liquids in sumps Pond levees Piping condition and status	Monthly	Pit/Pond Integrity/Leak Detection Inspection Form (Attachment II.1.C)
7.4	**Pond Containment System** Rainfall Berms Levees Liners Wind speed/direction Damage assessment	Quarterly	Facility Inspection Form (Attachment II.1.C)
7.5	**Below-grade Tanks and Sumps** Cover Grate Condition Primary Holding Tank Liquid/Sludge Level Primary Holidng Tank Condition Secondary Tank Liquid Level	Daily	Pit/Pond Integrity/Leak Detection Inspection Form (Attachment II.1.C)

Notes:

[1] When operations are active.

[2] Report discovery of significant liquid in the leak detection system to OCD within 24-hrs of observation.

6.2 Tank Farm, Processing Area, and Pump System

The tank farm is designed to accommodate 4,800 bbl. of produced water and 1,200 bbl. of skimmed oil before flowing to evaporation/storage pond 1. A Spill Prevention, Control, and Countermeasures (SPCC) Plan that applies to petroleum product storage and distribution systems is in place. Weekly inspections of the tank farm will be conducted in compliance with the SPCC Plan that includes the Receiving and Bleach Tanks as noted in Section 7.3. At a minimum, the inspections will include and document the items listed in **Table II.1.5**. The inspections will be documented on the Inspection Forms included as **Attachment II.1.C**. Items identified during inspections which require corrective action will be addressed immediately, and if required, the specific process equipment will be taken offline until repairs are completed. Covered below grade tanks (containment sumps) as shown on **Figure II.1.5** will be inspected at least weekly, and if deficiencies are noted, OCD will be notified within 48 hours of discovery, and the sump contents and sediments will be removed, stabilized and disposed of at an OCD-approved facility. A report describing subsequent investigations and remedial actions taken will be submitted to the OCD and maintained in the Facility Operating Record.

The processing area is part of the Tank Farm and physically separates oil from water through the use of tanks. Weekly inspections of the processing area and tanks will be conducted when operations are active. The inspections will be documented on the Inspection Forms included as **Attachment II.1.C**. At a minimum, the inspections will include and document the items listed in **Table II.1.5**. Equipment identified during inspections or mechanical testing which require corrective action will be taken offline until repairs are completed and documented as necessary.

Both the Receiving Tanks and Bleach Tanks will be inspected for proper function, piping and proper liquid flow operation. Should any defect that seriously jeopardizes the plant operation or safety of the operation be identified, the system will be decommissioned until repairs are completed.

6.3 Pit and Pond Operation

Inspection of the physical integrity of the evaporation ponds is conducted on a daily basis as a matter of routine (**Attachment II.1.C**). A thorough inspection of the leak detection system and sump will be conducted on a monthly basis and documented on the Pond Integrity/Leak Detection Inspection Form included in **Attachment II.1.C**. At a minimum, the items listed in **Table II.1.5** will be documented. Prior to placing a newly constructed pond or a pond that has undergone repair or cleaning into service, liquids will be removed from above the primary liner and from the leak detection system. Once in service, it is anticipated nominal liquids may be present in the leak detection system due to condensation and nominal flow through the primary liner. The sumps are 2 ft deep and have a capacity of >1,200 gallons (gal) using a porosity of 35% for the granular material (3/4 to 2-inch select aggregate). **Attachment II.1.D** is a summary table from an authoritative publication on potential geomembrane liner leakage for 40 mil high density polyethylene (HDPE) lined ponds. As shown on the table, the combined projected permeation/pinhole leakage rate ranges from 1.5 to 130 gal/acre/day. Using a very conservative value of 8 gal/acre/day for the combined leakage/permeation rate (**Attachment II.1.D**), this provides 16 days of storage at a depth of 2 ft in the sump. The rate of 8 gal/acre/day is considered very conservative as it is based on 40 mil HDPE (vs. the actual 60 mil HDPE pond liner provided); a fluid depth of 10 ft; and a high number of large pin holes. As additional protection, a geosynthetic clay liner (GCL) will be installed under the leak detection sumps (**Volume III.1**, **III.3,** and **Permit Plans**).

The liquid levels in the sumps will be monitored weekly at a minimum, immediately after ponds are put into service and documented. Should the consistent lack of liquids become apparent after a series of inspections, the monitoring frequency may be extended to monthly. Upon discovery of excessive liquid presence in a leak detection system (i.e., > 2 ft), OCD will be notified within 24 hours and the affected pond area drained. Prior to placing the pond back into service, BDI will initiate corrective action which may include but is not limited to:

- Actions undertaken to locate source(s) of leakage
- Repair procedures
- More frequent sump liquid level monitoring and/or pumping
- Liquids testing
- Increased vadose monitoring (if required)

The results of the corrective actions will be recorded and placed in the Facility Operating Record.

6.4 Pond Containment System

A thorough inspection of the berms and the outside walls of pond levees will be conducted at least quarterly, and after any major rainfall or windstorm. For purposes of this inspection frequency, a major rainfall is defined as a documented 25-year, 24-hour rainfall event, and a major windstorm is defined as sustained wind speeds in excess of 30 mph for a one-hour period. The inspections will be documented and retained on the Pond Integrity/Leak Detection Inspection Form such as the template included in **Attachment II.1.C**. At a minimum, the inspection shall consist of the items listed in **Table II.1.5**. The inspection will address erosion, liner damage and maintenance required with a timeframe to complete required repairs. In addition, the depth of sludge build-up in the bottom of the pond will be measured during the quarterly inspections and documented. Sludge in excess of 12 inches will be removed, dewatered, stabilized, processed onsite or disposed of at an OCD approved facility.

6.5 Below Grade Tanks

The two covered below grade tanks (containment sumps) are inspected on a daily basis with maintenance performed on an as-needed basis, but not exceeding monthly. The inspections are documented on the BDI inspection forms included as **Attachment II.1.C**. The two existing below grade tanks both have secondary containment (double wall tank) and conform to the requirements of 19.15.36.17.D(1) NMAC. Equipment identified during inspections or mechanical testing which require corrective action will be taken offline until repairs are completed and documented as necessary. At a minimum the following items are checked during the daily inspection:

- Cover grate condition
- Primary holding tank liquid/sludge level
- Primary holding tank condition
- Secondary tank liquid level

7.0 EMERGENCY SITUATIONS AND EQUIPMENT BREAKDOWN

Response to emergency situations involving the actions of the Emergency Coordinator, fire prevention and protection, incident response, and notification procedures are described in detail in the Contingency Plan (**Volume II.5**).

7.1 Equipment Breakdown

In the case of unplanned equipment downtime, the following measures will be deployed:

- Delivery of liquid oil field waste will be delayed if storage capacity is unavailable in the receiving tanks.
- Downtime associated with mobile equipment (i.e., skid-steer loader, forklift) will be addressed by deploying alternative on-site units (e.g., end loaders) and arrangements with local equipment vendors for immediate maintenance and lease of temporary replacement units.
- BDI's preventive maintenance plan has proven to be highly effective at preventing unplanned downtime through routine inspection and regular maintenance of mobile and stationary equipment.

8.0 RECORD KEEPING REQUIREMENTS

BDI is required to keep detailed records for the BDI SWMF as described throughout this Application. In addition, the Facility will meet the OCD requirements for reporting as detailed in the Management Plans provided elsewhere in **Volume II** of this Application. All records will be retained for a minimum of 5 years and will be made available for OCD review and inspection upon request pursuant to the following regulations:

19.15.36.13.G *The operator of a commercial facility shall maintain records reflecting the generator, the location of origin, the location of disposal within the commercial facility, the volume and type of oil field waste, the date of disposal and the hauling company for each load or category of oil field waste accepted at the commercial facility. The operator shall maintain such records for a period of not less than five years after the commercial facility's closure, subject to division inspection.*

19.15.36.13.P *Training program. Each operator shall conduct an annual training program for key personnel that includes general operations, permit conditions, emergencies proper sampling methods and identification of exempt and non-exempt waste and hazardous waste. The operator shall maintain records of such training, subject to division inspection, for five years.*

19.15.36.17.C.(2) *The operator shall monitor leak detection systems pursuant to the approved surface waste management facility permit conditions, maintain monitoring records in a form readily accessible for division inspection and report discovery of liquids in the leak detection system to the division within 24 hours.*

19.15.36.17.D.(2) *The operator shall test sumps' integrity annually, and shall promptly repair or replace a sump that does not demonstrate integrity. The operator may test sumps that can be removed from their emplacements by visual inspection. The operator shall test other sumps by appropriate mechanical means. The operator shall maintain records of sump inspection and testing and make such records available for division inspection.*

BDI has a demonstrated history of maintaining its equipment in optimum condition, resulting in uninterrupted service to the industry.

ATTACHMENT II.1.A

SAFETY COMMUNICATIONS PROGRAM (TYPICAL)

BASIN DISPOSAL
30 Years of Environmental Health and Safety Excellence
200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

SAFETY COMMUNICATIONS PROGRAM

SAFETY MEETING ATTENDANCE SHEET

Date: _____ Time: _____

Topic: _____

Presenter(s): _____

Printed Name	Signature

Instructions:

1. This form must be completed at each safety meeting.
2. Make additional copies as required.
3. Keep copy of completed attendance sheets in binder.

Absent	Date Covered

BASIN DISPOSAL
30 Years of Environmental Health and Safety Excellence
200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

SAFETY COMMUNICATIONS PROGRAM [1]

TRAINING SCHEDULE

Month	Topics
January	Lockout/Tagout Program SWPPP Good Housekeeping
February	Material Acceptance & Handling OCD 19.15.36.13.P Exempt vs Non-Exempt Form C133 & C138 H2S Screening
March	OCD 19.15.36.13.P General Operations OCD 19.15.36.13.P Permit Conditions OCD 19.15.36.13.P Proper Sampling Odors/Complaints
April	OCD 19.15.36.13.P Emergencies Site Contingency Plan H2S Contingency Plan Hazard Communications
May	Emergency Evacuation Drill Spill Prevention & Control Site Generated Waste Disposal
June	Heat Stress Confined Space Site Inspection
July	First Aid/Bloodbourne Pathogens Migratory Bird Prevention Industrial Powered Trucks
August	Employee Safety PPE 3 Point Contact
September	Record Keeping Incident & Injury Reporting High Voltage Training
October	Cold Weather Stress Fire Extinguisher Use
November	Sexual Harrassment Drug & Alcohol Cell Phone Use
November	Employee Benefits Temp/Short Term Employee Safety

1. Training schedule and content subject to change

ATTACHMENT II.1.B
EQUIPMENT SPECIFICATIONS

Aztec, New Mexico

Objective: Size Aqua-Jet for given situation.

Design Data:

Basin Volume: 3.7 MG

Lined with membrane

Design Calculations:

Use 4 HP/MG for O_2 dispersion

(3.7 MG) (4 HP/MG) = 14.8 HP

Recommendation:

Eight (8) 2 HP Aqua-Jet Aerators
with anti-erosion assemblies.

NOTE: 2 ft is the recommended minimum operating depth.

JDM/JEG/rh
3-22-89

STAINLESS STEEL
AERATOR SPECIFICATIONS

1. GENERAL

Furnish and install 8 2 HP floating aerators. Each aerator shall consist of a motor, a direct drive impeller driven at a constant speed and an integral flotation unit.

2. AERATOR DRIVE MOTOR

2.1 The motor shall deliver 2 horsepower and shall be wired for 230/460volts, 60 cycle, three phase service.

2.2 The motor shall be totally enclosed, fan cooled, and generally rated for severe chemical duty, and shall have a 1.15 service factor.

2.3 The motor windings shall be nonhygroscopic, and insulation shall equal or exceed NEMA Class "F".

2.4 A condensate drain shall be located at the lowest point in the lower end-bell housing.

2.5 A labyrinth seal shall be provided below the bottom bearing to prevent moisture from penetrating around the motor shaft.

2.6 All motor frame parting surfaces shall be deep registered and Permatex sealed.

2.7 All through bolts, nuts, and screws shall be of type 18-8 stainless steel.

2.8 A stainless steel nameplate shall be provided with each motor and shall be securely fastened thereto. the voltage, speed, insulation class, amperage, service factor, wiring diagram, motor serial number, and the manufacturer's name and address shall be steel stamped or otherwise permanently marked.

3. MOTOR SHAFT

3.1 Unit shall have a one-piece motor shaft continuous from the top motor bearing, through the lower bearing and down to and through the propeller. This shaft will be manufactured from 17-4 PH stainless steel, or comparable stainless steel having a minimum yield strength of 100,000 psi on units 3 HP and larger. For 1 and 2 HP units, this shaft will be manufactured from 303 stainless steel, or comparable stainless steel having a minimum yield strength of 30,000 psi.

4. RPM

Units shall operate at the lowest RPM offered in this size by the manufacturer. In no case shall nominal RPM exceed 1800 for units meeting the one-piece shaft specified above. Units featuring one-

piece shaft shall operate nominally at 1800 RPM in the size range of 1-15 HP, or at a nominal maximum speed of 1200 RPM for units in the 20-75 HP size range.

5. MOTOR BEARING

5.1 Motor bearings shall be regreasable. Sealed bearings are not acceptable and bearings shall be shielded on the bottom side only.

5.2 The top and bottom motor bearings shall be of the combined radial and axial thrust type and shall be packed at the factory with CHEVRON SRI-2 grease (or an approved equivalent lithium-base waterproof grease).

5.3 The lower motor bearing inner race shall be locked to the motor shaft via a special washer and locking nut arrangement. The shaft shall be threaded just below the lower bearing and shall have a keyway cut into the motor shaft. this key shall accept a tab from the I.D. of the locking washer, and the locking nut shall have recesses to accept a tab from the O.D. of the locking washer to prevent the nut from backing off. Snap ring type bearing retainers will not be acceptable.

6. DIFFUSER HEAD

6.1 The design of the diffuser head shall be such that the liquid spray will discharge at an angle of 90° to the motor shaft, and over a 360° pattern in the horizontal plane, and shall be a stainless steel monolithic casting.

6.2 The diffuser head casting shall act as a base for the aerator motor, and alignment of the motor to this base shall be controlled by machined index fittings that engage the P-base of the motor. Diffuser head/motor arrangements that are dependent upon bolt holes only for alignment will not be acceptable.

6.3 The diffuser head casting shall act as a thrust block to deflect the high velocity, pumped volume of the aerator from the vertical to the horizontal direction. In order to minimize vibration, to provide adequate strength, the diffuser head casting shall weigh no less than _____ lbs. The bottom side of this casting shall have a 90° radiused transition to effect the hydraulic change in direction with a minimum of head loss.

6.4 The diffuser head shall absorb all normal and shock loads encountered by the propeller, and transmitted to the diffuser head via the motor shaft and lower motor end-bell. The diffuser head shall distribute these forces into the float via webs that terminate in a flange or ring that is an

integral part of the diffuser head. This flange shall mate with a similar flange that is an integral part of the float/volute to spread the stresses generated by the propeller uniformly around the float so that no point loading of the float is allowed. These flanges shall be machined flat to provide proper bearing surfaces. The alignment of the diffuser head flange to the float/volute shall be by use of an index pilot; and, bolt holes only shall not be acceptable.

6.5 Specifically, diffuser head designs that employ studs and spacers, or shoulder bolts are not allowed. Load bearing flange-to-flange connections will be mandatory.

NOTE:

Aqua-Aerobic Systems strongly recommends the following language be incorporated into the aerator specification.

6.6 The diffuser head shall contain an anti-deflection journal insert to limit the radial deflection of the motor shaft.

6.7 This anti-deflection journal insert shall be located in the lower extremity of the diffusion head, approximately one-half the distance between the motor base and the lower end of the shaft.

6.8 The journal insert shall be machined from Delrin and shall be a minimum of 0.020" larger through the bore than the diameter of the motor shaft.

6.9 Units featuring a one-piece unsupported shaft will not be acceptable.

6.10 There shall be a fluid deflector located on the motor shaft immediately below the anti-deflection journal, which shall cover completely the anti-deflection journal insert and the lower portion of the diffusion head.

6.11 This fluid deflector shall be molded from black neoprene and shall be press fit onto the motor shaft.

7. FLOTATION

7.1 Each aerator shall have 200 lbs. reserve buoyancy to insure stability and to provide support flotation required during aerator servicing. Floats shall be one-piece, i.e. segmented floats are not acceptable.

7.2 Flotation stability will be mandatory. Under no circumstances will unstable flotation designs requiring counter balancing or ballast of liquid or solid mass or weight displacement be acceptable. Only aerators demonstrating stable operational characteristics, without rocking or oscillating and causing mooring stress, will be acceptable.

7.3 The float shall be fabricated of a minimum of 14 gauge 304 stainless steel.

7.4 The float shall be constructed so that all stress imposed from wave action and mooring line tension shall be transmitted from each mooring line to another by pulling across the float in such a manner as not to "flex" the structure.

7.5 All floats shall be constructed so that the internal void can be filled full of closed cell polyurethane foam having a minimum 2.0 lbs./ft^3 density and shall be completely sealed water tight.

7.6 All floats shall have six mooring points, spaced for 3 or 4-point mooring around the outer circumference. No mooring connections will be allowed as imbedments in the upper or lower float covers. Only tension type connections perpendicular to the outer sidewall will be approved. All mooring connections shall be stainless steel.

7.7 The float construction shall be such that the volute will distribute the load of the entire motor, drive, diffusion head and volute static load plus; the entire dynamic load from the propeller thrust and radial forces by spreading these forces uniformly around the full 360° circumference of the float's central core. Point connected joints or point stressed connections will not be accepted.

8. PROPELLER

8.1 The propeller shall be a precision casting of 316 stainless steel, and shall be specifically designed for the application intended. It shall be a self-cleaning type that will not accumulate fibers, rags, stringy materials, etc.

8.2 Each propeller blade shall be pitched so that the pitch angle and rake angle are within ± 2 percent of the other blade(s).

8.3 The propeller shall be pitched so that the drive motor is loaded between 88% and 95% of full-load nameplate horsepower.

9. VOLUTE

9.1 The propeller shall operate in a volute made of 304 stainless steel. It shall be round and true so that propeller blade tip clearance is uniform within the volute as is it rotates. The volute shall have a minimum of 3/16 inch wall thickness and a minimum of four full-length stainless steel gussets shall be welded on 90° spacing around the circumference of the volute between the top and bottom flanges.

9.2 The volute shall have a large flange at its top extremity that completely encircles the volute, and this flange shall match a similar flange on the bottom of the diffuser head to provide for a bolted, machined flange-to-flange fit to provide uniform distribution of the dynamic loads generated by the propeller and the static weight of the motor and drive. A machined index in the upper flange shall provide concentric alignment of the propeller in the volute by engaging the inside diameter of the mating flange on the diffusion head. Bolt holes alone will not be acceptable to locate the important alignment of the propeller.

9.3 Fiberglass volutes, or carbon steel volutes or carbon steel volutes that are fiberglass or stainless steel lined are not acceptable.

10. INTAKE CONE

10.1 The intake cone shall be fabricated from 304 stainless steel having a gradually expanding opening outward to the intake end. The length and inlet diameter shall be sufficient to provide uniform inlet hydraulics so that no increase in vibration is caused due to its' shape or size.

10.2 The material used to fabricate the intake cone shall be structurally sufficient to support the weight of the entire aerator assembly when the aerator is free-standing on dry ground.

10.3 For maximum in-depth mixing efficiency, the intake cone shall be designed so that the suction lift from the aerator propeller is vertical from the liquid depth below the aerator. Unless specifically required for anti-erosion requirements, side or angle entry suction inlets will not be approved.

11. BALANCING

The entire rotating assembly including the motor rotor, shaft and impeller shall be dynamically balanced to within 2.0 mils peak-to-peak horizontal displacement measured at the upper and lower motor bearing. Measurements shall be taken at a frequency equivalent to the motor RPM.

Measurements shall be taken with the motor in a vertical, shaft down position and with the motor or the entire power section mounted on resilient pads. Certified copies of the balance inspection shall be supplied with each aerator.

12. MOORING

12.1 The anchor cable shall be installed as recommended by the manufacturer so the aerator shall be permitted to rise and fall with water level variations, but will have a minimum of lateral movement.

12.2 The maximum amount of anticipated water level variation is _____ feet.

12.3 Anchor cable shall be 7 X 19 construction, 304 stainless steel and 3/16" diameter.

12.4 Mooring hardware (thimbles and clips) shall be of 316 stainless steel. Galvanized hardware is not acceptable.

13. ELECTRICAL SERVICE CABLE

13.1 Each unit shall be furnished with _____ feet of AWG # 12 four conductor, continuous length (non-spliced) underwater electric service cable.

13.2 The aerator manufacturer shall furnish the cable, with the motor end sealed into the motor terminal box, and wired for 230/460 volt service. The aerator manufacturer shall be responsible for this watertight seal and electrical connection. The other end of the cable will be wired into the power supply by the installing contractor.

13.3 Only flexible type copper stranded cable with four individually jacketed conductors bound together with a non-wicking filler and sheathed in a PVC, neoprene or approved equal over jacket will be approved.

14. INSTALLATION, OPERATING, AND MAINTENANCE MANUALS

14.1 The aerator manufacturer shall provide _____ copies of a detailed manual that shall include specific instructions for receiving and handling, assembly, mooring, wiring, installation, repair and service, storage, troubleshooting, detailed exploded drawings of the unit, and a full parts list.

14.2 In addition, the manual shall contain complete detailed instructions on the balancing procedure to be used for rebalancing to the propeller after is has been in service for an extended period of time. These instructions shall include, but not be limited to, a general procedural description, a detailed explanation of preparing the unit for balancing, for setting up the dynamic balancer, portable balancing technique, a detailed description of the vector chart method of single plane balancing and sample balancing record forms.

14.3 These manuals shall be submitted for review, along with other general submittal information, including detailed drawings, brochures, cut-sheets, motor data sheets, etc., as a part of the approval process.

15. MANUFACTURER

Aqua-Aerobic Systems, Inc.'s Aqua-Jet Aerator has been selected as a standard for comparison, and is viewed to be ideal for this application.

16. EQUIPMENT SELECTION - COMPLIANCE WITH THE SPECIFICATIONS

Detailed specifications have been set forth herein, and are to be adhered to in all respects. Absolutely no deviations from the specifications will be approved. Manufacturers wishing to submit equipment for consideration should furnish the general contractor with a statement as follows: "(Company Name) certifies that its offering is in full compliance with all details of the equipment specification and wishes to offer this equipment for considerations. Should the equipment be rejected as not complying with the specification, (Company Name) will be financially responsible for the difference between our quoted price and the next lowest responsible bid that meets the equipment specification." This document shall be furnished to all bidding contractors prior to the bid opening, and shall be duly signed by an officer of the company.

17. EXPERIENCE

17.1 Manufacturers proposing to furnish equipment for this project shall have three installations of similar equipment model and size in similar service for a period of three years.

17.2 Equipment manufacturers not meeting this requirement are invited to bid, provided they furnish an unconditional guarantee, underwritten by a bonding agent acceptable to the city for a period of three years. Equipment and/or components failing within this period due to deficiency in design, workmanship or material shall be replaced at no cost to the owner, and said replacement shall be guaranteed for three years continuous service.

18. PERFORMANCE

18.1 Each aerator shall be capable of transferring oxygen at the rate of 3.0 lbs./HP/hr as determined by the unsteady state test technique at the standard conditions of zero dissolved oxygen, 1 ATM pressure and 20°C.

18.2 Each aerator shall provide sufficient kinetic energy to the basin to provide uniform oxygen dispersion such that any given dissolved oxygen sample taken at random from the basin shall not vary more than 2 mg/l or 20% (whichever is greater) from the average of 10 samples simultaneously drawn at random from the basin.

18.3 Each aerator shall deliver a minimum of 88% and a maximum of 94% of nameplate horsepower as evidenced by measured operating amp load and voltage readings. Horsepower shall be computed by:

$$HP = \frac{(1.732)\ (amps)\ (volts)\ (E)\ (P.F.)}{746}$$ Where:

HP = Delivered horsepower

E = Efficiency of motor (nameplate rating)

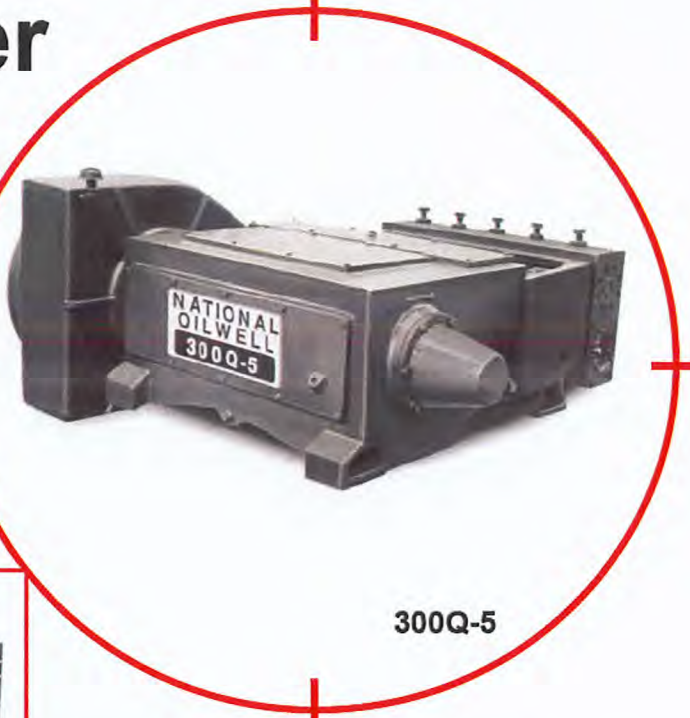
P.F. = Power factor of motor (certified by motor manufacturer)

18.4 The aerator manufacturer shall certify that the nameplate data on the aerator motor is valid specific data pertinent to that particular motor and that such nameplate data originates from the motor manufacturer and that no nameplate data changes have been made subsequent to the motor being shipped from the original motor manufacturer.

NATIONAL OILWELL VARCO

Multiplex Plunger Pumps

Installation, Care and Operation Manual



300Q-5

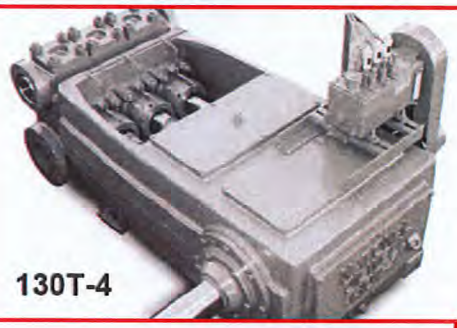
250T-5

200T-5

165T-5

60T-3

80T-3



130T-4

30T-2

100T-4

Covering the following pumps:

- **30T-2**
- **60T-3**
- **80T-3** Atex Certified
- **100T-4**
- **130T-4**
- **165T-5**
- **200T-5**
- **250T-5**
- **300Q-5** Atex Certified

Sales / Technical Information

USA Tollfree: 1-800-324-4706
Phone: 1 (918) 447-4600
Fax: 1 (918) 447-4677
Internet: http://www.nov.com

REVISED: July 17, 2008
REVISED: August 19, 2005
ISSUE: September 15, 2003

P.O. Box 4638

Houston, Texas 77210-4638

NATIONAL OILWELL VARCO

SUPPLEMENT FOR
ALL PUMP MANUALS

⚠! WARNING !⚠

PRESSURE

RELIEF

VALVES

⚠! NOTICE !⚠

Our technical publications relative to reciprocating pumps state that pressure relief valves must be installed in the discharge systems from these units. This supplement is issued to emphasize the importance of relieving the discharge system of all pressure which exceeds the rated working pressure applied by the manufacturer to the specific pistons and liners (or plungers and packing) in any particular unit.

⚠ ! WARNING ! ⚠

For the protection of persons and property the discharge system from each Reciprocating Pump must be equipped with a device which relieves the system of all pressures which exceed the pressure rating applied by the manufacturer to each particular piston or plunger diameter. Allowances will be made for pressure surges which are inherent with the reciprocating action of piston and plunger pumps. The percentage of pressure allowance appears later in this publication and in the "Standards of the Hydraulic Institute" (13th edition).

The relieving device must provide for instantaneous pressure relief, it may be a valve designed for automatic or manual resetting; however, if preferred, rupture discs or burst discs may be installed.

FAILURE to comply with the procedures outlined in the Warning may result in damage to the pump and related equipment and more importantly may cause serious bodily injury or death!

THE PRESSURE RELIEF VALVE:

1. This valve must be a full opening type.
2. It must have a working pressure rating, equal to or greater than, the maximum working pressure of the pump.
3. The through capacity of the valve, when fully opened, must be sufficient to relieve the full capacity of the pump without excessive overpressure.

RUPTURE DISC OR BURST DISC:

1. These discs must have a diameter which is not less than the pipe size of the pressure relief flange.
2. These discs must have a rupture or burst pressure rating consistent with the specifications tabulated later in this publication.

LOCATION OF THE RELIEF VALVE:

1. The relief valve must be placed in the discharge line as close as possible to the pump fluid end or it may be mounted on the pump discharge manifold.
2. The relief valve must be on the pump side of any discharge strainer.
3. The relief valve must be between the pump fluid end and any valve in the discharge system.
4. There must be no restricting device(s) between the relief valve and the pump fluid end.

THE RELIEF VALVE DISCHARGE LINE:

1. The relief valve discharge line should not terminate in the pump suction line.
2. The line should terminate in the supply tank, if possible.
3. The line must be securely anchored.
4. The line must be the same pipe size as, or may be larger than, the discharge connection on the relief valve.
5. If the line is of great length, this must be taken into consideration in sizing the relief valve.
6. There must be no restrictions or valves in the relief valve discharge line.

NOTE: Follow the foregoing instructions if rupture discs or burst discs are installed.

SUGGESTED SET PRESSURES FOR THE PUMP RELIEF VALVES:

PUMP TYPE:	OPERATING PUMP PRESSURE:
Double Acting – Duplex	Piston Pressure Rating – Plus 25%
Double Acting – Triplex	Piston Pressure Rating – Plus 10%
Double Acting – Quintuplex	Piston Pressure Rating – Plus 10%
Single Acting – Triplex	Piston Pressure Rating – Plus 10%
Single Acting – Simplex	Plunger Pressure Rating – Plus 25%
Single Acting – Duplex	Plunger Pressure Rating – Plus 20%
Single Acting – Triplex	Plunger Pressure Rating – Plus 10%
Single Acting – Quintuplex	Plunger Pressure Rating – Plus 10%
Single Acting – Septuplex	Plunger Pressure Rating – Plus 10%

Note: The above set pressures are to be observed when installing rupture discs or burst discs.

Foreword...

This manual is published as a guide for the normal operation of your **NATIONAL OILWELL VARCO** equipment. Because of the many factors which contribute to the function or malfunction of this machinery, and not having complete knowledge of each factor or combination of factors, we cannot detail all facets of this subject. We must therefore confine the scope of this presentation and when situations encountered are not fully encompassed by complete, understandable instructions, these situations must be referred to the manufacturer.

When other than routine servicing is necessary, it can be most efficiently performed if the unit is removed to an area of adequate space where an over-head crane, hydraulic lift, bearing pullers, impact tools, etc., are accessible.

The dimension and tolerances specified in this publication are those desirable for the most efficient operations of the equipment. When components become worn or when new parts are introduced into a worn unit, it may not be possible or economically feasible to reestablish such strict alignment and correct all dimensional deviations.

Improvements in design, engineering, materials, production methods, etc., may necessitate changes in these products and result in inconsistencies between the content of this publication and the physical equipment. We reserve the right to make these changes without incurring any liability or obligation beyond that which is stipulated in the purchase contract.

The pictures, photographs, charts, diagrams, drawings, verbal contents and specifications are not to be construed as giving rise to any warranty on the part of NATIONAL OILWELL VARCO. National Oilwell Varco makes no warranty, either expressed or implied beyond that which is stipulated in the purchase contract.

NATIONAL OILWELL VARCO pumps are manufactured by National Oilwell Varco at the McAlester, Oklahoma plant. The serial number, assigned each pump is stamped on the power end. Please refer to this serial number when ordering parts for the pump.

The right and left sides of the pump are determined by viewing the pump from the back of the power end, looking toward the fluid end. This position is also used to identify the plungers and their related parts as being number one, two and three, beginning at the left side of the pump.

⚠! CAUTION ! CAUTION ! CAUTION ! ⚠

EXERCISE SAFETY IN ALL PERFORMANCES: DO NOT IGNORE ANY WARNINGS; USE ONLY APPROVED METHODS, MATERIALS AND TOOLS. DO NOT PERMIT ANY FUNCTION OF QUESTIONABLE SAFETY; ACCIDENTS ARE CAUSED BY UNSAFE ACTS AND UNSAFE CONDITIONS. SAFETY IS YOUR BUSINESS AND YOU ARE INVOLVED.

⚠! WARNING ! WARNING ! WARNING ! ⚠

BEFORE PERFORMING ANY SERVICE FUNCTION, BE CERTAIN THAT THE UNIT IS SEPARATED FROM ITS POWER SOURCE OR THAT THE POWER SOURCE IS LOCKED-OUT TO PREVENT ANY FORM OF ENERGY FROM ENTERING THE EQUIPMENT. THIS WOULD INCLUDE ELECTRICAL OR MECHANICAL ENERGY INTO OR FROM THE PRIME MOVER(S), PNEUMATIC ENERGY FROM THE COMPRESSOR/AIR SYSTEM, ETC.

⚠! WARNING ! WARNING ! WARNING ! ⚠

FAILURE TO OBSERVE THE WARNINGS AND NOTES OF CAUTION IN THIS PUBLICATION CAN RESULT IN PROPERTY DAMAGE, SERIOUS BODILY INJURY, OR DEATH.

⚠! ATTENTION - NOTICE - IMPORTANT ! ⚠

THESE TERMS ARE USED TO DRAW ATTENTION TO ACTION THAT WILL CAUSE DAMAGE TO THE PUMP, COMPONENTS OR ATTACHMENTS.

⚠! ATTENTION ! ⚠

PUMP NOMENCLATURE:

ALL PUMP SIZES WITHIN THIS MANUAL WILL BE DESCRIBED WITH THE NEW OR CURRENT NOMENCLATURE. THE OLD 'J' MODEL PUMP NOMENCLATURES DESCRIBED ON THE FRONT COVER, BUT NOT INCLUDED IN THIS MANUAL EXCEPT AS NEEDED, ARE TO BE UNDERSTOOD AS BEING INCLUDED WITH THE NEW NOMENCLATURES.

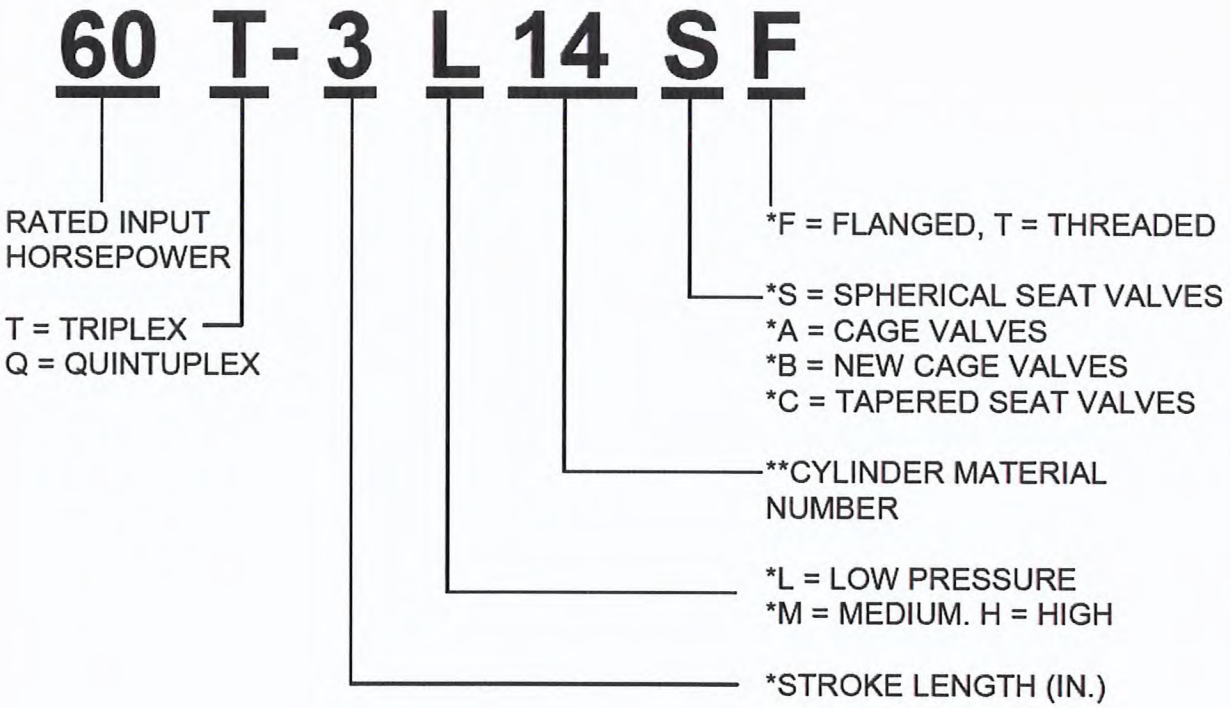
⚠! WARNING ! WARNING ! WARNING ! ⚠

BEFORE SERVICING PUMPS:

1. *SHUT DOWN OR DISENGAGE THE PUMP POWER SOURCE.*
2. SHUT DOWN ALL PUMP ACCESSORY EQUIPMENT.
3. RELIEVE OR "BLEED OFF" ALL PRESSURE FROM THE PUMP FLUID CYLINDER(S).

   FAILURE TO SHUT DOWN POWER AND RELIEVE PRESSURE FROM THE PUMP BEFORE SERVICING CAN RESULT IN SERIOUS PERSONAL INJURY AND PROPERTY DAMAGE.

Plunger Pump Nomenclature Example....



*NOMENCLATURE MAY BE SHORTENED IN PARTS LISTS OR OTHER INSTANCES TO LEAVE OFF THE MATERIAL, VALVE TYPE, ETC. THIS FULL NOMENCLATURE DESCRIPTION IS GIVEN FOR INFORMATIONAL PURPOSES.

**CYLINDER MATERIAL NUMBER EXAMPLES INCLUDE:
14 = 9D NICKEL ALUMINUM BRONZE
12 = FORGED STEEL
06 = 316 S.S.
(Inquire about other material numbers)

Table of Contents...

ATEX WARNING STATEMENTS

INSTALLATION

LUBRICATION

OPERATION

MAINTENANCE

Table of Contents (Continued)...

OVERHAUL AND REPAIR

DISASSEMBLY

ASSEMBLY

Table of Contents

ASSEMBLY (Continued)...

PLUNGER PUMP VALVES

Table of Contents (Continued)...

GEAR REDUCER

P-55U LUBRICATOR

STORAGE OF PUMPS

OWNERS RECORD

TYPICAL WATERFLOOD PUMP INSTALLATION SUCTION and DISCHARGE PIPING ARRANGEMENT

VISCOSITY EQUIVALENTS

ATEX Warning Statements

I. PUMPS AND PUMP UNITS

1. Where a pump or pump unit is to be installed in a potentially explosive atmosphere ensure that this has been specified at the time of purchase and that the equipment has been supplied accordingly and displays an ATEX nameplate or is supplied with a certificate of conformity. If there is any doubt as to the suitability of the equipment please contact National Oilwell Varco before commencing with installation and commissioning.

2. Process liquids or fluids should be kept within specified temperature limits, otherwise the surface of pump or system components may become an ignition source due to temperature rises. Where the process liquid temperature is less than 90°C the maximum surface temperature will not exceed 194°F (90°C) provided the pump is installed, operated and maintained in accordance with this manual.

3. Electrical installation and maintenance work should only be carried out by suitably qualified and competent persons and must be in accordance with relevant electrical regulations.

4. All electrical equipment, including control and safety devices, should be suitably rated for the environment in to which they are installed.

5. Where there may be a risk of an accumulation of explosive gases or dust, non-sparking tools should be used for installation and maintenance.

6. To minimize the risk of sparking or temperature rises due to mechanical or electrical overload the following control and safety devices should be fitted. A control system that will shut the pump down if the motor current or temperature exceed specified limits. An isolator switch that will disconnect all electrical supply to the motor and ancillary electrical equipment and be capable of being locked in the off position. All control and safety devices should be fitted, operated and maintained in accordance with the manufacturer's instructions. All valves on the system should be open when the pump is started otherwise serious mechanical overload and failure may result.

7. It is important that the pump rotates in the direction indicated on the nameplate. This must be checked on installation and commissioning and after any maintenance has been carried out. Failure to observe this may lead to dry running or mechanical or electrical overload.

8. When fitting drives, couplings, belts, pulleys and guards to a pump or pump unit it is essential that these are correctly fitted, aligned and adjusted in accordance with the manufacturer's instructions. Failure to do so may result in sparking due to unintended mechanical contact or temperature rises due to mechanical or electrical overload or slipping of drive belts. Regular inspection of these parts must be carried out to ensure they are in good condition and replacement of any suspect part must be carried out immediately.

9. Seals should be suitably rated for the environment. The seal and any associated equipment, such as a flushing system, must be installed, operated and maintained in accordance with the manufacturer's instructions.

10. Where a packed gland seal is fitted this must be correctly fitted and adjusted. This type of seal relies on the process liquid to cool the shaft and packing rings so a constant drip of liquid from the gland section is required. Where this is undesirable an alternative seal type should be fitted.

11. Failure to operate or maintain the pump and ancillary equipment in line with the manufacturer's instructions may lead to premature and potentially dangerous failure of components. Regular inspection, and where necessary replacement, of bearings and lubrication is essential.

12. The pump and its components have been designed to ensure safe operation within the guidelines covered by legislation. Accordingly National Oilwell Varco has declared the machine safe to use for the duty specified as defined by the Declaration of Incorporation or Conformity that is issued with this instruction manual.

ATEX Warning Statements

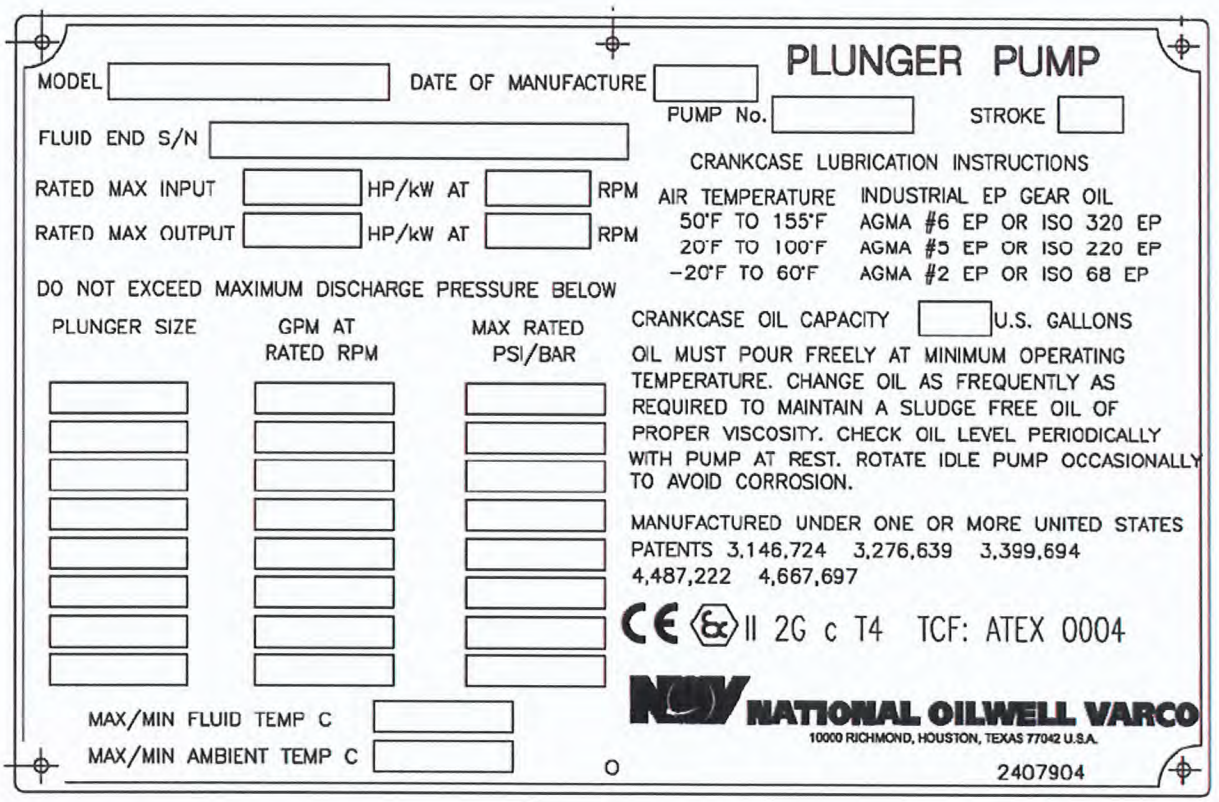
I. PUMPS AND PUMP UNITS (Continued)...

13. Failure to operate or maintain the pump and ancillary equipment in line with the manufacturer's instructions may lead to premature and potentially dangerous failure of components. Regular inspection, and where necessary replacement, of bearings and lubrication is essential.

14. The pump and its components have been designed to ensure safe operation within the guidelines covered by legislation. Accordingly National Oilwell Varco has declared the machine safe to use for the duty specified as defined by the Declaration of Incorporation or Conformity that is issued with this instruction manual.

A. 80T PUMP

1. NAMEPLATE



ATEX Warning Statements

I. PUMPS AND PUMP UNITS

A. 80T PUMP (Continued)...

2. DECLARATION OF INCORPORATION

Ex	Declaration of Incorporation (Machinery) EC Declaration of Conformity (ATEX)	

MANUFACTURER: National Oilwell Varco
6750 S. 57th West Avenue
Tulsa, Oklahoma 74131

PRODUCT DESCRIPTION: 80T Pump

APPLICABLE EUROPEAN DIRECTIVES:

Machinery:	98/37/EC
ATEX:	94/9/EC
PED	97/23/EC

APPLICABLE HARMONIZED STANDARDS:

Machinery:	EN 12100-1, EN 12100-2
ATEX:	EN 1127-1, EN 13463-1, EN 13463-5
PED:	Exempt per Article 1, Clause 3.10

NOTIFIED BODY

Bureau Veritas, ATEX NB 0081 retains a copy of the Technical File: ATEX 0004

ATEX product marking: CE Ex II 2G c T4

The equipment described in this Declaration of Incorporation complies with the Applicable European Directives and relevant sections of the Applicable International Standards. Integration instruction are provided that contain requirements and specifications that must be implemented prior to putting this equipment into service; this equipment must not be put into service before the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive. The EHSR's related to this equipment have been addressed; a Technical Construction File is available for inspection by designated bodies.

Authorized Signature: Date:

Chris Cackler October 4, 2007

Important safety information is contained in the installation, operation and service manuals; read and understand this information prior to installing or using this equipment

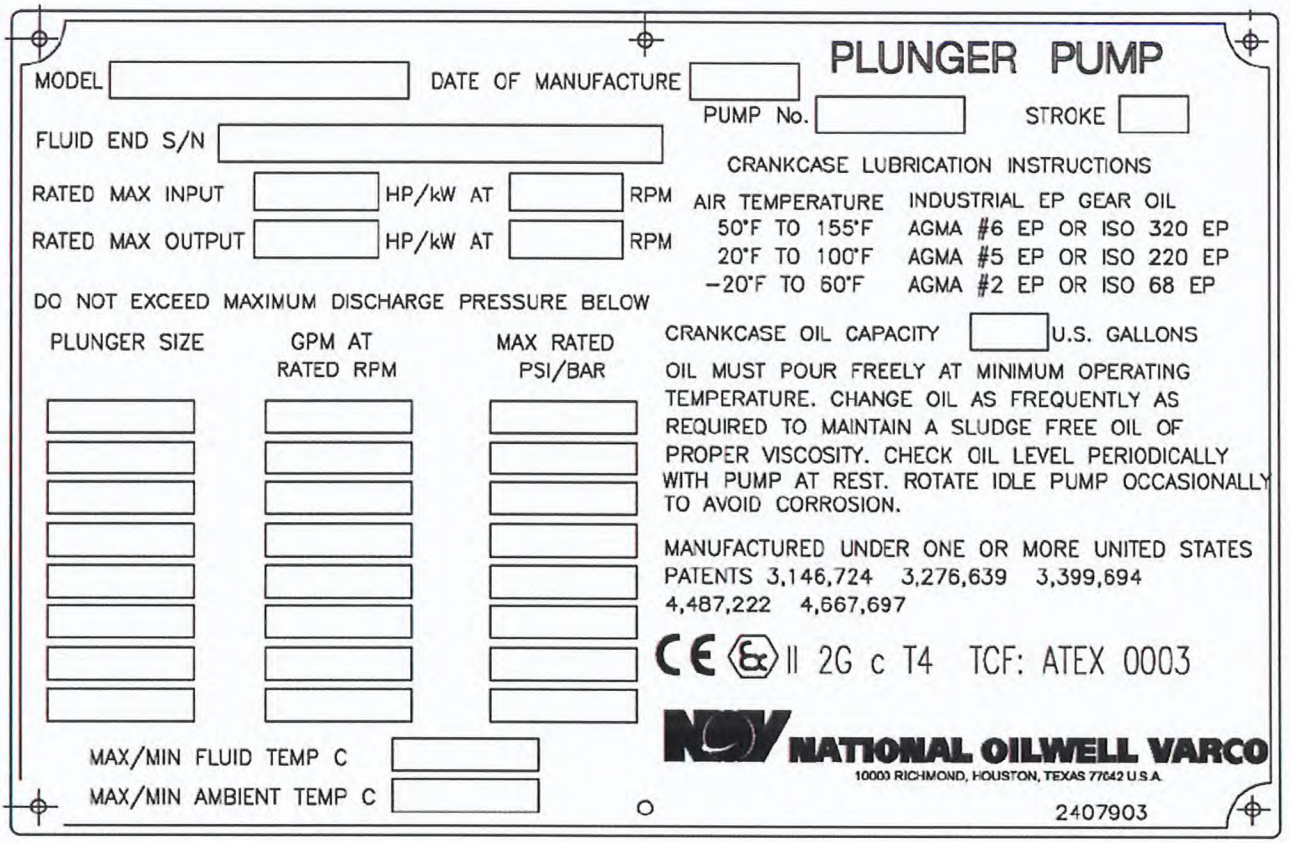
This Document applies only to the equipment described above and is invalid if not reproduced in its entirety.

ATEX Warning Statements

I. PUMPS AND PUMP UNITS (Continued)...

B. 300Q PUMP

1. NAMEPLATE



ATEX Warning Statements

I. PUMPS AND PUMP UNITS

B. 300Q PUMP (Continued)...

2. DECLARATION OF INCORPORATION

Ex	Declaration of Incorporation (Machinery) EC Declaration of Conformity (ATEX)	

MANUFACTURER: National Oilwell Varco
10000 Richmond
Houston, Texas 77042

PRODUCT DESCRIPTION: 300Q Pump

APPLICABLE EUROPEAN DIRECTIVES:

Machinery:	98/37/EC
ATEX:	94/9/EC
PED	97/23/EC

APPLICABLE HARMONIZED STANDARDS:

Machinery:	EN 12100-1, EN 12100-2
ATEX:	EN 1127-1, EN 13463-1, EN 13463-5
PED:	Exempt per Article 1, Clause 3.10

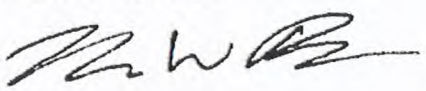
NOTIFIED BODY

Det Norske Veritas, ATEX NB 0575 retains a copy of the Technical File: ATEX 0003

ATEX product marking: CE Ex II 2G c T4

The equipment described in this Declaration of Incorporation complies with the Applicable European Directives and relevant sections of the Applicable International Standards. Integration instruction are provided that contain requirements and specifications that must be implemented prior to putting this equipment into service; this equipment must not be put into service before the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive. The EHSR's related to this equipment have been addressed; a Technical Construction File is available for inspection by designated bodies.

Authorized Signature: Date:



March 1, 2007

Matthew Bryce

Important safety information is contained in the installation, operation and service manuals; read and understand this information prior to installing or using this equipment

This Document applies only to the equipment described above and is invalid if not reproduced in its entirety.

Installation...

I. GENERAL

Careful planning of the plant layout will save considerable time and expense, both initially when the installation is made and later during the operation of the plant. In selecting the location for the pump, consideration should be given to the fact that a positive suction head at the pump inlet contributes toward the pump efficiency. However, the layouts of the piping, the arrangement of the fittings, and restrictions in the suction and discharge lines have even more effect. For this reason, all fittings and valves should be full opening; all bends should be of long radius or should be eliminated where possible. Long radius 45° ells should be used, particularly if installed near the fluid cylinder. The following points outline the basic requirements for an installation that will contribute greatly toward good pump operation.

A. LIFTING

⚠! WARNING ! WARNING ! WARNING !⚠

Extreme care must be made when lifting this pump to avoid property damage, serious bodily injury, or death.

1. CHAIN SELECTION

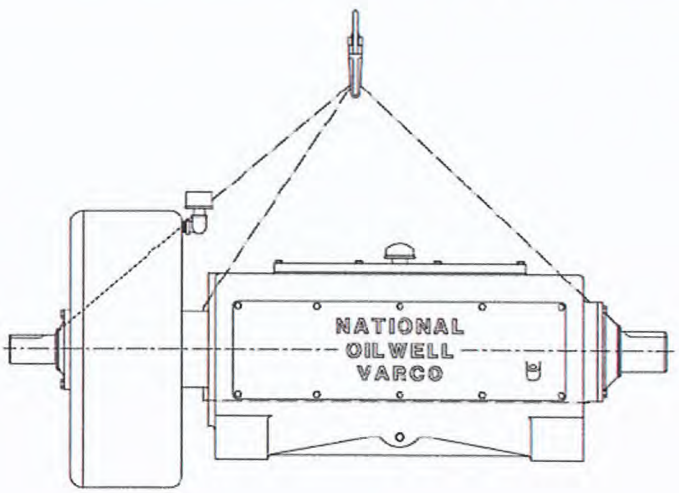
   Minimum chain specification is as follows:

   3/8" size
   31/32" pitch steel
   Rated 5000# Proof Test

Use of chain below minimum requirements can result in damage, serious bodily injury, or death.

2. CHAIN LOCATIONS

The arrangement drawings below and following indicate the proper slinging method for handling this pump with chains. Any deviation from this plan can result in damage, serious bodily injury, or death.

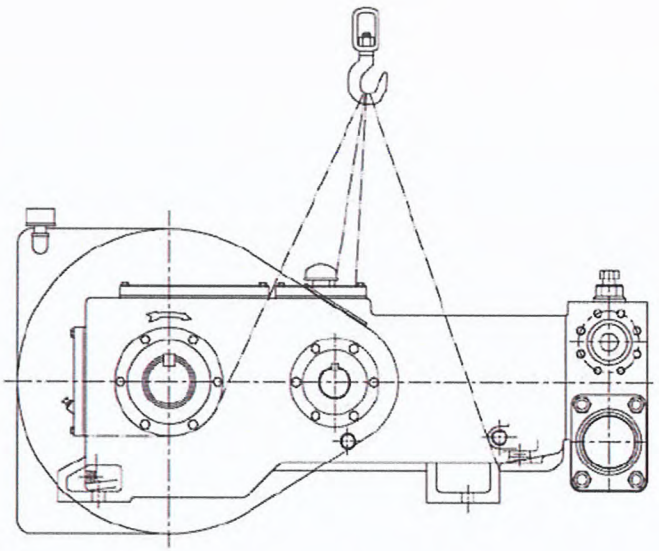


Lifting Arrangement, Rear View

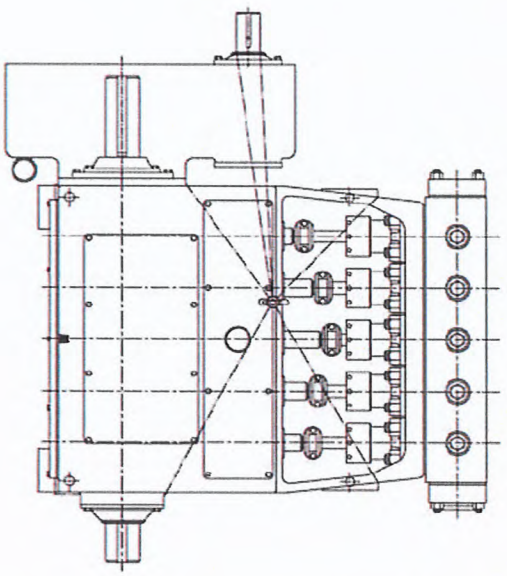
Installation...

I. GENERAL

A. LIFTING (Continued)...



Lifting Arrangement, Side View



Lifting Arrangement, Top View

Installation...

I. GENERAL (Continued)...

B. PUMP MOUNTING

1. The skid or foundation must be level. Angular installation and operation may be detrimental to the lubrication of equipment and may impose high stresses causing equipment failure.
2. The skid or foundation must be of sufficient strength to prevent flexing of the equipment.
3. The skid or foundation must be of sufficient size and design to maintain the equipment free of strain.
4. The equipment must be adequately secured to the foundation. High strength bolts or capscrews with locking devices are generally employed.
5. Consideration should be given to the location of the equipment with its proximity to the associated equipment, fluid supply, fuel supply, environmental contamination, etc.
6. Avoid environmental contamination by providing the proper disposition of drainage from the crankcase, gear case, chain case, sludge sump and any other lubrication reservoirs as well as from the flushing media sump, the pump cradle, the suction line and the discharge line.

C. ALIGNMENT

1. It is most important that the pump be accurately aligned with the prime mover.
2. Follow the recommended alignment procedures provided by the manufacturer of the belts and sheaves or couplings.

D. SUCTION LINE

1. The suction line must not be smaller than the suction intake of the fluid cylinder and may be larger. The length of the suction line should be held to a minimum and should run straight from the supply tank to the pump.
2. When bends are required, they should be made with long radius 45° ells. Do not use a bend directly adjacent to the fluid cylinder. Avoid using any 90° bends if at all possible.
3. Provide a full opening gate valve in the suction line adjacent to the supply tank to permit the line to be drained when necessary. Do not use any type of restricting valve.
4. Do not use meters or other restrictions in the suction line. Eliminate any rise or summit in the suction line where air or vapor can collect.
5. Pulsation dampening devices are strongly recommended.
6. When necessary to manifold a number of pumps to a common suction, the diameter of the manifold and suction pipe leading from the supply tank must be such that it has a cross-sectional area equal to, or greater, than the area of the combined individual suction pipes.
7. When a charging or booster pump is used in the suction line, it must have a capacity equal to twice that of the pump output. This is necessary to provide a charging pump with an output great enough to meet the peak volume requirements of the plunger pump during the suction stroke and not act as a restriction in the line.
8. All piping, both suction and discharge must be solidly and independently supported. The first support must be as close to the pump as practical. This is necessary to prevent placing the pump in a strain and to keep any vibration in the system from acting directly on the pump.

Installation...

I. GENERAL (Continued)...

E. DISCHARGE LINE

1. Use a pulsation dampener or a desurger in the discharge line. It should be placed in the line as near the fluid cylinder as possible and ahead of any bend in the line.

2. Do not reduce the size of the discharge line below that of the pump outlet until the line has passed through the desurger, and is away from the pump approximately 20 feet (6m).

3. Any bend in the discharge line should be made with a long radius 45° ell. Do not use a bend directly adjacent to the fluid cylinder, particularly a 90° bend.

4. A pressure relief valve should be installed in the discharge line. The relief valve should be set to operate at a pressure no greater than 25% above the maximum rated pressure for the plunger size being used. It should be installed in the line ahead of any valve and be piped so that any flow is returned to the supply tank rather than the suction line. This will prevent possible damage to the suction line and suction dampener.

5. A by-pass line should be installed to permit the pump to be started without load. This allows oil to circulate and reach all parts in the power end before they are loaded.

F. POWER END

1. The pump must be mounted level and should be grouted in and be free of strain. This applies to a skid-mounted pump or a pump mounted directly on a concrete base.

2. The sheave of a belt driven pump must be correctly aligned with the prime mover sheave. Care must be used to prevent over-tightening as this will shorten belt life, place the pump in a strain, and cause undue additional loads on the crankshaft and bearings. Sheave sizes should not be smaller than the minimum approved diameter.

3. When connecting a direct-driven pump, the shafts must be correctly aligned. Couplings should not be expected to compensate for avoidable misalignment. With Thomas Flexible Couplings, angular misalignment should not exceed one-half degree. Offset misalignment of the centerlines of the two shafts should not exceed .015" (.381 mm). Actually, misalignment should be as small as practical.

4. Provision should be made to stop the pump automatically in the event of supply fluid failure. A pump should not be run dry, as this causes wear on the packing.

5. Adequate plunger chamber drains have been provided in the pump and should not be plugged. Drain lines should never be reduced in size from the connection provided.

6. The pump has been drained of oil after testing at the factory and **MUST** be filled with the proper oil (see page 26) before starting. The rust inhibiting oil coating inside the power end need not be removed before filling; however, it is recommended that the power end be checked to make sure dirt or contamination has not entered during shipment.

Installation...

I. GENERAL (Continued)...

G. FLUID END

1. The fluid cylinder is shipped assembled to the pump complete with valves and cover plates. The stuffing boxes, plungers, and related items have also been assembled and tested with the pump (unless otherwise specified) and require no further assembly. Before the pump is started, these parts should be checked for tightness as well as for possible damage during shipment.

2. Thoroughly clean the suction line piping before starting the pump. Weld spatter, slag, mill scale, etc., will damage a pump in a short time.

H. PLUNGER PACKING

The recommended style of packing has been installed and run at the plant. It does, however, require further "setting up" as the pump is started and brought up to pressure. Refer to pages 49 through 52 for correct procedure for packing used.

I. PLUNGER PACKING LUBRICATION

1. Automatic packing lubricators are beneficial on all installations and are required on pumps operating at high pressure (1200 psi [85kg/cm 2] and up) to obtain good packing life.

2. When an automatic lubricator is used in water and power oil service, use Rock Drill (Air Drill) oil of proper viscosity. For butane-propane service, use NATURAL castor oil. Set lubricator to feed 5 to 7 drops per minute.

J. SUCTION PULSATION DAMPENERS

1. Low Pressure - Plastic Body

a. Some National Oilwell Varco plunger pumps are equipped with suction pulsation dampeners. These dampeners do an excellent job when properly charged and should be kept filled during operation.

⚠! ATTENTION ! ⚠

At suction pressures over 10 psi (.7kg/cm2), the dampener should be deflated prior to bleeding off the suction pressure to prevent damage to the diaphragm.

b. The plastic dampener body has an instruction decal attached, which lists the following installation and charging procedures.

⚠! ATTENTION ! ⚠

HANDLE WITH CARE.
This is a plastic part and can be broken.

c. Tighten capscrews with 10 to 12ft-lbs. of torque.

Installation...

I. GENERAL

J. SUCTION PULSATION DAMPENERS

1. Low Pressure - Plastic Body (Continued)...

! ATTENTION !

Use thread sealing compound on check valve and tighten until snug.
OVERTIGHTENING WILL DAMAGE BODY.

d. With pump operating - Charge dampener until bottom of diaphragm is visible through sight glass. Proper charge is when bottom of diaphragm is between center and top of sight glass.

2. High Pressure - Aluminum Body

a. In pressures in excess of 20 psi (1.406 kg/cm2) and up to 70 psi (10.545 kg/cm2), it is necessary to use the National Oilwell Varco high-pressure suction dampener.

b. The high-pressure dampener is charged in a similar manner to the low-pressure plastic dampener, using air or nitrogen to charge the diaphragm and maintain its position in relation to the sight glass.

c. The following procedures should be used to service this dampener:

(1) The dampener is fitted to an adapter that may be either welded into an existing line or be a part of a separate dampener housing. Place a gasket on each side of the diaphragm retaining plate and place on the adapter.

(2) The dampener spacer is then placed on top of the retainer plate with the grooved side up and the flat side against the retainer gasket.

(3) The diaphragm fits into the groove on the spacer with the curved portion of the diaphragm above the spacer.

(4) Apply a continuous 1/8" diameter bead of silicone rubber on the outer edge of the diaphragm after it has been positioned into the spacer. This silicone rubber (GE Silicone Rubber or Dow-Corning Silastic) is readily available at most hardware stores. Assemble the body cover within ten minutes after applying the silicone rubber.

(5) Fit the dampener cover over the diaphragm and assemble the capscrews. Tighten these capscrews evenly to approximate 80 ft-lbs. of torque.

(6) Install the sight glasses, one in each side of the cover. Be sure to seat the sight glass packing carefully into the groove on the cover, as this must be an airtight connection.

(7) The air check valve has a pipe thread and must be made up into the cover airtight. Use a good pipe thread sealant to promote sealing.

Lubrication...

I. GENERAL

NATIONAL OILWELL VARCO Plunger Pumps are "splash" lubricated. The main bearings receive oil through ports in the frame. Crankshaft bearings are fed by splash and at low speed through roll pins from the crosshead reservoir. Crossheads and crosshead pin bushings are fed through holes in the crossheads and crosshead reservoir. Intermediate rods are lubricated from the splash they receive from the crosshead. At speeds under 200 rpm, special auxiliary oil systems are required except on the 300Q Initial filling should be into the crosshead reservoir on top of the crossheads.

A. OIL

Use "extreme pressure" gear oil. The chart below shows the recommended grades for various temperatures surrounding the pump.

U.S. UNITS OF MEASURE	
Temperature	**AGMA Industrial EP Gear Oil**
+50°F to +155°F	AGMA No. 6 EP or ASTM/ISO Grade No. 320 (viscosity 1335 to 1632 SSU 100°F)
+20°F to +100°F	AGMA No. 5 EP or ASTM/ISO Grade No. 220 (viscosity 918 to 1122 SSU 100°F)
-20°F to + 60°F	AGMA No. 2 EP or ASTM/ISO Grade No. 68 (viscosity 284 to 347 SSU 100°F)

Crankcase Capacity - U.S. Gallons:

30T - 1-1/2	100T - 5-1/2	200T - 8
60T - 2	130T - 5-1/2	250T - 8
80T - 2	165T - 8	300Q - 12

METRIC UNITS OF MEASURE	
Temperature	**AGMA Industrial Gear Oil**
+10°C to +68°C	AGMA No. 6 EP or ASTM/ISO Grade No. 320 (Viscosity 228-352 cSt at 37.8°C)
-7°C to +38°C	AGMA No. 5 EP or ASTM/ISO Grade No. 220 (Viscosity 198-242 cSt at 37.8°C)
-29°C to +16°C	AGMA No. 2 EP or ASTM/ISO Grade No. 68 (Viscosity 61-75 cSt at 37.8°C)

Crankcase Capacity - Liters:

30T - 5.7	100T - 20.8	200T - 30.3
60T - 7.6	130T - 20.8	250T - 30.3
80T - 7.6	165T - 30.3	300Q - 45.4

Oil must pour freely at minimum operating temperature. Change oil every six months or as frequently as operating conditions require to maintain a clean, sludge-free oil of proper viscosity.

Operation...

I. GENERAL

⚠! ATTENTION ! ⚠

THE FOLLOWING POINTS SHOULD BE CHECKED FOR THE PREVENTION OF TROUBLE OR TO CORRECT TROUBLE THAT MAY ARISE.

A. OPERATION CHECKLIST

1. Pump must be a set level for proper lubrication. If an auxiliary lubrication pump is used for slow speed operation, make sure it is connected and is operating properly.
2. Make sure pump is filled with clean oil of the proper viscosity (see above).
3. Do **not** over-speed the pump.
4. Do **not** use a smaller diameter sheave than is recommended for the pump.
5. Make sure all safety shutdown switches are operating properly.
6. Keep all suction and discharge line valves fully open.
7. If a bypass is used to regulate output, make sure it is set properly.
8. Make sure the pressure relief valve is set properly.
9. Do **not** exceed the pressure rating of the pump for the particular plunger size.
10. Make sure the suction line is tight as air entering the suction line will cause severe hammering and knocking of the pump.
11. Make sure plunger and intermediate rod connections are tight and locked.
12. Check the plunger packing for correct adjustment (see pages 49 to 52).
13. Check the suction and discharge dampeners for proper charge as this is very important for long dampener life and good pump operation.
14. Make sure the hex nuts holding the cylinder in place are tight.

Maintenance...

I. GENERAL

The following points are intended as a guide to be used in setting up a maintenance program. Good preventive maintenance will pay big dividends in the form of reliable service with a minimum of trouble.

A. DAILY MAINTENANCE

1. Check power end oil level daily by means of the dipstick in the rear cover. Do not attempt to check the oil with the pump running. Inspect the oil for dirt or contamination and change if necessary. An increase in oil level indicates fluid end leakage into power end. Change oil immediately and check intermediate rod wipers and surface smoothness of rod. Check for plunger packing leakage.

2. Lubricate plunger packing frequently. Packing life can be greatly increased by greasing every four (4) hours with a small amount of grease. Grease is not recommended at pressures above 1200 psi. Use an alternate packing lubricator to drip the proper oil of the plunger for lubrication. (See page 26 for further details).

3. Check lubricator for proper level and operation.

4. Check plunger packing for excessive leakage. Replace packing as required.

5. Check stuffing box adjusting nuts for tightness.

6. Drain plunger leakage sump tanks if required.

7. Flush plunger chamber drain lines with kerosene on power oil pumps and fresh water on salt pumps. This may be done weekly unless salt and paraffin accumulation is severe.

8. Make sure suction and discharge line valves are fully open.

9. Check for leakage between the fluid cylinder and frame or stuffing box to fluid cylinder packing if required.

10. Check all seals for leakage.

11. Check belts or clutch for slippage. If either condition exists, correct immediately.

B. MONTHLY MAINTENANCE

1. Drain and refill crankcase every six (6) months or as often as required to maintain a clean, sludge-free oil of the proper viscosity.

2. Clean crankcase air breather with a non-explosive solvent.

3. Check all studs, nuts and capscrews for tightness. Inspect gaskets for leaks; tighten or replace as required.

4. Clean pump. Good housekeeping is a prerequisite to good maintenance.

Maintenance...

I. GENERAL (Continued)...

C. STORAGE

If the pump is to be idle for longer than one (1) week, it should be prepared for storage as follows:

1. Drain and clean crankcase thoroughly. Leave drain open and install 90° elbow, pointing downward, to permit air circulation and prevent condensation build-up.
2. Coat all bearings, finished surfaces, and entire inside surface of crankcase with a rust inhibiting oil.
3. Remove plungers and packing, clean and coat with rust inhibiting oil.
4. Remove fluid cylinder valves allowing cylinder to be thoroughly cleaned and drained.
5. Coat entire cylinder, valves and parts, with a rust inhibiting oil.
6. Thoroughly inspect pump and rotate crankcase once each month. Re-coat with rust inhibiting oil where necessary.

D. START-UP AFTER STORAGE

Any pump that has been in storage, either after field use or as shipped from the plant, will need a thorough inspection to make sure it has not been damaged in any way and that all parts are properly in place.

⚠ ! ATTENTION ! ⚠

FAILURE TO OBSERVE THE FOLLOWING POINTS CAN RESULT IN SERIOUS DAMAGE.

1. Remove all covers on both power end and fluid end; thoroughly clean and inspect all parts and finished surfaces.
2. Check all bearings to make sure they are clean and in good condition.
3. Make sure valves, plungers and packing are properly installed and in good condition.
4. Carefully tighten all bolts, nuts, studs and working connections.
5. Fill power end to the proper level with clean oil of the proper viscosity. Make sure oil is poured into the crosshead reservoir and is worked into all bearings.
6. Fill packing lubricator and pump lines full. Check by breaking connection at stuffing box, working lubricator plunger until oil appears.

Maintenance (Continued)...

II. TROUBLE SHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	CORRECTION
KNOCKING OR POUNDING IN FLUID END AND PIPING	SUCTION LINE RESTRICTED BY: (1, 2, 3, 4)	
	1. TRASH, SCALE BUILD UP, ETC.	LOCATE AND REMOVE
	2. PARTIALLY CLOSED VALVE IN SUCTION LINE	LOCATE AND CORRECT
	3. METERS, FILTERS, CHECK VALVES, NON-FULL-OPENING, CUT-OFF VALVE OR OTHER RESTRICTIONS.	RE-WORK SUCTION LINE TO ELIMINATE
	4. SHARP 90° BENDS OR 90° BLIND TEES.	RE-WORK SUCTION LINE TO ELIMINATE.
	AIR ENTERING SUCTION LINE THROUGH CUT-OFF VALVE	TIGHTEN OR REPACK VALVE STEM PACKING
	AIR ENTERING SUCTION LINE THROUGH LOOSE CONNECTION OR FAULTY PIPE	LOCATE AND CORRECT
	AIR OR VAPOR TRAPPED IN SUCTION LINE	LOCATE RISE OR TRAP AND CORRECT BY STRAIGHTENING LINE, PROVIDING ENOUGH SLOPE TO PERMIT ESCAPE AND PREVENT BUILD-UP
	LOW FLUID LEVEL	INCREASE SUPPLY AND INSTALL AUTOMATIC LOW LEVEL SHUT-DOWN SWITCH
	SUCTION DAMPENER NOT OPERATING	INSPECT AND REPAIR AS REQUIRED
	WORN VALVES	INSPECT AND REPAIR AS REQUIRED
	ENTRAINED GAS IN FLUID	PROVIDE GAS BOOT OR SCRUBBER FOR FLUID
	POOR INLET AND OUTLET ARRANGEMENT AT SUPPLY TANK	INLET TO BE AT TOP OF TANK AND BAFFLED TO BREAK-OUT GAS AND PREVENT CHANNELING. OUTLET TO BE 12" FROM BOTTOM OF TANK AND AS FAR FROM INLET AS POSSIBLE, NEVER CLOSER THAN 90°.
	LOOSE PACKING ADJUSTING NUT	TIGHTEN AND/OR REPLACE PACKING
	INADEQUATE SIZED SUCTION LINE	REPLACE WITH INDIVIDUAL SUCTION LINE OF NEXT SIZE LARGER THAN INLET PUMP
	LEAKAGE PRESSURE RELIEF VALVE THAT HAS BEEN PIPED BACK INTO SUCTION LINE	REPAIR VALVE AND RE-WORK PIPING TO RETURN TO SUPPLY TANK - NOT SUCTION LINE.
	BY-PASS PIPED BACK TO SUCTION	REWORK TO RETURN BY-PASSED FLUID BACK TO SUPPLY TANK - NOT SUPPLY LINE
	BROKEN PLUNGER	INSPECT WHEN ROTATING PUMP BY HAND AND REPLACE AS REQUIRED

Maintenance...

II. TROUBLE SHOOTING GUIDE (Continued)...

PROBLEM	POSSIBLE CAUSE	CORRECTION
KNOCK IN POWER END	VALVE WEAR OR DAMAGE	CHECK FLUID END FOR BAD VALVES
	WORN MAIN BEARINGS	REPLACE AS REQUIRED
	LOOSE PLUNGER - INTERMEDIATE ROD CROSSHEAD CONNECTION	INSPECT FOR DAMAGE - REPLACE AS REQUIRED AND TIGHTEN
	WORN CROSSHEAD PIN, OR CONNECTING ROD	LOCATE AND REPLACE AS REQUIRED
RAPID VALVE WEAR OR FAILURE	CORROSION	TREAT FLUID AS REQUIRED
	ABRASIVES IN FLUID	FILTER AS REQUIRED
	IMPROPER INSTALLATION	INSPECT AND INSTALL PER INSTRUCTION SHEET IN PACKING BOX
	IMPROPER LUBRICATION (EITHER INSUFFICIENT OR EXCESSIVE OR INCORRECT TYPE)	CHECK INSTRUCTIONS IN MANUAL AND CORRECT AS REQUIRED.
	LUBRICATOR NOT OPERATING	INSPECT AND CORRECT AS REQUIRED
	ADJUSTING NUT LOOSE	INSPECT AND REPACK PER INSTRUCTIONS
	SCALE OR BUILD UP ON PLUNGER	TREAT FLUID AS REQUIRED
SHORT PACKING LIFE	WORN OR PITTED PLUNGERS AND/OR STUFFING BOX	REPLACE AS REQUIRED
	ABRASIVES IN FLUID	FILTER AS REQUIRED
	PUMP OPERATED WITHOUT FLUID	CHECK SYSTEM FOR FAULTY LOW-LEVEL SHUT-DOWN CONTROLS OR CLOSED VALVES AND CORRECT AS REQUIRED.
	ABNORMALLY HIGH FLUID TEMPERATURES	CHECK WITH MANUFACTURER FOR RECOMMENDATIONS ON TYPE OF PACKING
	WRONG TYPE OF PACKING FOR PARTICULAR FLUID BEING HANDLED	CHECK WITH MANUFACTURER FOR RECOMMENDATIONS ON TYPE OF PACKING
	CAVITATION (KNOCKING AND POUNDING IN FLUID CYLINDER AND PIPING)	REFER TO CORRECTION OF "KNOCK IN POWER END" ABOVE

Maintenance...

II. TROUBLE SHOOTING GUIDE (Continued)...

PROBLEM	POSSIBLE CAUSE	CORRECTION
BROKEN OR PITTED FROM IMPLOSIONS CAUSED BY IN EXCESSIVE GAS OR AIR ENTRAINED FLUID.	PLUNGER CRACKED AT INSTALLATION.	INSTALL NEW PLUNGER USING CARE TO AVOID ANY SHARP BLOW OR FORCE ON PLUNGER.
	PLUNGER CRACKED FROM THERMAL SHOCK.	CHECK SYSTEM TO ELIMINATE ANY SHARP OR SUDDEN TEMPERATURE DIFFERENCES. TEMPERATURE EXTREMES ON THE PLUNGER CAN OCCUR FROM PACKING AS DISCUSSED UNDER "SHORT PACKING LIFE" PROBLEM PR FROM TEMPERATURE CHANGES IN THE FLUID ITSELF.
	PLUNGER PITTED FROM IMPLOSIONS CAUSED BNY EXCESSIVE GAS OR AIR ENTRAINED IN FLUID.	CHANGE SUCTION SYSTEM TO ELIMINATE OR CHECK WITH MANUF. REGARDING USE OF SPECIAL PACKING ARRANGEMENT.
RAPID WEAR OF HARD-COATED PLUNGER	PACKING FAILURE.	CHECK AND CORRECT PER RECOMMENDATIONS UNDER "SHORT PACKING LIFE" PROBLEM.
	PLUNGER NOT SUITABLE FOR PARTICULAR SERVICE.	CHECK WITH MANUF. FOR RECOMMENDATION.
OIL SEAL LEAKS	PLUNGER NOT SUITABLE FOR PARTICULAR SERVICE.	CHECK AND CORRECT AS REQUIRED.
	PUMP NOT LEVEL.	CHECK AND CORRECT AS REQUIRED.
	WORN, CORRODED, PITTED, OR OTHERWISE DAMAGED SEALING SURFACE.	CHECK AND CORRECT AS REQUIRED.
	WORN OR DAMAGED SEALS.	CHECK AND CORRECT AS REQUIRED.
	OIL LEVEL TOO HIGH.	CHECK AND CORRECT AS REQUIRED.

Overhaul and Repair...

I. GENERAL

The bearings and other working parts in the power end have been designed for continuous duty, and if properly lubricated, will provide years of trouble-free service. However, after the pump has been in service for a long period of time, the bearings and other working parts will gradually loosen, and if not corrected, will lead to more serious trouble. The time to overhaul the pump will vary, depending on the operating conditions, and is therefore a matter that must be left to the good judgment of the operator. Complete disassembly and assembly procedures are discussed in their respective sections.

A. TOOLS REQUIRED

Most of the tools required to overhaul the pump will be found in an ordinary set of mechanics hand tools. The special tools and equipment required and not furnished with the pump include a torque wrench, bearing puller, and a valve servicing kit. Also, a hot oil bath capable of reaching a temperature of 300° F (149° C) will be needed.

B. CHECK POINTS AND ADJUSTMENTS

1. 30T, 60T & 80T:

   The crankshaft main bearings are single row, shim adjusted, tapered roller bearings. They have been assembled and adjusted at the factory with proper clearance and will give long trouble-free service. The proper clearance is found by adjusting the amount of shims until the crankshaft has .003" to .005" endplay and will rotate freely.

2. 100T, 130T, 165T, 200T, 250T & 300Q:

   a. The crankshaft main bearings are non-adjustable, double row tapered roller bearings, factory set for the proper running clearance.

   b. The connecting rods, or bearing inserts, are solid aluminum alloy precision ground with the following tolerances -- page 28.

   c. The minimum allowable clearance between the crosshead and crosshead bore is .012" (.305 mm). The maximum allowable clearance, including wear, is .030" (.762 mm). This is for all pumps.

   d. Maximum allowable clearances between the crosshead pin and connecting rod bushings are listed on page 28. The bushings are pressed into the connecting rod and must be reamed to size. The pin and bushings must then be "blued" to check the fit. High spots in the bushings must be scraped.

Overhaul and Repair...

I. GENERAL

B. CHECK POINTS AND ADJUSTMENTS (Continued)...

PUMP	CRANKSHAFT O.D		MAXIMUM CLEARANCE		MINIMUM CLEARANCE	
	in	mm	in	mm	in	mm
30T	2.500 2.499	63.500 63.475	.012	.305	.003	.076
60T 80T	3.250 3.249	82.550 82.525	.013	.330	.003	.076
100T 130T	4.125 4.124	104.775 104.750	.018	.457	.007	.178
165T 250T 200T 300Q	5.000 4.999	127.000 126.975	.020	.508	.0064	.163

PUMP	CROSSHEAD PIN O.D.		MAXIMUM CLEARANCE		MINIMUM CLEARANCE	
	in	mm	in	mm	in	mm
30T	1.3765 1.3760	34.963 34.950	.007	.178	.001	.025
60T 80T	1.8765 1.8760	47.663 47.650	.007	.178	.0015	.038
100T 130T	2.5635 2.5630	65.113 65.100	.007	.178	.0015	.038
165T 200T 250T 300Q	3.0015 3.0010	76.238 76.225	.008	.203	.002	.051

Disassembly...

I. POWER END

It is not necessary to remove the fluid end when disassembling the power end. The plungers may be disconnected from the intermediate rods and left in the stuffing boxes.

A. INTERMEDIATE RODS AND OIL WIPER RETAINERS (ALL PUMPS)

1. Loosen the plunger lock screws (if used), disconnect the plunger from the intermediate rod, and remove the baffle plate.

⚠! ATTENTION ! ⚠

A BACK-UP WRENCH MUST BE USED FOR REMOVAL OF PLUNGER AND INTERMEDIATE ROD TO PREVENT DAMAGE TO THE CONNECTING ROD.

2. The oil wiper retainer is piloted into the frame and held in place by two capscrews or a metal clip.
3. Remove the intermediate rod from crosshead lock screw (if used), and using a **back-up wrench** on the crosshead, unscrew the rod. Remove the rod and oil wiper retainer as one assembly.

B. CRANKSHAFT ASSEMBLY

- **J-30 Prior to S/N 3854**
- **J-60 Prior to S/N 7476**

1. Remove connecting rod bolts and cap.

   NOTE: Match marks and deep halves together.

2. Connecting rod and crosshead must be moved all the way forward to clear crankshaft.
3. Remove crankshaft bearing retainers and seals, and shims. These shims should be tied together and marked for reassembly at their original location.

Disassembly...

I. POWER END

B. CRANKSHAFT ASSEMBLY (Continued)...

! ATTENTION !

COVER KEYWAYS TO PROTECT OIL SEALS DURING REMOVAL.

4. Rotate No. 1 throw to front, support the crankshaft, and remove it from either side, tapping it out with a brass bar to prevent damage to the end. This will automatically remove one of the main bearing outer races. The other race may be removed by knocking it out with a brass bar. Tag the outer bearing races so they may be reassembled with the same bearing cone and roller assembly.

• 30T, 60T, and 80T

1. Remove connecting rod bearing cup and both inserts.

   NOTE: Match marks on rod and cap and keep halves of inserts together.

2. Connecting rod and crosshead can be removed through cradle chamber without disturbing the crankshaft. Interference with plungers and stuffing box nuts is possible depending on plunger size. Remove plungers if necessary.

3. Remove crankshaft bearing oil seal retainers and gasket.

4. Use puller screws in crankshaft bearing cage "back-out" holes, if necessary, and remove crankshaft assembly with main bearing cage from the left side of the pump. During removal have No.1 throw on crankshaft forward.

• J-100 Prior to S/N 9568 and J-150

1. Remove all the connecting rod bearing caps and both inserts. Keep halves inserted together.

2. Connecting rod and crosshead must be moved all the way forward with intermediate rods removed, to clear crankshaft.

3. Remove crankshaft bearing oil seal retainers and gasket.

4. Use puller screws in crankshaft bearing cage "back-out" holes, if necessary, and remove crankshaft assembly with main bearing cage from the left side of the pump. During removal have No.1 throw on crankshaft forward.

Disassembly...

I. POWER END

B. CRANKSHAFT ASSEMBLY (Continued)...

• 100T, 130T, 165T, 200T, 250T and 300Q

1. Remove connecting rod bearing cap and both inserts. Keep halves of inserts together.
2. Connecting rod and crosshead can be removed through cradle chamber without disturbing the crankshaft. Interference with plungers and stuffing boxes is possible depending on plunger size. Remove stuffing boxes if necessary.
3. Remove oil wiper troughs. (200T, 250T and 300Q)
4. Remove right hand bearing retainer and gasket.
5. Remove left hand bearing retainer and gasket and remove capscrews from bearing cage.
6. Crankshaft can be removed from left side of pump only. Puller holes are provided in the bearing cage if needed. Extreme care should be used in removing the crankshaft so as not to damage the center support bearings or the bearing journals on the crankshaft of the 300Q.

C. CRANKSHAFT BEARINGS - ALL PUMPS

The crankshaft main bearings may be inspected while on the crankshaft and should not be removed unless necessary. A puller is required when replacement is necessary.

NOTE: Keep the component parts of the bearings together if they are to be re-installed. They are match marked and must be correctly assembled as a unit.

Disassembly (Continued)...

II. FLUID END

A. FLUID CYLINDER REMOVAL

•30T, 60T and 80T

1. Disconnect piping.
2. Remove the eight (8) fluid cylinder hex nuts and slide cylinder forward over the main frame studs.

• 100T, 130T, 165T, 200T, 250T and 300Q

1. Fluid cylinders can be removed without disturbing the stuffing boxes or plungers. But it is recommended that the stuffing boxes and plungers be removed for easier access to the lower cylinder studs and nuts.
2. Disconnect piping.
3. Remove nuts holding stuffing box retainer in place.
4. Slide retainer clear of the cylinder studs.
5. Remove fluid cylinder retaining socket head capscrews.

B. STUFFING BOXES AND PLUNGER REMOVAL

• 30T, 60T and 80T

1. Rotate crankshaft until the intermediate rod is in the back position of its stroke. Loosen the plunger lock screw (if used), and disconnect the plunger from the intermediate rod.

! ATTENTION !

USE BACK-UP WRENCH ON THE CROSSHEAD TO PREVENT DAMAGE TO CONNECTING ROD.

2. Slide the plunger forward in the stuffing box. Unscrew the intermediate rod. Remove the clip holding the intermediate rod wiper retainer; remove the rod and retainer as one assembly.
3. The plunger can now be slid back out of the stuffing box and removed through the cradle chamber.
4. Remove stuffing box nut and packing.
5. For removal of the stuffing box, the fluid cylinder must be first removed.

Disassembly...

II. FLUID END

B. STUFFING BOXES AND PLUNGER REMOVAL (Continued)...

• 100T, 130T, 165T, 200T, 250T and 300Q

1. Rotate the crankshaft until the intermediate rod is all the way forward (at the end of the discharge stroke). Remove the intermediate rod to crosshead lock screw, remove the plunger clamp assembly, and brake the intermediate rod loose from the crosshead one-fourth (1/4) turn.

! ATTENTION !

A BACK-UP WRENCH MUST BE USED ON THE CROSSHEAD.

2. With the intermediate rod in the forward position, slide the plunger forward in the stuffing box.
3. Rotate the crankshaft until the intermediate rod is in the back position of its stroke. Unscrew at the intermediate rod and the intermediate rod wiper retainer capscrews then remove the rod and retainer as one assembly.
4. The plunger can now be slid back out of the stuffing box and removed through the cradle chamber.
5. Remove the stuffing box nut, lube fitting (copper tubing if lubricator is used), and packing.

C. FLUID END VALVE REMOVAL

Refer to valve section located in the middle of this manual.

Assembly...

I. POWER END

A. CRANKSHAFT AND MAIN BEARINGS

• 30T, 60T, and 80T

1. Thoroughly clean and remove all burrs from the I.D. of the cone and roller assembly and from the bearing seating surfaces on the crankshaft.

2. Heat the cone and roller assembly in an electric oven or oil bath to 300°F (149°C). It is recommended that a thermometer be used to prevent overheating.

3. After the bearings have been brought up to temperature and with the crankshaft firmly supported, install the cone and roller assemblies on the crankshaft. The large O.D. must go on first and be positioned next to the shoulder on the crankshaft. *Make sure the cone and roller assemblies are firmly against the shoulders on the crankshaft.*

4. Allow the crankshaft and bearing assembly to cool before installing in the power end.

5. Make sure the main bearing openings in the frame are clean and free of burrs.

   NOTE: The crossheads and connecting rods on old J-30 pumps prior to S/N 3854 and J-60 pumps prior to S/N 7476 must be installed prior to replacing the crankshaft assembly.

6. With the cone and roller assemblies of the main bearings in place on the crankshaft, slide the crankshaft from either side through the main bearing openings in the power end frame with No. 1 throw forward.

7. Install the crankshaft main bearing outer races or cups; the thin edge of the tapered race leading into the bore over the cone and roller assembly.

8. Place the crankcase main bearing shims, amounting to approximately .050" (1.27 mm) in thickness, on either crankshaft bearing retainer. *If the **old** bearings and retainers are being re-installed, use the same amount of shims as before.*

   NOTE: The following steps (9, 10a and 10b) are necessary only if new bearings are being installed. When the same crankshaft main bearings are being reassembled, use the same amount of shims as were previously used and use the steps as a check for adjustment.

9. Assemble the crankshaft bearing retainer and shims (less oil seal) to the main frame and tighten in place with the proper capscrews.

10. Install the other crankshaft bearing retainer (less oil seal) in the same manner as in step nine (9) above. To determine the correct amount of shims when installing new bearings, the following steps are recommended.

    a. When first installing shims, use only enough shims to produce a slight drag when the crankshaft is rotated. Tap shaft on each end sufficient to ensure that the bearing outer race is tightly against the retainer.

    b. Then add enough shims to remove the slight drag or pre-load (approximately .005" [.127 mm] to .007" [.178 mm]), depending on the amount of pre-load). *The bearings are correctly adjusted when there is .003" to .005" end-play of the crankshaft and the crankshaft will rotate freely. Do not pre-load bearings.*

Assembly...

I. POWER END

A. CRANKSHAFT AND MAIN BEARINGS (Continued)...

• 100T, 130T, 165T, 200T, 250T and 300Q

The crankshaft should be clean and free of burrs. The cone and roller assemblies are to be heated in an electric oven or oil bath to 300°F (149°C). The use of a thermometer is recommended. *Bearing parts are match marked and should be noted prior to heating. Make sure parts are **not** interchanged.*

1. Right Hand Bearing (Short Shaft Extension):
   a. Install chain sprocket on 165T.
   b. With a bearing cone and roller assembly at proper temperature, install on the crankshaft with the thick edge of the taper against the shoulder.
   c. Assemble the bearing spacer and outer race on the crankshaft and against the inboard cone and roller.
   d. Install outboard cone and roller assembly; thin edge against the bearing spacer.
   e. Tighten the lock nut and lock with lock washer prong. (This can best be done **after** the shaft is in the pump). *Make sure cone and roller assemblies are tight against the bearing spacer.*
2. Left Hand Bearing (Long Shaft Extension):
   a. With bearing cone and roller at proper temperature, install on the crankshaft with the thick edge of the taper against the shoulder.
   b. Assemble the bearing spacer against the inboard cone and roller.
   c. Drive outer race into the bearing cage against bottom shoulder.
   d. Install the outer race and cage assembly and gasket against inboard cone and roller.
   e. Install outer cone and roller assembly; thin edge against the bearing spacer.
   f. Assemble lock nuts and lock washer.
   g. Tighten lock nut and lock with prong of lock washer. *Make sure cone and roller assemblies are tight against the bearing spacer.*

Assembly...

I. POWER END (Continued)...

B. CRANKSHAFT AND CENTER SUPPORT ROLLER BEARING ASSEMBLY

• 200T, 250T and 300Q

1. Check the crankshaft bearing surfaces for nicks or burrs and remove.
2. Install snap ring in groove nearest left hand bearing cage.
3. Heat inner race of roller bearing to not more than 300°F (149°C) in electric oven or oil bath and install against snap ring.
4. Install second snap ring on first bearing.
5. Install snap rings in the frame bearing support areas. Install rings in inner grooves.
6. Install snap rings in the frame bearing support areas. Install rings in inner grooves.
7. Roller bearing assembly is a possible light press fit into the frame bore. Slide or gently tap the bearing assemblies into place against the snap rings.
8. Install outer snap rings.

• 100T, 130T, 165T, 200T, 250T and 300Q

1. Install the crankshaft assembly in pump locating the crankshaft bearing cage at the left side with the "TOP" mark up and the plastic gasket in its proper location. Use care when passing the bearing inner race through the first roller assembly.

   NOTE: The crossheads and connecting rods on the old J-100 pumps prior to S/N 9568 must be installed prior to replacing the crankshaft assembly.

2. Check Timken lock nuts and lock washers and tighten securely.
3. Install right hand bearing retainer and gasket. Make certain "TOP" mark is facing upwards. Check clearance of Labyrinth seal to shaft. There should **not** be any metal-to-metal contact.
4. Install left hand bearing retainer and gasket as described previously.

   NOTE: If pump is to have a gear reducer, it is necessary to replace the left hand bearing retainer with a retainer that has a double drain back area in the labyrinth seal area. Do **not** use dirt excluder inside the gear reducer.

5. Install dirt excluder tightly against each bearing retainer -- except as noted above.

Assembly...

I. POWER END (Continued)...

C. CONNECTING ROD AND CROSSHEAD ASSEMBLY (ALL PUMPS)

1. Press the crosshead pin bushing into the connecting rod.
2. Ream bushing to size (refer to page 34 for dimensions). Blue with pin and scrape bushing to remove high spots. (If service bushings are used, reaming will not be necessary in most cases).
3. Install the crosshead pin by pressing into crosshead or to facilitate assembly, the crosshead may be heated to no more than 300° F (149°C) in an electric oven or bath.

   NOTE: Crossheads are marked "TOP" on extension rod end. Connecting rods and bearing caps are match marked as units. Install connecting rod in crosshead so match marks on top of crosshead correspond.

D. CONNECTING ROD TO CRANKSHAFT ASSEMBLY

• J-30 and J-60
(With Old-Style Straight-Cut Aluminum Connecting Rods)

1. Thoroughly clean and remove all burrs and nicks from connecting rod and crankshaft journals.
2. The connecting rod journals are a precision fit and require no adjustment. Make sure the match marks on connecting rod and cap are the same and on the same side.
3. Install connecting rod bolts and lock-type nuts. Use torque wrench and tighten to torque specified in chart below.

• J-100 and J-150
(With Old-Style Straight-Cut Connecting Rods)

The connecting rod bearings are precise fitting inserts requiring no adjustment. When reinstalling the same inserts, assemble them in pairs at their original location. Make sure the match marks on connecting rod and cap are the same and on the same side.

1. Install rod half of bearing, seat connecting rod on the shaft and install bolts.
2. Install other half of bearing and bearing cap, making sure dowel pins in the bearings are properly joined. Using a torque wrench, tighten to the torque specified in the chart below.

TORQUE: FT-LBS				
PUMP	30T	60T 80T	100T 130T	165T, 200T, 250T, 300Q
Straight, Cut Rod w/ Bolts & Locknuts	20	45	85	--
Straight, Cut Rod w/ Capscrews	--	--	150	--
Slant Cut Rod w/ Capscrews	30	75	150	250

Assembly...

I. POWER END

D. CONNECTING ROD TO CRANKSHAFT ASSEMBLY (Continued)...

• 30T, 60T, 80T, 130T (New Style), 165T, 200T, 250T and 300Q

The connecting rod bearings are precision fitting inserts requiring no adjustment. When re-installing the same inserts, assemble them in pairs at their original location. Make sure the match marks on the connecting rod and cap are the same on the corresponding sides.

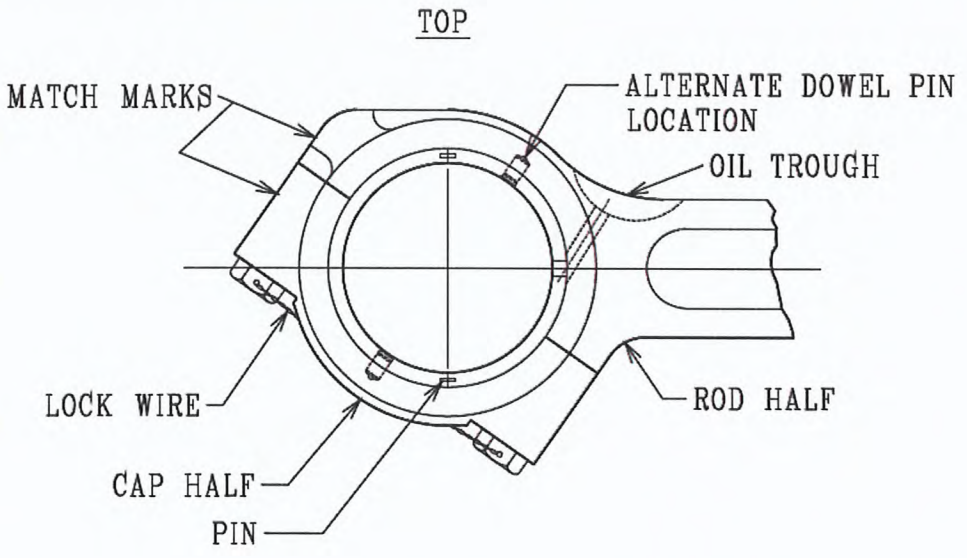


Figure 1

NOTE: It is possible to install these bearing shells incorrectly. Please follow instructions carefully.

Assembly...

I. POWER END

D. CONNECTING ROD TO CRANKSHAFT ASSEMBLY

• 30T, 60T, 80T, 130T (New Style), 165T, 200T, 250T and 300Q (Continued)...

1. Check bearing halves for pin engagement and fit over the dowel pin in the cap half of the connecting rod. Please note the drawing and match marks.

2. Install both bearing halves on the crankshaft with the dowel pins engaged as shown. Position crankshaft throw to the rear.

3. With bearing shells in position (as shown in drawing, pg. 38), fit the cap half of the connecting rod over the bearing shells. Make certain the dowel pin is seated properly and the lubrication hole in the bearing is toward the front so as to match the oil hole in the connecting rod.

   NOTE: Later model connecting rods have the dowel pin located in the rod half. With this pin, the location of the rod is positioned first on the bearing shell.

4. Slide the connecting rod back over the crankshaft throw using caution so the outer surface of the aluminum insert is not damaged. Note the match numbers of the cap and rod to be certain the rod is assembled correctly.

5. Install the two (2) capscrews and torque as shown in chart. Lockwire the capscrews securely.

E. INTERMEDIATE RODS AND OIL SEAL RETAINERS

• 30T, 60T, 80T, 100T, and 130T

Install two oil wipers; lips facing the power end. Open one from the power end side and one from the fluid side. On the power end side the wiper O.D. should be flushed with the face of the retainer. On the fluid end side, the wiper should be pressed in the retainer until it contacts the shoulder in the middle of the retainer. Install the third wiper on the fluid end side of the retainer with lip facing the fluid end.

NOTE: Make sure O.D. wiper and I.D. of retainer are clean and dry before installation of the wiper.

• 100T, 130T, 165T, 200T, 250T and 300Q

Install two (2) oil wipers, lips facing the power end, and two (2) oil wipers with lips facing the fluid end. The inner wipers should shoulder against the raised area in the center of the retainer. Make certain the retainer and wipers are clean and dry before installation. An oily or greasy surface can cause the wipers to become loose.

Assembly...

I. POWER END

E. INTERMEDIATE RODS AND OIL SEAL RETAINERS (Continued)...

• ALL PUMPS

Rotate the crankshaft until the crosshead is all the way forward and install the retainer and rod as a unit.

NOTE: Make sure retainer gasket is in place prior to installation. Tighten rod and the crosshead using a **back-up wrench** on the crosshead to the following torques:

Threads	30T	60T 80T	100T 130T	165T, 200T, 250T & 300Q
Dry (ft-lbs)	175	200	400	480
Lubricated (ft-lbs)	150	150	325	385

II. FLUID END

A. STUFFING BOXES AND PLUNGERS

Plungers are available in ceramic or steel.

! ATTENTION !

NATIONAL OILWELL VARCO DOES **NOT** RECOMMEND THE USE OF CERAMIC PLUNGERS FOR PUMPING FLAMMABLE LIQUIDS.

• 30T, 60T, and 80T

1. Thoroughly clean and remove any nicks or burrs from all mating surfaces of the main frame, fluid cylinder and stuffing boxes.
2. Insert stuffing boxes into main frame.

   NOTE: The stuffing box is a press fit in the main frame and will have to be driven into position.

! ATTENTION !

PREVENT DAMAGE BY PLACING A BLOCK OF WOOD OVER THE STUFFING BOX FACE.

Assembly...

II. FLUID END

A. STUFFING BOXES AND PLUNGERS

• 30T, 60T, and 80T (Continued)...

NOTE: Stuffing box flange face should extend .001" to .004" (.025 mm to .102 mm) beyond the frame face to assure proper crush on the stuffing box seal. If this condition does **not** exist, premature gasket failure will occur!

3. Insert seals (stuffing box to fluid cylinder) into grooves in the face of the stuffing boxes. Grease lightly to hold in place until fluid cylinder is installed.

4. Assemble packing in stuffing box bore as per instructions included with each set of packing, or as described on pages 47 to 50.

• 100T, 130T, 165T, 200T, 250T and 300Q

1. Rotate crankshaft until the intermediate rod is at the end of the suction stroke.

2. With the stuffing box packing and plunger installed, slide the assembly into the pilot bore. If properly aligned and lubricated, the stuffing box will slide easily into place. When a flanged retainer is used with the stuffing box, make certain the lubrication fitting hole is at the top.

3. Tighten stuffing box hex nuts to the following torque values:

Threads	100T, 130T	165T, 200T, 250T & 300Q
Dry (ft-lbs)	400	800
Lubricated (ft-lbs)	325	640

4. Install rubber baffle (if used) on intermediate rod and connect plunger to intermediate rod with threaded connection or clamped connection. Make sure the mating surfaces are clean and free from nicks and burrs.

   Tighten plunger rod using the following torques (threaded plungers):

Threads	100T, 130T	165T, 200T, 250T & 300Q
Dry (ft-lbs)	400	480
Lubricated (ft-lbs)	325	385

   Tighten capscrew in plunger clamp assembly as follows (clamped plungers):

PUMPS:	100T, 130T	165T, 200T, 250T & 300Q
Maximum Torque Value	15 ft.-lbs.	15 ft.-lbs. (21) 3/8" 1-bolt clamp 30 ft.-lbs. (45) 1/2" 2-bolt clamp

5. Adjust stuffing box nut. (Adjusting nut should be tightened with the bar furnished with the pump). See instructions on pages 43 through 46 for proper packing procedure and lubrication practices.

Assembly...

II. FLUID END (Continued)...

B. FLUID CYLINDER (ALL PUMPS)

1. Install fluid cylinder, check stuffing box seals as cylinder is moved into place.
2. Tighten nuts alternately, pulling fluid cylinder up evenly; torque nuts to the following values:

THREADS	30T	60T 80T	100T 130T	165T, 200T, 250T & 300Q
Dry (ft-lbs)	300	500	400	800
Lubricated (ft-lbs)	240	450	325	640

3. When installing the suction discharge piping, always use the capscrews furnished with the pump as they are special high-strength and double heat-treated.

C. FLUID VALVES – SPHERICAL, TAPERED SEAT BOTTOM GUIDED AND CAGE TYPE (ALL PUMPS)

See Valve section of this manual.

D. PIPING INSTALLATION (ALL PUMPS)

1. Install flanges on fluid cylinder with special high carbon double heat-treated capscrews furnished with the pump.
2. Install suction and discharge lines to flanges.

Assembly...

II. FLUID END (Continued)...

E. PLUNGER PACKING INSTALLATION

1. **850-N Packing**

It is important that the following procedure be observed when replacing old packing to prevent rapid packing wear:

a. Remove front crosshead reservoir cover plate and rotate pump to bring the desired plunger to the forward position.

b. Back off locking setscrew (if used) at intermediate rod crosshead connection and intermediate rod plunger connection. Using back-up wrenches, loosen connection one-fourth (1/4) turn.

c. Rotate crankshaft until plunger is all the way back. Unscrew plunger or remove clamp assembly and slide plunger forward.

d. Remove intermediate rod and intermediate rod seal retainer from as one assembly.

e. Remove plunger and old packing, making sure stuffing box is clean. Plungers and boxes may be removed as an assembly by rotating the pump so the intermediate rod is all the way back, thereby disconnecting the plunger and sliding the stuffing box back and out.

f. Oil each ring with light oil **(DO NOT GREASE)**, and install packing per sketch included with the packing. Make sure the lips on the sealing rings face pressure shown.

g. Install gland and pull down hand tight against packing.

h. Install plungers, then pull adjusting nut down as tight as possible with bar furnished with the pump. **DO NOT USE A CHEATER!!**

i. Install intermediate rod and retainer. Connect plunger and torque properly as outlined on page 47 & 48.

j. For 850-N packing, start pump and operate under pressure; retighten adjusting nut. After pump has been running for two (2) or three (3) hours under pressure, packing will seat itself and the adjusting nut should be tightened as much as possible to eliminate any movement of the packing in the stuffing box. Use the bar furnished with the pump. **Do not use a cheater!**

k. The adjusting nuts should be checked and each tightened for the first 2 or 3 days until the packing is completely seated and the adjusting nuts cannot be tightened any further. Use the bar furnished with the pump. **Do not use a cheater!**

Assembly...

II. FLUID END

E. PLUNGER PACKING INSTALLATION (Continued)...

2. 1045 PACKING (also called No. 265)

It is important that the following procedure be observed when replacing old packing to prevent rapid packing wear:

a. Remove crosshead reservoir and rotate crankshaft to bring plunger forward.

b. Back off locking set screw (if used) at intermediate rod crosshead connection and intermediate rod plunger connection. Using back-up wrench, loosen this connection one-fourth (1/4) turn.

c. Rotate crankshaft until plunger is all the way back, unscrew plunger or remove clamp assemblies and slide plunger forward.

d. Remove intermediate rod and intermediate rod seal retainer from pump as one assembly.

e. Remove plunger and old packing, making sure stuffing box is clean. Plungers and boxes may be removed as an assembly by rotating the pump so the intermediate rod is all the way back, disconnecting the plunger and sliding the stuffing box back and out.

f. Starting with the first Phenolic ring, seat each ring individually in the order packaged. Eliminate the No. 1 Phenolic ring when using a sleeve washer with ceramic plungers.

g. Install plunger and make-up the adjusting nut tight to insure the entire packing set is properly seated. The nut should be loosened and adjusting hand tight.

h. Install intermediate rod and retainer. Connect plunger and torque properly as outlined on page 47 & 48.

i. Start the pump and run with normal system pressure. Tighten the adjusting nut, carefully watching for excessive heat build-up. Continue to tighten the nut until it is a good, snug fit and the nut shows no movement in the threads.

! IMPORTANT !

IF THE ADJUSTING NUT LOCKS AND CANNOT BE MOVED, IMMEDIATELY REMOVE THE PRESSURE FROM THE PUMP, BACK OFF THE NUT ONE-HALF (1/2) TURN, AND START AGAIN.

j. This packing may or may not leak, depending on the circumstances, and it does not require continuous adjustment. It should be checked and re-tightened the first day or two after installation of new packing, but should require very little attention after this.

k. This packing can be used on hard coated or ceramic plungers without lubrication, but as with any packing, extended life is possible through the use of lubrication. When using a mechanical or drip type lubrication system in water service, use rock Drill (Air Drill) Oil of the proper viscosity. Drip five to seven drops per minute.

Assembly...

II. FLUID END (Continued)...

E. PLUNGER PACKING INSTALLATION

3. 699 PACKING

For top performance from the soft packing of "Teflon" fiber read and carry out the following instructions. Use the above method to remove and re-install intermediate rod and plunger.

a. Packing may be butt or diagonal cut. Stagger joints in successive rings at least 90°.

b. Slide rings into stuffing box, but do **not** tap or drive rings into place. Tests have shown that this method gets maximum performance from soft packing of "Teflon" fiber.

c. Tighten stuffing box nut finger tight and start pump. Packing should be leaking, if not, loosen stuffing box nut. Remember, install this soft packing with a minimum of gland pressure to minimize friction and heat build-up.

d. Reduce leakage to desired level by tightening stuffing box nut about 1/6 turn at a time every few minutes.

e. If gland heats up to a temperature that will boil water, back-off stuffing box nut and repeat run-in until temperature remains after nuts are re-tightened.

"Teflon" is DuPont's registered trademark for TFE- Fluorocarbon fiber.

4. SPRING LOADED KEVLAR MULTIPLEX PACKING

- Recommended Packing Procedure -

a. Before re-packing, determine cause of failure.

b. Remove plunger, stuffing box nut, and all internal parts in stuffing box. Remove stuffing box itself if necessary to clean.

c. Clean all parts and determine if parts are worn or reusable. Replace all worn parts.

d. Soak new packing elements in oil. Lubricate all other parts.

e. Note the depth of stuffing box bore. If greater than four inches (4"), install appropriate spacer. See appropriate parts-list for applicable spacer.

f. Install parts into stuffing box in the following order: spacer (if needed), spring, follower (small end first), Kevlar ring and brass ring (with care), (alternate these items three (3) times, twice for 30T), and then add the bushing (gland ring).

g. Screw on the nut -- hand tight.

h. Insert plunger into packing assembly.

Assembly...

II. FLUID END

E. PLUNGER PACKING INSTALLATION

4. SPRING LOADED KEVLAR MULTIPLEX PACKING (Continued)...

i. Tighten packing nut. Bushing should seat and shoulder against stuffing box face. Back off the nut one-half turn.

j. If stuffing box has been removed, re-install assembly onto multiplex.

k. Connect plunger to intermediate rod and tighten.

l. Insert stop pin into stuffing box nut.

m. Fill lubricator with Rock Drill Oil for normal temperature or steam cylinder oil for high temperature fluids. Fill lubricator lines by pumping it manually. Check its operation.

n. Start pump at slow speed and low pressure if possible, tighten stuffing box nut and insert stop pin in hole. Watch for a short period of time. Oil if needed.

o. Set lubricator to twice normal rate. After 24 hours, resume normal operation. Check stuffing box for excessively high temperatures and abnormal leakage.

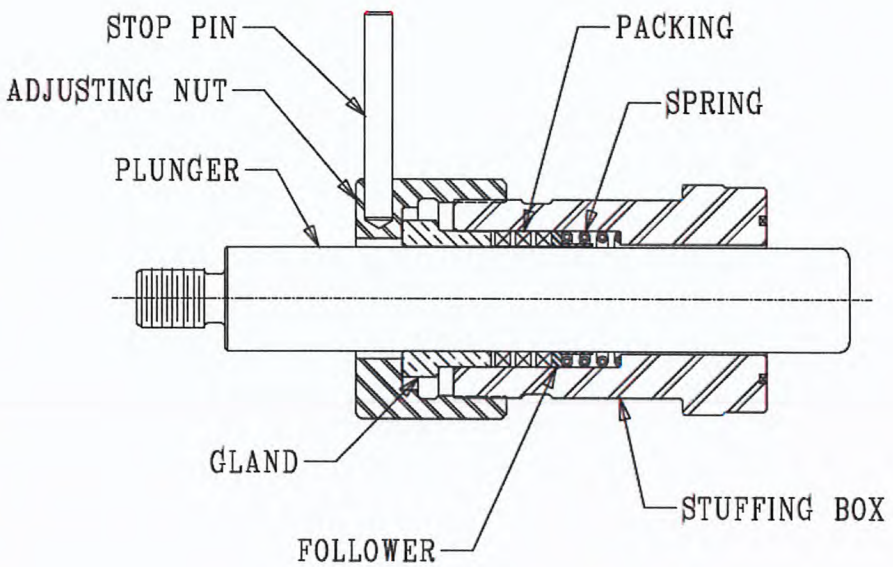


Figure 2

Plunger Pump Valves...

I. OPERATIONAL MAINTENANCE

A. SUCTION AND DISCHARGE

As with any plunger pump, the necessity for having an adequate suction head and proper piping design of both suction and discharge cannot be over emphasized.

! ATTENTION !

NOISY VALVES, DUE TO IMPROPER FILLING, CAN LEAD TO SHORT LIFE AND RAPID MECHANICAL WEAR OF THE POWER END PARTS.

B. VALVE COVERS

⚠ CAUTION ⚠

THE VALVE COVERS, AS USED WITH THE NATIONAL OILWELL VARCO PLUNGER PUMPS, **MUST** BE KEPT TIGHT AT ALL TIMES. DUE TO THE DISCHARGE PRESSURE APPLYING A CONSTANT LOAD TO THE COVERS, IT IS **NOT** POSSIBLE TO CHECK THEIR TIGHTNESS WITH THE PUMP RUNNING OR WITH PRESSURE IN THE CYLINDER.

Bleed off the discharge pressure and check the tightness of the covers as outlined under the assembly procedure for the type of cover used.

C. VALVE CAGE AND COVER SEALS

1. Cage Type Valves

   There are three identical seals in each valve stack. The seals perform a very important function in this design valve and we recommend that they be changed any time they are removed from the pump.

2. Cover Seals

   The cover seals should be replaced as required.

D. VALVE SPRINGS

The springs used with the NATIONAL OILWELL VARCO valves are made of inconel alloy or stainless steel.

! ATTENTION !

THESE SPRINGS SHOULD BE CHANGED APPROXIMATELY ONCE A YEAR IN ORDER TO ASSURE PROPER VALVE ACTION AND ELIMINATE THE POSSIBILITY OF A SPRING BREAK.

Plunger Pump Valves...

I. OPERATIONAL MAINTENANCE (Continued)...

E. VALVE CAGES

The cages are normally made from aluminum, bronze, stainless steel or hardened steel, depending on the type of service. These cages are precision machined to give long, continuous service.

F. VALVE AND SEAT

1. Cage Type Valves:

   There are four basic valve and seat assemblies available, depending on the type of service. They are the disc type, the ball type, the wing-guided type, and the spherical type. These valves can be made available in a variety of materials on special order.

2. Tapered Seat Valves:

   There are two basic OEM valve & seat assemblies available, depending on the type of service. They are the bottom guided (BG) tapered seat valves and the spherical tapered seat valves. The BG valve and seat are available in a variety of materials depending on the type of fluid being pumped. The spherical valves are made of Nitronic 50 material.

Plunger Pump Valves (Continued)...

II. CAGE TYPE VALVES

The NATIONAL OILWELL VARCO cage type valve is a patented design valve. This manual will assist in performing the normal maintenance requirements of the valves.

A. NOMENCLATURE

1. Acme threaded valve cover with center bolt. (One piece solid cover used on 30T, 60T or 80T).
2. Retainer (not used on 30T, 60T or 80T).
3. Cover and Cage Seal, Suction or Discharge (interchangeable).
4. Disc Valve Cage, Suction or Discharge (interchangeable).
5. Valve Spring, Suction or Discharge (interchangeable).
6. Stop, Valve Disc, 30° Taper Cut in Cage, not used in Ball Valve Cages.
7. Valve Disc, Valve suction or Discharge (interchangeable).
8. Valve Seat, Discharge only - Small bore (I.D.) used to retain Suction Spring.
9. Valve Seat, Suction Only - Large Bore (I.D.) same as Suction Throat Bore.
10. Valve Seat Suction and Discharge (interchangeable).

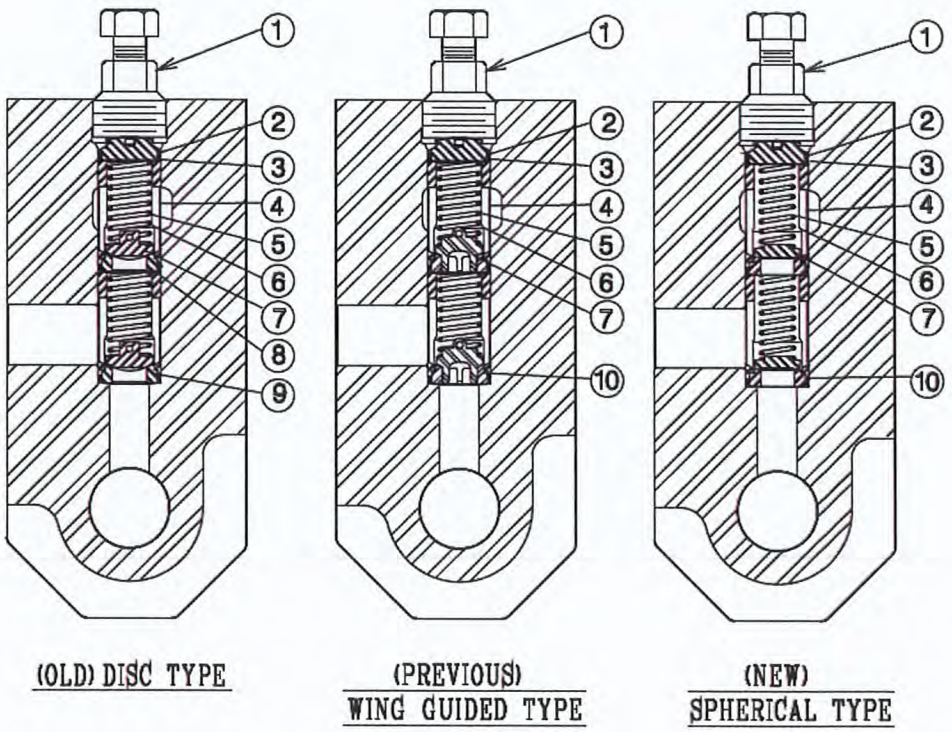


Figure 3

Plunger Pump Valves...

II. CAGE TYPE VALVES (Continued)...

B. VALVE SERVICING TOOLS (charts)

The valve servicing tools referred to on the following pages are listed below:

CAGE TYPE VALVES
(SPHERICAL, BOTTOM GUIDED, BALL, & DISC)

Pump Size	Valve Kit	Cage Puller	Cage Bumper	Seat Drive	Magnet Retriever
30T-2H, 60T-3H, 80T-3H	1710292	1710249	1790080	1790040	1790034
30T-2L, 60T-3M, 80T-3M, 100T-4H, 130T-4H	1711251	1711249	1790080	1790041	1790034
100T-4M, 130T-4H, 130T-4M, 165T-5H, 165T-5HA, 200T-5H, 200T-5HA, 250T-5H, 250T-5HA	1712342	1712242	1790080	1790042	1790034
165T-5M, 200T-5M, 250T-5M, 300Q-5M	1713068	1713069	1790085	1790043	1790034
375T-7H	1715338	1715339	1790085	1790053 G-1790062 G-1715342	1790034
165T-5HB, 200T-5HB, 250T-5HB, 300Q-5H	1713351	1713352	1790085	G-1790064	1790034

Plunger Pump Valves...

II. CAGE TYPE VALVES (Continued)...

C. DISASSEMBLY PROCEDURE

1. Remove threaded cover. (The covers should be tight enough to require an extension on a 24" pipe wrench to loosen). Inspect threads for wear, which could occur if cover was loose.
2. Remove retainer with hook on a magnetic retriever. Some retainers are tapped with a lifting thread for removal.
3. Remove cover seal from top of cage with hook on magnetic retriever. (This hook is rough ground at the plant and should be finished to a flat sharp edge to be most effective). (See Figure 4).
4. Before removing spring, observe amount of pre-load. Spring should extend about 1/8" to 3/16" above the top of the cage. It is not recommended that you stretch a spring to secure the correct pre-load as this causes physical damage to the spring. This should be done only on these cases where a new spring is not available. Remove the spring with hook. (See Figure 6).
5. Remove cage with puller as illustrated. Under normal conditions, these cages are readily removed. If the fluid being pumped makes mineral deposits (gyp) in the cage bore, this will immediately alert the customer that he should start some type of treating program to protect his complete system.
6. Using magnet or hook, remove valve disc. (See Figure 6).
7. Insert valve seat driver in discharge seat and rock back and forth. This action will loosen the seat and allow it to be removed with the hook. (See Figure 7).
8. Assemble upper valve as removed to keep parts together.
9. Remove seal from top of lower cage.
10. Remove spring with hook. **Note:** Notice if spring had proper pre-load.
11. Remove cages using same procedure as No. 4.
12. Using magnet, remove valve disc.
13. Insert valve seat driver in suction seat and rock back and forth. This action will loosen the seat and allow it to be removed with the hook.
14. Assemble lower valve as removed to deep parts together.
15. Remove bottom seal.
16. Inspect cylinder bore with flashlight paying particular attention to sealing areas.

*If necessary, repeat the above steps in the remaining cylinder bores.

Plunger Pump Valves...

II. CAGE TYPE VALVES

C. DISASSEMBLY PROCEDURE (Continued)...

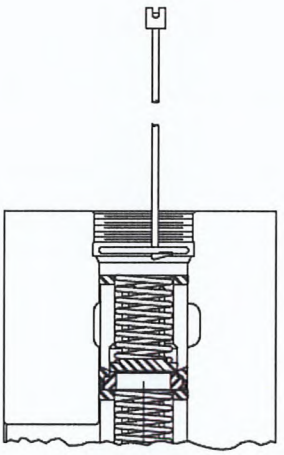


Figure 4

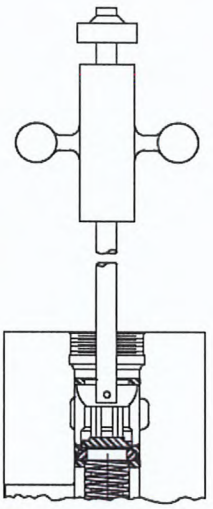


Figure 5

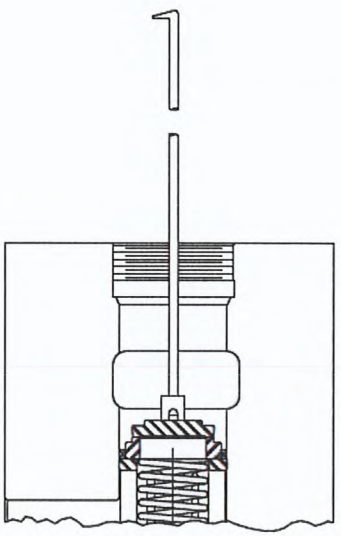


Figure 6

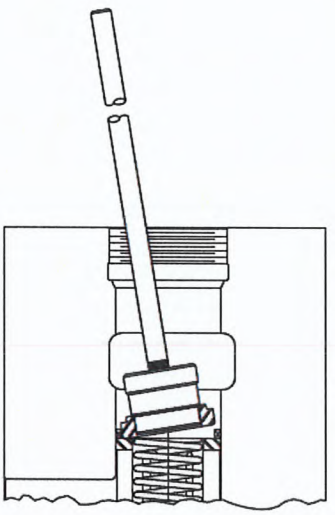


Figure 7

Plunger Pump Valves...

II. CAGE TYPE VALVES (Continued)...

D. VALVE PARTS INSPECTION

1. CAGE (Bottom Guide, Disc, Ball, or Spherical)

The cages used in the National Oilwell Varco Valve Assembly are precision machined and designed for long trouble-free service. Erratic valve action associated with poor suction conditions can cause accelerated wear on this part.

! ATTENTION !

A LOOSE COVER WILL ALLOW CAGE MOVEMENT AND WILL CAUSE EXTENSIVE DAMAGE TO CAGE AS WELL AS FLUID END.

Each cage that is removed should be inspected at the following points referred to in the drawing, Figure 8.

a. Inspect for wear in this area. It is best to do this with the valve and seat in the cage, therefore, a more accurate decision can be made. The wear in this area, which can be judged by the sideways movement of the disc, should not exceed 1/2 the width of the seating surface of the disc valve or more than 1/8" to 3/16" for the ball valve. These are maximum figures and could result in poor valve action and some loss of efficiency. If in doubt, change the cage.

b. Inspect the valve seat shouldering area for signs of wear or hammering. If this portion of the cage is cracked or battered, the cage should be replaced. This will only happen if the cage is allowed to move in the bore due to loose covers.

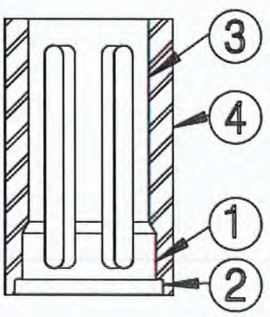


Figure 8

c. Inspect cage bore for excessive spring. In most cases this area will wear only if there is poor valve action or extremely corrosive water that attacks the cage material in this wear zone.

d. Inspect O.D. of cage for nicks, burrs or washers. Clean cage thoroughly before replacing.

Plunger Pump Valves...

II. CAGE TYPE VALVES

D. VALVE PARTS INSPECTION (Continued)...

2. VALVE, BOTTOM GUIDED AND SEAT

The standard (-25) NATIONAL OILWELL VARCO bottom guided disc and seat is made from a specialty stainless steel, which is strictly resistant to corrosion. An optional heat treated stainless steel (-4) valve is available for less corrosive fluids that contain solids. The standard valve is non-magnetic, so a loop is provided for removal from the fluid cylinder.

The following inspection points should be observed:

a. The valve seat and sealing surface should be closely inspected for evidence of excessive wear and /or washed areas. The amount of wear can be determined by comparison with a new valve and seat. Worn valves and seats should be replaced.

b. Inspect the valve guides and seat bores for guide wear. Valves with excessively worn or broken guides and grooved seats should be replaced.

c. Inspect the outside surface of the valve and seat for nicks, burrs or washers, and thoroughly clean before assembly.

3. VALVE, SPHERICAL AND SEAT

The standard NATIONAL OILWELL VARCO spherical valve & seat is made from a specialty stainless steel which is strictly resistant to corrosion. The valve is non-magnetic so a loop may be provided for removal from the fluid cylinder.

The following inspection points should be observed:

a. The valve seat & sealing surface should be closely inspected for evidence of excessive wear and/or washed areas. The amount of wear can be determined with a new valve & seat. Worn valves & seats should be replaced.

b. Inspect the outside surface of the valve & seat for nicks, burrs, or washes, and thoroughly clean before assembly.

Plunger Pump Valves...

II. CAGE TYPE VALVES

D. VALVE PARTS INSPECTION (Continued)...

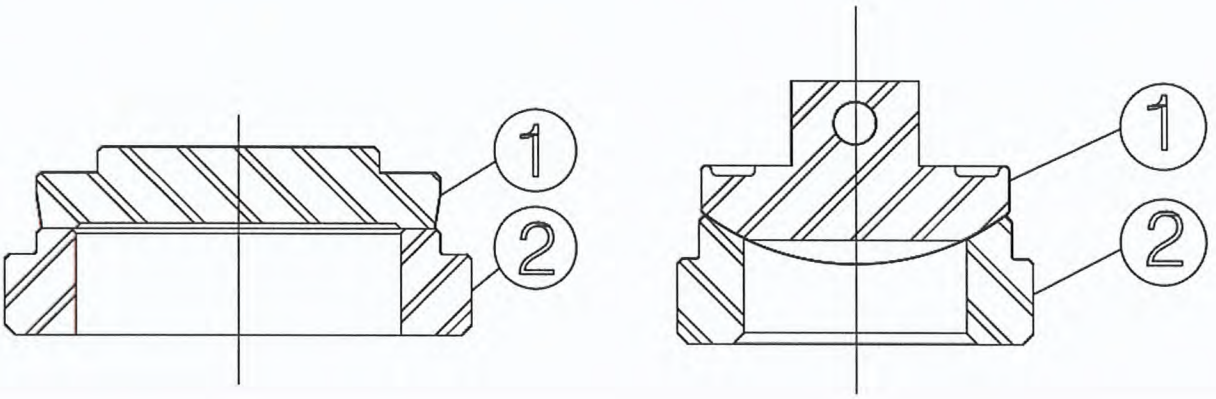
4. VALVE, DISC AND SEAT

The NATIONAL OILWELL VARCO disc-type valve is made from heat treated stainless steel. An optional 316 stainless steel valve is available for severe corrosive service. The 316 stainless steel valve is non-magnetic and cannot be picked up with a magnet. The heat-treated valve is magnetic:

The following inspection points should be observed (See Figure 9):

a. The valve and seat sealing surfaces should be closely inspected for evidence of excess wear and/or washed areas. The amount of wear can be determined by comparison with a new valve and seat or by observing the amount of undercut still remaining on the disc seating surface. If this face is flat, the valve disc and probably the seat should be replaced. Small washes or cuts in the seating surface can sometimes be removed with emery cloth. The seating surfaces should then be ground, or polished, to a smooth finish. A good field method is to lay the fine emery cloth or crocus cloth on the milled top of the cylinder and polish the disc and seat on this surface.

b. Inspect the outside surface of the disc and seat for nicks, burrs, or washes, and thoroughly clean before assembly.



Disc & Seat **Spherical Valve & Seat**

Figure 9

Plunger Pump Valves...

II. CAGE TYPE VALVES

D. VALVE PARTS INSPECTION (Continued)...

5. VALVE, BALL & SEAT

The NATIONAL OILWELL VARCO ball and seat valve is composed of the same material as the Fluid Packed Supreme Ball and Seat. The seat is reversible and the seating surfaces should indicate if replacement is necessary.

6. SPRINGS

The springs as used in the NATIONAL OILWELL VARCO cage-type valve assemblies are designed for long trouble-free service. If installed correctly with the proper pre-load and operated under normal conditions, which include a good suction that provides a smooth valve action, these springs will operate for a year or more.

! ATTENTION !

IT IS BEST YOU CHANGE SPRINGS AND DESTROY THE OLD ONES APPROXIMATELY ONCE A YEAR. IF THE SPRINGS FATIGUE AND BREAK, THE RESULTING VALVE ACTION CAN DAMAGE THE CAGE AND VALVE. HERE AGAIN, IF IN DOUBT, CHANGE THE SPRING; THEIR COST IS VERY MODERATE.

7. SEALS, VALVE CAGE

The NATIONAL OILWELL VARCO cage-type valves are of a stacked design and depend on the seal at the top, middle and bottom of the stack to isolate the suction and discharge valves and their associated changes in pressure. These seals should be changed every time the valves are removed from the pump. If it is absolutely necessary to re-use these seals, install the best seal in the middle stack, the next best at the bottom and the worst seals on the top covers. Replace used seals with new ones as soon as possible.

Plunger Pump Valves...

II. CAGE TYPE VALVES (Continued)...

E. ASSEMBLY PROCEDURES

1. After all parts have been thoroughly inspected and cleaned, assemble each valve unit on top of the pump **leaving off the seals**. Make certain the seat is shouldered up in the cage and the spring is correctly positioned on the disc. Now, check the spring for correct pre-load which should be with 1/8" to 3/16" of spring extending above top of cage. (See Figure 10)

2. Check cylinder bores for nicks, scratches, cuts or washed areas with flashlight. Fluid end should be reworked if these are too deep for seal to work effectively.

3. Place new seal in cylinder bore and push to bottom with hook. Gently tamp the seal into the bottom of the bore. (See Figure 11).

4. Using handle of seat driver as a guide, drop a suction seat on top of gasket. The handle will prevent the seat from turning over when dropped.

   NOTE: Suction seat has a larger bore (I.D.) than the discharge seat.

5. Insert seat driver in suction seat, and using a hammer, tap the seat into seal until it is solid with bottom of bore. (Check seat, be certain top side is up). (See Figure 12).

6. Place valve disc on magnet with spring in position on top of valve disc, and lower into place on top of seat. Leave magnet standing in bore.

   NOTE: Valve discs are interchangeable between suction and discharge seats. (See Figure 13).

7. Insert cage in bore, using handle of seat driver, tap cage gently to the bottom.

   NOTE: The cages fit the bores very closely. Use care when inserting the cage to be sure it is not cocked. Work the cage gently - it will slide into the bore when correctly aligned.

   Lift the valve disc with the magnet to make certain it is not caught under the cage, and using a hammer, gently drive the cage down until solid. (See Figure 14).

8. Check disc springs to see that they are free in the cage. Pull magnet loose. (See Figure 15).

9. Using a flashlight, check the spring for correct positioning on valve disc and for proper pre-load. Check valve disc to be certain top side is up. (See Figure 15).

10. Place seal in cylinder bore and push to top of suction cage with hook. Gently tamp seal into position.

11. Drop discharge seat using handle as described in No. 4.

12. Drive seat solid on top of cage. In some cases, the pre-load from the suction spring will push the seat up after it is driven - this is normal.

Plunger Pump Valves...

II. CAGE TYPE VALVES

E. ASSEMBLY PROCEDURES (Continued)...

13. Place valve on magnet with spring in position and lower into place on top of seat. Leave magnet standing in the bore.

14. Insert cage and drive using the same procedure as No. 7.

15. Inspect using same procedure as No. 7.

16. Check valve assembly with flashlight using same procedure as No. 8.

17. Place seal on retainer and install in cylinder. Screw threaded cover down by hand until threads are fully engaged. Torque center bolts to following values:

PLUNGER PUMP SIZE	TORQUE (Dry)	TORQUE (Lubricated)
30T-2H, 30T-2L, 60T-3H, 60T-3M, 80T-3H, 80T-3M	500 ft-lbs	400 ft-lbs
100T-4H, 100T-4M, 130T-4H, 130T-4M, 165T-5M, 300Q-5HA, 200T-5H, 250T-5H	550 ft-lbs	450 ft-lbs
165T-5M, 300Q-5M, 200T-5M, 250T-5M	650 ft-lbs	525 ft-lbs
165T-5H, 200T-5H, 250T-5H, 300Q-5HB	900 ft-lbs	735 ft-lbs
375T-7H	1300 ft-lbs	1060 ft-lbs

Plunger Pump Valves...

II. CAGE TYPE VALVES

E. ASSEMBLY PROCEDURES (Continued)...

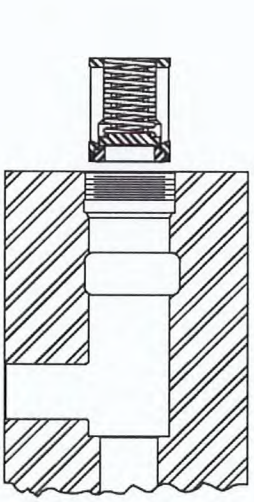


Figure 10

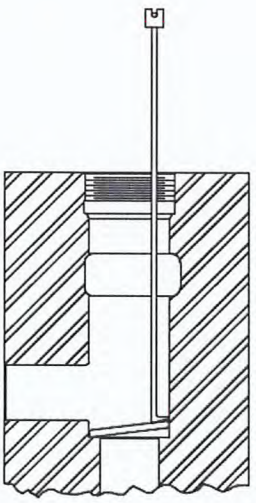


Figure 11

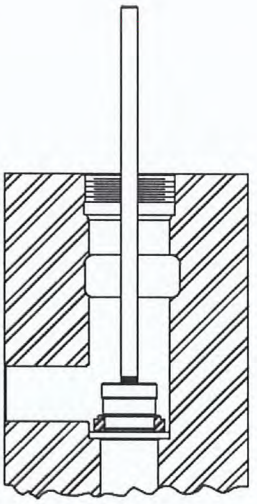


Figure 12

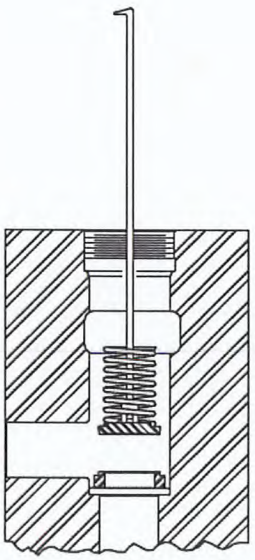


Figure 13

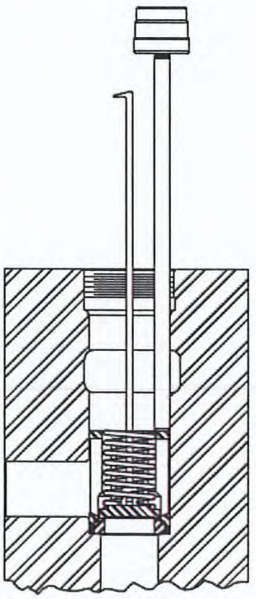


Figure 14

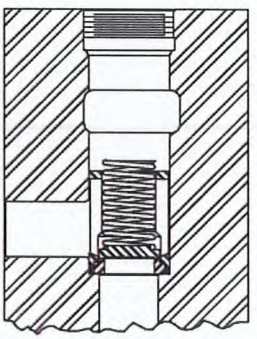


Figure 15

Plunger Pump Valves (Continued)...

III. TAPERED SEAT VALVES

A. SPHERICAL VALVES and SEATS

1. VALVE REMOVAL PROCEDURE

a. Both suction and discharge valves are removed from the top of the cylinder. It is necessary to pull the discharge valve prior to pulling the suction valve.

b. Remove the spring retainer by pressing downward on the puller head and turn counter clockwise about 1/8 of a turn or until retainer stops. Remove the retainer with the retriever. See Figure 17.

c. Remove spring(s) and valve with the retriever. See Figure 18.

d. Remove seat by placing the puller head through the seat opening and engage lugs to the underside of the seat. Pull seat or bump seat loose and remove. See Figure 19.

2. INSTALLATION PROCEDURE

a. Make certain cylinder tapers are clean and dry. Inspect for corrosion or damaged areas. Repair or replace as required.

b. Clean and dry spherical seat tapers and with retainer and spring(s) removed, place seat in place making certain it is straight.

c. With a bar and a driver tap seat in place with 2 or 3 strokes. **NOTE!!** Seat does not have to be completely seated. Pump start-up pressure will drive seat home. See Figure 20.

d. Install valve, spring(s), and spring retainer. See Figure 21.

Plunger Pump Valves...

III. TAPERED SEAT VALVES

A. SPHERICAL VALVES and SEATS (Continued)...

VALVE COMPLETE, Consists of:						
ITEMS INCLUDED		2-1/2"	3"	3-1/2"	4"	5"
VALVE COMPLETE	SUCTION	1792520-25	1793020-25	1793520-25	1794020-25	1795020-25
	DISCHARGE	1792522-25	1793022-25	1793522-25	1794022-25	1795022-25
SEAT	SUCTION	1792521-25	1793021-25	1793521-25	1794021-25	1795021-25
	DISCHARGE	1792523-25	1793023-25	1793523-25	1794023-25	1795023-25
VALVE (ONLY)		1792527-25	1793027-25	1793527-25	1794027-25	1795027-25
SPRING (SUCTION)		1792525	1793025	1793525	1794025	1795025
RETAINER		1792524-6	1793024-6	1793524-6	1794024-6	1795024-6
SPRING (DISC)	INNER	1792526	1793026	1793526	1794026	NONE
	OUTER	1792525	1793025	1793525	1794025	1795025

PULLER KIT, Consists of:					
ITEMS INCLUDED	2-1/2"	3"	3-1/2"	4"	5"
PULLER KIT	180104119	180104127	180104135	180104143	180104151
PULLER HEAD	181205709	181259300	181259359	181259409	181259410
RETRIEVER	1790034				
SPACER	181205709				181205710
WASHER	20-220-194				20-220-327
NUT	75-518-308				75-510-330

Plunger Pump Valves...

III. TAPERED SEAT VALVES

A. SPHERICAL VALVES AND SEATS (Continued)...

Figure 16

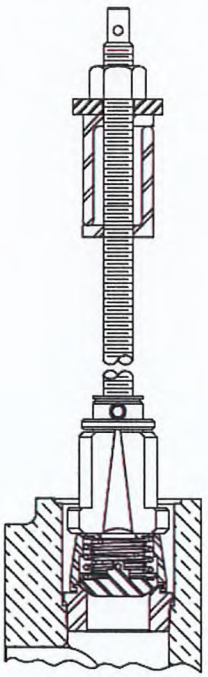


Figure 17

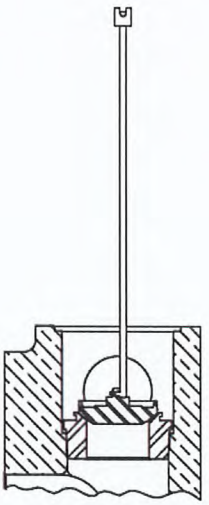


Figure 18

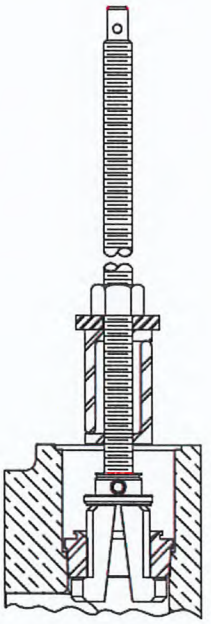


Figure 19

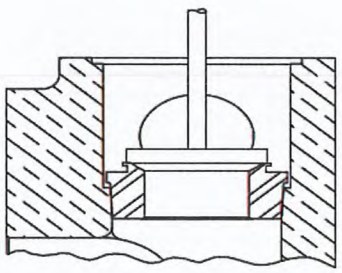


Figure 20

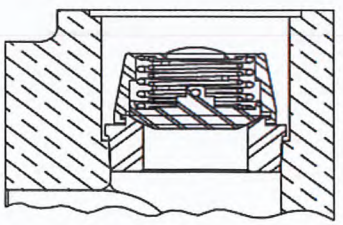


Figure 21

Plunger Pump Valves (Continued)...

III. TAPERED SEAT VALVES

B. TAPERED SEAT-BOTTOM GUIDED VALVES

1. VALVE REMOVAL PROCEDURE

a. Using hex head wrench as shown in Figure 23, remove retainer and spring. Bottom guided valves can be removed with a magnet or special valve retriever.

b. Screw puller head on valve seat until tightly shouldered. Valve seat can be pulled or bumped as shown in Figure 24.

2. INSTALLATION PROCEDURE

a. Make certain fluid end tapers are clean and dry. Inspect for corrosion or damaged areas to see if repair is required.

b. Clean and dry valve seats tapers and with retainer and spring removed, place seat in place making sure it is straight.

c. With bottom guided valve in place, drive the seat, as shown in Figure 25, until it stops driving.

d. Check bottom-guided valve to be sure it is free in the seat and install spring and retainer. Torque retainer to values shown below using hex head wrench as shown in Figure 26.

TORQUE ft.-lbs.	2-1/2"	3"	3-1/2"	4"
	100	100	100	100

Plunger Pump Valves...

III. TAPERED SEAT VALVES

B. TAPERED SEAT-BOTTOM GUIDED VALVES (Continued)...

VALVE COMPLETE, Consists of:					
ITEMS INCLUDED		2-1/2"	3"	3-1/2"	4"
VALVE (Complete).....	Suction	1792500-4	1793000-4	1793500-4	1794000-4
	Discharge	1792502-4	1793002-4	1793502-4	1794002-4
SEAT	Suction	1792501-4	1793001-4	1793501-4	1794001-4
	Discharge	1792503-4	1793003-4	1793503-4	1794003-4
VALVE (Only).....		1790066	1713502	1790067	1790068
SPRING.....		1792505	1793005	1793505	1794005
RETAINER		1792504-26	1793004-26	1793504-26	1794004-26

PULLER KIT, Consists of:				
ITEMS INCLUDED	2-1/2"	3"	3-1/2"	4"
PULLER KIT	1792507	1793007	1793507	1794007
PULLER HEAD	1792506	1793006	1793506	1794006
BUMPER	1790080			
BAR	1790081			
WRENCH	1790082			
RETRIEVER	1790034			
SUPPORT	1713109			
NUT	6300160			
FLANGED NUT	6314002			

Plunger Pump Valves...

III. TAPERED SEAT VALVES

B. TAPERED SEAT-BOTTOM GUIDED VALVES (Continued)...

REMOVAL

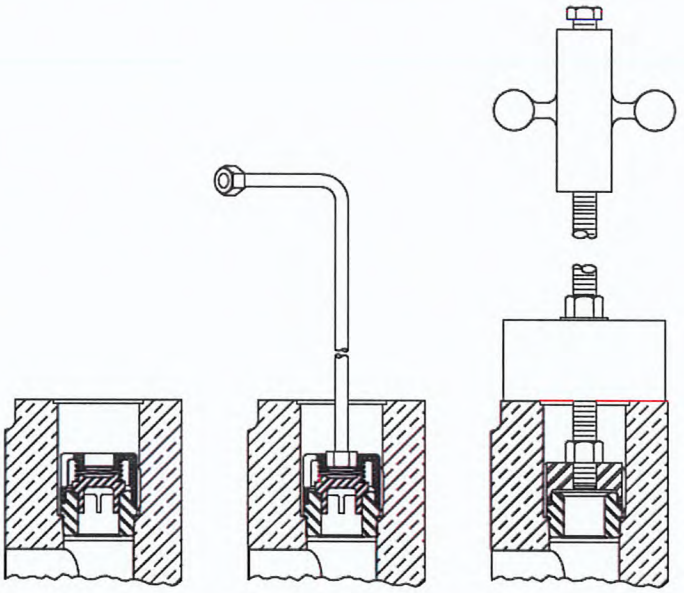


Figure 22 Figure 23 Figure 24

INSTALLATION

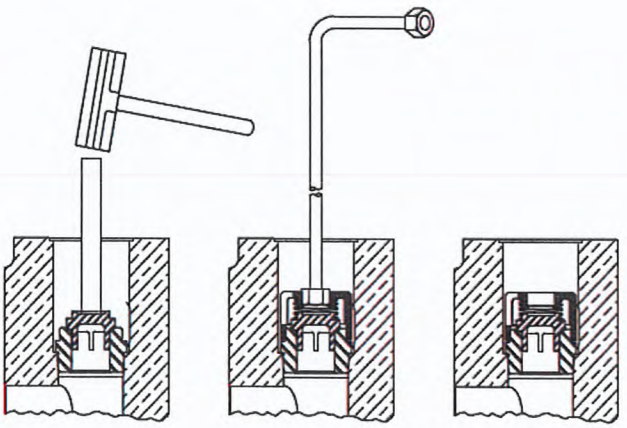


Figure 25 Figure 26 Figure 27

Gear Reducer...

I. LUBRICATION AND MAINTENANCE

A. GENERAL

NATIONAL OILWELL VARCO plunger pump gear reducers are "splash" lubricated. The rotation of the gears provides adequate lubrication to all working parts. The gear reducer housing and the plunger pump power end are separated by a labyrinth oil seal on the 30T, and a labyrinth oil seal retainer on the 60T, 80T, 100T, 130T, 165T, 200T, 250T and 300Q. These seals separate the lubricating oils and prevent contamination.

Initial filling should be through the hand hole cover and can be gauged by the high and low level oil plugs in the housing. Correct level is at the bottom of the high level plug.

1. OIL

Use an extreme pressure gear oil. The following chart shows the recommended grades for various temperatures surrounding the pump.

U.S. UNITS OF MEASURE	
Temperature	**AGMA Industrial EP Gear Oil**
+50°F to +155°F	AGMA No. 6 EP or ASTM/ISO Grade No.320 (Viscosity 1335 to 1632 SSU at 100°F)
+20°F to +100°F	AGMA No. 5 EP or ASTM/ISO Grade No.220 (Viscosity 918 to 1122 SSU at 100°F)
+20°F to +60°F	AGMA No. 2 EP or ASTM/ISO Grade No.68 (Viscosity 284 to 347 SSU at 100°F)

METRIC UNITS OF MEASURE	
Temperature	**AGMA Industrial EP Gear Oil**
+10°C to +68°C	AGMA No. 6 EP or ASTM/ISO Grade No.320 (Viscosity 288 to 352 cSt at 37.8°C)
-7°C to +38°C	AGMA No. 5 EP or ASTM/ISO Grade No.220 (Viscosity 198 to 242 cSt at 37.8°F)
-29°C to +16°C	AGMA No. 2 EP or ASTM/ISO Grade No.68 (Viscosity 61 to 75 cSt at 37.8°F)

Oil must pour freely at a minimum operating temperature. Change oil every six months or as frequently as operating conditions require to maintain a clean, sludge-free oil of proper viscosity.

Gear Reducer...

I. LUBRICATION AND MAINTENANCE

A. GENERAL

1. **OIL** (Continued)...

GEAR REDUCER OIL CAPACITY			
Pump	**Ratio**	**Gal.**	**Ltr.**
30T	3.50, 3.83, 4.20	2/3	2.5
60T, 80T	2.34, 2.77, 3.035, 3.50	1	3.8
100T, 130T	2.60, 3.15, 3.42, 3.89, 4.269	3	11.4
165T	2.80	3-1/2	13.3
	3.22, 3.46	3	11.4
	3.73	2-3/4	10.4
	4.00, 4.38, 4.78, 4.96, 5.74	2-1/4	8.5
200T 250T 300Q	2.27	6-1/2	24.6
	2.89	5	18.9
	3.25, 3.36, 3.69	4-1/2	17.1
	4.38, 4.84, 5.63	3-1/2	13.3

2. **MAINTENANCE**

a. The gear reducer housing is equipped with a magnetic drain plug that will collect any steel particles and prevent them from being recirculated with oil. This plug should be cleaned every six months.

b. The gear reducer should be drained, flushed and refilled every six months or as often as required to maintain clean, sludge-free oil of the proper viscosity.

c. Clean air breather with a non-explosive solvent.

Gear Reducer (Continued)...

II. OVERHAUL AND REPAIR

A. GENERAL

The bearings and other working parts in the plunger pump gear reducers have been designed for continuous duty service; and if proper maintenance is given, will provide years of trouble-free service. If overhaul and repairs are necessary, disassembly and assembly procedures are discussed below.

1. DISASSEMBLY

a. Remove housing cover bolts, and using threaded jackscrew holes, pull the cover and tapered dowel pins.

b. Remove pinion shaft and Timken bearings from housing.

c. Remove blind cover plate.

d. Tap out Timken outer cup and mark all parts for correct replacement position.

e. Pull crankshaft gear. Gear is a .001" to .005" shrink fit to shaft. Puller holes are provided in gear for pulling. (30T - 5/8" holes; 165T and 300Q - 1" holes). Heat should be used when pulling gears, but a combination of dry heat and dry ice can also be used. The puller should be attached to the gear and a heavy strain should be applied. The gear should be heated with a large tip torch starting at the outside gear rim below the root of the teeth, and working in a circular motion, heat the gear slowly and evenly toward the hub. The torch should be kept in constant motion to prevent hot spots. The gear rim should always be kept at a temperature above the hub area to eliminate tensile stresses in the gear rim, which causes the gear to crack. The gear will break loose from the shaft when enough heat has been applied. The puller should then be able to remove the gear. Do not exceed 350°F at any time on the surface of the gear. Use a tempil stick to gauge the temperature.

f. A gear removed in this manner will be a serviceable gear.

! ATTENTION !

EXCESS HEAT OR SPOT HEATING WILL CAUSE THE GEAR TO CRACK OR DISTORT.
ALLOW GEAR TO COOL SLOWLY.

Gear Reducer...

II. OVERHAUL AND REPAIR

A. GENERAL (Continued)...

2. ASSEMBLY

NOTE: Items 1 through 4 may be omitted if the pump is equipped with a new style main bearing cage; 100T & 130T - Part Number 1711617. Omit items 1 through 4 for all 30T, 60T, 80T, 165T, 200T, 250T and 300Q.

a. Remove crankshaft assembly and left hand main bearing and cage assembly as per pump service manual.

b. Install a new cage and bearing per assembly instructions in pump service manual.

c. Install new bearing retainer (100T & 130T - Part number 1711622) and gasket onto cage. Check clearance of Labyrinth seal to shaft. There should **not** be any metal-to-metal contact.

d. Install crankshaft assembly per instructions in pump service manual.

e. 60T & 80T only - replace left hand bearing retainer, Part Number 1710011, with new bearing retainer, Part Number 1710618, and re-shim crankshaft as per instructions in service manual. This retainer contains labyrinth oil seals, but some older models use two (2) YS-3254 seals with the lips pointed in opposite directions.

f. All other pumps contain labyrinth seal type retainers. No oil seals are necessary. Be sure seal grooves are clean before installing retainer.

g. Apply liquid gasket to bearing cage and install gear reducer housing over pilot on bearing cage. Insert special capscrews and tighten securely.

h. Drill and ream for dowel pins - two (2) holes. Dowel pins are standard .25" per foot taper pins and are listed in the parts list section for each pump.

! ATTENTION !

DO NOT DRILL THROUGH PUMP FRAME. HOLES SHOULD BE REAMED DEEP ENOUGH TO ALLOW PINS TO BE DRIVEN UNTIL THE TOP OF THE TAPER ON PIN IS FROM FLUSH TO 1/8" STAND-OFF.

Gear Reducer...

II. OVERHAUL AND REPAIR

A. GENERAL

2. ASSEMBLY (Continued)...

i. After taper pins are fitted and driven, re-check tightness of special capscrews by torquing to following values and wire them in place.

PUMP SIZE	SPECIAL CAPSCREW	TORQUE (Ft. – lbs.)
30T	2402010	75
60T, 80T	2402850	150
100T, 130T	2405029	75
165T	2403190	150
200T, 250T, 300Q	2405018	375

j. Check high-speed pinion for nicks and burrs in bearing areas and remove same.

k. Heat pinion tapered roller assemblies in electric oven or bath to 300°F and install on pinion shaft. Make sure bearings are shouldered on shaft.

l. Install outer race of tapered roller assemblies in housing and cover.

m. With half the shims on the blind retainer, install and secure with screws.

n. Check crankshaft extension, keyway crankshaft gear and key nicks and burrs - remove same.

o. Heat the crankshaft gear to 350°F in an oil bath or furnace to insure even and uniform heating. If these methods are not available, heat the gear with a large top torch as described in paragraph 1. e., page 68. It is of prime importance that the gear be heated slowly and evenly from the gear rim to the hub. Use a tempil stick and micrometers to assure a correct fit. Allow gear to cool slowly.

p. Slip gear on shaft with under cut area on hub facing toward pump; puller holes facing out. Position gear on shaft so that distance from end of shaft to outside face of hub is as follows:

PUMP	END OF SHAFT TO HUB FACE
30T	1-3/4"
60T, 80T	2-5/15"
100T, 130T	4-1/4"
165T	4-3/8"
200T, 250T, 300Q	6-1/2"

q. Insert key with beveled side next to shaft and allow to cool in place.

Gear Reducer...

II. OVERHAUL AND REPAIR

A. GENERAL

2. ASSEMBLY (Continued)...

! IMPORTANT !

- MAKE SURE GEAR IS HOT ENOUGH AND INSTALLATION IS PERFORMED QUICKLY ON THE SHAFT BEFORE IT IS POSITIONED.
- MAKE SURE KEYWAYS ARE ALIGNED WHEN SHRINKING GEAR ONTO SHAFT.

r. Position high-speed pinion in housing supporting same with rope or cloth through the hand hole in top of housing.

s. Apply liquid gasket between cover and housing. Install the housing cover and secure with capscrews and taper pins.

t. Place remaining shims on open retainer and install with screws, making certain the drain slot is at the bottom. Adjust with shims and retainers until the endplay of the pinion shaft is from .003" to .005" loose on all reducers except 200T and 300Q where the end play is from .005" to .007" ***loose.*** Check clearance of Labyrinth seal to shaft. There should **not** be any metal-to metal contact.

! IMPORTANT !

- MAKE CERTAIN THE BEARING OUTER CUPS ARE SOLID AGAINST THE RETAINERS AND THE OUTSIDE RETAINER IS INSTALLED CORRECTLY.

u. Check meshing of pinion and crankshaft gear.

v. Install pinion shaft dirt excluder.

3. INSTALLATION

Since the plunger pump gear reducer is attached to the pump and becomes a part of the pump package, the installation should receive the same careful consideration that the pump itself does. Careful installation practices will greatly increase trouble-free operation and reduce maintenance costs. For general installation recommendations, see Installation Section of the pump manual.

P-55U Pump...

A. OPERATING INSTRUCTIONS

1. BOX SUCTION PUMPS (VACUUM FEED)

- Fill reservoir with oil.
- Loosen union nut on pump outlet.
- Remove the vent screw and fill the sight glass with oil. Prime by manually pumping flushing unit until air free oil is observed from the drip tube and oil level drops in the sight glass.
- Replace vent screw and tighten union nut.
- Maintain oil level in sight glass below the drip tube so drops can be observed.

2. FLOW RATE ADJUSTMENT

- Loosen locknut on flushing unit.
- Turn flushing unit counter-clockwise to increase flow.
- Turn flushing unit clockwise to decrease flow.
- Tighten locknut when desired flow rate is achieved.

3. SIGHT GLASS

In a vacuum type sight feed, it is not uncommon for oil level in the sight glass to drop during operation. Absence of a level indicates air is being taken in with the oil. Some oils, due to viscosity conditions, will release air faster than others. When the quality of air becomes excessive, it can eventually air lock the pump.

For this reason it is recommended that an oil level in the sight glass be maintained.

When level drops, remove the vent screw and fill sight glass to top; replace vent screw and operate flushing unit manually, observing that an oil in the sight glass is free from air. If air is not expelled, it may be necessary to loosen union nut (on pump outlet) and expel air at this point. It is desirable to maintain level below the drip tube so drops can be seen during operation.

4. OVERFILLING OF SIGHT GLASS

In a vacuum type sight feed, it is not uncommon to see a reverse action whereas sight glass fills with oil and the drops cannot be observed. Overfilling is caused by oil absorbing air in the sight glass and normally does not affect the operation of the pump. Remove the vent screw from sight glass and allow level to drop below drip tube. Tighten vent screw and check to see that air free oil from drip tube can be observed in the sight glass. If overfilling continues, it may be caused by plunger wear and oil slippage is being drawn back to sight glass. If this is the problem, the feed setting in drops per stroke will then automatically be reduced by the amount of slippage.

5. RESERVOIR OIL LEVEL (LOSS OF PRIME)

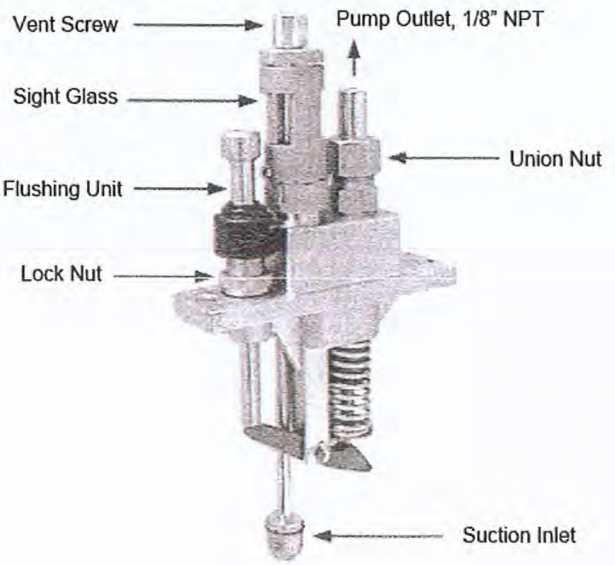
If reservoir runs low on oil (at a point below the suction inlet of the pump) it may be necessary to prime individual pumps after filling, using procedure listed above.

6. PUMP DISPLACEMENT

Maximum output (per stroke):

1/4 Plunger = .018 Cubic Inches
3/8 Plunger = .038 Cubic Inches

The cubic volume for a pint of oil is 28.9 cubic inches and average drop size is .002 cubic inches.



Storage of Pumps...

I. GENERAL

All machinery units require protection from corrosion erosion, natural attrition which causes deterioration of the surface as well as the working parts. Generally, units in operation are frequently inspected, cleaned, painted and lubricated while idle units are often more or less neglected. Any degree of neglect is costly, especially if continued over a sufficient period of time to make restoration of the equipment impossible. It is recommended that preventive measures of protection be established and the following will guide you in the minimum requirement.

A. GENERAL

Preferably, units should be stored in clean, climatically controlled buildings. This would require the minimum inspection, but, since storage in older environments is sometimes necessary, more frequent inspections and additional protection is necessary. The schedule for inspection and protection can be determined only at the point of storage. A protection and storage log is recommended. Tropical areas require the maximum protection; arid regions require the least amount of protection. The frequency of inspection is determined after noting the rate of deterioration. Take positive action immediately when corrosion/erosion appears, do not wait until large areas are covered because usually the larger the area, the deeper the penetration.

B. RECOMMENDED PROTECTION INITIAL STORAGE

1. Drain all oil and thoroughly clean inside of Power Frame.
2. Coat pinion shaft oil seals with grease.
3. Remove breathers for later installation on pump. Seal all breather holes with greased solid pipe plugs. Remove extension rods and diaphragm sealing housing; be sure to protect the rods and housings, storing them separately for later installation on the pump. Seal diaphragms with wooden covers. "Mate" the wood cover and diaphragm faces together, thoroughly coating with Rust Veto 342 or its equivalent.
4. Spray two gallons of Shell VSI 100 vapor phase inhibitor or equivalent into power end of pump.
5. Remove valves and valve springs. Clean and wrap in corrosion inhibiting paper. Remove liners and pistons. Clean and wrap in corrosion inhibiting paper. Clean and dry fluid end bores and thoroughly coat all internal surfaces with Tectyl 506 or equivalent.
6. Thoroughly coat all threads and end of valve cover and screw into fluid end.
7. Protect all external machine surfaces using Rust Veto 342 or equivalent including pump pads.
8. Inspect complete pump and record all details on the Protection and Storage Log.

Storage of Pumps...

I. GENERAL (Continued)...

C. SIX MONTH SERVICING

1. Rotate pump.
2. Renew internal rust inhibitors to specifications and quantities previously stated under the "Initial Storage" section.
3. Before replacing top and side covers, inspect for any internal corrosion.
4. Inspect for soundness of external protection, i.e., rust preventative and paint. Renew as necessary.
5. Enter and record all details on the "Protection and Storage Log".

D. PRE-INSTALLATION CHECK AFTER STORAGE

1. Repeat six month servicing procedure as stated above.
2. Ensure all necessary parts are complete and in a satisfactory condition for installation on pump.
3. Enter all records and close out the "Protection and Storage Log".

Owners Record...

NAME _____

LOCATION _____

DATE OF DELIVERY _____ DATE PLACED IN OPERATION _____

PUMP MODEL _____

PUMP SIZE _____ SERIAL NO. _____

PRIME MOVER _____ SERIAL NO. _____

GEAR UNIT _____ SERIAL NO. _____

DRIVE:

DRIVE SHEAVE P.D. _____ DRIVEN SHEAVE P.D. _____ NO. OF GROOVES _____

BELT LENGTH _____ DRIVE SPROCKET _____ CHAIN SIZE _____

CHAIN LENGTH _____ COUPLING (MAKE) _____ COUPLING SIZE _____

PRESSURE _____ VOLUME _____ PUMP SPEED _____ DRIVE SPEED _____

PLUNGERS _____

PACKING _____

PISTONS _____

LINERS _____

VALVES _____

SEATS _____

LUBRICANTS:

CRANK CASE _____

FLUSHING SYSTEM _____

GEAR UNIT _____

LUBRICATOR _____

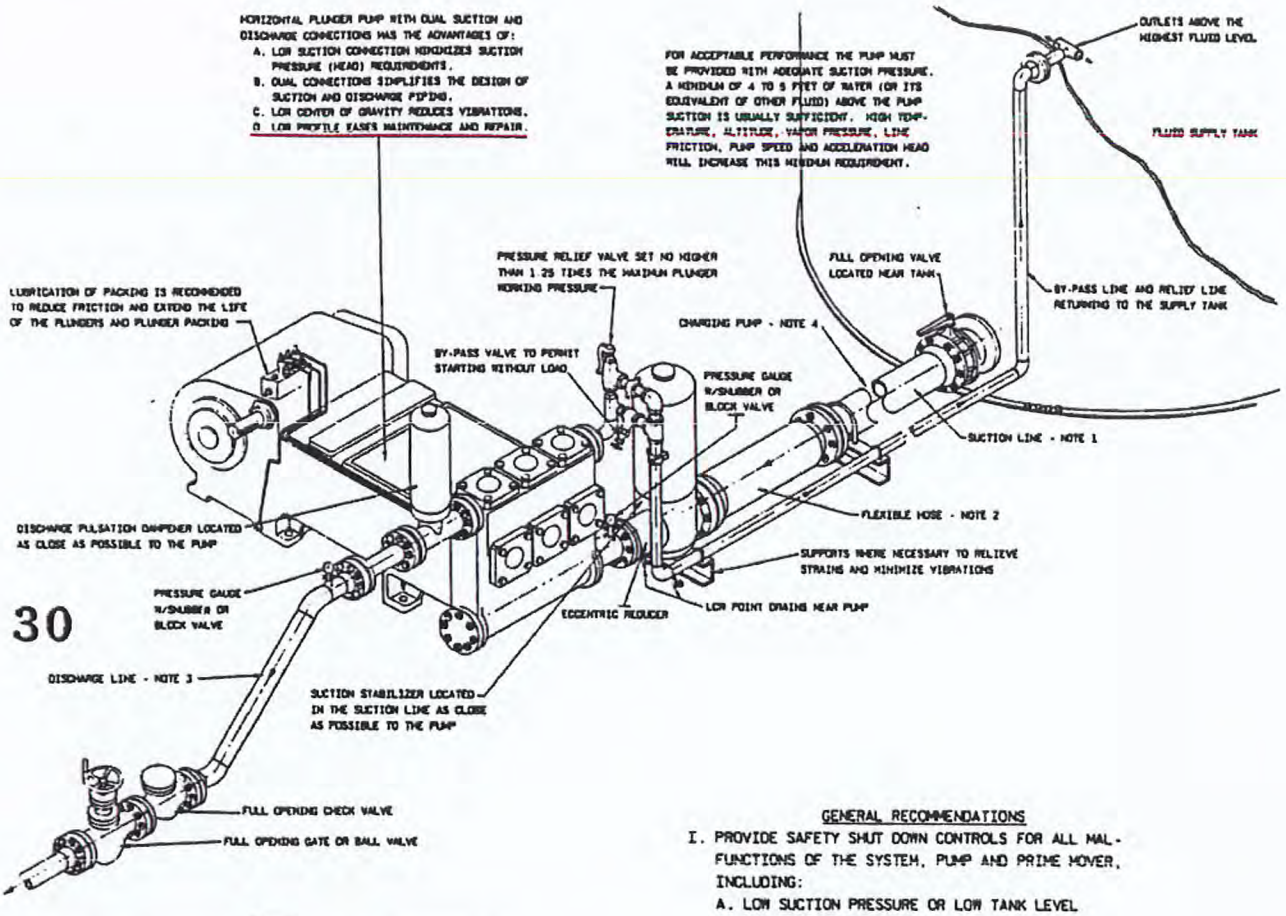
PRIME MOVER _____

COUPLING _____

NOTES _____

All of the above entries are not applicable to a specific unit; therefore, completion of this form must be confined within the limits of each pump and the specified optional accessory equipment.

Typical Waterflood Pump Installation Suction and Discharge Piping Arrangement...



NOTES

1. A SEPARATE SUCTION LINE IS RECOMMENDED FOR EACH PUMP. THE LINE SHOULD BE A MINIMUM OF ONE SIZE LARGER THAN THE PUMP SUCTION FLANGE OR OPENING TO PROVIDE A MAXIMUM OF 1 TO 2 FEET/SECOND FLUID VELOCITY. IF BENDS ARE NECESSARY USE ONLY 45° LONG RADIUS ELLS. A SLOPE OF 1/4" PER FOOT FROM TANK TO PUMP IS RECOMMENDED.
2. A FLEXIBLE HOSE AND/OR EXPANSION JOINT IN THE SUCTION LINE (ALSO DISCHARGE LINE) PROVIDES FOR THERMAL EXPANSION AND TENDS TO DAMPEN VIBRATIONS.
3. DIRECT THE DISCHARGE LINE, USING 45° LONG RADIUS ELLS, TO GRADE OR BELOW GRADE LEVEL AS SOON AS POSSIBLE TO RELIEVE STRAIN AND REDUCE VIBRATIONS. THE LINE SIZE SHOULD BE SUFFICIENT NOT TO EXCEED A MAXIMUM FLUID VELOCITY OF 8 TO 10 FEET/SECOND.
4. IF CHARGING PUMP IS USED IT SHOULD BE LOCATED NEAR THE SUPPLY TANK. IN ITS SELECTION GIVE CONSIDERATION TO THE FLUID PUMPED, VELOCITY, PLUNGER PUMP VALVING, LINE FRICTION, ETC. SIZE CHARGE PUMP TO 1-1/2 TIMES RECIPROCATING PUMP VOLUME CAPACITY, MINIMUM.

GENERAL RECOMMENDATIONS

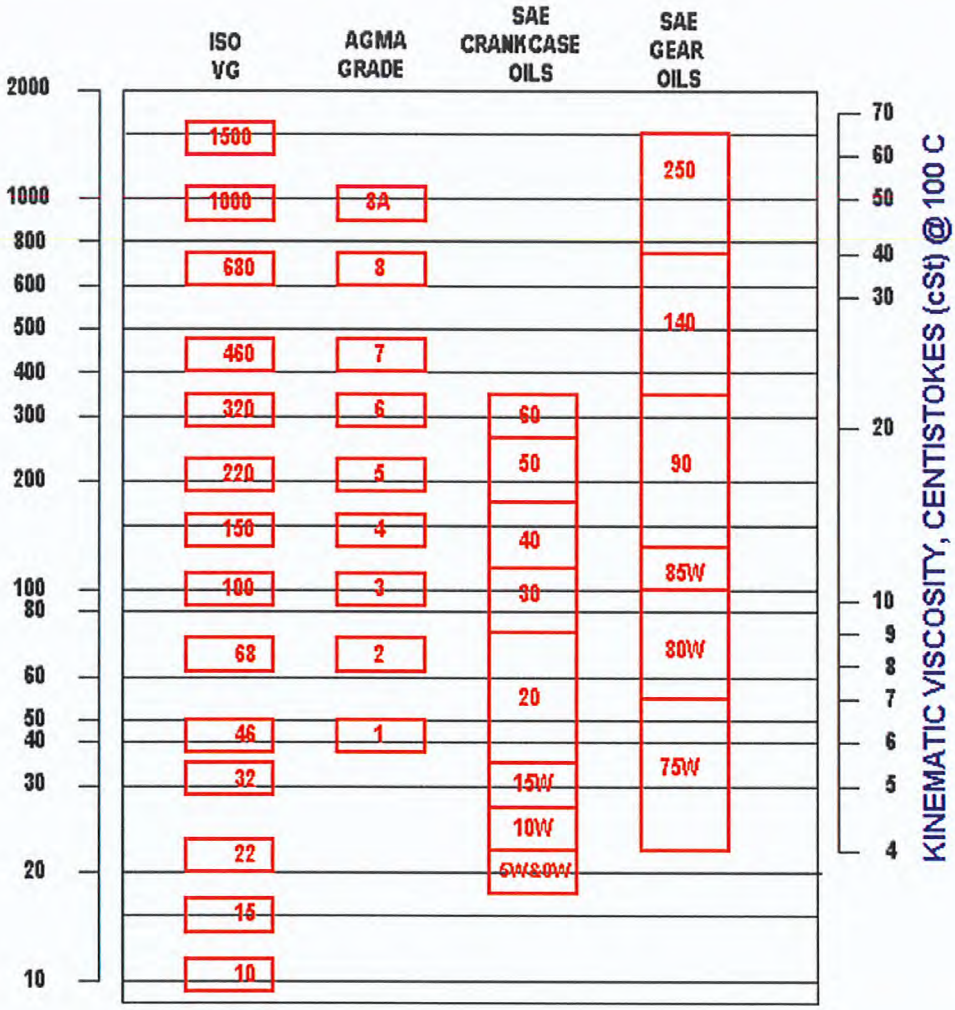
I. PROVIDE SAFETY SHUT DOWN CONTROLS FOR ALL MALFUNCTIONS OF THE SYSTEM, PUMP AND PRIME MOVER, INCLUDING:
   A. LOW SUCTION PRESSURE OR LOW TANK LEVEL
   B. LOW DISCHARGE PRESSURE
   C. HIGH DISCHARGE PRESSURE
   D. LOW OIL PRESSURE OR LOW OIL LEVEL
   E. HIGH TEMPERATURE, EXCESSIVE VIBRATIONS, OVERLOADING OF PRIME MOVER, ETC.

II. FOR SERVICING AND SAFETY PROVIDE ADEQUATE WORK AREA AROUND THE PUMP UNIT.

III. CARE AND OPERATIONS SHOULD INCLUDE CLEANLINESS, DAILY INSPECTIONS, PERIODIC INSPECTIONS, ROUTINE MAINTENANCE AND PREVENTIVE MAINTENANCE.

ISSUE DATE:			
NATIONAL - OILWELL			
TYPICAL WATERFLOOD PUMP INSTALLATION SUCTION & DISCHARGE PIPING ARRANGEMENT			
	SIZE	DRAWING NO.	REV
	C	GSK-3886P	

Viscosity Equivalents...

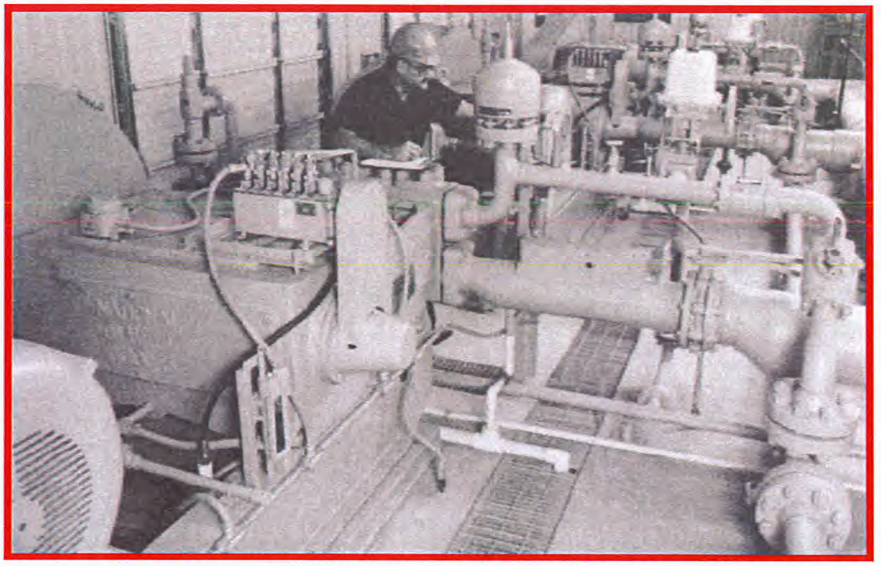


NOTES:

*Assumes 100 VI single grade oils. Read across horizontally.
*SAE grades based upon viscosity at 100 C. ISO and AGMA grades based upon viscosity at 40 C
*Equivalence is in terms only of viscosity. Quality requirements are a separate consideration.
*Viscosity limits are approximate: For precise data, consult ISO, AGMA and SAE specifications.
*W grades define only in terms of 100 C viscosity. For low temperature limits, consult SAE specifications.

*ISO = International Standardization Organization
*AGMA = American Gear Manufacturers Association
*SAE = Society of Automotive Engineers

NATIONAL OILWELL VARCO



With over 120 locations worldwide, National Oilwell Varco is located near you. To find the nearest Distribution Service Center, machinery center or repair facility, please give us a call at our main office listed below.

Or you can access our website at the URL listed below, where you may search by location or country.

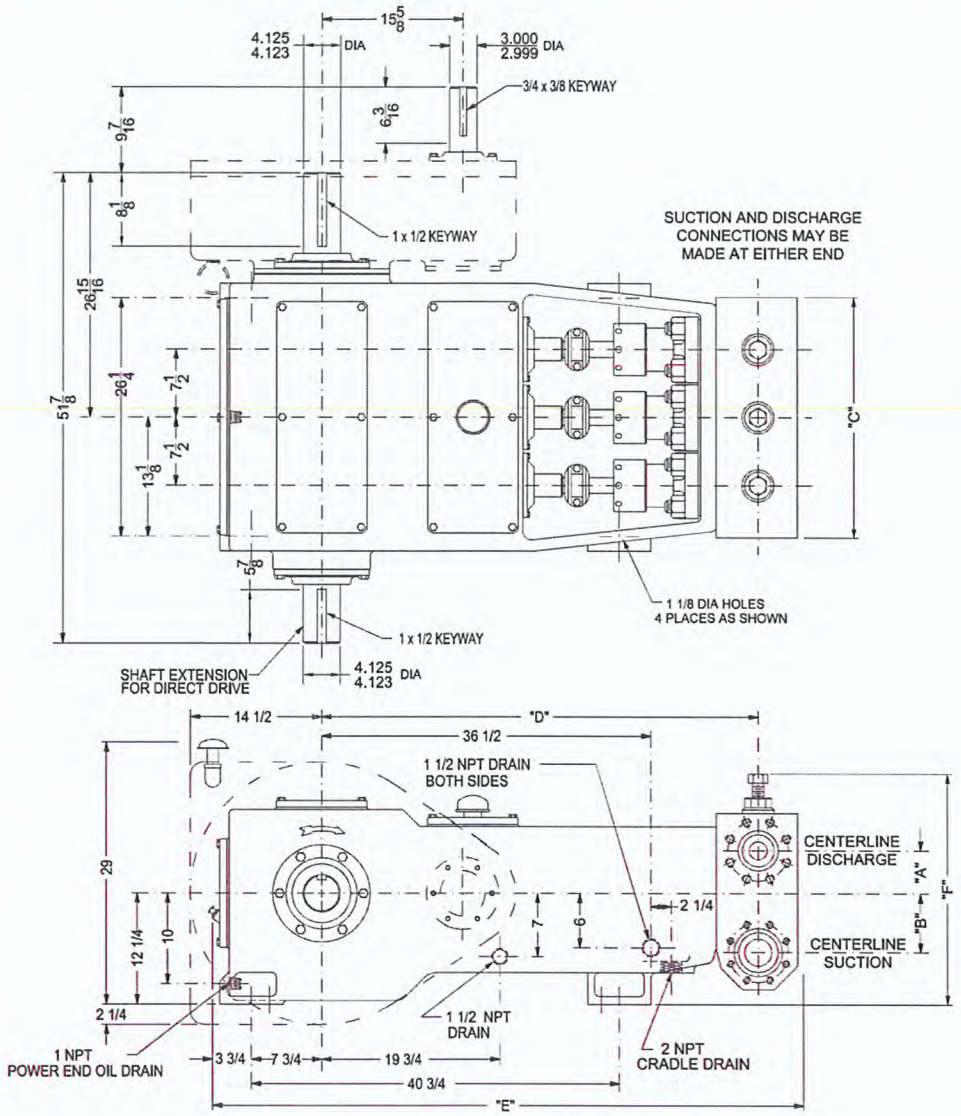
http://www.nov.com/contactus/

Sales/Technical Information:
USA Tollfree: 1 (800) 324-4706

Internet: http://www.nov.com

National Oilwell Varco is a leading manufacturer of reciprocating plunger pumps, Mission Fluid King centrifugal pumps, and fluid end replacement parts. We also offer a complete set of solutions to your fluid transfer challenges. For more Information, contact National Oilwell Varco directly at the Headquarters in Houston, Texas. All National Oilwell Varco products are available throughout the U.S. and around the world from service centers, authorized distributors, and representatives.

165T-5 Triplex Plunger Pump



Specifications

Pump Size
(maximum plunger size x stroke length in.(mm)
4 x 5 (102 x 127)
Rated bhp at 400 rpm (kw)
165 (123)
Rated plunger load, pounds (Kg)
9800 (4445.2)
Maximum discharge pressure: psi (kPa)
"L" model: 1650 (11,376)
"M" model: 3120 (21,512)
"H" model: 5000 (34,474)
Crankshaft extension: in.(mm)
Diameter: 4.125 (104.8)
Length long side: 8 1/8 (206.4)
Length short side: 5 7/8 (149.2)
Keyway (width x depth): 1 x 1/2 (25.4 x 12.7)
Maximum recommended sheave in.(mm):
50 (1270)
Minimum recommended sheave in.(mm):
36 (914)
For larger sizes: **Contact Factory**
Pinion shaft extension, in.(mm):
if gear reducer is supplied
For belt or chain drive: **Contact Factory**
For direct drive: Diameter: 3.0 (76.2)
Length: 6 3/16 (157.2)
Keyway (width x depth):
3/4 x 3/8 (19.05 x 9.53)
Accessory gear reduction unit:
2.8:1, 3.22:1, 3.46:1, 4.00:1,
4.38:1, 4.78:1, 4.96:1, 5.74:1
Oil Capacity, gallons (L)
Crankcase: 8 (30)
Gear Reducer-varies with ratio:
2.25 to 3.5 (8.52 to 13.25)
Weight, pump only on wood shipping skids
pounds (Kg): 4000 (1814)
Gear reducer, approximate pounds (Kg):
800 (363)

Pump Model	Flange Connections		Dimensions (Inches)					
	Discharge Connection Sizes	Suction Connection Sizes	A	B	C	D	E	F
165-5L	3 (76.2) API-2000 RJ	6 (152.4) ANSI-150 FF	5 11/16	7 5/8	27 3/4	48 3/4	65 3/4	23
165-5M	2 (50.8) API-5000 RJ	4 (101.6) ANSI-150 FF	4 3/4	6 1/2	26 1/2	48 3/8	64 7/8	25 5/16
165-5H	2 (50.8) ANSI-2500 RJ	3 (76.2) API-2000 RJ	4 3/4	6 1/2	26 1/2	48 3/8	64 1/4	25 5/16

165T-5 Triplex Plunger Pump

Performance Data

PUMP	English Units					100 RPM		200 RPM		250 RPM		300 RPM		350 RPM		400 RPM	
	Plunger Dia. In.	Plunger Area Sq. In.	BPD per RPM	GPM per RPM	Max. Press. PSI	BPD	GPM	BPD	GPM	BPD	GPM	BPD	GPM	BPD	GPM	BPD	GPM
165T-5L	4.000	12.5664	27.9770	0.8160	780	2798	81.6	5596	163.2	6995	204.0	8394	244.8	9792	285.6	11191*	326*
	3.750	11.0447	24.5892	0.7172	887	2459	71.7	4918	143.4	6148	179.3	7377	215.2	8607	251.0	9836	286.9
	3.500	9.6211	21.4199	0.6247	1019	2142	62.5	4284	124.9	5355	156.2	6426	187.4	7497	218.7	8568	249.9
	3.250	8.2958	18.4692	0.5387	1181	1847	53.9	3694	107.7	4618	134.7	5541	161.6	6465	188.5	7388	215.5
	3.000	7.0686	15.7371	0.4590	1386	1574	45.9	3148	91.8	3935	114.7	4722	137.7	5508	160.6	6295	183.6
	2.750	5.9396	13.2235	0.3857	1650	1323	38.6	2645	77.1	3306	96.4	3968	115.7	4629	135.0	5290	154.3
165T-5M	2.750	5.9396	13.2235	0.3857	1650	1323	38.6	2645	77.1	3306	96.4	3968	115.7	4629	135.0	5290	154.3
	2.500	4.9087	10.9285	0.3187	1996	1093	31.9	2186	63.7	2733	79.7	3279	95.6	3825	111.6	4372	127.5
	2.375	4.4301	9.8630	0.2877	2212	987	28.8	1973	57.5	2466	71.9	2959	86.3	3453	100.7	3946	115.1
	2.250	3.9761	8.8521	0.2582	2465	886	25.8	1771	51.6	2214	64.5	2656	77.5	3099	90.4	3541	103.3
	2.125	3.5466	7.8959	0.2303	2763	790	23.0	1580	46.1	1974	57.6	2369	69.1	2764	80.6	3159	92.1
	2.000	3.1416	6.9943	0.2040	3120	700	20.4	1399	40.8	1749	51.0	2099	61.2	2448	71.4	2798	81.6
165T-5H	2.000	3.1416	6.9943	0.2040	3120	700	20.4	1399	40.8	1749	51.0	2099	61.2	2448	71.4	2798	81.6
	1.875	2.7612	6.1473	0.1793	3549	615	17.9	1230	35.9	1537	44.8	1845	53.8	2152	62.8	2459	71.7
	1.750	2.4053	5.3550	0.1562	4074	536	15.6	1071	31.2	1339	39.0	1607	46.9	1875	54.7	2142	62.5
	1.625	2.0739	4.6173	0.1347	4725	462	13.5	924	26.9	1155	33.7	1386	40.4	1617	47.1	1847	53.9
	1.500	1.7671	3.9343	0.1147	5000	394	11.5	787	22.9	984	28.7	1181	34.4	1377	40.2	1574	45.9
	Brake Horsepower Required					42		83		104		124		144		165	

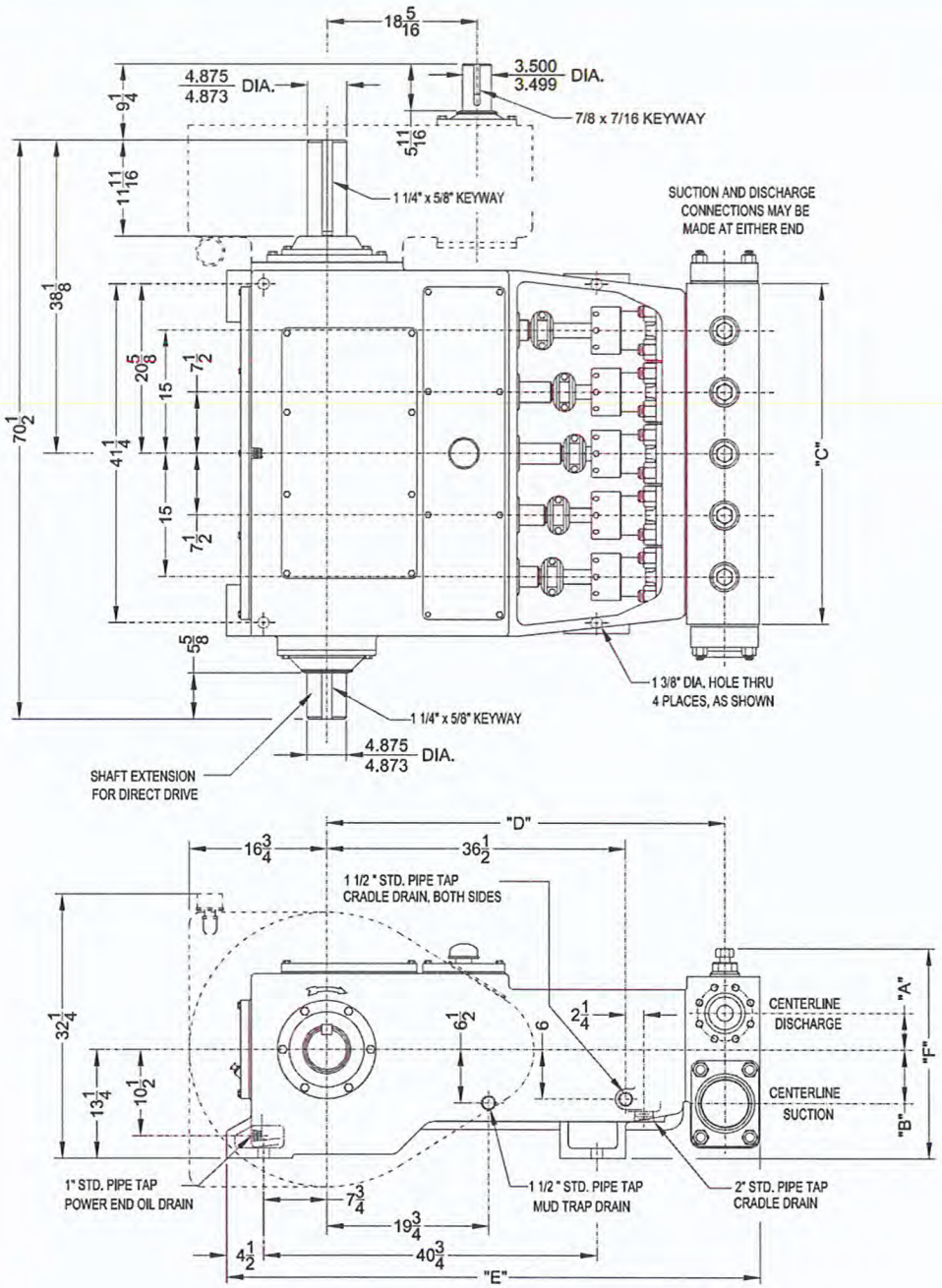
PUMP	Metric Units					100 RPM		200 RPM		250 RPM		300 RPM		350 RPM		400 RPM	
	Plunger Dia. mm	Plunger Area cm^2	M^3/Hr per RPM	L/Sec. per RPM	Max. Press. kPa	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.
165T-5L	102	81.073	0.1853	0.0515	5377	18.5	5.1	37.1	10.3	46.3	12.9	55.6	15.4	64.9	18.0	74.1*	20.6*
	95	71.256	0.1629	0.0452	6118	16.3	4.5	32.6	9.0	40.7	11.3	48.9	13.6	57.0	15.8	65.1	18.1
	89	62.072	0.1419	0.0394	7023	14.2	3.9	28.4	7.9	35.5	9.9	42.6	11.8	49.7	13.8	56.8	15.8
	83	53.521	0.1223	0.0340	8145	12.2	3.4	24.5	6.8	30.6	8.5	36.7	10.2	42.8	11.9	48.9	13.6
	76	45.604	0.1042	0.0290	9559	10.4	2.9	20.8	5.8	26.1	7.2	31.3	8.7	36.5	10.1	41.7	11.6
	70	38.320	0.0876	0.0243	11376	8.8	2.4	17.5	4.9	21.9	6.1	26.3	7.3	30.7	8.5	35.0	9.7
165T-5M	70	38.320	0.0876	0.0243	11376	8.8	2.4	17.5	4.9	21.9	6.1	26.3	7.3	30.7	8.5	35.0	9.7
	64	31.669	0.0724	0.0201	13765	7.2	2.0	14.5	4.0	18.1	5.0	21.7	6.0	25.3	7.0	29.0	8.0
	60	28.581	0.0653	0.0181	15252	6.5	1.8	13.1	3.6	16.3	4.5	19.6	5.4	22.9	6.4	26.1	7.3
	57	25.652	0.0586	0.0163	16994	5.9	1.6	11.7	3.3	14.7	4.1	17.6	4.9	20.5	5.7	23.5	6.5
	54	22.881	0.0523	0.0145	19052	5.2	1.5	10.5	2.9	13.1	3.6	15.7	4.4	18.3	5.1	20.9	5.8
	51	20.268	0.0463	0.0129	21512	4.6	1.3	9.3	2.6	11.6	3.2	13.9	3.9	16.2	4.5	18.5	5.1
165T-5H	51	20.268	0.0463	0.0129	21512	4.6	1.3	9.3	2.6	11.6	3.2	13.9	3.9	16.2	4.5	18.5	5.1
	48	17.814	0.0407	0.0113	24471	4.1	1.1	8.1	2.3	10.2	2.8	12.2	3.4	14.3	4.0	16.3	4.5
	44	15.518	0.0355	0.0099	28092	3.5	1.0	7.1	2.0	8.9	2.5	10.6	3.0	12.4	3.4	14.2	3.9
	41	13.380	0.0306	0.0085	32580	3.1	0.8	6.1	1.7	7.6	2.1	9.2	2.5	10.7	3.0	12.2	3.4
	38	11.401	0.0261	0.0072	34474	2.6	0.7	5.2	1.4	6.5	1.8	7.8	2.2	9.1	2.5	10.4	2.9
	Kilowatts Required					31		62		78		92		108		123	

Volumetric Rate is based on 100% Volumetric Efficiency. Brake Horsepower/Kilowatts Required is based on 90% Mechanical Efficiency. For Operation below 200 RPM, an auxiliary lubrication system is required. Not all plunger sizes are shown. Contact National-Oilwell for additional information. *Spherical Valves must be installed when the pump is fitted with 4.0" (102mm) plungers

Authorized Distributor:

NATIONAL OILWELL VARCO
www.nov.com • mission.sales@nov.com
10000 Richmond, Houston, Texas 77042
(713)346-7500 (phone) • (713)346-7366 (fax)

300Q-5 Quintuplex Plunger Pump



Specifications

Pump Size
maximum plunger size x stroke length, in.(mm):
4 x 5 (102 x 127)
Rated bhp at 400 rpm (kw): 300 (224)
Rated plunger load, pounds(Kg): 10,700(4853.5)
Maximum discharge pressure: psi(kPa)
"L" model: 1650 (11,375)
"M" model: 3000 (20,682)
"H" model: 5000 (34,470)
Crankshaft extension: in.(mm)
Diameter: 4.875 (123.8)
Length long side: 11 11/16 (297)
Length short side: 5 5/8 (143)
Keyway (width x depth):
1 1/4 x 5/8 (32 x 16)
Maximum recommended sheave in.(mm): 58 (1473)
Minimum recommended sheave in.(mm): 36 (914)
For larger sizes: **Contact Factory**
Pinion shaft extension,
if gear reducer is supplied, in.(mm)
For belt or chain drive:
Contact Factory
For direct drive: Diameter: 3.5 (88.9)
Length: 5 11/16 (145)
Keyway (width x depth):
7/8 x 7/16 (22.2 x 11.1)
Accessory gear reduction unit:
2.27:1, 2.89:1, 3.25:1, 3.36:1, 3.69:1, 4.38:1, 4.84:1, 5.63:1
Oil Capacity, gallons (L)
Crankcase: 12 (45.5)
Gear Reducer-varies with ratio:
3.5 to 6.5 (13.2 to 24.6)
Weight, pump only on wood shipping skids, pounds (Kg)
"L": 7000 (3175)
"M": 6750 (3062)
"H": 6840 (3103)
Gear reducer, approximate, pounds (Kg):
1100 (499)

Pump Model	Flange Connections		Dimensions in inches (mm)					
	Discharge Connection Sizes	Suction Connection Sizes	A	B	C	D	E	F
300Q-5L	4 (101.6) API 2000 RJ	8 (203.2) ANSI 150 FF	6 1/4	9 1/8	43 1/4	49	68	25 1/8
300Q-5M	3 (76.2) NSD 5000 RJ	6 (152.4) NSD 600 RJ	4 1/2	6 1/2	41 1/2	48 5/8	65	25 7/16
300Q-5H	2 (50.8) ANSI 2500 RJ	6 (152.4) NSD 600 RJ	4 1/2	6 1/2	41 1/2	48 5/8	65 1/8	25 5/8

300Q-5 Quintuplex Plunger Pump

Performance Data

PUMP	English Units					100 RPM		200 RPM		250 RPM		300 RPM		350 RPM		400 RPM	
	Plunger Dia. In.	Plunger Area Sq. In.	BPD per RPM	GPM per RPM	Max. Press. PSI	BPD	GPM	BPD	GPM	BPD	GPM	BPD	GPM	BPD	GPM	BPD	GPM
300Q-5L	4.000	12.5664	46.6284	1.3600	851	4663	136.0	9326	272.0	11658	340.0	13989	408.0	16320	476.0	18652	544.0
	3.750	11.0447	40.9820	1.1953	969	4099	119.5	8197	239.1	10246	298.8	12295	358.6	14344	418.4	16393	478.1
	3.500	9.6211	35.6999	1.0412	1112	3570	104.1	7140	208.2	8925	260.3	10710	312.4	12495	364.4	14280	416.5
	3.250	8.2958	30.7820	0.8978	1290	3079	89.8	6157	179.6	7696	224.5	9235	269.3	10774	314.2	12313	359.1
	3.000	7.0686	26.2285	0.7650	1514	2623	76.5	5246	153.0	6558	191.2	7869	229.5	9180	267.7	10492	306.0
	2.750	5.9396	22.0392	0.6428	1650	2204	64.3	4408	128.6	5510	160.7	6612	192.8	7714	225.0	8816	257.1
300Q-5M	2.750	5.9396	22.0392	0.6428	1801	2204	64.3	4408	128.6	5510	160.7	6612	192.8	7714	225.0	8816	257.1
	2.500	4.9087	18.2142	0.5312	2180	1822	53.1	3643	106.2	4554	132.8	5465	159.4	6375	185.9	7286	212.5
	2.375	4.4301	16.4383	0.4795	2415	1644	47.9	3288	95.9	4110	119.9	4932	143.8	5754	167.8	6576	191.8
	2.250	3.9761	14.7535	0.4303	2691	1476	43.0	2951	86.1	3689	107.6	4427	129.1	5164	150.6	5902	172.1
	2.125	3.5466	13.1598	0.3838	3000	1316	38.4	2632	76.8	3290	96.0	3948	115.1	4606	134.3	5264	153.5
	2.000	3.1416	11.6571	0.3400	3000	1166	34.0	2332	68.0	2915	85.0	3498	102.0	4080	119.0	4663	136.0
300Q-5H	2.000	3.1416	11.6571	0.3400	3406	1166	34.0	2332	68.0	2915	85.0	3498	102.0	4080	119.0	4663	136.0
	1.875	2.7612	10.2455	0.2988	3875	1025	29.9	2050	59.8	2562	74.7	3074	89.6	3586	104.6	4099	119.5
	1.750	2.4053	8.9250	0.2603	4449	893	26.0	1785	52.1	2232	65.1	2678	78.1	3124	91.1	3570	104.1
	1.625	2.0739	7.6955	0.2245	5000	770	22.4	1540	44.9	1924	56.1	2309	67.3	2694	78.6	3079	89.8
	1.500	1.7671	6.5571	0.1912	5000	656	19.1	1312	38.2	1640	47.8	1968	57.4	2295	66.9	2623	76.5
	Brake Horsepower Required					76		151		188		225		263		300	

PUMP	Metric Units					100 RPM		200 RPM		250 RPM		300 RPM		350 RPM		400 RPM	
	Plunger Dia. mm	Plunger Area cm^2	M^3/Hr per RPM	L/Sec. per RPM	Max. Press. kPa	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.	M^3/Hr	L/Sec.
300Q-5L	102	81.073	0.3089	0.0858	5871	30.9	8.6	61.8	17.2	77.2	21.5	92.7	25.7	108.1	30.0	123.5	34.3
	95	71.256	0.2715	0.0754	6680	27.1	7.5	54.3	15.1	67.9	18.9	81.4	22.6	95.0	26.4	108.6	30.2
	89	62.072	0.2365	0.0657	7668	23.6	6.6	47.3	13.1	59.1	16.4	70.9	19.7	82.8	23.0	94.6	26.3
	83	53.521	0.2039	0.0566	8893	20.4	5.7	40.8	11.3	51.0	14.2	61.2	17.0	71.4	19.8	81.6	22.7
	76	45.604	0.1737	0.0483	10437	17.4	4.8	34.7	9.7	43.4	12.1	52.1	14.5	60.8	16.9	69.5	19.3
	70	38.320	0.1460	0.0406	11376	14.6	4.1	29.2	8.1	36.5	10.1	43.8	12.2	51.1	14.2	58.4	16.2
300Q-5M	70	38.320	0.1460	0.0406	12421	14.6	4.1	29.2	8.1	36.5	10.1	43.8	12.2	51.1	14.2	58.4	16.2
	64	31.669	0.1206	0.0335	15029	12.1	3.4	24.1	6.7	30.2	8.4	36.2	10.1	42.2	11.7	48.3	13.4
	60	28.581	0.1089	0.0302	16653	10.9	3.0	21.8	6.0	27.2	7.6	32.7	9.1	38.1	10.6	43.6	12.1
	57	25.652	0.0977	0.0271	18555	9.8	2.7	19.5	5.4	24.4	6.8	29.3	8.1	34.2	9.5	39.1	10.9
	54	22.881	0.0872	0.0242	20684	8.7	2.4	17.4	4.8	21.8	6.1	26.2	7.3	30.5	8.5	34.9	9.7
	51	20.268	0.0772	0.0215	20684	7.7	2.1	15.4	4.3	19.3	5.4	23.2	6.4	27.0	7.5	30.9	8.6
300Q-5H	51	20.268	0.0772	0.0215	23483	7.7	2.1	15.4	4.3	19.3	5.4	23.2	6.4	27.0	7.5	30.9	8.6
	48	17.814	0.0679	0.0189	26719	6.8	1.9	13.6	3.8	17.0	4.7	20.4	5.7	23.8	6.6	27.1	7.5
	44	15.518	0.0591	0.0164	30672	5.9	1.6	11.8	3.3	14.8	4.1	17.7	4.9	20.7	5.7	23.6	6.6
	41	13.380	0.0510	0.0142	34474	5.1	1.4	10.2	2.8	12.7	3.5	15.3	4.2	17.8	5.0	20.4	5.7
	38	11.401	0.0434	0.0121	34474	4.3	1.2	8.7	2.4	10.9	3.0	13.0	3.6	15.2	4.2	17.4	4.8
	Kilowatts Required					57		113		140		168		196		224	

Volumetric Rate is based on 100% Volumetric Efficiency. Brake Horsepower/Kilowatts Required is based on 90% Mechanical Efficiency. For Operation below 100 RPM, an auxiliary lubrication system is required. Not all plunger sizes are shown. Contact National-Oilwell for additional information. Spherical Valves must be installed when the pump is fitted with 4.0" (102mm) plungers.

Authorized Distributor:

NATIONAL OILWELL VARCO
www.nov.com • mission.sales@nov.com
10000 Richmond, Houston, Texas 77042
(713)346-7500 (phone) • (713)346-7366 (fax)

WireFree

Model OI-WF690 Sensor Assembly

Operation Manual

OTIS INSTRUMENTS INC.

Product Overview

The Otis Instruments, Inc. WireFree Model OI-WF690 Sensor Assembly is an innovative wireless gas detection system designed to monitor gas in hostile environments without the use of wires or conduit from the controller to the sensor.

The OI-WF690 Sensor Assembly's key feature is non-intrusive calibration and configuration. With all adjustments made at the sensor assembly, one-man non-intrusive calibration is quick, easy, and allows the device to remain Class I, Division 1, Group C and D certified while in the field. Non-intrusive calibration is made possible by using an Otis Instruments, Inc. distributed magnet to activate the *MENU*, *ADD*, and *SUB* buttons.

The device is self-contained and battery operated. The sensor functions by transmission of radio wave messages to the OI-WF784 or OI-WF752 (or any receiving controller) every minute when there is no gas present, and every five seconds when gas is present (and above the background gas level setting).

The device is field adjustable for background gas, and addressable to eliminate interference with other systems. Since each system's address is field adjustable, any OI-WF690 sensor may be used as a replacement.

Features such as the auto-setting Null, relay/alarm tests and battery voltage indication make this device a truly remarkable gas detection system.

Note: Before powering on, make certain that the device is in clear air. To ensure a clean air environment, either power-on the device from an off site location or use a calibration cup attached to a clean air supply bottle.

Table of Contents

Introduction

This document is an Operation Manual containing diagrams and step-by-step instruction for proper operation of the Otis Instruments, Inc. WireFree Model OI-WF690 Sensor Assembly. This document should be read before initial operation of the product.

Should a question arise during the use of the product, this document will serve as a first reference for consultation. If further questions arise, or if the device is not working properly, please contact the sales representative of this product.

Warnings

- **Before powering on, make certain that the device is in clear air. To assure a clean air environment, either power-on the device from an off site location or use a calibration cup attached to a clean air supply bottle.**

- Do not open the enclosure when the device is energized.

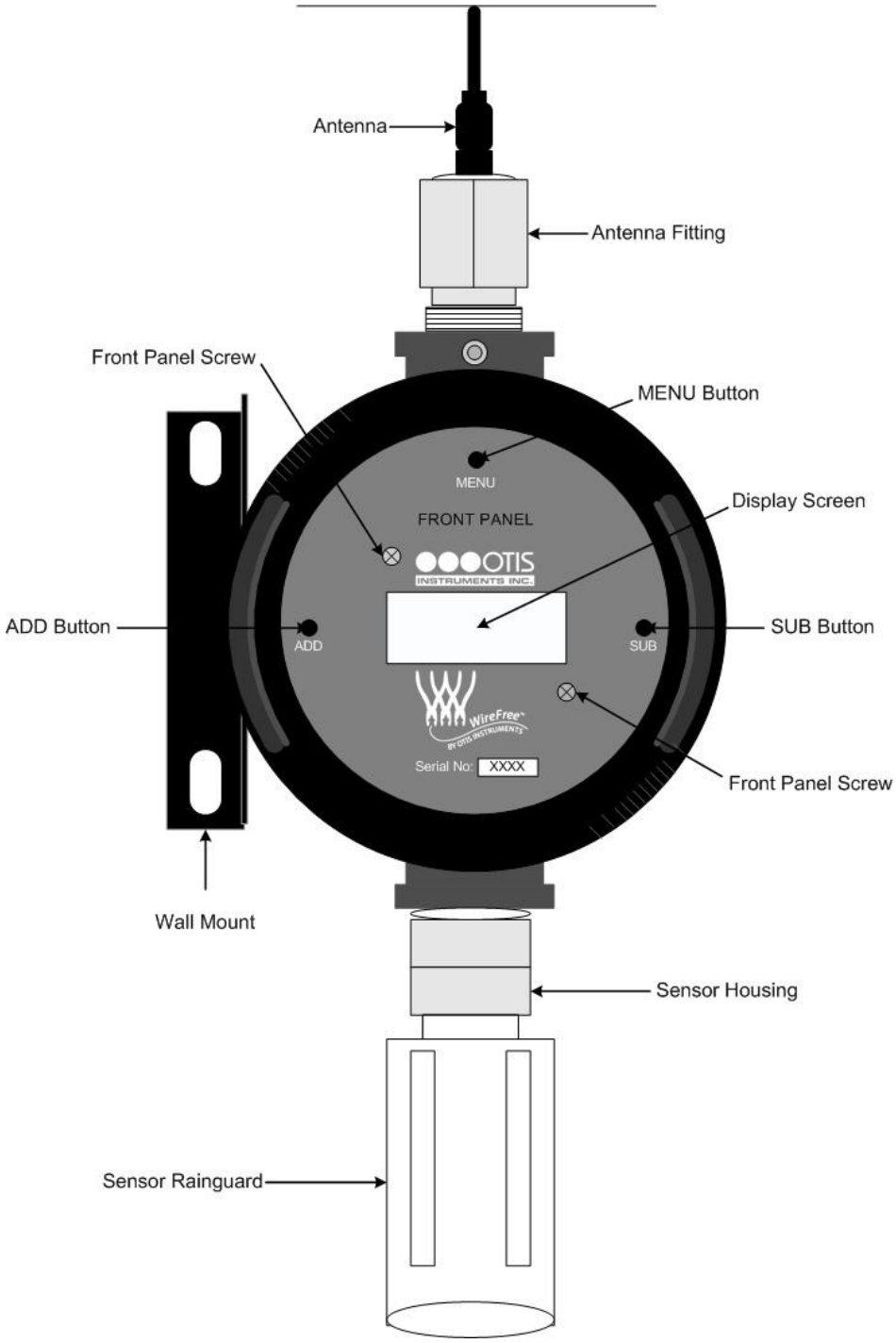
- Do not open the enclosure if an explosive gas atmosphere may be present.

- The Otis Instruments WireFree OI-WF690 Sensor Assembly is Class I Division I Certified. The assembly is able to maintain its certification at all times while in the field, simply by using the non-intrusive calibration method which requires the use of an Otis Instruments, Inc. distributed magnet. However, if the Moore lid is removed, for whatever reason, the OI-WF690 certification is not valid. To avoid invalidating the certification, once in the device is put in the field, always use the Otis Instruments, Inc. distributed magnet to ensure non-intrusive calibration.

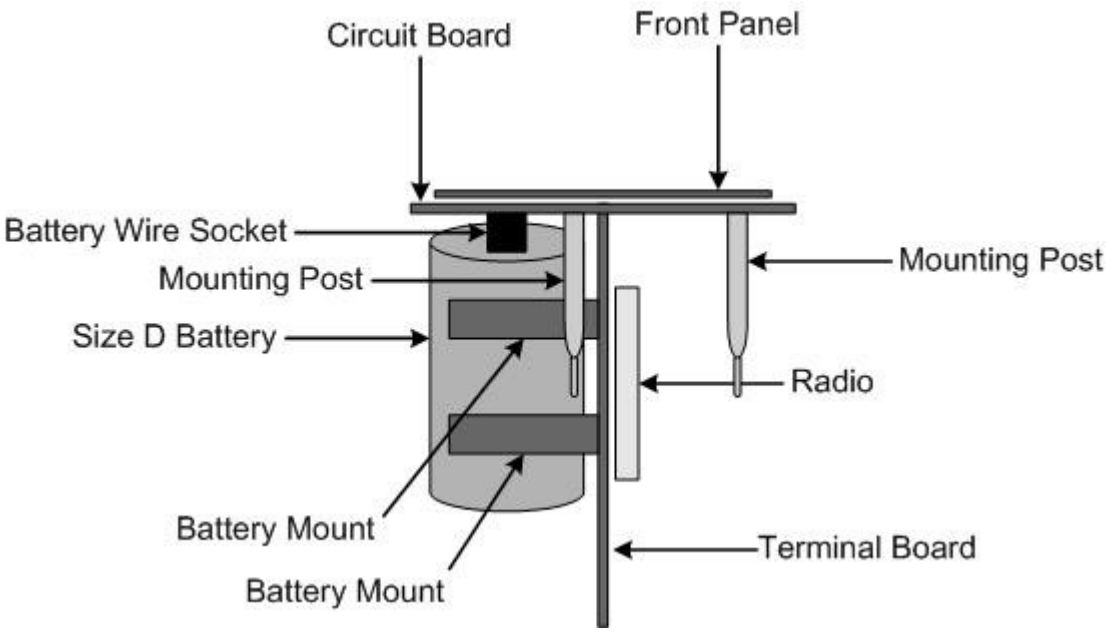
Complete System Diagram

The following diagrams should be consulted for identification of the system and all parts that may be referred to in this Operation Manual.

Complete System (External)



Complete System (Internal)

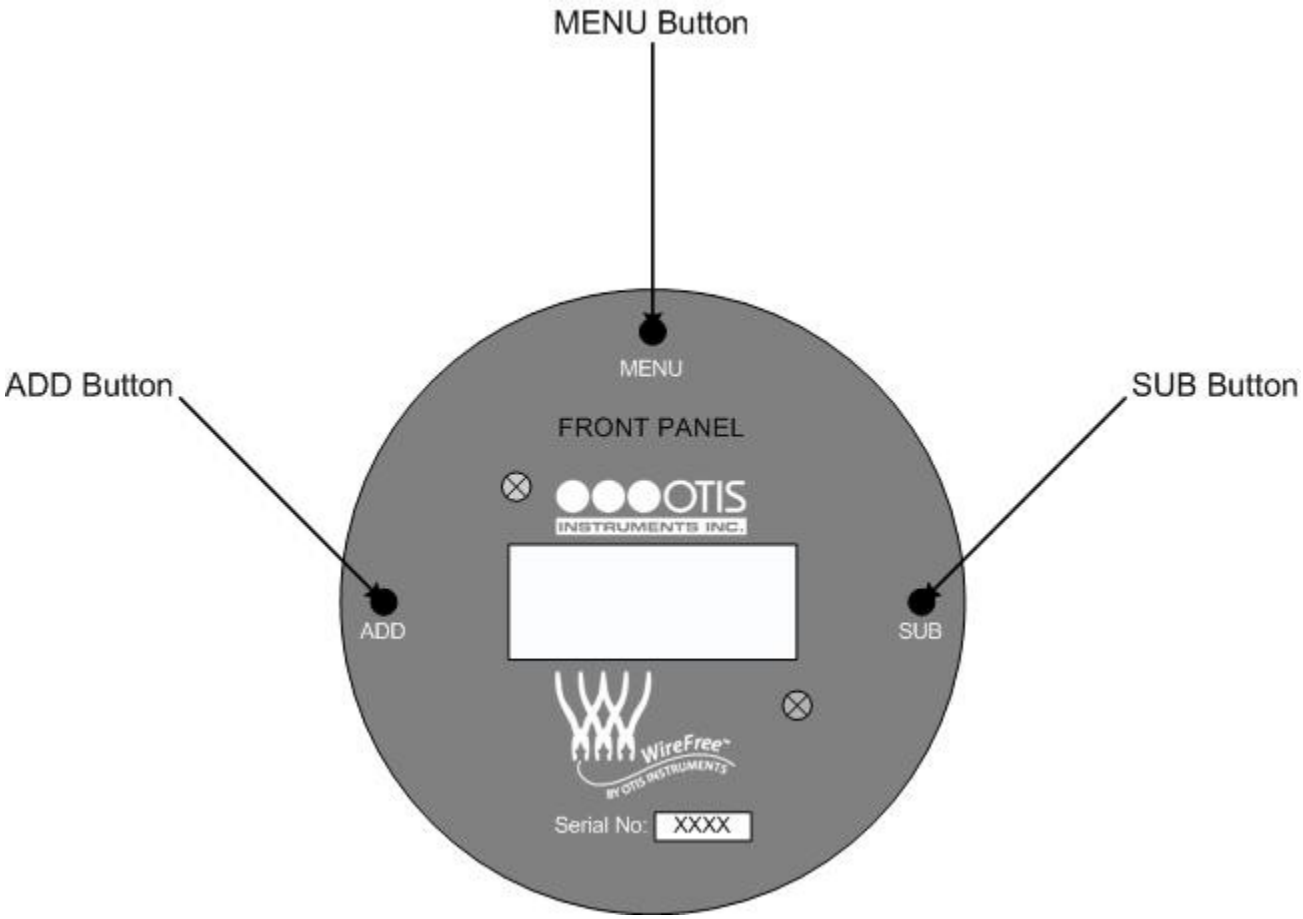


Power On

Powering on the device activates its functions. When powered on, the device is fully functional and access to system and settings menus is allowed.

NOTE: Before powering on, make certain that the device is in clear air. To assure a clean air environment, either power-on the device from an off site location or use a calibration cup attached to a clean air supply bottle.

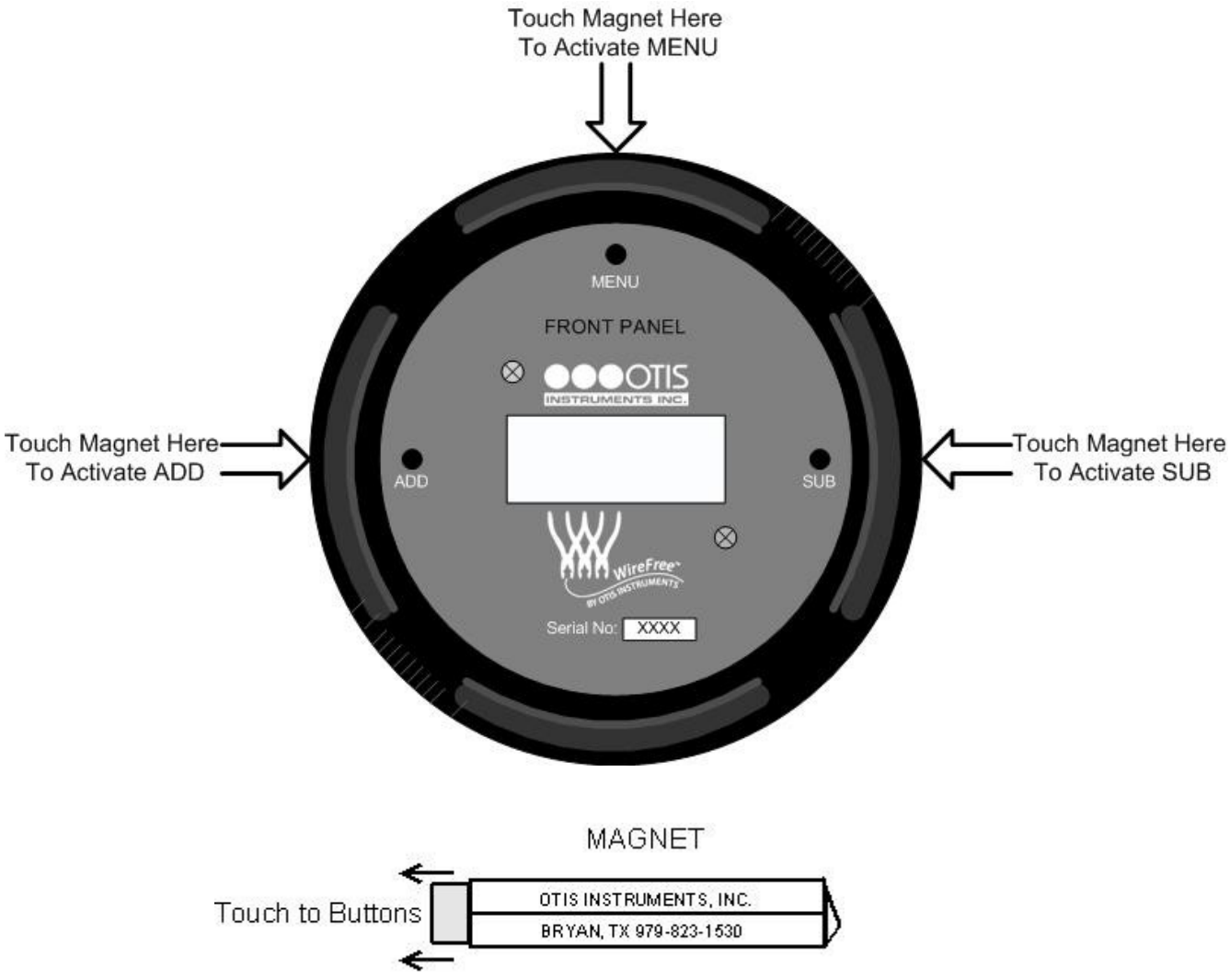
1. Locate *ADD* on the Front Panel.



Power On cont...

2. Touch an Otis Instruments, Inc. distributed magnet to the left side of the device to activate *ADD*.

NOTE: When the magnet touches the device and a connection has been made, two dots will appear.



Power On cont...

3. The device will display:

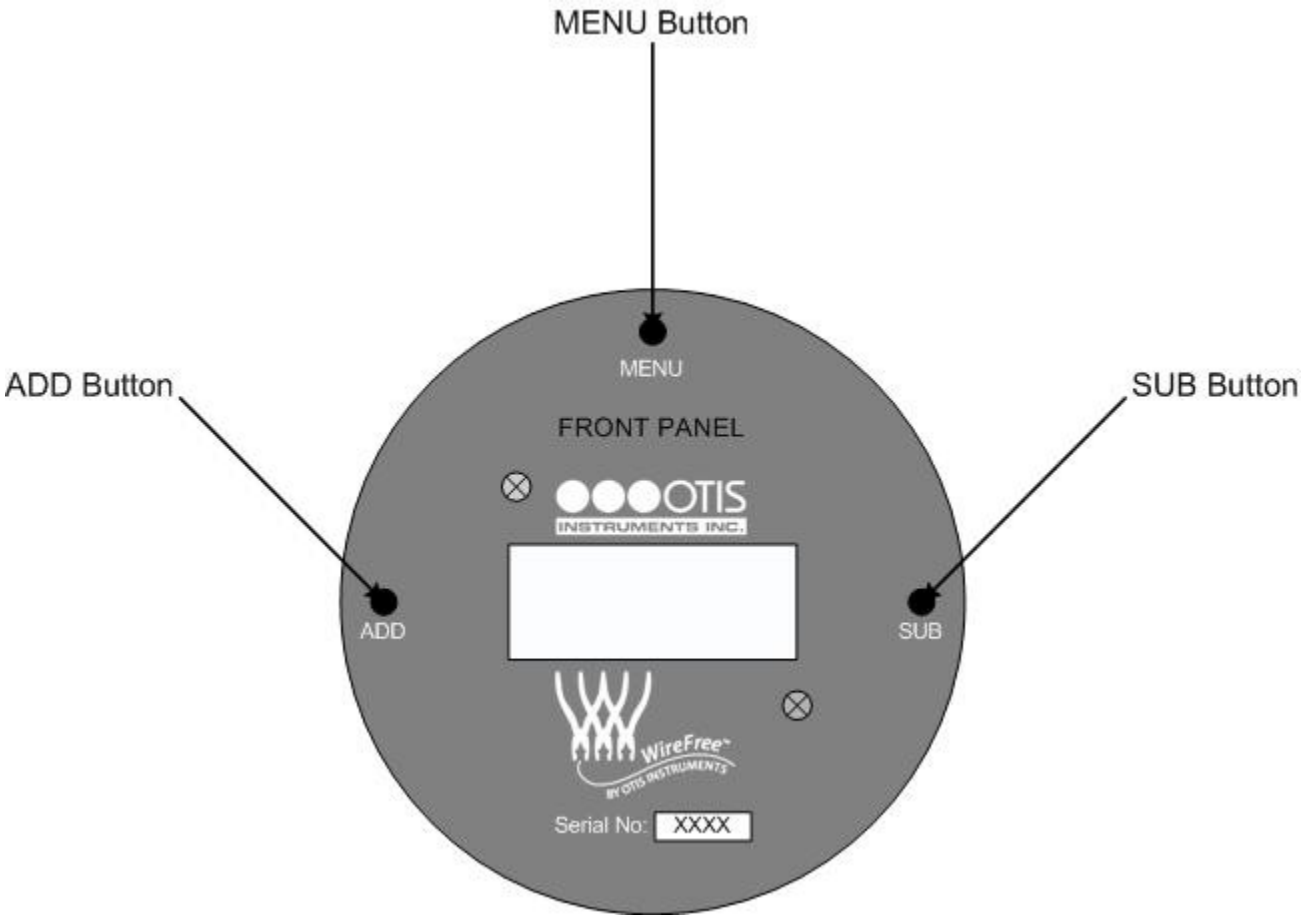
    - Revision number (r 1.81)
    - H_2S (H 25)
    - Battery voltage (b 3.6)
    - Address (Adr 8)

4. The device will count down from 35 to 0.
5. When “0” is displayed, the device is in Normal Operating Mode and ready to operate.

Power Off

Powering off the device shuts down the system. When powered off, the device is no longer transmitting signals so the receiving controller will display “FAU” for that sensor channel.

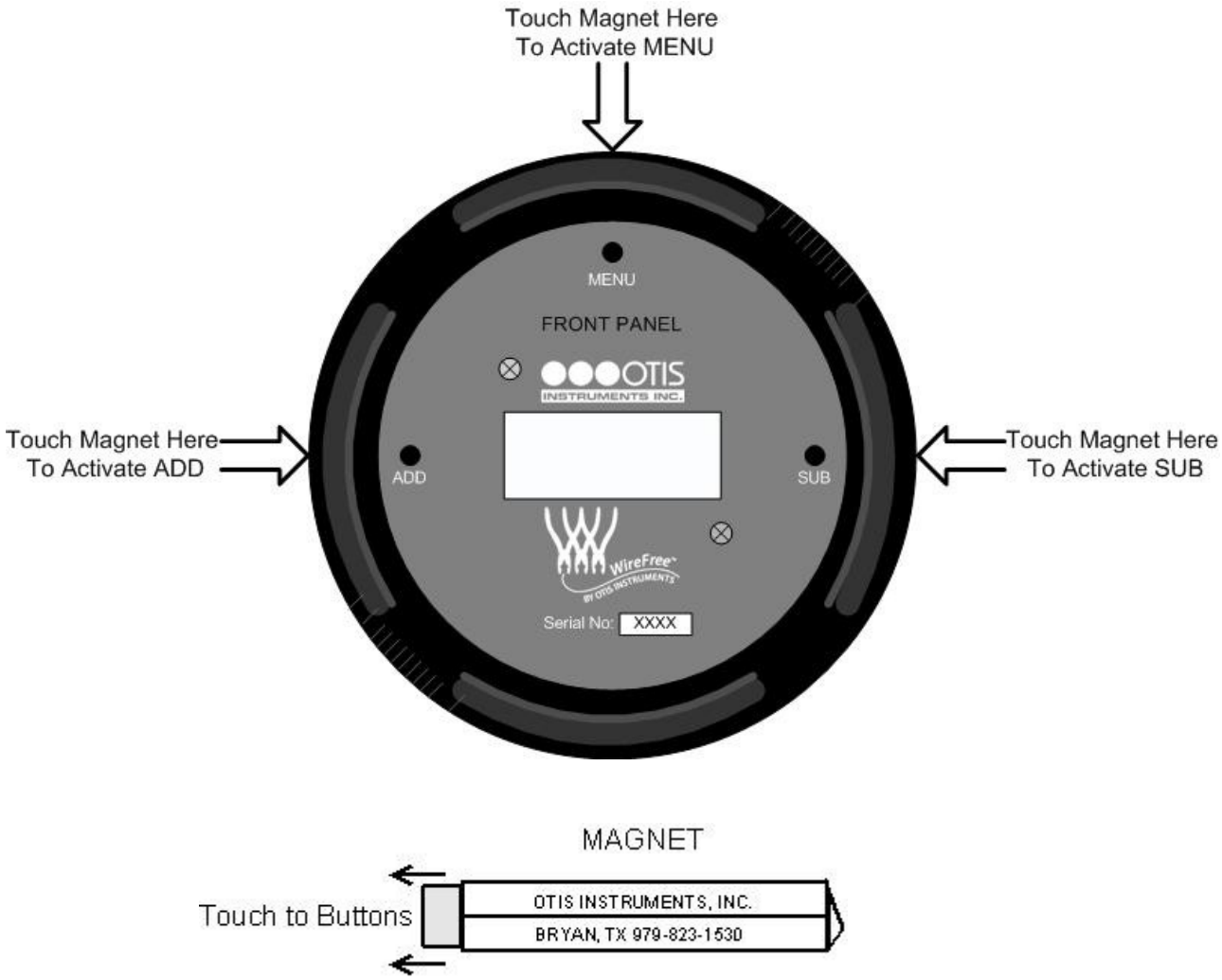
1. Locate *SUB* on the Front Panel.



Power Off cont...

2. Touch and hold an Otis Instruments, Inc. distributed magnet against the right side of the device for four seconds to activate *SUB*.

NOTE: When the magnet touches the device and a connection is made, two dots will appear on the display screen.



3. When powering off, the display screen will switch from showing ".0" to "OFF". The display will continue to show "OFF" until the device is powered on.

Normal Operating Mode

When powered on, the device will enter and remain in Normal Operating Mode until commanded otherwise. The presence of gas will affect the transmission of signals to the receiving controller in the following ways.

- When the device is in Normal Operating Mode, and there is no gas present, the sensor will send a message to the receiving controller every minute (approx.) to indicate that the system is in working order.

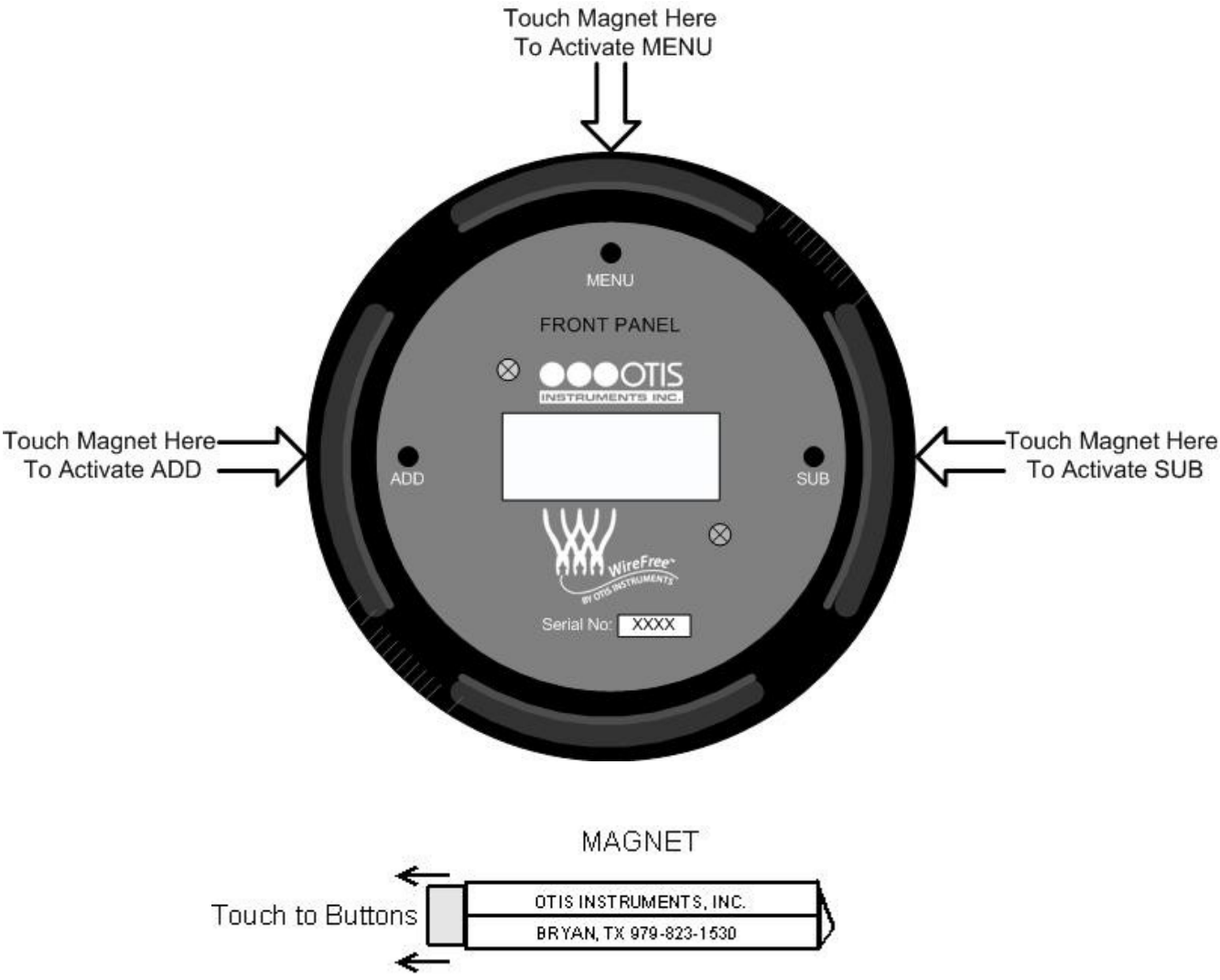
- When gas is present, and above the Background Gas Level, the device will report to the receiving controller every six seconds.

- When the gas level falls below the Background Gas Level the device will return to reporting every minute (approx.).

Setting Sensor Address

To ensure proper communication with the receiving monitor, set the Sensor Address to match the one assigned to this Sensor Assembly at the monitor.

1. Touch an Otis Instruments, Inc. distributed magnet against the top side of the device to active *MENU* and enter Setup Mode.

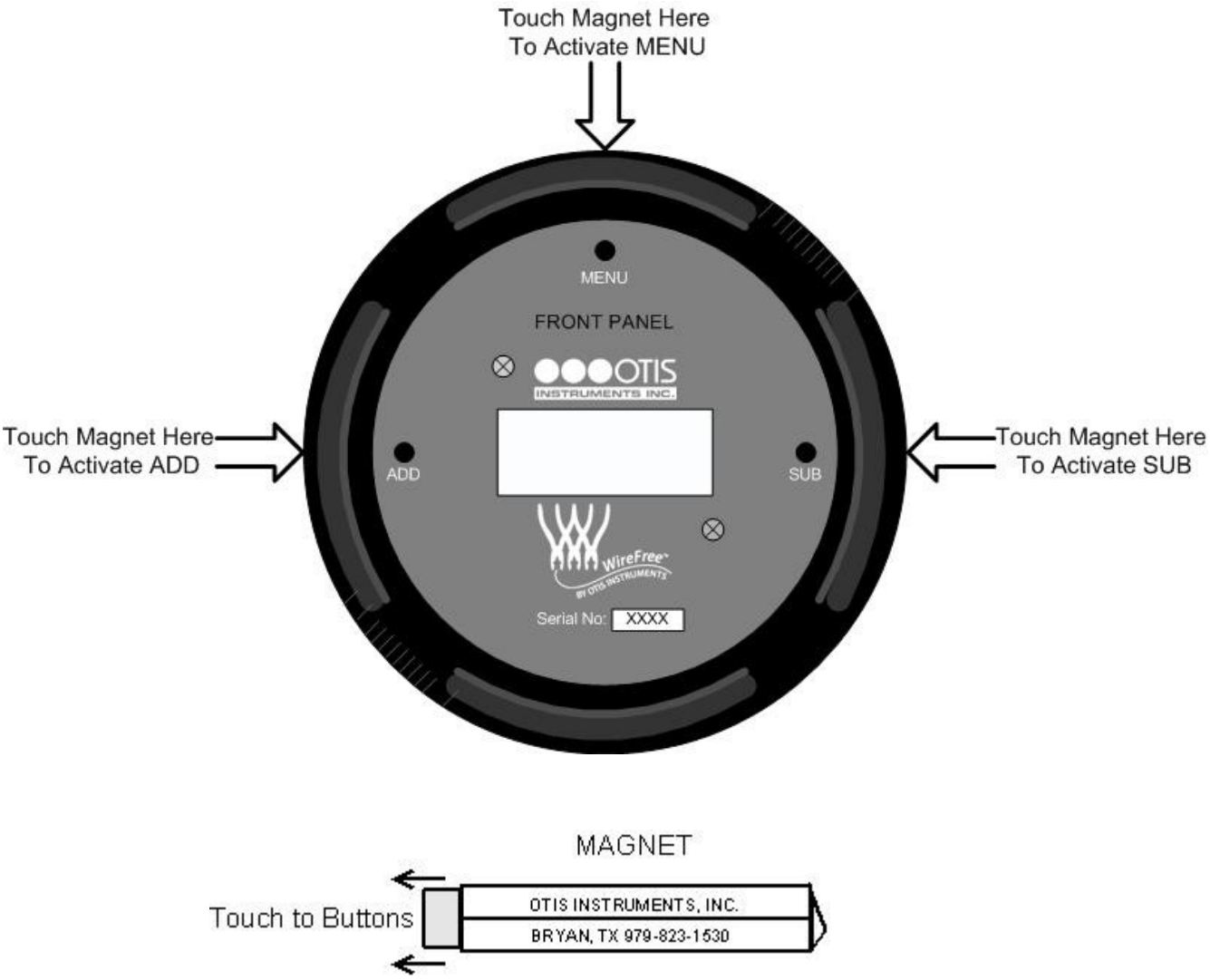


2. Touch the magnet to *MENU* once.
3. The display screen will show “Adr” and then a number.
4. Touch the magnet to *ADD* (increase) or *SUB* (decrease) until the desired Address Setting is displayed.
5. Once the sensor address is set, touch the magnet to *MENU* twice to exit Setup Mode.

Relay/Alarms Test Setting

The relay/alarms test should be completed periodically to ensure full functionality of the relay/alarms, and accurate transmission of radio waves from the device to the transmission controller.

1. Touch and hold an Otis Instruments, Inc. distributed magnet against the top side of the device for five seconds to active *MENU* and enter Menu Mode.



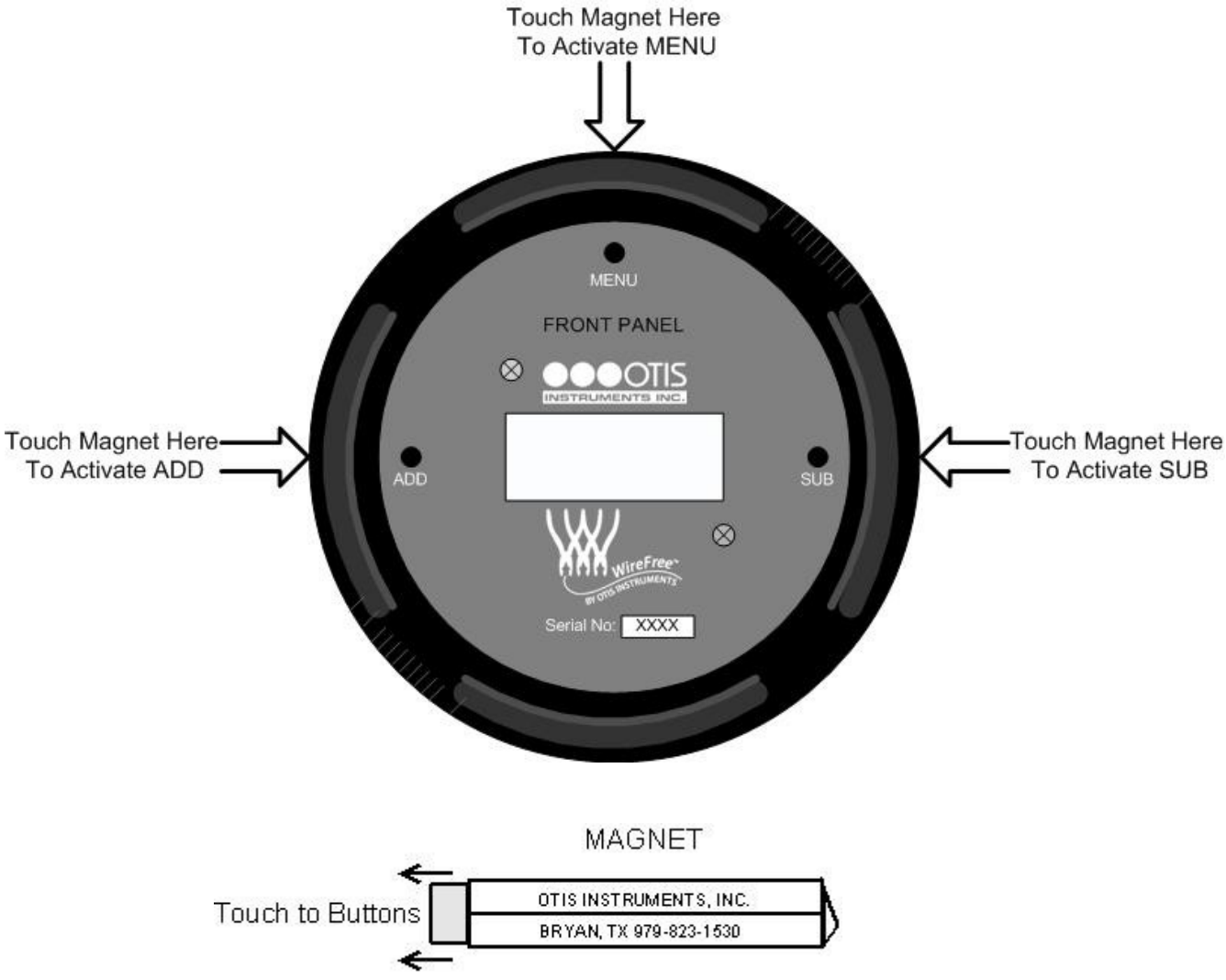
Relay/Alarms Test cont...

2. The display screen will show “r 0”.
3. Touch the magnet to *ADD* to increase the reading by 5 PPM. Continue touching the magnet to *ADD* until the increasing number reaches the pre-set level to trigger the relay/alarms.
4. Once the test is complete, touch the magnet to *MENU* two times to exit Menu Mode.

Setting Background Gas Level

The Background Gas Level should be used to avoid unwanted sensing of normal gas levels in the field. Once set, the device will transmit a message to the receiving controller every minute until gas is present at the Background Gas Level or above. When at this heightened level, the device will transmit a message to the receiving controller every five seconds until the gas level falls back below the Background Gas Level setting.

1. Touch and hold an Otis Instruments, Inc. distributed magnet against the top side of the device for five seconds to active *MENU* and enter Menu Mode.



2. The display screen will show “r 0”.

Setting Background Gas Level cont...

3. Touch the magnet to *MENU*.
4. The display screen will show “bgr” and then a number.
5. Touch the magnet to *ADD* (increase) and *SUB* (decrease) to manipulate the Background Gas Level setting.

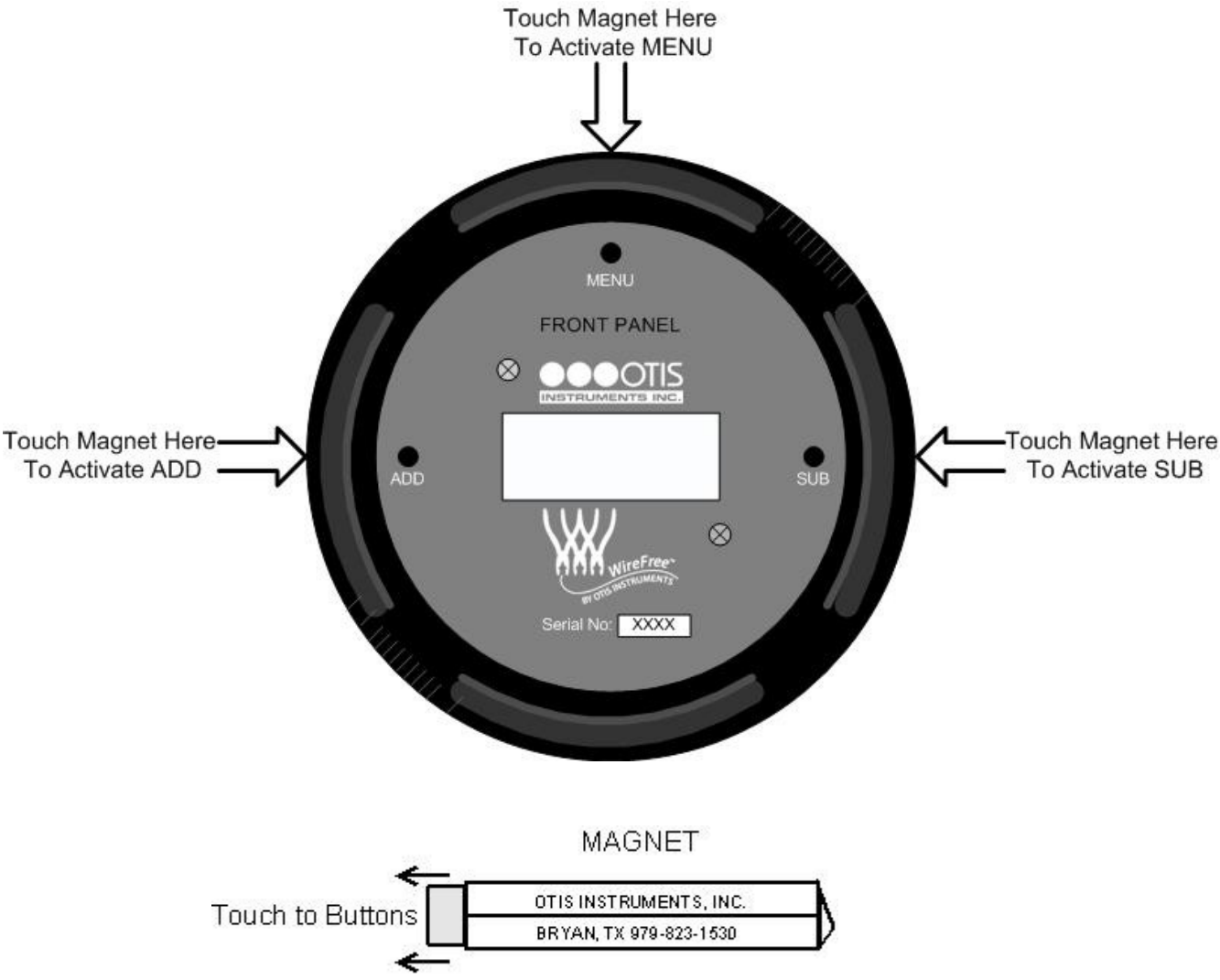
NOTE: The device will transmit a message to the controller every minute until gas is present at (or above) the Background Gas Level. If the Background Gas Level is reached, the device will transmit a message every five seconds until the gas level falls below the Background Gas Level Setting.

6. Once the desired setting is reached, touch the magnet to *MENU* to exit Menu Mode.

Checking Battery Voltage

The battery voltage should be checked periodically to ensure that the voltage being supplied to the Sensor Assembly is adequate for proper functionality (more than 3.0).

1. Touch an Otis Instruments, Inc. distributed magnet against the top side of the device to active *MENU* and enter Setup Mode.



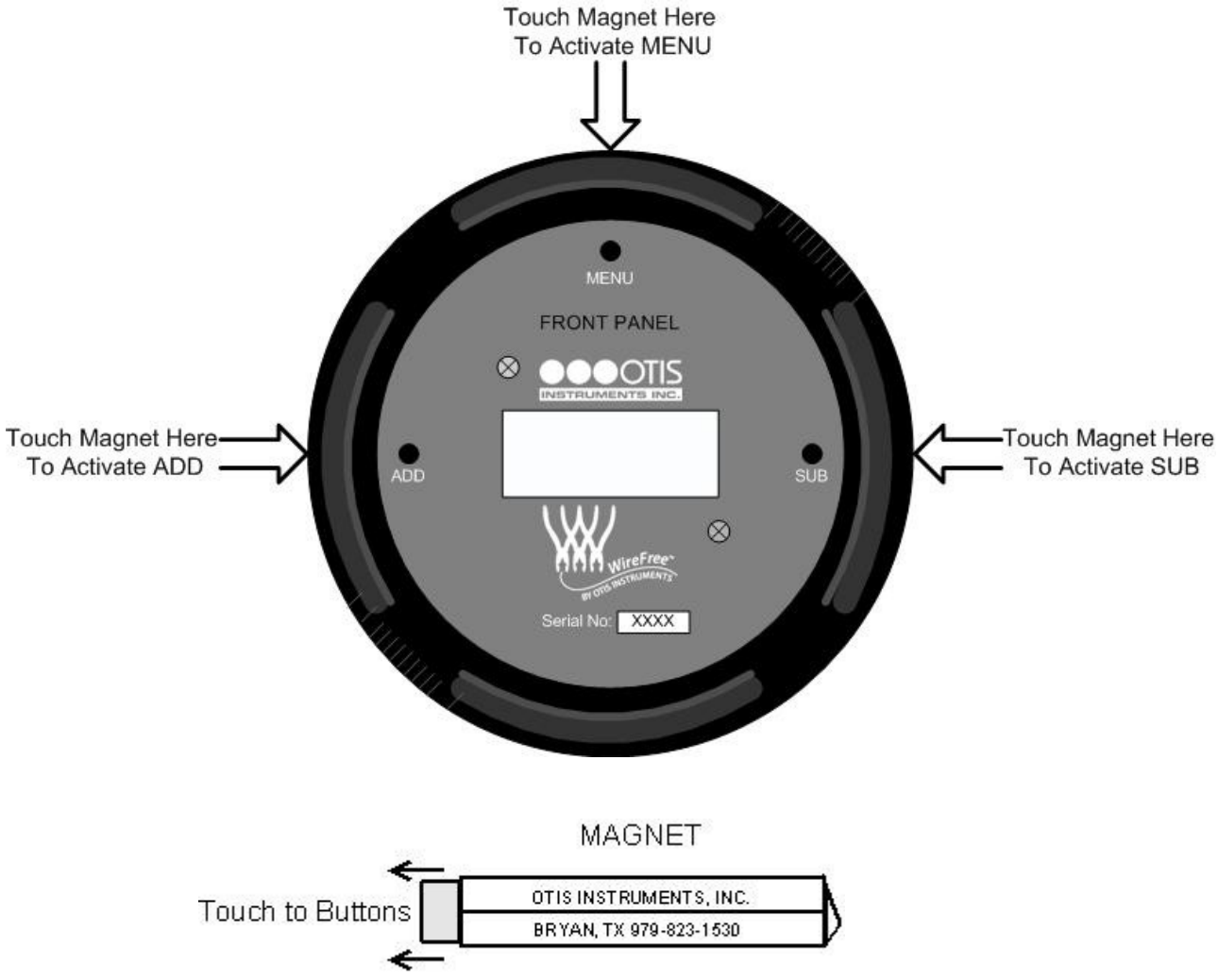
2. Touch the magnet to *MENU* twice.
3. The display screen will show the battery voltage as “b x.x”. If this battery voltage is less than 3.0 the battery should be replaced (see Battery Replacement).
4. Once the battery voltage has been checked, touch the magnet to *MENU* to exit Setup Mode.

Battery Replacement

To ensure full-functionality, the battery should be replaced if the voltage is less than 3.0. To check the battery voltage, refer to the Checking Battery Voltage section in this Operation Manual.

The device uses an Otis size "D" Lithium 18AH battery with connector. New batteries should only be obtained from Otis Instruments, Inc. or an affiliated distributer.

1. Power off the device by touching and holding an Otis Instruments, Inc. distributed magnet against the right side of the device for five seconds to activate *SUB*.



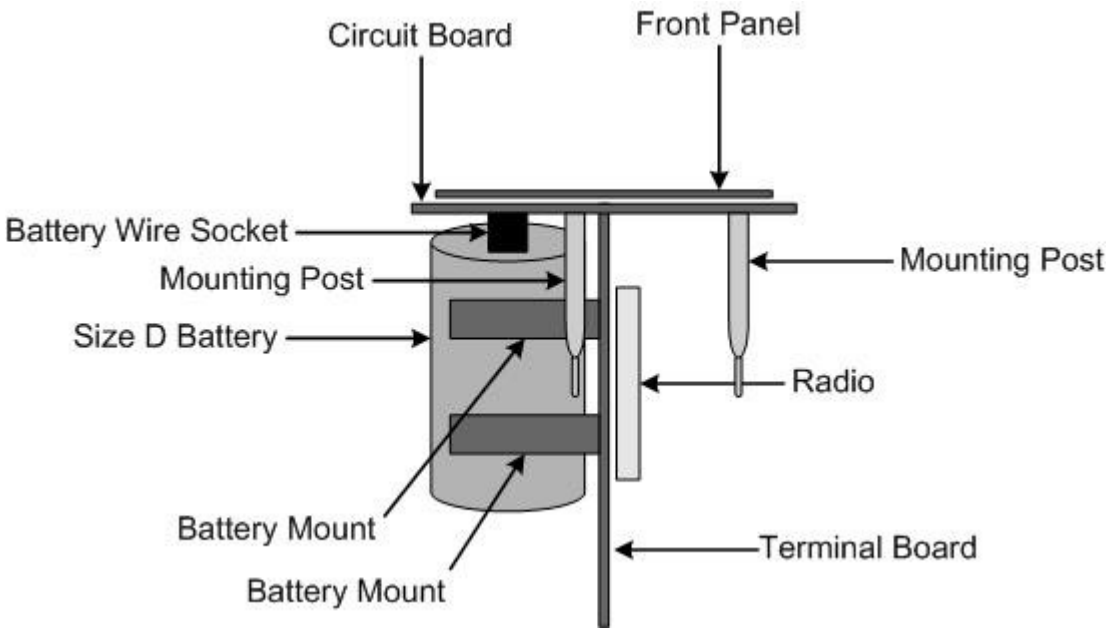
Battery Replacement cont...

2. Unscrew, remove, and set aside the explosion proof Moore lid.
3. Using only your fingers, pull straight up on the Front Panel until it is removed from both standing eyelets.

NOTE: Do not use any metal object to help remove the Front Panel.

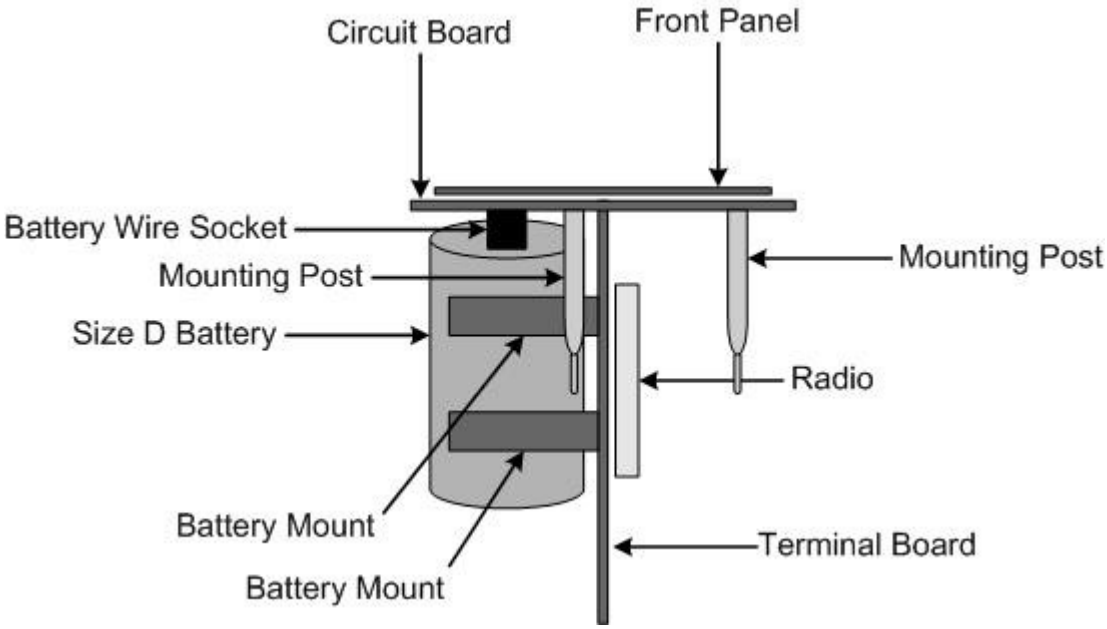
NOTE: Do not remove any connecting wires.

4. Gently lay the Front Panel to the side of the device so that inside of the Moore enclosure is visible.



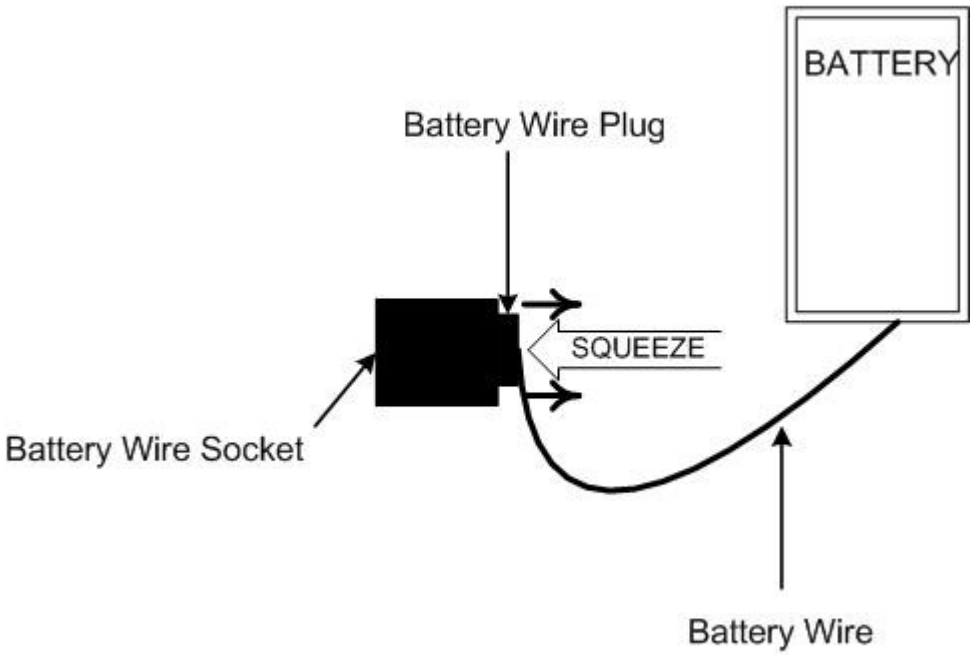
Battery Replacement cont...

5. Remove the battery from the two battery mounts.
6. Squeeze the top and bottom of the battery wire's plug, located in the battery wire socket on the circuit board.



Battery Replacement cont...

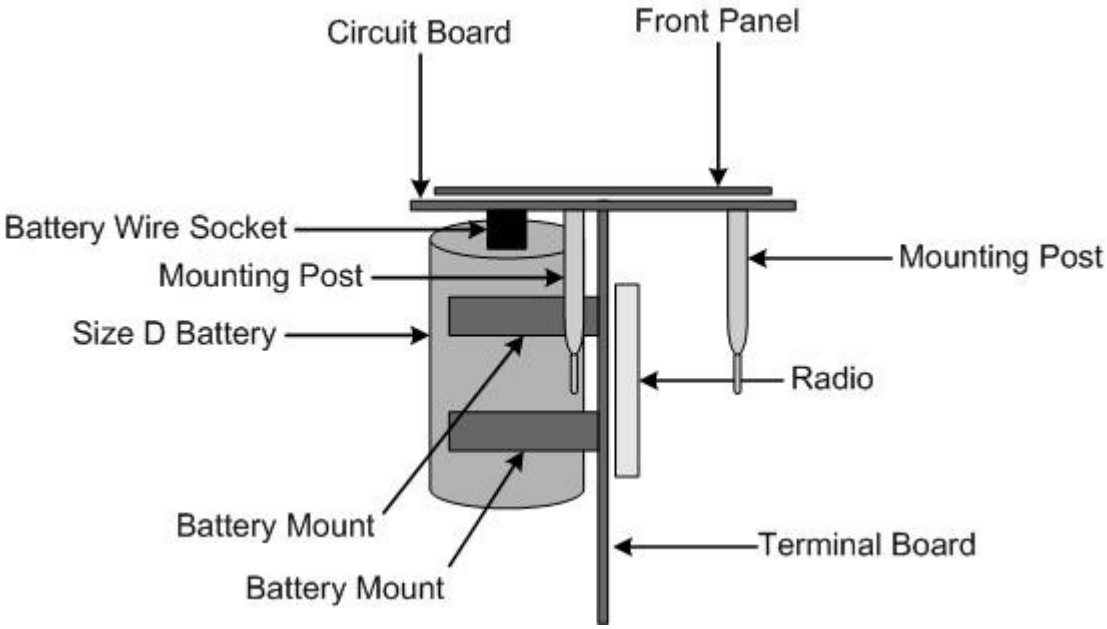
7. Pull the battery wire's plug straight out of the socket.



8. Place the new battery's plug in the socket.
9. Slide the new battery into the battery mounts.

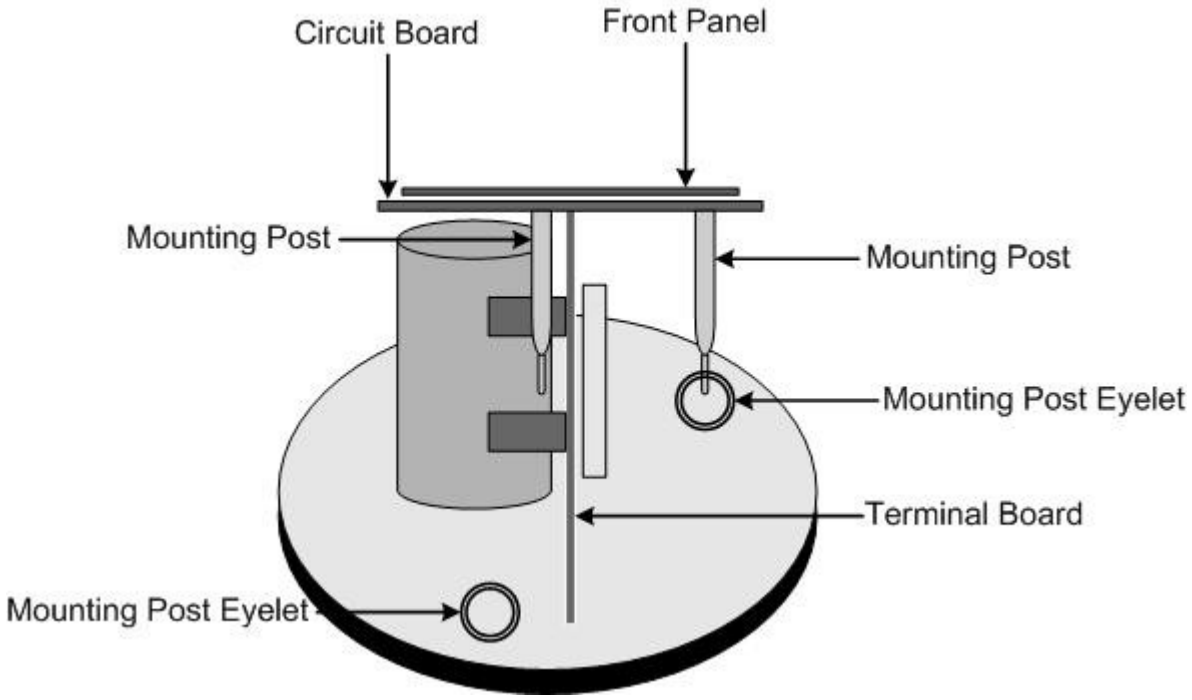
Battery Replacement cont...

10. Replace the circuit board back in the Moore enclosure by matching each sensor mounting post to its corresponding eyelet inside the enclosure.



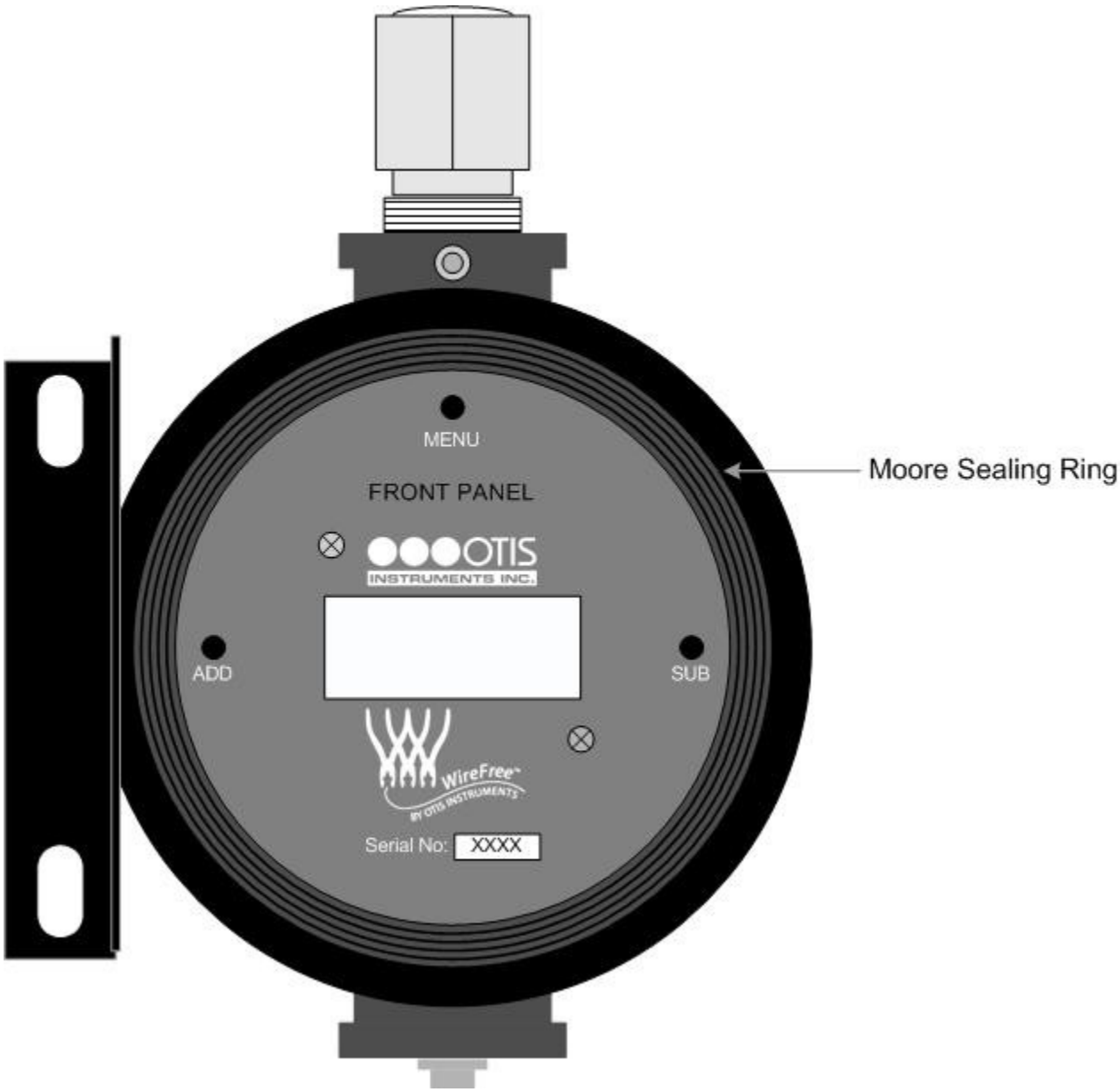
Battery Replacement cont...

11. Verify that each mounting post is properly fitted in its corresponding eyelet inside the Moore enclosure.



Battery Replacement cont...

12. Verify that the sealing ring on the Moore base is still in place.

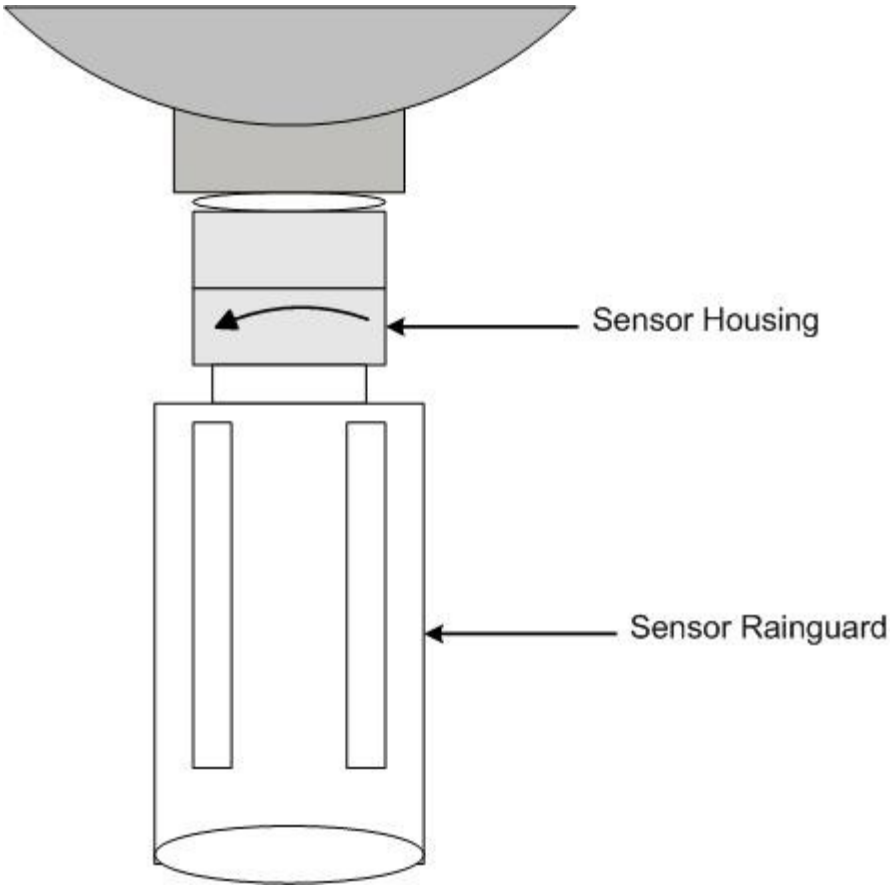


13. Place the Moore enclosure lid on top of the Moore enclosure base.
14. Rotate the lid until it is tightly screwed in place (approximately 20 rotations).
15. Power on the device and check the battery voltage (the third reading shown) to ensure that the new battery is fully functional and at 3.6 volts (b 3.6).

Sensor Replacement

The device's sensor detects gas in parts per million. The sensor must to be fully functional in order to alert the user of the presence of toxic gas at a dangerous level. Failed alarm tests could be an indicator of the device needing sensor replacement.

1. Power off the device by touching and holding an Otis Instruments, Inc. distributed magnet against the right side of the device for five seconds to activate *SUB*.
2. Unscrew and remove the sensor housing.

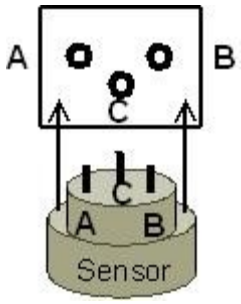


3. Using the thumb and forefinger, slide the sensor out of the device.

NOTE: Do not use any metal object to remove the sensor.

Sensor Replacement cont...

4. Slide the new sensor into device, matching the sensor prongs to the corresponding eyelets inside.



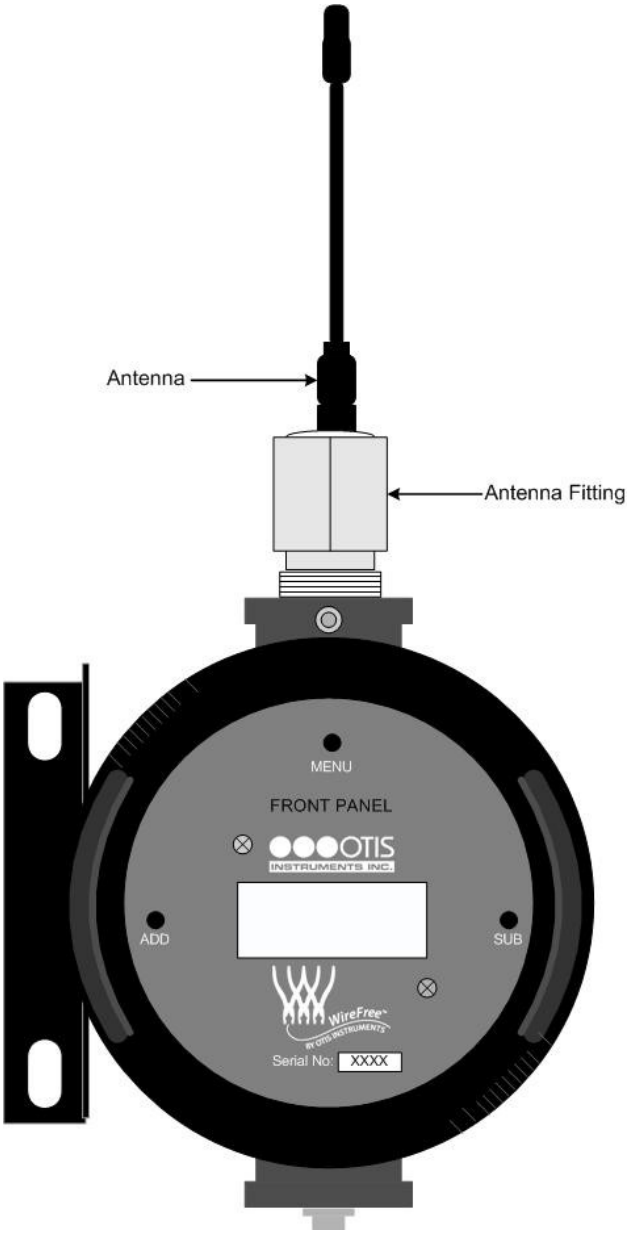
5. Screw the sensor housing back in place.

NOTE: Once the sensor has been changed the device must be re-calibrated (see page 20).

Antenna Replacement

The antenna is used to aid in sending clear and reliable radio signals to the transmission controller. The current antenna can be replaced by any antenna that is compatible with the fitting on the right side of the device.

1. Power off the device by touching and holding an Otis Instruments, Inc. distributed magnet against the right side of the device for five seconds to activate *SUB*.
2. Unscrew the current antenna located on the top of the device.



3. Screw new antenna into the antenna fitting.

APPENDIX A: OI-WF690 Sensor Calibration

Calibration

System calibration is necessary for the device to accurately sense gas and to send messages to the transmission controller in relation to gas presence in parts per million. Each time a sensor is replaced the device must be re-calibrated.

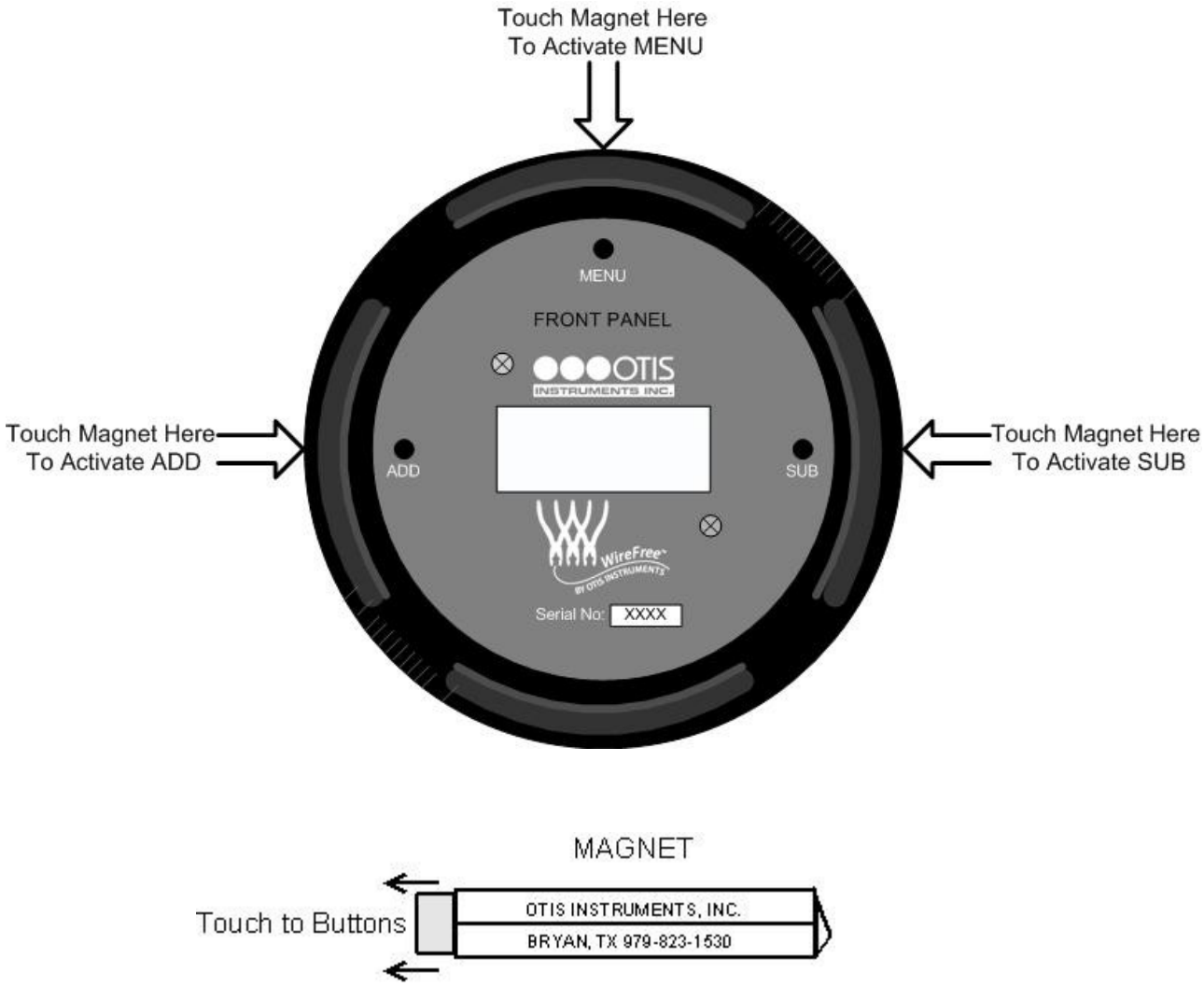
The Model OI-WF690 is equipped with a dual set of switches for *MENU*, *ADD* and *SUB*. The manual and magnet switches are located on the Front Panel. Manual switching may be used in calibration when the Moore explosion proof enclosure lid is removed. The magnet switches, for non-intrusive calibration, are activated by an Otis Instruments, Inc. distributed magnet.

Change/Check Null

The Model OI-WF690 features auto-setting Null. The Null is automatically set when the device is powered-on—eliminating the need for a Null user interface.

Setting Calibration

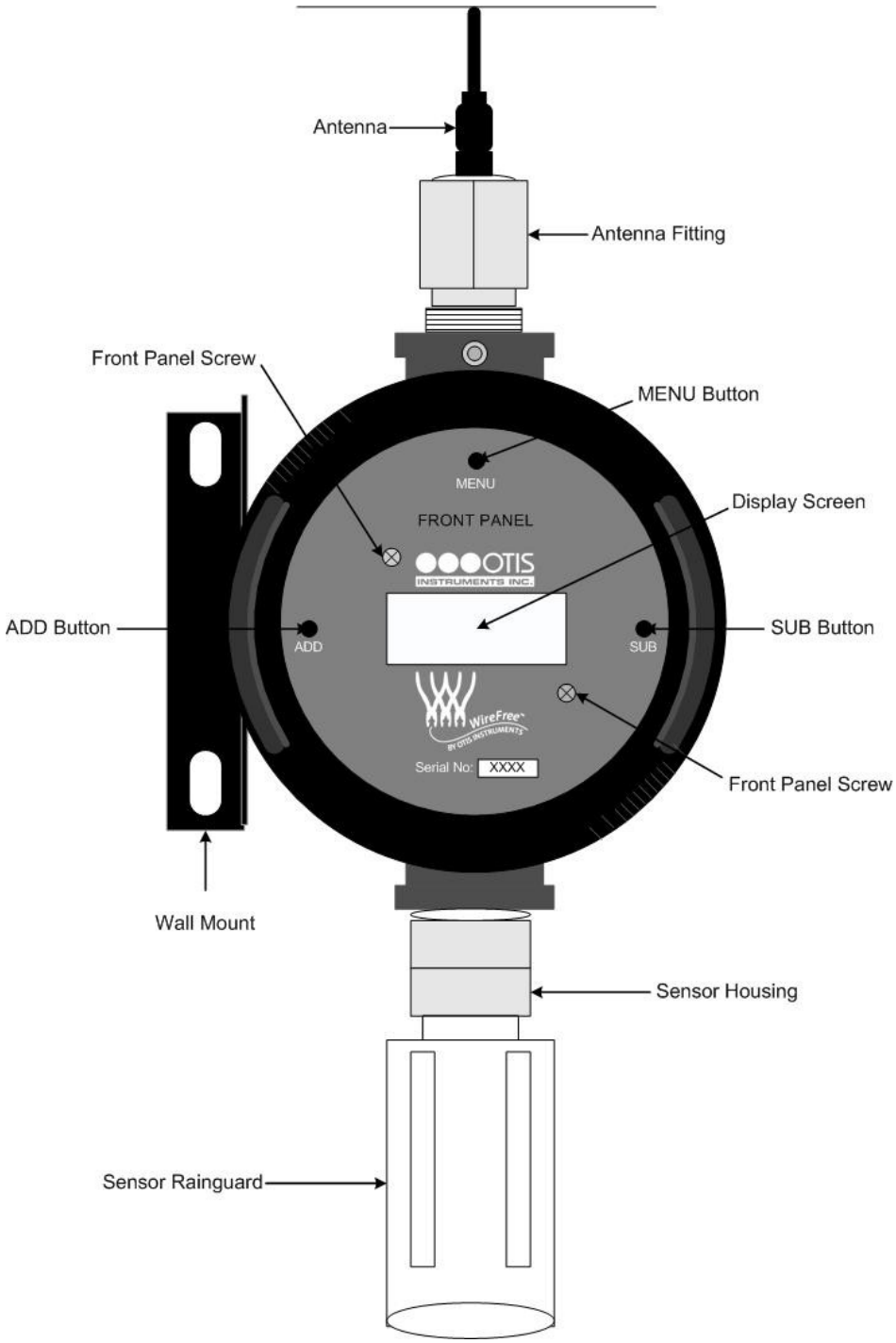
1. Touch an Otis Instruments, Inc. distributed magnet to the top side of the device to activate *MENU*.



2. The display screen will flash “CAL”.

Setting Calibration cont...

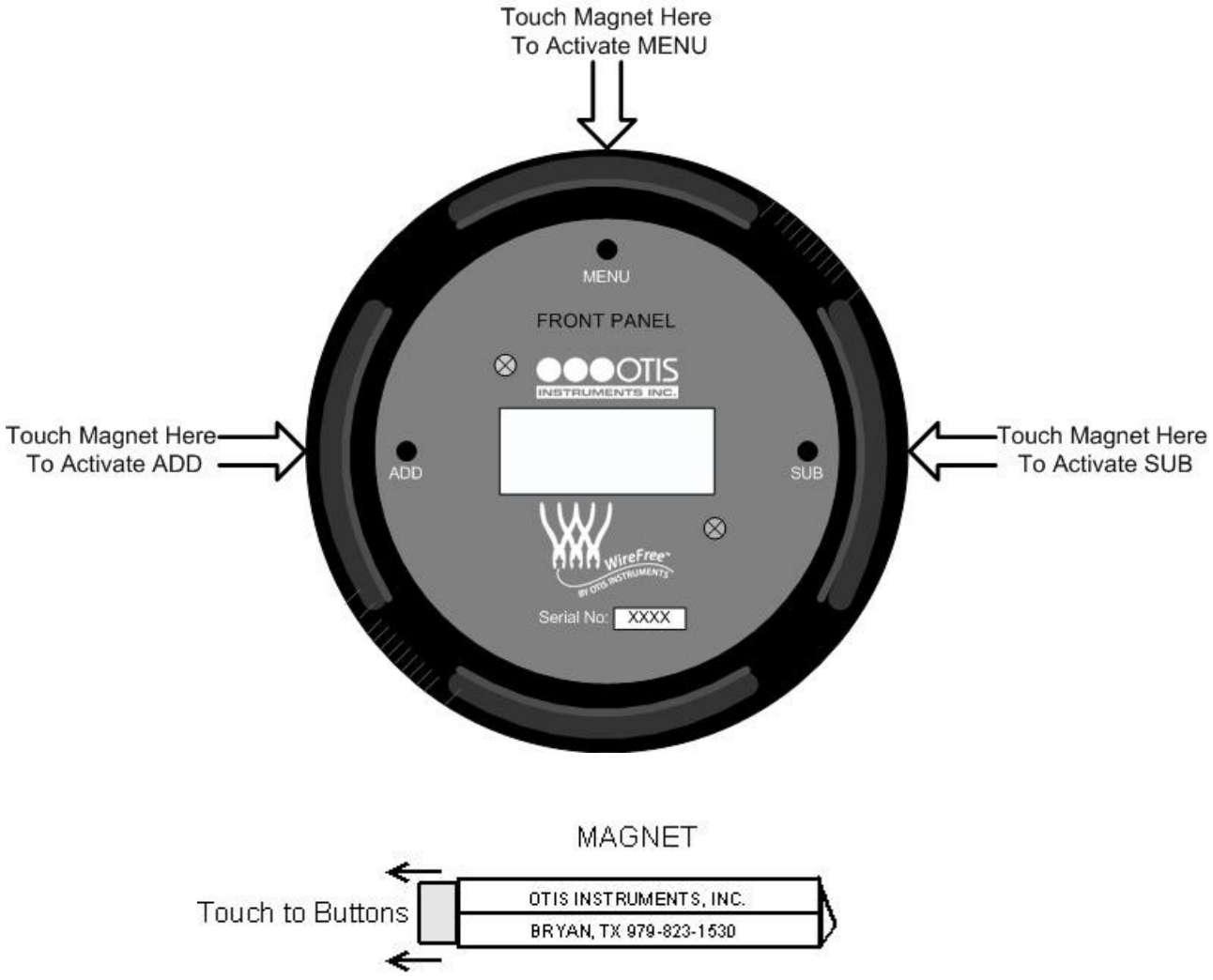
3. Unscrew and remove the sensor rainguard from the sensor housing.



Setting Calibration cont...

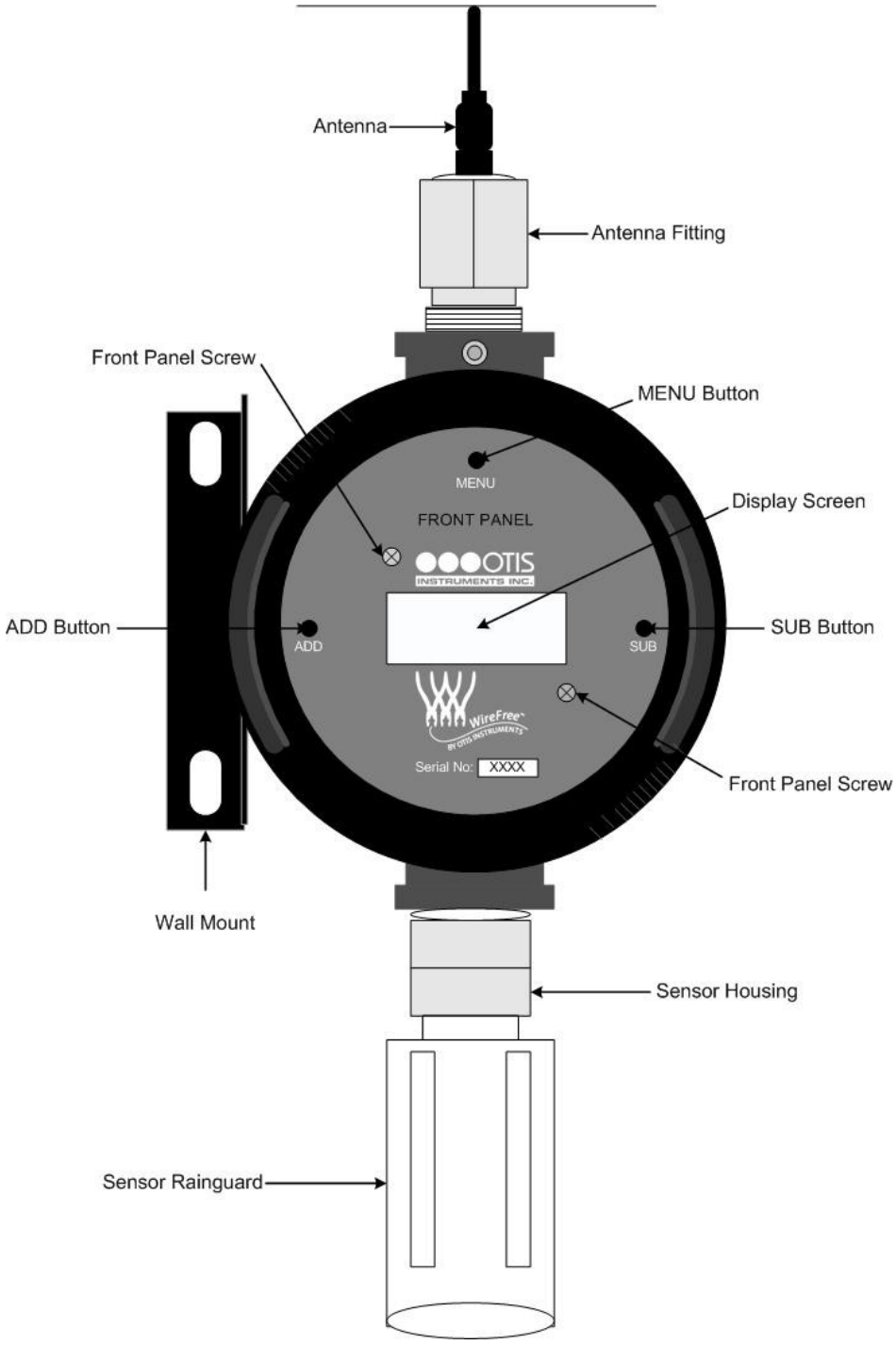
4. Replace the sensor rainguard with an Otis OI-410 Calibration Cup.
5. Apply a known calibration gas to the OI-410 Calibration Cup that is attached to the sensor housing.
6. The sensor's detection of gas will begin to climb in value as shown on the display screen.
7. Watch the display screen until the number displayed stops increasing.
8. Touch the magnet to the device, *ADD* (increase) or *SUB* (decrease), to manipulate the reading on the display screen to match that of the calibration gas.

EXAMPLE: If the calibration gas is 25 PPM and the number on the display screen is 22 PPM, touch the magnet to *ADD* three times.



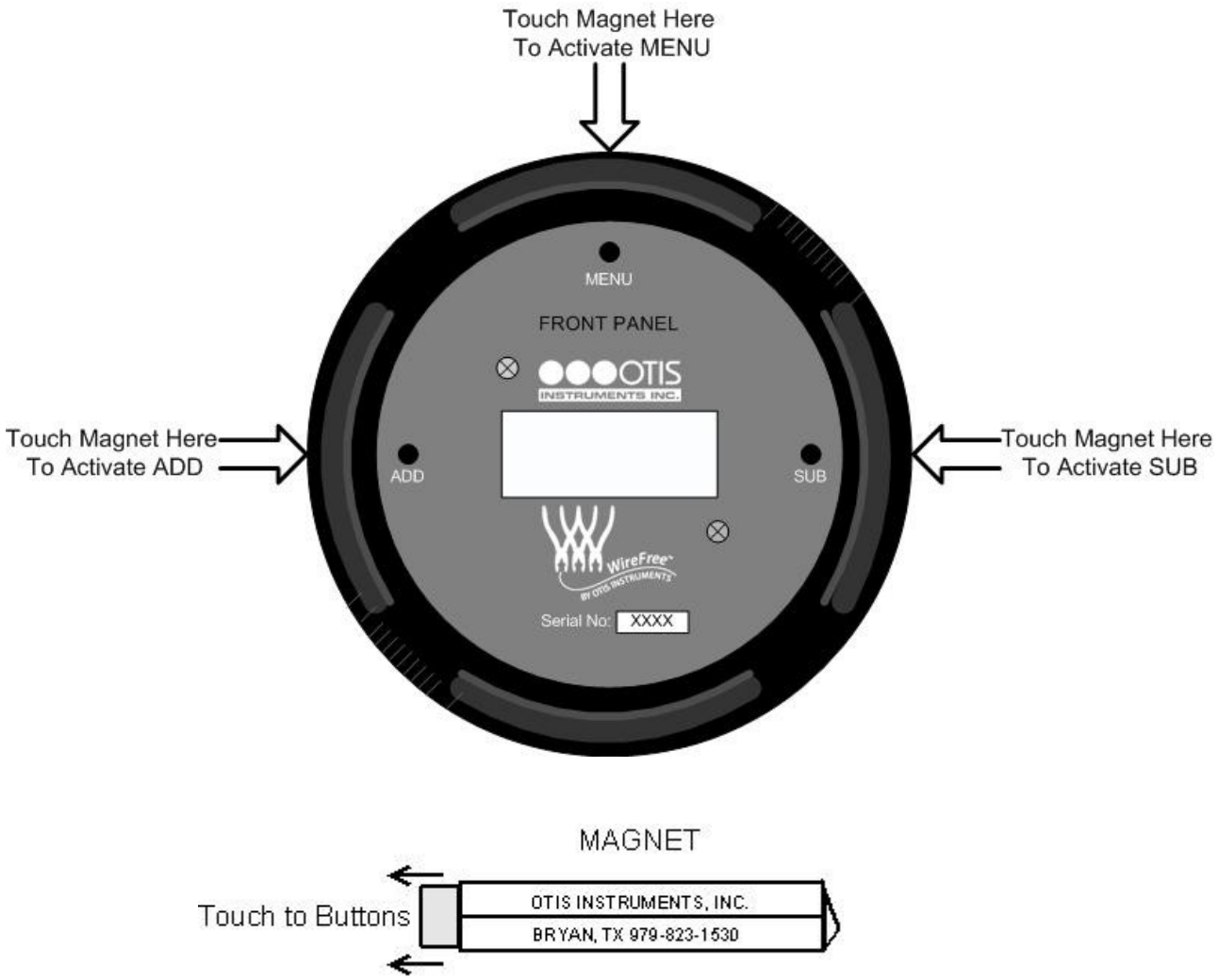
Setting Calibration cont...

9. The device is now calibrated.
10. Unscrew the OI-410 Calibration Cup.
11. Reattach (screw on) the sensor rainguard.



Setting Calibration cont...

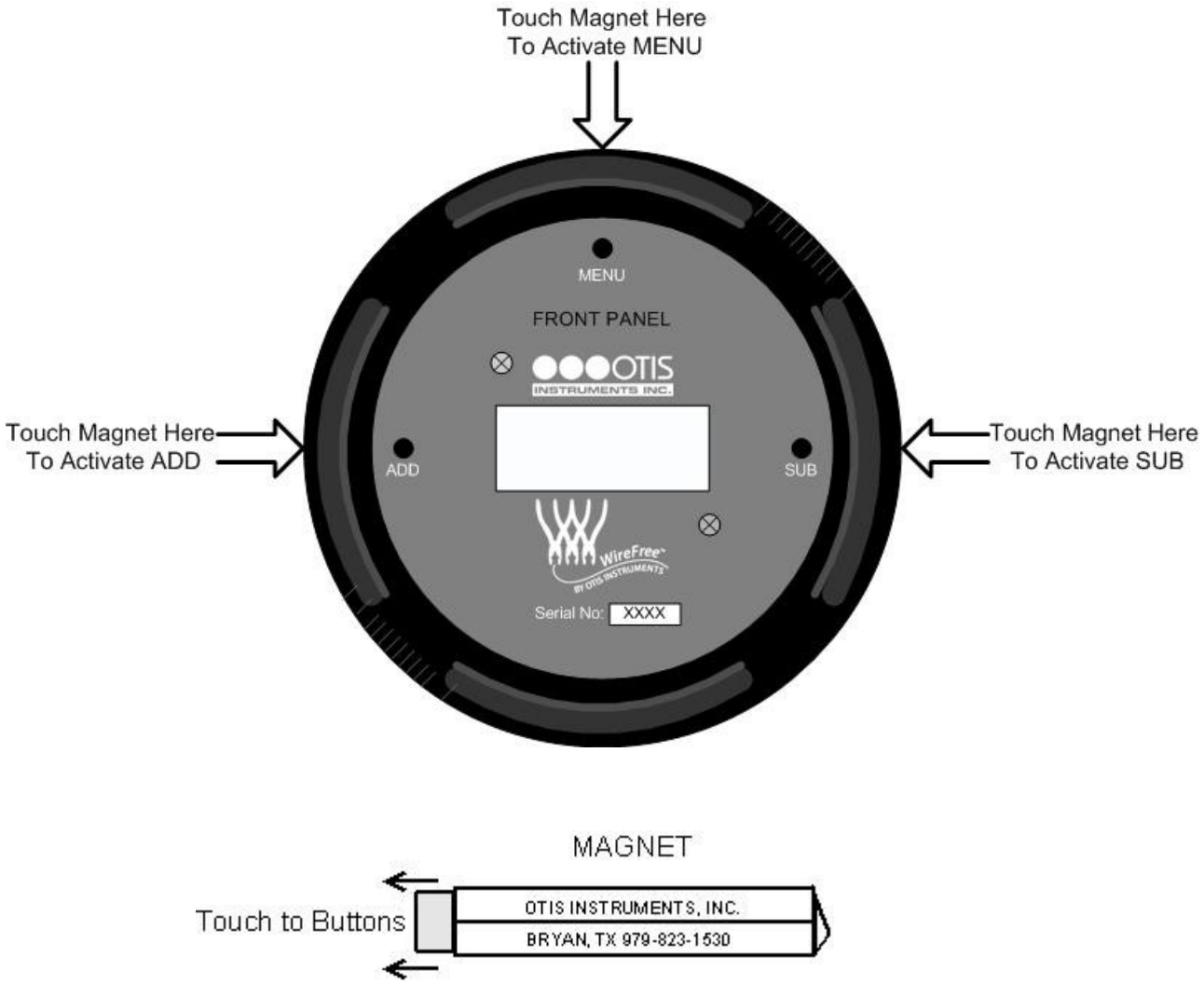
12. Touch the magnet to *MENU* three times to exit Calibration Mode.



NOTE: Calibration is now complete and the Relay/Alarms are active.

Checking Calibration

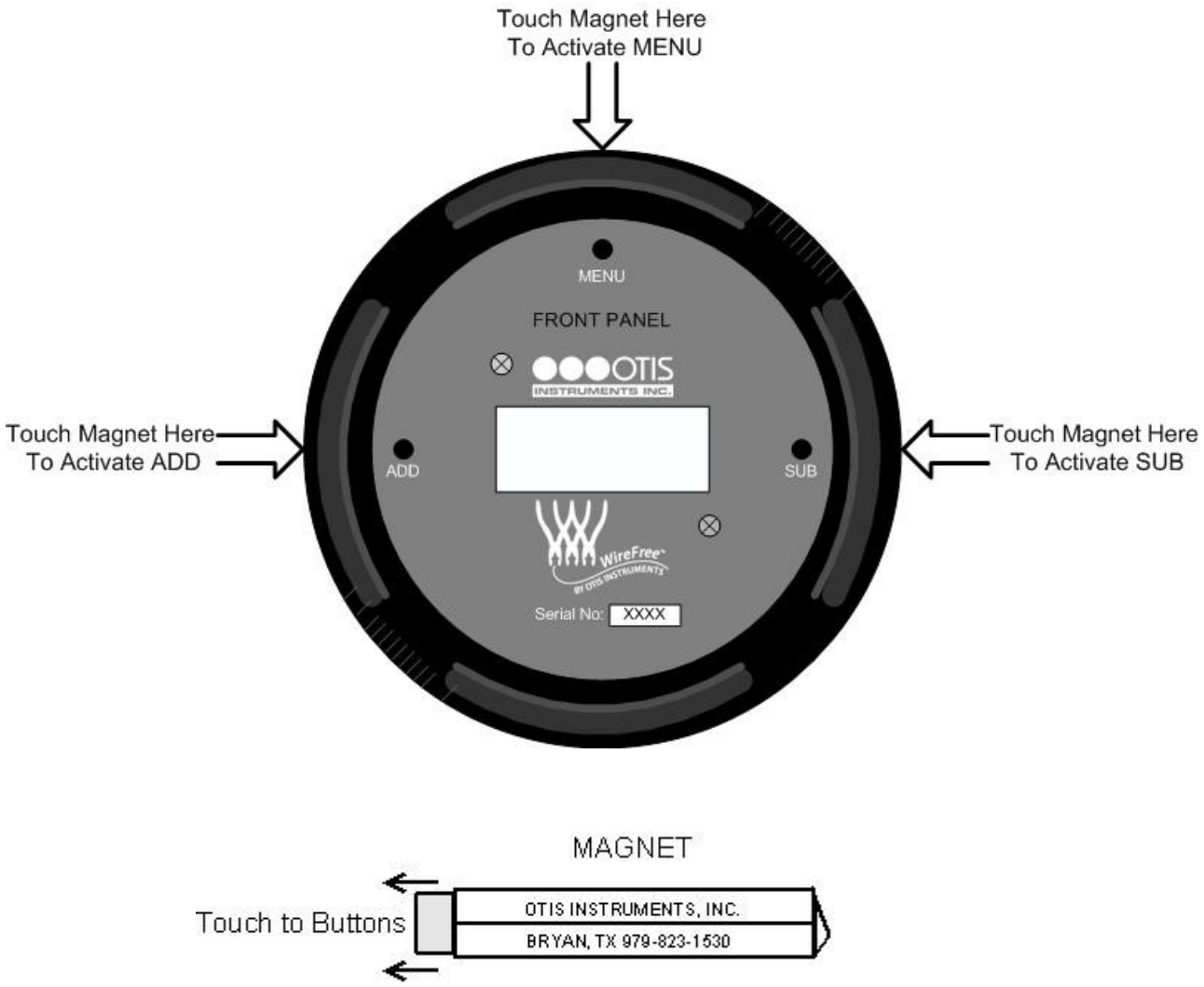
1. Touch and hold an Otis Instruments, Inc. distributed magnet against the top side of the device for five seconds to active *MENU* and enter Menu Mode.



2. The display screen will show “r 0”.

Checking Calibration cont...

3. Touch the magnet to *MENU* twice.



4. The display screen will show “c” and then a number.

EXAMPLE: c 81

5. This number is the sensor calibration number.
6. Touch the magnet to *MENU* to exit Menu Mode.

Specifications

Sensor Type:	Electro-Chemical '4' Series
Battery Type:	Lithium 18Ah with connector Model OI-WF690B
Battery Voltage:	3.6 Volts DC
Radio Wave:	900MHz Spread Spectrum
Unit Address:	1 to 255
Background Gas Level Adjustment:	1 to 20 ppm
Warranty:	Hardware: One year (limited) Sensor: Two years (varies with sensor type) Battery: 90 days from ship date

Warranty Statement for **WireFree Model OI-WF690**

Hardware

Otis Instruments, Inc. (Manufacturer) warrants its products to be free of defects in workmanship and materials—under normal use and service—from the date of purchase from the manufacturer or from the product's authorized reseller. The hardware for this device is under a one-year limited warranty.

The manufacturer is not liable (under this warranty) if its testing and examination disclose that the alleged defect in the product does not exist or was caused by the purchaser's (or any third party's) misuse, neglect, or improper installation, testing or calibrations. Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use, including damage by fire, lightening, water damage or other hazard, voids liability of the manufacturer.

In the event that a product should fail to perform up manufacturer specifications during the applicable warranty period, contact the product's authorized reseller or return the product directly to the manufacturer with a Return Material Authorization (RMA). This number will be assigned upon contacting customer service at 979.776.7700 or Otis@otisinstruments.com. The manufacturer will--at its option and expense--repair or replace the product, or deliver an equivalent product or part to the purchaser at no additional charge.

Any replaced or repaired product or part has either a 90-day warranty or the remainder of the initial warranty period (whichever is longer).

Sensor

The sensor contained in the device is covered under a two-year limited warranty.

Battery

All batteries supplied by Otis Instruments, Inc. are covered, from ship date, under a 90-day warranty.

Otis Instruments, Inc.

Corporate Office
2200 E. Villa Maria Dr.
Bryan, TX 77802
979.776.7700
www.otisinstruments.com

Revision 2.1w

Data Sheet

Model OI-WF690 WireFree Sensor Assembly

OTIS INSTRUMENTS INC.

DESCRIPTION

The Otis Instruments, Inc. WireFree Model OI-WF690 Sensor Assembly is an innovative wireless gas detection system designed to monitor gas in hostile environments without the use of wires or conduit from the controller to the EC sensor.

The OI-WF690 is self-contained and battery operated. The sensor functions by transmission of radio wave messages to the Relayer OI-WF752, Interface OI-WF985, ProSafe OI-WF784, or any other compatable receiving controller. The device is field adjustable for background gas and addressable to eliminate interference with other systems.

The OI-WF690 is Class I, Division 1 certified and can be calibrated non-intrusively by using an Otis Instruments, Inc. distributed magnet.

Features such as the relay/alarm tests and battery voltage indication make this device a truly remarkable gas detection system.

FEATURES

- Non-instrusive calibration with MENU, ADD and SUB
- Glass lid for viewing amplifier display
- Explosion and weather proof Moore enclosure
- Rapid response and clearing time
- Rain/splashguard for sensor protection

PRODUCT PHOTO

SPECIFICATIONS

Sensor Type:	Electro-Chemical '4' Series
Battery Type:	Lithium 8.5AH w/ connector
Battery Voltage:	3.6 VDC
Radio Wave:	900 MHz Spread Spectrum
Unit Address:	1-255
Background Adj:	1-20 PPM
Certification:	Class I, Div. 1 Groups C & D
Enclosure:	Moore Explosion Proof
Warranty:	Device: 1 Year (limited) Battery: 90 Days Sensor: 2 Year (limited)

Otis Instruments, Inc.
2200 E. Villa Maria Dr
Bryan, TX 77802

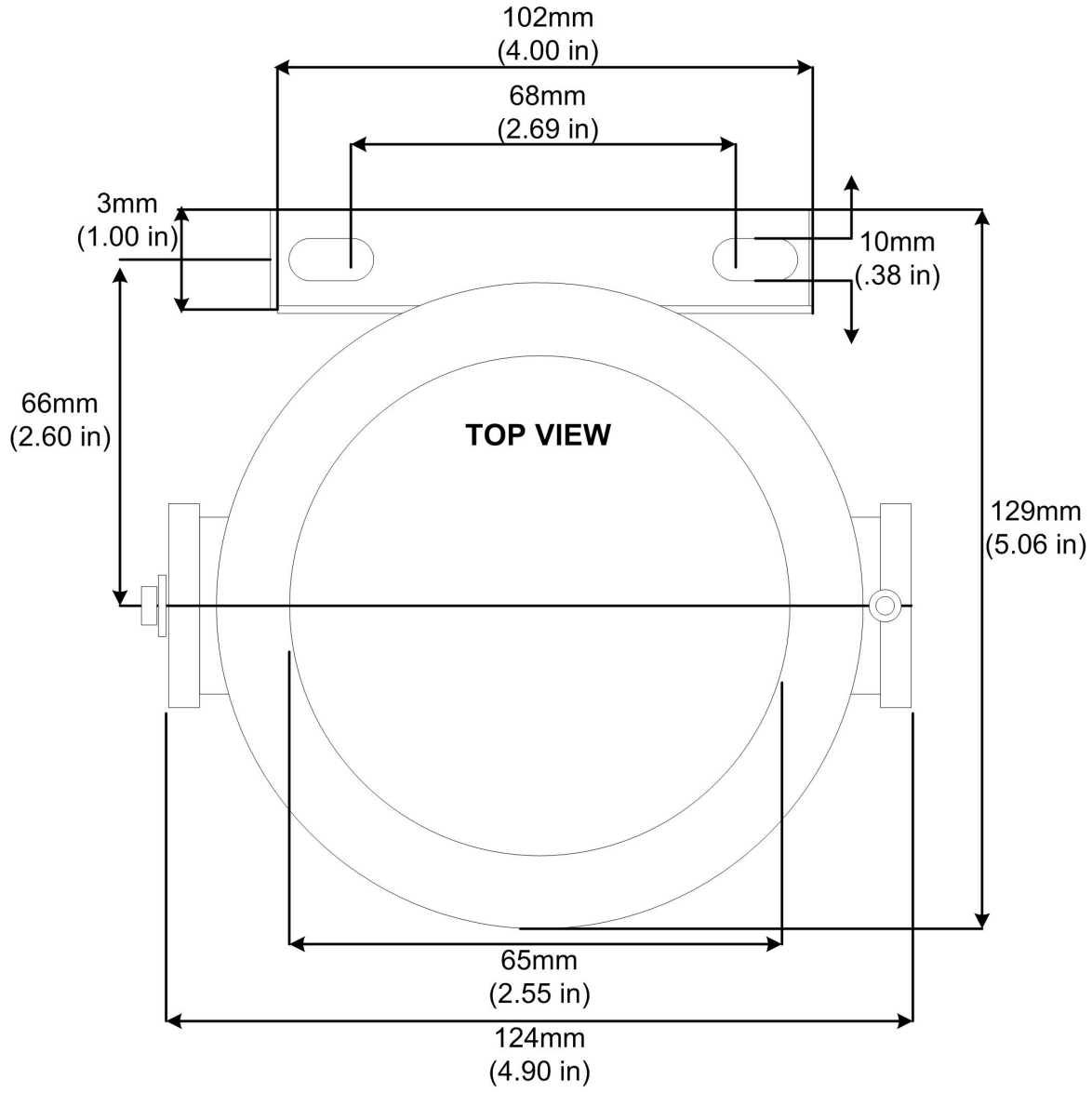
979.776.7700
Fax: 979.776.7719
info@otisinstruments.com
www.otisinstruments.com

Data Sheet

Model OI-WF690 WireFree Sensor Assembly

OTIS INSTRUMENTS INC.

DIMENSIONS



UNIT DEPTH
119mm
4.70 in.

Revision 2.0

Otis Instruments, Inc.
2200 E. Villa Maria Dr
Bryan, TX 77802

979.776.7700
Fax: 979.776.7719
info@otisinstruments.com
www.otisinstruments.com

RESOURCE WEST
Applied H_2O Solutions

Resource West and Western Pump & Dredge
Wind Station Set Up Instructions

Setting up the tripod and wind pole.

The first step in setting up your wind station is to set up your tripod and wind pole. Unfold your tripod and slide the wind pole down thru the center of the tripod. Next turn the tripod until the marking arrow faces the pit. This should line up the 0 degree hash mark on the wind vane facing towards the pit. Next mount the wind station to the pole with supplied bracket. Connect your communication cable from the pole to the wind station, and then use the separate communication wire from the wind station to the control box.

Connecting the Wind Station to the Generator

We prefer to connect the wind station to 110 volt power which can be found inside the main evaporator control box. There is a transformer that supplies 110 voltage to the switch and hour meter that we can tie into. This may require drilling a hole and installing a cord grip for a 14/2 gage wire with ground cable. After you verify the voltage and have connected to the main control box you will need to turn on the breaker for the main control box. The Wind station should now have power. Make sure the control box is in auto mode and turn the Wind Station to ON after you have set all your parameters. The unit should start up on its own. Make sure you have set the correct parameters; refer to the logo programming guide.

Logo Programming Instructions for Wind Speed and Wind Direction

After powering up the wind station, press the down arrow until the date and time screen is shown then push the blue **esc (escape)** button. This should bring up the Set parameter screen as shown below.

> Stop
Set parameters
Set…
Program Name

To proceed scroll down to “Set Parameters” line with the down arrow key.

Stop
>Set parameters
Set…
Program Name

To change the settings for your parameters push the blue **OK** button to go to your next screen which should read “On speed”.

On Speed
On=0
Off=x
Ax=x

This screen tells you the speed the wind needs to decrease to before the evaporator pump will turn back on after a high wind speed shut down. Off=X will be the only number that we will be adjusting. **On** should all ways = 0 and **Off** should = the speed you wish to turn the evaporator back on after high wind. Ax = your actual wind speed at that present time. To set this setting press OK, your screen should change to the Programming Screen. You will need to scroll continuously with the right arrow button to get from On=+00000 to >off=+0000 as shown below. Again, On=+00000 needs to remain at 0. Your settings should **ALWAYS BE +** Not – as shown below.

On Speed
On=+00000
>off=+00000
Ax=00000

To adjust the off parameter you will use the up or down arrow button. You always start with your right most numbers. Below is an example of the off setting if you wanted the evaporator to come back on after a high wind shut down of 3 miles per hour. The number in red is the number that has been adjusted.

on speed
On=+00000
Off=+00003
Ax=00000

Once you are done press OK and you will return to the on speed screen. From here scroll up with the arrow button to the next screen that will read… "Offspd".

Offspd
On=X
Off=X
Ax=X

This is the setting for turning off the evaporator in a high wind situation. Press OK then set the on and off speed to the same number. Here is an example. Both On and Off must be set the same.

On=+00015
Off=+00015
Ax=X

After setting your desired wind speed, press esc to return to the "offspd" screen. Proceed using the up arrow to scroll to the next screen. It will read:

zone1dir
On=0
Off=0
Ax=0

This screen creates the zones to enable you to turn the evaporator on and off with the wind directional vane. The wind vane detects the direction the wind is blowing on a 0^{o}-360^{o} clockwise scale. This allows the evaporator to be turned off if the wind is blowing from an undesirable direction. To adjust these parameters press OK. Manual manipulation of the wind vane will show the degree setting on the Ax line of the screen. The first setting (On=?) will set up the left hand side of your zone to turn the evaporator on. Turn the wind vane until it points at the area you want the unit to turn on. Then read the number displayed on the "Ax" line. This would be the number used for your "on" parameter. The second setting (off=?) will set up the right side of the zone to the turn the evaporator off. Turn the vane towards the right side of the pit and get the "Ax" line reading for your "off" parameter. After setting your zones press esc to return to the "zone1dir" screen.

Proceed using the up arrow to scroll to the next screen. This screen should read "On delay".

On delay
T=30:00s
Ta=00;00

This is the timer that turns the evaporator on after the wind has slowed down to the speed programmed previously in the On Speed screen. To adjust this timer press OK and use the arrow buttons to enter the desired time. When you are done press OK and the "On Delay" screen will reappear.

Proceed using the up arrow to scroll to the next screen. The "outwindT" screen should appear as shown below.

outwindT
T=30:00s
Ta=X

The outwindT delay timer is used to turn the evaporator off after the wind has been blowing above your "off speed" for this amount of time. This delay time is what we are programming with this screen. To adjust this time first push OK, then use the arrow buttons to enter the desired time. When done press OK and the "outbound" screen will reappear.

Proceed using the up arrow to scroll to the next screen. This screen should read "Dir on".

Dir on
T=_____
Ta=00:00

This is the delay timer that turns the evaporator on when the wind vane comes back into parameters. The purpose of this timer is to avoid having the evaporator turn off too frequently with short, high gusts of wind. To adjust this time first push OK, then use the arrow buttons to enter the desired time. Press OK and the "Dir on" screen will reappear.

To proceed to the next screen use the up arrow to scroll to the next screen. This screen should read "Dir off"

dir off

T=_____
Ta=00;00

This is the delay timer that turns the evaporator off when the wind vane goes out of direction. The purpose of this timer is to avoid having the evaporator turn off too frequently with short, high gusts of wind. To adjust this time first push OK, then use the arrow buttons to enter the desired time. Press OK and the "Dir off" screen will reappear.

Proceed using the up arrow to scroll to the next screen. This screen should read "Overtime1"This is a preset timer that we suggest you do not change!

Proceed using the up arrow to scroll to the next screen. This screen should read "OverRoff"(over ride off).

This override setting will let the system come back on and blow out of it's parameters until it hits this mph setting. The override setting is the maximum wind speed you would want it to run at while the wind is blowing out of its parameters. The screen below is a sample of a default settting.

overRoff
On=+00000
Off=+00007
AX=+00000

To change this parameter setting hit OK and adjust only the off =X setting. See below for example which shows an off speed of 8 mph. After this adjustment is made press OK to return to the overRoff shown above.

overRoff
On=+00000
Off=+00008
AX=+00000

Now you are ready to start your program make sure the unit is completely connected to the pump and you should be able to start your system.
The next page gives you definitions of the headings and the sequence of settings in a shorter overview.

RESOURCE WEST
Applied H_2O Solutions

Resource West and Western Pump & Dredge
Wind Station Program Parametors

On Speed screen #1
On Speed
On=+00000 (needs to be set at 0)
Off=+00___
Ax=00000

Off speed screen #2.
Both on & off must be set the same here.
Offspd
On=_____
Off=_____
Ax=X

Zone 1 dir screen #3
zone1dir
On=_____
Off=_____
Ax=0

On delay screen#4 ie. T=30:00s
On delay
T=_____
Ta=00:00

1. To change parameters you need to scroll down with the down arrow to the time and date screen, then push esc.
2. Next scroll down to set param and push ok.

OutwindT screen #5 ie. T=30:00s
outwindT
T=_____
Ta=X

Dir on screen#6 ie. T=10;00s
dir on
T=_____
Ta=00:00

Dir off screen #7 ie. T=10:00s
dir off
T=_____
Ta=00;00

Overtime1 screen#8
Ignore DO NOT CHANGE

OverRoff screen #9
overRoff
On=+00000 (needs to be set at 0)
Off=+00___
AX=+00000

3. Then use the up arrow to scroll through these screens.
4. To adjust each parameter push ok and use the arrow keys.
5. Push esc when you have made your adjustment and go to the next screen.

Definitions of the Headings

On Speed - This screen tells you the speed the wind needs slow down to before the evaporator will turn back on after a high wind speed shut down.

Offspeed - This is the setting for turning off the evaporator in a high wind situation. Press OK then set the on and off speed to the same number.

zone1dir - This screen creates the zones to enable you to turn the evaporator on and off with the wind directional vane. The wind vane detects the direction the wind is blowing on a 0^{o}-360^{o} clockwise scale. This allows the evaporator to be turned off if the wind is blowing from an undesirable direction.

On delay - This is the delay timer that turns the evaporator on after the wind has slowed down to the speed programmed previously in the On Speed screen.

outwindT - The outwindT delay timer is used to turn the evaporator off after the wind has been blowing above your "off speed" for this amount of time. This delay time is what we are programming with this screen.

Dir on - This is the delay timer that turns the evaporator on when the wind vane comes back into parameters. The purpose of this timer is to avoid having the evaporator turn off too frequently with short, high gusts of wind.

Dir off - This is the delay timer that turns the evaporator off when the wind vane goes out of direction. The purpose of this timer is to avoid having the evaporator turn off too frequently with short, high gusts of wind.

Overtime1 - Ignore this setting it is a preset timer.

overROFF {over ride off} - This override setting will let the system come back on while the wind is blowing out of it's direction parameters until the wind hits this mph setting. The override setting is the maximum wind speed you would want to blow and still run the evaporator even though the wind is blowing out of its direction parameters

Trouble shooting

Make sure all your setting our correct ex. Off speed both on and off have to me the same number.
Your on speed must be lower than your off speed.
Make sure cables and electrical wire connections, in junction box is secure.
The connections at the wind vane and anemonitor under the rubber sleeve is secure.
Check for corrosion under the rubber sleeve.
Data cable could be not working cut or no power. Make sure the cable female and male get tighten up correctly could be a short.
Make sure your on switch.
Control panel or the pump is on auto.
Make sure the tripod is positioned correctly with the zero pointing opposite of the pit.

ATTACHMENT II.1.C
INSPECTION FORMS (TYPICAL)

BASIN DISPOSAL, INC.
DAILY EQUIPMENT INSPECTION

YEAR__2019_____ MONTH_____ WEEK BEGINNING_____

EMPLOYEES SHALL PERFORM A ROUTINE INSPECTION AT THE BEGINNING OF EACH SHIFT :

SERVICE PUMPS (put initals in box):
A. CHECK CHARGE PUMP OIL AND FOR LEAKS,
B. CHECK POND PUMP OIL AND SPIDER COUPLER
C. CHECK MURPHY SWITCHES FOR CORRECT SETTING, BLOW OUT HOSES,
D. CHECK STUFFING BOXES AND PACKING OIL LEVEL,

EQUIPMENT CHECKS (put initials in box):
A. CHECK ELECTRICAL CORDS ON WEEKEND FOR DAMAGE
B. CHECK FIRST AID KIT ON WEEKEND, INFORM MGR
C. CHECK FIRE EXTINGUISHERS ON WEEKEND
D. CHECK ON WEEKEND FOR LOW SUPPLIES
E. CHECK BOBCAT, PRIOR TO USE
F. CHECK LOADER, PRIOR TO USE
G. CHECK FILTERS & FILTER POT FOR LEAKS AND PRESSURE

LOOK FOR SPILLS:
A. CHECK GROUND FOR OIL
B. IF ANY ARE FOUND CLEAN IMMEDIATELY
C, NOTIFY SUPERVISOR IMMEDIATELY

STORMWATER:
A. QUARTERLY & AFTER MAJOR STORM
B. INSPECT BERMS/LEVEES - FIX IF NEEDED

INSPECT FOR LEAKS:
A. TIME AND INITIALS IN BOX
B. PRODUCTION TANKS, VALVES, HOSES , PUMPS
C. UNLOADING TANKS AND DOCK FOR OIL
D. FUEL TANKS, CHEMICAL STORAGE TANKS

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Pumps							
Charge Pump AM							
Charge Pump PM							
Pond Pump 1 AM							
Pond Pump 1 PM							
Pond Pump 3 AM							
Pond Pump 3 PM							
Murphy Switches AM							
Murphy Switches PM							
Stuffing Boxes,Packing Oil AM							
Stuffing Boxes,Packing Oil PM							
Equipment							
Electrical Cords							
First Aid Kit							
Fire Extinguishers							
Eye Wash Station							
Bobcat/Loader							
Enterprise Pipeline							
Filter Pots AM							
Filter Pots PM							
Spills							
Location							
Description							
Action Taken							
Leaks							
Production Tanks, Valves							
Hoses and Pumps							
Unloading Dock							
Fuel & Chemical Tanks							
Manager Verification							
Intials and Time							

BASIN WATER RECYCLING
Containment Inspection

YEAR__2019_____ MONTH_____ WEEK BEGINNING_____

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Weather							
Temperature, ^{0}F							
Skies (clear, pt cldy, cloudy)							
Precipitaion (last 24 hr), Inches							
Wind Speed (mph)							
Wind Direction							
Containment Surface							
Migratory Birds Present (Y/N)							
(if yes, what action taken?)							
Bird Deterrant Operational (Y/N)							
(if no, what is done)							
Oil on Surface (Y/N)							
(if yes, was it removed?) (if not removed, why/when)							
Containment Inspection							
Depth of Containment Water, ft							
3 ft Freeboard Maintained (Y/N)							
(if no, what is done)							
Strutural Defect (Y,N) *							
(if yes, what and actions?)							
Leak Detected (Y/N)							
(if yes, what and actions?)							
Run On/Off Water Present (Y/N)							
Comments							
Verification							
Intials and Time							

BASIN DISPOSAL, INC.
DAILY POND BLEACH INSPECTION

YEAR__2019_____ MONTH_____ WEEK BEGINNING_____

POND CONDITIONS
A.POND LEVEL (Feet)
B. OVERFLOW COLOR (Black, Gray, Brown, Other)
C. POND COLOR (Black, Gray, Brown, Other)
D. TEMPERATURE (Fahrenheit)
E. DISSOVED OXYGEN
F. TOTAL CHLORINE

BLEACH
A TIME (note AM or PM)
B. VOLUME (Gallons)
C. INITIALS

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Pond 1 Conditions							
Pond Level (ft)							
Overflow Color							
Pond Color							
Water Temperature							
pH							
Dissolved Oxygen							
Total Chlorine							
Dissolved H2S/Sulfides							
Pond 3 Conditions							
Pond Level (ft)							
Pond Color							
Water Temperature							
pH							
Dissolved Oxygen							
Total Chlorine							
Dissolved H2S/Sulfides							
Bleach/Chemical							
Time							
Volume							
Initials							
Time							
Volume							
Initials							
Time							
Volume							
Initials							
Time							
Volume							
Initials							
Time							
Volume							
Initials							
Time							
Volume							
Initials							
Manager Verification							
Intials and Time							

BASIN DISPOSAL, INC.
DAILY H2S AND CONTAINMENT SUMP INSPECTION

YEAR__2019_____ MONTH_____ WEEK BEGINNING_____

AMBIENT AIR WIND SPEED/DIRECTION (Initials & Time)
A.AM READINGS
B.PM READINGS

SUMP LEVELS (Initials & Time)
C. PUMP HOUSE SUMP CHECKED AM & PM
D. LOADING AREA SUMP CHECKED AM & PM, EMPTY DAILY AT 4PM.
E. CONCRETE SLAB, NOTE WHEN EMPTOED

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Ambient Air H2S (AM)							
H2S Reading (ppm)							
Wind Speed (mph)							
Wind Direction							
Initials and Time							
Ambient Air H2S (PM)							
H2S Reading (ppm)							
Wind Speed (mph)							
Wind Direction							
Initials and Time							
Sump Levels							
AM Cement Slab Sump (ft)							
AM Loading Area (ft)							
AM Pump House Sump (ft)							
Intials and Time							
Empty Cement Slab (Initial/Date)							
4 PM EMPTY THE SUMPS							
PM Loading Area Sump (ft)							
PM Pump House Sump (ft)							
Intials and Time							
Stormwater Control							
Strutural Defect (Y,N) *							
Action Taken							
Initials and Time							
Manager Verification							
Intials and Time							

BASIN DISPOSAL, INC.
DAILY OIL SALES TANKS
YEAR 2019 MONTH WEEK BEGINNING

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Tank 2							
Volume Added (BBLS)/Time							
Treating Tank/BS&W							
Volume Sold/Date							
BS&W/Gravity/Temp							
Tank 3							
Volume Added (BBLS)/Time							
Treating Tank/BS&W							
Volume Sold/Date							
BS&W/Gravity/Temp							
Tank 4							
Volume Added (BBLS)/Time							
Treating Tank/BS&W							
Volume Sold/Date							
BS&W/Gravity/Temp							
Tank 5							
Volume Added (BBLS)/Time							
Treating Tank/BS&W							
Volume Sold/Date							
BS&W/Gravity/Temp							
Tank 6							
Volume Added (BBLS)/Time							
Treating Tank/BS&W							
Volume Sold/Date							
BS&W/Gravity/Temp							
Tank 7							
Volume Added (BBLS)/Time							
Treating Tank/BS&W							
Volume Sold/Date							
BS&W/Gravity/Temp							
Tank 8							
Volume Added (BBLS)/Time							
Treating Tank/BS&W							
Volume Sold/Date							
BS&W/Gravity/Temp							

BASIN DISPOSAL, INC.
DAILY OIL TREATING
YEAR 2019 MONTH WEEK BEGINNING

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Tank 17							
Initial Volume Added (BBLS)/Time							
Chemical Added (Gallons)/Time							
Temp/Time							
Temp/Time							
Bottom Pulled (BBLS)/Time							
Volume Topped Off/Time							
Test Reading/Time							
Volume Transferred to Sales/Time							
Sales Tank							
Tank 18							
Initial Volume Added (BBLS)/Time							
Chemical Added (Gallons)/Time							
Temp/Time							
Temp/Time							
Bottom Pulled (BBLS)/Time							
Volume Topped Off/Time							
Test Reading/Time							
Volume Transferred to Sales/Time							
Sales Tank							
Tank 19							
Initial Volume Added (BBLS)/Time							
Chemical Added (Gallons)/Time							
Temp/Time							
Temp/Time							
Bottom Pulled (BBLS)/Time							
Volume Topped Off/Time							
Test Reading/Time							
Volume Transferred to Sales/Time							
Sales Tank							

BASIN DISPOSAL, INC.
Pond Integrity and Leak Detection

YEAR__2019_____ MONTH_____ WEEK BEGINNING_____

WEATHER
A. TEMPERATURE
B. SKIES
C. PRECIPITATION, INCHES
D. WIND SPEED, DIRECTION

POND INTEGRITY
A. EROSION (Deficiency, Photograph Taken, NA)
B. VEGETATION (Deficiency, Photograph Taken, Sample Taken, NA)
C. VECTORS/ANIMALS (Deficiency, Photograph Taken, Sample Taken, NA)

LEAK DETECTION
A. Depth (ft)
B. Structural Defect (Y,N)

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Weather							
Temperature, ^{0}F							
Skies (clear, pt cldy, cloudy)							
Precipitaion (last 24 hr), Inches							
Wind Speed (mph)							
Wind Direction							
Initials and Time							
Pond 1 Integrity							
Erosion (D, P, NA) *							
Vegetation (D, P, S, NA) *							
Vectors (D, P, S, NA) *							
Initials and Time							
Pond 3 Integrity							
Erosion (D, P, NA) *							
Vegetation (D, P, S, NA) *							
Vectors (D, P, S, NA) *							
Initials and Time							
Pond 1 Leak Detection							
Depth of Water, ft							
Strutural Defect (Y,N) *							
Intials and Time							
Pond 3 Leak Detection							
East Sump Water Depth, (SA)							
Strutural Defect (Y,N) *							
West Sump Water Depth (SA)							
Strutural Defect (Y,N) *							
Intials and Time							
Manager Verification							
Intials and Time							

BASIN DISPOSAL, INC.
DAILY PUMP FILTERS INSPECTION

YEAR__2019_____ MONTH_____ WEEK BEGINNING_____

EMPLOYEES SHALL PERFORM A ROUTINE INSPECTION AT THE BEGINNING OF EACH SHIFT :

INJECTION VOLUME (Time & Initials in Box):
A. AM SHIFT
B. PM SHIFT

PRESSURES:
A. PUMP PRESSURE
B. WELL HEAD PRESSURE
C. TIME AND INITIALS IN BOX

CONOCO METER:
A. READING
B. TIME AND INITIALS IN BOX

Enterprise METER:
A. READING
B. TIME AND INITIALS IN BOX

FILTER CHANGES:
A. TIME AND INITIALS IN BOX

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Injection Volume							
AM Shift Reading							
Initals and Time							
PM Shift Reading							
Initals and Time							
Pressure							
Well Head Pressure							
Initals and Time							
Conoco Meter							
AM Reading							
Initals and Time							
PM Reading							
Initals and Time							
Enterprise Meter							
AM Reading							
Initals and Time							
PM Reading							
Initals and Time							
Filter Changes							
20 um Wheatley							
5 um Wheatley							
5 um							
Manager Verification							
Intials and Time							

BASIN DISPOSAL, INC.
DAILY ODOR INSPECTION

YEAR__2019_____ MONTH_____ WEEK BEGINNING_____

ODOR
A.DESCRIBE TYPE OF ODOR (BLEACH, OIL, SULFUR, OTHER)
B. LIST LOCATION ON POND (N, S, E, W)

WIND
A. LIST SPEED
B. LIST DIRECTION (N, S, E, W)

POND
A. DESCRIBE COLOR (BLACK, BROWN)
B. DESCRIBE OVERFLOW COLOR (BLACK, BROWN, CLEAR)

H2S
A.NOTE H2S READINGS

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
9PM							
Odor Type (bleach, oil, other)							
Location (N, S, E, W)							
Wind Speed							
Wind Direction (N, S, E, W)							
Overflow (brown, black, clear)							
H2S Readings							
Bleach Added? (Y or N)							
10PM							
Odor Type (bleach, oil, other)							
Location (N, S, E, W)							
Wind Speed							
Wind Direction (N, S, E, W)							
Overflow (brown, black, clear)							
H2S Readings							
Bleach Added? (Y or N)							
12PM							
Odor Type (bleach, oil, other)							
Location (N, S, E, W)							
Wind Speed							
Wind Direction (N, S, E, W)							
Overflow (brown, black, clear)							
H2S Readings							
Bleach Added? (Y or N)							
3AM							
Odor Type (bleach, oil, other)							
Location (N, S, E, W)							
Wind Speed							
Wind Direction (N, S, E, W)							
Overflow (brown, black, clear)							
H2S Readings							
Bleach Added? (Y or N)							
5AM							
Odor Type (bleach, oil, other)							
Location (N, S, E, W)							
Wind Speed							
Wind Direction (N, S, E, W)							
Overflow (brown, black, clear)							
H2S Readings							
Bleach Added? (Y or N)							

BASIN DISPOSAL, INC.
DAILY KCL PLANT INSPECTION

YEAR__2019_________ MONTH_______________ WEEK BEGINNING_______________

POTASH
A.SILO LEVELS
B.LBS OF POTASH FROM INTREPID DELIVERY TICKETS
C.COMMENTS (i.e. silo plugged, etc…)

KCL MIXING
A.BATCH #
B.DATE
C.TIME
D.WEIGHT
E. BARRELS
F. INITIALS

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
POTASH							
South Silo Level, ft							
North Silo Level, ft							
Lbs of Potash Received							
Lbs of Potash Received							
Lbs of Potash Received							
Lbs of Potash Received							
Comments							
KCL MIXING							
BATCH							
DATE							
TIME							
WEIGHT (pound per gal)							
INCHES (mixing tank)							
BARRELS							
INITIALS							
BATCH							
DATE							
TIME							
WEIGHT							
INCHES							
BARRELS							
INITIALS							
BATCH							
DATE							
TIME							
WEIGHT							
INCHES							
BARRELS							
INITIALS							
BATCH							
DATE							
TIME							
WEIGHT							
INCHES							
BARRELS							
INITIALS							
BATCH							
DATE							
TIME							
WEIGHT							
INCHES							
BARRELS							
INITIALS							

BASIN DISPOSAL, INC.
DAILY KCL PLANT INSPECTION

YEAR__2019_____ MONTH_____ WEEK BEGINNING_____

POTASH
B.BBLS FROM DELIVERY TICKETS
C.COMMENTS

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
CALCIUM							
TANK							
BBLS Received							
BBLS Received							
BBLS Received							
BBLS Received							
BBLS Received							
Comments							
CALCIUM SOLD							
BARRELS							
BARRELS							
BARRELS							
BARRELS							
BARRELS							
BARRELS							
INITIALS							

BASIN DISPOSAL, INC.
ANNUAL TANK H2S MEASUREMENTS

Basin Operations/SOPS/Daily Inspection

RECEIVING TANKS

Old Number	New Number	H2S PPM
1	R1	
A	A	
B	B	
2	R2	
A	A	
B	B	
3	R3	
A	A	
B	B	
4	R4	
A	A	
B	B	
	R5	not installed
	A	not installed
	B	not installed
	R6	not installed
	A	not installed
	B	not installed
12	R7	
A	A	
B	B	
Amigo	Amigo	

SEPERATION TANKS

14	T1	
14.5	T2	

SETTLING TANKS

		H2S PPM
	T3	
	T4	
	T5	

SKIMMED OIL TANKS

Old Number	New Number	H2S PPM
9	R1	
10	A	
11	B	

FILTERED WATER TANKS

15	P1	
16	P2	
13	P3	

OIL HEATING TANKS

17	H1	
18	H2	
19	H3	

OIL SALES TANKS

8	S1	
7	S2	
6	S3	
5	S4	
20	S5	
21	S6	
22	S7	
	S8	not installed
	S9	not installed

CONTAINMENT SUMP TANKS

		H2S PPM
	1	
	2	

Manager Verification

Initials and Time

Permit Condition 9.H, At least once per year test H2S in tanks

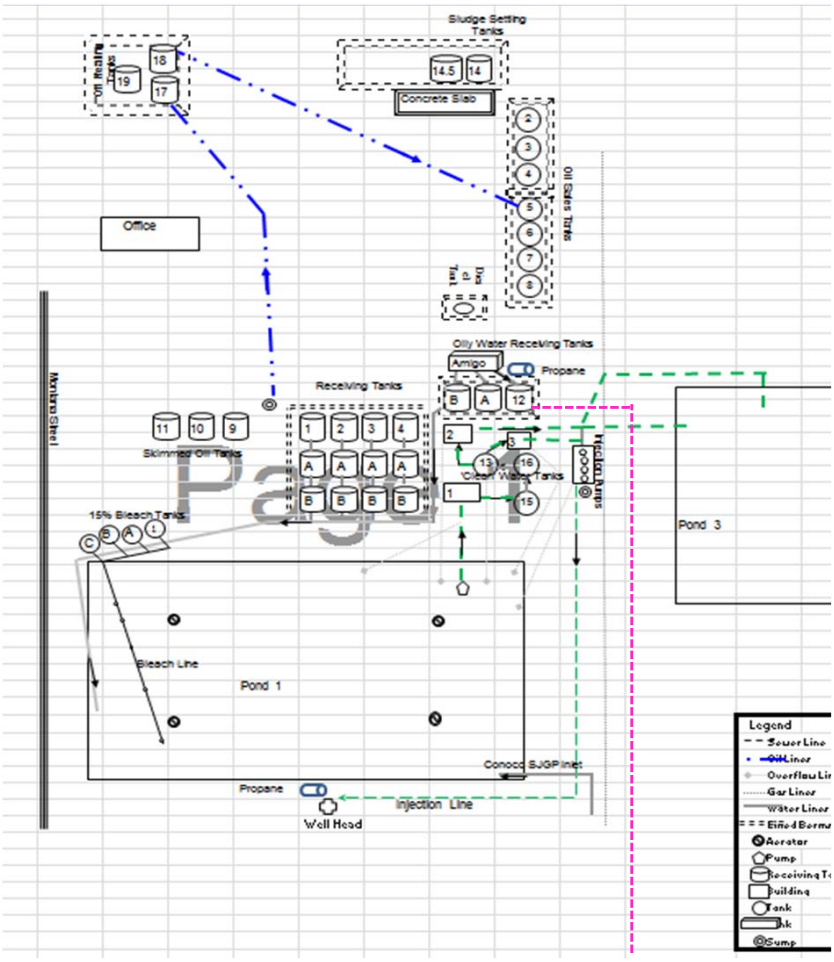
BASIN DISPOSAL, INC.
Underground Process and Wastewater Pipelines Testing

Permit Condition 6.A,The Owner/Operator shall test all underground process/wastewater pipelines at least once every 5 years to demonstrate their mechanical integrity. The Owner/Operator shall test all pressure-rated pipelines to 150% of the normal operating pressure and pressure held for a minimum of 30 minutes with no more than a 1% loss/gain in pressure

Process Lines, Every Five Years, Every Five Years per Permit Condition 6.A						
Number	**Description**	**Operating Pressure (psi)**	Test Date & Time	Initial Test Pressure	Final Test Pressure (30 minutes)	Percent Change
1	From oil skimming tanks to oil treating tanks	11	4/22/15 2:00pm	30	30	0%
2	From oil treating tanks to oil sales tanks	11	4/22/15 3:00pm	30	30	0%

Waste Water Lines, Every Five Years per Permit Condition 6.A						
Number	**Description**	**Operating Pressure (psi)**	Test Date & Time	Initial Test Pressure	Final Test Pressure (30 minutes)	Percent Change
3	Injection Pumps to Well Head	1600	5/1/2015 10:45	2400	2400	0%
4	From Pond 1 to Pond 3	11	4/22/15 9:00am	30	30	0%
5	From Pond 3 to Injection Pumps	11	4/22/15 11:00am	30	30	0%

Enterprise Pipeline ANNUALY per 2016 Minor Mod						
Number	**Description**	**Operating Pressure (psi)**	Test Date & Time	Initial Test Pressure	Final Test Pressure (30	Percent Change
6	Fence Line Valve to Meter Valve					



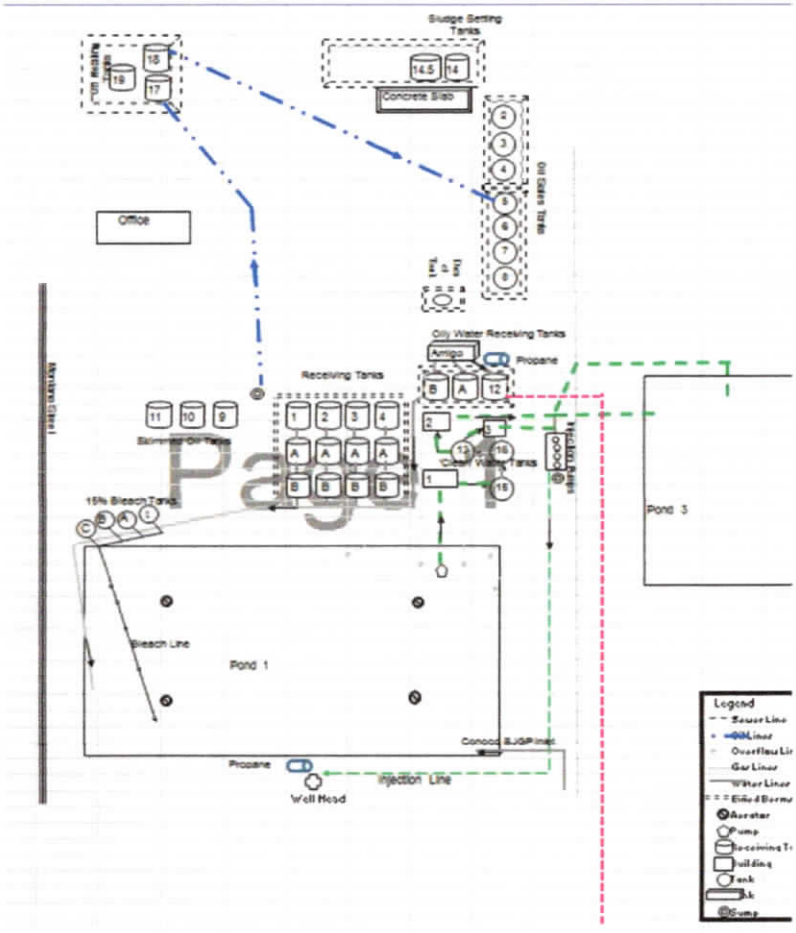
BASIN DISPOSAL, INC.
Underground Process and Wastewater Pipelines Testing

Permit Condition 6.A,The Owner/Operator shall test all underground process/wastewater pipelines at least once every 5 years to demonstrate their mechanical integrity. The Owner/Operator shall test all pressure-rated pipelines to 150% of the normal operating pressure and pressure held for a minimum of 30 minutes with no more than a 1% loss/gain in pressure

Process Lines, Every Five Years, Every Five Years per Permit Condition 6.A						
Number	Description	Operating Pressure (psi)	Test Date & Time	Initial Test Pressure	Final Test Pressure (30 minutes)	Percent Change
1	From oil skimming tanks to oil treating tanks	11	2/10/2020 11:30	30	30	0%
2	From oil treating tanks to oil sales tanks	11	2/10/2020 10:30	30	30	0%

Waste Water Lines, Every Five Years per Permit Condition 6.A						
Number	Description	Operating Pressure (psi)	Test Date & Time	Initial Test Pressure	Final Test Pressure (30 minutes)	Percent Change
3	Injection Pumps to Well Head	1600	2/11/2020 9:00	2400	2400	0%
4	From Pond 1 to Pond 3	11	3/15/2020 10:00	30	30	0%
5	From Pond 3 to Injection Pumps	11	3/15/2020 11:00	30	30	0%

Enterprise Pipeline ANNUALY per 2016 Minor Mod						
Number	Description	Operating Pressure (psi)	Test Date & Time	Initial Test Pressure	Final Test Pressure (30	Percent Change
6	Fence Line Valve to Meter Valve	5	2/10/2020 14:00	30	30	0%



ATTACHMENT II.1.D

POTENTIAL GEOMEMBRANE LINER LEAKAGE

ATTACHMENT II.1.D - Potential Geomembrane Liner Leakage

Title: Leakage Through Liners Constructed with Geomembranes - Part 1. Geomembrane Liners

Written by: J.P. Giroud and R. Bonaparte
Published in: Geotextiles and Geomembranes **Volume:** 8 **Issue:** 2 **Pages:** 27 to 67
Phone: +31 20-485-3757 ~ **Web Site:** http://www.elsevier.com

How impermeable are 'impermeable liners'? All liners leak, including geomembranes, but how much? What are the mechanisms of leakage through liners constructed with geomembranes? To answer these questions, a detailed review of leakage mechanisms, published and unpublished data, and analytical studies has been carried out with the goal of providing practical design recommendations. In particular, it appears that a composite liner (i.e. geomembrane on low-permeability soil) is more effective in reducing the rate of leakage through the liner than either a geomembrane alone or a soil liner (low-permeability soil layer) alone. However, the paper shows that the effectiveness of composite liners depends on the quality of the contact between the geomembrane and the underlying low-permeability soil layer.

Table 1
Calculated Leakage Rates Due to Pinholes and Holes in a Geomembrane

	Water depth on top of the geomembrane, h_w					
	Defect Diameter	0.003 m (0.01 ft)	0.03 m (0.1 ft)	0.3 m (1 ft)	3 m (10 ft)	30 m (100 ft)
Pinholes	0.1 mm (0.004 in)	0.006 (0.0015)	0.06 (0.015)	0.6 (0.15)	6 (1.5)	60 (15)
	0.3 mm (0.012 in)	0.5 (0.1)	5 (1)	50 (13)	500 (130)	5000 (1 300)
Holes [a]	2 mm (0.08 in)	40 (10)	130 (30)	400 (100)	1300 (300)	4000 (1 000)
	11.3 mm (0.445 in)	1 300 (300)	4 000 (1 000)	13 000 (3 000)	40 000 (10 000)	130 000 (30 000)
	Values of leakage rate in liters/day (gallons/day)					

Table 2
Calculated Unitized Leakage Rates Due to Permeation of Water Through an HDPE Geomembrane

	Water depth on top of the geomembrane, h_w					
	0 m (0 ft)	*0.003 m (0.01 ft)*	*0.03 m (0.1 ft)*	*0.3 m (1 ft)*	*3 m (10 ft)*	*>10 m (>30 ft)*
Coefficient of migration, m_g(m^2/s)	0	$9x10^{-20}$	$9x10^{-18}$	$9x10^{-16}$	$9x10^{-14}$	$3x10^{-13}$
Unitized leakage rate,q_q	0	$9x10^{-17}$	$9x10^{-15}$	$9x10^{-13}$	$9x10^{-11}$	$3x10^{-10}$
(m/s)	0	$8x10^{-5}$	0.008	0.8	80	260
(lphd)	0	$8x10^{-6}$	0.0008	0.08	8	28
(gpad)						

Notes: These values of utilized leakage rates were calculated using eqn (5) and assuming a geomembrane thickness of 1 mm (40 mils). The coefficients of migration used to calculate the unitized leakage rates in this table were obtained from eqns (19) and (20), with $C_1 = 1x10^{-22}$ m^4 $kg^{-2}s^3$, $n = 2$, and $m_{gmax} = 3x10^{-13}$ m^2/s.

The water depths used here correspond to the typical values defined in Section1.3.6. (To use eqn (19), it is necessary to know the pressure difference, Δp. According to eqn (1), water depths, h_w, are approximately equal to hydraulic head differences, Δh, which are related by eqn (12) to pressure differences, Δp.)

- data used in calculations

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ATTACHMENTS

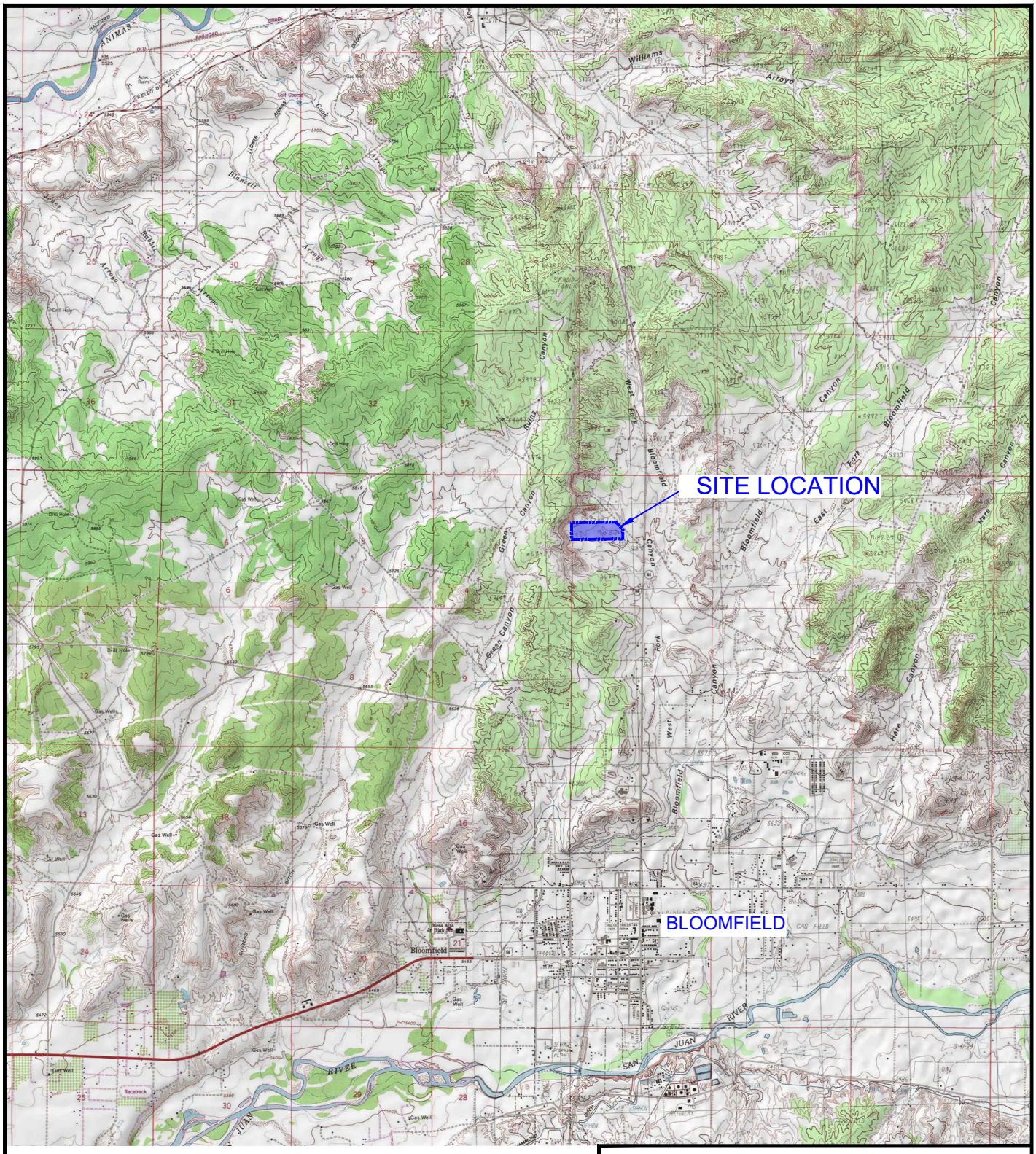
1.0 INTRODUCTION

Basin Disposal, Inc. (BDI) is an existing Surface Waste Management Facility (SWMF) providing oil field waste liquids (OFWL) disposal services. The existing BDI facility is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.36 NMAC, administered by the Oil Conservation Division (OCD) of the NM Energy, Minerals, and Natural Resources Department (NMEMNRD). This document is a component of the "Application for Permit Renewal" that proposes continued operations of the existing approved waste processing and disposal capabilities. The Facility is designed in compliance with 19.15.36 NMAC, and is operated in compliance with a Surface Waste Management Facility Permit issued by the OCD. The Facility is owned and operated by, Basin Disposal Inc.

BDI only accepts liquid waste from the production and exploration of oil fields in northwest New Mexico and the surrounding areas. The existing facility is organized in a pattern that allows for specific liquid waste acceptance, treatment, evaporation, or injection of clean liquid.

1.1 Site Location

BDI is located in unincorporated San Juan County on 27.77 acres entirely within Section 3, Township 29 North, Range 11 West approximately 3 miles north of the intersection of Highway 550 and 64 (**Figure II.2.1**). Coordinates for the approximate center of the BDI site are Latitude 36°45'19.92" and Longitude -107°58'58.73". The site is situated approximately 4 miles north of the San Juan River, and about 4.7 miles south of the Animas River on Crouch Mesa, about 500 feet and 400 feet in elevation above these respective river plains. The site occupies the West Fork of Bloomfield Canyon, an ephemeral drainage channel that drains south to the San Juan River. The site slopes gently to the east and southeast, from a maximum elevation of 5,750 feet to less than 5,700 feet. Detailed site characterization documentation is provided in **Volume IV**.



SITE LOCATION MAP

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

NOTE:
1. GEOGRAPHIC CENTER, 36° 45' 19.92" N -107° 58' 58.73" W

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE LOCATION.dwg
Date/Time:Jul. 07, 2022-11:11:13

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: SITE LOCATION.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.2.1
APPROVED BY: MWK	www.parkhill.com	

1.2 Facility Description

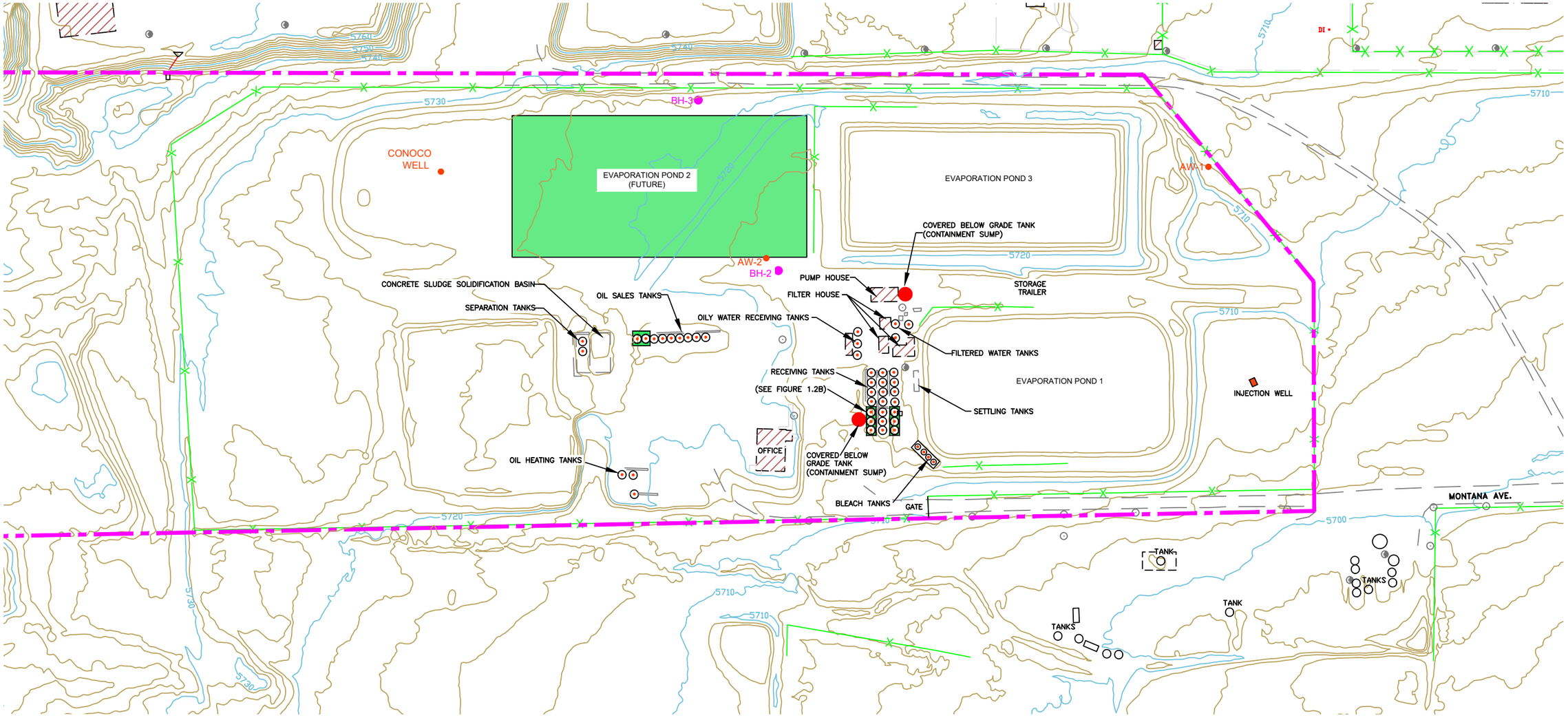
The existing BDI facility is comprised of 27.77 acres and is comprised of the following:

- 2 existing evaporation ponds (1 pending construction)
- 12 existing receiving tanks (6 pending construction)
- 4 existing oily water receiving tanks
- 3 existing skimmed oil tanks
- 3 existing oil heating tanks
- 3 existing settling tanks
- 7 existing oil sales tanks (2 pending construction)
- 3 existing filtered water tanks
- 4 existing bleach tanks
- 1 existing concrete sludge solidification basin
- 2 existing covered below grade tanks (containment sumps)
- 1 existing UIC Class II injection well for disposal of produced water
- 2 existing separation tanks
- Various support facilities including an office, a maintenance building, roads, and a storm water detention basin.

Oil field wastes are delivered to the BDI SWMF from oil and gas exploration and production operations in northwestern New Mexico and southwest Colorado. The Site Plan provided as **Figure II.2.2** identify the locations of the Disposal facilities, evaporation/storage ponds, and all structures. Perimeter of the site is surrounded by commercial/industrial businesses on three sides and buffered by a bluff on the west side of the Facility.

2.0 PURPOSE

This Oil Field Waste Management Plan (the Plan) addresses the requirements of 19.15.36.13, and 17 NMAC, and establishes a program of internal controls that will be followed by BDI to ensure that oil field wastes receive attention commensurate with the specific waste streams. The purpose of this Plan is to provide waste identification, tracking and screening mechanisms for OCD waste that may require special handling to meet applicable regulatory requirements and to protect public health and safety. The oil field wastes discussed in this Plan are limited to those materials that have met specific disposal requirements as described in Sections 13 and 17 of 19.15.36 NMAC; as well as 19.15.35.8 NMAC.



BOREHOLE LOCATIONS	
BH–2	LAT 36°45'20.54269"N (NAD 83) LONG 107°59'02.70950"W (NAD83) ELEV: 5717.98 (GROUND)
BH–3	LAT 36°45'22.92950"N (NAD 83) LONG 107°59'04.21563"W (NAD83) ELEV: 5727.46 (GROUND)
AW–1	LAT 36°45'22.01797"N (NAD 83) LONG 107°58'55.15402"W (NAD83) ELEV: 5717.85 (TOP OF CAP)
AW–2	LAT 36°45'20.58589"N (NAD 83) LONG 107°59'02.96163"W (NAD83) ELEV: 5722.20 (TOP OF CAP)

LEGEND

- PROPERTY BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 10 CONTOUR (EXISTING)
- ROADWAY (EXISTING)
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- STRUCTURE
- CONCRETE SLAB
- AW-1 ASSESSMENT WELL
- BH-3 BOREHOLE LOCATION
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)

NORTH

0 75' 150'

SITE PLAN

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/14/2025	CAD: SITE PLAN.dwg	PROJECT #: 1657.22	
DRAWN BY: DMI	REVIEWED BY: AY		FIGURE II.2.2
APPROVED BY: AY	www.parkhill.com		

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\SITE PLAN.dwg
Date/Time:Jan. 15, 2025-09:34:38

3.0 OIL FIELD WASTE ACCEPTANCE PROGRAM

A decision to accept incoming oil field waste streams for management at BDI will be clearly documented for each load received, as delineated on **Table II.2.1**. Disposal operations at BDI will only be conducted when an attendant is on duty and the Facility is operational. Current operating hours at BDI are 24 hours a day, 7 days a week.

BDI is completely secured by a 6-foot chain-link fence and locking gates to prevent any unauthorized access or disposal when an attendant is not on duty. The temporary parking area (**Permit Plans**) will be inspected for leakage, and vehicles will be required to have any valves or access ports secured and locked to prevent spillage or tampering. At a minimum, the following Waste Acceptance Protocol (**Table II.2.1**) requirements must be met prior to managing waste at BDI.

TABLE II.2.1 - Waste Acceptance Protocol

1. The commercial or industrial customers are required to provide a valid "Authorization To Move Produced Water", C-133 form **(Attachment II.1.A).** After producing the C-133, BDI will verify the customer is an authorized hauler by checking it against the OCD monthly updated list at http://www.emnrd.state.nm.us/ocd/Statistics.html. BDI will follow the following protocol in managing the C-133 form:
   a) Monthly, the General Manager shall provide the plant personnel an updated list.
   b) The C-133 list shall be maintained in the Plant Manager's filing cabinet.
   c) Prior to accepting water, plant personnel shall ensure that the hauling company has a valid C-133 approval.
   d) Since all haulers that have frequented Basin Disposal in the past have already been verified, the verification will likely only be necessary for new haulers.
   e) If a valid C-133 is not on file, the hauler shall not be allowed to unload the liquid waste.
   f) The Plant Manager or General Manager will be contacted if assistance is needed
2. The customer must provide to BDI the required Form C-138, Generator Certificate of Waste Status (**Attachment II.2.B**), signed by the generator or the generator's authorized agent, certifying the waste is exempt oil field waste and are not mixed with non-exempt waste. In addition, the generator, or their authorized representative, will be required to sign the BDI Disposal Ticket, SJRP Form 168-6 or similar (**Attachment II.2.C)** which contains the following certification:

   I do hereby certify that, according to the Resource Conservation and Recovery Act (RCRA) and Environmental Protection Agency's July, 1988, regulatory determination, any and all waste delivered to Basin Disposal Inc. from the above locations is: EXEMPT oilfield waste. This waste is in compliance with Regulated Levels of Naturally Occurring Radioactive Material (NORM) pursuant to 20 NMAC 3.1 Subpart 1403.C and D.

   Should the generator or their authorized representative fail to sign the BDI ticket, the load of oil field waste will be rejected.
3. BDI will notify the customer of all necessary conditions/limitations that apply to managing the waste, and the customer will be required to comply with all conditions/limitations.
4. BDI shall have the option to accept the required Form C-138 on a monthly, weekly, or per load basis. BDI will maintain and make the certificates available for the Division's inspections.

3.1 Prohibited Wastes

Non-exempt hazardous waste, non-exempt non-hazardous waste, and Regulated Naturally Occurring Radioactive Material (NORM) wastes pursuant to 19.15.35 NMAC, which are subject to other Federal or State regulations are prohibited at BDI. Generators/haulers with these wastes will be referred to a United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) permitted facility (i.e., WCS, Andrews County, TX).

3.2 Oil Field Waste Inspection and Management

Once the required paperwork has been reviewed and verified, each load will be inspected to ensure compliance with 19.15.36.13.F NMAC. Inspections consist of:

3.2.1 Examination of Loads for Fluids

a) Loads will be checked prior to acceptance for the presence of non-permitted materials (e.g., compressor oil) and to determine the solid content of the load (i.e., "clean" or "dirty") for the purposes of proper management.

b) Every truck will stop at the inspection landing for evaluation by site personnel.

c) BDI personnel will not step onto the truck until the driver has placed the truck in park with the brake applied, opened the door, and has his/her legs outside the cab. This is to ensure the truck does not move while BDI personnel are on the truck.

d) BDI personnel will position themselves upwind, and will wear neoprene or other heavy duty non-permeable gloves.
e) The cap on the tank will be opened and a metal rod will be inserted to the bottom of the tank.
f) Care will be exercised because hydrogen sulfide (H_2S) may be present when the cap is opened. If there is any indication that H_2S may be present, the H_2S safety procedures will be followed (**Volume II.3**).
g) Based on whether the rod contacts the metal bottom of the tank, or is slowed by sludge/solid material, Facility personnel will be able to gauge if the load may potentially be laden with sediment.
h) The metal rod will be pulled out from the tank and the fluid on the rod examined for the presence of unacceptable oils or other non-exempt materials.
i) Odor can also be an indication if the load contains fluids that are non-exempt. Non-exempt waste with potential odors include:
    a. Septic conditions
    b. Caustic or acid cleaners
    c. Methanol, unused
    d. Pesticide and herbicide wastes
    e. Solvents, spent (including waste solvents)
j) Non-compliant wastes are not accepted and will be rejected and returned to the Hauler/Generator.

3.2.2 Presence of H_2S

BDI will monitor for H_2S on a continual basis for each oil field delivery waste vehicle arriving at the site. Monitoring for H_2S will be completed as follows:

a) The battery and calibration date on the monitoring instrument will be checked to ensure both are current.
b) BDI personnel will position themselves upwind or as far away from the cap opening on the tank as possible, in order to minimize the potential for exposure. Safety is the most important consideration when checking for H_2S.
c) BDI personnel will use the H_2S monitor to determine the potential presence and concentration of H_2S (for specific operational instructions, refer to specific owner's manual for the monitoring instrument).
d) The tube wand will be used to acquire a sample, and the H_2S reading and related notes will be recorded on the BDI Disposal Log (**Attachment II.2.D**).

In the event of an H_2S detection of 1 ppm or greater, the following procedures will also be implemented by BDI personnel:

a) Notification of the presence of H_2S will be provided to both the driver (hauler) and the generator.
b) The generator will be provided the option of allowing BDI to treat the load on-site.

Should the generator decline treatment, the load will be rejected and directed to leave BDI Facility.

c) If the generator requests treatment, BDI personnel will add sodium hypochlorite (NaClO) to the load at the levels corresponding to **Table II.3.5**. In the event that NaClO is unavailable due to market shortages, calcium hypochlorite may be used instead.

d) Once the NaClO has been added, the load will be "rolled" (i.e., trucks will use their air pumps to "roll" air through the tank to allow for mixing of the contents and the added NaClO to assist the chemical reaction. After approximately 20 minutes, the load will be re-sampled for the presence of H_2S. Treatment will continue until the H_2S reading is below 1 ppm. Once the H_2S measurement reads below 1 ppm, the load will be directed to the receiving area for processing.

e) Treatment information and the final H_2S measurement will be recorded on the BDI Disposal Log (**Attachment II.2.D**).

f) BDI personnel will contact the Generator's Plant Manager or General Manager if assistance is needed.

3.2.3 Presence of Non-exempt fluids

a) In the event compressor oil or other non-exempt fluids are detected, a sample of the fluid will be collected in a sample container.

b) The date, generating company, hauler, and location will be noted on the sample container.

c) The hauler will be prevented from unloading.

d) BDI will contact the generator's Plant Manager or General Manager if assistance is needed.

e) Samples will be maintained at the Facility for two weeks for inspection/testing by the generator's personnel and OCD, as necessary.

3.2.4 Presence of High Solids Content

a) In the event high solid/sludge content is suspected, a sample of the material will be collected in a sample container.

b) The date, company, hauler, and location will be noted on the container.

c) If the load can be accepted with filtration, the driver shall call the company for permission to be charged the normal price plus filter costs.

d) If the load cannot be accepted due to high solids content, the hauler will contact the production company to inform them that the load has been rejected, and the hauler will be prevented from unloading.

e) The Facility will contact the Generator's Plant Manager or General Manager if assistance is needed.

f) Samples will be maintained at the Facility for two weeks for inspection/testing by the generator's personnel.

3.2.5 Unloading

a) Basin Disposal has 5 unloading stations (Tanks 1-4, Amigo tank).
b) To minimize the chance for conflicts between trucks, a maximum of 4 sequential trucks will be allowed past the inspection platform(s) at one time.
c) Trucks will pull up to the load-out station as instructed by BDI personnel.
d) Drivers will connect their grounding straps to the grounding stakes at their specific Load-Out Point.
e) Trucks will exit around the back side of the shop building.
f) Failure of drivers to follow these procedures will be brought to the attention of management for proper resolution with the hauling company.
g) In rare instances when a driver's pump is inoperative upon arrival, the load will be inspected for the presence of H2S, non-exempt fluids, and high solids content, and if none are present the truck will be allowed to dump directly into Evaporation Pond #3.

3.3 Recordkeeping

Upon receipt of oil field waste, Facility employees will record the following into the Facility Disposal Log Book or similar template (**Attachment II.2.D**):

- Generator
- Origin
- Date received
- Quantity
- Transporter
- Disposal location

Logbooks will be maintained for a minimum of 5 years after facility closure. At the end of each month, the General Manager shall compile information to be submitted electronically for the C-115 report to the OCD.

3.4 Site Generated Waste

Certain wastes generated by BDI as a result of routine operations and maintenance will meet the definitions of 19.15.35.8. The anticipated list along with the testing requirements and final disposition is presented below:

TABLE II.2.2 - Testing Requirements

Description	Testing Requirements	Test Method	Regulatory Limit	Disposal Location
C(1) Waste	None	N/A	N/A	San Juan County LF
C(2) Waste				
Junk pipe, valves, metal pipe	NORM*	20.3.14.1403 NMAC	Division specific review	San Juan County LF
Pipe scale & other deposits	TPH	EPA method 418.1	1000 mg/kg	San Juan County LF
	TCLP / metals	EPA Method 1311	arsenic: 5 mg/l	San Juan County LF
			barium: 100 mg/l	San Juan County LF
			cadmium: 1 mg/l	San Juan County LF
			chromium: 5 mg/l	San Juan County LF
			lead: 5 mg/l	San Juan County LF
			mercury: 0.2 mg/l	San Juan County LF
			selenium: 1 mg/l	San Juan County LF
			silver: 5 mg/l	San Juan County LF
	NORM*	20.3.14.1403 NMAC	Division specific review	San Juan County LF
Produced water filters	Corrosivity	EPA Method 1110	2.0 < pH < 12.5	San Juan County LF
C(3) Waste				
Other Waste**	Case-by-case basis	Division determined	Division specific review	San Juan County LF
Petroleum contaminated soils***	Case-by-case basis	Division determined	Division specific review	Enviro Tech Landfarm Industrial Ecosystems
Sludges***	Case-by-case basis	Receiving SWMF determined	Division specific review	Enviro Tech Landfarm Industrial Ecosystems

Notes:
** If NORM is determined to be a regulated NORM, a written request for disposal will not be submitted to OCD. The NM Radition Control Bureau will be contacted.*
***If any of these wastes are determined to be characteristically hazardous, OCD will not be contacted for a disposal determination.*
****BDI is responsible to submit/provide the destination OCD- approved SWMF Landfarm with the appropriate completed form C-138 manifest upon delivery of sludge wastes.*

While this list is not all inclusive, BDI will coordinate with the Division the proper handling and disposal requirement for the 19.15.35.8 NMAC C(2) and C(3) waste and approved disposal facilities. As part of this process BDI will make written requests to OCD and provide test results to obtain OCD approval.

4.0 TRAINING

BDI personnel will be trained and updated in the identification of oil field waste and excluded wastes on at least an annual basis. Spotters and/or equipment operators will be present when oil field waste is unloaded in order to check for unauthorized waste and confirm compliance with proper site rules. In addition to the routine customer screening process, new customer oil field waste deliveries will receive focused supervision and scrutiny.

At a minimum, inspection personnel will be trained to identify suspicious wastes based on visual (and olfactory) characteristics in addition to the waste screening procedures outlined in Section 2.2 of this Plan. Specific items that will be on the training agenda include:

- Hazardous placarding or markings
- Proper form identification and use
- H_2S screening
- Non-exempt liquids recognition
- "Chemical" odors
- Excessive solids recognition
- Employee safety and personal protective equipment (PPE) use
- Site-generated waste handling and disposal

Whenever a suspicious waste is identified, inspection personnel will follow specific procedures that may include:

- Identifying the unacceptable waste by characteristic, estimated quantity, transport vehicle, and the names and addresses of those associated with the waste load
- Questioning the driver of the vehicle
- Reviewing existing and historic generator paperwork
- Contacting the possible source (i.e., generator) and questioning the originator of waste pursuant to the Rules.
- Denying access to the vehicle
- Contacting the Division and/or Hazardous Waste Bureau, as applicable
- Using protective equipment
- Calling an emergency response agency, if required
- Contacting laboratory support, if necessary
- Document load refusal on C-138 (**Attachment II.2.B**)

ATTACHMENT II.2.A

AUTHORIZATION TO MOVE PRODUCED WATER,

OCD FORM C-133

Submit a single copy to
Santa Fe Office

State of New Mexico
Energy Minerals and Natural Resources

Form C-133
Revised August 1, 2013

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

AUTHORIZATION TO MOVE PRODUCED WATER

Transporter Name:_____

Business (Physical) Address in New Mexico:

_____

_____

Contact Mailing Address (If different):

_____

_____

Business Phone: _____
Business Fax: _____

Contact Phone: _____
Contact Fax: _____

1. Attach a copy of the applicant's New Mexico Public Regulation Commission (PRC) Warrant for Transportation Services.

2. Identify the form of the applicant's business entity: (Example: corporation, limited liability company [LLC], limited partnership, limited liability partnership, partnership, sole proprietor): _____

A. If the applicant is a corporation or LLC, provide the Secretary of State corporation number:
_____

B. If the applicant is a limited partnership or limited liability partnership, provide the Secretary of State file number: _____

C. If the applicant is any other form of partnership, identify all partners:
_____

D. If the applicant is a sole proprietor, provide the name of the sole proprietor:
_____

(Note: If the form of your business entity changes, the name of your business changes, or the business address changes, you must re-apply for authorization.)

It is the responsibility of each holder of an approved Form C-133 to comply with 19.15.34 NMAC and familiarize its personnel with that rule's requirements. Failure to move or dispose of produced water in accordance with 19.15.34 NMAC may be cause for cancellation of the Form C-133.

"I hereby certify that the information above is true and complete to the best of my knowledge and belief." (Application must be signed by person who is authorized to obligate the company applying for the permit)

Signature:_____ Date:_____

Printed Name:_____ Title:_____

E-mail Address:_____

(This space for State use)

Approved by:_____ Title:_____

Date:_____

ATTACHMENT II.2.B

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE,

OCD FORM C-138

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-138
Revised August 1, 2011

*Surface Waste Management Facility Operator and Generator shall maintain and make this documentation available for Division inspection.

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. Generator Name and Address:

2. Originating Site:

3. Location of Material (Street Address, City, State or ULSTR):

4. Source and Description of Waste:

Estimated Volume _____ yd^3 / bbls Known Volume (to be entered by the operator at the end of the haul) _____ yd^3 / bbls

5. GENERATOR CERTIFICATION STATEMENT OF WASTE STATUS

I, _____, representative or authorized agent for _____ do hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: (Check the appropriate classification)

☐ RCRA Exempt: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. *Operator Use Only: Waste Acceptance Frequency* ☐ *Monthly* ☐ *Weekly* ☐ *Per Load*

☐ RCRA Non-Exempt: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined in 40 CFR, part 261, subpart D, as amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items)

☐ MSDS Information ☐ RCRA Hazardous Waste Analysis ☐ Process Knowledge ☐ Other (Provide description in Box 4)

GENERATOR 19.15.36.15 WASTE TESTING CERTIFICATION STATEMENT FOR LANDFARMS

I, _____, representative for _____ do hereby certify that representative samples of the oil field waste have been subjected to the paint filter test and tested for chloride content and that the samples have been found to conform to the specific requirements applicable to landfarms pursuant to Section 15 of 19.15.36 NMAC. The results of the representative samples are attached to demonstrate the above-described waste conform to the requirements of Section 15 of 19.15.36 NMAC.

5. Transporter:

OCD Permitted Surface Waste Management Facility

Name and Facility Permit #:

Address of Facility:

Method of Treatment and/or Disposal:

☐ Evaporation ☐ Injection ☐ Treating Plant ☐ Landfarm ☐ Landfill ☐ Other

Waste Acceptance Status:

☐ **APPROVED** ☐ **DENIED** (Must Be Maintained As Permanent Record)

PRINT NAME: _____ TITLE: _____ DATE: _____

SIGNATURE: _____ TELEPHONE NO.: _____

Surface Waste Management Facility Authorized Agent

ATTACHMENT II.2.C

DISPOSAL TICKET, SJRP FORM 168-6

BASIN DISPOSAL

30 Years of Environmental Health and Safety Excellence

200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

NO. 734937
NMOCD PERMIT: NM -001-0005
Oil Field Waste Document, Form C138
INVOICE:

DATE _____ DEL. TKT#. _____

GENERATOR: _____ BILL TO: _____

HAULING CO. _____ DRIVER: _____
(Print Full Name)

ORDERED BY: _____ CODES: _____

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☐ Produced Water ☐ Drilling/Completion Fluids

STATE: ☐ NM ☐ CO ☐ AZ ☐ UT TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1								
2								
3								
4								
5								

I, _____ representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☐ Approved ☐ Denied ATTENDANT SIGNATURE _____

SAN JUAN PRINTING 08180188

ATTACHMENT II.2.D

DISPOSAL LOG BOOK, SJRP FORM 567-43

ENTRY	TRUCK	DRIVERS NAME	TICKET #	TIME OUT AM / PM	ORIGIN	OPERATING COMPANY	WORK DESCRIPTION	DATE IN	TIME IN AM / PM	TRUCKING COMPANY
1				A.M. P.M.					A.M. P.M.	
2				A.M. P.M.					A.M. P.M.	
3				A.M. P.M.					A.M. P.M.	
4				A.M. P.M.					A.M. P.M.	
5				A.M. P.M.					A.M. P.M.	
6				A.M. P.M.					A.M. P.M.	
7				A.M. P.M.					A.M. P.M.	
8				A.M. P.M.					A.M. P.M.	
9				A.M. P.M.					A.M. P.M.	
10				A.M. P.M.					A.M. P.M.	
11				A.M. P.M.					A.M. P.M.	
12				A.M. P.M.					A.M. P.M.	
13				A.M. P.M.					A.M. P.M.	
14				A.M. P.M.					A.M. P.M.	
15				A.M. P.M.					A.M. P.M.	
16				A.M. P.M.					A.M. P.M.	
17				A.M. P.M.					A.M. P.M.	
18				A.M. P.M.					A.M. P.M.	
19				A.M. P.M.					A.M. P.M.	
20				A.M. P.M.					A.M. P.M.	
21				A.M. P.M.					A.M. P.M.	
22				A.M. P.M.					A.M. P.M.	
23				A.M. P.M.					A.M. P.M.	
24				A.M. P.M.					A.M. P.M.	
25				A.M. P.M.					A.M. P.M.	

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ATTACHMENTS

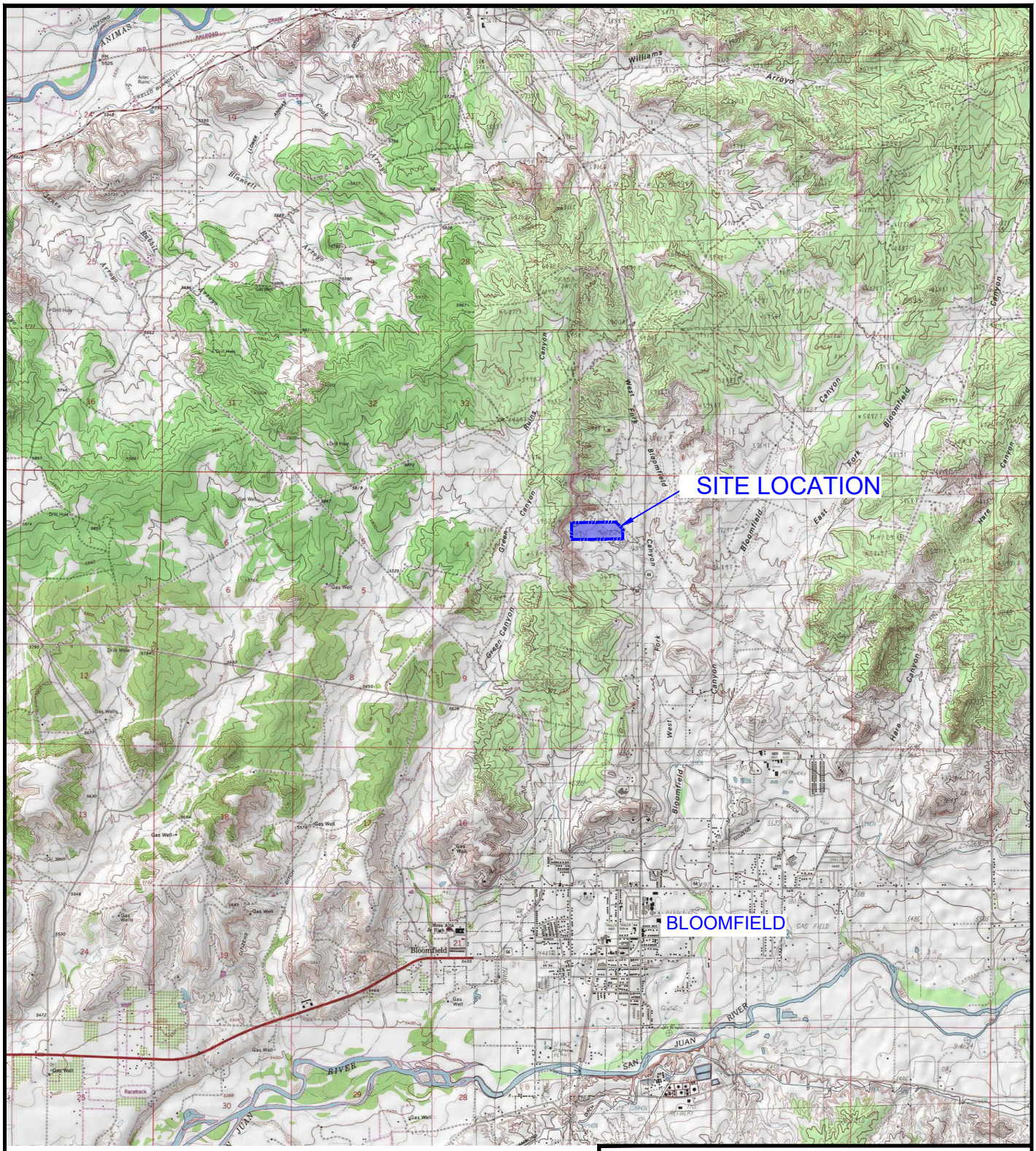
1.0 INTRODUCTION

Basin Disposal, Inc. (BDI) is an existing Surface Waste Management Facility (SWMF) providing oil field waste liquids (OFWL) disposal services. The existing BDI facility is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.36 NMAC, administered by the Oil Conservation Division (OCD) of the NM Energy, Minerals, and Natural Resources Department (NMEMNRD). This document is a component of the "Application for Permit Renewal" that proposes continued operations of the existing approved waste processing and disposal capabilities. The Facility is designed in compliance with 19.15.36 NMAC and is operated in compliance with a Surface Waste Management Facility Permit issued by the OCD. The Facility is owned and operated by Basin Disposal Inc.

BDI only accepts liquid waste from the production and exploration of oil fields in northwest New Mexico and the surrounding areas. The existing facility is organized in a pattern that allows for specific liquid waste acceptance, treatment, evaporation, or injection of clean liquid.

1.1 Site Location

BDI is located in unincorporated San Juan County on 27.77 acres entirely within Section 3, Township 29 North, Range 11 West approximately 3 miles north of the intersection of Highway 550 and 64 (**Figure II.3.1**). Coordinates for the approximate center of the BDI site are Latitude 36°45'19.92" and Longitude -107°58'58.73". The site is situated approximately 4 miles north of the San Juan River, and about 4.7 miles south of the Animas River on Crouch Mesa, about 500 feet and 400 feet in elevation above these respective river plains. The site occupies the West Fork of Bloomfield Canyon, an ephemeral drainage channel that drains south to the San Juan River. The site slopes gently to the east and southeast, from a maximum elevation of 5,750 feet to less than 5,700 feet. Detailed site characterization documentation is provided in **Volume IV**.



SITE LOCATION MAP

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

NOTE:
1. GEOGRAPHIC CENTER, 36° 45' 19.92" N -107° 58' 58.73" W

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE LOCATION.dwg
Date/Time:Jul. 07, 2022-11:22:58

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: SITE LOCATION.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.3.1
APPROVED BY: MWK	www.parkhill.com	

1.2 Facility Description

The existing BDI facility is comprised of 27.77 acres and is comprised of the following:

- 2 existing evaporation ponds (1 pending construction)
- 12 existing receiving tanks (6 pending construction)
- 4 existing oily water receiving tanks
- 3 existing skimmed oil tanks
- 3 existing oil heating tanks
- 3 existing settling tanks
- 7 existing oil sales tanks (2 pending construction)
- 3 existing filtered water tanks
- 4 existing bleach tanks
- 1 existing concrete sludge solidification basin
- 2 existing covered below grade tanks (containment sumps)
- 1 existing UIC Class II injection well for disposal of produced water
- 2 existing separation tanks
- Various support facilities including an office, a maintenance building, roads, and a storm water detention basin.

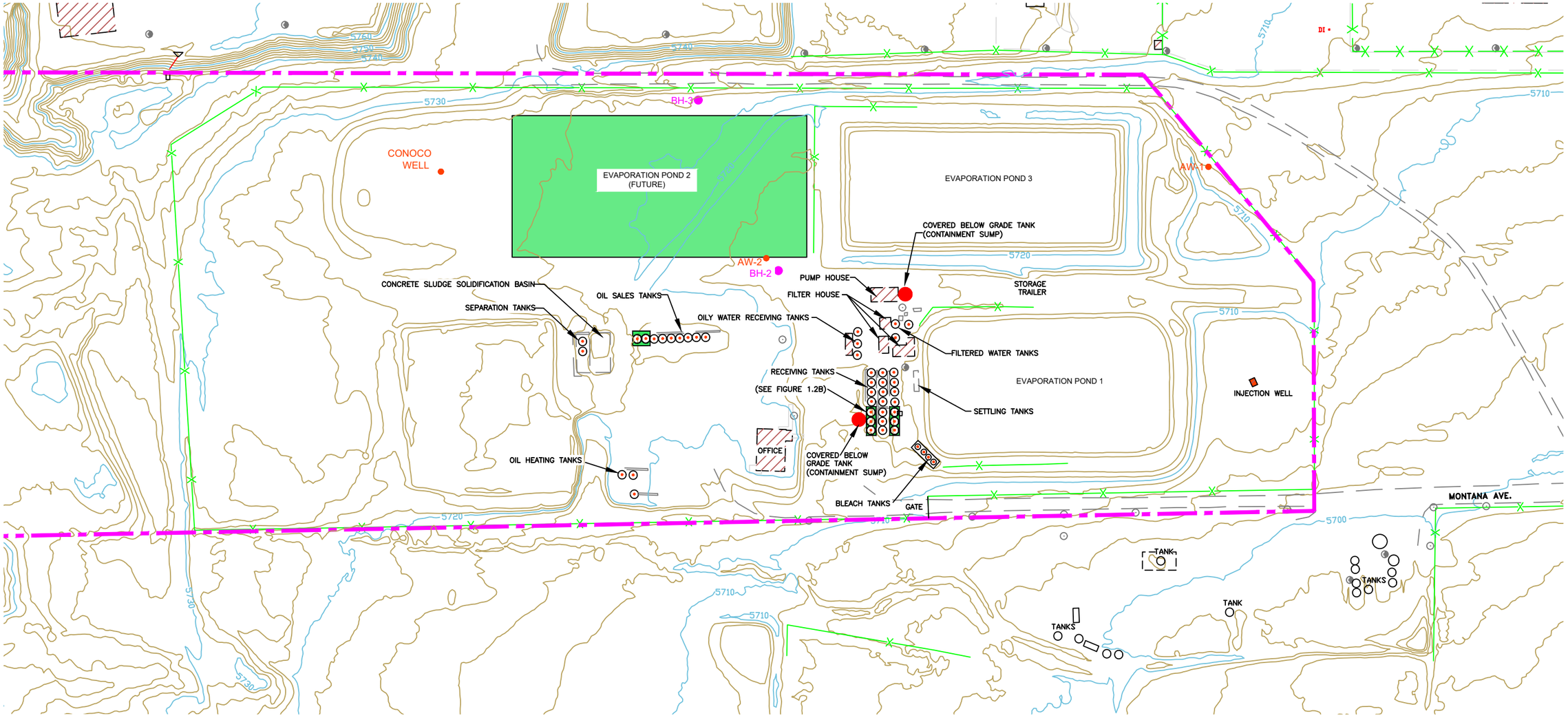
Oil field wastes are delivered to the BDI SWMF from oil and gas exploration and production operations in northwestern New Mexico and southwest Colorado. The Site Plan provided as **Figure II.3.2** identify the locations of the Disposal facilities, evaporation/storage ponds, and all structures. Perimeter of the site is surrounded by commercial/industrial businesses on three sides and buffered by a bluff on the west side of the Facility.

1.3 Purpose

The purpose of this Hydrogen Sulfide (H_2S) Prevention and Contingency Plan (the Plan) is to enhance awareness and establish measures to protect employees from occupational exposure to H_2S while allowing them to perform their assigned duties. The Plan is also designed to protect customers and visitors to the BDI Facility, as well as the general public and nearby land users in conformance with 19.15.11.9 NMAC.

This Plan prescribes measures for:

- Providing routine H_2S monitoring of incoming wastes.
- Monitoring H_2S detectors at the Facility evaporation ponds.
- Routine facility perimeter monitoring, and the potential for permanent perimeter monitoring stations.
- Regular monitoring in and around incoming oil field waste transportation vehicles.
- Augmenting the monitoring and emergency response procedures (i.e., Plan activation) in the event that two subsequent detections of H_2S at ≥ 1 part per million (ppm) in ambient air immediately adjacent to the evaporation ponds occur.
- Preliminary assessment and response to incoming loads in the event that H_2S is detected > 1 part per million (ppm) from incoming loads.



BOREHOLE LOCATIONS	
BH–2	LAT 36°45'20.54269"N (NAD 83) LONG 107°59'02.70950"W (NAD83) ELEV: 5717.98 (GROUND)
BH–3	LAT 36°45'22.92950"N (NAD 83) LONG 107°59'04.21563"W (NAD83) ELEV: 5727.46 (GROUND)
AW–1	LAT 36°45'22.01797"N (NAD 83) LONG 107°58'55.15402"W (NAD83) ELEV: 5717.85 (TOP OF CAP)
AW–2	LAT 36°45'20.58589"N (NAD 83) LONG 107°59'02.96163"W (NAD83) ELEV: 5722.20 (TOP OF CAP)

LEGEND

- PROPERTY BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 10 CONTOUR (EXISTING)
- ROADWAY (EXISTING)
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- STRUCTURE
- CONCRETE SLAB
- AW-1 ASSESSMENT WELL
- BH-3 BOREHOLE LOCATION
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)

NORTH

0 75' 150'

SITE PLAN

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/14/2025	CAD: SITE PLAN.dwg	PROJECT #: 1657.22	
DRAWN BY: DMI	REVIEWED BY: AY	FIGURE II.3.2	
APPROVED BY: AY	www.parkhill.com		

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\SITE PLAN.dwg
Date/Time:Jan. 15, 2025-10:17:01

BDI has an established relationship with the local emergency response authorities identified in **Table II.3.1**. BDI will invite first responders to discuss notification, emergency response procedures, and evacuation plans. The H_2S monitoring program will continue during the active life of the Facility and following closure, as necessary.

TABLE II.3.1 - Emergency Response Agencies and Contacts

Agency/Organization	Emergency Number
1. Local Emergency Response Contacts	
San Juan County Emergency Management	505.334.7700
2. Fire	
Bloomfield Fire Department	911 or 505.632.6363
San Juan County Fire Department	911 or 505.334.1180
3. Police	
San Juan County Sheriff's Department	911 or 505.334.6107
New Mexico State Police	911 or 505.325.7547
4. Medical/Ambulance	
San Juan Region Medical Center 801 West Maple St. Farmington, NM 87401	911 or 505.609.2000
5. Response Firm	
Envirotech, Inc. 5796 Highway 64 Farmington, NM 87401	505.632.0615
6. OCD Emergency Response Contacts	
Oil Conservation Division 1000 Rio Brazos Aztec, NM 87410 Mobile Phone	 505.320.0243 505.320.0200
Oil Conservation Division 1220 South St. Francis Drive Santa Fe, NM 87505	505.476.3441
7. State Emergency Response Contacts	
Environmental Emergency 24 hr. (NMED)	505.827.9329
New Mexico Environment Department Solid Waste Bureau, Santa Fe	505.827.0197
8. Federal Emergency Response Contacts	
National Emergency Response Center (U.S. Coast Guard)	800.424.8802
Region VI Emergency Response Hotline (USEPA)	214.665.2222

To be posted prominently on-site

1.4 Hydrogen Sulfide and Sulfur Dioxide Characteristics

H_2S is a colorless and flammable gas with a distinct odor (i.e., rotten eggs). Being heavier than air, H_2S tends to accumulate at the floor of poorly ventilated spaces. It is found in petroleum and natural gas and is sometimes present in groundwater. The odor of hydrogen sulfide gas can be perceived at levels as low as 10 parts per billion (ppb). At levels of 50-100 ppm, it may cause the human sense of smell to fail (e.g., desensitizing). Limited exposure to low concentrations of H_2S can result in eye irritation, sore throat, coughing, shortness of breath, and fluid in the lungs. These symptoms usually subside in a few weeks in the absence of continued exposure. Long-term, low-level exposure may result in fatigue, loss of appetite, headaches, irritability, poor memory, and dizziness. Exposure to high concentrations of H_2S can lead to eye damage, loss of sense of smell, pulmonary edema (swelling and/or fluid accumulation in the lungs), loss of breathing and death. General risks associated with increasing levels of H_2S contact are summarized on **Table II.3.2**, and more detailed chemical hazard information for H_2S is provided on the safety data sheet (SDS) for H_2S provided as **Attachment II.3.A**. BDI contingencies and immediate response actions associated with specific detected levels of H_2S are described in Section 4, **Table II.3.5**.

Sulfur Dioxide (SO_2) is a toxic gas responsible for the smell of burnt matches. It is released naturally by volcanic/geothermal activity and is a by-product of copper extraction and the burning of fossil fuels contaminated with sulfur compounds. Inhaling sulfur dioxide is associated with increased respiratory symptoms and disease, difficulty in breathing, and premature death. In 2008, the American Conference of Governmental Industrial Hygienists reduced the short-term exposure limit to 0.25 parts per million (ppm). The OSHA PEL is currently set at 5 ppm (13 mg/m3) time-weighted average. NIOSH has set the IDLH at 100 ppm. In 2010, the EPA revised the primary SO_2 NAAQS by establishing a new one-hour standard at a level of 75 parts per billion (ppb).

TABLE II.3.2 - H_2S Exposure Health Risk and Regulatory Levels

H_2S EXPOSURE LEVEL[1]	HEALTH RISK/REGULATION
1 ppm	ACGIH-Recommended TLV[1] for 8 hour TWA
5 ppm	ACGIH-Recommended STEL[2] for 15-minutes of exposure
10 ppm	NIOSH-Recommended Exposure Limit
20 ppm	Enforceable Ceiling Occupational Exposure Limit. Long term exposure can lead to loss of concentration capacity, recurrent headaches.
100 ppm	Immediately Dangerous to Life & Health (IDLH[3]). Eliminates sense of smell in 3 to 5 minutes, watery eyes, light sensitivity, corneal scarring, vomiting, and cardiac arrythmia.
200 ppm	Kills sense of smell quickly (olfactory paralysis), memory loss, incoordination and motor function loss.
500 ppm	Dizziness, cessation of breathing begins in a few minutes
700 ppm	Unconscious quickly, death will result if not rescued promptly
1,000 ppm[3] +	Strong central nervous system reaction, respiratory arrest and Immediate collapse and respiratory paralysis when above 1,000 ppm. Death will result unless rescued promptly. Artificial resuscitation may be necessary.

[1]*TLV* – Threshold Limit Value is the concentration employees may be exposed to based on a Time Weighted Average (TWA[4]) for 8 hours/day for 40 hours/week. Value is set by the American Conference of Governmental Industrial Hygienists (ACGIH) *and regulated by OSHA*

[2]*STEL* – Short Term Exposure Limit is defined by ACGIH as the concentration to which an employee may be exposed to continuously for a short period of time without suffering irritation, providing that the highest exposure never exceeds the Ceiling Occupational Exposure Limit (20 ppm for H_2S).

[3]*IDLH* – Immediately Dangerous to Life and Health is the concentration that has been determined by the ACIGH to cause serious health problems or death if exposed to this concentration. The IDLH for H2S is 100 ppm.

[4]*TWA* – Time Weighted Average is the average concentration of any chemical or gas for an 8-hour period. This is the concentration that any employee may be exposed to based on TWA.

General data obtained from www.safetydirectory.com

The acceptable oil field waste types, and engineering design and operating procedures specific to the BDI Facility, will mitigate against the potential release of H_2S into the environment. The measures deployed by BDI that minimize the potential generation of releases include:

- Screening of existing and new incoming deliveries
- Load inspections and screening for the presence of H_2S as outlined in the Oil Field Waste Management Plan (**Volume II.2**)
- Onsite H_2S treatment of incoming loads to ensure that the acceptance criteria of non-detectable/measurable H_2S (< 1 ppm) is met
- Continual evaporation pond monitoring and testing
- Employee training

The cornerstone of this Plan consists of routine H_2S monitoring conducted for the Facility,

incoming waste streams, and evaporation ponds to ensure that the regulatory limits for H_2S are not exceeded. The monitoring is intended to confirm that the H_2S concentration of waste being accepted at the Facility is <1 ppm, and that the ambient air surrounding the evaporation ponds contains <1 ppm H_2S. This approach to monitoring and treatment has proven effective in reducing H_2S concentrations and has been successful in eliminating the need for H_2S Contingency Plan implementation as described in 19.15.11.9 NMAC. It is intended that BDI shall activate the hydrogen sulfide contingency plan when a release creates two consecutive hourly H_2S readings of ≥1 ppm at the evaporation pond perimeter monitors, and/or a H_2S concentration ≥10 ppm anywhere on-site at the facility. At a minimum, BDI shall activate the plan whenever a release may create a hydrogen sulfide concentration of more than 100 ppm in a public area, 500 ppm at a public road or 100 ppm 3,000 feet from the site of release.

BDI also recognizes and complies with the additional, more stringent requirements contained in 19.15.11 NMAC, as well as the Permit Conditions set forth in the May 19, 2010, Surface Waste Management Facility Permit (NM1-005) Major Modification Permit:

9.F The Owner/Operator shall, within 24 hours of receiving notification from the Division's Environmental Bureau or a concerned party that an objectionable odor has been detected or reported, implement the following response procedures:
- *i. Log date and approximate time of notice that an odor exists, including the name of the complainant and any contact information;*
- *ii. Investigate the source of the odor and log investigative steps taken, including date and time, and conclusions reached; and,*
- *iii. Take actions to alleviate the odor, which may include adjusting chemical treatment, air sparging, solidification, or similar responses, and log the actions taken.*

9.G In addition to the commitments of the Hydrogen Sulfide (H_2S) Prevention and Contingency Plan in Section 3 of Volume II of the approved Application, if a hydrogen sulfide (H_2S) reading of 10.0 ppm or greater is obtained at the facility boundary, then the Owner/Operator shall notify all persons residing within one-half mile of the facility boundary and assist public safety officials with evacuation as requested.

9.H In addition to the commitments specified in the Hydrogen Sulfide (H_2S) Prevention and Contingency Plan in Section 3 of Volume II of the approved Application, the Owner/Operator shall monitor at least once per year for hydrogen sulfide (H_2S) at the vent of covered tanks or at the top of open tanks as specified in Attachment III.1.F of the approved Application. The Owner/Operator shall comply with 19.15.11.12.E NMAC as required. The Owner/Operator shall include the results of the annual hydrogen sulfide monitoring event in its Annual Report.

In addition, this Plan has been created taking into consideration the procedures outlined in the

American Petroleum Institute (API) Recommended Practice 55 (RP-55) paragraph 7.6(a) *Immediate Action Plan* to respond to H_2S concentrations greater than or equal to 10 ppm, and paragraph 7.6(c) (**Attachment II.3.B**).

1.5 Regulatory Requirements: 19.15.36 NMAC and 19.15.11 NMAC

The Rules for Surface Waste Management Facilities (19.15.36 NMAC) address the monitoring and management of H_2S in 19.15.36.8.C(8) NMAC:

> *19.15.36.8 SURFACE WASTE MANAGEMENT FACILITY PERMITS AND APPLICATION REQUIREMENTS*
> *C. Application requirements for new facilities, major modifications and permit renewals. An applicant or operator shall file an application, form C-137, for a permit for a new surface waste management facility, to modify an existing surface waste management facility or for permit renewal with the environmental bureau in the division's Santa Fe office. The application shall include:*
> *(8) a hydrogen sulfide prevention and contingency plan that complies with those provisions of 19.15.11 NMAC that apply to surface waste management facilities;*

Additionally, this H_2S monitoring program is intended to demonstrate compliance with 19.15.36.8.C(8) NMAC (Surface Waste Management Facility Permits and Application Requirements), the requirements of 19.15.11 NMAC (Hydrogen Sulfide Gas), and other permit conditions that apply to this Facility.

Should monitoring results identify unexpected concentrations of H_2S which would contribute to concentrations of H_2S in excess of 10 ppm at the facility boundary downwind of a release, the public within 1/2 mile of the facility boundary shall be notified directly by way of door-to-door notification, through appropriate media and/or through government agencies. The requirements of 19.15.11.8.C NMAC (originally developed for concentrations of H_2S above 100ppm) and this Plan, developed specifically to be responsive to 19.15.11.9 NMAC, will be implemented as required. Utilizing the guidance provided in 19.15.11.8(C) NMAC, upon detection of H_2S in excess of 10ppm at the facility boundary, the radius of exposure will be determined assuming a continuous release rate of 100 SCFH using the graph of ROE provided in Figure C-2 of Appendix C of API RP-55 (provided in its entirety in this document in **Attachment II.3.B**). Using the facility fenceline as the point of H_2S release and a continuous release rate of 100 SCFM at the point of release, the 10ppm ROE has been determined to be 350 feet as shown on **Figure II.3.3B**. This distance is significantly less than the prescribed 1/2 mile notification radius. Should monitoring results identify a potential concentration of $H_2S \geq 10$ ppm at the facility fenceline downwind of a release, the actions

summarized in **Table II.3.5** and **Table II.3.6** will be followed. **Attachment II.3.B** includes select sections of API-RP 55 Second Edition (1995) used to develop this Plan.

2.0 EMERGENCY COORDINATORS

BDI has designated individual specialists with the responsibility and authority to implement response measures in the event of an emergency which threatens public health, or the environment per 19.15.36.13.N(3) NMAC. The Primary, Alternate, and on-site Emergency Coordinators (ECs; **Table II.3.3**) will be thoroughly familiar with all aspects of this Plan; operations and activities at the Facility; location and characteristics of waste to be managed; the repository of all records within the Facility; and the Facility layout. **Table II.3.3** provides a list of names, designations, titles, and phone numbers for each EC.

TABLE II.3.3 - List of Emergency Coordinators*

Primary Emergency Coordinator

Name:	Brett Lanier	Work Phone:	505.334.3013
Title:	General Manager	Mobile Phone:	505.419.5272

Alternate Emergency Coordinator

Name:	Paul Gurule	Work Phone:	505.632.8936
Title:	Plant Manager	Mobile Phone:	505.320.7499

Onsite Emergency Coordinator

Name:	Paul Gurule	Work Phone:	505.632.8936
Title:	Plant Manager	Mobile Phone:	505.320.7499

The ECs are responsible for coordinating emergency response measures and have the authority to commit the resources required for implementation of this Plan. A designated EC will be available to respond to emergencies 24 hours a day, 7 days a week. The BDI employee who identifies an emergency situation will contact an EC directly, or via phone or radio. Contact will be attempted with each EC (Primary, Alternate, and the On-site) until communication is achieved (**Table II.3.3**). Upon arrival at the scene of an emergency, the first EC to arrive will assume responsibility for initiating response measures. If more than one EC responds, authority is assigned to the highest-ranking EC.

In the rare case that an EC cannot be contacted in an emergency, the BDI employee who identifies the emergency will make every effort to follow the emergency procedures outlined in this Plan until an EC or emergency authority (local, state, or federal; **Table II.3.1**) arrives to assist or take charge. The term “EC” as used throughout this Plan to references the responsible Emergency Coordinator

at the scene of an emergency regardless of whether that EC is the Primary, Alternate, On-site EC, or EC designee. This Plan will be amended as described in Section 8.0 if the list of ECs changes, with updates submitted in a timely manner to OCD and filed on-site.

3.0 MONITORING

3.1 Incoming Processing Loads

BDI monitors for H_2S on a continual basis, every oil field waste delivery vehicle arriving for processing at the site, as described in the Oil Field Waste Management Plan (**Volume II.2**). Waste type and vehicle information are recorded on an inspection report form or ticket (**Attachment II.3.C**) and retained as part of the Facility Operating Record. BDI personnel wear personal H_2S monitors under circumstances where H_2S may be present, including when they are testing or unloading materials that may contain H_2S. The monitors will issue a visual and audible signal at 10 ppm of H_2S in the ambient air that becomes more rapid at 20 ppm.

BDI also measures H_2S within incoming loads with a discrete monitor dedicated to inspecting trucks. This discrete monitor is currently a BioSystems MultiPro handheld monitor capable of reading H_2S levels from 0 – 200 ppm in 1 ppm increments. In the event of an H_2S detection of 1 ppm or greater from within an incoming load, the following procedures will be implemented:

- Notification of the presence of H_2S will be provided to both the driver (hauler) and the generator.
- The generator will be provided the option of allowing BDI to treat the load on-site. Should the generator decline treatment, the load will be rejected and directed to leave the BDI Facility.
- If the generator requests treatment, BDI personnel will add sodium hypochlorite (NaClO) to the load at the levels corresponding to **Table II.3.4**. In the event that NaClO is unavailable due to market shortages, calcium hypochlorite ($Ca(ClO)_2$) may be used instead.
- Once the NaClO (or $Ca(ClO)_2$)has been added, the load will be "rolled" (i.e., trucks will use their air pumps to "roll" air through the tank to allow for mixing of the contents and the added NaClO (or $Ca(ClO)_2$) to assist the chemical reaction. After approximately 20 minutes, the load will be re-sampled for the presence of H_2S. Treatment will continue until the H_2S reading is below 1 ppm. Once the H_2S measurement reads below 1 ppm, the load will be directed to the receiving area for processing.
- BDI personnel will contact the Generator's Plant Manager or General Manager if assistance is needed.

Table II.3.7 provides a list of safety equipment and supplies available and utilized on-site.

TABLE II.3.4 - H_2S Treatment for Vehicles[1]

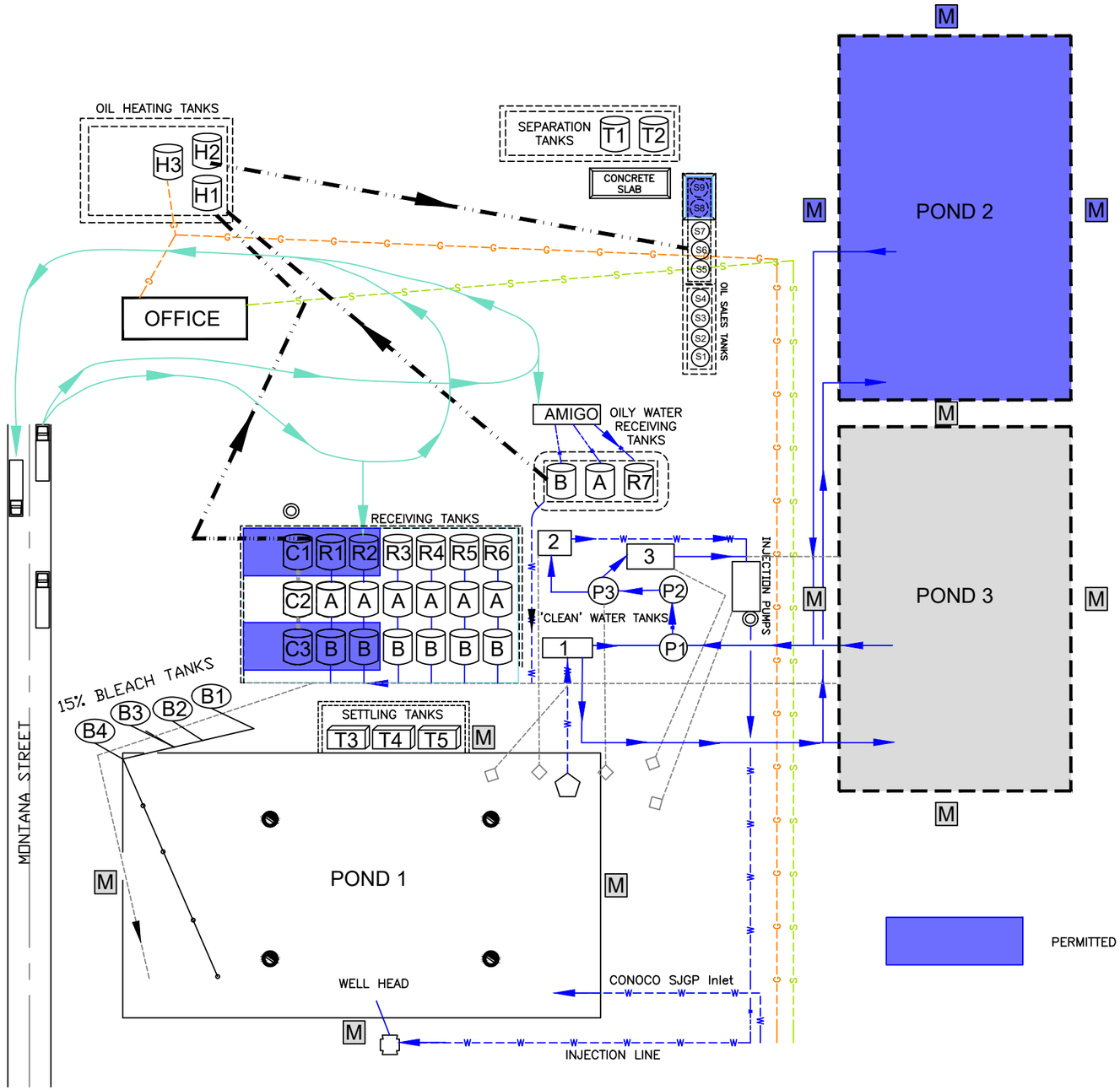
H_2S PPM	NaOCl Coffee Cans Required
<50	1.0
50-100	1.5
100-150	2.0
150-200	2.5
200-250	3.0
250-300	3.5
300-350	4.0
350-400	4.5
400-450	5.0
450-500	5.5
500-550	6.0
550-600	6.5
600-650	7.0
650-700	7.5
700-750	8.0
750-800	8.5
800-850	9.0
850-900	9.5
900-950	10.0
950-1000	10.5

[1]Typical volume of truck is 80 bbl. One coffee can equals 34.5 oz of product.

3.2 Evaporation Pond Monitoring

3.2.1 Stationary Monitors

Evaporation ponds are monitored for the presence of H_2S by recording at four stationary continuous monitors maintained at the center of each side of each pond as shown on **Figure II.3.3A**. These monitors are Otis Instruments, Inc. WireFree Model OI-WF690 Sensors and are networked directly to the office for remote observation and alarms. These sensors are accurate from 0 ppm H_2S to 100 ppm H_2S. H_2S readings and wind speed/direction are logged and recorded twice daily on the BDI Daily H_2S and Containment Sump Inspection Form (**Attachment II.3.D**). The EC will be notified and will implement the procedures outlined below if H_2S readings at the stationary pond monitors are ≥ 1 ppm. Upon observing an H_2S reading ≥ 1 ppm, close monitoring will continue utilizing both the facility's handheld H_2S meter and stationary monitors. If during this close monitoring period H_2S readings reach a level ≥ 10 ppm, the EC or designated employee will implement the procedures listed in **Table II.3.5**.



LEGEND

- SEWER
- GAS
- OIL
- WATER
- PROCESS FLOW DIRECTION
- DELIVERY VEHICLE ROUTE
- OVERFLOW
- LINED BERMS
- M — H_2S MONITORING LOCATION PERMITTED NOT YET CONSTRUCTED
- M — H_2S MONITORING LOCATION (EXISTING)
- AERATOR
- PUMP
- EXISTING RECEIVING TANK
- EXISTING TANK
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)
- STRUCTURE

NOTE: ELEMENTS ARE LABELED IN ACCORDANCE WITH THE UPDATED NOMENCLATURE (11/08, ATTANCHMENT III.1.F)

NORTH

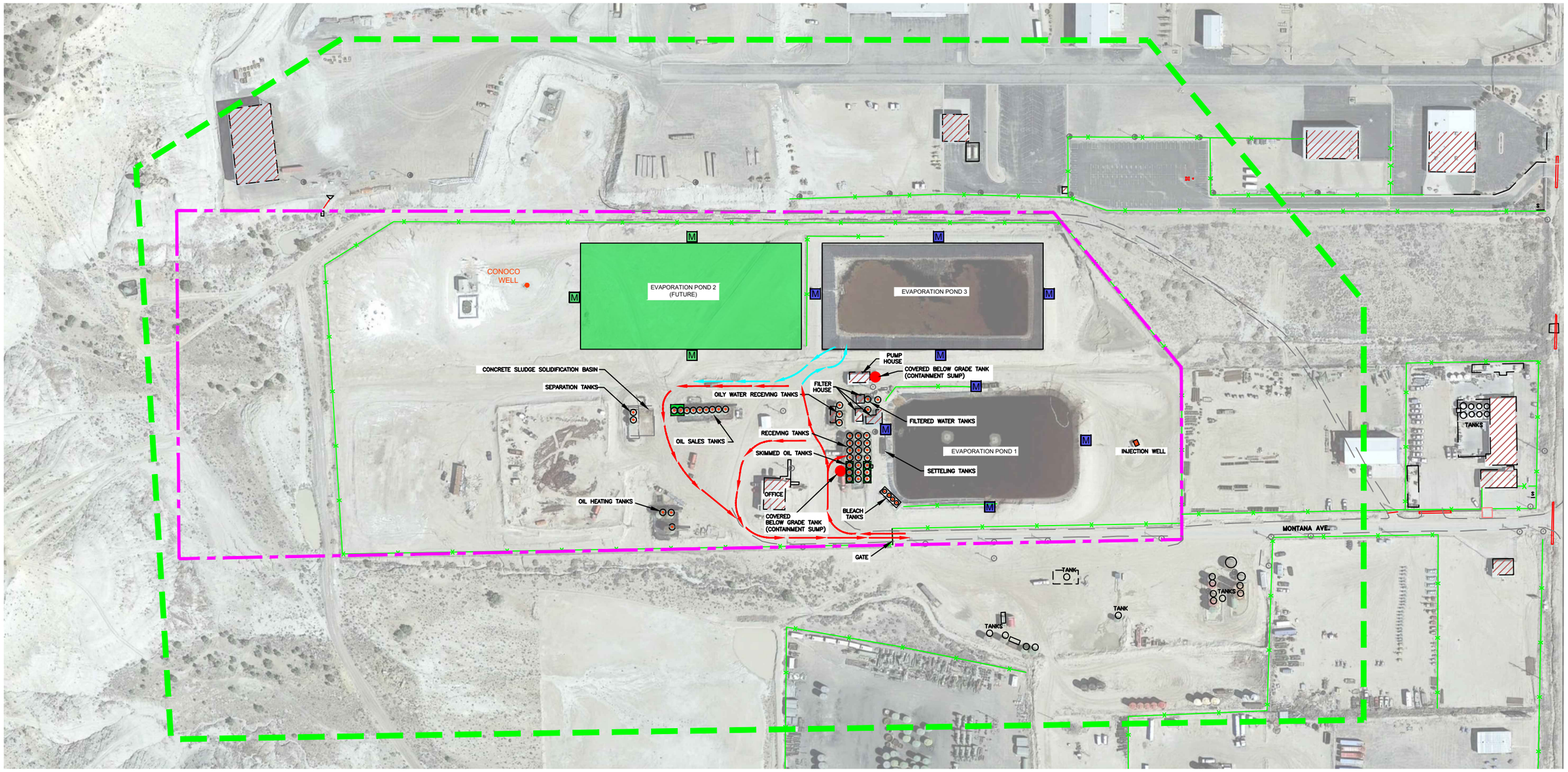
NOT TO SCALE

EVAPORATION POND STATIONARY MONITORING

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/14/2025	CAD: EVAP MONITORING.dwg	PROJECT #: 1657.22	FIGURE II.3.3A
DRAWN BY: DMI	REVIEWED BY: AY		
APPROVED BY: AY	www.parkhill.com		



LEGEND

- PROPERTY BOUNDARY
- ROADWAY (EXISTING)
- TRAFFIC FLOW
- ALTERNATIVE TRAFFIC FLOW
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- M — H_2S MONITORING LOCATION (FUTURE)
- M — H_2S MONITORING LOCATION (EXISTING)
- 350 FOOT H_2S RADIUS OF EXPOSURE (ROE)
- STRUCTURE
- CONCRETE SLAB
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)

NORTH

0 75' 150'

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\350 FT RADIUS.dwg
Date/Time:Jan. 15, 2025-09:12:36

350 FOOT 10ppm H_2S RADIUS OF EXPOSURE

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/15/2025	CAD: 350 FT RADIUS.dwg	PROJECT #: 1657.22	
DRAWN BY: DMI	REVIEWED BY: AY	FIGURE II.3.3B	
APPROVED BY: MWK	www.parkhill.com		

In the event of an H_2S detection of 1 ppm or greater, the following procedures will be implemented:

- A second reading will be taken on the downwind berm within one hour by the emergency coordinator or designated employee utilizing a handheld H_2S monitor. The handheld monitor currently utilized is a BioSystems MultiPro handheld monitor capable of reading H_2S levels from 0 – 200 ppm in 1 ppm increments.
- The dissolved oxygen and dissolved sulfide levels of the pond will also be tested immediately and the need for immediate treatment determined
- Monitoring tor H_2S levels will be made at the fenceline downwind from the area of concern by the emergency coordinator or designated employee utilizing the handheld BioSystems MultiPro handheld H_2S monitor.

If two (2) consecutive H_2S readings of 1 ppm or greater are recorded:

- The EC will provide preliminary notification to the Aztec office of OCD by phone immediately (**Table II.3.1**)
- BDI will commence hourly monitoring on a 24-hour basis
- BDI will lower the pond level so that the mechanical evaporation system is able to circulate the entire pond fluid volumes
- BDI will obtain daily analysis of dissolved sulfides in the pond

3.2.2 Dissolved Oxygen and pH Monitoring

Dissolved oxygen (DO) and pH levels are key indicators of the efficacy of treatment and removal of H_2S during the aeration process in the evaporation ponds. The chemical reaction of H_2S and oxygen to produce sulfate as an end product is dependent upon the level of both dissolved oxygen and pH. Daily tests will be conducted, and records made for each pond. If the pH falls below 8.0, remedial steps will be taken immediately to raise the pH. BDI at this time uses sodium hypochlorite (NaOCl) to raise the pH to the optimal level of 8.2-9.0. Dissolved oxygen levels will be tested on a daily basis to ensure a residual of 0.5 ppm is maintained. The dissolved oxygen level will be taken at the beginning of each day (or at least once per 24-hour period), approximately one foot off the floor of each pond at various locations and recorded. If tests show a dissolved residual oxygen level of less than 0.5 ppm, immediate steps will be undertaken to oxygenate the pond and create a residual oxygen level within the pond of at least 0.5 ppm. Remedial measures may include addition of chemicals or increased aeration. The pH readings will be recorded daily on the Daily H_2S and Containment Sump Inspection Form or similar template (**Attachment II.3.D**).

4.0 IMMEDIATE RESPONSE PROCEDURES; IMPLEMENTATION, ASSESSMENT, AND NOTIFICATION

The following subsections present a series of procedures for Immediate Response. Assessment, Implementation, and Notification of appropriate authorities in the unlikely event that an H_2S emergency develops (19.15.11.9 NMAC). Specific action levels for H_2S emergencies can be found in **Table II.3.5**. **Table II.3.5** also serves as an immediate action plan, developed pursuant to the procedures recommended in API RP-55, which is to be followed any time notice of a potentially hazardous hydrogen sulfide or sulfur dioxide release is received.

4.1 Implementation

This H_2S Contingency Plan for Immediate Action will be implemented when an imminent or actual emergency situation develops that represents a potential impact to public health, or the environment. Pursuant to 19.15.11.16 NMAC, BDI shall notify the division upon a release of H_2S requiring activation of the H_2S contingency plan as soon as possible, but no more than four hours after the plan activation. BDI shall also submit a full report of the incident to the division on Form C-141 no later than 15 days following the release. The circumstances that could require implementation of this Plan include the potential release of H_2S at concentrations ≥ 10 ppm at the facility boundary downwind of the release. **Table II.3.5** lists the assessment, immediate action, and notification procedures that will be followed in the event of a detection of H_2S ≥ 10 ppm at the facility boundary downwind of the release. Assessment and notification are discussed further in Sections 4.2 and 4.3.

TABLE II.3.5
Implementation, Assessment, and Notification Procedures for H_2S Emergencies

1. **EVACUATE AREA AND NOTIFY THE ECs:** The employee who first becomes aware of the H_2S alarm when readings reach a level ≥ 10 ppm from close monitoring of the stationary pond monitors, handheld monitors, or the personal monitors anywhere on site will immediately notify the Primary EC, Alternate EC and/or On-site EC and determine if immediate assistance is necessary, evacuate the area, and don protective personal breathing (SCBA) equipment or full-face respirator. On-site notification will be made in person, via cellular telephone, facility telephone, or radio. The responding EC will assume full authority over the situation. A properly protected responder will then assist any affected personnel or customers. The Primary EC will assure that facility staff and customers are guided to the Primary Meeting Point (Facility office, **Figure II.3.4**), and will account for all on-site personnel and customers.
2. **CONTROL THE PRESENT OR POTENTIAL RELEASE:** the EC Takes immediate measures to control the present or potential hydrogen sulfide or sulfur dioxide discharge and to eliminate possible ignition sources. Emergency shutdown procedures should be initiated as deemed necessary to correct or control the specific situation. If the required action cannot be accomplished in time to prevent exposing operating personnel, customers, visitors or the public

to hazardous concentrations of hydrogen sulfide or sulfur dioxide, proceed to the following steps, as appropriate.

3. **REMAIN UPWIND OF RELEASE:** Persons evacuated from the release area should remain away and upwind from the area of the release until an assessment of the conditions has been made. A windsock is installed atop the receiving tanks to indicate on-site wind direction at all times.
4. **MONITOR DOWNWIND IF FENCELINE $H_2S \geq 10$ PPM**: In the event a sustained reading of 10 ppm or greater is registered at the facility boundary downwind of the release (as indicated by the on-site windsock), the Facility will be evacuated, stationary equipment will be shut down, and Facility personnel will continue to monitor the H_2S levels along the downwind boundary. The Primary EC will assure that facility staff, customers and visitors are guided from the facility office to the primary or secondary evacuation point by way of either the primary or secondary evacuation route, respectively (**Figure II.3.4**, Site Evacuation Plan and **Table II.3.6**, Evacuation Procedures). Truck drivers will also be instructed to exit through the facility gate by way of Montana Ave. to gather at the Primary or Secondary Evacuation Point, as appropriate. The EC in charge will notify other supervisors and other appropriate personnel (including public officials) on the call list (**Table II.3.1**). The EC will also make recommendations to public officials regarding the blocking of unauthorized access to the unsafe area, evacuation of the public, and assist as appropriate. During this time, the entrance side of the main gate will be closed to prevent entry into an area with potentially hazardous concentrations of H_2S.

   Additionally, BDI will notify all persons within one-half mile of the fence line. There are several businesses and residents located in the one-half mile radius of the fence line, mainly on the north, south and east of the Facility. BDI will notify the surrounding businesses and residents of the evacuation and will help evacuate the area and monitor downwind levels. Notification will be provided by radio, telephone, public service announcement, and direct door-to-door notification, as necessary. Notice will be provided in verbal and paper form, and will contain the following language (or similar): ***"Attention, a release of potentially hazardous concentrations of hydrogen sulfide gas has occurred at the Basin Disposal Inc. facility located at 200 Montana street in Bloomfield, NM. Evacuation at this point is not required, please await further instructions from law enforcement, BDI personnel or first responders. Please 911 with any questions or concerns This is not a test."***
5. **EVACUATE AND CLOSE THE FACILITY IF $H_2S \geq 20$ PPM AT DOWNWIND BOUNDARY:** If levels reach ≥ 20 ppm at the facility boundary downwind of the release, the Facility will be completely evacuated of all remaining personnel and response staff and closed. Evacuation routes and evacuation points are detailed in the Site Evacuation Plan map provided as **Figure II.3.4**, and discussed in Section **4.2.1**, below.
6. **NOTIFICATION OF AUTHORITIES:** In the event of an H_2S detection ≥ 20 ppm at the downwind facility boundary, notification will also be provided to the New Mexico State Police, San Juan County Sheriff, San Juan County Emergency Management, OCD, and the National Response Center (**Table II.3.1**) to comply with release reporting requirements. In addition, medical authorities will be contacted if needed. BDI will also notify Envirotech Inc., (if necessary) in Farmington (**Table II.3.1**) to provide response personnel, equipment, and supplies to mitigate the source of H_2S.
7. **CONTINUED MONITORING**: Following abatement measures, BDI will monitor the ambient air in the area of the release to determine when the area is safe for re-entry.
8. **RECORDKEEPING:** BDI will log and report to OCD all incidents where an H_2S reading of ≥10 ppm is registered from close monitoring of the stationary pond monitors, handheld monitors, or the personal monitors (also see Section 6.0). Reports will be submitted to OCD within 15 days of each event on division Form C-141, Records will be maintained for at least 5 years at the BDI administrative offices.

4.2 Assessment

In the event of a release ($H_2S \geq 10$ ppm at the facility boundary downwind of a release), the EC will don appropriate PPE (i.e., one of the facility's 2 SCBAs), immediately identify the character, source, amount and extent of released materials, as possible; and assess the potential impact to public health, or the environment. BDI shall review the H_2S contingency plan any time a subject addressed in the plan materially changes and make appropriate amendments to better protect public health or the environment, if needed (19.15.11.9.F NMAC). The Division will be notified of the release as soon as possible, but no more than 4 hours after the start of the event. Within 15 days following the release/event, BDI shall submit a full report of the incident to the Division on OCD Form C-141.

The division may require BDI to add provisions to the plan or amend the plan as necessary to protect public safety if it is determined that the H_2S contingency plan is inadequate to protect public safety. Following the resolution of a release event, the EC will also assess the circumstances of the emergency situation and determine the most effective way to:

- implement immediate response procedures should a similar incident occur in the future
- provide future notifications to appropriate agencies and the general public
- implement appropriate recordkeeping procedures and Plan amendments for future events

The assessment provides the EC with critical data needed to determine whether an evacuation is necessary, whether emergency authorities should be contacted, and whether BDI should attempt to control the release with on-site personnel and equipment. This Section contains additional, detailed information regarding the Site Evacuation Plan, and Section 5.0 addresses control procedures.

4.2.1 Site Evacuation Plan

Based upon the type of waste materials and treatment received at BDI and the rigorous operational safety protocols prescribed, the potential for a Facility evacuation is unlikely (19.15.11.9.B(2)(a) NMAC). However, various circumstances could arise warranting a Facility evacuation. In an emergency situation, the EC is the individual responsible for determining when evacuation of the Facility is required. Imminent or actual concerns that constitute a situation that could require evacuation include:

- Detection of H_2S levels at ≥10 ppm anywhere on-site (i.e., evacuate the immediate area, muster at the primary meeting point (Site Office), and monitor downwind levels of H_2S).
- Detection of H_2S levels at ≥10 ppm at the downwind facility boundary (i.e., evacuate the facility of all non-emergency personnel, evacuate the facility via the primary or secondary

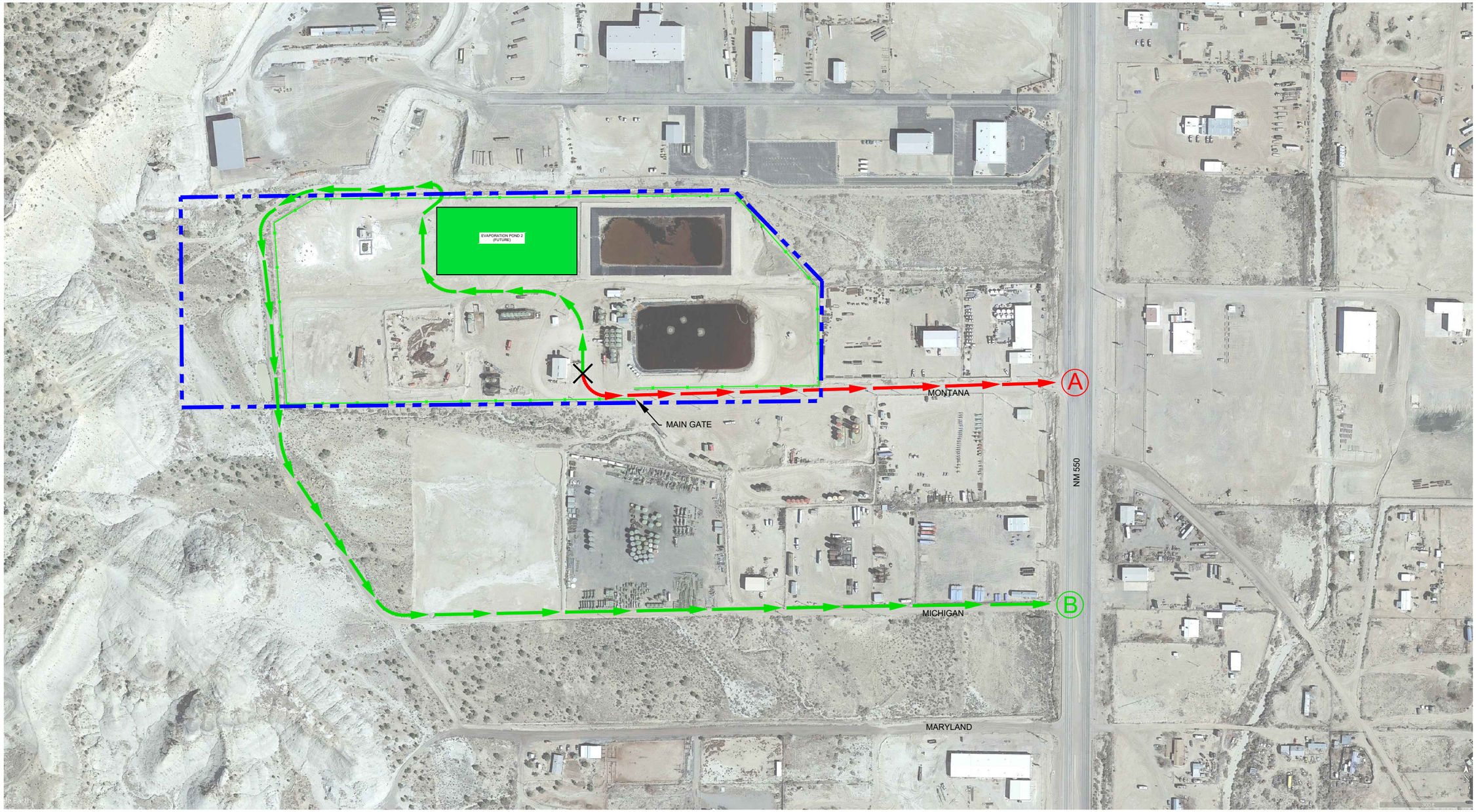
evacuation routes and muser at the primary or secondary evacuation points, and continue to monitor downwind levels of H_2S), notify the public and residents within ½ mile of evacuation requirements.

- Detection of H_2S levels at ≥20 ppm at the downwind facility boundary (i.e., evacuate all persons from the facility via the primary or secondary evacuation routes and muster at the primary or secondary evacuation points, and close the Facility)

When conditions warrant an on-site evacuation of an immediate area at the facility (e.g., H_2S ≥10 ppm anywhere on site), on-site persons (e.g., Facility personnel, haulers, visitors, vendors, etc.) will be directed to proceed immediately to the primary meeting point (i.e., Site Office) to await further emergency instructions. When conditions warrant immediate evacuation of the Facility (e.g., H_2S ≥10 ppm at the downwind facility boundary) or complete evacuation and closure of the facility (e.g., H2S ≥ 20 ppm at the downwind facility boundary), on-site persons will be directed to proceed immediately to the Primary Evacuation Point via the Primary Evacuation Route through the main gates, which will be locked to prevent entry by incoming waste loads, visitors, vendors and personnel (**Figure II.3.4**). BDI Personnel will use good judgment and common sense, monitoring equipment level readings, and prevailing wind direction in deciding whether to use the Primary Evacuation Route to exit the Facility, or the Secondary Evacuation Route (**Figure II.3.4**). Driving directions to the nearest hospital are included with **Figure II.3.5**, and **Table II.3.6** provides detailed procedures for evacuating and securing the Facility in the event of an H_2S emergency.

4.3 Notification of Authorities and General Public

This Section provides a series of procedures for implementation and notification of appropriate authorities and the public in the event that a specific emergency develops (e.g., As described in Section 3.2.1, this Plan will be activated at two subsequent detections of H_2S ≥1 ppm at the facility) (19.15.11.16 NMAC). Whenever there is an imminent or actual emergency (i.e., two subsequent detections of H_2S ≥1 ppm), the EC will immediately contact on-site persons (Facility personnel, visitors, vendors, haulers, etc.) via in person communication, use of two way radios, or use of cellular telephones (**Table II.3.1**), as determined by review of the facility visitor sign-in log, the employee daily attendance roster, and the ticketed trucks still on-site. OCD will be notified within 4 hours after the Contingency Plan has been activated as described at the beginning of this section and shall submit a full report on Division Form C-141 no later than 15 days following the release.



NOTE: IMAGE REFERENCE GOOGLE EARTH 2019

LEGEND

- PROPERTY BOUNDARY
- FENCE LINE
- PRIMARY MEETING POINT (FACILITY OFFICE)
- PRIMARY EVACUATION ROUTE
- SECONDARY EVACUATION ROUTE
- A — PRIMARY EVACUATION POINT
- B — SECONDARY EVACUATION POINT

NORTH

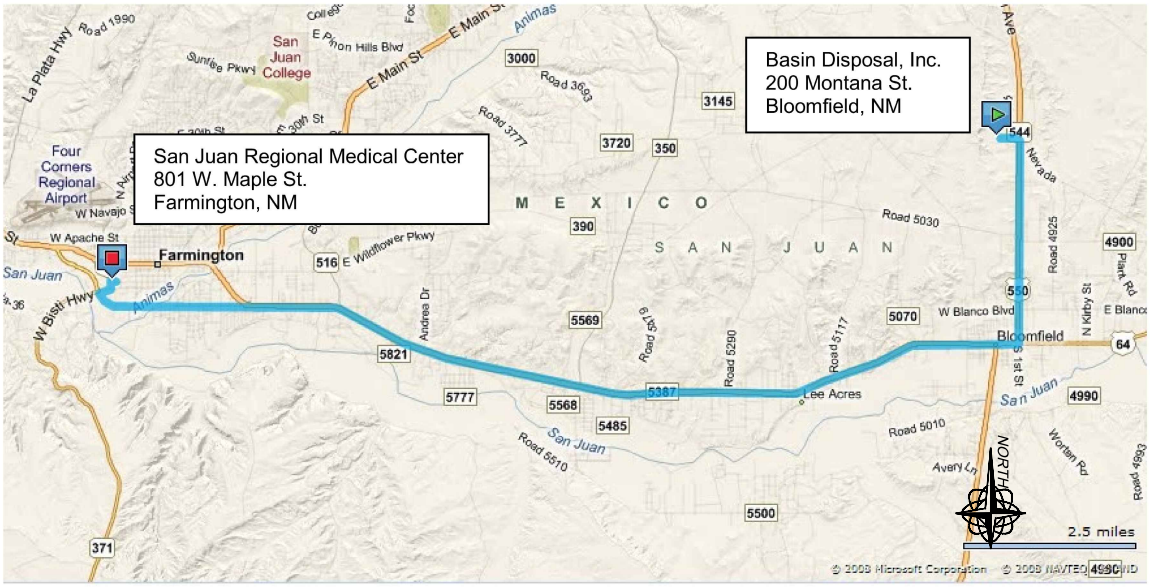
0 150' 300'

SITE EVACUATION PLAN

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL. INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 11/23/2022	CAD: EVACUATION.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.3.4
APPROVED BY: MWK	www.parkhill.com	



Driving Directions

FROM:
Basin Disposal, Inc.
200 Montana Street
Bloomfield, NM 87413
505.632.8936

TO:
San Juan Regional Medical Center
801 W. Maple Street
Farmington, NM 87401
505.325.5011

STEP	DIRECTIONS	DISTANCE	TOTAL DISTANCE
1	Starting at 200 Montana Street, bear right onto Nevada	0.3	0.3
2	Turn right onto US-550 South	3.0	3.3
3	Turn right to stay on US-64/US-550/W. Broadway Ave.	11.7	15.0
4	Keep straight onto E. Murray Dr.	1.2	16.2
5	Keep straight onto W. Murray Dr./US-64 West	1.0	17.2
6	Turn right onto SR-371 North/W. Pinon St.	0.2	17.4
7	Turn left to stay on SR-371/S. Lake St.	0.1	17.5
8	Turn right onto W. Maple St. and arrive at 801 W. Maple St.	0.1	17.6
		Estimated Travel Time = 29 minutes	

HOSPITAL LOCATION

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: HOSPITAL LOC.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.3.5
APPROVED BY: MWK	www.parkhill.com	

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\HOSPITAL LOCATION.dwg
Date/Time:Jul. 07, 2022-10:42:28

Evacuation from the facility property is required when either H_2S readings ≥ 10 ppm at the downwind facility boundary require evacuation of vendors, visitors, drivers and non-responding facility personnel, and notification of the public within 1/2 mile and appropriate state and local agencies; or H_2S readings ≥ 20 ppm at the downwind facility boundary require a complete evacuation including responding Facility personnel. **Table II.3.1** provides contact information for state and local agencies to be contacted, and **Attachment II.3.G** provides a list of property owners within 1/2 mile of the facility boundary. Notification of the public within 1/2 mile of the facility will be provided by radio, telephone, public service announcement, and direct door-to-door notification, as necessary.

As described in step 1 (and alternate steps 2 or 3, below) It is assumed that prior to facility evacuation, all on-site individuals have been instructed to muster at the primary Meeting Point (Facility Office) due to a detection of a concentration of H_2S ≥10 ppm anywhere on-site (**Table II.3.6**). A facility evacuation involves the following procedures:

TABLE II.3.6 - Evacuation Procedures

1. Upon detection of H_2S ≥10 ppm anywhere on site, personnel, customers, and visitors will be notified of the presence of a potentially hazardous concentration of H_2S at the facility, and will be directed to proceed to the Site Office, which will be the primary meeting Point (**Figure II.3.4**). The EC will identify missing persons at that time by reviewing the facility visitor sign-in log, the employee daily attendance roster, and the ticketed trucks still on-site. This step constitutes pre-evacuation, and H_2S concentrations are monitored by personal monitors worn by all facility personnel, one of whom will remain in the Site Office with visitors, drivers, and other staff present.
2. If the release and detection of H_2S ≥10 ppm from Step 1 involves the Site Office or its immediate environs, the intersection of NM 550 and Montana (Primary Evacuation Point) will be used as the primary meeting point for all on-site persons instead of the Site Office. Upon confirmation that the facility is evacuated, the main access gate will be closed to prevent further access.
3. If the release and detection of H_2S ≥10 ppm from Step 1 precludes access to both the Site Office and the intersection of NM 550 and Montana (Primary Evacuation Point), personnel will evacuate the site via an auxiliary access gate at the north end of the facility and follow the Secondary Evacuation Route to the intersection of NM 550 and Michigan (Secondary Evacuation Point). Upon confirmation that the facility is evacuated, the main access gate will be closed to prevent further access.
4. When a concentration of H_2S ≥10 ppm is detected at the downwind boundary of the Facility, Facility personnel, vendors, visitors, and drivers will be alerted using the Facility telephone, cellular telephones, radios, or in-person communications that an H_2S release has occurred and that H_2S concentrations at the downwind facility boundary warrant an evacuation of the facility to protect human health and welfare. All facility visitors, personnel, vendors, and drivers will be instructed to utilize the Primary Evacuation Route and to muster at the Primary Evacuation Point at the intersection of Montana and NM 550 (**Figure II.3.4**). If the Primary Evacuation Route is not accessible, the Secondary Evacuation Route and Secondary Evacuation Point at the

intersection of Michigan and NM 550 will be used.

5. Stationary Facility operating equipment will be shut down. Personnel tasked with shutting down equipment on site could potentially come in contact with H_2S concentrations ≥ 10 ppm, and should be equipped with the proper PPE for this concentration, either one of the two SCBA units on site, or a full-face respirator equipped with the correct cartridges specific to H_2S (i.e., Organic Vapor and Acid Gas, P100)
6. Vehicles currently on-site delivering waste will be diverted away from the location of the emergency and routed to the Facility exit where they will exit the facility via Montana Ave. and gather at the Primary or Secondary Evacuation Point (as appropriate). During this period the entrance side of the main access gate will be closed to preclude entrance to the Facility. (**Figure II.3.2**). Montana Ave will also be blocked at NM 550 to prevent entry into an area with potentially hazardous concentrations of H_2S.
7. If the release and detection of H_2S results in a concentration of ≥20 ppm at the downwind facility boundary, remaining personnel (including response personnel still on site conducting monitoring and shutdown) will be directed to evacuate the facility by way of the Primary or Secondary Evacuation Routes, and gather at the Primary or Secondary Evacuation Point, as directed by the EC.
8. Once assembled at the Primary or Secondary Evacuation Point (as directed by the EC), BDI personnel, vendors, visitors, and customers will be accounted for as discussed it item #4 above. Facility personnel will stand by to afford assistance and coordinate further actions. H_2S monitoring will continue at the Primary and Secondary Evacuation points as provided by the personal monitors worn by BDI personnel. At least one BDI staff member will be required to remain with the evacuated persons until the release and detection event is resolved.

Table II.3.1 provides a list of emergency response agencies and contacts that may need to be notified depending on the type and extent of an emergency situation. **Table II.3.1** will be posted prominently near on-site telephones and provided as handouts to BDI personnel, customers, response personnel, etc. Fire, police, and medical authorities will be contacted, as necessary, in an emergency situation (**Table II.3.1**).

In the event of two consecutive detections of H_2S ≥1ppm at one of the stationary pond monitors, the Division will be notified as soon as possible, but no more than four hours after the detection, and submit a full report of the incident to the Division on form C-141 no later than 15 days following the release.

In the case of an H_2S detection ≥10 ppm at the downwind facility boundary, notification will be provided to the New Mexico State Police, San Juan County Sheriff, and OCD (also listed on **Table II.3.1**), as well as nearby residents and members of the public within 1/2 mile of the facility fenceline. There are several businesses and residents located in the one-half mile radius of the fence line, mainly on the north, south and east of the Facility. BDI will also notify the surrounding businesses and residents of the evacuation and will help evacuate the area and monitor downwind levels.

Notification will be provided by radio, telephone, public service announcement, and direct door-to-door notification, as necessary:

- OCD:
  - Aztec, NM 505.320.0243
  - Mobile Phone 505.320.0200
  - Santa Fe, NM 505.476.3441
- New Mexico State Police 911 or 505.325.7847
- San Juan County Sherriff's Dept 911 or 505.334.6622
- San Juan County Emergency Management 505.334.7700
- Bloomfield Police Dept. 911 or 505.634.1062

BDI will also notify EnviroTech (505.632.0615), a third-party response specialist (if necessary) in Farmington (**Table II.3.1**) to provide response personnel, equipment, and supplies to mitigate the source of an H_2S reading ≥10 ppm.

Section 3.2.1 provides specific information regarding notification of OCD in the case of a release of hydrogen sulfide requiring activation of the H_2S Contingency Plan in order to protect the public from exposure to hydrogen sulfide gas.

Additional State, Federal, and other local emergency contact numbers are provided and should be used as deemed appropriate to protect public from exposure to hydrogen sulfide gas (**Table II.3.1**) by the EC. If the EC determines that the incident could threaten public safety or the environment beyond the limits of the Facility, the EC will notify the National Response Center and USEPA at the following phone numbers (also included on **Table II.3.1**):

- National Response Center - 24 Hr. Hotline - 800.424.8802
- NMED Environmental Emergencies - 24 Hr. Hotline: 505.827.9329

The EC's notification to authorities will include the following information, as listed on the Incident Report Form (**Attachment II.3.E**):

- name and telephone number of person reporting the incident
- name and address of Facility
- time and type of incident (e.g., hazardous material release, fire)
- name and quantity of material(s) involved, to the extent known
- extent of injuries, if any
- possible hazards to human health or the environment
- other information requested by the response entity

Recordkeeping will be recorded as detailed in Section 6.0, and Plan Amendments accomplished in accordance with Section 8.0 with revisions that reflect "lessons learned" from the incident.

5.0 EMERGENCY EQUIPMENT

The following sections describe emergency equipment at BDI that will be available for responding to emergency situations. An Emergency Response Equipment List describing the equipment, quantity, location, and uses is provided as **Table II.3.7**.

5.1 Internal Communications

Communications at BDI will be accomplished via cellular telephones, land lines, two-way radios, in-person communications, etc. These systems provide Facility personnel with immediate emergency notification capabilities, and the opportunity to receive instructions in the event of an emergency incident. Facility customers and visitors will be required to sign in upon arrival at BDI, and will be asked to provide a cellular telephone number in case of emergency. Communications will be conducted with visitors either by cell phone or face-to-face personal communication. Any mechanical difficulties with on-site communications equipment will be promptly repaired. Recordkeeping methods and Internal communication devices are listed on **Table II.3.7.**

5.2 External Communications

The land-line telephones and cell phones located at BDI will have outside access in the event that notification of the local emergency response authorities is required (i.e., fire department, ambulance, etc.). Key Facility personnel including the ECs, Facility Manager, etc., will carry cellular telephones for contacting outside agencies. The cellular telephones also provide a backup means for contacting emergency authorities in the event they cannot be reached by conventional (land-line) telephone. Emergency phone numbers will be posted in the Site Office and provided to employees and key customers on laminated pocket cards. External communication devices are also listed on **Table II.3.7.**

TABLE II.3.7 - Emergency Response Equipment List

Equipment Description	Quantity	Location	Use(s)
10 lb ABC rated fire extinguisher	2	Site Office	Firefighting
10 lb ABC rated fire extinguisher	2	Trucks	Firefighting
10 lb ABC rated fire extinguisher	1	Heavy Equipment	Firefighting
20 lb ABC rated fire extinguisher	1	Oil Treating Tanks	Firefighting
20 lb ABC rated fire extinguisher	1	Concrete Slab	Firefighting
20 lb ABC rated fire extinguisher	1	Oil Sales Tanks	Firefighting
20 lb ABC rated fire extinguisher	1	Oil Separation Tanks	Firefighting
20 lb ABC rated fire extinguisher	1	Water Receiving Tanks 1-4	Firefighting
20 lb ABC rated fire extinguisher	1	Water receiving Tanks, Amigo	Firefighting
20 lb ABC rated fire extinguisher	1	Pump House	Firefighting
20 lb ABC rated fire extinguisher	1	Diesel Storage Tank	Firefighting
20 lb ABC rated fire extinguisher	1	Conoco SJGP Inlet Line	Firefighting
Loader	1	Facility	Berm Repair, Containment, Smother Fires
Bobcat	1	Facility	Berm Repair, , Containment, Smother Fires
Oil Booms	4	NE Corner of Pond	Oil Containment
SCBA	2	Site Office (1) Filter House (1)	Protective gear for employees (30 minute capacity)
Pair leather gloves	12	Assigned to Employees	Protective gear for employees
NOMEX Coveralls	84	Assigned to Employees	Protective gear for employees
Pair safety glasses	12	All employee workstations	Protective gear for employees
Round-point wood handle shovels	2	Shop	Contain spillage, putting out fires
Round-point wood handle shovels	2	20 um Filter House	Contain spillage, putting out fires
First Aid Kit	3	Site Office, Maintenance Shop, Oil Recycling Plant	First Aid
First Aid Kit	3	Facility Vehicles, *always available*	First Aid
Eye Wash Station	1	SE Corner of Water Receiving Tanks	First Aid
Portable 2-way radio	12	Base unit at Site Office, *minimum 1 in use during overnight hours*	Employee Communications
Visitor Sign-in/out Sheet	1	Main Site Office	Tracking Facility Visitors and Cell Phone Numbers
Cell Phones	4	General Manager Plant Manager Plant Supervisor Office Supervisor	Communications
Office Phone	1	Site Office	Communications
Mobile pressure washer	1	Mobile	Decontamination equipment
Personal H_2S Monitor	12	Assigned to Employees, *minimum 1 on site during overnight hours*	Personal H_2S Monitor
BioSystems MultiPro Handheld Monitor	1	Site Office / Receiving	H_2S Monitor for incoming loads and spot-checks
Stationary H_2S monitoring system	1	Facility	Monitoring
Water Truck	1	Facility	Dust Control / Fire Control
Inbound Load Log	1	Main Site Office	Recordkeeping
Daily employee log	1	Office	Recordkeeping
Traffic Cones	20	Facility	Traffic control
Non-reactive sorbent materials	10 bags	Facility Shop	Spill control

Notes:

*Subject to change in response to waste receipts, regulatory requirements, technology, etc. Any changes to be made to this list will also be made to the equipment list found in the Contingency Plan (**Volume II, Section 5**).*

5.3 Personnel Protection, First Aid, and Safety Equipment

Personal protective equipment (PPE) necessary for responding to a potential release of hazardous materials will be maintained in on-site buildings (Site Office, Maintenance Shop, Filter House, and the Oil Recycling Plant) and/or issued to each employee (**Table II.3.7**). These items include Tyvek suits, gloves, safety glasses, hearing protection, full-face respirators with H_2S-specific cartridges, self-contained breathing apparatus (SCBA), etc. Each of the facility's two SCBA units is rated for 30 minutes of continuous use.

At BDI, first aid and safety equipment is maintained at strategic locations as shown on **Table II.3.7**. Safety equipment located at the Facility includes industrial first aid kits, fire extinguishers, an eye wash station, etc. First aid kits are placed in the Site Office, Maintenance Shop, and the Oil Recycling Plant. In addition, first aid kits are maintained in Facility vehicles, including heavy equipment. Prominent signs are placed identifying the location of health and safety equipment, and emergency response items (e.g., fire extinguishers).

6.0 RECORDKEEPING

The EC is responsible for ensuring that emergency response actions are fully documented. The Primary EC may complete the documentation requirements or delegate to another EC. The Incident Report Form (**Attachment II.3.E**) illustrates the information that will be recorded as a result of an emergency incident and related response action. This form will be signed by both the EC and the Facility Manager. Copies of the form filed for each incident will be retained for OCD review as part of the Facility Operating Record. Records will be maintained for at least 5 years at the BDI administrative offices.

In addition, in the case of an H_2S release requiring activation of this Plan, the OCD will be notified (pursuant to 19.15.11.16 NMAC) as soon as possible but no more than 4 hours after Plan activation. BDI shall submit a full report of the incident to the division on Form C-141 no later than 15 days following the release. A copy of OCD Form C-141 is provided as **Attachment II.3.F**. Copies of the Form filed for each incident will be retained on-site as part of the Facility Operating Record. Records will be maintained for at least 5 years at the BDI administrative offices.

Training records pertinent to this Plan for H_2S response and contingency are also retained for at least 5 years at the BDI administrative offices.

7.0 COORDINATION AGREEMENTS

A copy of this Plan will be provided to the local organizations identified in **Table II.3.1**. This Plan serves to familiarize each of the identified organizations with the operations of the Facility and types of emergencies and responses that may be required. Each agency will be encouraged to visit the Facility for purposes of assessing site operations, access, etc., and providing input regarding emergency response procedures (19.15.11.9.B(2)(e) NMAC).

8.0 PLAN AMENDMENT

The EC will be responsible for assuring that updates to or amendments of this Plan are conducted and recorded in the event of any of the following (19.15.11.9.F NMAC):

1. The Facility Permit is revised or modified with potential impacts on this Plan.
2. The OCD mandates it, including responses to regulatory updates.
3. The Plan fails in an emergency, resulting in Plan Amendments.
4. Modification to the Facility design, construction, operation, maintenance or other circumstances that changes the potential circumstance or locations for fires, explosion, or releases of hazardous oil field waste constituents; or related changes in the appropriate emergency response.
5. The list of ECs changes.
6. The list of emergency equipment changes significantly.

The updated Plan will be distributed to OCD and provided to the local organizations identified in **Table II.3.1** with a cover letter highlighting any substantive changes. Proposed changes will be in compliance with 19.15.36 NMAC.

9.0 TRAINING

The EC or Facility training representative will ensure that new and existing employees are trained on the H_2S Prevention and Contingency Plan, including training in the responsibilities and duties of essential personnel, at least annually; or when significant changes to the Plan have been made, whichever is more frequent. Prior to any new employee commencing work, a training session separate from the standard annual training will be conducted to provide specific proficiency in H_2S

safety and procedures. Training will include both classroom drills and field exercises simulating H_2S monitoring, potential releases, and evacuation procedures. BDI shall also provide for the training of residents as appropriate on the proper protective measures to be taken in the event of a release, and shall provide briefing of public officials on issues such as evacuation or shelter-in-place plans. Included in this training are H_2S hazards identification and detection, personal protection, contingency procedures, etc. Training sign-in sheets for initial training and refresher events, as well as a training schedule are provided as **Attachment II.3.H.**

ATTACHMENT II.3.A

SAFETY DATA SHEET FOR H_2S

SAFETY DATA SHEET

Hydrogen Sulfide

Airgas
an Air Liquide company

Section 1. Identification

GHS product identifier : Hydrogen Sulfide

Chemical name : hydrogen sulfide

Other means of identification : Hydrogen sulfide; Hydrogen sulfide (H2S); Sulfuretted hydrogen; Sewer gas; Hydrosulfuric acid; dihydrogen sulfide

Product type : Gas.

Product use : Synthetic/Analytical chemistry.

Synonym : Hydrogen sulfide; Hydrogen sulfide (H2S); Sulfuretted hydrogen; Sewer gas; Hydrosulfuric acid; dihydrogen sulfide

SDS # : 001029

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE GASES - Category 1
GASES UNDER PRESSURE - Liquefied gas
ACUTE TOXICITY (inhalation) - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
AQUATIC HAZARD (ACUTE) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Extremely flammable gas.
May form explosive mixtures with air.
Contains gas under pressure; may explode if heated.
Fatal if inhaled.
May cause respiratory irritation.
Very toxic to aquatic life.
Extended exposure to gas reduces the ability to smell sulfides.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Do not depend on odor to detect presence of gas. Approach suspected leak area with caution.

Prevention : Wear respiratory protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe gas.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.

Storage : Store locked up. Protect from sunlight. Store in a well-ventilated place.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : hydrogen sulfide

Other means of identification : Hydrogen sulfide; Hydrogen sulfide (H2S); Sulfuretted hydrogen; Sewer gas; Hydrosulfuric acid; dihydrogen sulfide

Product code : 001029

CAS number/other identifiers

CAS number : 7783-06-4

Ingredient name	%	CAS number
hydrogen sulfide	100	7783-06-4

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Fatal if inhaled. May cause respiratory irritation.

Skin contact : No known significant effects or critical hazards.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Section 4. First aid measures

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : Adverse symptoms may include the following:, respiratory tract irritation, coughing

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Section 6. Accidental release measures

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Use only non-sparking tools. Avoid release to the environment. Empty containers retain product residue and can be hazardous. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not breathe gas.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Store locked up. Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
hydrogen sulfide	**ACGIH TLV (United States, 3/2017).** STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. **NIOSH REL (United States, 10/2016).** CEIL: 15 mg/m³ 10 minutes. CEIL: 10 ppm 10 minutes. **OSHA PEL 1989 (United States, 3/1989).** STEL: 21 mg/m³ 15 minutes. STEL: 15 ppm 15 minutes. TWA: 14 mg/m³ 8 hours. TWA: 10 ppm 8 hours. **OSHA PEL Z2 (United States, 2/2013).** AMP: 50 ppm 10 minutes. CEIL: 20 ppm

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas. [Compressed gas.]

Color : Colorless.

Odor : Rotten eggs.

Odor threshold : Not available.

pH : Not available.

Melting point : -82°C (-115.6°F)

Boiling point : -60°C (-76°F)

Critical temperature : 100.5°C (212.9°F)

Flash point : Not available.

Evaporation rate : Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Lower: 4.3%
Upper: 45%

Vapor pressure : 252 (psig)

Vapor density : 1.19 (Air = 1)

Specific Volume (ft^3/lb) : 11.236

Gas Density (lb/ft^3) : 0.089

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : 5 g/l

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : 270°C (518°F)

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 34.08 g/mole

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
hydrogen sulfide	LC50 Inhalation Gas.	Rat	712 ppm	1 hours

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Section 11. Toxicological information

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
hydrogen sulfide	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Fatal if inhaled. May cause respiratory irritation.

Skin contact : No known significant effects or critical hazards.

Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : Adverse symptoms may include the following:, respiratory tract irritation, coughing

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 11. Toxicological information

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Other information : IDLH : 100 ppm

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
hydrogen sulfide	Acute EC50 62 µg/l Fresh water Acute LC50 2 µg/l Fresh water	Crustaceans - Gammarus pseudolimnaeus Fish - Coregonus clupeaformis - Yolk-sac fry	2 days 96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

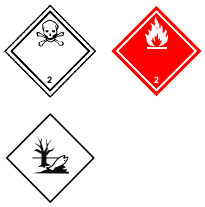
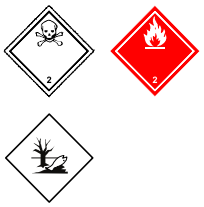
Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Hydrogen sulfide; Hydrogen sulfide H2S	7783-06-4	Listed	U135

Section 14. Transport information

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1053	UN1053	UN1053	UN1053	UN1053
UN proper shipping name	HYDROGEN SULFIDE	HYDROGEN SULFIDE; OR HYDROGEN SULPHIDE	HYDROGEN SULFIDE	HYDROGEN SULPHIDE	HYDROGEN SULPHIDE
Transport hazard class(es)	2.3 (2.1) 	2.3 (2.1) 	2.3 (2.1) 	2.3 (2.1) 	2.3 (2.1) 
Packing group	-	-	-	-	-
Environmental hazards	No.	Yes.	Yes. The environmentally hazardous substance mark is not required.	Yes.	Yes. The environmentally hazardous substance mark is not required.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : Toxic - Inhalation hazard Zone B
Reportable quantity 100 lbs / 45.4 kg. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
Limited quantity Yes.
Quantity limitation Passenger aircraft/rail: Forbidden. Cargo aircraft: Forbidden.
Special provisions 2, B9, B14

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.13-2.17 (Class 2), 2.7 (Marine pollutant mark).
The marine pollutant mark is not required when transported by road or rail.
Explosive Limit and Limited Quantity Index 0
ERAP Index 0
Passenger Carrying Ship Index Forbidden
Passenger Carrying Road or Rail Index Forbidden

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: Forbidden.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Water Act (CWA) 311: hydrogen sulfide

Clean Air Act (CAA) 112 regulated toxic substances: hydrogen sulfide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
hydrogen sulfide	100	Yes.	500	-	100	-

SARA 304 RQ : 100 lbs / 45.4 kg

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	hydrogen sulfide	7783-06-4	100
Supplier notification	hydrogen sulfide	7783-06-4	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.

New York : This material is listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

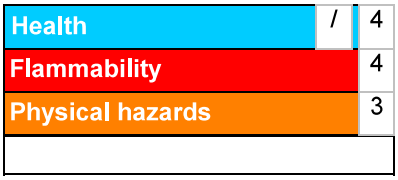
Section 15. Regulatory information

Inventory list

Australia	:	This material is listed or exempted.
Canada	:	This material is listed or exempted.
China	:	This material is listed or exempted.
Europe	:	This material is listed or exempted.
Japan	:	**Japan inventory (ENCS)**: This material is listed or exempted. **Japan inventory (ISHL)**: Not determined.
Malaysia	:	Not determined.
New Zealand	:	This material is listed or exempted.
Philippines	:	This material is listed or exempted.
Republic of Korea	:	This material is listed or exempted.
Taiwan	:	This material is listed or exempted.
Thailand	:	Not determined.
Turkey	:	Not determined.
United States	:	This material is listed or exempted.
Viet Nam	:	Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Section 16. Other information

Classification	Justification
FLAMMABLE GASES - Category 1	Expert judgment
GASES UNDER PRESSURE - Liquefied gas	Expert judgment
ACUTE TOXICITY (inhalation) - Category 2	On basis of test data
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Expert judgment
AQUATIC HAZARD (ACUTE) - Category 1	Expert judgment

History

Date of printing : 11/30/2017

Date of issue/Date of revision : 11/30/2017

Date of previous issue : 3/23/2017

Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

AFROX
A Member of The Linde Group

MATERIAL SAFETY DATA SHEET (MSDS)
HYDROGEN SULPHIDE (H2S)
Please ensure that this MSDS is received by the appropriate person

DATE: April 2011 Version 2

Ref. No.: MS033

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name HYDROGEN SULPHIDE

Chemical Formula H2S
Trade Name Hydrogen Sulphide

Company Identification African Oxygen Limited
23 Webber Street
Johannesburg, 2001
Tel. No: (011) 490-0400
Fax No: (011) 490-0506

EMERGENCY NUMBER **0860111185 or (0860 02 02 02)**
(24 hours)

2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name: Hydrogen Sulphide
Chemical Abstract Service Number (CAS No.): 07783-06-04
UN No.: 1053
ERG No.: 117

3. HAZARDS IDENTIFICATION

Main Hazards in concentrations of 20 to 50ppm , hydrogen sulphide irritates the eyes. Slightly higher concentrations irritate The upper respiratory tract and, may result in pulmonary edema. Inhalation of 500ppm for 30 minutes produces headache, dizziness, excitement, staggergering, and gastroenteric disorder, followed in some cases by bronchitis and bronchial pneumonia. Concentrations above 600pm can be fatal within 30 minutes through respiratory paralysis. Although the foul odor of hydrogen sulphide is readily detectable in low concentrations, it becomes unreliable as a warning of dangerous concentrations of gas since continuous inhalation leads rapidly to olfactory fatigue.

Vapour Inhalation Hydrogen sulfide reacts with enzymes in the bloodstream and inhibits cellular respiration resulting in pulmonary paralysis, sudden collapse and death. Continuous exposure to low (15-50 ppm) concentrations will generally cause irritation to mucous membranes, and may also cause headache, dizziness or nausea. Higher concentrations (200-300 ppm) may result in respiratory arrest leading to coma or unconsciousness. Exposures for more than 30minutes at concentrations greater than 700 ppm have been fatal. Continuous inhalation of low concentrations may cause olfactory fatigue or paralysis of the sense of smell.Thus, detection of hydrogen sulfide by its odor is not effective.

Eye Contact Low concentrations will generally cause irritation to the conjunctiva. Repeated exposure to low concentrations is reported to cause conjunctivitis, photo phobia, corneal bullae, tearing, pain and blurred vision.

Skin Contact May irritate the skin upon contact

Ingestion Ingestion is unlikely. Hydrogen sulfide will irritate the mucous membranes causing a burning feeling with excess salivation likely. Irritation of the gastrointestinal tract may also occur.

4 FIRST AID MEASURES

Inhalation: Very toxic by inhalation.
May cause damaging effects to central nervous system, metabolism and gastrointestinal tract.
Prolonged exposure to small concentrations may result in pulmonary oedema.
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor.
Apply artificial respiration if breathing stopped.
Delayed adverse effects possible.

Skin/Eye: Remove contaminated clothing.
In case of frostbite spray with water for at least 15minutes. Apply a sterile dressing.
Immediately flush eyes thoroughly with water for at least minutes. Obtain medical assistance.

Ingestion: It is not considered a potential route of exposure

5 FIRE FIGHTING MEASURES

Extinguishing media Suitable extinguishing media: all known extinguishants can be used.

Specific Hazards Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products: If involved in a fire, the following toxic and/or corrosive fumes may be produced by thermal decomposition: Sulfur dioxide,
Suitable extinguishing media: all known extinguishants can be used.

Emergency Actions stop flow of product if possible. Move away from the container and cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary.
Spontaneous/explosive re-ignition may occur.

Protective Clothing Use a self contained breathing apparatus and chemically protective clothing.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions Evacuate area.
Eliminate ignition sources. Ensure adequate air ventilation.
Wear self- contained breathing apparatus when entering area unless atmosphere is proved to be safe.

Environmental Precautions Do not allow the product from entering sewers and storm water drains.

Methods for cleaning up Ventilate area. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated, that is ground free from frost

AFROX
A Member of The Linde Group

MATERIAL SAFETY DATA SHEET (MSDS)
HYDROGEN SULPHIDE (H2S)
Please ensure that this MSDS is received by the appropriate person

7 HANDLING AND STORAGE

Ensure equipment is adequately earthed.
Purge air from system before introducing gas.
Do not allow backfeed into the container.
Cylinders should be stored upright and prevented from falling.
Suck back of water into the container must be prevented.
Use only properly specified equipment, which is suitable for this product, its supply pressure and temperature.
Contact your gas supplier if in doubt.
Keep away from ignition sources (including static discharges).
Secure them away from flammable or combustible materials; in a dry, well ventilated constructed of non -combustible material with firm level floor.
Keep container below 50 deg. Celsius in a well ventilated place.
Use the "first in – first out" inventory system to prevent full cylinders from being stored for excessive period of time. Compliance of all relevant legislation is essential. Keep away from children

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure hazards Hydrogen sulfide – TLV: 10ppm; STEL: 15ppm

Engineering control measures Filling or withdrawal from a Hydrogen Sulfide cylinder must be performed in a well ventilated area and if possible should be in a forced ventilation system or using a hood over the valve.

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Chemical Symbol	H_2S
Molecular Weight	34.08 g/mol
Melting point @ 224 kPa	-86°C
Appearance/Colour:	Colourless gas
Odour:	Rotten eggs
Relative density, Gas @ 101.325kPa @ 25°C	1.188
Specific Volume @ 21.1°C, 101.325 kPa	70.11dm^3/kg
Dielectric constant; Gas @ 0°C, @ 101.325kPa	1.004

10 STABILITY AND REACTIVITY

Conditions to avoid avoid heat, flames, sparks and other source of ignition.
Minimise contact with material
Avoid inhalation of material or combustion by products.
Keep out of water suppliers and sewers.

Incompatible Materials Do not store reserve stocks of hydrogen sulphide cylinder with cylinders containing oxygen or other highly oxidising or combustible materials.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity	unknown
Skin & eye contact	unknown
Chronic Toxicity	unknown
Carcinogenicity	unknown
Mutagenicity	unknown
Reproductive Hazards	unknown

12 ECOLOGICAL INFORMATION

General: Toxic to water organisms.

13 DISPOSAL CONSIDERATIONS

Disposal methods Avoid discharge to atmosphere.
Do not discharge into any place where its accumulation could be dangerous.
Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere.
Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor.
Contact supplier if further guidance is required

14 TRANSPORT INFORMATION

UN No.	1053
Class	2.3
ADR/RID Item Nr.	2,2 deg. TIF
ADR/RID Hazard Nr.	263
Labelling ADR	Label 6.1 Toxic Substance Label 3 Flammable substance
Other transport information	Avoid transport on vehicles where load space is not separated from the driver's compartment. Ensure vehicle driver is aware of potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured and valve outlet cap, nut or plug (where provided) is correctly fitted. Valve protection device (where provided) is correctly fitted. Ensure that there is adequate ventilation. Comply with applicable transport regulation.

15 REGULATORY INFORMATION

Risk phrases R26 Very toxic by inhalation

Safety phrases
S (1/2) Keep locked up and out of reach of children
S9 Keep container in a well ventilated place
S16 Keep away from ignition sources – No smoking
S28 After contact with skin, immediately wash with plenty of ... (to be specified by manufacturer)
S36/37 Wear suitable protective clothing and gloves
S45 In case of accident or if you feel unwell, seek medical advice immediately
S61Avoid release into environment; refer to special instructions/material safety data sheet

Reference: SANS 10265

16 OTHER INFORMATION

Ensure all national/local regulations are observed. Ensure operators understand the asphyxiation hazard.

Bibliography
Compressed Gas Association, Arlington, Virginia
Handbook of Compressed Gases – 3rd Edition
Matheson Gas Data Book – 6th Edition

EXCLUSION OF LIABILITY
Whilst AFROX made best endeavour to ensure that the information contained in this publication is accurate at the date of publication, AFROX does not accept liability for an inaccuracy or liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.

ATTACHMENT II.3.B

SELECT SECTIONS OF API RP-55

APPENDIX C—A SCREENING APPROACH TO DISPERSION OF HYDROGEN SULFIDE

Note: The exposure radii shown in Figures C-1 through C-4 represent estimates developed by API's Air Modeling Task Force (AQ7) using simple screening models and modeling techniques. These models should be reasonably accurate for low velocity releases of neutrally-buoyant mixtures of hydrogen sulfide and carrier gas. Figures C-1 through C-4 are useful as a conservative screening tool for high velocity releases and for light hydrogen sulfide carrier gas mixtures. Figures C-1 through C-4 are not recommended for low velocity releases of heavier-than-air hydrogen sulfide/carrier gas mixtures or of potential aerosol-generating mixtures, since these illustrations sometimes will underpredict exposure radii for these mixtures. Site specific conditions should be assessed to determine the need for additional, more rigorous modeling techniques. Users should evaluate their operations and select proper modeling applications for their specific emergency planning purposes.

C.1 Introduction

The material presented in Appendix C is generic in nature and is intended for emergency response planning purposes to arrive at conservative hydrogen sulfide dispersion estimates. Figures C-1 through C-4 present the screening-level, model-predicted radius of exposure (ROE) for atmospheric concentrations of hydrogen sulfide at 10, 30, 100, 300, and 500 ppm for both continuous and puff (instantaneous) releases of pure hydrogen sulfide. The ROE represents the distance from the emission source to the concentration of interest measured along the plume's centerline at ground level. Equations were developed for predicting the ROE as a function of the quantity/rate of hydrogen sulfide released for each of the hydrogen sulfide concentrations modeled and the type of release (continuous and puff). The equations and corresponding coefficients are presented in Par. C.8 and Table C-1. Meteorological conditions typical of worst-case daytime and nighttime conditions were modeled.

Various regulations dealing with hydrogen sulfide operations prescribe a method(s) or technique(s) for ROE predictions. Such methods must be taken into account because specific compliance actions may require use of a method(s) specified by the regulation, unless use of other methods are allowed.

C.2 Methodology

The ROEs shown in Figures C-1, C-2, C-3, and C-4 were predicted using standard EPA-approved modeling procedures based on Gaussian dispersion theory. The ROEs shown in Figures C-1 and C-2 were predicted by modeling a continuous, steady-state point source release of 100 percent hydrogen sulfide. The ROEs shown in Figures C-3 and C-4 were predicted by modeling an instantaneous hydrogen sulfide release. Both hydrogen sulfide release types were modeled as releases of a neutrally-buoyant material under steady-state meteorological conditions. An effective plume height (release height plus plume rise) of 10 feet was used in all the modeling work. It was assumed that the predicted ROEs do not vary significantly with effective plume height in the range of 0-50 feet.

Table C-1—Linear Regression Coefficients for Mathematical Predictions of ROE as a Function of Downwind Hydrogen Sulfide Concentration and Release Quantity/Rate

Time*	Type of Release	Concentration, ppm	Coefficients A	Coefficients B
Day	Continuous	10	0.61	0.84
Day	Continuous	30	0.62	0.59
Day	Continuous	100	0.58	0.45
Day	Continuous	300	0.64	-0.08
Day	Continuous	500	0.64	-0.23
Night	Continuous	10	0.68	1.22
Night	Continuous	30	0.67	1.02
Night	Continuous	100	0.66	0.69
Night	Continuous	300	0.65	0.46
Night	Continuous	500	0.64	0.32
Day	Puff	10	0.39	2.23
Day	Puff	30	0.39	2.10
Day	Puff	100	0.39	1.91
Day	Puff	300	0.39	1.70
Day	Puff	500	0.40	1.61
Night	Puff	10	0.39	2.77
Night	Puff	30	0.39	2.60
Night	Puff	100	0.40	2.40
Night	Puff	300	0.40	2.20
Night	Puff	500	0.41	2.09

*Day Meteorological Conditions: Stability Class PG D (Neutral)—5 mph Wind Speed.
*Night Meteorological Conditions: Stability Class PG F (Stable)—2.2 mph Wind Speed.

For the purposes of dispersion modeling, the amount of turbulence in the ambient air is categorized into defined increments or stability classes. The most widely used categories are the Pasquill-Gifford (PG) Stability Classes A, B, C, D, E, and F (Pasquill, F., *Atmospheric Difusion*, Second Edition, John Wiley & Sons, New York, New York, 1974). PG Stability Class A denotes the most unstable (most turbulent) air conditions and PG Stability Class F denotes the most stable (least turbulent) air conditions. PG Stability Class D denotes neutral atmospheric conditions where the ambient temperature gradient is essentially the same as the adiabatic lapse rate. Under neutral conditions, rising or sinking air parcels cool or heat at the same rate as the ambient air, resulting in no enhancement or suppression of vertical air motion.

Standard Pasquill-Gifford (PG) dispersion coefficients for flat, open grassland were used in the continuous hydrogen sulfide release model. The Slade (refer to *NTIS-TID 24190:* Slade, D. H., *Meteorology and Atomic Energy,* 1968) dispersion coefficients for flat, open grassland were used in the puff (instantaneous) release model. When modeling instantaneous hydrogen sulfide releases it was assumed that the downwind (x) and the crosswind (y) dispersion coefficients

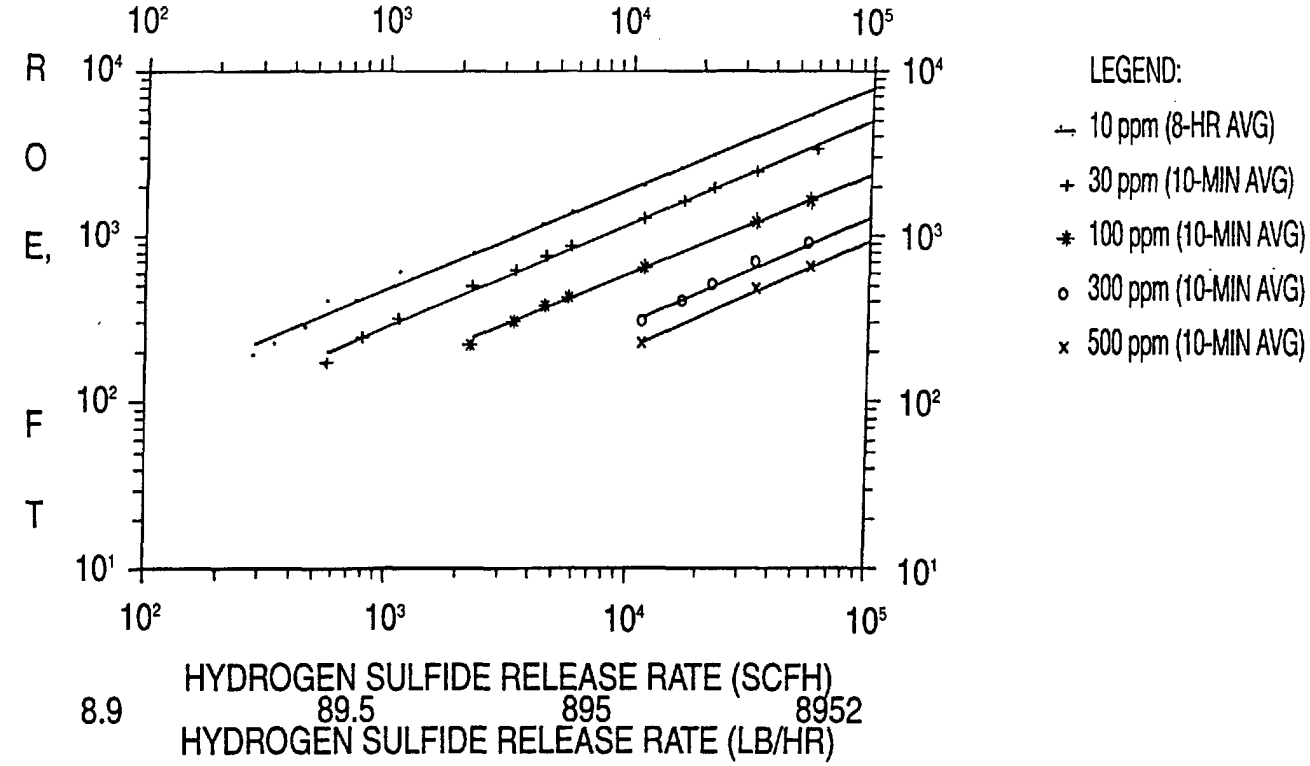


Figure C-1—Radius of Hydrogen Sulfide Exposure
Continuous Daytime Hydrogen Sulfide Releases [PG D (Neutral)—5 MPH Wind Speed]

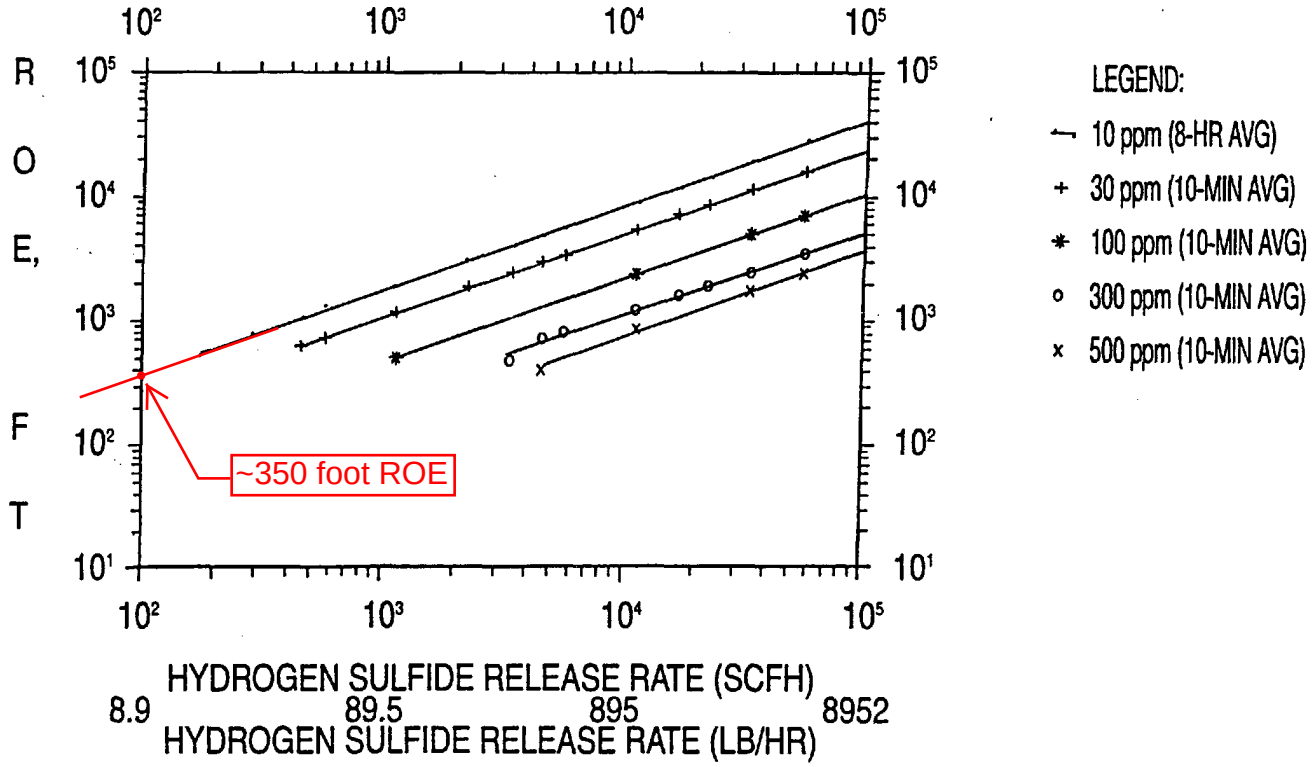


Figure C-2—Radius of Hydrogen Sulfide Exposure
Continuous Nighttime Hydrogen Sulfide Releases [PG F (Stable)—2.2 MPH Wind Speed]

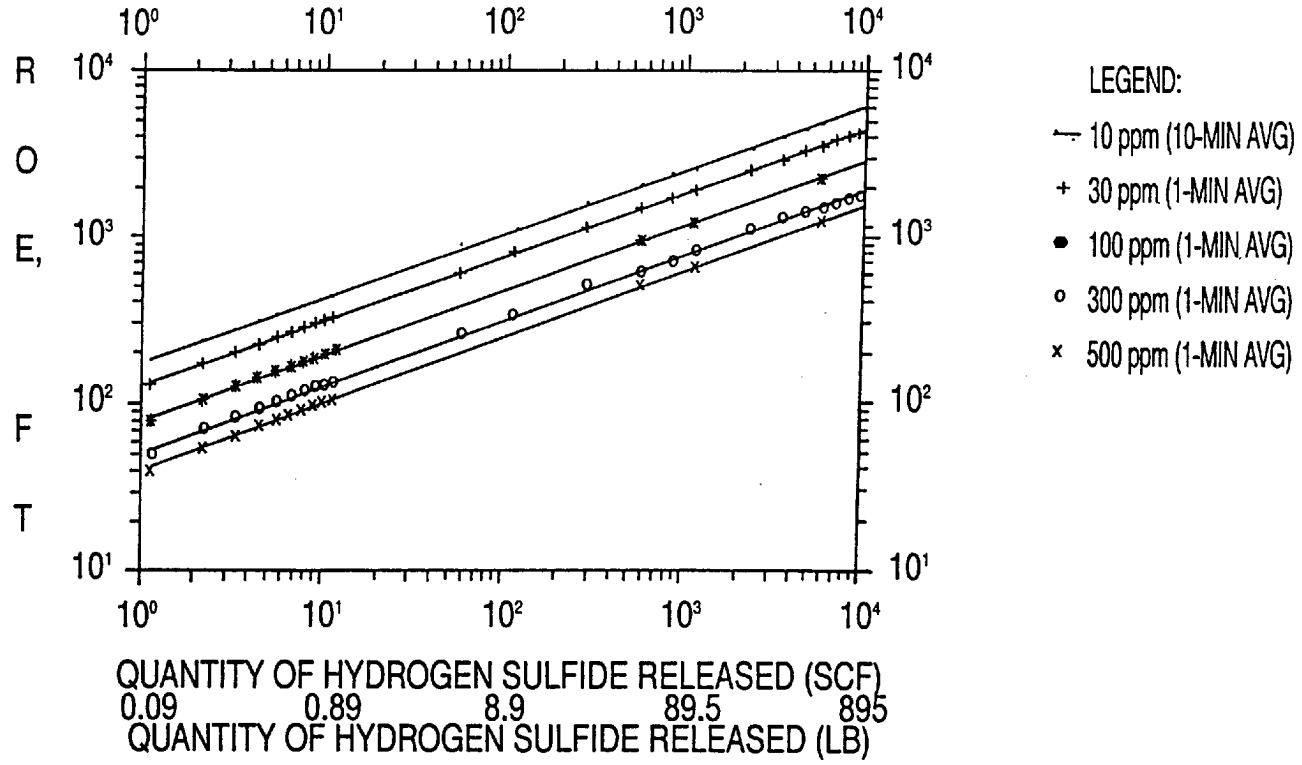


Figure C-3—Radius of Hydrogen Sulfide Exposure
Instantaneous Daytime Hydrogen Sulfide Releases [Slade A (Slightly Unstable)—5 MPH Wind Speed]

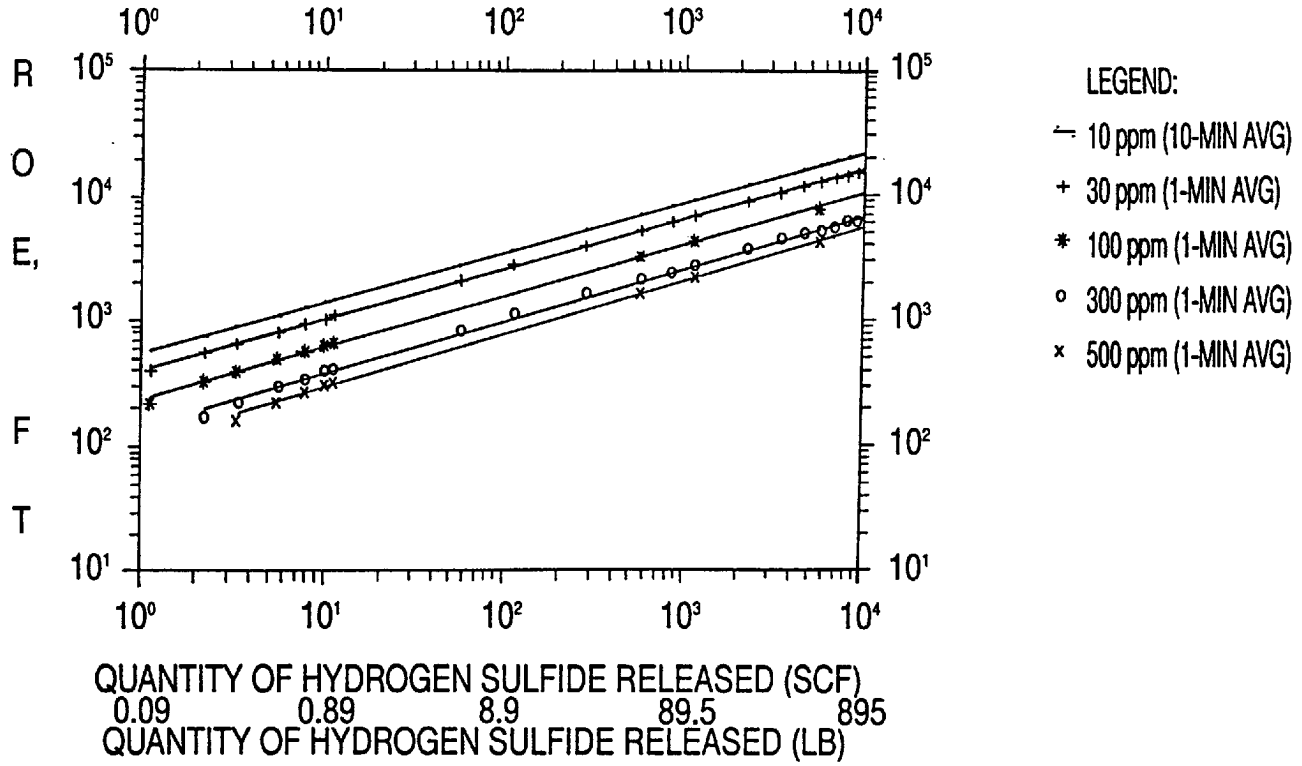


Figure C-4—Radius of Hydrogen Sulfide Exposure
Instantaneous Nighttime Hydrogen Sulfide Releases [Slade B (Neutral)—2.2 MPH Wind Speed]

were equivalent. This assumption results in conservative (worst case) estimates of the ROEs. The following meteorological conditions were assumed to be representative of worst case daytime and nighttime conditions. For continuous daytime releases a neutral Stability Class (PG D) and 5 miles per hour wind speed were chosen. For continuous nighttime releases, a stable Stability Class (PG F) and a 2.2 miles per hour wind speed were chosen. For instantaneous (puff) daytime releases, a slightly unstable Stability Class (Slade A) and a 5 miles per hour wind speed were chosen. For instantaneous nighttime releases, a neutral-to-stable Stability Class (Slade B) and a 2.2 miles per hour wind speed were chosen.

The ROEs for continuous hydrogen sulfide releases at 30, 100, 300, and 500 ppm are valid for averaging times of 10 minutes to 1 hour. The ROEs shown for 10 ppm (continuous hydrogen sulfide release) are based on an 8-hour average concentration, since 10 ppm represents the 8-hour time weighted average (TWA) for hydrogen sulfide. To obtain the 8-hour/10 ppm average concentration a factor of 0.7 was used to convert the 1-hour concentrations (refer to EPA-450/4-88-009: *A Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants*). The ROEs for the puff (instantaneous) hydrogen sulfide releases at 30, 100, 300, and 500 ppm are valid for averaging times of 1 to 10 minutes. EPA's 0.7 conversion factor was used to obtain the 10 minute/10 ppm time averaged concentrations from instantaneous peak concentrations predicted by the model. For continuous releases, the EPA considers 10-minute and 1-hour averaging times to be equivalent. The modeling reported herein assumed that an instantaneous release would be of a very short duration (10 to 15 minutes maximum).

Brief descriptions of the models used to predict the ROEs for both continuous and puff (instantaneous) hydrogen sulfide releases are presented in Par. C.13.

C.3 Results

ROEs for atmospheric plume-centerline, ground-level concentrations of hydrogen sulfide resulting from instantaneous and continuous hydrogen sulfide releases were predicted and are presented in Figures C-1 through C-4. Figures C-1 and C-2 present the predicted ROEs for continuous hydrogen sulfide releases during worst case daytime and nighttime meteorological conditions, respectively. Figures C-3 and C-4 present the predicted ROEs for instantaneous hydrogen sulfide releases during worst case daytime and nighttime meteorological conditions, respectively. The ROEs for concentrations of 10, 30, 100, 300 and 500 ppm were modeled for both release types. The 10 ppm concentration ROEs represent an 8-hour averaging time for the continuous hydrogen sulfide release and a 10-minute averaging time for the instantaneous release. The 30, 100, 300, and 500 ppm concentration ROEs represent a 10-minute averaging time for the continuous hydrogen sulfide release and a 1-minute averaging time for the instantaneous release. A hydrogen sulfide release rate range of 10 to 10,000 lb/hr (111.8 to 111,765 SCFH) was modeled for the continuous type release. For the puff (instantaneous) type hydrogen sulfide release, a release quantity range of 0.1 to 1000 lbs (1.1 to 11,177 SCF) was modeled. If the hydrogen sulfide release is based on pounds, standard cubic feet (SCF) can be obtained by multiplying pounds by a factor of 11.2.

Note: The ROEs presented in Figures C-1 through C-4 are plotted against the amount of hydrogen sulfide released. For the release of a multi-component gas stream, the actual amount of hydrogen sulfide released should be used to determine the ROE.

Equation coefficients based on linear regression for predicting the ROE as a function of the release type (continuous/puff) and quantity/rate of hydrogen sulfide released for both daytime and nighttime meteorological conditions are presented in Table C-1. The equation is given in Par. C.8. The coefficients are applicable only over the ranges presented in Figures C-1 through C-4, and extrapolation could result in overly conservative estimates of the ROEs. Any release lasting significantly longer than 15 minutes should be interpreted as a continuous release. The modeling work presented in Appendix C assumes steady-state meteorological conditions. ROEs predicted for a long averaging time (8-hour) and long downwind distances are conservative because it is unlikely that the same meteorological conditions will persist during that time period.

C.4 Additional Considerations

The modeling work presented in Appendix C assumes a neutrally-buoyant, gaseous hydrogen sulfide release in flat, rural terrain under steady-state meteorological conditions. Also, the ROEs shown in Figures C-1 through C-4 are for a generic class of hydrogen sulfide releases covering a wide range of site and release conditions. Actual ROEs will be dependent on the specifics of the type of release, release conditions, and release site. For instance, the ROEs for a release in a more urban setting where structures, buildings, etc. are present will be reduced significantly due to structure-induced turbulence. Some other conditions that could significantly affect the actual ROE include: a liquid/aerosol release, dense cloud behavior, a buoyant cloud (plume liftoff), a jet release, time-dependent release (well blowout, pipeline ruptures, etc.), and complex terrain. If any of these phenomena are present, then more rigorous modeling may be necessary.

The ROE curves of Figures C-1 through C-4 should not be used when the mixture of hydrogen sulfide and carrier gas being dispersed is significantly heavier than air and the mixture is released at a low velocity. If the hydrogen sulfide/carrier gas mixture specific gravity exceeds approximately 1.2, Figures C-1 through C-4 may not give conservative ROEs for all release rates and meteorological conditions. Hydrogen sulfide, as encountered in the petroleum industry, is usually

a minor constituent of a carrier gas, such as natural gas or carbon dioxide. Carbon dioxide has a specific gravity of 1.52. Dispersion predictions for hydrogen sulfide/carbon dioxide mixtures, using a dense gas model sometimes underpredict hydrogen sulfide ROEs for low velocity gas releases. Low velocity gas releases would include those with initial velocities less than 200 feet/second and releases greater than 200 feet/second involve impact of the gas jet from the leak with a nearby surface, thereby breaking the jet's momentum. Likewise, Figures C-1 through C-4 should not be used with any hydrogen sulfide/carrier gas release that potentially could form an aerosol.

Figures C-1 through C-4 can also substantially overpredict ROEs. In the case of hydrogen sulfide/carrier gas mixtures significantly lighter than air (i.e., specific gravity less than 0.8) released at low velocity, use of these illustrations may overpredict ROEs by a factor of 2 to 3. Use of these illustrations can result in overestimation of ROEs for high velocity hydrogen sulfide/carrier gas releases (i.e., gas release velocities greater than 200 feet/second) regardless of the orientation of the release. However, this overprediction is particularly significant in the case of vertical, high-velocity releases. In such situations, the overprediction can be two orders of magnitude. The user should consult more rigorous atmospheric dispersion models.

When calculating the ROE for dilute concentrations of hazardous gases, a significant overestimation can result. For example, it would not be practical to expect higher downwind atmospheric concentrations than are present in the released gas stream. The user should consult more rigorous atmospheric dispersion models.

In summary, the composition of the hydrogen sulfide/carrier gas and the velocity and orientation of the release are critical variables, dramatically affecting predicted hydrogen sulfide ROEs. Also, other variables, such as released gas temperature and flashing or aerosol formation involving liquid containing dissolved hydrogen sulfide, can have significant impacts on ROE predictions. Accurate atmospheric dispersion techniques are, of necessity, complex. Under some circumstances, such as those mentioned above, more rigorous modeling may be required.

References and models are available to address special release scenarios. A partial list of models that may be used in such cases is shown in Pars. C.5 and C.6. API does not endorse any one particular model. Further guidance on appropriate model selection and application can be obtained from the model developers as well as other individuals experienced in this field. A specific reference to address well blowout and pipeline ruptures is *"Release and Dispersion of Gas from Pipe Line Ruptures,"* Wilson, D. J., Department of Mechanical Engineering, University of Alberta, Edmonton, Canada.

In the event that hydrogen sulfide release quantities calculated by the user are below the ranges shown in Figures C-1 through C-4, extensions of the ROE curves are allowed to a minimum ROE of 50 feet. In some cases, ROEs of less than 50 feet may be inferred from extrapolation of the curves. Figures C-1 through C-4 were developed using an assumed release height plus plume rise of 10 feet. Actual release heights of other than 10 feet will result in different ROEs.

C.5 Proprietary Dispersion Models

Note: Users should carefully evaluate applicability of these models to prevailing conditions.

A list of some proprietary models that can be used to address special site-specific scenarios follows:

CHARM—(Radian Corporation): CHARM is a Gaussian puff model for continuous and instantaneous releases of gases or liquids. The model is configured to handle chemicals that are buoyant, neutrally buoyant, and heavier than air. Heavy gas dispersion is estimated using the Eidsvik model. Source components in the model include a modified version of Shell Oil Company's SPILLS Model. (Radian Corp., 850 MOPAC Blvd., Austin, TX 78759.)

FOCUS—(Quest Consultants, Inc.): FOCUS is a modeling package that includes both emission rate models (two-phase discharges, pool evaporation, jet vapor releases, etc.) and dispersion models for both neutrally-buoyant and dense-gas plumes. The models can be run separately or in a linked mode. (Quest Consultants, Inc., 908 26th Avenue, NW, Suite 103, Norman, OK 73069-6216.)

TRACE—(Dupont): TRACE uses a multiple Lagrangian Wall dispersion model to handle both puff and continuous releases. Wind channeling can be incorporated. Liquid evaporation and buoyancy effects are considered also. (E. I. Dupont de Nemours & Company, 5700 Corea Avenue, Westlake Village, CA 91362.)

WHAZAN—(Technica International): WHAZAN is a package of dispersion models for both neutrally-buoyant and dense-gas plumes. Submodels are included to handle two-phase discharges, evaporation, and vapor dispersion as a free jet. The model can be run both individually and in a linked mode. (Technica International Associates, Inc., Box 187, Woodstock, GA 30128-4420.)

C.6 Publicly-available Models

Note: Users should carefully evaluate applicability of these models to prevailing conditions.

A list of some publicly-available models that can be used to address special site-specific scenarios follows:

DEGADIS—(U. S. Coast Guard): DEGADIS, the Dense Gas Dispersion Model, is designed to simulate dispersion of heavier-than-air gas releases. It can handle both evaporative emissions from liquid spills and jet emissions. It is basically steady-state but simulates transient conditions by a series of steady-state calculations. Vapor generation rate, spill area, and meteorological parameters are important inputs to the

model. Information available through National Technical Information Service (NTIS), U. S. Department of Commerce, Springfield, VA 22161.

HEGADAS—(Shell Research B.V.): HEGADAS is a dispersion model for neutrally-buoyant and dense gases. The basic model components are solutions to the advection/diffusion equations and are in the standard form of Gaussian dispersion models. The model can handle a wide variety of source types, including transient horizontal jets. Information available through National Technical Information Service, U. S. Department of Commerce, Springfield, VA 22161.

SLAB—(Lawrence Livermore National Laboratory): SLAB is designed for application to dense gases that are emitted from liquid spills. The model considers the concentration integrated over a cross-section perpendicular to the plume centerline. The downwind variation of the integrated concentration is calculated. The size and emission rate of the liquid spill are required inputs to the model. Information available through Lawrence Livermore National Laboratory, Box 808, Livermore, CA 94550, or contact American Petroleum Institute, Health & Environmental Sciences Department, 1220 L Street, NW, Washington, D.C. 20005.

C.7 Sample Calculations for Figures C-1 through C-4

The following calculations may be used to estimate volume and mass of hydrogen sulfide when total gas volume and its hydrogen sulfide content are known:

Continuous Release.

Assume: Release of 5,000,000 SCFD of natural gas containing 8,000 ppm (by volume) of hydrogen sulfide.

Note: The user must know both the volume (or flow rate) of natural gas and its hydrogen sulfide concentration so that Figures C-1 through C-4 can be effectively used.

To determine standard cubic feet per hour (SCFH) of hydrogen sulfide released, the following calculations should be performed using appropriate values for the conditions being evaluated:

$$\frac{5{,}000{,}000 \text{ SCFD} \times 8{,}000 \text{ ppm } H_2S}{24{,}000{,}000}$$
$$= 1{,}667 \text{ SCFH of } H_2S \text{ released.}$$

To determine the pounds of hydrogen sulfide released per hour, the following calculations should be performed using appropriate values for the conditions being evaluated:

$$\frac{5{,}000{,}000 \text{ SCFD} \times 8{,}000 \text{ ppm } H_2S}{267{,}605{,}634}$$
$$= 150 \text{ lb/hr of } H_2S \text{ released.}$$

Instantaneous Release.

Assume: Release of 100,000 SCF of natural gas containing 8,000 ppm (by volume) of hydrogen sulfide. Also, assume this example is a daytime release, 5 miles per hour wind speed (refer to Figure C-3).

To determine the volume (SCF) of hydrogen sulfide released, the following calculations should be performed using appropriate values for the conditions being evaluated:

$$\frac{100{,}000 \text{ SCF} \times 8{,}000 \text{ ppm H2S}}{1{,}000{,}000}$$
$$= 800 \text{ SCF of } H_2S \text{ released}$$

After applying the appropriate calculations and using known factors to arrive at either hydrogen sulfide release rate or quantity of hydrogen sulfide released, refer to the appropriate chart (Figs. C-1 through C-4) or the equation in Par. C.8 (example calculations in Pars. C.9 through C.12) for obtaining radius of exposure (ROE) information.

The following equation can be used to convert percent hydrogen sulfide to parts per million on a volume basis:

$$\text{Percent } H_2S \times 10{,}000 = \text{ppm } H_2S$$

C.8 Radius of Exposure (ROE) Calculation

Using the values of coefficients "A" and "B" in Table C-1, the radius of exposure (ROE) for various hydrogen sulfide release rates (H_2S) can be mathematically predicted using the following equation:

$$ROE = \text{Antilog } [A \times \log (H_2S) + B]$$

For a continuous release, enter the hydrogen sulfide release rate (H_2S) in standard cubic feet per hour (SCFH). For a puff (instantaneous) release, enter the quantity of hydrogen sulfide (H_2S) released in standard cubic feet (SCF).

C.9 Sample Calculation—Continuous Release (Daylight)

Determine the $ROE_{100\text{ ppm}}$ for a continuous release of 100 percent hydrogen sulfide gas at a rate of 11,170 SCFH in daylight (PG D stability) conditions and 5 mph wind speed. Using Table C-1, the coefficients applicable to this scenario are: A = 0.58; B = 0.45. Using the equation in Par. C.8:

$ROE_{100\text{ ppm}} = \text{Antilog } [0.58 \times \log (11{,}170) + 0.45] = 628 \text{ feet.}$

C.10 Sample Calculation—Continuous Release (Nighttime)

Determine the $ROE_{100\text{ ppm}}$ for a continuous release of 100 percent hydrogen sulfide gas at a rate of 11,170 SCFH in nighttime (PG F stability) conditions and 2.2 mph wind speed. Using Table C-1, the coefficients applicable to this scenario are: A = 0.66; B = 0.69. Using the equation in Par. C.8:

$ROE_{100ppm} = \text{Antilog } [0.66 \times \log (11{,}170) + 0.69]$
$= 2{,}300 \text{ feet}$

C.11 Sample Calculation—Instantaneous Release (Daylight)

Determine the ROE_{100ppm} for an instantaneous release of 100 percent hydrogen sulfide gas of 1,117 SCF in daylight (Slade A stability) conditions and 5 mph wind speed. Using Table C-1, the coefficients applicable to this scenario are: A = 0.39; B = 1.91. Using the equation in Par. C.8:

ROE_{100ppm} = Antilog [0.39 × log (1,117) + 1.91] = 1,255 feet.

C.12 Sample Calculation—Instantaneous Release (Nighttime)

Determine the ROE_{100ppm} for an instantaneous release of 100 percent hydrogen sulfide gas of 1,117 SCF in nighttime (Slade B stability) conditions and 2.2 mph wind speed. From Table C-1, the coefficients applicable to this scenario are: A = 0.40; B = 2.40. Using the equation in Par. C.8:

ROE_{100ppm} = Antilog [0.40 × log (1,117) + 2.40] = 4,161 feet.

C.13 Descriptions of Gaussian and Puff Dispersion Models

C.13.1 INTRODUCTION

The emergency response Gaussian and Puff screening models are designed to predict the downwind dispersion (plume-centerline, ground-level concentration and maximum ground-level plume width as a function of downwind distance) of a neutrally-buoyant, steady-state point source gaseous release under steady-state meteorological conditions. Classical EPA-approved Gaussian dispersion theory is applied in the models. The programs are in BASIC and are designed for use on personal computers. The models are described below. The program listings and runs should use the IDLH, ERPG-2, and TLV and STEL levels as the concentrations of interest because they usually are the concentration values of concern. Both models can be run for other concentrations by substituting the values of interest in place of the values for IDLH, ERPG-2, and TLV and STEL in the computer programs. Copies of the example program listings and computer runs are available on request from American Petroleum Institute, Exploration & Production Department, 700 North Pearl Street, Suite 1840, Dallas, Texas 75201-2845.

C.13.2 Gaussian Model

This model calculates the plume-centerline, ground-level concentration, and maximum ground-level plume width for a single, steady-state, continuous-point release at user-specified, steady-state meteorological conditions and downwind distances. The model uses standard Gaussian dispersion modeling with Pasquill-Gifford dispersion coefficients. The user inputs the release rate, effective release height (release height plus plume rise), nominal wind speed, incremental downwind distance for which calculations are to be made, type of material released, and the stability class. A total of eight compounds are currently accepted by this model. Additional compounds can be entered by replacing compounds presently in the model. The model uses a default D Stability Class; but, can be run with any of the standard six Pasquill-Gifford Stability Classes (A, B, C, D, E, or F—with A being the most unstable and F being the most stable).

C.13.3 Puff Model

This model calculates the plume-centerline, ground-level concentration, and maximum ground-level plume width for a single, instantaneous-point release at user-specified, steady-state meteorological conditions and downwind distances. The model uses standard Gaussian dispersion theory for an instantaneous (puff) release with Slade dispersion coefficients. User inputs to the model are the same as those used in the Gaussian model except that the total amount of material released is entered rather than the rate of release. Three values are accepted for the Stability Class (A, B, or C—with A being unstable, B being neutral, and C being stable).

tion of sulfur dioxide exceeding 2 ppm in the atmosphere (refer to Par. 4.1 and Appendices A and B).

7.6 IMMEDIATE ACTION PLAN

Each contingency plan should contain a condensed "Immediate Action Plan" to be followed by designated personnel any time they receive notice of a potentially hazardous hydrogen sulfide or sulfur dioxide discharge. For the protection of personnel (including the general public) and abatement of the discharge, this "Immediate Action Plan" should include, but not be limited to, the following provisions:

a. Alert and account for facility personnel.
   1. Move away from the hydrogen sulfide or sulfur dioxide source and get out of the affected area.
   2. Don proper personal breathing equipment.
   3. Alert other affected personnel.
   4. Assist personnel in distress.
   5. Proceed to the designated emergency assembly area.
   6. Account for on-site personnel.

b. Take immediate measures to control the present or potential hydrogen sulfide or sulfur dioxide discharge and to eliminate possible ignition sources. Emergency shutdown procedures should be initiated as deemed necessary to correct or control the specific situation. When the required action cannot be accomplished in time to prevent exposing operating personnel or the public to hazardous concentrations of hydrogen sulfide or sulfur dioxide, proceed to the following steps, as appropriate for the site specific conditions.

c. Alert the public (directly or through appropriate government agencies) that may be subjected to an atmosphere exposure exceeding 30 ppm[21] of hydrogen sulfide or 10[21] ppm of sulfur dioxide.

d. Initiate evacuation operations.

e. Contact the first available designated supervisor on the call list (refer to Par. 7.4.a). Notify the supervisor of circumstances and whether or not immediate assistance is needed. The supervisor should notify (or arrange for notification of) other supervisors and other appropriate personnel (including public officials) on the call list.

f. Make recommendations to public officials regarding blocking unauthorized access to the unsafe area and assist as appropriate.

g. Make recommendations to public officials regarding evacuating the public and assist as appropriate.

h. Notify, as required, state and local officials and the National Response Center to comply with release reporting requirements (i.e., 40 *Code of Federal Regulations Parts* 302 and 355) (refer to Par. 4.4).

i. Monitor the ambient air in the area of exposure (after following abatement measures) to determine when it is safe for re-entry.

Note: This sequence (Par. 7.6) should be altered to fit the prevailing situation. Certain actions, especially those dealing with the public, should be coordinated with public officials.

7.7 EMERGENCY TELEPHONE LISTS

A list of emergency telephone numbers should be prepared and maintained as a part of the contingency plan, considering the need to contact any of the following:

a. Emergency Services
   1. Ambulances
   2. Hospitals
   3. Medical personnel (e.g., doctors)
   4. Helicopter services
   5. Veterinarians

b. Government Agencies and Contacts
   1. Local Emergency Planning Committee
   2. National Response Center
   3. State Emergency Response Commission
   4. State and Local Law Enforcement Agencies
   5. Civil Defense
   6. Fire Departments
   7. Other applicable government agencies.

c. Operator and Contractors
   1. Operator personnel
   2. Contractor personnel
   3. Applicable service companies

d. Public

7.8 TRAINING AND DRILLS

The value of training and drills in emergency response procedures for oil and gas operations involving hydrogen sulfide or sulfur dioxide cannot be over emphasized. All personnel identified in the plan shall have appropriate training. It is important that the training conveys a full appreciation of the importance of each role and the effect that each person has on implementing an effective emergency response.

Exercises or drills that simulate an emergency in which personnel perform or demonstrate their duties are important tools that can convey the importance of contingency plans and result in their being kept current. The exercise can be a tabletop or classroom discussion; or can be a realistic drill in which equipment is deployed, communication equipment is tested, and "victims" are sent to hospital facilities with simulated injuries. Public officials should be informed of (and preferably involved in) these exercises. After a plan is tested, it should be revised and retested until those responsible for the plan are confident the plan is operational. Refer to *NRT-1: Hazardous Materials Emergency Planning Guide.*

[21]Emergency Response Planning Guide Level 2 (ERPG-2), refer to Reference 27. ERPG-2 is defined as the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.

ATTACHMENT II.3.C

BDI INSPECTION REPORT FORM

BASIN DISPOSAL

30 Years of Environmental Health and Safety Excellence

200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

NO. 734937
NMOCD PERMIT: NM -001-0005
Oil Field Waste Document, Form C138
INVOICE:

DATE _____ DEL. TKT#. _____

GENERATOR: _____ BILL TO: _____

HAULING CO. _____ DRIVER: _____
(Print Full Name)

ORDERED BY: _____ CODES: _____

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☐ Produced Water ☐ Drilling/Completion Fluids

STATE: ☐ NM ☐ CO ☐ AZ ☐ UT TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1								
2								
3								
4								
5								

I, _____ representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☐ Approved ☐ Denied ATTENDANT SIGNATURE _____

SAN JUAN PRINTING 08180188

ATTACHMENT II.3.D
DAILY H_2S AND CONTAINMENT SUMP INSPECTION FORM (TYPICAL)

BASIN DISPOSAL, INC.
DAILY H2S AND CONTAINMENT SUMP INSPECTION

YEAR__2019_____ MONTH_____ WEEK BEGINNING_____

AMBIENT AIR WIND SPEED/DIRECTION (Initials & Time)
A.AM READINGS
B.PM READINGS

SUMP LEVELS (Initials & Time)
C. PUMP HOUSE SUMP CHECKED AM & PM
D. LOADING AREA SUMP CHECKED AM & PM, EMPTY DAILY AT 4PM.
E. CONCRETE SLAB, NOTE WHEN EMPTOED

Date	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Ambient Air H2S (AM)							
H2S Reading (ppm)							
Wind Speed (mph)							
Wind Direction							
Initials and Time							
Ambient Air H2S (PM)							
H2S Reading (ppm)							
Wind Speed (mph)							
Wind Direction							
Initials and Time							
Sump Levels							
AM Cement Slab Sump (ft)							
AM Loading Area (ft)							
AM Pump House Sump (ft)							
Intials and Time							
Empty Cement Slab (Initial/Date)							
4 PM EMPTY THE SUMPS							
PM Loading Area Sump (ft)							
PM Pump House Sump (ft)							
Intials and Time							
Stormwater Control							
Strutural Defect (Y,N) *							
Action Taken							
Initials and Time							
Manager Verification							
Intials and Time							

ATTACHMENT II.3.E

INCIDENT REPORT FORM (TYPICAL)

Fax completed report within 24 hours to Basin Disposal, Inc. at 505-333-3898

INCIDENT REPORT FORM

Type of Incident and General Information

- ❑ Work related Injury / Illness
- ❑ Property Damage
- ❑ Vehicular Accident
- ❑ Explosion
- ❑ Unsafe Act / Near Miss
- ❑ Vandalism / Criminal Activity
- ❑ Release to the Environment
- ❑ Fire

Employee Name: _____ Job Title: _____

Date of Incident: _____ Time of Incident: _____ AM/PM

Location of Incident: _____

Unit# _____ Start of Shift:_____Weather:_____

Date and Time Reported to Management : Date:_____ Time:_____ AM/PM

Reported to: _____ Title:_____ Reported by:_____

What was the injury category of incident at the time it was first reported to management ?

[ ] N/A. BDI employee does not claim an injury associated with this incident
[ ] Notice Only of Injury, Declined Medical Treatment at this time
[ ] First Aid done on site, Declined Medical Treatment at this time
[ ] Medical Treatment. Transported by _____ to _____
[ ] Fatality, BDI employee

Type of Release to the Environment

[ ] Release to Air
[ ] Release to Water
[ ] Release to Ground
[ ] Fire
[ ] Radiation

Employee's Description of Incident / Declaración del empleado de los hechos

THIS SECTION FILLED OUT BY EMPLOYEE

Were you injured ? *(Ud. se lastimó ?)* **Yes [ ] No [ ]**

Type of Injury: *(Tipo de lesión)* _____

Part of Body:_____ Left_____ Right_____
(Parte del cuerpo) *(Izq)* *(Der)*

Explain in your own words what happened and what measures were taken to control a release, if one occurred. *(Explique en sus propias palabras lo que sucedió)*

_____

_____

_____

_____

Employee Signature: (*Firma del empleado*) :_____

Date: (*Fecha*) _____

TO BE FILLED OUT BY BASIN DISPOSAL, INC. ACCIDENT INVESTIGATOR

Describe in order of occurrence the events leading to the accident, injury, and/or release to the environment. Reconstruct the sequence of events that led to the event(s).

_____
_____
_____
_____
_____
_____
_____
_____

Witnesses / Bystanders / Co-workers **Yes [ ] N/A (No Witnesses) [ ]**

Name: _____ Address: _____
Phone: _____ Workplace: _____
Was a Written Statement Obtained ? Yes [ ] No [ ]

Name: _____ Address: _____
Phone: _____ Workplace: _____
Was a Written Statement Obtained ? Yes [ ] No [ ]

Drug and Alcohol Post Accident Test

Is the BDI employee a D.O.T. regulated employee ? Yes [ ] No [ ]
Did the BDI employee receive a moving traffic violation ? Yes [ ] No [ ]
Were any of the vehicles involved towed away ? Yes [ ] No [ ]
Was "immediate medical treatment" required for anyone ? Yes [ ] No [ ]
Was a post accident drug/alcohol test performed ? Yes [ ] No [ ]
If so, was the D/A test conducted within 2 hours ? Yes [ ] No [ ] N/A [ ]

Investigated by: _____ (Waste Connections Employee)

Title: _____ Date: _____ Department: _____

CORRECTIVE ACTIONS. (Equipment, Practices, Environment, Retraining) Steps that have been, or will be taken to prevent recurrence:

_____
_____
_____
_____
_____

Corrective Action Completed ? ☐ YES Date Completed:_____

- I have been briefed on the corrective actions outlined above
- *Estoy consciente de las acciones correctivas mencionadas anteriormente en esta hoja*

_____
Employee's Signature / Date

REPORT REVIEWED AND CONCLUDED BY:

_____
Immediate Supervisor's Signature / Date

_____
Employee's Manager's Signature / Date

DISCIPLINARY ACTION ? ☐ YES ☐ NO
(Timely forward appropriate paperwork to BDI)

ATTACHMENT II.3.F

RELEASE NOTIFICATION AND CORRECTIVE ACTION

OCD FORM C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # *(assigned by OCD)*
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# *(if applicable)*

Unit Letter	Section	Township	Range	County

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Cause of Release		

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☐ The source of the release has been stopped.

☐ The impacted area has been secured to protect human health and the environment.

☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☐ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	_____ (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☐ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☐ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☐ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☐ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☐ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☐ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☐ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☐ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☐ Data table of soil contaminant concentration data
- ☐ Depth to water determination
- ☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ☐ Topographic/Aerial maps
- ☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature:_____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☐ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

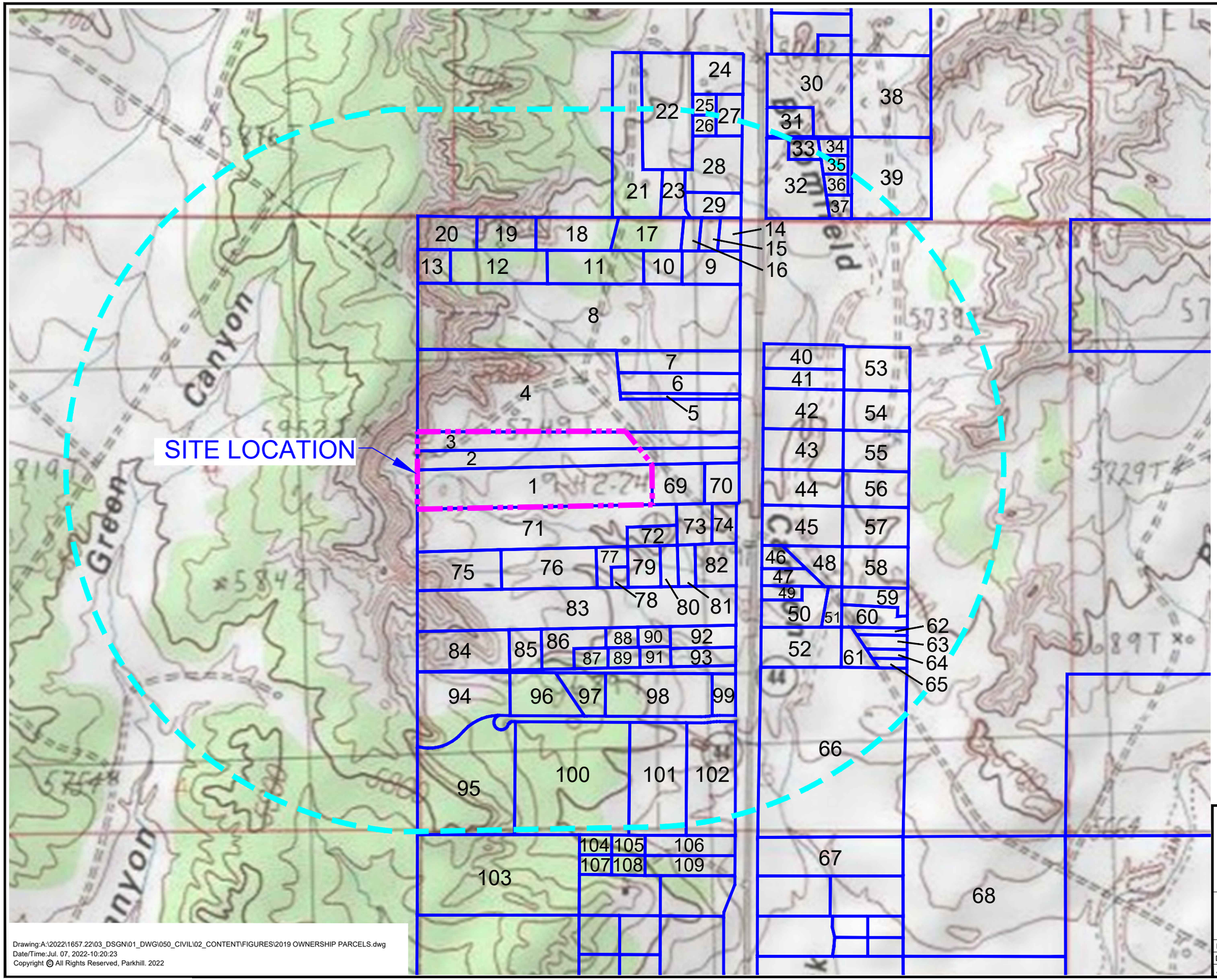
Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

ATTACHMENT II.3.G

ADJACENT LAND OWNERS WITHIN 1/2 MILE OF BDI



LEGEND

SITE BOUNDARY

1/2 MILE RADIUS

PARCEL BOUNDARY

39 PARCEL REFERENCE NUMBER (SEE TABLE I.A.1)

*PROPERTY OWNERSHIP AND PARCEL BOUNDARY DATA PROVIDED BY SAN JUAN COUNTY ASSESSORS OFFICE.

*ALL DATA CURRENT AS OF 9/26/2019.

NORTH

0 400' 800'

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\2019 OWNERSHIP PARCELS.dwg
Date/Time:Jul. 07, 2022-10:20:23

LAND OWNERSHIP MAP

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: 2019 OWNERSHIP.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	ATTACHMENT II.3.G
APPROVED BY: MWK	www.parkhill.com	

TABLE II.3.G - List of Property Owners within 0.5-miles

OWNER	ADDRESS	CITY	STATE	ZIP	PARCEL NO.	MAP NO.
Basin Disposal, Inc.	PO BOX 100	Aztec	NM	87410	2063173396280	1
					2063173396306	2
					2063173396322	3
					2063173414247	71
					2063173477214	75
					2063173434215	76
					2063173384217	77
					2063173371207	78
					2063173396181	83
Foutz and Bursom Const CO, Inc.	PO BOX 187	Bloomfield	NM	87413	2063173396339	4
					2063173396355	5
					2063173396372	6
					2063173396387	7
Western Refining Wholesale, Inc.	POX BOX 592809 TX1-047	San Antonio	TX	78259	2063173396410	8
RE Pool I LLC	25528 Genesee Trail Rd.	Golden	CO	80401	2063173288467	9
Doud Dory Beth	25529 Genesee Trail Rd.	Golden	CO	80401	2063173331467	10
					2063173386466	11
Wallis Jeffrey T and Laura A	203 Murray Road	Albuquerque	NM	87105	2063173469467	12
					2063173458492	19
Deherrera Rocky L	8906 S 92nd E Place	Tulsa	OK	74133	2063173469467	13
					2063173403493	18
					2063173507493	20
MW Electric, Inc.	13155 Noel Rd STE 100	Dallas	TS	75240-5050	2063173276491	14
Pascetti Investments LLC	10600 Holly NE AVE	Albuquerque	NM	87122	2063173292490	15
					2063173307490	16
					2063174379070	21
					2063174343023	23
					2063174308045	28
Haulrite Of Four Corners, Inc.	35 Valley Court	Durango	CO	91301	2063173344493	17
AFI Properties LLC	PO BOX 1270	Aztec	NM	87410	2063174348096	22
Crane Lee Anne and Lee M JR*	3695 N 1st ST	Bloomfield	NM	87413	2063174290099	24
Crane Lee M Trust	125 S Pollard	Aztec	NM	87410-2073	2063174317094	25
					2063174317077	26
					2063174297086	27
DB Property Management LLC	3601 N 1st ST STE E	Bloomfield	NM	87413	2063174311012	29
Hollar Betty	3650 N 1st	Bloomfield	NM	87413	2063174233099	30
					2063174230080	31
Schaffer Family Trust	PO Box 23	Aztec	NM	87410	2063174240032	32
					2063174235057	33
					2063174211060	34
					2063174210045	35
					2063174209027	36
					2063174206011	37
Yocum Donald P and Sue Trust*	203 Utah St	Bloomfield	NM	87413	2063174164101	38
Mcconnel William E and Jerilyn R Trust	200 Utah St	Bloomfield	NM	87413-5331	2063174164033	39
Eavenson Roy J and Misty M	16858 US 550	Aztec	NM	87410	2063173220388	40
Jicarilla Apache Energy Corporation	PO BOX 710	Dulce	NM	87528	2063173220372	41
Stinson Johnny R and Machelle A	13420 Road 38.9	Mancos	CO	81328	2063173228346	42
Intermountain Crain LLC ATTN Bryn Burke	2730 N Nellis Blvd	Las Vegas	NV	89115-4507	2063173220312	43
D and C Properties LLC	PO BOX 1735	Eunice	NM	88231	2063173220280	44
					2063173220247	45
					2063173159312	55
					2063173159279	56
					2063173159247	57
Yoakum Robert L	615 Smith Ln	Bloomfield	NM	87413	2063173236228	46
Ajac Enterprises	8359 Corona Loop NE STE 100	Albuquerque	NM	87113-1614	2063173231208	47
Cash For Contracts INC	PO BOX 16134	Las Cruces	NM	88004	2063173197223	48
Estrada Francisco J	42 Road 5415	Bloomfield	NM	87413-9727	2063173234190	49
Windham Properties LLC	320 Kempton Court	Alpharetta	GA	30022	2063173224183	50
					2063173194183	51
Raney Kenneth N and Rose A	PO BOX 2122	Bloomfield	NM	87413-2122	2063173221150	52
Gurule Rey Pena Maclovia Maxie Trust	4703 Hilltop Ct	Farmington	NM	87402	2063173159380	53
Lindsay Delaws And Cheryl R	PO BOX 2775	Bloomfield	NM	87413	2063173159346	54
Benny Alvin Et Al	PO BOX 1044	Bloomfield	NM	87413-1044	2063173159215	58
Mcdaniel Gary C and T Joy	PO BOX 2225	Bloomfield	NM	87413-2225	2063173157196	59
Beal Jerry W and Gail L	PO BOX 14816	Albuquerque	NM	87191	2063173159180	60
Begay Arthur C Jr	2758 Nevada	Bloomfield	NM	87413	2063173177150	61
Holmes Barbara	8 Apache Plume Dr	Santa Fe	NM	87508	2063173172137	62
					2063173151153	63
Lewis Dee Wayne	2755 Nevada	Bloomfield	NM	87413	2063173147143	64
Litke Family Trust Attn: Doris Litke	2751 Nevada	Bloomfield	NM	87413	2063173145137	65
Huntington Investment LLC	793 Road 104	Hesperus	CO	81326	2063173198066	66
D J Simmons Co LTD Partnership*	1009 Ridgeway Pl STE 200	Farmington	NM	87401	2062172195510	67
Old and Bold LLC*	PO BOX 190	Aztec	NM	87410	2062172068485	68
AAAARRRR Industries LLC	9321 N 136 E Ave	Owasso	OK	74055	2063173329287	69
Petrolite Corp	PO BOX 4740	Houston	TX	77210	2063173288280	70

TABLE II.3.G - List of Property Owners within 0.5-miles

OWNER	ADDRESS	CITY	STATE	ZIP	PARCEL NO.	MAP NO.
Natco Petroleum Inc	PO BOX 445	Bloomfield	NM	87413	2063173345270	72
Roth Family Trust	4910 Rio St	Farmington	NM	87402	2063173309247	73
Byars Raymond M Etal Turnbaugh Michael J and Kim L Trust	9321 N 136 E Ave	Owasso	OK	74055	2063173284247	74
Cummins Burner Fuel INC	201 Michigan Ave	Bloomfield	NM	87413	2063173351217	79
Fortner William A Investments LLC C/O: Detrick Services LLC	PO BOX 655	Bloomfield	NM	87413	2063173330217	80
Davis Donald L C/O: Cummins Timothy D and Jana L	PO BOX 655	Bloomfield	NM	87413	2063173316215	81
Mantle Enterprises LLC	5310 Hallmarc Dr	Farmington	NM	87401	2063173284214	82
Cruz Ben A and Pauline N	33 Road 5290 NO 3027B	Farmington	NM	87401	2063173491148	84
BDI Land LLC	PO BOX 1618	Aztec	NM	87410	2063173441152	85
BDI Land LLC	PO BOX 100	Aztec	NM	87410	2063173386140	87
					2063173335158	90
Henson Riley and Pauline	PO BOX 1441	Bloomfield	NM	87413	2063173415157	86
Martinez Leroy M And Abeyta Dolores C	PO BOX 685	Bloomfield	NM	87413	2063173362157	88
					2063173360140	89
Harrison Danny	611 Sagewood	Chapparral	NM	88081	2063173333140	91
Drake Twana And Lorraine	PO BOX 448	Flora Vista	NM	87415	2063173296157	92
					2063173301140	93
Bloomfield Economic Development LLC	7615 Indian School Road NE	Albuquerque	NM	87110	2063173497117	94
					2063173492042	95
					2063173391117	97
					2063173333052	101
					2063173289052	102
Pyramid Landmark Corporation	1400 Woodloch Forst Dr STE 410	The Woodlands	TX	77380	2063173432117	96
4 Rivers Properties Bloomfield LLC	924 11th Street	Greenley	CO	80631	2063173337116	98
Spanier Childrens Trust	1359 E 26th ST	Tulsa	OK	74114	2063173279117	99
Wagner Equipment Attn Facilities Department	18000 Smith Rd	Aurora	CO	80011	2063173404050	100
Phillips Jim R and Laura V Trust	791 N Newby Ln	Bloomfield	NM	87413-6755	2063172462502	103
Harper Linda M and Garcia Freddie*	318 Moore St	Bloomfield	NM	87413	2063172383521	104
Coury John J Jr and Candace M*	6651 US 64	Bloomfield	NM	87413	2063172357521	105
					2063172383504	107
SFT LLC*	PO BOX 25865	Albuquerque	NM	87125	2063172307518	106
					2063172307502	109
Quintana Jaime ET AL Quintana Anthony*	200 Kentucky	Bloomfield	NM	87413-1173	2063172357504	108

Note:

1. San Juan County, NM Ownership data obtained from: https://webmaps.sjcounty.net/portal/apps/webappviewer/index.html?id=c1ff5e7d1d1d4bd3aec95fa861ba8ecf

*2. * Notice sent as courtesy to some property owners not within the 0.5-mile radius*

ATTACHMENT II.3.H

SAFETY TRAINING SIGN-IN SHEET

AND

TRAINING SCHEDULE

BASIN DISPOSAL
30 Years of Environmental Health and Safety Excellence
200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

SAFETY COMMUNICATIONS PROGRAM

SAFETY MEETING ATTENDANCE SHEET

Date: _____ Time: _____

Topic: _____

Presenter(s): _____

Printed Name	Signature

Instructions:

1. This form must be completed at each safety meeting.
2. Make additional copies as required.
3. Keep copy of completed attendance sheets in binder.

Absent	Date Covered

BASIN DISPOSAL
30 Years of Environmental Health and Safety Excellence
200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

SAFETY COMMUNICATIONS PROGRAM [1]

TRAINING SCHEDULE

Month	Topics
January	Lockout/Tagout Program SWPPP Good Housekeeping
February	Material Acceptance & Handling OCD 19.15.36.13.P Exempt vs Non-Exempt Form C133 & C138 H2S Screening
March	OCD 19.15.36.13.P General Operations OCD 19.15.36.13.P Permit Conditions OCD 19.15.36.13.P Proper Sampling Odors/Complaints
April	OCD 19.15.36.13.P Emergencies Site Contingency Plan H2S Contingency Plan Hazard Communications
May	Emergency Evacuation Drill Spill Prevention & Control Site Generated Waste Disposal
June	Heat Stress Confined Space Site Inspection
July	First Aid/Bloodbourne Pathogens Migratory Bird Prevention Industrial Powered Trucks
August	Employee Safety PPE 3 Point Contact
September	Record Keeping Incident & Injury Reporting High Voltage Training
October	Cold Weather Stress Fire Extinguisher Use
November	Sexual Harrassment Drug & Alcohol Cell Phone Use
November	Employee Benefits Temp/Short Term Employee Safety

1. Training schedule and content subject to change

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ATTACHMENTS

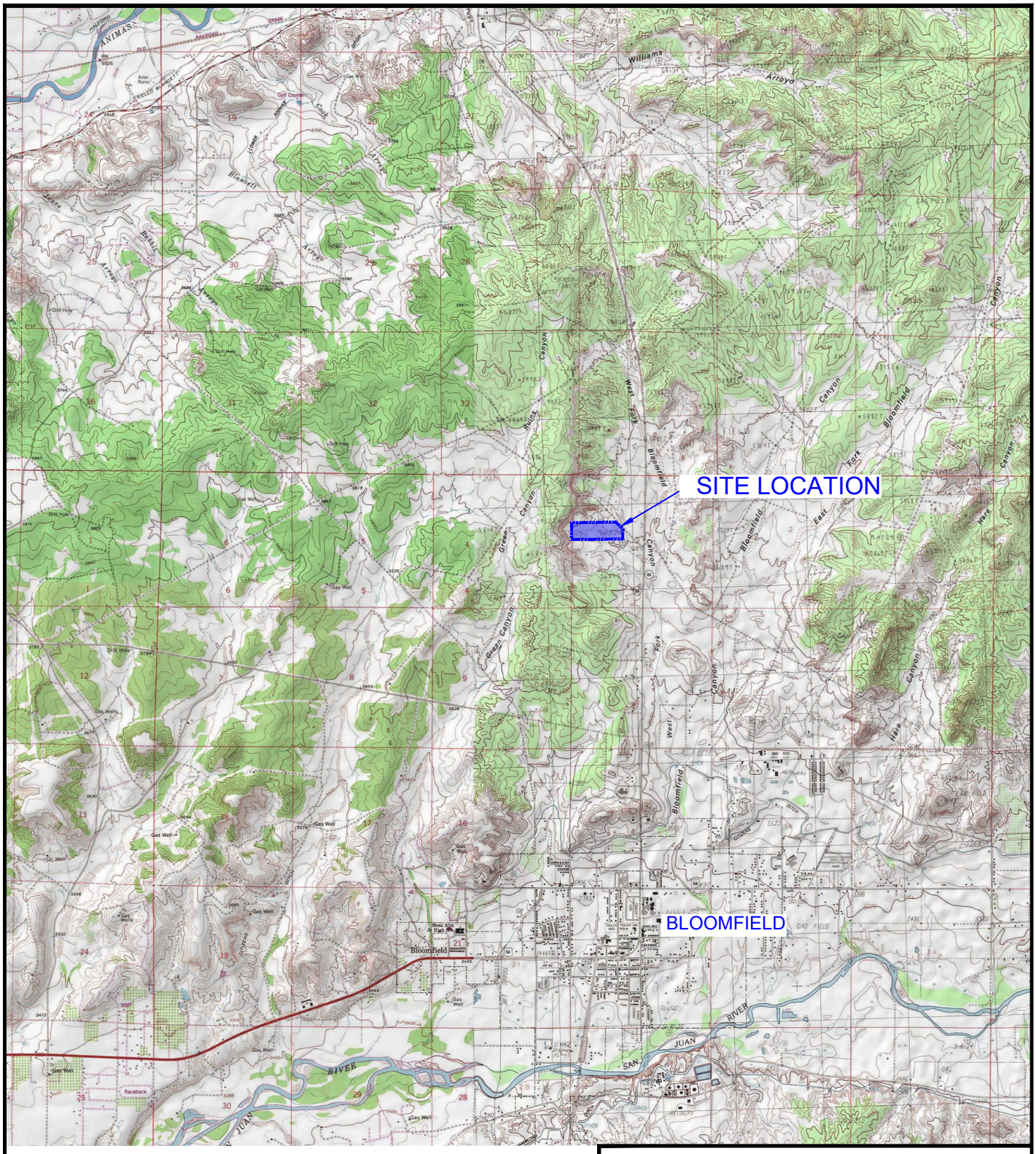
1.0 INTRODUCTION

Basin Disposal, Inc. (BDI) is an existing Surface Waste Management Facility (SWMF) providing oil field waste liquids (OFWL) disposal services. The existing BDI facility is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.36 NMAC, administered by the Oil Conservation Division (OCD) of the NM Energy, Minerals, and Natural Resources Department (NMEMNRD). This document is a component of the "Application for Permit Renewal" that proposes continued operations of the existing approved waste processing and disposal capabilities. The Facility is designed in compliance with 19.15.36 NMAC, and is operated in compliance with a Surface Waste Management Facility Permit issued by the OCD. The Facility is owned and operated by, Basin Disposal Inc.

BDI only accepts liquid waste from the production and exploration of oil fields in northwest New Mexico and the surrounding areas. The existing facility is organized in a pattern that allows for specific liquid waste acceptance, treatment, evaporation, or injection of clean liquid.

1.1 Site Location

BDI is located in unincorporated San Juan County on 27.77 acres entirely within Section 3, Township 29 North, Range 11 West approximately 3 miles north of the intersection of Highway 550 and 64 (**Figure II.4.1**). Coordinates for the approximate center of the BDI site are Latitude 36°45'19.92" and Longitude -107°58'58.73". The site is situated approximately 4 miles north of the San Juan River, and about 4.7 miles south of the Animas River on Crouch Mesa, about 500 feet and 400 feet in elevation above these respective river plains. The site occupies the West Fork of Bloomfield Canyon, an ephemeral drainage channel that drains south to the San Juan River. The site slopes gently to the east and southeast, from a maximum elevation of 5,750 feet to less than 5,700 feet. Detailed site characterization documentation is provided in **Volume IV**.



NOTE:
1. GEOGRAPHIC CENTER, 36° 45' 19.92" N -107° 58' 58.73" W

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE LOCATION.dwg
Date/Time:Jul. 07, 2022-11:16:00

SITE LOCATION MAP

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: SITE LOCATION.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.4.1
APPROVED BY: MWK	www.parkhill.com	

1.2 Facility Description

The existing BDI facility is comprised of 27.77 acres and is comprised of the following:

- 2 existing evaporation ponds (1 pending construction)
- 12 existing receiving tanks (6 pending construction)
- 4 existing oily water receiving tanks
- 3 existing skimmed oil tanks
- 3 existing oil heating tanks
- 3 existing settling tanks
- 7 existing oil sales tanks (2 pending construction)
- 3 existing filtered water tanks
- 4 existing bleach tanks
- 1 existing concrete sludge solidification basin
- 2 existing covered below grade tanks (containment sumps)
- 1 existing UIC Class II injection well for disposal of produced water
- 2 existing separation tanks
- Various support facilities including an office, a maintenance building, roads, and a storm water detention basin.

Oil field wastes are delivered to the BDI SWMF from oil and gas exploration and production operations in northwestern New Mexico and southwest Colorado. The Site Plan provided as **Figure II.1.2** identify the locations of the Disposal facilities, evaporation/storage ponds, and all structures. Perimeter of the site is surrounded by commercial/industrial businesses on three sides and buffered by a bluff on the west side of the Facility.

1.3 Purpose

The purpose of this Closure/Post-Closure (C/PC) Plan (the "Plan") is to comply with the requirements of 19.15.36.8.C(9) and 19.15.36.18 NMAC, and to provide detailed written closure and post-closure protocols for partial or complete closure of surface waste management units. This Plan describes the procedures for closure and post-closure of the BDI Facility, including a C/PC Cost Estimate sufficient to close the Facility in a manner that will protect fresh water, public health and the environment. The C/PC cost estimate has been prepared by Parkhill as the responsible third-party contractor as required by 19.15.36.8.C(9). Parkhill has extensive cost estimating experience for both the construction and closure of Landfills and Surface Waste Management Facilities throughout New Mexico and Texas for over 20 years.

Structures not yet developed were previously designed and permitted and are not being modified, removed, or amended in this application. The undeveloped structures will be constructed as-needed in response to market demand, with appropriate notification to the division prior to construction. This C/PC Plan may be modified by BDI to address changes in site conditions or operating conditions; and those modifications will be submitted to OCD for approval at least 30 days prior to implementation of

the proposed changes. This Plan may also be amended at the request of OCD per 19.15.36.18.A NMAC, Sections 2-4.

2.0 CLOSURE PLAN

Surface Waste Management Facility closure may be initiated by the Operator, or by the Division in accordance with 19.15.36.18.G NMAC. Closure of the BDI facility is required to be conducted per the terms of its Permit, this Plan, and the requirements of 19.15.36.18 NMAC. Detailed closure procedures are provided in **Attachment II.4.E** and the C/PC Cost Estimate is provided in **Attachment II.4.A**

2.1 Proposed Schedule for Closure

1. BDI will notify OCD's Environmental Bureau at least 60 days prior to cessation of permanent operations at the Surface Waste Management Facility. Included in this notification will be a proposed schedule for closure and monitoring activities. During the 60-day period after notification, it is anticipated that BDI will coordinate the required site inspection by the Division (19.15.36.18.A(1) NMAC).
2. The division will notify BDI within 60 days of cessation of operations of modifications to the Closure/Post-Closure Care Plan and proposed schedule or additional requirements deemed necessary for the protection of fresh water, public health, or the environment (19.15.36.18.A(2) NMAC).
3. Should the Division not notify BDI of additional closure or post-closure requirements within 60 days of cessation of operations, BDI will commence the following closure activities at the Facility provided the Director has not extended, for good cause, the Division's response time for a period not to exceed 60 days (19.15.36.18.A(3) NMAC).
4. Within 10 days after receipt of written notice of proposed modifications or additional requirements, BDI shall be entitled to a hearing concerning such modifications or additional requirements (19.15.36.18.A(4) NMAC)
5. Closure shall proceed in accordance with approved closure/Post-closure Plan and schedule, as well as any modifications or additional requirements imposed by the Division. BDI shall maintain the surface waste management facility to protect fresh water, public health and the environment (19.15.36.18.A(5) NMAC).

Table II.4.1 provides a list of permitted waste management units to be closed and initiation of post-closure care and monitoring.

TABLE II.4.1 - Closure Units
Permitted Waste Management Units to be closed

- Existing evaporation ponds (1 pending construction)
- Existing receiving tanks (6 pending construction)
- Existing oily water receiving tanks
- Existing skimmed oil tanks
- Existing oil heating tanks
- Existing settling tanks
- Existing oil sales tanks (2 pending construction)
- Existing filtered water tanks
- Existing bleach tanks
- Existing concrete sludge solidification basin
- Existing covered below grade tanks (containment sumps)
- Existing UIC Class II injection well for disposal of produced water
- Existing separation tanks
- Various support facilities including an office, a maintenance building, roads, and a storm water detention basin.

2.2 Liquids Removal (This item is specific to multiple "units" during removal)

Produced water remaining in receiving tanks will be processed and pumped or transported to the evaporation ponds. Once produced water is placed into the evaporation ponds, and free-floating crude oil is removed for additional processing, evaporation will be conducted possibly with the aid of a mechanical evaporation system. Liquids remaining in the evaporation ponds at time of closure will be disposed of in the on-site injection well. The injection well will remain in operation until all liquids are removed from the site. Although highly unlikely, should the injection well not be operational at time of closure, all remaining liquids will be removed from the ponds and disposed of in a Division-approved disposal facility.

2.3 Evaporation Pond Liner Removal

Upon completion of liquids removal, the remaining sludge, if any, will be allowed to dry to a consistency that lends itself to management and removal (i.e., passing the paint filter test). Sampling and analysis of the sludge will be performed prior to removal and disposal at a Division-approved disposal facility in conformance with the receiving facility's current operating standards. Sludge testing details can be found in **Attachments II.4.A** and **II.4.E.** BDI pond components will be analyzed for the constituents identified in **Attachment II.4.F** (Required Testing) and compared to the limits established in **Attachment II.4.G – Pond and Pit Closure.**

If wastes listed in 19.15.35.8.C(2) and (3) NMAC are to be disposed of in an NMED-permitted Solid Waste Disposal Facility, pursuant to 19.15.35 NMAC, BDI will compare the analytical results to the levels shown in **Attachment II.4.G – Waste Disposal**, and transmit the results to the Environmental Bureau in the Division's Santa Fe office for prior approval. Wastes listed in 19.15.35.8.C(3), including petroleum contaminated soils, may dispose of on a case-by-case basis with the division's approval. Sludges to be disposed of in an OCD permitted surface waste management facility will be accompanied by a completed form C.138. Detailed closure procedures are provided in **Attachment II.4.A.**

In the event of the presence of previously-installed and potentially damaged liner system beneath current liner systems (i.e., a potentially damaged HDPE liner lined-over with a new 60-mil HDPE liner [an "overliner"]) the upper liner will be completely emptied, cleaned, and removed before work on the lower and potentially damaged liner system may commence. The potentially damaged liner will then be removed using the same process as described in **Attachment II.4.E** for the current primary liner.

2.4 Tank Removal

Upon closure, tanks, piping and equipment will be emptied and cleaned, and tested in accordance with **Attachment II.4.E.** BDI will conduct testing consistent with the requirements outlined in **Attachment II.4.F** and dispose of the residual oil field waste removed from the tanks at a Division-approved disposal facility. BDI will reuse, recycle or remove all tanks, piping, containment liners and materials, and other equipment pertaining to tank operations from the site within 90 days of closure. Please see **Attachment II.4.A.** costs details.

2.5 Injection Well

Once all liquids from the site have been injected or properly disposed of, the injection well (API 30-045-26862) will be plugged in accordance with the Plugging and Permanent Abandonment rule (19.15.25.10 NMAC) within 90 days of closure. The Division will be sent Form C-103 notification as required. As injection wells are permitted separate of Part 36 facilities, the injection well operates under its own permit and financial assurance requirements. Closure/Post Closure Cost Estimates for the well are not provided in this Application, and closure costs are addressed by a bond issued to BDI specifically for plugging and abandonment of the injection well.

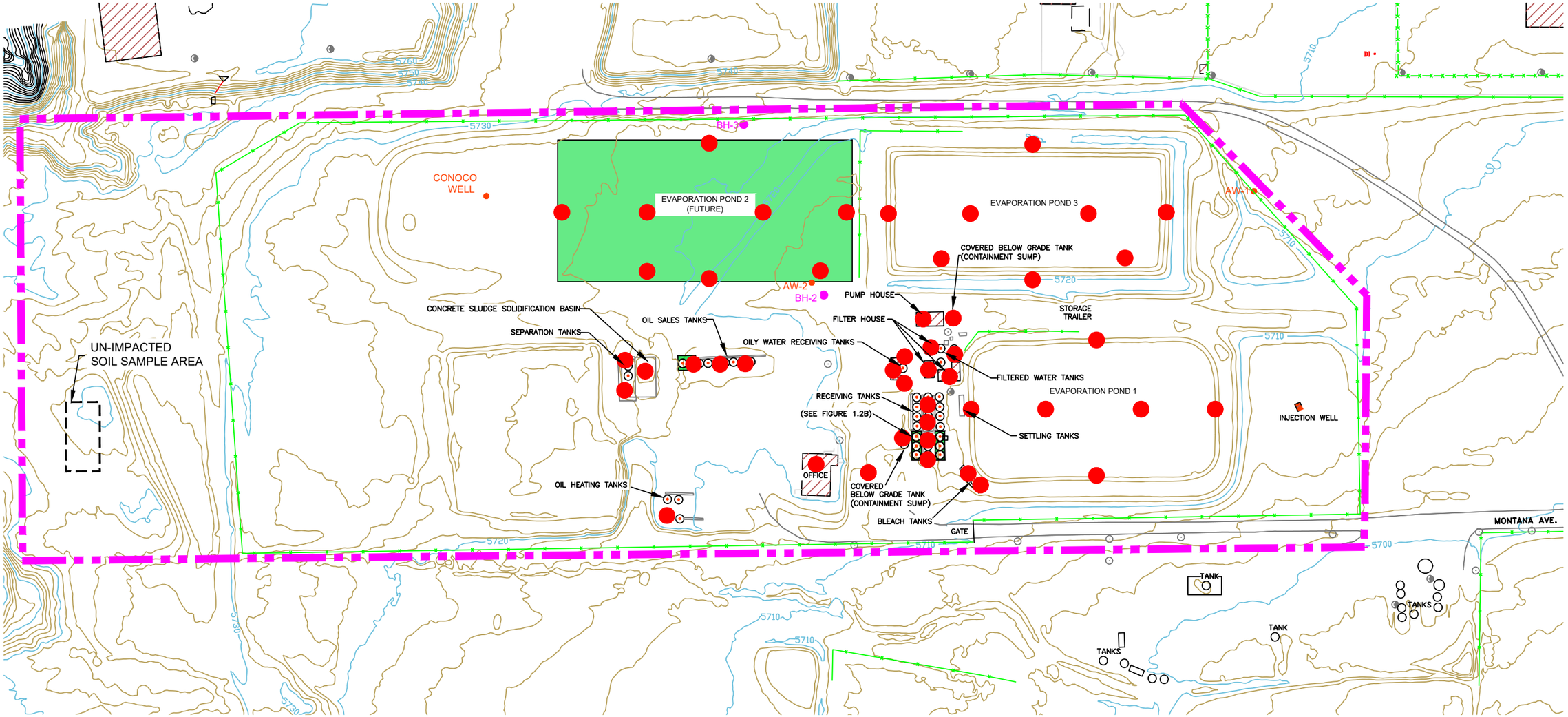
2.6 Site Sampling

Once Processing Area tanks, equipment, and liners have been removed, and the plugging of the injection well has been completed, but prior to backfilling the pond areas and site grading, the site will be sampled in accordance with Chapter Nine of United States Environmental Protection Agency (EPA) publication SW-846; *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (per 19.15.36.18.C(1)(b) and 19.15.36.18.D(4)), and **Attachment II.4.F**.

A sampling map is provided as **Figure II.4.2**, which illustrates the proposed testing configuration at the BDI site to document proper closure. One soil sample will be collected from an un-impacted area where there is no potential for run-off or contaminants from the site, and tested for analytical comparison purposes. At the discretion of the personnel performing the closure of the facility, additional samples may be collected from areas that exhibit evidence of staining and/or discoloration. Surface soil samples (grab samples) will be collected at select locations in accordance with **Attachment II.4.E** (i.e., the areas used for shipping and receiving, treatment and storage areas, and the evaporation ponds area). Samples will be evaluated for the constituents/parameters identified in **Attachment II.4.F**, and the results compared to the background and applicable Practical Quntitation Limit (PQL) levels listed in **Attachment II.4.G – SWMF Closure Testing** and **Attachment II.4.G – Pond and Pit Testing**, as appropriate.

Sample results will be submitted to the Environmental Bureau in the Division's Santa Fe office. Provided the sample results indicate no contamination exists at the facility in excess of allowable levels pursuant to 19.15.36.18 NMAC, BDI will proceed with final site closure and post-closure activities.

In the event that a surface soil sample's analytical results indicate an exceedance of the parameters outlined in **Attachment II.4.G – Release Testing,** BDI will, within 24-hours of receipt of the analytical results, notify the division's environmental bureau chief of the contamination and follow up the notification with form C-141. BDI will then comply with 19.15.29 NMAC to determine both the lateral and vertical extents of the release and initiate remediation and closure efforts in compliance with 19.15.29 NMAC Subpart 19 Remediation and Closure.



BOREHOLE LOCATIONS	
BH–2	LAT 36°45'20.54269"N (NAD 83) LONG 107°59'02.70950"W (NAD83) ELEV: 5717.98 (GROUND)
BH–3	LAT 36°45'22.92950"N (NAD 83) LONG 107°59'04.21563"W (NAD83) ELEV: 5727.46 (GROUND)
AW–1	LAT 36°45'22.01797"N (NAD 83) LONG 107°58'55.15402"W (NAD83) ELEV: 5717.85 (TOP OF CAP)
AW–2	LAT 36°45'20.58589"N (NAD 83) LONG 107°59'02.96163"W (NAD83) ELEV: 5722.20 (TOP OF CAP)

LEGEND

- PROPERTY BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 10 CONTOUR (EXISTING)
- ROADWAY (EXISTING)
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- STRUCTURE
- CONCRETE SLAB
- AW-1 ASSESSMENT WELL
- BH-3 BOREHOLE LOCATION
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- SAMPLING POINT

NORTH

0 75' 150'

SAMPLING MAP

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/15/2025	CAD: SAMPLING MAP.dwg	PROJECT #: 1657.22	
DRAWN BY: DMI	REVIEWED BY: AY		FIGURE II.4.2
APPROVED BY: AY	www.parkhill.com		

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\SAMPLING MAP.dwg
Date/Time:Jan. 15, 2025-10:57:14

2.7 Final Site Closure – Processing Area

Upon OCD determination that no contamination is present at BDI at or above regulated levels outlined in **Attachment II.4.G – SWMF Closure Testing and Attachment II.4.G – Pond and Pit Testing**, the Facility will be re-graded to the intended final use. Activities to be conducted during this period include:

- Submittal of Notice of Intent (NOI) to the EPA for a Construction General Permit (CGP) and SWPPP implementation
- Evaporation and sedimentation pond berm removal and backfilling to prevent the collection of stormwater within the pond area and any other excavated area.
- Site grading and re-contouring
- Site revegetation/ Stabilization

Re-vegetation of the 27.77-acre BDI site (equal to 70% of the native perennial vegetative cover) will be conducted during the optimum planting period, via hydroseeding and/or tractor seeding, whenever possible. Consistent with 19.15.13.18.F NMAC, BDI recognizes that if there is an intended use of the land, where the surface waste management facility is located, for purposes inconsistent with re-vegetation, BDI may, with division approval, implement an alternative surface treatment appropriate for the contemplated use, provided that the alternative treatment will effectively prevent erosion. Examples of seed types identified and recommended by the NRCS as acceptable cover for the local climate and precipitation are described in **Table II.4.2.**

TABLE II.4.2 - NRCS Recommended Seed Mix

Bouteloua gracilis (Blue Grama)	1.5 pounds per acre
Bouteloua cortipendula (Sideoats grama)	4.5 pounds per acre
Sand Dropseed	1 pound per acre
Little Bluestem	3.4 pounds per acre
Western Wheatgrass	8 pounds per acre
Short-Stemmed Straw Mulch	1650 pounds per acre

The Closure Documentation Record (**Attachment II.4.C**), or a similar template, will be used to record the field activities specific to final site closure. A licensed New Mexico Professional Engineer, experienced in environmental engineering, will supervise closure construction and certify completion of closure activities.

2.8 Miscellaneous Building and Structure Removal

At this time, it is anticipated that, following closure and the 3-year post-closure period, the BDI Facility will revert to open space or livestock grazing. Should an alternate land use be identified that could utilize the remaining structures and buildings (i.e., main office used for daily administrative operations, parking areas used by employee vehicles, fencing for site security), they will be cleaned as needed and left in place, and the facility will remain fenced and closed to protect the remaining assets. If an alternate land use is not identified, buildings and miscellaneous structures will be dismantled and, where practical, recycled or reused. Non-recyclable material will be disposed of in a OCD-approved landfill. Once buildings and other structures are removed, these areas will be inspected for contamination (see Site Sampling, Section 2.6).

2.9 Final Land Use

At this time BDI has not established a use for the Facility after closure beyond open space or future oil and gas exploration/development activities. Should a specific use inconsistent with re-vegetation be contemplated, BDI will, with division approval, implement an alternative surface treatment appropriate for the contemplated land use, provided that this alternative will effectively prevent erosion impacts to the property following post-closure activities provided there has not been a release to the vadose zone or groundwater pursuant to 19.15.30 and 19.15.29 NMAC. If this alternative is approved by the Division prior to the completion of the 3-year post-closure period, the Division shall not release the portion of the BDI's financial assurance reserved for post-closure until BDI has obtained necessary regulatory approvals and begun implementation of the alternative use per 19.15.36.19 NMAC.

3.0 POST-CLOSURE PLAN

3.1 Post-Closure Maintenance

Upon OCD approval of final closure, BDI will monitor and provide post-closure maintenance for the facility for a period of not less than 3 years, or as otherwise approved by OCD. During the post-closure care period, BDI proposes to inspect and maintain the site on a monthly basis, and immediately after a documented 24 hour, 25-year storm event, whichever is more frequent, utilizing the Post-Closure Site Inspection Checklist (**Attachment II.4.D**). Upon successful re-vegetation efforts and maintenance of that cover through two successive growing seasons, or two years as required by 19.15.36.18.A(6) NMAC, resulting in at least 70% coverage (not including noxious

weeds), BDI may request an exception to the required inspection frequency subject to OCD approval. In the event that an exception is considered, the appropriate requests or application for permit modification will be submitted in accordance with 19.15.36.19 NMAC. Post-closure care inspections will typically include:

- Vegetative growth observation
- Erosion
- Differential settlement
- Monitoring well integrity (if conducted due to vadose zone or groundwater releases)

Should deficiencies or discrepancies be discovered during the site inspections in these or other areas of the facility, BDI will implement corrective measures. Should a documented release to the vadose zone or groundwater occur, BDI will comply with the requirements of 19.15.30 and 19.15.29 NMAC.

3.2 Reporting

Reports of post-closure activities, including but not limited to site inspection data and maintenance procedures, will be submitted to OCD within 45 days from the end of each calendar year or as otherwise required.

4.0 FINANCIAL ASSURANCE

4.1 Closure/Post Closure Cost Estimate

The Cost Estimate (**Attachment II.4.A**) for the closure and post-closure care activities described in this C/PC Plan is presented in current dollars and assumes third party contractors to perform closure and post closure activities at the site as required by the Rules. Preparation of the estimate also assumes no contamination has occurred, and that remedial activities due to releases into the environment are not required. Should any unforeseen conditions arise, the estimate will be revised accordingly, as required. Upon Division approval of requested modification/revision to closure/post-closure care costs, BDI will submit a revised financial assurance mechanism in the form of a Letter of Credit or other approved mechanism pursuant to 19.15.36 to the Division based on the estimates provided in this Plan. For informational purposes, the existing C/PC Cost Estimate and Financial Assurance Mechanism is provided in **Attachments II.4.A**.

4.2 Release of Financial Assurance

Upon successful completion and demonstration of closure activities for the entire Facility, and after OCD concurrence, BDI will request the release of the financial assurance mechanism in place for that proportional component of closure of the Facility. After the post-closure periods have expired (i.e., 3 years for waste processing pits/ponds), provided there is no contamination evident and the site has established cover stabilization in accordance with the rules, BDI will request release from the remaining financial assurance requirements for the Facility.

ATTACHMENT II.4.A
CLOSURE/POST-CLOSURE COST ESTIMATES

Attachment II.4.A
Closure/Post-Closure Cost Estimates

Descirption	Total Closure Cost
Ponds Closure Costs	$ 558,206.50
Oil Receiving and Skimmed Oil Tank Area Closure Costs	$ 145,277.01
Oily Water Receiving Area Closure Costs	$ 39,830.26
Oil Heating Tank Area Closure Costs	$ 55,862.76
Oil Sales Area Closure Costs	$ 54,852.76
Separation Tank Area Closure Costs	$ 25,216.16
Filtered Water Tank Area Closure Costs	$ 25,835.76
Settling Tanks Area Closure Costs	$ 22,634.27
Bleach Tank Area Closure Costs	$ 16,395.50
Containment Sumps (Covered Below Grade Tanks) Closure Costs	$ 25,063.10
Sludge Solidification Basin Area Closure Costs	$ 21,010.75
Support Facilities and Equipment Closure Costs	$ 30,259.50
Post Closure Costs	$ 102,912.00
Grand Total:	**$ 1,123,356.31**

Ponds Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	Notes
PONDS, LIQUIDS & SLUDGE									
TPH Test for Pond 1 Sludge	-	-	-	$ 77.00	test	6	$ 462.00		Six TPH tests per pond
BTEX Test for Pond 1 Sludge	-	-	-	$ 60.00	test	6	$ 360.00		Six BTEX tests per pond
TCLP Test for Pond 1 Sludge	-	-	-	$ 1,075.00	test	6	$ 6,450.00		Six TCLP tests per pond
NORM Testing for Pond 1 Sludge	-	-	-	$ 61.75	test	6	$ 370.50		Six NORM tests per pond ($30/test + 1/4 hour field tech @127/hr)
Chloride Test for Pond 1 Sludge	-	-	-	$ 35.00	test	6	$ 210.00		Six Chloride tests per pond
Corrosivity Test for Pond 1 Sludge	-	-	-	$ 28.00	test	6	$ 168.00		Six Corrosivity tests per pond
Reactivity Test for Pond 1 Sludge	-	-	-	$ 110.00	test	6	$ 660.00		Six Reactivity tests per pond
Ignitability Test for Pond 1 Sludge	-	-	-	$ 55.00	test	6	$ 330.00		Six Ignitability tests per pond
Paint Filter Test for Pond 1 Sludge	-	-	-	$ 28.00	test	6	$ 168.00		Six Paint Filter tests per pond
Remove sludge from retention pond 1	7,048	88	44	$ 2.20	bbl	7,048	$ 15,505.60		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (7,048 bbls = 1 foot sludge layer, assumes 80 bbl capacity per truck)
TPH Test for Pond 3 Sludge	-	-	-	$ 77.00	test	6	$ 462.00		Six TPH tests per pond
BTEX Test for Pond 3 Sludge	-	-	-	$ 60.00	test	6	$ 360.00		Six BTEX tests per pond
TCLP Test for Pond 3 Sludge	-	-	-	$ 1,075.00	test	6	$ 6,450.00		Six TCLP tests per pond
NORM Testing for Pond 3 Sludge	-	-	-	$ 61.75	test	6	$ 370.50		Six NORM tests per pond ($30/test + 1/4 hour field tech @127/hr)
Chloride Test for Pond 3 Sludge	-	-	-	$ 35.00	test	6	$ 210.00		Six Chloride tests per pond
Corrosivity Test for Pond 3 Sludge	-	-	-	$ 28.00	test	6	$ 168.00		Six Corrosivity tests per pond
Reactivity Test for Pond 3 Sludge	-	-	-	$ 110.00	test	6	$ 660.00		Six Reactivity tests per pond
Ignitability Test for Pond 3 Sludge	-	-	-	$ 55.00	test	6	$ 330.00		Six Ignitability tests per pond
Paint Filter Test for Pond 3 Sludge	-	-	-	$ 28.00	test	6	$ 168.00		Six Paint Filter tests per pond
Remove sludge from retention Pond 3	8,725	109	55	$ 2.20	bbl	8,725	$ 19,195.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (8,725 bbls = 1 foot sludge layer, assumes 80 bbl capacity per truck)
Dispose of Liquids from Ponds 1 & 3	183,792	-	-	$ 0.70	bbl	183,792	$ 128,654.40		Operational cost for injecting pond liquids into BDI injection well. 109.860 bbl from pond 1 and 73,932 bbl from pond 3.
Dispose of Sludge from Pond 1 & 3	15,773	197	99	$ 12.00	bbl	15,773	$ 189,276.00		Disposal fee for sludge at an NMED approved disposal facility
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	15	$ 1,905.00		1/2 hr per Sample collected (2 liquid & 12 sludge samples) +1/2 hr per paint filter test (12-tests) + 2-1 hr/mobilization times for Staff Engineer and Support Vehicle @$127.00/hr
LINERS & LEAK DETECTION								**$ 372,893.00**	
Wash Upper-most Liner (overliner) from Pond 1	-	-	-	$ 380.00	hour	8	$ 3,490.00		8 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	2400	30	-	$ 2.20	bbl	2400.0	$ 5,280.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 2-inch layer of water across liner, 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
Dispose of Wash Liquid	2400	-		$ 0.70	bbl	2400.0	$ 1,680.00		Operational cost for injecting liquids into BDI injection well.

Ponds Closure Costs

Task				Cost/unit		# of units	Cost	Subtotals	Notes
Remove Upper-most Liner (overliner) from Pond 1	-	-	12	$ 225.00	hour	14.0	$ 3,150.00		12 hours crew and support vehicle @$225/hr + 2-1 hr drive times
Disposal of Upper-most liner (overliner) from Pond 1	249	-	-	$ 12.00	yd	249	$ 2,988.00		disposal of 249cy (375ft x 215ft x 1in)@$12/cy disposal
Wash Primary Liner from Pond 1	-	-		$ 380.00	hour	8	$ 3,490.00		8 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	2400	30	-	$ 2.20	bbl	2400.0	$ 5,280.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 2-inch layer of water across liner, 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
Dispose of Wash Liquid	2400	-	-	$ 0.70	bbl	2400.0	$ 1,680.00		Operational cost for injecting liquids into BDI injection well.
Remove Primary Liner from Pond 1	-	-	12	$ 225.00	hour	14.0	$ 3,150.00		12 hours crew and support vehicle @$225/hr + 2-1 hr drive times
Disposal of primary Liner	249			$ 12.00	yd	249	$ 2,988.00		disposal of 249cy (375ft x 215ft x 1in)@$12/cy disposal
Wash Geonet from Pond 1	-	-	-	$ 380.00	hours	4	$ 1,970.00		4 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	2400	30	-	$ 2.20	bbl	2400.0	$ 5,280.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 2-inch layer of water across liner, 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
Dispose of Wash Liquid	80	1	-	$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Remove Geonet from Pond 1	-	-	12	$ 225.00	hr	14.0	$ 3,150.00		12 hours crew and support vehicle @$225/hr + 2-1 hr drive times
Disposal of Geonet	249	-	-	$ 12.00	yd	249	$ 2,988.00		disposal of 249cy (375ft x 215ft x 1in)@$12/cy disposal
Remove geotextile, HDPE pipe, soil, and aggregate from pond 1 sump.	-	-		$ 225.00	hour	8	$ 1,800.00		12 hours crew and support vehicle @$225/hr + 2-1 hr drive times
NORM Testing (licensed instrument)	-	-	-	$ 30.00	test	8	$ 240.00		4 NORM test for Pond 1 (1 test per element per sump) Geotextile, HDPE pipe, soil, and aggregate ($30/test)
Disposal of geotextile, HDPE pipes, soil, and aggregate from pond 1 sumps.	80	-	-	$ 12.00	yd	80	$ 960.00		Disposal of 80cy @$12/cy disposal
Wash Secondary Liner from Pond 1	-	-	-	$ 380.00	hours	8	$ 3,490.00		8 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	2400	30	-	$ 2.20	bbl	2400.0	$ 5,280.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 2-inch layer of water across liner, 80 bbl capacity per truck)

Ponds Closure Costs

Task				Cost/unit		# of units	Cost	Subtotals	Notes
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
Dispose of Wash Liquid	2400	-	-	$ 0.70	bbl	2400.0	$ 1,680.00		Operational cost for injecting liquids into BDI injection well.
Remove Secondary Liner from Pond 1	-	-	12	$ 225.00	hour	14	$ 3,150.00		12 hours crew and support vehicle @$225/hr + 2-1 hr drive times
Disposal of Secondary Liner	249	-	-	$ 12.00	yd	249	$ 2,988.00		disposal of 249cy (375ft x 215ft x 1in)@$12/cy disposal
Remove GCL from Pond 1	-	-	2	$ 225.00	hour	3	$ 675.00		2 hours crew and support vehicle @$225/hr + 1 hr drive times
Wash Primary Liner from Pond 3	-	-	-	$ 380.00	hour	8	$ 3,490.00		8 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	2600	33		$ 2.20	bbl	2600.0	$ 5,720.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 2-inch layer of water across liner, 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
Dispose of Wash Liquid	2600	-	-	$ 0.70	bbl	2600.0	$ 1,820.00		Operational cost for injecting liquids into BDI injection well.
Remove Primary Liner from Pond 3	-	-	12	$ 225.00	hour	14.0	$ 3,150.00		12 hours crew and support vehicle @$225/hr + 2-1 hr drive times
Disposal of Primary Liner	269	-	-	$ 12.00	yd	269	$ 3,228.00		disposal of 269cy (205ft x 425ft x 1in)@$12/cy disposal
Wash Geonet from Pond 3	-	-	-	$ 380.00	hour	4	$ 1,970.00		4 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	2600	33	-	$ 2.20	bbl	2600.0	$ 5,720.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 2-inch layer of water across liner, 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
Dispose of Wash Liquid	2600	-	-	$ 0.70	bbl	2600.0	$ 1,820.00		Operational cost for injecting liquids into BDI injection well.
Remove Geonet from Pond 3	-	-	12.0	$ 225.00	hour	14.0	$ 3,150.00		12 hours crew and support vehicle @$225/hr + 2-1 hr drive times
Disposal of Geonet	269	-	-	$ 12.00	yd	269	$ 3,228.00		disposal of 269cy (205ft x 425ft x 1in)@$12/cy disposal
Remove geotextile, HDPE pipe, soil, and aggregate from pond 3 sumps.	-	-	5	$ 225.00	hour	6	$ 1,350.00		6 hours crew and support vehicle @$225/hr + 1 hr drive times

Ponds Closure Costs

Task				Cost/unit		# of units	Cost	Subtotals	Notes
NORM Testing of geotextile, HDPE pipes, soil, and aggregate (licensed instrument)	-	-	-	$ 30.00	test	8	$ 240.00		8 NORM test for Pond 3 (1 test per element per sump) Geotextile, HDPE pipe, soil, and aggregate ($30/test)
Disposal of geotextile, HDPE pipes, soil, and aggregate from pond 3 sumps.	12	-	-	$ 12.00	yd	12	$ 144.00		Disposal of 80cy @$12/cy disposal fee
Wash Secondary Liner from Pond 3	-	-	-	$ 380.00	hours	8	$ 3,490.00		8 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	2600	33	-	$ 2.20	bbl	2600.0	$ 5,720.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 2-inch layer of water across liner, 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
Dispose of Wash Liquid	2600	-	-	$ 0.70	bbl	2600.0	$ 1,820.00		Operational cost for injecting liquids into BDI injection well.
Remove Secondary Liner from Pond 3	-	-	12	$ 225.00	hour	14	$ 3,150.00		12 hours crew and support vehicle @$225/hr + 2-1 hr drive times
Disposal of Secondary Liner from Pond 3	269	-	-	$ 12.00	yd	269	$ 3,228.00		disposal of 269cy (205ft x 425ft x 1in)@$12/cy disposal
Remove GCL from Pond 3	-	-	3	$ 5.00	hour	3	$ 15.00		2 hours crew and support vehicle @$225/hr + 1 hr drive time
TPH Test for Pond Liner	-	-	-	$ 77.00	test	5	$ 385.00		2 TPH tests per pond (1 test for primary liner + 1 test for secondary liner) + 1 additional test for Upper-most liner [overliner] in pond 1)
BTEX Test for Pond Liner	-	-	-	$ 60.00	test	5	$ 300.00		2 BTEX test per pond (1 test for primary liner + 1 test for secondary liner) + 1 additional test for Upper-most liner [overliner] in pond 1)
TCLP Test for Pond Liner	-	-	-	$ 1,075.00	test	5	$ 5,375.00		2 TCLP test per pond (1 test for primary liner + 1 test for secondary liner) + 1 additional test for Upper-most liner [overliner] in pond 1)
NORM Testing for Pond Liner	-	-	-	$ 30.00	test	5	$ 150.00		2 NORM test per pond (1 test for primary liner + 1 test for secondary liner) + 1 additional test for Upper-most liner [overliner] in pond 1)
Chloride Test for Pond Liner	-	-	-	$ 35.00	test	5	$ 175.00		2 Chloride test per pond (1 test for primary liner + 1 test for secondary liner) + 1 additional test for Upper-most liner [overliner] in pond 1)
Corrosivity Test for Pond Liner	-	-	-	$ 28.00	test	5	$ 140.00		2 Corrosivity test per pond (1 test for primary liner + 1 test for secondary liner) + 1 additional test for Upper-most liner [overliner] in pond 1)
Reactivity Test for Pond Liner	-	-	-	$ 110.00	test	5	$ 550.00		2 Reactivity test per pond (1 test for primary liner + 1 test for secondary liner) + 1 additional test for Upper-most liner [overliner] in pond 1)
Ignitability Test for Pond Liner	-	-	-	$ 55.00	test	5	$ 275.00		2 Ignitability test per pond (1 test for primary liner + 1 test for secondary liner) + 1 additional test for Upper-most liner [overliner] in pond 1)
TPH Test for Pond Geonet	-	-	-	$ 77.00	test	2	$ 154.00		1 TPH test per pond
BTEX Test for Pond Geonet	-	-	-	$ 60.00	test	2	$ 120.00		1 BTEX test per pond
TCLP Test for Pond Geonet	-	-	-	$ 1,075.00	test	2	$ 2,150.00		1 TCLP test per pond
NORM Testing for Pond Geonet	-	-	-	$ 30.00	test	2	$ 60.00		1 NORM test per pond
Chloride Test for Pond Geonet	-	-	-	$ 35.00	test	2	$ 70.00		1 Chloride test per pond
Corrosivity Test for Pond Geonet	-	-	-	$ 28.00	test	2	$ 56.00		1 Corrosivity test per pond
Reactivity Test for Pond Geonet	-	-	-	$ 110.00	test	2	$ 220.00		1 Reactivity test per pond
Ignitability Test for Pond Geonet	-	-	-	$ 55.00	test	2	$ 110.00		1 Ignitability test per pond

Ponds Closure Costs

Task				Cost/unit		# of units	Cost	Subtotals	Notes
TPH Test for Pond Geotextile	-	-	-	$ 77.00	test	2	$ 154.00		1 TPH test per pond
BTEX Test for Pond Geotextile	-	-	-	$ 60.00	test	2	$ 120.00		1 BTEX test per pond
TCLP Test for Pond Geotextile	-	-	-	$ 1,075.00	test	2	$ 2,150.00		1 TCLP test per pond
NORM Testing for Pond Geotextile	-	-	-	$ 61.75	test	2	$ 123.50		1 NORM test per pond
Chloride Test for Pond Geotextile	-	-	-	$ 35.00	test	2	$ 70.00		1 Chloride test per pond
Corrosivity Test for Pond Geotextile	-	-	-	$ 28.00	test	2	$ 56.00		1 Corrosivity test per pond
Reactivity Test for Pond Geotextile	-	-	-	$ 110.00	test	2	$ 220.00		1 Reactivity test per pond
Ignitability Test for Pond Geotextile	-	-	-	$ 55.00	test	2	$ 110.00		1 Ignitability test per pond
TPH Test for Pond leak detection soil/aggregate	-	-	-	$ 77.00	test	4	$ 308.00		1 TPH test per pond sump
BTEX Test for Pond leak detection soil/aggregate	-	-	-	$ 60.00	test	4	$ 240.00		1 BTEX test per pond sump
TCLP Test for Pond leak detection soil/aggregate	-	-	-	$ 1,075.00	test	4	$ 4,300.00		1 TCLP test per pond sump
NORM Testing for Pond leak detection soil/aggregate	-	-	-	$ 61.75	test	4	$ 247.00		1 NORM test per pond sump
Chloride Test for Pond leak detection soil/aggregate	-	-	-	$ 35.00	test	4	$ 140.00		1 Chloride test per pond sump
Corrosivity Test for Pond leak detection soil/aggregate	-	-	-	$ 28.00	test	4	$ 112.00		1 Corrosivity test per pond sump
Reactivity Test for Pond leak detection soil/aggregate	-	-	-	$ 110.00	test	4	$ 440.00		1 Reactivity test per pond sump
Ignitability Test for Pond leak detection soil/aggregate	-	-	-	$ 55.00	test	4	$ 220.00		1 Ignitability test per pond sump
TPH Test for Pond leak detection HDPE Piping	-	-	-	$ 77.00	test	4	$ 308.00		1 TPH test per pond sump
BTEX Test for Pond leak detection HDPE Piping	-	-	-	$ 60.00	test	4	$ 240.00		1 BTEX test per pond sump
TCLP Test for Pond leak detection HDPE Piping	-	-	-	$ 1,075.00	test	4	$ 4,300.00		1 TCLP test per pond sump
NORM Testing for Pond leak detection HDPE Piping	-	-	-	$ 61.75	test	4	$ 247.00		1 NORM test per pond sump
Chloride Test for Pond leak detection HDPE Piping	-	-	-	$ 35.00	test	4	$ 140.00		1 Chloride test per pond sump
Corrosivity Test for Pond leak detection HDPE Piping	-	-	-	$ 28.00	test	4	$ 112.00		1 Corrosivity test per pond sump
Reactivity Test for Pond leak detection HDPE Piping	-	-	-	$ 110.00	test	4	$ 440.00		1 Reactivity test per pond sump
Ignitability Test for Pond leak detection HDPE Piping	-	-	-	$ 55.00	test	4	$ 220.00		1 Ignitability test per pond sump
TPH Test for Pond Sump GCL	-	-	-	$ 77.00	test	4	$ 308.00		1 TPH test per pond sump
BTEX Test for Pond Sump GCL	-	-	-	$ 60.00	test	4	$ 240.00		1 BTEX test per pond sump
TCLP Test for Pond Sump GCL	-	-	-	$ 1,075.00	test	4	$ 4,300.00		1 TCLP test per pond sump
NORM Testing for Pond Sump GCL	-	-	-	$ 61.75	test	4	$ 247.00		1 NORM test per pond sump
Chloride Test for Pond Sump GCL	-	-	-	$ 35.00	test	4	$ 140.00		1 Chloride test per pond sump
Corrosivity Test for Pond Sump GCL	-	-	-	$ 28.00	test	4	$ 112.00		1 Corrosivity test per pond sump
Reactivity Test for Pond Sump GCL	-	-	-	$ 110.00	test	4	$ 440.00		1 Reactivity test per pond sump
Ignitability Test for Pond Sump GCL	-	-	-	$ 55.00	test	4	$ 220.00		1 Ignitability test per pond sump
SOILS BELOW POND LINERS								$ 160,940.50	
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	7	$ 889.00		1/2 hr per Sample collected (12 total samples) + 1 hr/mobilization time for Staff Engineer and Support Vehicle @$127.00/hr
Grade/Backfill and contour pond areas to prevent the collection of stormwater	3	-	-	$ 1,960.00	day	3	$ 5,880.00		3 days Front end loader @ $ 1280/day + equipment operator @$85/hr
TPH test for soils below ponds				$ 77.00	sample	12	$ 924.00		6 samples from below each pond liner
BTEX test for soils below ponds				$ 60.00	sample	12	$ 720.00		6 samples from below each pond liner
RCRA 8 Metals test for soils below ponds				$ 130.00	sample	12	$ 1,560.00		6 samples from below each pond liner
20.6.2.3103 NMAC Subsection A&B test for soils below ponds				$ 1,200.00	sample	12	$ 14,400.00		6 samples from below each pond liner
								$ 24,373.00	
						TOTAL PONDS CLOSURE COSTS		$ 558,206.50	

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

Oil Receiving and Skimmed Oil Tank Area Closure Costs

				Cost/unit		# of units	Cost	Subtotals	Notes
TANKS LIQUIDS & SLUDGE	**Quantity**	**Trucks**	**Hours**						
Remove liquids from Tanks	5,400	68	-	$ 2.20	bbl	5400	$ 11,880.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr [4,800 bbls (15 tanks* 400 bbl/tank * 90% liquid) , assumes 80 bbl capacity per truck]
Remove sludge from Tanks	600	8	-	$ 2.20	bbl	600	$ 1,320.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr [1,200 bbls (15 tanks* 400 bbl/tank * 10% sludge) , assumes 80 bbl capacity per truck]
TPH Test for Tank Sludge	-	-	-	$ 77.00	test	8	$ 577.50		One TPH test per truck (8 trucks)
BTEX Test for Tank Sludge	-	-	-	$ 60.00	test	8	$ 450.00		One BTEX test per truck (8 trucks)
TCLP Test for Tank Sludge	-	-	-	$ 1,075.00	test	8	$ 8,062.50		One TCLP test per truck (8 trucks)
NORM Testing for Tank Sludge	-	-	-	$ 30.00	test	8	$ 225.00		One NORM test per truck (8 trucks)
Chloride Test for Tank Sludge	-	-	-	$ 35.00	test	8	$ 262.50		One Chloride test per truck (8 trucks)
Corrosivity Test for Tank Sludge	-	-	-	$ 28.00	test	8	$ 210.00		One Corrosivity test per truck (8 trucks)
Reactivity Test for Tank Sludge	-	-	-	$ 110.00	test	8	$ 825.00		One Reactivity test per truck (8 trucks)
Ignitability Test for Tank Sludge	-	-	-	$ 55.00	test	8	$ 412.50		One Ignitability test per truck (8 trucks)
Paint Filter Tests for Tank Sludge	-	-	-	$ 28.00	test	8	$ 210.00		One paint filter test per truck (8 trucks)
Dispose liquids from Tanks	5,400	-	-	$ 0.70	bbl	5400	$ 3,780.00		Operational cost for injecting pond liquids into BDI injection well.
Dispose of sludge from Tanks	600	8	-	$ 7.00	bbl	600	$ 4,200.00		Disposal fee for sludge at an NMED approved disposal facility
Field Tech & Support Vehicle		-	-	$ 127.00	hour	4.75	$ 603.25		1/2 hr per Sample collected (8 samples) +1 hr/mobilization time for Field Tech and Support Vehicle @$127.00/hr
								$ 33,018.25	
TANK TESTING/REMOVAL									
NORM Testing (licensed instrument)	-	-	-	$ 30.00	test	15	$ 450.00		One NORM test per tank (@ $30/test)
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	4	$ 508.00		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) assumes 0.25 hr/test
Remove/Transport Tanks	-	-	-	$ 330.00	load	19	$ 6,810.00		4 hour Crew Cost with support vehicle @$225/hr + 2 hour Dump Truck w/driver @105/hr + 1 hour drive time + 45 cy @ $12.00/cy
								$ 7,768.00	
TANKS CONCRETE BLOCKS									
Field Tech & Support Vehicle-Concrete Scrapings				$ 127.00	hour	5	$ 635.00		5 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport/ concrete blocks				$ 804.00	load	4	$ 3,216.00		4 hour Crew Cost with support vehicle @$225/hr + 2 hours Dump Truck w/driver @105/hr (includes 1 hour drive time) + 12 cy @ $12.00/cy
TPH Test for Tank Blocks	-	-	-	$ 77.00	test	15	$ 1,155.00		1 composite scraping from concrete blocks per tank
BTEX Test for Tank Blocks	-	-	-	$ 60.00	test	15	$ 900.00		1 composite scraping from concrete blocks per tank
TCLP Test for Tank Blocks	-	-	-	$ 1,075.00	test	15	$ 16,125.00		1 composite scraping from concrete blocks per tank
NORM Testing for Tank Blocks	-	-	-	$ 30.00	test	15	$ 450.00		1 composite scraping from concrete blocks per tank (@ $30/test)
Chloride Test for Tank Blocks	-	-	-	$ 35.00	test	15	$ 652.00		1 composite scraping from concrete blocks per tank
Corrosivity Test for Tank Blocks	-	-	-	$ 28.00	test	15	$ 420.00		1 composite scraping from concrete blocks per tank
Reactivity Test for Tank Blocks	-	-	-	$ 110.00	test	15	$ 1,650.00		1 composite scraping from concrete blocks per tank
Ignitability Test for Tank Blocks	-	-	-	$ 55.00	test	15	$ 110.00		1 composite scraping from concrete blocks per tank
								$ 25,313.00	
FACILITY PIPING									
Uncover/Expose Facility Piping	-	-	-	$ 360.00	hour	5	$ 1,950.00		excavator @$125/hr + equipment operator $85/hr to uncover pipe + Heavy equipment transport (4 axle) @$150/hr
NORM Testing (licensed instrument)	6	-	-	$ 30.00	test	6	$ 180.00		One NORM test 100 linear feet of piping (approximately 600 LF of piping) @ $30/test

Oil Receiving and Skimmed Oil Tank Area Closure Costs

``				Cost/unit		# of units	Cost	Subtotals	Notes
Remove Facility Piping	-	-	-	$ 435.00	hour	2	$ 978.00		Crew Cost with support vehicle @$225/hr + excavator @$125/hr + equipment operator $85/hr (includes drive time)
Transport/Disposal facility piping	-	-	-	$ 570.00	hour	2	$ 1,284.00		Crew Cost with support vehicle @$225/hr + Dump Truck w/driver @105/hr + 20cy @ $12.00/cy
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	9	$ 1,143.00		Field Tech and support vehicle @ $127/hr
								$ 5,535.00	
FILTER HOUSES									
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	3	$ 381.00		3 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time)
Remove/transport filter pods from building				$ 380.00	hour	5	$ 2,035.00		5 hours crew and support vehicle @ $225/hr + backhoe @ $70/hr + equipment operator @ $85/hr + heavy equipment transport w/equip oper as driver @$135/hr (includes 1 hr drive time)
Demolish/remove steel buildings				$ 3,280.00	day	2	$ 6,695.00		2 days crew and support vehicle @ $225/hr + 2 days backhoe @ $70/day + equipment operator @ $85/hr + 1 hr/day heavy equip transport/driver (3 axles) @$135/hr (includes drive time)
Transport/Disposal building demolition materials				$ 406.50	load	15	$ 6,097.50		2.5 hrs/load dump truck w/driver @ $105/hr (includes drive time) + 12 cy/load @ $12.00/cy
Demolish floor and foundation				$ 3,040.00	day	2	$ 6,230.00		2 days excavator @$125/hr + equipment operator $85/hr to break up concrete & load dump truck +2 days front end loader @$125/hr + equipment operator $85/hr + 1 hr/day Heavy equipment transport (4 axle) @$150/hr
NORM Testing for building				$ 30.00	test	3	$ 90.00		1 NORM per filter house ($30/test)
Field Tech & Support Vehicle-Concrete Scrapings				$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time)
Transport/Disposal floor/foundation demolition materials				$ 406.50	load	15	$ 6,367.50		2.5 hrs/load dump truck w/driver @ $105/hr (includes 1 hr drive time)+ 12 cy/load @ $12.00/cy
TPH Test for Concrete	-	-	-	$ 77.00	test	1	$ 77.00		1 sample from concrete floor & 1 concrete foundation
BTEX Test for Concrete	-	-	-	$ 60.00	test	1	$ 60.00		1 sample from concrete floor & 1 concrete foundation
TCLP Test for Concrete	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 sample from concrete floor & 1 concrete foundation
NORM Testing for Concrete	-	-	-	$ 30.00	test	1	$ 30.00		1 sample from concrete floor & 1 concrete foundation
Chloride Test for Concrete	-	-	-	$ 35.00	test	1	$ 162.00		1 sample from concrete floor & 1 concrete foundation
Corrosivity Test for Concrete	-	-	-	$ 28.00	test	1	$ 28.00		1 sample from concrete floor & 1 concrete foundation
Reactivity Test for Concrete	-	-	-	$ 110.00	test	1	$ 110.00		1 sample from concrete floor & 1 concrete foundation
								$ 29,692.00	
PUMP HOUSE									
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	4	$ 508.00		4 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time) for concrete scrapings
Remove/transport pumps from building				$ 380.00	hour	5	$ 2,035.00		5 hours crew and support vehicle @ $225/hr + backhoe @ $70/hr + equipment operator @ $85/hr + heavy equipment transport w/equip oper as driver @$135/hr (includes 1 hr drive time)
Demolish/remove steel building				$ 2,855.00	day	2	$ 5,710.00		2 days crew and support vehicle @ $225/hr + 2 days backhoe @ $70/day + equipment operator @ $85/hr + 1 hr/day heavy equip transport/driver (3 axles) @$135/hr (includes drive time)
Transport/Disposal building demolition materials				$ 406.50	load	15	$ 6,097.50		2.5 hrs/load dump truck w/driver @ $105/hr (includes drive time) + 12 cy/load @ $12.00/cy
Demolish floor and foundation				$ 3,495.00	day	2	$ 6,990.00		2 days excavator @$125/hr + equipment operator $85/hr to break up concrete & load dump truck +2 days front end loader @$125/hr + equipment operator $85/hr + 1 hr/day Heavy equipment transport (4 axle) @$135/hr
NORM Testing for Building				$ 30.00	test	1	$ 30.00		1 NORM per pump house ($30/test)
Transport/Disposal floor/foundation demolition materials				$ 406.50	load	15	$ 6,097.50		2.5 hrs/load dump truck w/driver @ $105/hr (includes drive time) + 12 cy/load @ $12.00/cy
TPH Test for Concrete	-	-	-	$ 77.00	test	1	$ 77.00		1 sample from concrete floor & 1 concrete foundation
BTEX Test for Concrete	-	-	-	$ 60.00	test	1	$ 60.00		1 sample from concrete floor & 1 concrete foundation
TCLP Test for Concrete	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 sample from concrete floor & 1 concrete foundation
NORM Testing for Concrete	-	-	-	$ 30.00	test	1	$ 30.00		1 sample from concrete floor & 1 concrete foundation
Chloride Test for Concrete	-	-	-	$ 35.00	test	1	$ 162.00		1 sample from concrete floor & 1 concrete foundation
Corrosivity Test for Concrete	-	-	-	$ 28.00	test	1	$ 28.00		1 sample from concrete floor & 1 concrete foundation

Oil Receiving and Skimmed Oil Tank Area Closure Costs

``				Cost/unit		# of units	Cost	Subtotals	Notes
								$ 28,900.00	
RECEIVING AREA LINER									
Wash and Remove Liner	-	-	2	$ 605.00	hour	2	$ 1,210.00		2 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	80	-	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
TPH Test for tank liner	-	-	-	$ 77.00	test	1	$ 77.00		1 TPH test for tank liner
BTEX Test for tank liner	-	-	-	$ 60.00	test	1	$ 60.00		1 BTEX test for tank liner
TCLP Test for tank liner	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 TCLP test for tank liner
NORM Testing for tank liner	-	-	-	$ 61.75	test	1	$ 61.75		1 NORM test for tank liner
Chloride Test for tank liner	-	-	-	$ 35.00	test	1	$ 35.00		1 Chloride test for tank liner
Corrosivity Test for tank liner	-	-	-	$ 28.00	test	1	$ 28.00		1 Corrosivity test for tank liner
Reactivity Test for tank liner	-	-	-	$ 110.00	test	1	$ 110.00		1 Reactivity test for tank liner
Ignitability Test for tank liner	-	-	-	$ 55.00	test	1	$ 55.00		1 Ignitability test for tank liner
Dispose of Wash Liquid	80			$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Disposal of Liner	14			$ 12.00	yd	14	$ 168.00		Disposal of 14cy (4500 ft2 x 1in) @$12/cy disposal
								$ 4,581.75	
SOILS BELOW RECEIVING AREALINER									
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	3	$ 381.00		3 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time)
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	2	$ 660.00		2 hour Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH Test for Base Course	-	-	-	$ 77.00	test	1	$ 77.00		1 composite sample from base course
BTEX Test for Base Course	-	-	-	$ 60.00	test	1	$ 60.00		1 composite sample from base course
TCLP Test for Base Course	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite sample from base course
NORM Testing for Base Course	-	-	-	$ 30.00	test	1	$ 30.01		1 composite sample from base course
Chloride Test for Base Course	-	-	-	$ 35.00	test	1	$ 35.00		1 composite sample from base course
Corrosivity Test for Base Course	-	-	-	$ 28.00	test	1	$ 28.00		1 composite sample from base course
Reactivity Test for Base Course	-	-	-	$ 110.00	test	1	$ 110.00		1 composite sample from base course
Ignitability Test for Base Course	-	-	-	$ 55.00	test	1	$ 110.00		1 composite sample from base course
Remove/Disposal Base Course				$ 380.00	hour	5	$ 2,035.00		5 hours crew and support vehicle @ $225/hr + backhoe @ $70/hr + equipment operator @ $85/hr + heavy equipment transport w/equip oper as driver @$135/hr (includes 1 hr drive time)
TPH test for soils below tank liner	-	-	-	$ 77.00	sample	4	$ 308.00		4 TPH tests from below the tank liner
BTEX test for soils below tank liner	-	-	-	$ 60.00	sample	4	$ 240.00		4 BTEX tests from below the tank liner
RCRA 8 Metals test for soils below heating tanks	-	-	-	$ 130.00	sample	4	$ 520.00		4 RCRA 8 Metals tests from below the tank liner
Major Cations and Anions (6010)	-	-	-	$ 1,200.00	sample	4	$ 4,800.00		4 tests from below the tank liner
								$ 10,469.01	
						TOTAL RECEIVING AND SKIMMED OIL AREA CLOSURE COSTS		$ 145,277.01	

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

Oily Water Receiving Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
LIQUIDS & DISPOSAL									
Remove liquids from Tanks	1,300	16	-	$ 2.20	bbl	1300.0	$ 2,860.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
Remove sludge from Tanks	130	2	-	$ 2.20	bbl	130.0	$ 286.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Oily Water Tank Sludge	-	-	-	$ 77.00	test	4	$ 308.00		One TPH test per oily water tank (4 tanks)
BTEX Test for Oily Water Tank Sludge	-	-	-	$ 60.00	test	4	$ 240.00		One BTEX test per oily water tank (4 tanks)
TCLP Test for Oily Water Tank Sludge	-	-	-	$ 1,075.00	test	4	$ 4,300.00		One TCLP test per oily water tank (4 tanks)
NORM Testing for Oily Water Tank Sludge	-	-	-	$ 30.00	test	4	$ 120.00		One NORM test per oily water tank (4 tanks) @ $30/test
Chloride Test for Oily Water Tank Sludge	-	-	-	$ 35.00	test	4	$ 140.00		One Chloride test per oily water tank (4 tanks)
Corrosivity Test for Oily Water Tank Sludge	-	-	-	$ 28.00	test	4	$ 112.00		One Corrosivity test per oily water tank (4 tanks)
Reactivity Test for Oil Oily Water Tank Sludge	-	-	-	$ 110.00	test	4	$ 440.00		One Reactivity test per oily water tank (4 tanks)
Ignitability Test for Oily Water Tank Sludge	-	-	-	$ 55.00	test	4	$ 220.00		One Ignitability test per oily water tank (4 tanks)
Paint Filter Test for Oily Water Tank Sludge	-	-	-	$ 28.00	test	4	$ 112.00		One Paint Filter test per oily water tank (4 tanks)
Dispose of liquids from Tanks	1,300	16	-	$ 0.70	bbl	1300	$ 910.00		Operational cost for injecting liquids into BDI injection well.
Dispose of sludge from Tanks	130	2	-	$ 7.00	bbl	130	$ 910.00		Disposal fee for sludge at an NMED approved disposal facility
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	5	$ 635.00		1/2 hr per Sample collected (4 sludge samples) +1/2 hr per paint filter test (4 tests) + 1 hr/mobilization time for Staff Engineer and Support Vehicle @$127.00/hr
								$ 11,593.00	
TANK TESTING/REMOVAL									
NORM Testing (licensed instrument)	-	-	-	$ 30.00	test	4	$ 120.00		One NORM test per tank (@ $30/test)
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) assumes 0.25 hr/test
Remove/Transport Tanks	-	-	-	$ 330.00	load	5	$ 1,794.00		4 hour Crew Cost with support vehicle @$225/hr + 2 hour Dump Truck w/driver @105/hr + 1 hour drive time + 12 cy @ $12.00/cy
								$ 2,168.00	
CONCRETE BLOCK TESTING/REMOVAL									
Field Tech & Support Vehicle-Concrete Scrapings	-	-	-	$ 127.00	hour	2	$ 254.00		4 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport/ concrete blocks	-	-	-	$ 804.00	load	4	$ 3,216.00		2 hour Crew Cost with support vehicle @$225/hr + 2 hours Dump Truck w/driver @105/hr (includes 1 hour drive time) + 12 cy @ $12.00/cy
TPH Test for Tank Blocks	-	-	-	$ 77.00	test	4	$ 308.00		1 composite scraping from concrete blocks per tank
BTEX Test for Tank Blocks	-	-	-	$ 60.00	test	4	$ 240.00		1 composite scraping from concrete blocks per tank
TCLP Test for Tank Blocks	-	-	-	$ 1,075.00	test	4	$ 4,300.00		1 composite scraping from concrete blocks per tank
NORM Testing for Tank Blocks	-	-	-	$ 30.00	test	4	$ 120.00		1 composite scraping from concrete blocks per tank (@ $30/test)
Chloride Test for Tank Blocks	-	-	-	$ 35.00	test	4	$ 140.00		1 composite scraping from concrete blocks per tank
Corrosivity Test for Tank Blocks	-	-	-	$ 28.00	test	4	$ 112.00		1 composite scraping from concrete blocks per tank
Reactivity Test for Tank Blocks	-	-	-	$ 110.00	test	4	$ 440.00		1 composite scraping from concrete blocks per tank
Ignitability Test for Tank Blocks	-	-	-	$ 55.00	test	4	$ 110.00		1 composite scraping from concrete blocks per tank
								$ 9,240.00	
FACILITY PIPING									
Uncover/Expose Facility Piping	-	-	-	$ 360.00	hour	4	$ 1,590.00		excavator @$125/hr + equipment operator $85/hr to uncover pipe + Heavy equipment transport (4 axle) @$150/hr
NORM Testing (licensed instrument)	5	-	-	$ 30.00	test	5	$ 150.00		One NORM test 100 linear feet of piping (approximately 450 LF of piping) @ $30/test
Remove Facility Piping	-	-	-	$ 435.00	hour	1	$ 543.00		Crew Cost with support vehicle @$225/hr + excavator @$125/hr + equipment operator $85/hr (includes drive time)
Transport/Disposal facility piping	-	-	-	$ 510.00	hour	1	$ 654.00		Crew Cost with support vehicle @$225/hr + Dump Truck w/driver @105/hr + 15cy @ $12.00/cy
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	6	$ 762.00		Field Tech and support vehicle @ $127/hr
								$ 3,699.00	
SALES TANK POLYESTER CONTAINMENT LINER									

Oily Water Receiving Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
Wash and Remove Liner	-	-	2	$ 605.00	hour	2	$ 1,210.00		2 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	80	-	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
TPH Test for tank liner	-	-	-	$ 77.00	test	1	$ 77.00		1 TPH test for tank liner
BTEX Test for tank liner	-	-	-	$ 60.00	test	1	$ 60.00		1 BTEX test for tank liner
TCLP Test for tank liner	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 TCLP test for tank liner
NORM Testing for tank liner	-	-	-	$ 61.75	test	1	$ 61.75		1 NORM test for tank liner
Chloride Test for tank liner	-	-	-	$ 35.00	test	1	$ 35.00		1 Chloride test for tank liner
Corrosivity Test for tank liner	-	-	-	$ 28.00	test	1	$ 28.00		1 Corrosivity test for tank liner
Reactivity Test for tank liner	-	-	-	$ 110.00	test	1	$ 110.00		1 Reactivity test for tank liner
Ignitability Test for tank liner	-	-	-	$ 55.00	test	1	$ 55.00		1 Ignitability test for tank liner
Dispose of Wash Liquid	80	-	-	$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Disposal of Liner	9	-	-	$ 12.00	yd	9	$ 108.00		Disposal of 6cy (50ft x 35ft x 1in) @$12/cy disposal
SOILS BELOW HEATING TANKS TESTING/REGRADING								**$ 4,521.75**	
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	2.5	$ 317.50		2.5 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time)
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	1	$ 330.00		1 hour Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH Test for Base Course	-	-	-	$ 77.00	test	1	$ 77.00		1 sample from base course
BTEX Test for Base Course	-	-	-	$ 60.00	test	1	$ 60.00		1 sample from base course
TCLP Test for Base Course	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 sample from base course
NORM Testing for Base Course	-	-	-	$ 30.00	test	1	$ 30.01		1 sample from base course
Chloride Test for Base Course	-	-	-	$ 35.00	test	1	$ 35.00		1 sample from base course
Corrosivity Test for Base Course	-	-	-	$ 28.00	test	1	$ 28.00		1 sample from base course
Reactivity Test for Base Course	-	-	-	$ 110.00	test	1	$ 110.00		1 sample from base course
Ignitability Test for Base Course	-	-	-	$ 55.00	test	1	$ 110.00		1 sample from base course
Remove/Disposal Base Course				$ 380.00	hour	5	$ 2,035.00		5 hours crew and support vehicle @ $225/hr + backhoe @ $70/hr + equipment operator @ $85/hr + heavy equipment transport w/equip oper as driver @$135/hr (includes 1 hr drive time)
TPH test for soils below sales tanks	-	-	-	$ 77.00	sample	3	$ 231.00		3 TPH tests from below the tank liner
BTEX test for soils sales tanks	-	-	-	$ 60.00	sample	3	$ 180.00		3 BTEX tests from below the tank liner
RCRA 8 Metals test for soils below sales tanks	-	-	-	$ 130.00	sample	3	$ 390.00		3 RCRA 8 Metals tests from below the tank liner
Major Cations and Anions (6010)	-	-	-	$ 1,200.00	sample	3	$ 3,600.00		3 tests from below the tank liner
								$ 8,608.51	

Notes:
1) Disposal fees at external facilities include costs associated with hauling.

TOTAL OILY WATER RECIEVING AREA CLOSURE COSTS $ 39,830.26

Oil Heating Tank Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
LIQUIDS & DISPOSAL									
Remove liquids from Tanks	1,400	18	-	$ 2.20	bbl	1400.0	$ 3,080.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
Remove sludge from Tanks	140	2	-	$ 2.20	bbl	140.0	$ 308.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 10% sludge and 80 bbl capacity per truck)
TPH Test for Oil Heating Tank Liquids	-	-	-	$ 77.00	test	3	$ 231.00		One TPH test per heating tank (3 tanks)
BTEX Test for Oil Heating Tanks Liquids	-	-	-	$ 60.00	test	3	$ 180.00		One BTEX test per heating tank (3 tanks)
TCLP Test for Oil Heating Tanks Liquids	-	-	-	$ 1,075.00	test	3	$ 3,225.00		One TCLP test per heating tank (3 tanks)
NORM Testing for Oil Heating Tanks Liquids	-	-	-	$ 30.00	test	3	$ 90.00		One NORM test per heating tank (3 tanks) @ $30/test
Chloride Test for Oil Heating Tanks Liquids	-	-	-	$ 35.00	test	3	$ 105.00		One Chloride test per heating tank (3 tanks)
Corrosivity Test for Oil Heating Tanks Liquids	-	-	-	$ 28.00	test	3	$ 84.00		One Corrosivity test per heating tank (3 tanks)
Reactivity Test for Oil Heating Tanks Liquids	-	-	-	$ 110.00	test	3	$ 330.00		One Reactivity test per heating tank (3 tanks)
Ignitability Test for Oil Heating Tanks Liquids	-	-	-	$ 55.00	test	3	$ 165.00		One Ignitability test per heating tank (3 tanks)
Paint Filter Test for Oil Heating Tanks Liquids	-	-	-	$ 28.00	test	3	$ 84.00		One Paint Filter test per heating tank (3 tanks)
TPH Test for Oil Heating Tank Sludge	-	-	-	$ 77.00	test	3	$ 231.00		One TPH test per heating tank (3 tanks)
BTEX Test for Oil Heating Tanks Sludge	-	-	-	$ 60.00	test	3	$ 180.00		One BTEX test per heating tank (3 tanks)
TCLP Test for Oil Heating Tanks Sludge	-	-	-	$ 1,075.00	test	3	$ 3,225.00		One TCLP test per heating tank (3 tanks)
NORM Testing for Oil Heating Tanks Sludge	-	-	-	$ 30.00	test	3	$ 90.00		One NORM test per heating tank (3 tanks) @ $30/test
Chloride Test for Oil Heating Tanks Sludge	-	-	-	$ 35.00	test	3	$ 105.00		One Chloride test per heating tank (3 tanks)
Corrosivity Test for Oil Heating Tanks Sludge	-	-	-	$ 28.00	test	3	$ 84.00		One Corrosivity test per heating tank (3 tanks)
Reactivity Test for Oil Heating Tanks Sludge	-	-	-	$ 110.00	test	3	$ 330.00		One Reactivity test per heating tank (3 tanks)
Ignitability Test for Oil Heating Tanks Sludge	-	-	-	$ 55.00	test	3	$ 165.00		One Ignitability test per heating tank (3 tanks)
Paint Filter Test for Oil Heating Tanks Sludge	-	-	-	$ 28.00	test	3	$ 84.00		One Paint Filter test per heating tank (3 tanks)
Dispose of liquids from Tanks	1,400	18	-	$ 12.00	bbl	1400	$ 16,800.00		Disposal fee for sludge at an NMED approved disposal facility
Dispose of sludge from Tanks	140	2	-	$ 7.00	bbl	140	$ 980.00		Disposal fee for sludge at an NMED approved disposal facility
								$ 30,156.00	
TANK TESTING/REMOVAL									
NORM Testing (licensed instrument)	-	-	-	$ 30.00	test	3	$ 90.00		One NORM test per tank and exposed piping (@ $30/test)
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport Tanks	-	-	-	$ 330.00	load	4	$ 1,428.00		3 hour Crew Cost with support vehicle @$225/hr + 2 hour Dump Truck w/driver @105/hr + 1 hour drive time + 12 cy @ $9.00/cy
								$ 1,772.00	
CONCRETE BLOCK TESTING/REMOVAL									
Field Tech & Support Vehicle-Concrete Scrapings	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport/ concrete blocks	-	-	-	$ 804.00	load	2	$ 1,608.00		2 hour Crew Cost with support vehicle @$225/hr + 2 hours Dump Truck w/driver @105/hr (includes 1 hour drive time) + 12 cy @ $12.00/cy
TPH Test for Tank Blocks	-	-	-	$ 77.00	test	3	$ 231.00		1 composite scraping from concrete blocks per tank
BTEX Test for Tank Blocks	-	-	-	$ 60.00	test	3	$ 180.00		1 composite scraping from concrete blocks per tank
TCLP Test for Tank Blocks	-	-	-	$ 1,075.00	test	3	$ 3,225.00		1 composite scraping from concrete blocks per tank
NORM Testing for Tank Blocks	-	-	-	$ 30.00	test	3	$ 90.00		1 composite scraping from concrete blocks per tank (@ $30/test)
Chloride Test for Tank Blocks	-	-	-	$ 35.00	test	3	$ 105.00		1 composite scraping from concrete blocks per tank
Corrosivity Test for Tank Blocks	-	-	-	$ 28.00	test	3	$ 84.00		1 composite scraping from concrete blocks per tank
Reactivity Test for Tank Blocks	-	-	-	$ 110.00	test	3	$ 330.00		1 composite scraping from concrete blocks per tank
Ignitability Test for Tank Blocks	-	-	-	$ 55.00	test	3	$ 110.00		1 composite scraping from concrete blocks per tank
								$ 6,217.00	
FACILITY PIPING									
Uncover/Expose Facility Piping	-	-	-	$ 360.00	hour	6	$ 2,310.00		excavator @$125/hr + equipment operator $85/hr to uncover pipe + Heavy equipment transport (4 axle) @$150/hr

Oil Heating Tank Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
NORM Testing (licensed instrument)	8	-	-	$ 30.00	test	8	$ 240.00		One NORM test 100 linear feet of piping (approximately 750 LF of piping) @ $30/test
Remove Facility Piping	-	-	-	$ 435.00	hour	2	$ 978.00		Crew Cost with support vehicle @$225/hr + excavator @$125/hr + equipment operator $85/hr (includes drive time)
Transport/Disposal facility piping	-	-	-	$ 570.00	hour	2	$ 1,284.00		Crew Cost with support vehicle @$225/hr + Dump Truck w/driver @105/hr + 20cy @ $12.00/cy
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	10	$ 1,270.00		Field Tech and support vehicle @ $127/hr
								$ 6,082.00	
HEATING TANK POLYESTER CONTAINMENT LINER									
Wash and Remove Liner	-	-	2	$ 605.00	hour	2	$ 1,210.00		2 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	80	-	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
TPH Test for tank liner	-	-	-	$ 77.00	test	1	$ 77.00		1 TPH test for tank liner
BTEX Test for tank liner	-	-	-	$ 60.00	test	1	$ 60.00		1 BTEX test for tank liner
TCLP Test for tank liner	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 TCLP test for tank liner
NORM Testing for tank liner	-	-	-	$ 61.75	test	1	$ 61.75		1 NORM test for tank liner
Chloride Test for tank liner	-	-	-	$ 35.00	test	1	$ 35.00		1 Chloride test for tank liner
Corrosivity Test for tank liner	-	-	-	$ 28.00	test	1	$ 28.00		1 Corrosivity test for tank liner
Reactivity Test for tank liner	-	-	-	$ 110.00	test	1	$ 110.00		1 Reactivity test for tank liner
Ignitability Test for tank liner	-	-	-	$ 55.00	test	1	$ 55.00		1 Ignitability test for tank liner
Dispose of Wash Liquid	80	-	-	$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Disposal of Liner	12	-	-	$ 12.00	yd	12	$ 144.00		disposal of 3cy (75ft x 52ft x 1in) @$12/cy disposal
SOILS BELOW HEATING TANKS TESTING/REGRADING								**$ 4,557.75**	
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		1.5 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time) for concrete
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	1	$ 330.00		1 hour Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH Test for Base Course	-	-	-	$ 77.00	test	1	$ 77.00		1 sample from base course
BTEX Test for Base Course	-	-	-	$ 60.00	test	1	$ 60.00		1 sample from base course
TCLP Test for Base Course	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 sample from base course
NORM Testing for Base Course	-	-	-	$ 30.00	test	1	$ 30.01		1 sample from base course
Chloride Test for Base Course	-	-	-	$ 35.00	test	1	$ 35.00		1 sample from base course
Corrosivity Test for Base Course	-	-	-	$ 28.00	test	1	$ 28.00		1 sample from base course
Reactivity Test for Base Course	-	-	-	$ 110.00	test	1	$ 110.00		1 sample from base course
Ignitability Test for Base Course	-	-	-	$ 55.00	test	1	$ 110.00		1 sample from base course
Remove/Disposal Base Course				$ 380.00	hour	5	$ 2,035.00		5 hours crew and support vehicle @ $225/hr + backhoe @ $70/hr + equipment operator @ $85/hr + heavy equipment transport w/equip oper as driver @$135/hr (includes 1 hr drive time)
TPH test for soils below heating tanks	-	-	-	$ 77.00	sample	2	$ 154.00		2 TPH tests from below the tank liner
BTEX test for soils heating tanks	-	-	-	$ 60.00	sample	2	$ 120.00		2 BTEX tests from below the tank liner
RCRA 8 Metals test for soils below heating tanks	-	-	-	$ 130.00	sample	2	$ 260.00		2 RCRA 8 Metals tests from below the tank liner
Major Cations and Anions (6010)	-	-	-	$ 1,200.00	sample	2	$ 2,400.00		2 tests from below the tank liner
								$ 7,078.01	

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

TOTAL OIL HEATING TANKS AREA CLOSURE COSTS $ 55,862.76

Oil Sales Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
LIQUIDS & DISPOSAL									
Remove sludge from Tanks	280	4	-	$ 2.20	bbl	280.0	$ 616.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 10% sludge and 80 bbl capacity per truck)
TPH Test for Oil Sales Tank Sludge	-	-	-	$ 77.00	test	7	$ 539.00		One TPH test per sales tank (7 tanks)
BTEX Test for Oil Sales Tank Sludge	-	-	-	$ 60.00	test	7	$ 420.00		One BTEX test per sales tank (7 tanks)
TCLP Test for Oil Sales Tank Sludge	-	-	-	$ 1,075.00	test	7	$ 7,525.00		One TCLP test per sales tank (7 tanks)
NORM Testing for Oil Sales Tank Sludge	-	-	-	$ 30.00	test	7	$ 210.00		One NORM test sales tank (7 tanks) @ $30/test
Chloride Test for Oil Sales Tank Sludge	-	-	-	$ 35.00	test	7	$ 245.00		One Chloride test per sales tank (7 tanks)
Corrosivity Test for Oil Sales Tank Sludge	-	-	-	$ 28.00	test	7	$ 196.00		One Corrosivity test per sales tank (7 tanks)
Reactivity Test for Oil Sales Tank Sludge	-	-	-	$ 110.00	test	7	$ 770.00		One Reactivity test per sales tank (7 tanks)
Ignitability Test for Oil Sales Tank Sludge	-	-	-	$ 55.00	test	7	$ 385.00		One Ignitability test per sales tank (7 tanks)
Paint Filter Test for Oil Sales Tank Sludge	-	-	-	$ 28.00	test	7	$ 196.00		One Paint Filter test per sales tank (7 tanks)
Dispose of sludge from Tanks	280	4	-	$ 7.00	bbl	280	$ 1,960.00		Disposal fee for sludge at an NMED approved disposal facility
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	8	$ 1,016.00		1/2 hr per Sample collected (7 sludge samples) +1/2 hr per paint filter test (7 tests) + 1 hr/mobilization time for Staff Engineer and Support Vehicle @$127.00/hr
								$ 14,078.00	
TANK TESTING/REMOVAL									
NORM Testing (licensed instrument)	-	-	-	$ 30.00	test	7	$ 210.00		One NORM test per tank and exposed piping (@ $30/test)
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2.75	$ 349.25		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) assumes 0.25 hr/test
Remove/Transport Tanks	-	-	-	$ 330.00	load	8	$ 2,784.00		7 hour Crew Cost with support vehicle @$225/hr + 2 hour Dump Truck w/driver @105/hr + 1 hour drive time + 12 cy @ $12.00/cy
								$ 3,343.25	
CONCRETE BLOCK TESTING/REMOVAL									
Field Tech & Support Vehicle-Concrete Scrapings	-	-	-	$ 127.00	hour	4	$ 508.00		4 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport/ concrete blocks	-	-	-	$ 804.00	load	7	$ 5,628.00		2 hour Crew Cost with support vehicle @$225/hr + 2 hours Dump Truck w/driver @105/hr (includes 1 hour drive time) + 12 cy @ $12.00/cy
TPH Test for Tank Blocks	-	-	-	$ 77.00	test	7	$ 539.00		1 composite scraping from concrete blocks per tank
BTEX Test for Tank Blocks	-	-	-	$ 60.00	test	7	$ 420.00		1 composite scraping from concrete blocks per tank
TCLP Test for Tank Blocks	-	-	-	$ 1,075.00	test	7	$ 7,525.00		1 composite scraping from concrete blocks per tank
NORM Testing for Tank Blocks	-	-	-	$ 30.00	test	7	$ 210.00		1 composite scraping from concrete blocks per tank (@ $30/test)
Chloride Test for Tank Blocks	-	-	-	$ 35.00	test	7	$ 245.00		1 composite scraping from concrete blocks per tank
Corrosivity Test for Tank Blocks	-	-	-	$ 28.00	test	7	$ 196.00		1 composite scraping from concrete blocks per tank
Reactivity Test for Tank Blocks	-	-	-	$ 110.00	test	7	$ 770.00		1 composite scraping from concrete blocks per tank
Ignitability Test for Tank Blocks	-	-	-	$ 55.00	test	7	$ 110.00		1 composite scraping from concrete blocks per tank
								$ 16,151.00	
SALES TANK POLYESTER CONTAINMENT LINER									
Wash and Remove Liner	-	-	2	$ 605.00	hour	2	$ 1,210.00		2 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	80	-	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
TPH Test for tank liner	-	-	-	$ 77.00	test	1	$ 77.00		1 TPH test for tank liner

Oil Sales Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
BTEX Test for tank liner	-	-	-	$ 60.00	test	1	$ 60.00		1 BTEX test for tank liner
TCLP Test for tank liner	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 TCLP test for tank liner
NORM Testing for tank liner	-	-	-	$ 61.75	test	1	$ 61.75		1 NORM test for tank liner
Chloride Test for tank liner	-	-	-	$ 35.00	test	1	$ 35.00		1 Chloride test for tank liner
Corrosivity Test for tank liner	-	-	-	$ 28.00	test	1	$ 28.00		1 Corrosivity test for tank liner
Reactivity Test for tank liner	-	-	-	$ 110.00	test	1	$ 110.00		1 Reactivity test for tank liner
Ignitability Test for tank liner	-	-	-	$ 55.00	test	1	$ 55.00		1 Ignitability test for tank liner
Dispose of Wash Liquid	80			$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Disposal of Liner	12			$ 12.00	yd	12	$ 144.00		Disposal of 12cy (110ft x 35ft x 1in) @$12/cy disposal
								$ 4,557.75	
FACILITY PIPING									
Uncover/Expose Facility Piping	-	-	-	$ 360.00	hour	1	$ 510.00		excavator @$125/hr + equipment operator $85/hr to uncover pipe + Heavy equipment transport (4 axle) @$150/hr
NORM Testing (licensed instrument)	1	-	-	$ 30.00	test	1	$ 30.00		One NORM test 100 linear feet of piping (approximately 100 LF of piping) @ $30/test
Remove Facility Piping	-	-	-	$ 435.00	hour	0.5	$ 325.50		Crew Cost with support vehicle @$225/hr + excavator @$125/hr + equipment operator $85/hr (includes drive time)
Transport/Disposal facility piping	-	-	-	$ 390.00	hour	0.5	$ 339.00		Crew Cost with support vehicle @$225/hr + Dump Truck w/driver @105/hr + 5cy @ $12.00/cy
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		Field Tech and support vehicle @ $127/hr
								$ 1,458.50	
SOILS BELOW HEATING TANKS TESTING/REGRADING									
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2.5	$ 317.50		2.5 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time)
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	1	$ 330.00		1 hour Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH Test for Base Course below sales tanks	-	-	-	$ 77.00	test	1	$ 77.00		1 sample from base course below sales tank area
BTEX Test for Base Course below sales tanks	-	-	-	$ 60.00	test	1	$ 60.00		1 sample from base course below sales tank area
TCLP Test for Base Course below sales tanks	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 sample from base course below sales tank area
NORM Testing for Base Course below sales tanks	-	-	-	$ 30.00	test	1	$ 30.01		1 sample from base course below sales tank area
Chloride Test for Base Course below sales tanks	-	-	-	$ 35.00	test	1	$ 35.00		1 sample from base course below sales tank area
Corrosivity Test for Base Course below sales tanks	-	-	-	$ 28.00	test	1	$ 28.00		1 sample from base course below sales tank area
Reactivity Test for Base Course below sales tanks	-	-	-	$ 110.00	test	1	$ 110.00		1 sample from base course below sales tank area
Ignitability Test for Base Course below sales tanks	-	-	-	$ 55.00	test	1	$ 110.00		1 sample from base course below sales tank area
Remove/Disposal Base Course				$ 380.00	hour	5	$ 2,035.00		5 hours crew and support vehicle @ $225/hr + backhoe @ $70/hr + equipment operator @ $85/hr + heavy equipment transport w/equip oper as driver @$135/hr (includes 1 hr drive time)
TPH test for soils below sales tanks	-	-	-	$ 77.00	sample	3	$ 231.00		3 TPH tests from below the sales tank liner
BTEX test for soils sales tanks	-	-	-	$ 60.00	sample	3	$ 180.00		3 BTEX tests from below the sales tank liner
RCRA 8 Metals test for soils below sales tanks	-	-	-	$ 130.00	sample	3	$ 390.00		3 RCRA 8 Metals tests from below the sales tank liner
Major Cations and Anions (6010) for soils below sales tanks	-	-	-	$ 1,200.00	sample	3	$ 3,600.00		3 tests from below the sales tank liner
								$ 8,608.51	
DIESEL FUEL TANK									
Remove/transport tank				$ 170.00	hour	1	$ 170.00		
TPH test for diesel tank	-	-	-	$ 77.00	sample	1	$ 77.00		1 TPH tests per tank
BTEX test for diesel tank	-	-	-	$ 60.00	sample	1	$ 60.00		1 BTEX tests per tank
RCRA 8 Metals test for diesel tank	-	-	-	$ 130.00	sample	1	$ 130.00		1 RCRA 8 Metals tests per tank
Major Cations and Anions (6010) test for soils below diesel tank	-	-	-	$ 1,200.00	sample	1	$ 1,200.00		1 tests per tank
								$ 1,637.00	
DIESEL FUEL TANK LINER									
Wash and Remove Liner	-	-	2	$ 605.00	hour	2	$ 1,210.00		2 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	80	-	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for tank liner	-	-	-	$ 77.00	test	1	$ 77.00		1 TPH test for tank liner

Oil Sales Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
BTEX Test for tank liner	-	-	-	$ 60.00	test	1	$ 60.00		1 BTEX test for tank liner
TCLP Test for tank liner	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 TCLP test for tank liner
NORM Testing for tank liner	-	-	-	$ 61.75	test	1	$ 61.75		1 NORM test for tank liner
Chloride Test for tank liner	-	-	-	$ 35.00	test	1	$ 35.00		1 Chloride test for tank liner
Corrosivity Test for tank liner	-	-	-	$ 28.00	test	1	$ 28.00		1 Corrosivity test for tank liner
Reactivity Test for tank liner	-	-	-	$ 110.00	test	1	$ 110.00		1 Reactivity test for tank liner
Ignitability Test for tank liner	-	-	-	$ 55.00	test	1	$ 55.00		1 Ignitability test for tank liner
Dispose of Wash Liquid	80	-	-	$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Disposal of Liner	2	-	-	$ 12.00	yd	2	$ 24.00		Disposal of 2cy (22ft x 17ft x 1in) @$12/cy disposal
								$ 2,967.75	
SOILS BELOW DIESEL TANK									
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time)
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	1	$ 330.00		1 hour Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH test for soils below sales tanks	-	-	-	$ 77.00	sample	1	$ 77.00		1 TPH tests from below the diesel tank liner
BTEX test for soils sales tanks	-	-	-	$ 60.00	sample	1	$ 60.00		1 BTEX tests from below the diesel tank liner
RCRA 8 Metals test for soils below sales tanks	-	-	-	$ 130.00	sample	1	$ 130.00		1 RCRA 8 Metals tests from below the diesel tank liner
20.6.2.3103 NMAC Subsection A&C test for soils below sales tanks	-	-	-	$ 1,200.00	sample	1	$ 1,200.00		1 tests from below the diesel tank liner
								$ 2,051.00	

Notes:

1) There is no cost associated with removing the liquids in the oil sales tanks as the oil in the tanks will be sold prior to closure efforts commence.

2) Disposal fees at external facilities include costs associated with hauling.

TOTAL OIL SALES AREA CLOSURE COSTS $ 54,852.76

Separation Tank Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
LIQUIDS & DISPOSAL									
Remove liquids from Tanks	160	2	-	$ 2.20	bbl	160.0	$ 352.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
Remove sludge from Tanks	42	1	-	$ 2.20	bbl	42.0	$ 92.40		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Oil Separation Tank Sludge	-	-	-	$ 77.00	test	2	$ 154.00		One TPH test per Separation tank (2 tanks)
BTEX Test for Oil Separation Tank Sludge	-	-	-	$ 60.00	test	2	$ 120.00		One BTEX test per Separation tank (2 tanks)
TCLP Test for Oil Separation Tank Sludge	-	-	-	$ 1,075.00	test	2	$ 2,150.00		One TCLP test per Separation tank (2 tanks)
NORM Testing for Oil Separation Tank Sludge	-	-	-	$ 30.00	test	2	$ 60.00		One NORM test Separation tank (2 tanks) @ $30/test
Chloride Test for Oil Separation Tank Sludge	-	-	-	$ 35.00	test	2	$ 70.00		One Chloride test per Separation tank (2 tanks)
Corrosivity Test for Oil Separation Tank Sludge	-	-	-	$ 28.00	test	2	$ 56.00		One Corrosivity test per Separation tank (2 tanks)
Reactivity Test for Oil Separation Tank Sludge	-	-	-	$ 110.00	test	2	$ 220.00		One Reactivity test per Separation tank (2 tanks)
Ignitability Test for Oil Separation Tank Sludge	-	-	-	$ 55.00	test	2	$ 110.00		One Ignitability test per Separation tank (2 tanks)
Paint Filter Test for Oil Separation Tank Sludge	-	-	-	$ 28.00	test	2	$ 56.00		One Paint Filter test per Separation tank (2 tanks)
Dispose of sludge from Tanks	42	1	-	$ 7.00	bbl	42	$ 294.00		Disposal fee for sludge at an NMED approved disposal facility
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	3	$ 381.00		1/2 hr per Sample collected (2 sludge samples) +1/2 hr per paint filter test (2 tests) + 1 hr/mobilization time for Staff Engineer and Support Vehicle @$127.00/hr
								$ 4,115.40	
TANK TESTING/REMOVAL									
NORM Testing (licensed instrument)	-	-	-	$ 30.00	test	2	$ 60.00		One NORM test per tank (@ $30/test)
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	1.5	$ 190.50		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) assumes 0.25 hr/test
Remove/Transport Tanks	-	-	-	$ 330.00	load	8	$ 2,784.00		2 hour Crew Cost with support vehicle @$225/hr + 2 hour Dump Truck w/driver @105/hr + 1 hour drive time + 12 cy @ $12.00/cy
								$ 3,034.50	
CONCRETE BLOCK TESTING/REMOVAL									
Field Tech & Support Vehicle-Concrete Scrapings	-	-	-	$ 127.00	hour	4	$ 508.00		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport/ concrete blocks	-	-	-	$ 804.00	load	2	$ 1,608.00		2 hour Crew Cost with support vehicle @$225/hr + 2 hours Dump Truck w/driver @105/hr (includes 1 hour drive time) + 12 cy @ $12.00/cy
TPH Test for Tank Blocks	-	-	-	$ 77.00	test	2	$ 154.00		1 composite scraping from concrete blocks per tank
BTEX Test for Tank Blocks	-	-	-	$ 60.00	test	2	$ 120.00		1 composite scraping from concrete blocks per tank
TCLP Test for Tank Blocks	-	-	-	$ 1,075.00	test	2	$ 2,150.00		1 composite scraping from concrete blocks per tank
NORM Testing for Tank Blocks	-	-	-	$ 30.00	test	2	$ 60.00		1 composite scraping from concrete blocks per tank (@ $30/test)
Chloride Test for Tank Blocks	-	-	-	$ 35.00	test	2	$ 70.00		1 composite scraping from concrete blocks per tank
Corrosivity Test for Tank Blocks	-	-	-	$ 28.00	test	2	$ 56.00		1 composite scraping from concrete blocks per tank
Reactivity Test for Tank Blocks	-	-	-	$ 110.00	test	2	$ 220.00		1 composite scraping from concrete blocks per tank
Ignitability Test for Tank Blocks	-	-	-	$ 55.00	test	2	$ 110.00		1 composite scraping from concrete blocks per tank
								$ 5,056.00	
FACILITY PIPING									
Uncover/Expose Facility Piping	-	-	-	$ 360.00	hour	1	$ 510.00		excavator @$125/hr + equipment operator $85/hr to uncover pipe + Heavy equipment transport (4 axle) @$150/hr
NORM Testing (licensed instrument)	1	-	-	$ 30.00	test	1	$ 30.00		One NORM test 100 linear feet of piping (approximately 100 LF of piping) @ $30/test
Remove Facility Piping	-	-	-	$ 435.00	hour	0.5	$ 325.50		Crew Cost with support vehicle @$225/hr + excavator @$125/hr + equipment operator $85/hr (includes drive time)
Transport/Disposal facility piping	-	-	-	$ 390.00	hour	0.5	$ 339.00		Crew Cost with support vehicle @$225/hr + Dump Truck w/driver @105/hr + 5cy @ $12.00/cy
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		Field Tech and support vehicle @ $127/hr
								$ 1,458.50	
SEPARATION TANK POLYESTER CONTAINMENT LINER									
Wash and Remove Liner	-	-	2	$ 605.00	hour	2	$ 1,210.00		2 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr

Separation Tank Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
Remove wash liquid from liner	80	-	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
TPH Test for tank liner	-	-	-	$ 77.00	test	1	$ 77.00		1 TPH test for tank liner
BTEX Test for tank liner	-	-	-	$ 60.00	test	1	$ 60.00		1 BTEX test for tank liner
TCLP Test for tank liner	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 TCLP test for tank liner
NORM Testing for tank liner	-	-	-	$ 61.75	test	1	$ 61.75		1 NORM test for tank liner
Chloride Test for tank liner	-	-	-	$ 35.00	test	1	$ 35.00		1 Chloride test for tank liner
Corrosivity Test for tank liner	-	-	-	$ 28.00	test	1	$ 28.00		1 Corrosivity test for tank liner
Reactivity Test for tank liner	-	-	-	$ 110.00	test	1	$ 110.00		1 Reactivity test for tank liner
Ignitability Test for tank liner	-	-	-	$ 55.00	test	1	$ 55.00		1 Ignitability test for tank liner
Dispose of Wash Liquid	80	-	-	$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Disposal of Liner	5	-	-	$ 12.00	yd	5	$ 60.00		Disposal of 5cy (65ft x 25ft x 1in) @$12/cy disposal
								$ 4,473.75	
SOILS BELOW HEATING TANKS TESTING/REGRADING									
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time)
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	1	$ 330.00		1 hour Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH Test for Base Course below separation tanks	-	-	-	$ 77.00	test	1	$ 77.00		1 sample from base course below sales tank area
BTEX Test for Base Course below separation tanks	-	-	-	$ 60.00	test	1	$ 60.00		1 sample from base course below sales tank area
TCLP Test for Base Course below separation tanks	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 sample from base course below sales tank area
NORM Testing for Base Course below separation tanks	-	-	-	$ 30.00	test	1	$ 30.01		1 sample from base course below sales tank area
Chloride Test for Base Course below separation tanks	-	-	-	$ 35.00	test	1	$ 35.00		1 sample from base course below sales tank area
Corrosivity Test for Base Course below separation tanks	-	-	-	$ 28.00	test	1	$ 28.00		1 sample from base course below sales tank area
Reactivity Test for Base Course below separation tanks	-	-	-	$ 110.00	test	1	$ 110.00		1 sample from base course below sales tank area
Ignitability Test for Base Course below separation tanks	-	-	-	$ 55.00	test	1	$ 110.00		1 sample from base course below sales tank area
Remove/Disposal Base Course				$ 380.00	hour	5	$ 2,035.00		5 hours crew and support vehicle @ $225/hr + backhoe @ $70/hr + equipment operator @ $85/hr + heavy equipment transport w/equip oper as driver @$135/hr (includes 1 hr drive time)
TPH test for soils below Separation tanks	-	-	-	$ 77.00	sample	2	$ 154.00		2 TPH tests from below the separation tank liner
BTEX test for soils Separation tanks	-	-	-	$ 60.00	sample	2	$ 120.00		2 BTEX tests from below the separation tank liner
RCRA 8 Metals test for soils below Separation tanks	-	-	-	$ 130.00	sample	2	$ 260.00		2 RCRA 8 Metals tests from below the separation tank liner
Major Cations and Anions (6010) test for soils below Separation tanks	-	-	-	$ 1,200.00	sample	2	$ 2,400.00		2 tests from below the separation tank liner
								$ 7,078.01	

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

TOTAL SEPARATION TANK AREA CLOSURE COSTS $ 25,216.16

Filtered Water Tank Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
LIQUIDS & DISPOSAL									
Remove Liquids from Tanks	1,200	15	-	$ 0.70	bbl	1200	$ 840.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
Dispose Liquids from Tanks	1,200	15	-	$ 0.70	bbl	1200	$ 840.00		Operational cost for injecting liquids into BDI injection well.
TPH Test for Filtered Water Tank Liquids	-	-	-	$ 77.00	test	2	$ 154.00		One TPH test per Separation tank (2 tanks)
BTEX Test for Filtered Water Tank Liquids	-	-	-	$ 60.00	test	2	$ 120.00		One BTEX test per Separation tank (2 tanks)
TCLP Test for Filtered Water Tank Liquids	-	-	-	$ 1,075.00	test	2	$ 2,150.00		One TCLP test per Separation tank (2 tanks)
NORM Testing for Filtered Water Tank Liquids	-	-	-	$ 30.00	test	2	$ 60.00		One NORM test Separation tank (2 tanks) @ $30/test
Chloride Test for Filtered Water Tank Liquids	-	-	-	$ 35.00	test	2	$ 70.00		One Chloride test per Separation tank (2 tanks)
Corrosivity Test for Filtered Water Tank Liquids	-	-	-	$ 28.00	test	2	$ 56.00		One Corrosivity test per Separation tank (2 tanks)
Reactivity Test for Filtered Water Tank Liquids	-	-	-	$ 110.00	test	2	$ 220.00		One Reactivity test per Separation tank (2 tanks)
Ignitability Test for Filtered Water Tank Liquids	-	-	-	$ 55.00	test	2	$ 110.00		One Ignitability test per Separation tank (2 tanks)
								$ 3,780.00	
TANK TESTING/REMOVAL									
NORM Testing (licensed instrument)	-	-	-	$ 30.00	test	2	$ 60.00		One NORM test per tank (@ $30/test)
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time)
Remove/Transport Tanks	-	-	-	$ 330.00	load	3	$ 1,134.00		hour drive time + 12 cy @ $12.00/cy
								$ 1,448.00	
CONCRETE BLOCK TESTING/REMOVAL									
Field Tech & Support Vehicle-Concrete Scrapings	-	-	-	$ 127.00	hour	3	$ 381.00		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport/ concrete block	-	-	-	$ 804.00	load	3	$ 2,412.00		hour drive time + 12 cy @ $12.00/cy
TPH Test for concrete block	-	-	-	$ 77.00	test	3	$ 231.00		1 composite scraping from concrete per tank
BTEX Test for concrete block	-	-	-	$ 60.00	test	3	$ 180.00		1 composite scraping from concrete per tank
TCLP Test for concrete block	-	-	-	$ 1,075.00	test	3	$ 3,225.00		1 composite scraping from concrete per tank
NORM Testing for concrete block	-	-	-	$ 30.00	test	3	$ 90.00		1 NORM test under each tank (@ $30/test)
Chloride Test for concrete block	-	-	-	$ 35.00	test	3	$ 232.00		1 composite scraping from concrete per tank
Corrosivity Test for concrete block	-	-	-	$ 28.00	test	3	$ 84.00		1 composite scraping from concrete per tank
Ignitability Test for concrete block	-	-	-	$ 55.00	test	3	$ 165.00		1 composite scraping from concrete per tank
Reactivity Test for concrete block	-	-	-	$ 110.00	test	3	$ 330.00		1 composite scraping from concrete per tank
								$ 7,330.00	
FACILITY PIPING									
Uncover/Expose Facility Piping	-	-	-	$ 360.00	hour	1.5	$ 690.00		excavator @$125/hr + equipment operator $85/hr to uncover pipe + Heavy equipment transport (4 axle) @$150/hr
NORM Testing (licensed instrument)	2	-	-	$ 30.00	test	2	$ 60.00		One NORM test 100 linear feet of piping (approximately 150 LF of piping) @ $30/test
Remove Facility Piping	-	-	-	$ 435.00	hour	0.5	$ 325.50		Crew Cost with support vehicle @$225/hr + excavator @$125/hr + equipment operator $85/hr (includes drive time)
Transport/Disposal facility piping	-	-	-	$ 390.00	hour	0.5	$ 339.00		Crew Cost with support vehicle @$225/hr + Dump Truck w/driver @105/hr + 5cy @ $12.00/cy
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2.5	$ 317.50		Field Tech and support vehicle @ $127/hr
								$ 1,732.00	
FILTERED WATER TANKS POLYESTER CONTAINMENT LINER									
Wash and Remove Liner	-	-	2	$ 605.00	hour	2	$ 1,210.00		2 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	80	-	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)

Filtered Water Tank Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
TPH Test for tank liner	-	-	-	$ 77.00	test	1	$ 77.00		1 TPH test for tank liner
BTEX Test for tank liner	-	-	-	$ 60.00	test	1	$ 60.00		1 BTEX test for tank liner
TCLP Test for tank liner	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 TCLP test for tank liner
NORM Testing for tank liner	-	-	-	$ 61.75	test	1	$ 61.75		1 NORM test for tank liner
Chloride Test for tank liner	-	-	-	$ 35.00	test	1	$ 35.00		1 Chloride test for tank liner
Corrosivity Test for tank liner	-	-	-	$ 28.00	test	1	$ 28.00		1 Corrosivity test for tank liner
Reactivity Test for tank liner	-	-	-	$ 110.00	test	1	$ 110.00		1 Reactivity test for tank liner
Ignitability Test for tank liner	-	-	-	$ 55.00	test	1	$ 55.00		1 Ignitability test for tank liner
Dispose of Wash Liquid	80	-	-	$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Disposal of Liner	6	-	-	$ 9.00	yd	6	$ 54.00		Disposal of 6cy (1773 ft2 x 1in) @$9/cy disposal
								$ 4,467.75	
SOILS BELOW BLEACH TANK TESTING/REGRADING									
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		1.5 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time) for concrete
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	1	$ 330.00		1 hours Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH Test for Base Course below filtered water tanks	-	-	-	$ 77.00	test	1	$ 77.00		1 sample from base course below filtered water tanks
BTEX Test for Base Course below filtered water tanks	-	-	-	$ 60.00	test	1	$ 60.00		1 sample from base course below filtered water tanks
TCLP Test for Base Course below filtered water tanks	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 sample from base course below filtered water tanks
NORM Testing for Base Course below filtered water tanks	-	-	-	$ 30.00	test	1	$ 30.01		1 sample from base course below filtered water tanks
Chloride Test for Base Course below filtered water tanks	-	-	-	$ 35.00	test	1	$ 35.00		1 sample from base course below filtered water tanks
Corrosivity Test for Base Course below filtered water tanks	-	-	-	$ 28.00	test	1	$ 28.00		1 sample from base course below filtered water tanks
Reactivity Test for Base Course below filtered water tanks	-	-	-	$ 110.00	test	1	$ 110.00		1 sample from base course below filtered water tanks
Ignitability Test for Base Course below filtered water tanks	-	-	-	$ 55.00	test	1	$ 110.00		1 sample from base course below filtered water tanks
Remove/Disposal Base Course				$ 380.00	hour	5	$ 2,035.00		5 hours crew and support vehicle @ $225/hr + backhoe @ $70/hr + equipment operator @ $85/hr + heavy equipment transport w/equip oper as driver @$135/hr (includes 1 hr drive time)
TPH test for soils below filtered water tanks	-	-	-	$ 77.00	sample	2	$ 154.00		2 TPH tests from below the filtered water tank liner
BTEX test for soils filtered water tanks	-	-	-	$ 60.00	sample	2	$ 120.00		2 BTEX tests from below the filtered water tank liner
RCRA 8 Metals test for soils below filtered water tanks	-	-	-	$ 130.00	sample	2	$ 260.00		2 RCRA 8 Metals tests from below the filtered water tank liner
Major Cations and Anions (6010) test for soils below filtered water tanks	-	-	-	$ 1,200.00	sample	2	$ 2,400.00		2 tests from below the filtered water tank liner
								$ 7,078.01	

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

TOTAL FILTERED WATER TANK CLOSURE COSTS $ 25,835.76

Settling Tanks Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
LIQUIDS & DISPOSAL									
Remove liquids from Tanks	160	2	-	$ 2.20	bbl	160.0	$ 352.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
Remove sludge from Tanks	160	2	-	$ 2.20	bbl	160.0	$ 352.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Settling Tank Sludge	-	-	-	$ 77.00	test	2	$ 154.00		One TPH test per settling tank (2 tanks)
BTEX Test for OSettling Tank Sludge	-	-	-	$ 60.00	test	2	$ 120.00		One BTEX test per settling tank (2 tanks)
TCLP Test for Settling Tank Sludge	-	-	-	$ 1,075.00	test	2	$ 2,150.00		One TCLP test per settling tank (2 tanks)
NORM Testing for Settling Tank Sludge	-	-	-	$ 30.00	test	2	$ 60.00		One NORM test per settling tank (2 tanks) @ $30/test
Chloride Test for Settling Tank Sludge	-	-	-	$ 35.00	test	2	$ 70.00		One Chloride test per settling tank (2 tanks)
Corrosivity Test for Settling Tank Sludge	-	-	-	$ 28.00	test	2	$ 56.00		One Corrosivity test per settling tank (2 tanks)
Reactivity Test for Settling Tank Sludge	-	-	-	$ 110.00	test	2	$ 220.00		One Reactivity test per settling tank (2 tanks)
Ignitability Test for Settling Tank Sludge	-	-	-	$ 55.00	test	2	$ 110.00		One Ignitability test per settling tank (2 tanks)
Paint Filter Test for Settling Tank Sludge	-	-	-	$ 28.00	test	2	$ 56.00		One Paint Filter test per settling tank (2 tanks)
Dispose of liquids from Tanks	160	2	-	$ 0.70	bbl	160	$ 112.00		Operational cost for injecting liquids into BDI injection well.
Dispose of sludge from Tanks	160	2	-	$ 7.00	bbl	160	$ 1,120.00		Disposal fee for sludge at an NMED approved disposal facility
								$ 4,932.00	
TANK TESTING/REMOVAL									
NORM Testing (licensed instrument)	-	-	-	$ 30.00	test	2	$ 60.00		One NORM test per tank (@ $30/test)
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time)
Remove/Transport Tanks	-	-	-	$ 330.00	load	3	$ 1,134.00		2 hour Crew Cost with support vehicle @$225/hr + 2 hour Dump Truck w/driver @105/hr + 1 hour drive time + 12 cy @ $12.00/cy
								$ 1,448.00	
CONCRETE BLOCK TESTING/REMOVAL									
Field Tech & Support Vehicle-Concrete Scrapings	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and Support Vehicle @ $127/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport/ concrete blocks	-	-	-	$ 804.00	load	2	$ 1,608.00		2 hour Crew Cost with support vehicle @$225/hr + 2 hours Dump Truck w/driver @105/hr (includes 1 hour drive time) + 12 cy @ $12.00/cy
TPH Test for Tank Blocks	-	-	-	$ 77.00	test	2	$ 154.00		1 composite scraping from concrete blocks per tank
BTEX Test for Tank Blocks	-	-	-	$ 60.00	test	2	$ 120.00		1 composite scraping from concrete blocks per tank
TCLP Test for Tank Blocks	-	-	-	$ 1,075.00	test	2	$ 2,150.00		1 composite scraping from concrete blocks per tank
NORM Testing for Tank Blocks	-	-	-	$ 30.00	test	2	$ 60.01		1 composite scraping from concrete blocks per tank (@ $30/test)
Chloride Test for Tank Blocks	-	-	-	$ 35.00	test	2	$ 70.00		1 composite scraping from concrete blocks per tank
Corrosivity Test for Tank Blocks	-	-	-	$ 28.00	test	2	$ 56.00		1 composite scraping from concrete blocks per tank
Reactivity Test for Tank Blocks	-	-	-	$ 110.00	test	2	$ 220.00		1 composite scraping from concrete blocks per tank
Ignitability Test for Tank Blocks	-	-	-	$ 55.00	test	2	$ 110.00		1 composite scraping from concrete blocks per tank
								$ 4,802.01	
SETTLING TANK POLYESTER CONTAINMENT LINER									
Wash and Remove Liner	-	-	2	$ 605.00	hour	2	$ 1,210.00		2 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 2 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	80	-	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
TPH Test for tank liner	-	-	-	$ 77.00	test	1	$ 77.00		1 TPH test for tank liner

Settling Tanks Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
BTEX Test for tank liner	-	-	-	$ 60.00	test	1	$ 60.00		1 BTEX test for tank liner
TCLP Test for tank liner	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 TCLP test for tank liner
NORM Testing for tank liner	-	-	-	$ 61.75	test	1	$ 61.75		1 NORM test for tank liner
Chloride Test for tank liner	-	-	-	$ 35.00	test	1	$ 35.00		1 Chloride test for tank liner
Corrosivity Test for tank liner	-	-	-	$ 28.00	test	1	$ 28.00		1 Corrosivity test for tank liner
Reactivity Test for tank liner	-	-	-	$ 110.00	test	1	$ 110.00		1 Reactivity test for tank liner
Ignitability Test for tank liner	-	-	-	$ 55.00	test	1	$ 55.00		1 Ignitability test for tank liner
Dispose of Wash Liquid	80			$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Disposal of Liner	2			$ 12.00	yd	2	$ 24.00		disposal of 2cy (40ft x 15ft x 1in) @$12/cy disposal
								$ 4,437.75	
SOILS BELOW SETTLING TANKS TESTING/REGRADING									
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	1.5	$ 190.50		1.5 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time) for concrete
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	1	$ 330.00		1 hour Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH Test for Base Course below settling tanks	-	-	-	$ 77.00	test	1	$ 77.00		1 sample from base course below settling tanks
BTEX Test for Base Course below settling tanks	-	-	-	$ 60.00	test	1	$ 60.00		1 sample from base course below settling tanks
TCLP Test for Base Course below settling tanks	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 sample from base course below settling tanks
NORM Testing for Base Course below settling tanks	-	-	-	$ 30.00	test	1	$ 30.01		1 sample from base course below settling tanks
Chloride Test for Base Course below settling tanks	-	-	-	$ 35.00	test	1	$ 35.00		1 sample from base course below settling tanks
Corrosivity Test for Base Course below settling tanks	-	-	-	$ 28.00	test	1	$ 28.00		1 sample from base course below settling tanks
Reactivity Test for Base Course below settling tanks	-	-	-	$ 110.00	test	1	$ 110.00		1 sample from base course below settling tanks
Ignitability Test for Base Course below settling tanks	-	-	-	$ 55.00	test	1	$ 110.00		1 sample from base course below settling tanks
Remove/Disposal Base Course				$ 380.00	hour	5	$ 2,035.00		5 hours crew and support vehicle @ $225/hr + backhoe @ $70/hr + equipment operator @ $85/hr + heavy equipment transport w/equip oper as driver @$135/hr (includes 1 hr drive time)
TPH test for soils below settling tanks	-	-	-	$ 77.00	sample	2	$ 154.00		2 TPH tests from below the settling tanks
BTEX test for soils settling tanks	-	-	-	$ 60.00	sample	2	$ 120.00		2 BTEX tests from below the settling tanks
RCRA 8 Metals test for soils below settling tanks	-	-	-	$ 130.00	sample	2	$ 260.00		2 RCRA 8 Metals tests from below the settling tanks
Major Cations and Anions (6010) test for soils below settling tanks	-	-	-	$ 1,200.00	sample	2	$ 2,400.00		2 tests from below the settling tanks
								$ 7,014.51	

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

TOTAL SETTLING TANK AREA CLOSURE COSTS $ 22,634.27

Bleach Tank Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
LIQUIDS & DISPOSAL									
Remove liquids from Tanks	300	4	-	$ 2.20	bbl	300.0	$ 660.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
Dispose Liquids from Tanks	300	4	-	$ 7.00	bbl	300	$ 2,100.00		Disposal fee for sludge at an NMED approved disposal facility
								$ 2,760.00	
TANK TESTING/REMOVAL									
NORM Testing (licensed instrument)	-	-	-	$ 30.00	test	4	$ 120.00		One NORM test per tank and exposed piping (@ $30/test)
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time) for concrete
Remove/Transport Tanks	-	-	-	$ 330.00	load	3	$ 1,134.00		2 hour Crew Cost with support vehicle @$225/hr + 2 hour Dump Truck w/driver @105/hr + 1 hour drive time + 12 cy @ $12.00/cy
								$ 1,508.00	
CONCRETE TESTING/REMOVAL									
Field Tech & Support Vehicle-Concrete Scrapings	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech @ $43/hr + Support Vehicle @ $15/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport/ concrete slab	-	-	-	$ 804.00	load	3	$ 2,412.00		2 hour Crew Cost with support vehicle @$225/hr + 2 hour Dump Truck w/driver @105/hr + 1 hour drive time + 12 cy @ $12.00/cy
TPH Test for concrete slab	-	-	-	$ 77.00	test	4	$ 308.00		1 composite scraping from concrete per tank
BTEX Test for concrete slab	-	-	-	$ 60.00	test	4	$ 240.00		1 composite scraping from concrete per tank
TCLP Test for concrete slab	-	-	-	$ 1,075.00	test	4	$ 4,300.00		1 composite scraping from concrete per tank
NORM Testing for concrete slab	-	-	-	$ 30.00	test	4	$ 120.00		1 NORM test under each tank (@ $30/test)
Chloride Test for concrete slab	-	-	-	$ 35.00	test	4	$ 267.00		1 composite scraping from concrete per tank
Corrosivity Test for concrete slab	-	-	-	$ 28.00	test	4	$ 112.00		1 composite scraping from concrete per tank
Ignitability Test for concrete slab	-	-	-	$ 55.00	test	4	$ 220.00		1 composite scraping from concrete per tank
Reactivity Test for concrete slab	-	-	-	$ 110.00	test	4	$ 440.00		1 composite scraping from concrete per tank
								$ 8,673.00	
SOILS BELOW BLEACH TANK TESTING/REGRADING									
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	1.5	$ 190.50		1.5 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time) for concrete
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	1	$ 330.00		1 hour Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH test for soils below bleach tanks	-	-	-	$ 77.00	sample	2	$ 154.00		2 TPH tests from below the bleach tank concrete
BTEX test for soils bleach tanks	-	-	-	$ 60.00	sample	2	$ 120.00		2 BTEX tests from below the bleach tank concrete
RCRA 8 Metals test for soils below bleach tanks	-	-	-	$ 130.00	sample	2	$ 260.00		2 RCRA 8 Metals tests from below the bleach tank concrete
Major Cations and Anions (6010) test for soils below bleach tanks	-	-	-	$ 1,200.00	sample	2	$ 2,400.00		2 tests from below the bleach tank concrete
								$ 3,454.50	

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

TOTAL BLEACH TANK AREA CLOSURE COSTS $ 16,395.50

Containment Sumps (Covered Below Grade Tanks) Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
LIQUIDS & DISPOSAL									
Remove liquids from Sumps	80	1	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
Remove sludge from Sumps	8	1	-	$ 2.20	bbl	8.0	$ 17.60		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 10% sludge and 80 bbl capacity per truck)
TPH Test for Containment Sump Liquids	-	-	-	$ 77.00	test	2	$ 154.00		One TPH test per containment sump
BTEX Test for Containment Sump Liquids	-	-	-	$ 60.00	test	2	$ 120.00		One BTEX test per containment sump
TCLP Test for Containment Sump Liquids	-	-	-	$ 1,075.00	test	2	$ 2,150.00		One TCLP test per containment sump
NORM Testing for Containment Sump Liquids	-	-	-	$ 30.00	test	2	$ 60.00		One NORM test per containment sump @ $30/test
Chloride Test for Containment Sump Liquids	-	-	-	$ 35.00	test	2	$ 70.00		One Chloride test per containment sump
Corrosivity Test for Containment Sump Liquids	-	-	-	$ 28.00	test	2	$ 56.00		One Corrosivity test per containment sump
Reactivity Test for Containment Sump Liquids	-	-	-	$ 110.00	test	2	$ 220.00		One Reactivity test per containment sump
Ignitability Test for Containment Sump Liquids	-	-	-	$ 55.00	test	2	$ 110.00		One Ignitability test per containment sump
TPH Test for Containment Sump Sludge	-	-	-	$ 77.00	test	2	$ 154.00		One TPH test per containment sump
BTEX Test for Containment Sump Sludge	-	-	-	$ 60.00	test	2	$ 120.00		One BTEX test per containment sump
TCLP Test for Containment Sump Sludge	-	-	-	$ 1,075.00	test	2	$ 2,150.00		One TCLP test per containment sump
NORM Testing for Containment Sump Sludge	-	-	-	$ 30.00	test	2	$ 60.00		One NORM test per containment sump @ $30/test
Chloride Test for Containment Sump Sludge	-	-	-	$ 35.00	test	2	$ 70.00		One Chloride test per containment sump
Corrosivity Test for Containment Sump Sludge	-	-	-	$ 28.00	test	2	$ 56.00		One Corrosivity test per containment sump
Reactivity Test for Containment Sump Sludge	-	-	-	$ 110.00	test	2	$ 220.00		One Reactivity test per containment sump
Ignitability Test for Containment Sump Sludge	-	-	-	$ 55.00	test	2	$ 110.00		One Ignitability test per containment sump
Paint Filter Test for Containment Sump Sludge	-	-	-	$ 28.00	test	2	$ 56.00		One Paint Filter test per containment sump
Dispose of liquids from Tanks	80	1	-	$ 12.00	bbl	80	$ 960.00		Operational cost for injecting liquids into BDI injection well.
Dispose of sludge from Tanks	8	1	-	$ 7.00	bbl	8	$ 56.00		Disposal fee for sludge at an NMED approved disposal facility
								$ 7,145.60	
CONTAINMENT SUMP TESTING/REMOVAL									
TPH Test for Sumps	-	-	-	$ 77.00	test	2	$ 154.00		One TPH test per containment sump
BTEX Test for Sumps	-	-	-	$ 60.00	test	2	$ 120.00		One BTEX test per containment sump
TCLP Test for Sumps	-	-	-	$ 1,075.00	test	2	$ 2,150.00		One TCLP test per containment sump
NORM Testing for Sumps	-	-	-	$ 188.75	test	2	$ 377.50		One TPH test per containment sump
Chloride Test for Sumps	-	-	-	$ 35.00	test	2	$ 70.00		One Chloride test per containment sump
Corrosivity Test for Sumps	-	-	-	$ 28.00	test	2	$ 56.00		One Corrosivity test per containment sump
Reactivity Test for Sumps	-	-	-	$ 110.00	test	2	$ 220.00		One Reactivity test per containment sump
Ignitability Test for Sumps				$ 172.50	test	2	$ 345.00		One Ignitability test per containment sump
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		1/2 hr per Sample collected (2 samples) + 1 hr/mobilization time for Field Tech and Support Vehicle @$127.00/hr
Remove/Transport Tanks	-	-	-	$ 330.00	load	5	$ 1,794.00		4 hour Crew Cost with support vehicle @$225/hr + 2 hours Dump Truck w/driver @105/hr (includes 1 hour drive time) + 12 cy @ $12.00/cy
								$ 5,540.50	
SECONDARY CONTAINMENT TESTING/REMOVAL									
Field Tech & Support Vehicle-Concrete Scrapings	-	-	-	$ 127.00	hour	2	$ 254.00		2 hrs Field Tech @ $43/hr + Support Vehicle @ $15/hr (includes 1 hr drive time) for concrete blocks
Remove/Transport/ secondary containment	-	-	-	$ 804.00	load	2	$ 1,608.00		2 hour Crew Cost @$155/hr + support vehicle @$15/hr+ 2 hours Dump Truck w/driver @75/hr (includes 1 hour drive time) + 12 cy @ $12.00/cy
TPH Test for secondary containment	-	-	-	$ 77.00	test	4	$ 308.00		2 TPH tests per containment Sump (1 test on concrete containment + 1 test on HDPE containment)
BTEX Test for secondary containment	-	-	-	$ 60.00	test	4	$ 240.00		2 BTEX tests per containment Sump (1 test on concrete containment + 1 test on HDPE containment)
TCLP Test for secondary containment	-	-	-	$ 1,075.00	test	4	$ 4,300.00		2 TCLP tests per containment Sump (1 test on concrete containment + 1 test on HDPE containment)
NORM Testing for secondary containment	-	-	-	$ 30.00	test	4	$ 120.00		1 NORM test under each tank (@ $30/test)
Chloride Test for secondary containment	-	-	-	$ 35.00	test	4	$ 267.00		2 Chloride tests per containment Sump (1 test on concrete containment + 1 test on HDPE containment)

Containment Sumps (Covered Below Grade Tanks) Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	NOTES
Corrosivity Test for secondary containment	-	-	-	$ 28.00	test	4	$ 112.00		2 Corrosivity tests per containment Sump (1 test on concrete containment + 1 test on HDPE containment)
Ignitability Test for secondary containment	-	-	-	$ 55.00	test	4	$ 220.00		2 Ignitability tests per containment Sump (1 test on concrete containment + 1 test on HDPE containment)
Reactivity Test for secondary containment	-	-	-	$ 110.00	test	4	$ 440.00		2 Reactivity tests per containment Sump (1 test on concrete containment + 1 test on HDPE containment)
								$ 7,869.00	
SOILS BELOW CONTAINMENT SUMPS TESTING/REGRADING									
Staff Engineer Scientist & Support Vehicle	-	-	-	$ 127.00	hour	2	$ 254.00		1 hr Field Tech and support vehicle @ $127/hr (1/2 hr/sample) + 1 hr drive time
Grade/Backfill and contour pond areas to prevent the collection of stormwater	-	-	-	$ 330.00	hours	4	$ 1,320.00		4 hours Front end loader @ $ 160/hr + equipment operator @$85/hr
TPH test for soils containment sumps	-	-	-	$ 77.00	sample	2	$ 154.00		2 TPH tests from below the containment sumps
BTEX test for soils below containment sumps	-	-	-	$ 60.00	sample	2	$ 120.00		2 BTEX tests from below the containment sumps
RCRA 8 Metals test for soils below containment sumps	-	-	-	$ 130.00	sample	2	$ 260.00		2 RCRA 8 Metals tests from below the containment sumps
Major Cations and Anions (6010) test for soils below containment sumps	-	-	-	$ 1,200.00	sample	2	$ 2,400.00		2 tests from below the containment sumps
								$ 4,508.00	

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

TOTAL OIL TREATING AREA CLOSURE COSTS $ 25,063.10

Sludge Solidification Basin Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	Notes
LIQUIDS & SLUDGE									
Remove sludge from solidification basin	40	0.5	-	$ 2.20	bbl	40.0	$ 88.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Solidification Basin Sludge	-	-	-	$ 77.00	test	1	$ 38.50		One TPH test for basin sludge
BTEX Test for Solidification Basin Sludge	-	-	-	$ 60.00	test	1	$ 30.00		One BTEX test for basin sludge
TCLP Test for Solidification Basin Sludge	-	-	-	$ 1,075.00	test	1	$ 537.50		One TCLP test for basin sludge
NORM Testing for Solidification Basin Sludge	-	-	-	$ 30.00	test	1	$ 15.00		One NORM test for basin sludge (@ $30/test)
Chloride Test for Solidification Basin Sludge	-	-	-	$ 35.00	test	1	$ 17.50		One Chloride test for basin sludge
Corrosivity Test for Solidification Basin Sludge	-	-	-	$ 28.00	test	1	$ 14.00		One Corrosivity test for basin sludge
Reactivity Test for Solidification Basin Sludge	-	-	-	$ 110.00	test	1	$ 55.00		One Reactivity test for basin sludge
Ignitability Test for Solidification Basin Sludge	-	-	-	$ 55.00	test	1	$ 27.50		One Ignitability test for basin sludge
Paint Filter Test for Solidification Basin Sludge	-	-	-	$ 28.00	test	1	$ 14.00		One Paint Filter test for basin sludge
Dispose Sludge from solidification basin	40	-	-	$ 12.00	bbl	40	$ 480.00		Disposal fee for sludge at an NMED approved disposal facility
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	2.00	$ 254.00		
								$ 1,571.00	
CONCRETE SLAB									
Demolish Concrete			8	$ 455.00	hr	8	$ 3,940.00		8 hours of: excavator @$125/hr + equipment operator $85/hr to break up concrete & load dump truck +front end loader @$160/hr equipment operator $85/hr +2 hours Heavy equipment transport (4 axle) @$150/hr
Transport/Disposal demolition materials	-	-	-	$ 838.50	load	4	$ 3,354.00		2.5 hrs/load dump truck w/driver @ $105/hr (includes drive time) + 48 cy @ 12 cy/load @ $12.00/cy
TPH Test for concrete	-	-	-	$ 77.00	test	1	$ 77.00		1 composite scraping from concrete basin
BTEX Test for concrete	-	-	-	$ 60.00	test	1	$ 60.00		1 composite scraping from concrete basin
TCLP Test for concrete	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite scraping from concrete basin
NORM Testing for concrete	-	-	-	$ 30.00	test	1	$ 30.00		1 NORM test on concrete slab(@ $30/test)
Chloride Test for concrete	-	-	-	$ 35.00	test	1	$ 162.00		1 composite scraping from concrete basin
Corrosivity Test for concrete	-	-	-	$ 28.00	test	1	$ 28.00		1 composite scraping from concrete basin
Reactivity Test for concrete	-	-	-	$ 110.00	test	1	$ 110.00		1 composite scraping from concrete basin
Field Tech & Support Vehicle-Concrete Scrapings				$ 127.00	hour	1.5	$ 190.50		1/2 hr per Sample collected + 1 hr/mobilization time for Field Tech and Support Vehicle @$127.00/hr
								$ 9,026.50	
CONCRETE SLAB HDPE LINER									

Sludge Solidification Basin Area Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	Notes
Wash and Remove Liner	-	-	5	$ 380.00	hour	5	$ 2,560.00		5 hours Crew and support vehicle Cost @$225/hr + backhoe @$70/hr + equipment operator @$85/hr + 2 hours heavy equip transport w/driver(3 axle) @$120/hr (transport drop off/pick up equipment) + 4 hrs dump truck w/driver @105/hr
Remove wash liquid from liner	80	-	-	$ 2.20	bbl	80.0	$ 176.00		Oilfield vacuum/hydrovac truck w/driver @ $350/hr (assumes 80 bbl capacity per truck)
TPH Test for Wash Waters	-	-	-	$ 77.00	test	1	$ 77.00		1 composite TPH test per wash
BTEX Test for Wash Waters	-	-	-	$ 60.00	test	1	$ 60.00		1 composite BTEX test per wash
TCLP Test for Wash Waters	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 composite TCLP test per wash
NORM Testing for Wash Waters	-	-	-	$ 30.00	test	1	$ 30.00		1 composite NORM test per wash
Chloride Test for Wash Waters	-	-	-	$ 35.00	test	1	$ 35.00		1 composite Chloride test per wash
Corrosivity Test for Wash Waters	-	-	-	$ 28.00	test	1	$ 28.00		1 composite Corrosivity test per wash
Reactivity Test for Wash Waters	-	-	-	$ 110.00	test	1	$ 110.00		1 composite Reactivity test per wash
Ignitability Test for Wash Waters	-	-	-	$ 55.00	test	1	$ 55.00		1 composite Ignitability test per wash
TPH Test for Pond liner	-	-	-	$ 77.00	test	1	$ 77.00		1 TPH test per pond
BTEX Test for Pond liner	-	-	-	$ 60.00	test	1	$ 60.00		1 BTEX test for basin liner
TCLP Test for Pond liner	-	-	-	$ 1,075.00	test	1	$ 1,075.00		1 TCLP test for basin liner
NORM Testing for Pond liner	-	-	-	$ 61.75	test	1	$ 61.75		1 NORM test for basin liner
Chloride Test for Pond liner	-	-	-	$ 35.00	test	1	$ 35.00		1 Chloride test for basin liner
Corrosivity Test for Pond liner	-	-	-	$ 28.00	test	1	$ 28.00		1 Corrosivity test for basin liner
Reactivity Test for Pond liner	-	-	-	$ 110.00	test	1	$ 110.00		1 Reactivity test for basin liner
Ignitability Test for Pond liner	-	-	-	$ 55.00	test	1	$ 55.00		1 Ignitability test for basin liner
Dispose of Wash Liquid	80	-	-	$ 0.70	bbl	80.0	$ 56.00		Operational cost for injecting liquids into BDI injection well.
Disposal of Liner	86	-	-	$ 12.00	yd	86	$ 1,032.00		Disposal of 86cy (61ft x 38ft x 1ft) @$12/cy disposal
								$ 6,795.75	
SOILS BELOW SLUDGE BASIN LINER									
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	1.5	$ 190.50		1/2 hr per Sample collected + 1 hr/mobilization time for Field Tech and Support Vehicle @$127.00/hr
Grade/Backfill and contour slab area to prevent the collection of stormwater	-	-	-	$ 245.00	hour	8	$ 1,960.00		2 hours Front end loader @ $ 160/hour + equipment operator @$85/hr
TPH test for soils below basin	-	-	-	$ 77.00	sample	1	$ 77.00		1 TPH test from below the bleach tank concrete
BTEX test for soils below basin	-	-	-	$ 60.00	sample	1	$ 60.00		1 BTEX test from below the bleach tank concrete
RCRA 8 Metals test for soils below basin	-	-	-	$ 130.00	sample	1	$ 130.00		1 RCRA 8 Metals test from below the bleach tank concrete
Major Cations and Anions (6010) test for soils below basin	-	-	-	$ 1,200.00	sample	1	$ 1,200.00		1 test from below the bleach tank concrete
								$ 3,617.50	

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

TOTAL CONCRETE SLAB CLOSURE COSTS $ 21,010.75

Support Facilities and Equipment Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	Notes
SPOT CLEAN UP									
Facility "Spot" Clean-Up			5	$ 225.00	hour	5	$ 1,125.00		Crew and support vehicle @ $225/hr (includes drive time)
Spot Clean Up Testing (TPH, BTEX, RCRA 8 Metals, Major Cations and Anions, and Paint Filter)	1			$ 1,467.00	tests	1.0	$ 1,467.00		$28/paint filter test + $15/chloride test
Facility "Spot" Clean-Up Field Tech			2	$ 127.00	hour	2.00	$ 254.00		1 hour sample collection and paint filter test+1 hr drive time @$127/hr
								$ 2,846.00	
FACILITY FENCING									
Inspect Facilitiy Fencing	-	-	-	$ 127.00	hour	4	$ 508.00		Field Tech and support vehicle @127/hr (includes 1 hr drive time) for insepecting approximately 4,300 LF of fence line.
								$ 508.00	
OFFICE BUILDING									
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	4	$ 508.00		4 hrs Field Tech and support vehicle @ $127/hr (includes 1 hr drive time) for concrete scrapings
Demolish/remove steel building	-	-	-	$ 2,855.00	day	2	$ 5,710.00		2 days crew and support vehicle @ $225/hr + 2 days backhoe @ $70/day + equipment operator @ $85/hr + 1 hr/day heavy equip transport/driver (3 axles) @$135/hr (includes drive time)
Transport/Disposal building demolition materials	-	-	-	$ 1,005.00	load	7	$ 7,035.00		5 hrs/load dump truck w/driver @ $105/hr (includes drive time) + 280 cy @ 40 cy/load @ $12.00/cy
Demolish floor and foundation	-	-	-	$ 3,495.00	day	2	$ 6,990.00		2 days excavator @$125/hr + equipment operator $85/hr to break up concrete & load dump truck +2 days front end loader @$125/hr + equipment operator $85/hr + 1 hr/day Heavy equipment transport (4 axle) @$135/hr
NORM Testing for Building	-	-	-	$ 30.00	test	1	$ 30.00		1 NORM per pump house ($30/test)
Transport/Disposal floor/foundation demolition materials	15	-	-	$ 1,005.00	load	3	$ 3,015.00		5 hrs/load dump truck w/driver @ $105/hr (includes drive time) + 120 cy @ 40 cy/load @ $12.00/cy
								$ 23,288.00	
SOILS BELOW FACILITY									
Field Tech & Support Vehicle	-	-	-	$ 127.00	hour	1.5	$ 190.50		1/2 hr per Sample collected + 1 hr/mobilization time for Field Tech and Support Vehicle @$127.00/hr
stormwater	-	-	-	$ 245.00	hour	8	$ 1,960.00		equipment operator @$85/hr
TPH test for soils below facility	-	-	-	$ 77.00	sample	1	$ 77.00		1 TPH test from below the bleach tank concrete
BTEX test for soils below facility	-	-	-	$ 60.00	sample	1	$ 60.00		1 BTEX test from below the bleach tank concrete
RCRA 8 Metals test for soils below facility	-	-	-	$ 130.00	sample	1	$ 130.00		1 RCRA 8 Metals test from below the bleach tank concrete
Major Cations and Anions (6010) test for soils below facility	-	-	-	$ 1,200.00	sample	1	$ 1,200.00		1 test from below the bleach tank concrete
								$ 3,617.50	

Notes:
1) Disposal fees at external facilities include costs associated with hauling.

TOTAL SUPPORT FACIILTY CLOSURE COSTS $ 30,259.50

Post Closure Costs

Task	Quantity	Trucks	Hours	Cost/unit		# of units	Cost	Subtotals	Notes
RE-VEGETATION									
Re-Vegetation of Site	27.77	-	-	$ 2,000.00	acre	27.77	$ 55,540.00		Seed and Mulch site with regional native seeding mix ($2,000/acre)
Field Tech & Support Vehicle	-	-	5	$ 127.00	hour	8	$ 1,016.00	**$ 56,556.00**	8 hrs Field Technician and support vehicle @$127/hr (includes 1 hour drive time)
POST CLOSURE									
Monitoring Facility Monthly Inspection	36	-	3	$ 127.00	hour	108	$ 13,716.00		3 hrs Field Technician and support vehicle @$127/hr (includes 1 hour drive time) . One per month for three years
Erosion Control	6	-	6	$ 220.00	hr	36	$ 8,640.00		6 hrs backhoe @$70/hr + equipment operator @$85/hr (includes drive time) + 6 hrs laborer @$ 65/hr + 1 hr Heavy Equip Transport. w/driver (3 axle) @$120/hr. Twice a year for three years
Re-seeding	6	-		$ 4,000.00	event	6	$ 24,000.00	**$ 46,356.00**	Assume 10% re-seeding costs (i.e. 10% of $2,000 per acre of 20 AC) per event @ twice per year

Notes:

1) Disposal fees at external facilities include costs associated with hauling.

TOTAL POST CLOSURE COSTS $ 102,912.00

ATTACHMENT II.4.B

INTENTIONALLY LEFT BLANK

ATTACHMENT II.4.C
CLOSURE DOCUMENTATION RECORD (TYPICAL)

ATTACHMENT II.4.C - Closure Documentation Record (Typical)

Pond or Tank	Location		Closure Location					Revegetation			
			Liner		Tank						
Number	Lat. (Northing)	Lon. (Easting)	Removed	Tested [1]	Cleaned	Removed	Tested [2]	Installed	Date	Certified	Date

Date: _____ **Recorded By:** _____

Inspected By: _____ **Certified By:** _____

Comments: _____

NOTES: [1] If liner is washed with water prior to disposal to achieve "EPA clean" levels established by 40 CFR 261.7(b), wash water must also be tested for the analytes listed in Attachment II.4.F and disposed of in an OCD-approved disposal facility.

[2] Upon removal, all tanks must be tested for NORM to determine if they can be recycled or sold

ATTACHMENT II.4.D

POST-CLOSURE SITE INSPECTION CHECKLIST (TYPICAL)

ATTACHMENT II.4.D - Post-Closure Site Inspection Checklist (Typical)

Page _____ of _____

Date: _____ **Inspector(s):** _____

Time: _____ _____

Weather:

Temperature _____ deg. F Precipitation (last 24 hours) _____ inches

Skies _____

Wind Speed _____ mph

Wind Direction _____ *(direction blowing from)*

NOTES:
"X" indicates that a Deficiency has been noted. "P" indicates that a Photograph has been taken. "S" indicates that a Sample has been collected. Complete descriptions of Deficiencies, Photographs, and Samples are provided on attached pages. Items are referenced by Location.

Vegetation Conditions

Location	Item			
	Vegetation Stress	Stabilization Progress	Vectors	Sample

Surface Water Management System

Location	Deficiency			Sample
	Erosion/ Siltation	Structural Defect	Flow Obstruction	

NOTES: _____

_____

ATTACHMENT II.4.E
CLOSURE PROCEDURES

Pond Closure Procedures

Task No.	Task	Description
1	Remove liquids from pond and liquid collection system.	Liquids to be removed from pond and sent to the injection well utilizing in-place site equipment.
2	Test sludge present in pond in accordance with Attachment II.4.F.	Sample collection of sludge for laboratory testing and/or in-situ testing of sludge.
3	Upon satisfactory laboratory and/or field test results remove sludge from pond.	Sludge to be removed from ponds utilizing vacuum or hydrovac truck.
4	Primary HDPE liner systems components to be thoroughly cleaned in-place using water.	HDPE liner to be thoroughly washed using a pressure washer unit.
5	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
6	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed from ponds utilizing vacuum truck.
7	Remove primary HDPE liner.	Primary HDPE liner components are to be cut into manageable sized pieces and removed from the pond.
8	Test primary HDPE liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of primary HDPE liner components.
9	Upon satisfactory laboratory and/or field test results dispose of primary HDPE liner components at a NMED-approved disposal facility.	Haul HDPE liner components with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
10	Geonet leak-detection system components to be thoroughly cleaned in-place using water.	Geonet to be thoroughly washed using a pressure washer unit.
11	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
12	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed from ponds utilizing vacuum truck.
13	Remove Geonet leak-detection system components.	Geonet leak-detection system components are to be cut into manageable sized pieces and removed from the pond.
14	Test Geonet leak-detection system components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of primary HDPE liner components.
15	Upon satisfactory laboratory and/or field test results dispose of Geonet leak-detection system components at a NMED-approved disposal facility.	Haul Geonet liner components with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
16	Remove all geotextile, HDPE pipe, soil, and aggregate present in the leak detection sump and riser pipe trench.	Geotextile, HDPE pipe, soil, and aggregate components are to be cut into manageable sized pieces (as necessary) and removed from the pond.
17	Test geotextile, HDPE pipe, soil, and aggregate in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of primary HDPE liner components.
18	Upon satisfactory laboratory and/or field test results dispose of geotextile, HDPE pipe, soil, and aggregate at a NMED-approved disposal facility.	Haul geotextile, HDPE pipe, soil, and aggregate with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
19	Secondary HDPE liner systems components to be thoroughly cleaned in-place using water.	HDPE liner to be thoroughly washed using a pressure washer unit.
20	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
21	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at a NMED-approved disposal facility.	Liquids to be removed from ponds utilizing vacuum truck.
22	Remove secondary HDPE liner.	Secondary HDPE liner components are to be cut into manageable sized pieces and removed from the pond.
23	Test secondary HDPE liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of secondary HDPE liner components.
24	Upon satisfactory laboratory and/or field test results dispose of secondary HDPE liner components at a NMED-approved disposal facility.	Haul HDPE liner components with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
25	Remove Geosynthetic Clay liner (GCL).	GCL components are to be cut into manageable sized pieces and removed.
26	Test GCL components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of GCL components.
27	Upon satisfactory laboratory and/or field test results dispose of GCL components at a NMED-approved disposal facility.	Haul GCL components with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
28	Perform shallow soil sample collection of subgrade below previously constructed liner system.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
29	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
30	Upon satisfactory laboratory and/or field test results the pond is to be backfilled to surround natural grades	Fill in the pond to natural ground elevations surround the pond and grade appropriately to minimize ponding.

Oil Receiving and Skimmed Oil Tank Area Closure Procedures

Task No.	Task	Description
1	Remove all liquids from receiving and skimmed oil tanks, piping, and equipment dispose of the liquids at the BDI injection well.	Liquids to be removed from tanks and sent to the injection well utilizing in-place site equipment.
2	Test sludge present in the system in accordance with Attachment II.4.F.	Sample collection of sludge for laboratory testing and/or in-situ testing of sludge.
3	Upon satisfactory laboratory and/or field test results remove sludge and dispose of the sludge at a NMED-approved disposal facility.	All sludge in the system to be removed a utilizing vacuum/hydrovac truck.
4	Perform NORM testing on the receiving and skimmed oil tanks and exposed piping in accordance with Attachment II.4.F	Perform testing of tanks and exposed piping using a licensed Geiger Counter.
5	Upon satisfactory NORM testing results, remove tanks and exposed pipes and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove receiving tanks, skimmed oil tanks, and exposed (i.e., above-ground) piping from the facility.
6	Perform testing on the concrete oil tank blocks in accordance with Attachment II.4.F.	Collect samples for laboratory analyses and/or field testing of the concrete blocks.
7	Upon satisfactory laboratory and/or field test results remove concrete blocks and dispose of at a NMED-approved disposal facility.	Remove all concrete blocks within the receiving system area.
8	Perform testing on the receiving/skimmed oil area base course in accordance with Attachment II.4.F.	Collect samples of the base course for laboratory analyses and/or field testing of the base course.
9	Upon satisfactory laboratory and/or field testing results remove receiving tank area base course and dispose of at an NMED-approved disposal facility.	Remove base course in a manner that will not damage the underlying liner system.
10	Polyester liner to be thoroughly cleaned in-place using water.	Polyester liner to be thoroughly washed using a pressure washer unit.
11	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
12	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed from ponds utilizing vacuum truck.
13	Remove polyester liner.	Polyester liner to be cut into manageable sized pieces and removed from the pond.
14	Test polyester liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of the polyester liner.
15	Upon satisfactory laboratory and/or field test results dispose of polyester liner at an NMED-approved disposal facility.	Haul polyester liner with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
16	Expose underground receiving and skimmed oil piping.	Remove the soil above the receiving and skimmed oil piping (including piping running to the oil heating tanks) in a manner that will not damage the piping. **Note: Liquids in Oil Heating tanks must be removed prior to removal of piping
17	Test piping for NORM in accordance with Attachment II.4.F	Perform testing of piping using a licensed Geiger Counter.
18	Upon satisfactory NORM testing results, remove piping and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove piping from the facility.
19	Perorm NORM testing of filter house building then demolish Filter house steel buidling, filter pods, concrete flooring, and foundation.	Demo and remove all elements of the filter house and perform NORM testing.
20	Test concrete components of filter house in accordance with Attachment II.4.F.	Sample collection of concrete components for laboratory testing and/or in-situ testing of flooring and foundation.
21	Upon satisfaction laboratory and/or field test results remove and dispose of filter house components at an NMED-approved disposal facility.	Haul demolition debris, filter pods, concrete and steel to appropriate NMED permitted facility.
22	Perorm NORM testing of pump house building then demolish Pump house steel buidling, pumps, concrete flooring, and foundation.	Demo and remove all elements of the pump house and perform NORM testing.
23	Test concrete components of pump house in accordance with Attachment II.4.F.	Sample collection of concrete components for laboratory testing and/or in-situ testing of flooring and foundation.
24	Upon satisfaction laboratory and/or field test results remove and dispose of filter house components at an NMED-approved disposal facility.	Haul demolition debris, filter pods, concrete and steel to appropriate NMED permitted facility.
25	Perform shallow soil sample collection of subgrade below oil receiving and skimmed oil area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
26	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
27	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Oily Water Receiving Area Closure Procedures

Task No.	Task	Description
1	Remove all liquids from the oily water receiving tanks, piping, and equipment dispose of the liquids at the BDI injection well.	Liquids to be removed from tanks and sent to the injection well utilizing in-place site equipment.
2	Test sludge present in the system in accordance with Attachment II.4.F.	Sample collection of sludge for laboratory testing and/or in-situ testing of sludge.
3	Upon satisfactory laboratory and/or field test results remove sludge and dispose of the sludge at a NMED-approved disposal facility.	All sludge in the system to be removed a utilizing vacuum/hydrovac truck.
4	Perform NORM testing on the oily water receiving tanks and exposed piping in accordance with Attachment II.4.F	Perform testing of tanks and exposed piping using a licensed Geiger Counter.
5	Upon satisfactory NORM testing results, remove tanks and exposed pipes and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove oily water receiving tanks, and exposed (i.e., above-ground) piping from the facility.
6	Perform testing on the concrete oil tank blocks in accordance with Attachment II.4.F.	Collect samples for laboratory analyses and/or field testing of the concrete blocks.
7	Upon satisfactory laboratory and/or field test results remove concrete blocks and dispose of at a NMED-approved disposal facility.	Remove all concrete blocks within the oily water receiving area.
8	Perform testing on the oily water receiving area base course in accordance with Attachment II.4.F.	Collect samples of the base course for laboratory analyses and/or field testing of the base course.
9	Upon satisfactory laboratory and/or field testing results remove oily water receiving area base course and dispose of at an NMED-approved disposal facility.	Remove base course in a manner that will not damage the underlying liner system.
10	Polyester liner to be thoroughly cleaned in-place using water.	Polyester liner to be thoroughly washed using a pressure washer unit.
11	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
12	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed from ponds utilizing vacuum truck.
13	Remove polyester liner.	Polyester liner to be cut into manageable sized pieces and removed from the pond.
14	Test polyester liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of the polyester liner.
15	Upon satisfactory laboratory and/or field test results dispose of polyester liner at an NMED-approved disposal facility.	Haul polyester liner with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
16	Expose underground oily water receiving piping.	Remove the soil above the oily water piping (including piping running to the oil heating tanks) in a manner that will not damage the piping. **Note: Liquids in Oil Heating tanks must be removed prior to removal of piping
17	Test piping for NORM in accordance with Attachment II.4.F	Perform testing of piping using a licensed Geiger Counter.
18	Upon satisfactory NORM testing results, remove piping and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove piping from the facility.
19	Perform shallow soil sample collection of subgrade below oil receiving and skimmed oil area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
20	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
21	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Oil Heating Tank Area Closure Procedures

Task No.	Task	Description
1	Remove all liquids from the oil heating tanks, piping, and equipment dispose of the liquids at the BDI injection well.	Liquids to be removed from tanks and sent to the injection well utilizing in-place site equipment.
2	Test liquids and sludge present in the system in accordance with Attachment II.4.F.	Sample collection of liquids and sludge for laboratory testing and/or in-situ testing of sludge.
3	Upon satisfactory laboratory and/or field test results remove sludge and dispose of the sludge at a NMED-approved disposal facility.	All sludge in the system to be removed a utilizing vacuum/hydrovac truck.
4	Perform NORM testing on the oil heating tanks and exposed piping in accordance with Attachment II.4.F	Perform testing of tanks and exposed piping using a licensed Geiger Counter.
5	Upon satisfactory NORM testing results, remove tanks and exposed pipes and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove oil heating tanks, and exposed (i.e., above-ground) piping from the facility.
6	Perform testing on the concrete oil tank blocks in accordance with Attachment II.4.F.	Collect samples for laboratory analyses and/or field testing of the concrete blocks.
7	Upon satisfactory laboratory and/or field test results remove concrete blocks and dispose of at a NMED-approved disposal facility.	Remove all concrete blocks within the oil heating tank area.
8	Perform testing on the oil heating tank area base course in accordance with Attachment II.4.F.	Collect samples of the base course for laboratory analyses and/or field testing of the base course.
9	Upon satisfactory laboratory and/or field testing results remove oil heating tank area base course and dispose of at an NMED-approved disposal facility.	Remove base course in a manner that will not damage the underlying liner system.
10	Polyester containment liner to be thoroughly cleaned in-place using water.	Polyester liner to be thoroughly washed using a pressure washer unit.
11	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
12	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed from ponds utilizing vacuum truck.
13	Remove polyester liner.	Polyester liner to be cut into manageable sized pieces and removed from the pond.
14	Test polyester liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of the polyester liner.
15	Upon satisfactory laboratory and/or field test results dispose of polyester liner at an NMED-approved disposal facility.	Haul polyester liner with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
16	Expose underground oil heating piping.	Remove the soil above the oil heating piping (including piping running to the oil sales tanks) in a manner that will not damage the piping. **Note: Liquids in oil sales tanks must be removed prior to removal of piping
17	Test piping for NORM in accordance with Attachment II.4.F	Perform testing of piping using a licensed Geiger Counter.
18	Upon satisfactory NORM testing results, remove piping and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove piping from the facility.
19	Perform shallow soil sample collection of subgrade below oil heating tank area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
20	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
21	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Oil Sales Area Closure Procedures

Task No.	Task	Description
1	Remove all liquids from the oil sales tanks, the diesel tank, piping, and equipment dispose of the liquids at the BDI injection well.	All liquids in the oil sales tank to be removed and sold prior to facility closure. Note: The Diesel in the diesel tank will not be disposed of in the ponds
2	Test liquids in oil sales tanks and sludge present in the system in accordance with Attachment II.4.F.	Sample collection of liquids and sludge for laboratory testing and/or in-situ testing of sludge.
3	Upon satisfactory laboratory and/or field test results remove sludge and dispose of the sludge at a NMED-approved disposal facility.	All sludge in the system to be removed a utilizing vacuum/hydrovac truck.
4	Perform NORM testing on the oil sales tanks and exposed piping in accordance with Attachment II.4.F	Perform testing of tanks and exposed piping using a licensed Geiger Counter.
5	Upon satisfactory NORM testing results, remove tanks and exposed pipes and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove oil sales tanks, and exposed (i.e., above-ground) piping from the facility.
6	Perform testing on the concrete oil tank blocks in accordance with Attachment II.4.F.	Collect samples for laboratory analyses and/or field testing of the concrete blocks.
7	Upon satisfactory laboratory and/or field test results remove concrete blocks and dispose of at a NMED-approved disposal facility.	Remove all concrete blocks within the oil sales area.
8	Perform testing on the oil sales area base course in accordance with Attachment II.4.F.	Collect samples of the base course for laboratory analyses and/or field testing of the base course.
9	Upon satisfactory laboratory and/or field testing results remove oil sales area base course and dispose of at an NMED-approved disposal facility.	Remove base course in a manner that will not damage the underlying liner system.
10	Polyester liner to be thoroughly cleaned in-place using water.	Polyester liner to be thoroughly washed using a pressure washer unit.
11	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
12	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed utilizing vacuum truck.
13	Remove polyester liner.	Polyester liner to be cut into manageable sized pieces and removed from the pond.
14	Test polyester liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of the polyester liner.
15	Upon satisfactory laboratory and/or field test results dispose of polyester liner at an NMED-approved disposal facility.	Haul polyester liner with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
16	Expose underground oil sales piping.	Remove the soil above the oil sales piping (including piping running to the oil sales tanks) in a manner that will not damage the piping. **Note: Liquids in oil sales tanks must be removed prior to removal of piping
17	Test piping for NORM in accordance with Attachment II.4.F	Perform testing of piping using a licensed Geiger Counter.
18	Upon satisfactory NORM testing results, remove piping and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove piping from the facility.
19	Perform shallow soil sample collection of subgrade below oil sales tank area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
20	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
21	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Separation Tank Area Closure Procedures

Task No.	Task	Description
1	Remove all liquids from the separation tanks, piping, and equipment dispose of the liquids at the BDI injection well.	All liquids in the system to be removed a utilizing a vacuum truck and disposed of in the injection well (via the ponds).
2	Test sludge present in the system in accordance with Attachment II.4.F.	Sample collection of sludge for laboratory testing and/or in-situ testing of sludge.
3	Upon satisfactory laboratory and/or field test results remove sludge and dispose of the sludge at a NMED-approved disposal facility.	All sludge in the system to be removed a utilizing vacuum/hydrovac truck.
4	Perform NORM testing on the separation tanks and exposed piping in accordance with Attachment II.4.F	Perform testing of tanks and exposed piping using a licensed Geiger Counter.
5	Upon satisfactory NORM testing results, remove tanks and exposed pipes and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove separation tanks, and exposed (i.e., above-ground) piping from the facility.
6	Perform testing on the concrete oil tank blocks in accordance with Attachment II.4.F.	Collect samples for laboratory analyses and/or field testing of the concrete blocks.
7	Upon satisfactory laboratory and/or field test results remove concrete blocks and dispose of at a NMED-approved disposal facility.	Remove all concrete blocks within the separation tank area.
8	Perform testing on the separation tank area base course in accordance with Attachment II.4.F.	Collect samples of the base course for laboratory analyses and/or field testing of the base course.
9	Upon satisfactory laboratory and/or field testing results remove separation tank area base course and dispose of at an NMED-approved disposal facility.	Remove base course in a manner that will not damage the underlying liner system.
10	Polyester containment liner to be thoroughly cleaned in-place using water.	Polyester containment liner to be thoroughly washed using a pressure washer unit.
11	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
12	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed from tanks utilizing vacuum truck.
13	Remove polyester containment liner.	Polyester containment liner to be cut into manageable sized pieces and removed from the pond.
14	Test polyester containment liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of the polyester containment liner.
15	Upon satisfactory laboratory and/or field test results dispose of polyester containment liner at an NMED-approved disposal facility.	Haul polyester containment liner with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
16	Expose underground separation tank piping.	Remove the soil above the separation tank piping (including piping running to the amigo tank) in a manner that will not damage the piping. **Note: Liquids in amigo tank must be removed prior to removal of piping
17	Test piping for NORM in accordance with Attachment II.4.F	Perform testing of piping using a licensed Geiger Counter.
18	Upon satisfactory NORM testing results, remove piping and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove piping from the facility.
19	Perform shallow soil sample collection of subgrade below separation tank area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
20	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
21	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Filtered Water Tank Area Closure Procedures

Task No.	Task	Description
1	Test liquids present in the system in accordance with Attachment II.4.F.	Sample collection of liquids for laboratory testing and/or in-situ testing of sludge.
2	Upon satisfactory laboratory and/or field test results remove liquids and dispose of at the BDI injection well.	All liquids in the system to be removed a utilizing vacuum/hydrovac truck and disposed of in the injection well (via the ponds).
3	Perform NORM testing on the filtered water tanks and exposed piping in accordance with Attachment II.4.F	Perform testing of tanks and exposed piping using a licensed Geiger Counter.
4	Upon satisfactory NORM testing results, remove tanks and exposed pipes and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove filtered water tanks, and exposed (i.e., above-ground) piping from the facility.
5	Perform testing on the concrete tank blocks in accordance with Attachment II.4.F.	Collect samples for laboratory analyses and/or field testing of the concrete blocks.
6	Upon satisfactory laboratory and/or field test results remove concrete blocks and dispose of at a NMED-approved disposal facility.	Remove all concrete blocks within the filtered water tank area.
7	Perform testing on the filtered water tank area base course in accordance with Attachment II.4.F.	Collect samples of the base course for laboratory analyses and/or field testing of the base course.
8	Upon satisfactory laboratory and/or field testing results remove filtered water tank area base course and dispose of at an NMED-approved disposal facility.	Remove base course in a manner that will not damage the underlying liner system.
9	Polyester liner to be thoroughly cleaned in-place using water.	Polyester liner to be thoroughly washed using a pressure washer unit.
10	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
11	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed from utilizing vacuum truck.
12	Remove polyester liner.	Polyester liner to be cut into manageable sized pieces and removed from the pond.
13	Test polyester liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of the polyester liner.
14	Upon satisfactory laboratory and/or field test results dispose of polyester liner at an NMED-approved disposal facility.	Haul polyester liner with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
15	Expose underground filtered water tank piping.	Remove the soil above the filtered water tank piping in a manner that will not damage the piping.
16	Test piping for NORM in accordance with Attachment II.4.F	Perform testing of piping using a licensed Geiger Counter.
17	Upon satisfactory NORM testing results, remove piping and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove piping from the facility.
18	Perform shallow soil sample collection of subgrade below filtered water tank area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
19	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
20	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Settling Tanks Area Closure Procedures

Task No.	Task	Description
1	Remove all liquids from the settling tanks, piping, and equipment dispose of the liquids at the BDI injection well.	All liquids in the system to be removed a utilizing vacuum/hydrovac truck and disposed of in the injection well (via the ponds).
2	Test sludge and solids present in the system in accordance with Attachment II.4.F.	Sample collection of sludge and solids for laboratory testing and/or in-situ testing.
3	Upon satisfactory laboratory and/or field test results remove sludge and solids and dispose of at a NMED-approved disposal facility.	All sludge and solids in the system to be removed a utilizing vacuum/hydrovac truck.
4	Perform NORM testing on the settling tanks and exposed piping in accordance with Attachment II.4.F	Perform testing of tanks and exposed piping using a licensed Geiger Counter.
5	Upon satisfactory NORM testing results, remove tanks and exposed pipes and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove settling tanks, and exposed (i.e., above-ground) piping from the facility.
6	Perform testing on the concrete oil tank blocks in accordance with Attachment II.4.F.	Collect samples for laboratory analyses and/or field testing of the concrete blocks.
7	Upon satisfactory laboratory and/or field test results remove concrete blocks and dispose of at a NMED-approved disposal facility.	Remove all concrete blocks within the settling tank area.
8	Perform testing on the settling tank area base course in accordance with Attachment II.4.F.	Collect samples of the base course for laboratory analyses and/or field testing of the base course.
9	Upon satisfactory laboratory and/or field testing results remove settling tank area base course and dispose of at an NMED-approved disposal facility.	Remove base course in a manner that will not damage the underlying liner system.
10	Polyester liner to be thoroughly cleaned in-place using water.	Polyester liner to be thoroughly washed using a pressure washer unit.
11	Test wash waters in accordance with Attachment II.4.F	Sample collection of washwater for laboratory testing and/or in-situ testing of washwater.
12	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed from ponds utilizing vacuum truck.
13	Remove polyester liner.	Polyester liner to be cut into manageable sized pieces and removed from the pond.
14	Test polyester liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of the polyester liner.
15	Upon satisfactory laboratory and/or field test results dispose of polyester liner at an NMED-approved disposal facility.	Haul polyester liner with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
16	Perform shallow soil sample collection of subgrade below settling tank area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
17	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
18	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Bleach Tank Area Closure Procedures

Task No.	Task	Description
1	Remove all liquids from the bleach tanks, piping, and equipment dispose of the liquids at a NMED-approved disposal facility.	All liquids in the bleach tanks to be removed a utilizing vacuum/hydrovac truck.
2	Perform NORM testing on the bleach tanks and exposed piping in accordance with Attachment II.4.F	Perform testing of tanks and exposed piping using a licensed Geiger Counter.
3	Upon satisfactory NORM testing results, remove tanks and exposed pipes and recycle, sell, or dispose of at a NMED-approved disposal facility.	Remove bleach tanks, and exposed (i.e., above-ground) piping from the facility.
4	Perform testing on the concrete slab in accordance with Attachment II.4.F.	Collect samples for laboratory analyses and/or field testing of the concrete slab.
5	Upon satisfactory laboratory and/or field test results demolish concrete slab and dispose demolition debris of at a NMED-approved disposal facility.	Remove all elements of the concrete slab within the bleach tank area.
6	Perform shallow soil sample collection of subgrade below bleach tank area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
7	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
8	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Containment Sumps (Covered Below Grade Tanks) Closure Procedures

Task No.	Task	Description
1	Test liquids present in containment sumps in accordance with Attachment II.4.F.	Sample collection of liquids for laboratory testing and/or in-situ testing of liquids.
2	Remove all liquids from the containment sumps and dispose of the liquids at the BDI injection well.	All liquids in the containment sump to be removed a utilizing vacuum truck and disposed of in the injection well (via the ponds).
3	Test sludge present in the containment sumps in accordance with Attachment II.4.F.	Sample collection of sludge for laboratory testing and/or in-situ testing.
4	Upon satisfactory laboratory and/or field test results remove sludge and dispose of at a NMED-approved disposal facility.	All sludge in the containment sumps to be removed a utilizing vacuum/hydrovac truck.
5	Perform NORM testing on the containment sumps in accordance with Attachment II.4.F	Perform testing of containment sumps using a licensed Geiger Counter.
6	Upon satisfactory NORM testing results dispose of containment sumps at a NMED-approved disposal facility.	Remove sump tanks from the facility.
7	Perform shallow soil sample collection of subgrade below sump tank area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
8	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
9	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Sludge Solidification Basin Area Closure Procedures

Task No.	Task	Description
1	Test sludge present in basin in accordance with Attachment II.4.F.	Sample collection of sludge for laboratory testing and/or in-situ testing of sludge.
2	Upon satisfactory laboratory and/or field test results remove sludge from basin and dispose of at the BDI injection well.	Sludge to be removed from Basin utilizing vacuum or hydrovac truck and disposed of in the injection well (via the ponds).
3	Perform NORM testing on the basin in accordance with Attachment II.4.F	Perform testing of basin using a certified and calibrated Geiger Counter.
4	Upon satisfactory NORM testing results, demolish concrete slab and dispose demolition debris of at a NMED-approved disposal facility.	Remove all elements of the concrete solidification basin without damaging the underlying HDPE liner.
5	HDPE liner components to be thoroughly cleaned in-place using water.	HDPE liner to be thoroughly washed using a pressure washer unit.
6	Test wash waters in accordance with Attachment II.4.F	Sample collection of wash water for laboratory testing and/or in-situ testing of wash water.
7	Upon satisfactory laboratory and/or field test results remove wash water and dispose of at an NMED-approved disposal facility.	Liquids to be removed from ponds utilizing vacuum truck.
8	Remove HDPE liner.	HDPE liner components are to be cut into manageable sized pieces and removed from the pond.
9	Test primary HDPE liner components in accordance with Attachment II.4.F	Collect samples for laboratory analyses and/or field testing of HDPE liner components.
10	Upon satisfactory laboratory and/or field test results dispose of primary HDPE liner components at a NMED-approved disposal facility.	Haul HDPE liner components with appropriate special waste manifests to an NMED permitted and approved special waste disposal facility.
11	Perform shallow soil sample collection of subgrade below the solidification basin area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
12	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
13	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

Support Facilities and Equipment Closure Procedures

Task No.	Task	Description
1	Perform NORM testing on the main office building in accordance with Attachment II.4.F	Perform testing the main office building using a licensed Geiger Counter.
2	Upon satisfactory NORM testing results, clean as-needed and leave in-place.	Clean building and surrounding areas.
	Perform facility "spot" clean-up and testing.	Spot cleaning and testing for TPH, BTEX, RCRA 8 Metals, Major Cations and Anions, and Paint filter tests.
3	Inspect facility fencing integrity.	Inspect facility fence for any deficiencies that would impact security fencing.
4	If it is decided that the building is to be removed, demolish/remove the office building recycle, sell, or dispose of at a NMED-approved solid waste disposal facility.	Dismantle office building and haul to a NMED permitted and approved disposal facility.
5	Perform shallow soil sample collection of subgrade below the office building area.	Collect shallow soil samples using a spade shovel for laboratory analyses and/or field testing of subgrade soils.
6	Test subgrade soil samples in accordance with Attachment II.4.F	Analyze collected shallow soil samples via laboratory analyses and/or field testing as identified in Attachment II.4.F.
7	Upon satisfactory laboratory and/or field test results backfill any excavated areas to surrounding natural grades.	Fill in any excavated areas to natural ground elevations surrounding the area appropriately to minimize ponding.

ATTACHMENT II.4.F
SUMMARY OF REQUIRED TESTING

Summary of Required Testing (EPA Test Method)															
			TPH (418.1)	BTEX (8021B)	TCLP (1311)	NORM[1] (20.3.14 NMAC)	Chlorides (300.0)	RCRA 8 Metals (6010/6020/7470)	Major Cations and Anions (6010)	20.6.2.3103 NMAC Subsection A & B Constitutes	Corrosivity (1110)	Reactivity (Sec 7.3.3.2 & 7.3.4.1 SW 846)	Ignitability (1010/1030)	Paint Filter (9095A)	Receiving Disposal Facility Additional Requested Testing
BDI Unit	1	**Ponds**													
	1a	Liquids	X	X	X	X	X				X	X	X		X
	1b	Sludge	X	X	X	X	X				X	X	X	X	X
	1c	Wash Waters	X	X	X	X	X				X	X			X
	1d	HDPE Liner	X	X	X	X	X				X	X	X		X
	1e	Geonet	X	X	X	X	X				X	X	X		X
	1f	Geotextile	X	X	X	X	X				X	X	X		X
	1g	HDPE Pipe	X	X	X	X	X				X	X	X		X
	1h	Leak detection soil/aggregate	X	X	X	X	X				X	X	X		X
	1i	Underlying Soils	X	X				X		X					X
	2	**Receiving Tanks**													
	2a	Liquids	X	X	X	X	X				X	X	X		X
	2b	Sludge	X	X	X	X	X				X	X	X	X	X
	2c	Tanks, Pipes, & Equipment				X									X
	2d	Concrete Blocks	X	X	X	X	X				X	X	X		X
	2e	Base Course	X	X	X	X	X				X	X	X		X
	2f	Polyester Liner	X	X	X	X	X				X	X	X		X
	2g	Wash Waters	X	X	X	X	X				X	X	X		X
	2h	Underlying Soils	X	X				X	X						X
	3	**Oily Water Receiving Tanks**													
	3a	Liquids	X	X	X	X	X				X	X	X		X
	3b	Sludge	X	X	X	X	X				X	X	X	X	X
	3c	Tanks, Pipes, & Equipment				X									X
	3d	Concrete Blocks	X	X	X	X	X				X	X	X		X
	3e	Base Course	X	X	X	X	X				X	X	X		X
	3f	Polyester Liner	X	X	X	X	X				X	X	X		X
	3g	Wash Waters	X	X	X	X	X				X	X	X		X
	3h	Underlying Soils	X	X				X	X						X

Summary of Required Testing (EPA Test Method)															
			TPH (418.1)	BTEX (8021B)	TCLP (1311)	NORM[1] (20.3.14 NMAC)	Chlorides (300.0)	RCRA 8 Metals (6010/6020/7470)	Major Cations and Anions (6010)	20.6.2.3103 NMAC Subsection A & B Constitutes	Corrosivity (1110)	Reactivity (Sec 7.3.3.2 & 7.3.4.1 SW 846)	Ignitability (1010/1030)	Paint Filter (9095A)	Receiving Disposal Facility Additional Requested Testing
BDI Unit	4	**Oil Heating Tanks**													
	4a	Liquids	X	X	X	X	X				X	X	X		X
	4b	Sludge	X	X	X	X	X				X	X	X	X	X
	4c	Tanks, Pipes, & Equipment				X									X
	4d	Concrete Blocks	X	X	X	X	X				X	X	X		X
	4e	Base Course	X	X	X	X	X				X	X	X		X
	4f	Polyester Liner	X	X	X	X	X				X	X	X		X
	4g	Wash Waters	X	X	X	X	X				X	X	X		X
	4h	Underlying Soils	X	X				X	X						X
	5	**Settling Tanks**													
	5a	Liquids	X	X	X	X	X				X	X	X		X
	5b	Sludge/Solids	X	X	X	X	X				X	X	X	X	X
	5c	Tanks, Pipes, & Equipment				X									X
	5d	Concrete Blocks	X	X	X	X	X				X	X	X		X
	5e	Base Course	X	X	X	X	X				X	X	X		X
	5f	Polyester Liner	X	X	X	X	X				X	X	X		X
	5g	Wash Waters	X	X	X	X	X				X	X	X		X
	5h	Underlying Soils	X	X				X	X						X
	6	**Oil Sales Tanks**													
	6a	Liquids	X	X	X	X	X				X	X	X		X
	6b	Sludge	X	X	X	X	X				X	X	X	X	X
	6c	Tanks, Pipes, & Equipment				X									X
	6d	Concrete Blocks	X	X	X	X	X				X	X	X		X
	6e	Base Course	X	X	X	X	X				X	X	X		X
	6f	Polyester Liner	X	X	X	X	X				X	X	X		X
	6g	Wash Waters	X	X	X	X	X				X	X	X		X
	6h	Underlying Soils	X	X				X	X						X

Summary of Required Testing (EPA Test Method)															
			TPH (418.1)	BTEX (8021B)	TCLP (1311)	NORM[1] (20.3.14 NMAC)	Chlorides (300.0)	RCRA 8 Metals (6010/6020/7470)	Major Cations and Anions (6010)	20.6.2.3103 NMAC Subsection A & B Constitutes	Corrosivity (1110)	Reactivity (Sec 7.3.3.2 & 7.3.4.1 SW 846)	Ignitability (1010/1030)	Paint Filter (9095A)	Receiving Disposal Facility Additional Requested Testing
BDI Unit	7	**Filtered Water Tanks**													
	7a	Liquids	X	X	X	X	X				X	X	X		X
	7b	Sludge	X	X	X	X	X				X	X	X	X	X
	7c	Tanks, Pipes, & Equipment				X									X
	7d	Concrete Blocks	X	X	X	X	X				X	X	X		X
	7e	Base Course	X	X	X	X	X				X	X	X		X
	7f	Polyester Liner	X	X	X	X	X				X	X	X		X
	7g	Wash Waters	X	X	X	X	X				X	X	X		X
	7h	Underlying Soils	X	X				X	X						X
	8	**Bleach Tanks**													
	8a	Tanks, Pipes, & Equipment				X									X
	8b	Concrete basin	X	X	X	X	X				X	X	X		X
	8c	Underlying Soils	X	X				X	X						X
	9	**Concrete Sludge Solidification Basin**													
	9a	Liquids	X	X	X	X	X				X	X	X		X
	9b	Sludge	X	X	X	X	X				X	X	X	X	X
	9c	Wash Waters	X	X	X	X	X				X	X	X		X
	9d	Concrete	X	X	X	X	X				X	X	X		X
	9e	HDPE Liner	X	X	X	X	X				X	X	X		X
	9f	Underlying Soils	X	X				X	X						X
	10	**Containment Sumps**													
	10a	Liquids	X	X	X	X	X				X	X	X		X
	10b	Sludge	X	X	X	X	X				X	X	X	X	X
	10c	Tanks, Pipes, & Equipment				X									X
	10d	Underlying Soils	X	X				X	X						X

Summary of Required Testing (EPA Test Method)															
			TPH (418.1)	BTEX (8021B)	TCLP (1311)	NORM[1] (20.3.14 NMAC)	Chlorides (300.0)	RCRA 8 Metals (6010/6020/7470)	Major Cations and Anions (6010)	20.6.2.3103 NMAC Subsection A & B Constitutes	Corrosivity (1110)	Reactivity (Sec 7.3.3.2 & 7.3.4.1 SW 846)	Ignitability (1010/1030)	Paint Filter (9095A)	Receiving Disposal Facility Additional Requested Testing
BDI Unit	**11**	**Separation Tanks**													
	11a	Liquids	X	X	X	X	X				X	X	X		X
	11b	Sludge	X	X	X	X	X				X	X	X	X	X
	11c	Tanks, Pipes, & Equipment				X									X
	11d	Concrete Blocks	X	X	X	X	X				X	X	X		X
	11e	Base Course	X	X	X	X	X				X	X	X		X
	11f	Polyester Liner	X	X	X	X	X				X	X	X		X
	11g	Wash Waters	X	X	X	X	X				X	X	X		X
	11h	Underlying Soils	X	X				X	X						X
	12	**Support Facilities and Infrastructure**													
	12a	Structures				X									X
	12b	Spot Clean Up	X	X				X	X					X	X
	12b	Underlying Soils	X	X				X	X						X

ATTACHMENT II.4.G

TESTING LIMITS

- **WASTE DISPOSAL TESTING**
- **SWMF CLOSURE TESTING**
- **RELEASE TESTING**
- **POND AND PIT TESTING**

ATTACHMENT II.4.G – WASTE DISPOSAL

Title 19 – Natural Resources and Wildlife
Chapter 15 – Oil and Gas
Part 35 – Waste Disposal
Subsection 8 – Disposal of Certain Oil Field Waste at Solid Waste Facilities

Constituent	Method*	Limit
TPH (DRO and GRO)	EPA 418.1 or Method 8015M	1,000 mg/kg
TCLP	EPA Method 1311	Arsenic: 5 mg/l, Barium: 100 mg/l, Cadmium: 1 mg/l, Chromium: 5 mg/l, Lead: 5 mg/l, Mercury: 0.2 mg/l, Selenium: 1 mg/l, Silver: 5 mg/l
Paint Filter Test	EPA Method 9095A	No liquids pass through the paint filter over a 5-minute period.
Ignitability	EPA Method 1030	Nonflammable as established by EPA Test Method 1030
Corrosivity	EPA Method 1110	2 ≤ pH ≤ 12.5 Standard Units
Reactivity	To be determined by receiving Facility.	To be determined by receiving Facility.
NORM	20.3.14.1403 NMAC	C. NORM not otherwise exempted and equipment from oil, gas, and water production containing NORM are exempt from the requirements of this Subpart if the maximum radiation exposure reading at any accessible point does not exceed 50 microroentgens per hour (mR/hr) (0.5 mSv/hr), including background radiation levels. Sludges and scales contained in oil, gas and water production equipment are exempt from the requirements of this Subpart if the maximum radiation exposure reading within 1 cm of the surface of the sludge or scale does not exceed 50 microroentgens per hour (50 mR/hr) (0.5 mSv/hr), including background radiation levels. If the radiation readings exceed 50 mR/hr (0.5 mSv/hr), removable sludges and scales are exempt from the requirements of these regulations if the concentration of Radium 226, in a representative sample, does not exceed 30 picocuries per gram.

		D. NORM not otherwise exempted and equipment from gas processing, fractionation, and dry gas distribution containing NORM are exempt from the requirements of this Subpart [Part] if the removable surface NORM contamination does not exceed 1000 dpm/100 cm2 and otherwise conforms with the requirements of 1403.A [Subsection A., Section 1403 of 20.3.14.1403 NMAC]. Removable scale from gas processing fractionating, and dry gas distribution is exempt from the requirements of this Subpart [Part] if the concentration of Lead 210, in a representative sample, does not exceed 150 picocuries per gram.
Benzene		10 mg/kg
BTEX	EPA Method 8021B	500 mg/kg

Note: All analytical results will be compared to those of an un-impacted soil sample obtained from withing the facility boundary.

ATTACHMENT II.4.G – SWMF CLOSURE COMPARISON

Title 19 – Natural Resources and Wildlife
Chapter 15 – Oil and Gas
Part 36 – Surface Waste Management Facilities
Subsection 18 – Closure and Post Closure
Item (C) – Surface Waste Management Facility and Cell Closure

*Or other test methods approved by the division.
**Test Results compared to Practical Quantitation Limits (PQL) or natural background level, whichever is greater.
***This applies to releases of produced water or other fluids, which may contain chloride.

Constituent	Method*	PQL**	Background
TPH (DRO and GRO)	EPA 8015M	**	TBD
BTEX	EPA 8021B	**	TBD
Cations	EPA 6010B	**	TBD
Anions	EPA 300.0/ SM2320B	**	TBD
RCRA Metals	EPA 6010/6020/7470	**	TBD

TBD = Background sampling not yet conducted, concentration to be determined.

** PQLs and reporting limits will be established during the sampling analysis of the unimpacted background samples. PQLs can vary significantly across analytical laboratories due to factors such as the specific instrumentation used, analytical methods, laboratory procedures, and operator. Given these variations, the minimum concentration that a laboratory can reliably quantify will inherently differ between laboratories performing the same analysis. At the time of background sampling, it will be verified that the laboratory PQLs utilized are less than or equal to the established regulatory thresholds for each constituent being analyzed for.

ATTACHMENT II.4.G – RELEASE TESTING

Title 19 – Natural Resources and Wildlife
Chapter 15 – Oil and Gas
Part 29 – Release Notification
Subsection 12 – Remediation and Closure

Table I
Closure Criteria for Soils Impacted by a Release

Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/l TDS	Constituent	Method*	Limit**
<= 50 feet	Chloride***	EPA 300.0 or SM4500 Cl B	600 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
51 feet-100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
>100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	20,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

*Or other test methods approved by the division.
**Numerical limits or natural background level, whichever is greater.
***This applies to releases of produced water or other fluids, which may contain chloride.

ATTACHMENT II.4.G – POND AND PIT CLOSURE COMPARISON

Title 19 – Natural Resources and Wildlife
Chapter 15 – Oil and Gas
Part 36 – Surface Waste Management Facilities
Subsection 18 – Closure and Post Closure
Item (D) – Pond and Pit Closure

*Or other test methods approved by the division.
**Test Results compared to Practical Quantitation Limits (PQL) or natural background level, whichever is greater.
***This applies to releases of produced water or other fluids, which may contain chloride.

Constituent	Method*	PQL**	Background
TPH (DRO and GRO)	EPA 8015D	**	TBD
BTEX	EPA 8021B	**	TBD
20.6.2.3103 A&B NMAC Metals and other Inorganics	Var.	**	TBD

Var. = Analytical method and PQL vary by analyte for 20.6.2.3103 constituents
TBD = Background sampling not yet conducted, concentration to be determined
** PQLs and reporting limits will be established during the sampling analysis of the unimpacted background samples. PQLs can vary significantly across analytical laboratories due to factors such as the specific instrumentation used, analytical methods, laboratory procedures, and operator. Given these variations, the minimum concentration that a laboratory can reliably quantify will inherently differ between laboratories performing the same analysis. At the time of background sampling, it will be verified that the laboratory PQLs utilized are less than or equal to the established regulatory thresholds for each constituent being analyzed for.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ATTACHMENTS

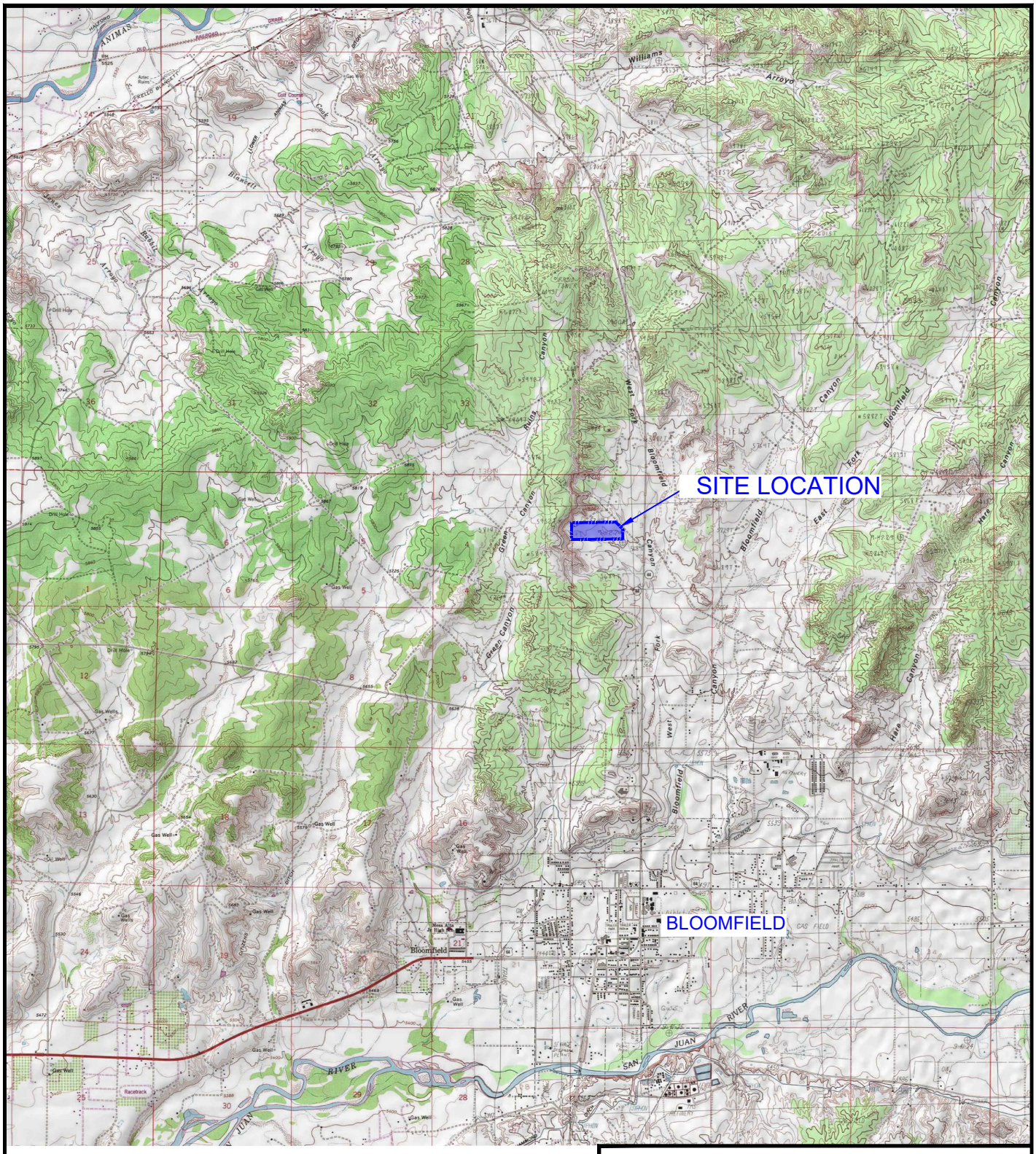
1.0 INTRODUCTION

Basin Disposal, Inc. (BDI) is an existing Surface Waste Management Facility (SWMF) providing oil field waste liquids (OFWL) disposal services. The existing BDI facility is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.36 NMAC, administered by the Oil Conservation Division (OCD) of the NM Energy, Minerals, and Natural Resources Department (NMEMNRD). This document is a component of the "Application for Permit Renewal" that proposes continued operations of the existing approved waste processing and disposal capabilities. The Facility is designed in compliance with 19.15.36 NMAC, and is operated in compliance with a Surface Waste Management Facility Permit issued by the OCD. The Facility is owned and operated by, Basin Disposal Inc.

BDI only accepts liquid waste from the production and exploration of oil fields in northwest New Mexico and the surrounding areas. The existing facility is organized in a pattern that allows for specific liquid waste acceptance, treatment, evaporation, or injection of clean liquid.

1.1 Site Location

BDI is located in unincorporated San Juan County on 27.77 acres entirely within Section 3, Township 29 North, Range 11 West approximately 3 miles north of the intersection of Highway 550 and 64 (**Figure II.5.1**). Coordinates for the approximate center of the BDI site are Latitude 36°45'19.92" and Longitude -107°58'58.73". The site is situated approximately 4 miles north of the San Juan River, and about 4.7 miles south of the Animas River on Crouch Mesa, about 500 feet and 400 feet in elevation above these respective river plains. The site occupies the West Fork of Bloomfield Canyon, an ephemeral drainage channel that drains south to the San Juan River. The site slopes gently to the east and southeast, from a maximum elevation of 5,750 feet to less than 5,700 feet. Detailed site characterization documentation is provided in **Volume IV**.



SITE LOCATION MAP

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

NOTE:
1. GEOGRAPHIC CENTER, 36° 45' 19.92" N -107° 58' 58.73" W

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE LOCATION.dwg
Date/Time:Jul. 07, 2022-11:14:37

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: SITE LOCATION.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.5.1
APPROVED BY: MWK	www.parkhill.com	

1.2 Facility Description

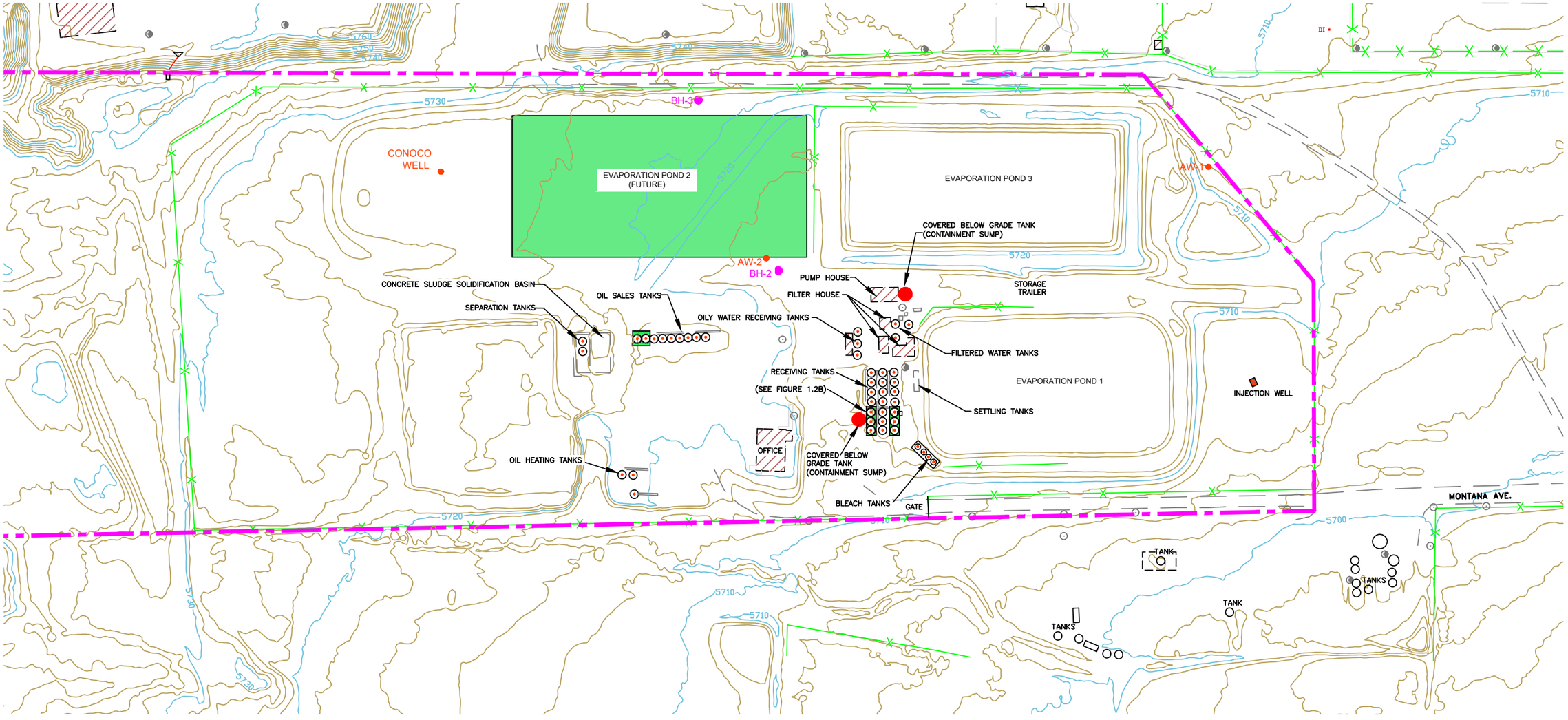
The existing BDI facility is comprised of 27.77 acres and is comprised of the following:

- 2 existing evaporation ponds (1 pending construction)
- 12 existing receiving tanks (6 pending construction)
- 4 existing oily water receiving tanks
- 3 existing skimmed oil tanks
- 3 existing oil heating tanks
- 3 existing settling tanks
- 7 existing oil sales tanks (2 pending construction)
- 3 existing filtered water tanks
- 4 existing bleach tanks
- 1 existing concrete sludge solidification basin
- 2 existing covered below grade tanks (containment sumps)
- 1 existing UIC Class II injection well for disposal of produced water
- 2 existing separation tanks
- Various support facilities including an office, a maintenance building, roads, and a storm water detention basin.

Oil field wastes are delivered to the BDI SWMF from oil and gas exploration and production operations in northwestern New Mexico and southwest Colorado. The Site Plan provided as **Figure II.5.2** identify the locations of the Disposal facilities, evaporation/storage ponds, and all structures. Perimeter of the site is surrounded by commercial/industrial businesses on three sides and buffered by a bluff on the west side of the Facility.

1.3 Purpose

This document has been prepared to address the requirements of 19.15.36.13.N NMAC which specify that each operator of a Surface Waste Management Facility must prepare and have available a Contingency Plan (the Plan). This Plan is designed to minimize hazards to fresh water, public health, or the environment from fires, explosions or an unplanned sudden or non-sudden release of contaminants or oil field waste to air, soil, surface water or ground water in conformance with 19.15.36.13.N NMAC. Applicable provisions of this Plan will be implemented immediately whenever there is a fire, explosion or release of contaminants or oil field waste constituents that could threaten fresh water, public health, or the environment. This Plan is supplemented by the H_2S Prevention and Contingency Plan (**Volume II.3**), as a cross-reference.



BOREHOLE LOCATIONS	
BH–2	LAT 36°45'20.54269"N (NAD 83) LONG 107°59'02.70950"W (NAD83) ELEV: 5717.98 (GROUND)
BH–3	LAT 36°45'22.92950"N (NAD 83) LONG 107°59'04.21563"W (NAD83) ELEV: 5727.46 (GROUND)
AW–1	LAT 36°45'22.01797"N (NAD 83) LONG 107°58'55.15402"W (NAD83) ELEV: 5717.85 (TOP OF CAP)
AW–2	LAT 36°45'20.58589"N (NAD 83) LONG 107°59'02.96163"W (NAD83) ELEV: 5722.20 (TOP OF CAP)

LEGEND

- PROPERTY BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 10 CONTOUR (EXISTING)
- ROADWAY (EXISTING)
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- STRUCTURE
- CONCRETE SLAB
- AW-1 ASSESSMENT WELL
- BH-3 BOREHOLE LOCATION
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)

NORTH

0 75' 150'

SITE PLAN

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/14/2025	CAD: SITE PLAN.dwg	PROJECT #: 1657.22	
DRAWN BY: DMI	REVIEWED BY: AY		FIGURE II.5.2
APPROVED BY: AY	www.parkhill.com		

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\SITE PLAN.dwg
Date/Time:Jan. 15, 2025-10:07:14

This Plan is organized for easy reference by BDI personnel, whom will be required to read it. Copies of this Plan will be maintained in a readily accessible location at the Site Office. In addition, copies of the Plan will be provided to the emergency agencies identified in **Table II.5.1**. Agencies listed on **Table II.5.1** will be invited to the site for the purposes of familiarizing themselves with the Facility and reviewing the Plan's contents with BDI (19.15.36.13.N(2) NMAC). As detailed in Section 10 of this Plan, whenever significant changes to the Plan are made, revised copies of the Plan will replace existing copies, and the agencies listed in **Table II.5.1** will be provided with the most recent Plan updates. Definitions specific to this Plan are provided in **Table II.5.2** as specified in 19.15.2.7 NMAC, and a more comprehensive list of definitions is included as **Table I.5** (**Volume I**).

2.0 EMERGENCY COORDINATORS

BDI has designated specific individuals with the responsibility and authority to implement response measures in the event of an emergency which may threaten freshwater, public health, or the environment per 19.15.36.13.N(3) NMAC. The Primary, Alternate, and On-site Emergency Coordinators (ECs; **Table II.5.3**) will be thoroughly familiar with aspects of this Plan; operations and activities at the BDI SWMF; location and characteristics of waste to be managed; the location of records within the Facility; and the Facility layout. **Table II.5.3** lists the names, designations, titles, and phone numbers for each EC.

The ECs are responsible for coordinating emergency response measures and have the authority to commit the resources required for implementation of this Plan. A designated EC is available to respond to emergencies 24 hours a day, 7 days a week. The BDI employee who identifies an emergency situation will contact an EC directly or via phone. Contact will be attempted with each EC (Primary, Alternate, and the On-site) until communication is achieved (**Table II.5.3**). Upon arrival at the scene of an emergency, the first EC to arrive will assume responsibility for initiating response measures. If more than one EC responds, authority is assigned to the highest-ranking EC.

TABLE II.5.1 - Emergency Response Agencies and Contacts

Agency/Organization	Emergency Number
1. Local Emergency Response Contacts	
San Juan County Emergency Management	505.334.7700
2. Fire	
Bloomfield Fire Department	911 or 505.632.6363
San Juan County Fire Department	911 or 505.334.1180
3. Police	
San Juan County Sheriff's Department	911 or 505.334.6107
New Mexico State Police	911 or 505.325.7547
4. Medical/Ambulance	
San Juan Region Medical Center 801 West Maple St. Farmington, NM 87401	911 or 505.609.2000
5. Response Firm	
Envirotech, Inc. 5796 Highway 64 Farmington, NM 87401	505.632.0615
6. OCD Emergency Response Contacts	
Oil Conservation Division 1000 Rio Brazos Aztec, NM 87410 Mobile Phone	 505.320.0243 505.320.0200
Oil Conservation Division 1220 South St. Francis Drive Santa Fe, NM 87505	505.476.3441
7. State Emergency Response Contacts	
Environmental Emergency 24 hr. (NMED)	505.827.9329
New Mexico Environment Department Solid Waste Bureau, Santa Fe	505.827.0197
8. Federal Emergency Response Contacts	
National Emergency Response Center (U.S. Coast Guard)	800.424.8802
Region VI Emergency Response Hotline (USEPA)	214.665.2222

To be posted prominently on-site

TABLE II.5.2 – Definitions [19.15.2.7.B. – W. NMAC]

Barrel:
shall mean 42 United States gallons measured at 60 degrees Fahrenheit and atmospheric pressure at the sea level. [19.15.2.7.B.(3) NMAC]

Division:
shall mean the New Mexico energy, minerals and natural resources department, oil conservation division. [19.15.2.7.D.(4) NMAC]

Fresh water:
(to be protected) includes the water in lakes and playas (regardless of quality, unless the water exceeds 10,000 mg/l TDS and it can be shown that degradation of the particular water body will not adversely affect hydrologically connected fresh ground water), the surface waters of streams regardless of the water quality within a given reach, and underground waters containing 10,000 mg/l or less of TDS except for which, after notice and hearing, it is found there is no present or reasonably foreseeable beneficial use that contamination of such waters would impair. [19.15.2.7.F.(3) NMAC]

Hazard to public health:
exists when water that is used or is reasonably expected to be used in the future as a human drinking water supply exceeds at the time and place of the use, one or more of the numerical standards of Subsection A of 20.6.2.3103 NMAC, or the naturally occurring concentrations, whichever is higher, or if a toxic pollutant as defined at Subsection WW of 20.6.2.7 NMAC affecting human health is present in the water. In determining whether a release would cause a hazard to public health to exist, the director investigates and considers the purification and dilution reasonably expected to occur from the time and place of release to the time and place of withdrawal for use as human drinking water. [19.15.2.7.H.(2) NMAC]

Oil field waste:
shall mean waste generated in conjunction with the exploration for, drilling for, production of, refining of, processing of, gathering of or transportation of oil, gas or carbon dioxide; waste generated from oil field service company operations; and waste generated from oil field remediation or abatement activity regardless of the date of release. Oil field waste does not include waste not generally associated with oil and gas industry operations such as tires, appliances or ordinary garbage or refuse unless generated at a division-regulated facility, and does not include sewage, regardless of the source. [19.15.2.7.O.(3) NMAC]

Release:
shall mean all breaks, leaks, spills, releases, fires or blowouts involving oil, produced water, condensate, drilling fluids, completion fluids or other chemical or contaminant or mixture thereof, including oil field wastes and gases to the environment. [19.15.2.7.R.(4) NMAC]

In the rare case that an EC cannot be contacted in an emergency, the BDI employee who identifies the situation should make every effort to follow the emergency procedures outlined in this Plan until an EC or emergency authority (local, state, or federal; **Table II.5.1**) arrives to assist or take control. The term "EC" as used throughout this Plan, references the responsible Emergency Coordinator at the scene of an emergency regardless of whether that EC is the Primary, Alternate, On-site EC, or EC designee. This Plan will be amended as described in Section 10.0, if the list of ECs changes.

TABLE II.5.3 - List of Emergency Coordinators

Primary Emergency Coordinator

Name:	Brett Lanier	Work Phone:	505.334.3013
Title:	General Manager	Mobile Phone:	505.419.5272

Alternate Emergency Coordinator

Name:	Paul Gurule	Work Phone:	505.632.8936
Title:	Plant Manager	Mobile Phone:	505.320.7499

Onsite Emergency Coordinator

Name:	Paul Gurule	Work Phone:	505.632.8936
Title:	Plant Manager	Mobile Phone:	505.320.7499

3.0 PREVENTION MEASURES

3.1 Waste Inspection and Screening

BDI accepts RCRA exempt liquid oil field wastes at the Site. BDI ultimately utilizes a Class II injection well to inject these fluids defined as "[Fluids] which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as hazardous waste at the time of injection". It is unlikely that defined hazardous wastes will be delivered to this Facility, and BDI has implemented a waste inspection and screening program at the Site Office to preclude acceptance of unauthorized wastes as described in the Oil Field Waste Management Plan (**Volume II.2**). A Waste Inspection Form is provided as **Attachment II.5.A**. It is possible that hazardous materials could become a concern if they arrive with other typical waste materials (19.15.36.13.N(6) NMAC). If this occurs, the generator will be notified and the entire load will be rejected and returned for proper management. The waste inspection and screening program has been established in order to identify hazardous materials before they become a health and safety liability. Other expected contaminants are discussed in subsections 4.1.1 and 4.1.2.

3.2 Fire Prevention and Preparedness

BDI has implemented a program of fire preventative and preparedness measures, as well as employee training. Preventive measures taken to avoid fires will include regular inspections of incoming vehicles to identify incompatible or problematic wastes, and indication of suspect loads. Response procedures can be found in **Table II.5.5**.

A list of available emergency response equipment is provided in **Table II.5.4** in accordance with the requirements of 19.15.36.13.N(4) NMAC. Control preparation procedures for potential fire emergencies include:

- Placement and maintenance of ABC-type fire extinguishers in structures and equipment.
- Implementation of a site-wide communication network to optimize mobilization of appropriate response personnel and equipment.
- Well established emergency response procedures found in this section, documented and posted at the Site Office and provided to each employee as part of the training program..

Employee fire prevention and preparedness training will include the following:

- Training of equipment operators to identify suspect incompatible problematic wastes loads and measures for mitigation.
- Training of site personnel in waste screening (see Section 3.1), flammables identification, etc.
- Training on fire response technique, notification procedures, fire response equipment, etc.

4.0 IMPLEMENTATION, ASSESSMENT, AND NOTIFICATION

The following subsections present a series of procedures for implementation, assessment, and notification of appropriate authorities in the unlikely event that a specific emergency develops (19.15.36.13.N(1) NMAC).

4.1 Implementation

This Contingency Plan will be implemented when an imminent or actual emergency situation develops that represents a potential impact to freshwater, public health, or the environment. Situations that could require implementation of this Plan include:

- fire/explosions
- release of contaminants or oil field waste constituents

TABLE II.5.4 - Emergency Response Equipment List

Equipment Description	Quantity	Location	Use(s)
10 lb ABC rated fire extinguisher	2	Site Office	Firefighting
10 lb ABC rated fire extinguisher	2	Trucks	Firefighting
10 lb ABC rated fire extinguisher	1	Heavy Equipment	Firefighting
20 lb ABC rated fire extinguisher	1	Oil Treating Tanks	Firefighting
20 lb ABC rated fire extinguisher	1	Concrete Slab	Firefighting
20 lb ABC rated fire extinguisher	1	Oil Sales Tanks	Firefighting
20 lb ABC rated fire extinguisher	1	Oil Separation Tanks	Firefighting
20 lb ABC rated fire extinguisher	1	Water Receiving Tanks 1-4	Firefighting
20 lb ABC rated fire extinguisher	1	Water receiving Tanks, Amigo	Firefighting
20 lb ABC rated fire extinguisher	1	Pump House	Firefighting
20 lb ABC rated fire extinguisher	1	Diesel Storage Tank	Firefighting
20 lb ABC rated fire extinguisher	1	Conoco SJGP Inlet Line	Firefighting
Loader	1	Facility	Berm Repair, Containment, Smother Fires
Bobcat	1	Facility	Berm Repair, , Containment, Smother Fires
Oil Booms	4	NE Corner of Pond	Oil Containment
SCBA	2	Site Office (1) Filter House (1)	Protective gear for employees (30 minute capacity)
Pair leather gloves	12	Assigned to Employees	Protective gear for employees
NOMEX Coveralls	84	Assigned to Employees	Protective gear for employees
Pair safety glasses	12	All employee workstations	Protective gear for employees
Round-point wood handle shovels	2	Shop	Contain spillage, putting out fires
Round-point wood handle shovels	2	20 um Filter House	Contain spillage, putting out fires
First Aid Kit	3	Site Office, Maintenance Shop, Oil Recycling Plant	First Aid
First Aid Kit	3	Facility Vehicles, *always available*	First Aid
Eye Wash Station	1	SE Corner of Water Receiving Tanks	First Aid
Portable 2-way radio	12	Base unit at Site Office, *minimum 1 in use during overnight hours*	Employee Communications
Visitor Sign-in/out Sheet	1	Main Site Office	Tracking Facility Visitors and Cell Phone Numbers
Cell Phones	4	General Manager Plant Manager Plant Supervisor Office Supervisor	Communications
Office Phone	1	Site Office	Communications
Mobile pressure washer	1	Mobile	Decontamination equipment
Personal H_2S Monitor	12	Assigned to Employees, *minimum 1 on site during overnight hours*	Personal H_2S Monitor
BioSystems MultiPro Handheld Monitor	1	Site Office / Receiving	H_2S Monitor for incoming loads and spot-checks
Stationary H_2S monitoring system	1	Facility	Monitoring
Water Truck	1	Facility	Dust Control / Fire Control
Inbound Load Log	1	Main Site Office	Recordkeeping
Daily employee log	1	Office	Recordkeeping
Traffic Cones	20	Facility	Traffic control
Non-reactive sorbent materials	10 bags	Facility Shop	Spill control
H_2S Plan	1	Site Office	H_2S Responses

Notes:

*Subject to change in response to waste receipts, regulatory requirements, technology, etc. Any changes to be made to this list will also be made to the equipment list found in the H_2S Prevention and Contingency Plan (**Volume II, Section 3**).*

Table II.5.5 lists the implementation, assessment, and notification procedures that will be followed in the case of an emergency. Assessment and notification are discussed further in subsections 4.2 and 4.3.

TABLE II.5.5 - Implementation, Assessment, and Notification Procedures for Releases (Breaks, Leaks, Spills, Releases, Fires or Blowouts)

1. **NOTIFY THE ECs:** The employee who first becomes aware of the emergency will immediately notify the Primary EC, and the Alternate EC and On-site EC if necessary. Notification will be made in person, via telephone, or via radio. The responding EC will assume full authority over the situation. Responders will then assist any affected personnel or customers if deemed safe to do so by the EC.
2. **ASSESS SOURCE, AMOUNT, AND EXTENT OF RELEASE:** The EC will assess the source, amount, and extent of spill or release, or released material resulting from a fire or explosion and determine possible hazards to fresh water, public health, or the environment. This will be completed through a combination of direct observation, review of surface waste management facility records, manifests, and if necessary by chemical analysis performed by a third party. Based upon this data gathered by the EC, the EC will then assess the direct and/or indirect hazards posed by the release.
3. **CONTROL MEASURES OR EVACUATION:** The EC's assessment of the emergency situation will be the basis for attempting to control the release or for implementing an evacuation, as well as for notifying the appropriate state and local authorities if their assistance is needed. **Table II.5.7** provides Evacuation Procedures and a Site Evacuation Plan is provided as **Figure II.5.3** (also refer to control measures in Section 5.0). Control measures typically utilized by facility personnel will include use of fire extinguishers for small fires, use of spill containment booms or oil absorbents for small spills, and use of earthmoving equipment and soil to contain spills. Appropriate state and local emergency responders will be contacted for any situation that the EC deems too large or hazardous for facility personnel to address.
4. **CONTAIN AND PREVENT SPREAD OF RELEASE:** If deemed safe by the EC, the appropriate BDI response equipment and personnel will be dispatched to the scene of the release. Personnel will initiate actions within their scope of training to contain the release and prevent the spread and/or windblown dispersion of the release. Depending on the type of release, appropriate equipment may include deployment of absorbents for spills, fire extinguishers, and/or earthmoving equipment. Any explosion at the facility will prompt the EC to contact local emergency responders for assistance. Fires will be evaluated by the EC and if small enough will be managed with the use of fire extinguishers. The EC will contact local emergency responders to address fires beyond the reasonable effectiveness of a fire extinguisher. Releases to soil or surface water will be evaluated by the EC and managed through the use of absorbents or the use of soil berms. If the EC determines the Release to soil or surface water is too hazardous or large for facility personnel, the EC will contact local emergency responders. The EC will contact local emergency responders for any releases to the air.
5. **NOTIFICATION OF EMERGENCY AUTHORITIES:** If the EC's assessment indicates a need to notify appropriate state and local emergency authorities, notification will be initiated immediately. In the ECs judgement, local emergency responders will be contacted generally when the hazard is too large or too dangerous for facility personnel to safely manage and any of the hazards exceed OSHA Level D pursuant to Appendix D of 1910.120. A list of state and local response

agencies with phone numbers is provided as **Table II.5.1**. OCD will be notified as necessary in accordance with **Table II.5.6** (Release Notification and Corrective Action).

6. **DIVERT TRAFFIC AND RESTRICT PERSONS FROM AREA:** BDI personnel not actively involved in release control operations will be restricted from the area until the area is determined to be safe by the EC and, if appropriate, the on-scene senior emergency authority (i.e., fire, police, hazard or other official). Vehicular traffic will be diverted away from release response activities until the situation is abated. Before resuming operations the EC will perform a complete inspection of the facility for leaks, pressure buildup in the high pressure filtering and discharge portion of the operation, gas generation, or ruptures in any valves, pipes or the tanks and associated equipment.

4.1.1 Fires/Explosions

Potential scenarios for fires include ignition of mobile equipment while operating or during servicing, or the ignition of oil-contaminated wastes. It is also possible that a chemically incompatible material may be transported to the Facility. Personnel are trained in the identification, prevention and control of fires or explosions and will respond to these incidents in accordance with **Table II.5.5**.

4.1.2 Spills/Releases

The spill or release of a hazardous or non-hazardous material not already discussed in **Volume II.3** at BDI is most likely to involve fuel or various vehicle maintenance materials (i.e., engine oil, hydraulic oil, antifreeze, etc.). Routine releases will be managed according to the protocol outlined in the Operations, Inspection, and Maintenance Plan (**Volume II.1**) which will be included with this plan maintained at the BDI facility. Management protocols for these releases can also be found in **Table II.5.5.** Other materials most likely to present a concern as a result of normal operations include petroleum products and petroleum wastes delivered to the Facility for processing or disposal. Spills involving these types of materials (fluids which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of inspection) could potentially occur during fueling, routine maintenance operations, during unloading or processing of waste, or in the event of an equipment failure such as a pipeline. In addition, the possibility exists for a spill that may be inadvertently transported to the Facility. Although highly unlikely, spill/releases from pond and tanks on-site are addressed in Section 5.2.

4.2 Assessment

In the event of a spill, release, fire, or explosion the EC will immediately identify the character, source, amount and extent of released materials, if possible; as well as assessing the potential impact to fresh water, public health, or the environment (19.15.36.13.N(10) NMAC). This will be conducted in accordance with **Table II.5.5.** Following an emergency, the EC may amend this Plan as necessary to protect fresh water, public health, or the environment (19.15.36.13.N(14) NMAC). The EC will also assess the circumstances of an emergency situation and determine the responses required to:

- implement immediate response procedures in accordance with **Table II.5.5**
- provide notifications to appropriate agencies
- implement appropriate recordkeeping procedures and Plan amendments

This assessment provides the EC with critical data needed to determine whether an evacuation is necessary, whether emergency authorities are needed, and whether BDI will attempt to control the release with on-site personnel and equipment. **Table II.5.6** provides OCD descriptions of "major" and "minor" releases which are applicable for assessment purposes per 19.15.29.7 – 11 NMAC. **Table II.5.6** also provides notification and reporting requirements under 19.15.29.10 NMAC. **Table II.5.5** provides protocols on how BDI will respond to fires, explosions, or releases to air, soil, surface or ground water. This Section prescribes additional detailed information regarding the Site Evacuation Plan, and Section 5.0 addresses control restrictions.

4.2.1 Site Evacuation Plan

Based upon the type of waste materials received at BDI and the rigorous operational safety protocols prescribed, the potential for a Facility evacuation is unlikely (19.15.36.13.N(5) NMAC). In an emergency situation, the EC is the individual responsible for determining when evacuation of BDI SWMF is required. Imminent or actual concerns that constitute a situation that could require evacuation include:

- A generalized fire or threat of fire that cannot be avoided.
- An explosion or the threat of explosion that cannot be averted.
- A major spill or leak that cannot be contained and constitutes a potential threat to human health or the environment.

TABLE II.5.6 - Part 29: Release Notification (1 of 3)

19.15.29.7 DEFINITIONS:

A. "Major release" means:
   (1) an unauthorized release of a volume, excluding gases, of 25 barrels or more;
   (2) an unauthorized release of a volume that:
      (a) results in a fire or is the result of a fire;
      (b) may with reasonable probability reach a watercourse;
      (c) may with reasonable probability endanger public health; or
      (d) substantially damages property or the environment;
   (3) an unauthorized release of gases exceeding 500 MCF; or
   (4) a release of a volume that may with reasonable probability be detrimental to fresh water.

B. "Minor release" means an unauthorized release, which is not a major release and is a volume greater than five barrels but less than 25 barrels; or for gases, greater than 50 MCF but less than 500 MCF.

C. "Responsible party" means the operator, as defined in 19.15.2 NMAC. Notwithstanding the foregoing, the division, in its sole discretion, may also consider a person causing the release, or controlling the location of the release as the responsible party.

D. "Wellstream" means the gas, oil, water, suspended constituents, or any combination thereof, which comes from the wellbore.

19.15.29.8 RELEASES:

A. Requirements. For all releases regardless of volume, the responsible party shall comply with 19.15.29.8 NMAC and shall remediate the release. For major and minor releases, the responsible party shall also comply with 19.15.29.9, 19.15.29.10, 19.15.29.11, 19.15.29.12 and 19.15.29.13 NMAC.

B. Initial response. The responsible party must take the following immediate actions unless the actions could create a safety hazard that would result in injury.
   (1) Source elimination and site security. The responsible party must take appropriate measures to stop the source of the release and limit access to the site as necessary to protect human health and the environment.
   (2) Containment. Once the site is secure, the responsible party must contain the materials released by construction of berms or dikes, the use of absorbent pads or other containment actions to limit the area affected by the release and prevent potential fresh water contaminants from migrating to watercourses or areas that could pose a threat to public health and environment. The responsible party must monitor the containment to ensure that it is effectively containing the material and not being degraded by weather or onsite activity.
   (3) Site stabilization. After containment, the responsible party must recover any free liquids and recoverable materials that can be physically removed from the surface within the containment area. The responsible party must deliver material removed from the site to a division-approved facility.
   (4) Remediation. The responsible party may commence remediation immediately.

19.15.29.9 RELEASE NOTIFICATION:

A. The responsible party must notify the division on form C-141 of a major or minor release occurring during the drilling, producing, storing, disposing, injecting, transporting, servicing or processing of oil, gases, produced water, condensate or oil field waste including regulated NORM, or other oil field related chemicals, contaminants or mixture of the chemicals or contaminants, in accordance with the requirements of 19.15.29 NMAC.

B. If state, federal or tribal lands are involved, the responsible party must send a copy of the form C-141 to the appropriate land managing agency including the state land office, the BLM or tribal authority, as applicable.

TABLE II.5.6 - Part 29: Release Notification (2 of 3)

19.15.29.10 RELEASE NOTIFICATION REPORTING REQUIREMENTS: The responsible party must notify the division of releases in 19.15.29.9 NMAC as follows.

A. Reporting a major release.
   (1) The responsible party must notify the division's environmental bureau chief and the appropriate division district office verbally or by e-mail within 24 hours of discovery of the release. The notification must provide the information required on form C-141.
   (2) The responsible party must also notify the appropriate division district office in writing within 15 days of discovering the release by completing and filing form C-141. The written notification must verify the prior verbal or e-mail notification and include additions or corrections to the information contained in the prior verbal or e-mail notification.

B. Reporting a minor release. The responsible party must notify the appropriate division district office in writing within 15 days of discovery of the release by completing and filing form C-141.

19.15.29.11 SITE ASSESSMENT/CHARACTERIZATION: After the responsible party has removed all free liquids and recoverable materials, the responsible party must assess soils both vertically and horizontally for potential environmental impacts from any major or minor release containing liquids.

A. Characterization requirements. The responsible party must submit information characterizing the release to the appropriate division district office within 90 days of discovery of the release or characterize the release by submitting a final closure report within 90 days of discovery of the release in accordance with Subsection E of 19.15.29.12 NMAC. The responsible party may seek an extension of time to submit characterization information for good cause as determined by the division. The responsible party must submit the following information to the division.
   (1) Site map. The responsible party must provide a scaled diagram that shows the potentially impacted area, significant surface features including roads and site infrastructure, location of borings, sample points, monitoring wells and subsurface features such as known pipelines to the extent known at the time of submittal including the source of information regarding subsurface features.
   (2) Depth to ground water. The responsible party must determine the depth to ground water where the release occurred. If the exact depth to ground water is unknown, the responsible party must provide a reasonable determination of probable ground water depth using data generated by numeric models, cathodic well lithology, water well data, published information or other tools as approved by the appropriate division district office. If the responsible party uses water well data, the responsible party must provide all pertinent well information.
   (3) Wellhead protection area. The responsible party must determine the horizontal distance from all known water sources within a half mile of the release including private and domestic water sources. Water sources are wells, springs or other sources of fresh water extraction. Private and domestic water sources are those water sources used by less than five households for domestic or stock purposes.
   (4) Distance to nearest significant watercourse. The responsible party must determine the horizontal distance to the nearest significant watercourse as defined in Subsection P of 19.15.17.7 NMAC within a half mile of any horizontal boundary of the release.
   (5) Soil/waste characteristics. The responsible party must determine the lateral and vertical extents of soil contamination, as follows.
      (a) If the release occurred within a lined containment area, the responsible party must demonstrate liner integrity after affected material is removed and the affected area of the liner is exposed and provide:
         (i) certification on form C-141 that the responsible party has visually inspected the liner where the release occurred and the liner remains intact and had the ability to contain the leak in question; and
         (ii) at least two business days' notice to the appropriate division district office before conducting the liner inspection.

TABLE II.5.6 - Part 29: Release Notification (3 of 3)

(b) If the responsible party is unable to demonstrate liner integrity or the release occurred outside of a lined containment area, the responsible party must delineate the release horizontally and vertically using Table I of 19.15.29.12 NMAC constituents or as required by Subparagraph (e) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC based on the type of release. The responsible party shall use one or more of the following soil sampling methods for characterization:
(i) NRCS Field Guide;
(ii) EPA SW-846;
(iii) ASTM Method 4547;
(iv) EPA 600; or
(v) or other division-approved methods.

(c) In addition to Subparagraph (b) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC, if the release occurred outside of a lined containment area and is in an area where depth to ground water is greater than 50 feet and less than or equal to 100 feet, the responsible party must delineate the vertical extent of the release to the greater of 600 mg/kg chloride or background chloride level, if:
(i) the release contains produced water that exceeds 10,000 mg/l of chloride (if the responsible party contends the fluid is less than 10,000 mg/l, the responsible party must provide current sample results to the division); and
(ii) the release is of an unknown quantity or results in greater than 200 barrels of unrecovered produced water.

(d) If the conditions are met in Subparagraph (c) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC, the responsible party must submit at least two soil samples for laboratory analysis from each borehole or sample point (highest observed contamination and deepest depth investigated). Field screening and assessment techniques are acceptable (headspace, titration, electrical conductivity [include algorithm for validation purposes], electromagnetics, etc.), but the sampling procedures must be clearly defined. The responsible party must submit copies of field notes attributable to field sampling and provide copies of the actual laboratory results including chain of custody documentation.

(e) If a known release of other oil field related chemicals occurs that is not included in Table I of 19.15.29.12 NMAC, and does not include oil, gas, produced water or other fluids from the wellstream, the standards for remediation shall be as follows:
(i) if the constituent appears on Table 1 of 40 C.F.R. 261.24(b), then that constituent shall be remediated according to 40 C.F.R. 261.24;
(ii) if the constituent is not identified in Table 1 of 40 C.F.R. 261.24(b), but is identified in the New Mexico environment department's Risk Assessment Guidance for Site Investigations and Remediation Volumes I and II (assessment), the division will determine the appropriate Assessment Volume and remediation shall occur pursuant to the assessment;
(iii) if the constituent is not identified in Items (i) or (ii) of Subparagraph (e) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC, the division shall consult with the responsible party to determine appropriate remediation of the release.

B. Unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.

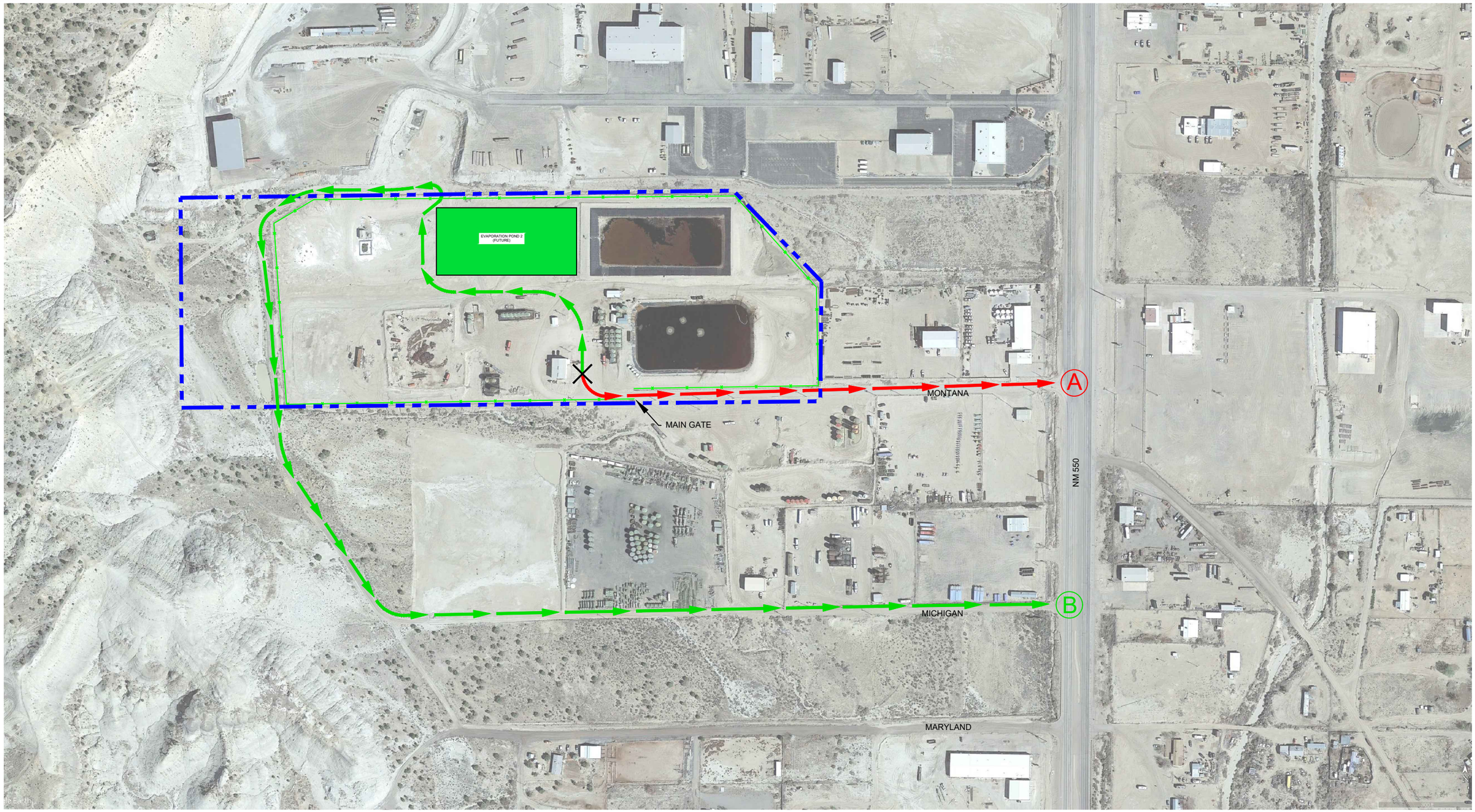
C. If the division determines that more information is needed to understand the character of the release and its potential impact on fresh water, public health and the environment, the division may request the responsible party submit additional information. Should the division request additional information, it must do so in writing to the responsible party within 30 days from receipt of the characterization report or remediation plan with what specific information the division is requesting and reasons why the additional information is needed. The responsible party has 14 days to respond to a written request for additional information. If the responsible party disagrees with the request for additional information, it may consult with the division, or file an application for hearing pursuant to 19.15.4 NMAC within 30 days of the issuance of the request for additional information.

When conditions warrant immediate evacuation of on-site persons (e.g., Facility personnel, transporters, visitors, vendors, etc.) everyone will be directed to proceed immediately to the Site Office for directions, BDI's primary evacuation route (**Figure II.5.3**). Everyone at the facility includes all employees logged in for work, visitors and vendors that are signed in at the main office, and all customers currently logged into the facility. Due to the relatively small facility size, the EC will also visually scan the facility for any persons that need to be evacuated. The EC will exercise good judgment and common sense in directing everyone to the primary evacuation route to exit the Facility, or if necessary, using the Secondary Evacuation Route (**Figure II.5.3**). Assembly points, primary and secondary evacuation routes are provided on **Figure II.5.3**. Driving directions to the nearest hospital are included as **Figure II.5.4**, and **Table II.5.7** provides detailed procedures for evacuating the Facility.

TABLE II.5.7 - Evacuation Procedures

When evacuation is required, the following procedures will be implemented:

1. Facility personnel (including BDI employees, visitors, vendors and haulers) will be alerted directly or using the Facility telephone, cellular telephones, or radios.
2. Vehicles delivering waste will be diverted away from the location of the emergency and routed towards the Facility exit via in-person discussion.(**Figure II.5.3**).
3. Stationary Facility operating equipment will be shut down and the entrance side of the site entrance gate will be closed.
4. Personnel will be directed to proceed to the Site Office, which will be the designated emergency response coordination location. (**Figure II.5.3**). The EC will identify missing persons at that time by referencing the inbound load log, visitor sign-in log, and the daily employee attendance log.
5. If the emergency involves the Site Office or its immediate environs, the intersection of Montana and SR 550 will be the secondary assembly point for facility personnel and evacuation routes will be utilized (as applicable). Additional inbound traffic will be informed of the evacuation verbally by the EC at this intersection and halted from proceeding further towards the BDI facility.
6. If the emergency precludes access to both the Site Office and the intersection of the NM 550 and Montana, personnel will evaluate the site via an auxiliary access gate at the north end of the facility. Montana will be blocked with traffic cones in this instance.
7. Once assembled, the EC will verify full evacuation by comparing the physical headcount to the inbound load log, the visitor sign in log, and the daily employee attendance log. BDI personnel will stand by to afford assistance, if and as needed, or to evacuate the Site.



NOTE: IMAGE REFERENCE GOOGLE EARTH 2019

LEGEND

- PROPERTY BOUNDARY
- FENCE LINE
- PRIMARY MEETING POINT (FACILITY OFFICE)
- PRIMARY EVACUATION ROUTE
- SECONDARY EVACUATION ROUTE
- A — PRIMARY EVACUATION POINT
- B — SECONDARY EVACUATION POINT

NORTH

0 150' 300'

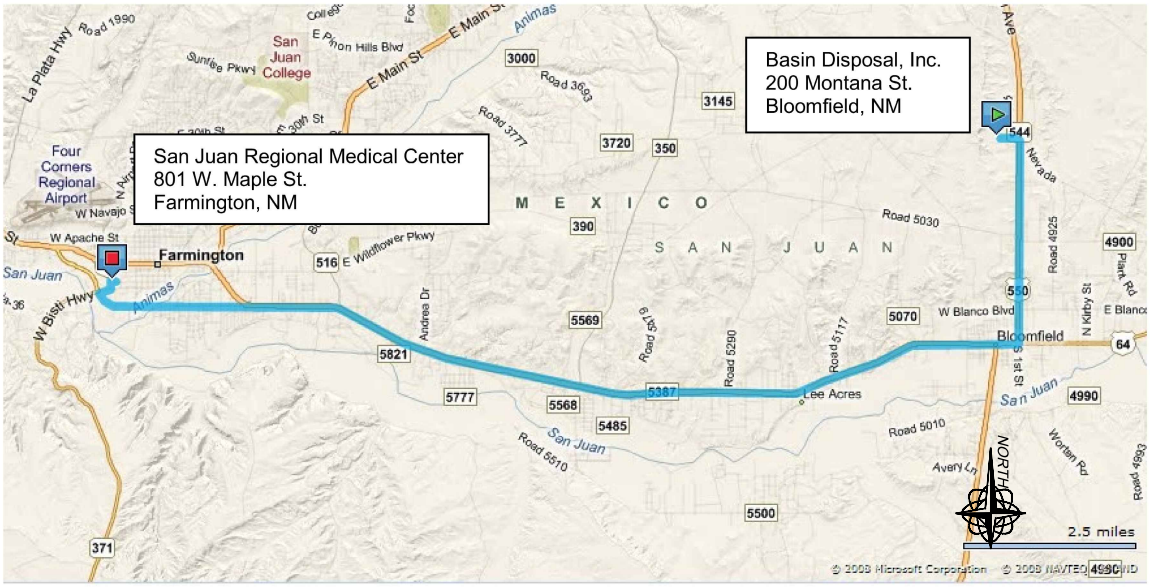
SITE EVACUATION PLAN

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL. INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/14/25	CAD: EVACUATION.dwg	PROJECT #: 43912.24
DRAWN BY: DMI	REVIEWED BY: ANY	FIGURE II.5.3
APPROVED BY: ANY	www.parkhill.com	

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\EVACUATION.dwg
Date/Time:Jan. 15, 2025-09:16:21



Driving Directions

FROM:
Basin Disposal, Inc.
200 Montana Street
Bloomfield, NM 87413
505.632.8936

TO:
San Juan Regional Medical Center
801 W. Maple Street
Farmington, NM 87401
505.325.5011

STEP	DIRECTIONS	DISTANCE	TOTAL DISTANCE
1	Starting at 200 Montana Street, bear right onto Nevada	0.3	0.3
2	Turn right onto US-550 South	3.0	3.3
3	Turn right to stay on US-64/US-550/W. Broadway Ave.	11.7	15.0
4	Keep straight onto E. Murray Dr.	1.2	16.2
5	Keep straight onto W. Murray Dr./US-64 West	1.0	17.2
6	Turn right onto SR-371 North/W. Pinon St.	0.2	17.4
7	Turn left to stay on SR-371/S. Lake St.	0.1	17.5
8	Turn right onto W. Maple St. and arrive at 801 W. Maple St.	0.1	17.6
		Estimated Travel Time = 29 minutes	

HOSPITAL LOCATION

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: HOSPITAL LOC.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.5.4
APPROVED BY: MWK	www.parkhill.com	

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\HOSPITAL LOCATION.dwg
Date/Time:Jul. 07, 2022-10:44:03

4.3 Notification of Authorities

The following discussion presents a series of procedures for implementation and notification of appropriate authorities in the event that a specific emergency develops (19.15.36.13.N(1) NMAC). Whenever there is an imminent or actual emergency, the EC will immediately notify on-site persons (Facility personnel, visitors, vendors, transporters, etc. identified using the office sign in logs and employee rosters) via in person discussion or on-site communication systems, as well as notify the appropriate state and local agencies as necessary (19.15.36.13.N(9) NMAC).

Table II.5.1 provides a list of emergency response agencies and contacts that may need to be notified depending on the type and extent of an emergency situation. **Table II.5.1** will be posted prominently near on-site telephones and provided as handouts to Basin Disposal personnel, customers, response personnel, etc. Fire, police, and medical authorities should be contacted as necessary in an emergency situation (**Table II.5.1**). The adjacent property users should be notified if there is an immediate threat to human health and the environment in the area, such as fire, explosions or H_2S release.

In the case of an H_2S emergency where H_2S ≥10 ppm site personnel will follow the H_2S plan in **Volume II.3**. However**,** notification will be provided to the New Mexico State Police, San Juan County Sheriff, and OCD (also listed on **Table II.5.1**):

- OCD:
  - Aztec, NM 505.320.0243
  - Mobile Phone 505.320.0200
  - Santa Fe, NM 505.476.3441
- New Mexico State Police 911 or 505.325.7847
- San Juan County Sherriff's Dept 911 or 505.334.6622
- San Juan County Emergency Management 505.334.7700
- Bloomfield Police Dept. 911 or 505.634.1062

BDI will also notify Envirotech, a third-party response specialist (if necessary) in Farmington (**Table II.5.1**) to provide response personnel, equipment, and supplies to mitigate the source of an H_2S reading of ≥10 ppm at the property boundary.

Table II.5.6 provides specific information regarding notification of OCD in the case of a release, which by definition includes "*breaks, leaks, spills, releases, fires or blowouts*" (**Table II.5.2**). In addition, **Table II.5.6** also provides OCD definitions for "major" and "minor" releases.

Additional State, Federal, and other local emergency contact numbers are provided and should be used as deemed appropriate to the situation by the EC. If the EC determines that the incident could threaten fresh water, human health, public safety or the environment beyond the limits of the Basin Disposal SWMF, the EC will notify the National Response Center and New Mexico Environment Department (NMED) spill emergencies at the following phone numbers (also included on **Table II.5.1**):

- National Response Center - 24 Hr. Hotline: 800.424.8802
- NMED Environmental Emergencies - 24 Hr. Hotline: 505.827.9329

The EC's notification to authorities must include the following information, as listed on the Emergency Response Record Keeping Form:

- name and telephone number of person reporting the incident
- name and address of Facility
- time and type of incident (e.g., hazardous material release, fire)
- name and quantity of material(s) involved, to the extent known
- extent of injuries, if any
- possible hazards to human health or the environment

If the release has the potential to go beyond the facility boundary, adjacent affected property owners will be notified of the incident in-person or by phone by the EC or his designee as soon as practicable.

Recordkeeping will be recorded as detailed in Section 8.0, and Plan Amendments accomplished in accordance with Section 10.0.

5.0 CONTROL PROCEDURES

This section provides information for the EC and Basin Disposal personnel regarding control procedures for different types of releases including fires, explosions, spills, and releases. The focus of the EC's initial efforts will be the protection of Facility personnel and those using the Facility. Control procedures should only be implemented by the EC and Basin Disposal personnel once an assessment of the situation and possible hazards to fresh water, public health, or the environment has been completed in accordance with **Table II.5.5**. Staff should not attempt to contain or control fires, explosions, spills, leaks, breaks, or blowouts that are

beyond the scope of their safety, training, and available response equipment. Once the appropriate state and local agencies arrive on scene, these authorities will take control of the situation, as appropriate.

The following subsections provide the EC and Basin Disposal personnel with specific control procedures for emergency situations. Note that in the case of an H_2S emergency situation, the procedures outlined in **Volume II.3** (Hydrogen Sulfide (H_2S) Prevention and Contingency Plan) should be followed.

5.1 Fire Control Guidelines

Fire response equipment available at BDI is identified on **Table II.5.4**. Fire control efforts will not be initiated until untrained personnel or customers are at a safe distance. The following general guidelines for fire control, outlined on **Table II.5.8**, will be followed in the event of a fire or explosion at Basin Disposal:

TABLE II.5.8 - Fire/Explosion: Control Guidelines

1. **INITIATE FIRE CONTROL:** The EC and BDI personnel will initiate response actions within the scope of their training to control the spread of the fire.
2. **P.A.S.S. METHOD:** Fires will generally be controlled with ABC-type fire extinguishers using the P.A.S.S. method (Pull pin, Aim nozzle, Squeeze trigger, Sweep from side to side to extinguish).
3. **SMOTHER METHOD:** Fires may also be smothered with cover materials (i.e., soil, caliche) when possible to extinguish. This can be accomplished with shovels or heavy equipment (i.e. Loader or Bobcat).
4. **AVAILABLE WATER SOURCES:** Fires may be doused or hosed with the water truck. Water will not be used on petroleum fires and the EC will contact local emergency response to manage petroleum fires.
5. **EVACUATE AND NOTIFY EMERGENCY AUTHORITIES:** If at any time the scope of the fire is beyond the capabilities of Basin Disposal personnel to contain and/or extinguish it, the EC will contact the local Fire Department or the San Juan County Emergency Management (**Table II.5.1**) for assistance. Personnel and visitors will be instructed to evacuate the area.
6. **MONITOR SITUATION:** The EC will monitor for leaks, pressure buildup, gas generation or rupture in valves, pipes or equipment as appropriate (19.15.36.13.N(11) NMAC).
7. **RECORDKEEPING/REPORTING:** The EC will complete an Incident Report Form (**Attachment II.5.B**) and maintain a copy in the Facility Operating Record, readily accessible for OCD inspection.

After responding to the incident, the EC will meet with involved personnel and response agencies, if appropriate, to assess the cause of the emergency and document the incident. The Incident Report Form (**Attachment II.5.B**) will reflect the details of the emergency and the resulting actions. The identified causative agent will be removed from the vicinity of the Facility if the possibility of re-ignition exists. Appropriate actions to prevent recurrence of fire will be developed and implemented. Personnel involved with the handling, transport, and placement of materials at the Facility will be informed of the resultant actions. Significant changes in operating protocol or procedures resulting from this meeting will be documented and added as an amendment to the Plan (see Section 10.0) as appropriate.

5.2 Spills/Release Control Guidelines

The waste inspection and screening program (see Section 3.0) has been implemented in order to intercept potential unauthorized wastes inadvertently delivered to BDI before they are unloaded at the Facility. Emergency equipment for response to releases includes, but is not limited to, the items provided in the Emergency Response Equipment List (**Table II.5.4**). Containment/control and characterization of potential releases will be conducted only after untrained personnel are at a safe distance. At that point, the EC will then implement the following procedures for managing existing or potential release (19.15.36.13.N(6) NMAC):

TABLE II.5.9 - Spill/Release: Control Guidelines

1. **INITIATE CONTROL:** The EC and BDI personnel will initiate response actions within the scope of their training to control the spill/release.
2. **REMOVAL OR SEGREGATION:** Determine if the material can be safely removed to a designated waste inspection/segregation area such as the concrete lined solidification basin for further evaluation. If the materials cannot be safely relocated, contain them for investigation and sampling by an accredited third party laboratory. If necessary, shut down operations until safe conditions are restored.
3. **CONTAIN RELEASE:** Attempt to contain the release to the smallest area possible. Examples of equipment available for spill containment to protect soil, surface water and ground water, are non-reactive sorbent materials, oil booms, sand, shovels and heavy equipment. Containment strategies will include the construction of soil berms if the spill is large enough to require it. Releases from transmission pipes outside of the tank containment areas will be investigated by BDI staff familiar with the pipeworks and the failed pipe will be isolated by closing valves adjacent to the failure. Releases to the air are discussed in **Volume II.3**. A third-party contractor (Envirotech) is also available for emergency response to augment efforts by on-site personnel.
4. **SAMPLING:** After isolating the contaminants and contaminated media, a third party professional

engineer familiar with the requirements of the facility permit and the regulations will be contacted to recommend if and what type of sampling should be completed to fully characterize the waste. If appropriate, isolate contaminants in the concrete lined solidification basin, or in designated leak-proof containers, until characterization is complete.

5. **CLEANUP:** After the release has been contained and necessary samples have been obtained, cleanup will be initiated by removing the spilled materials, sorbent materials, soils used for containment, etc.
6. **EQUIPMENT MONITORING:** Pertinent liners and equipment, including valves and pipes, will be monitored for leaks, pressure buildup, gas generation or rupture as appropriate (19.15.36.13.N(11) NMAC).
7. **VERIFICATION SAMPLING:** Dependent on the type of material spilled, the EC will assess requirements for cleanup verification including the collection of samples for appropriate analytical testing.
8. **DISPOSAL OR PROCESSING:** When visual and/or laboratory characterization is complete, determine appropriate processing or disposal procedures for that waste type. Send residuals for disposal to a Facility that is approved for managing that type of waste.
9. **EVACUATE AND NOTIFY EMERGENCY AUTHORITIES:** If at any time the scope of the spill/release is beyond the capabilities of the on-site personnel to contain and/or extinguish it, the EC will contact the local Fire Department (if flammable materials are involved in the spill) or San Juan County Emergency Management (**Table II.5.1**) for assistance. Personnel and visitors will be instructed to evacuate the area.
10. **RECORDKEEPING AND REPORTING:** The EC will complete an Incident Report Form (**Attachment II.5.B**) and maintain a copy in the Facility Operating Record, readily accessible for OCD inspection.

Immediately after an emergency situation, the EC will complete the reporting requirements found in 19.15.29.10 NMAC which can be found herein in **Table II.5.6**. The EC will then make arrangements for the segregation, storage, or disposal of recovered wastes, water, or contaminated materials resulting from the incident. An evaluation of the contamination will be carried out as soon as time permits to prevent future accidents. The Incident Report Form (**Attachment II.5.B**) will reflect the details of the emergency and the resulting actions.

Although operating procedures, roadways, unloading areas, and general areas surrounding the BDI SWMF will be maintained in an effort to minimize the potential for a release or spill of hazardous materials, provisions have been developed to improve procedures if an event warrants review and modification. After responding to the incident, the EC will meet with involved personnel to determine the cause of the spill. Appropriate actions to prevent its recurrence will be developed and implemented. Significant changes in operating protocol or procedures resulting from this meeting will be documented and added as an amendment to this Plan. Plan amendments will be documented and disseminated as outlined in Section 10.0, including OCD within 5 days.

5.3 Clean, Replace, and Inspect Equipment

Following an emergency incident, emergency response equipment used will be inspected, decontaminated/cleaned and made fit for re-use, or replaced as necessary, so that the equipment will be available when Facility operations resume. The inspection of equipment will take place before operations resume ensuring that each item is in proper working condition. This inspection will include a review of the Facility infrastructure to ensure that a potential hazard has not been created as a result of responding to the emergency. Prescribed procedures may include lock-out/tag-out on processing equipment until inspection and repairs can be completed. Remedial activities, as a result of this inspection, may include recharging of fire extinguishers, replacement of personal protective gear, restocking of disposable items, etc. The EC will verify that response equipment has been properly decontaminated and returned to its original location and is fit for future use.

6.0 STORAGE AND TREATMENT OF RELEASED MATERIALS

Spilled or otherwise contaminated materials will be containerized, stored and disposed of in accordance with applicable local, state and federal regulatory requirements; potentially including third-party services (i.e., Envirotech, Farmington, NM). Any materials determined to be hazardous either by manifest or by analytical sampling are outside the training and capabilities of BDI personnel and will be managed by a third party. RCRA exempt fluids will be managed by BDI personnel through the use of sorbents, dikes, and on-site soils. No oil field waste, which may be incompatible with the released material, will be treated, stored, or disposed of until cleanup procedures are complete (19.15.36.13.N.(12) and (13) NMAC). This will be accomplished by segregating the containerized and stored materials away from the active area and truck traffic handling oil field wastes.

7.0 EMERGENCY EQUIPMENT

The following sections describe emergency equipment that is available at BDI for responding to emergency situations. An Emergency Response Equipment List describing the equipment, quantity, location, and uses is provided as **Table II.5.4**.

7.1 Internal Communications

Communications at the BDI SWMF will be accomplished via cellular telephones, land lines, two-way radios, etc. These systems provide Facility personnel with immediate and redundant emergency notification capabilities, and the opportunity to receive instructions in the event of an emergency incident. Mechanical difficulties with the communications equipment will be promptly addressed. Internal communication devices are listed on **Table II.5.4**.

7.2 External Communications

The telephones located at BDI will have outside access in the event that notification of the local emergency response authorities is required (i.e., EMS, fire department, ambulance, etc.). In addition, key Facility personnel including the ECs, General Manager, etc., will carry cellular telephones for contacting each other, and outside agencies. The cellular telephones will also provide a backup means for contacting emergency authorities in the event they cannot be reached by conventional (hard-line) telephone. Site visitors, vendors and customers will be notified via in-person communication. Emergency phone numbers will be posted in the Facility Site Office and near on-site telephones for easy access by BDI personnel. External communication devices are also included on **Table II.5.4**.

7.3 Fire Prevention

Portable ABC-type fire extinguishers will be located in Facility vehicles and mobile equipment, as well as within the Site Office, and tank areas. The extinguishers are located at the site office, on facility vehicles, on facility heavy equipment, at the oil treating tanks, at the concrete solidification basin, at the oil sales tanks, at the oil separation tanks, at water receiving tanks 1-4, at the Amigo water receiving tank, at the pump house, at the diesel storage tank, and at the Conoco SJGP inlet line as listed in **Table II.5.4** and depicted on **Figure II.5.5.** Fire extinguishers will be maintained in accordance with state and local fire codes and regulations, and routinely serviced.

7.4 Personnel Protection, First Aid, and Safety Equipment

Personal protective equipment (PPE) necessary for preliminary response to a release of RCRA exempt fluids and materials will be maintained in on-site buildings (Facility Site Office, etc.) and/or issued to each employee (**Table II.5.4**). These items may include Tyvek suits, gloves, glasses, hearing protection, etc. BDI will utilize qualified third party services to respond to a release of hazardous materials.

BOREHOLE LOCATIONS	
BH–2	LAT 36°45'20.54269"N (NAD 83) LONG 107°59'02.70950"W (NAD83) ELEV: 5717.98 (GROUND)
BH–3	LAT 36°45'22.92950"N (NAD 83) LONG 107°59'04.21563"W (NAD83) ELEV: 5727.46 (GROUND)
AW–1	LAT 36°45'22.01797"N (NAD 83) LONG 107°58'55.15402"W (NAD83) ELEV: 5717.85 (TOP OF CAP)
AW–2	LAT 36°45'20.58589"N (NAD 83) LONG 107°59'02.96163"W (NAD83) ELEV: 5722.20 (TOP OF CAP)

LEGEND

- PROPERTY BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 10 CONTOUR (EXISTING)
- ROADWAY (EXISTING)
- FENCE (EXISTING)
- PERMITTED NOT YET CONSTRUCTED
- CULVERT
- STRUCTURE
- CONCRETE SLAB
- AW-1 ASSESSMENT WELL
- BH-3 BOREHOLE LOCATION
- TANKS
- LIGHT POLE (EXISTING)
- POWER POLE (EXISTING)
- COVERED BELOW GRADE TANK (CONTAINMENT SUMP)
- 1 FIRE EXTINGUISHER
- 2 OIL BOOM
- 3 SHOVEL
- 4 EYE WASH STATION
- 5 PORTABLE 2–WAY RADIO
- 6 OFFICE PHONE
- 7 H2S PLAN
- 8 HAND–HELD H2S MONITOR
- 9 NON–REACTIVE SORBENT MATERIALS

NORTH

0 75' 150'

EMERGENCY RESPONSE EQUIPMENT LOCATIONS

SURFACE WASTE MANAGEMENT
BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/27/2025	CAD: SITE PLAN.dwg	PROJECT #: 43912.24
DRAWN BY: DMI	REVIEWED BY: AY	FIGURE II.5.5
APPROVED BY: AY	www.parkhill.com	

Drawing:A:\2024\43912.24\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\EMERGENCY RESPONSE EQUIPMENT LOCATIONS.dwg
Date/Time:Jan. 27, 2025-08:08:49

First aid and safety equipment will be maintained at various locations at the BDI SWMF (**Table II.5.4**) and as depicted on **Figure II.5.5**. Safety equipment located at the Facility will include industrial first aid kits, emergency eye wash station, etc. First aid kits will be placed in the Facility Site Office and the BDI facility vehicles. An emergency eye wash station will also be located at the southeast corner of the water receiving tanks. Prominent signs will be placed identifying the location of health and safety equipment, and emergency response items (e.g., fire extinguishers).

7.5 Spill Response Equipment

Spill response equipment, including heavy equipment and hand-gear, will be stored at specific locations around the Facility (**Table II.5.4**). Heavy equipment includes the loader and the bobcat. Hand-gear includes oil booms, round point wooden handled shovels, non-reactive sorbent materials, and a mobile pressure washer.

8.0 RECORDKEEPING

The EC will be responsible for ensuring that emergency response actions are fully documented. The Incident Report Form (**Attachment II.5.B**) and the Incident Review Form (**Attachment II.5.D**) illustrates the information that will be recorded as a result of an emergency incident and related response action. This form will be signed by both the EC and the Facility Manager. Copies of the form filed for each incident will be retained as part of the Basin Disposal SWMF Operating Record.

In addition, in the case of an unauthorized release at the Basin Disposal SWMF, the OCD will be notified pursuant to 19.15.29 NMAC. As defined by OCD in **Table II.5.2**, a "*release*" is "*breaks, leaks, spills, releases, fires or blowouts involving crude oil, produced water, condensate, drilling fluids, completion fluids or other chemical or contaminant or mixture thereof, including oil field wastes and natural gases to the environment*" (19.15.2.7.R(4) NMAC). A major release (19.15.29 NMAC; **Table II.5.6**) includes *an unauthorized release of a volume in excess of 25 barrels; or of any volume which results in a fire, will reach a water course, may with reasonable probability endanger public health or results in substantial damage to property or to the environment, cause detriment to water or exceed the standards in 19.15.30 NMAC*. A major release requires both immediate verbal or e-mail notification (within 24 hours) as well as timely written notification to OCD (within 15 days) using OCD Form C-141 (**Attachment II.5.C**) relating to *Release Notification and Corrective Action*.

A minor release (**Table II.5.6**) is an unauthorized release of greater than 5 barrels but less than 25 barrels. A minor release requires timely written notice within 15 days of discovery. A copy of OCD Form C-141 is provided as **Attachment II.5.C**. Copies of the form filed for each incident will be retained as part of the BDI SWMF Operating Record.

9.0 COORDINATION AGREEMENTS

A copy of the Contingency Plan will be provided to the organizations identified in **Table II.5.1**. The Contingency Plan serves to familiarize each of the identified organizations with the operations of the Facility and types of emergencies and responses that may be required. Each agency will be encouraged to visit the Facility for purposes of assessing site operations and providing input regarding emergency response procedures (19.15.36.13.N.(2)-(7) NMAC).

10.0 PLAN AMENDMENT

The EC will be responsible for assuring updates to, or amendments of the Contingency Plan. Amendments to the Contingency Plan will be made within five working days in the event of the following (19.15.36.13.N(8) NMAC):

1. The Facility Permit is revised or modified.
2. The Plan fails in an emergency.
3. Modification to the Facility design, construction, operation, maintenance or other circumstances that changes the potential for fires, explosion, or releases of hazardous oil field waste constituents; or related changes in the appropriate emergency response.
4. The list of EC's changes.
5. The list of emergency equipment changes significantly.

The Contingency Plan amendments will be distributed to OCD and to each of the organizations identified in **Table II.5.1** with a cover letter highlighting substantive changes. Proposed changes will be accomplished in compliance with 19.15.36.13.N NMAC.

ATTACHMENT II.5.A

WASTE INSPECTION FORM/TICKET

BASIN DISPOSAL

30 Years of Environmental Health and Safety Excellence

200 Montana, Bloomfield, NM 87413
505-632-8936 or 505-334-3013
OPEN 24 Hours per Day

NO. 734937
NMOCD PERMIT: NM -001-0005
Oil Field Waste Document, Form C138
INVOICE:

DATE _____ DEL. TKT#. _____

GENERATOR: _____ BILL TO: _____

HAULING CO. _____ DRIVER: _____
(Print Full Name)

ORDERED BY: _____ CODES: _____

WASTE DESCRIPTION: ☒ Exempt Oilfield Waste ☐ Produced Water ☐ Drilling/Completion Fluids

STATE: ☐ NM ☐ CO ☐ AZ ☐ UT TREATMENT/DISPOSAL METHODS: ☒ EVAPORATION ☒ INJECTION ☒ TREATING PLANT

NO.	TRUCK	LOCATION(S)	VOLUME	COST	H2S	COST	TOTAL	TIME
1								
2								
3								
4								
5								

I, _____ representitive or authorized agent for the above generator and hauler hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination that the above described waste is RCRA Exempt Oil field wastes.

☐ Approved ☐ Denied ATTENDANT SIGNATURE _____

SAN JUAN PRINTING 08180188

ATTACHMENT II.5.B

INCIDENT REPORT FORM (TYPICAL)

Fax completed report within 24 hours to Basin Disposal, Inc. at 505-333-3898

INCIDENT REPORT FORM

Type of Incident and General Information

- ❑ Work related Injury / Illness
- ❑ Property Damage
- ❑ Vehicular Accident
- ❑ Unsafe Act / Near Miss
- ❑ Vandalism / Criminal Activity
- ❑ Other _____

Employee Name: _____ Job Title: _____

Date of Incident: _____ Time of Incident: _____ AM/PM

Location of Incident: _____

Unit# _____ Start of Shift:_____Weather:_____

Date and Time Reported to Management : Date:_____ Time:_____ AM/PM

Reported to: _____ Title:_____ Reported by:_____

What was the injury category of incident at the time it was first reported to management ?

[ ] N/A. BDI employee does not claim an injury associated with this incident
[ ] Notice Only of Injury, Declined Medical Treatment at this time
[ ] First Aid done on site, Declined Medical Treatment at this time
[ ] Medical Treatment. Transported by _____ to _____
[ ] Fatality, BDI employee

Employee's Description of Incident / Declaración del empleado de los hechos

THIS SECTION FILLED OUT BY EMPLOYEE

Were you injured ? *(Ud. se lastimó ?)* **Yes [ ]** **No [ ]**

Type of Injury: *(Tipo de lesión)* _____

Part of Body:_____ Left_____ Right_____
(Parte del cuerpo) *(Izq)* *(Der)*

Explain in your own words what happened. *(Explique en sus propias palabras lo que sucedió)*

_____

_____

_____

_____

_____

_____

_____

Employee Signature: (*Firma del empleado*) :_____

Date: (*Fecha*) _____

TO BE FILLED OUT BY BASIN DISPOSAL, INC. ACCIDENT INVESTIGATOR

Describe in order of occurrence the events leading to the accident and/or injury. Reconstruct the sequence of events that led to the accident.

_____

_____

_____

_____

_____

_____

_____

_____

Witnesses / Bystanders / Co-workers **Yes [ ] N/A (No Witnesses) [ ]**

Name: _____ Address: _____
Phone: _____ Workplace: _____
Was a Written Statement Obtained ? Yes [ ] No [ ]

Name: _____ Address: _____
Phone: _____ Workplace: _____
Was a Written Statement Obtained ? Yes [ ] No [ ]

Drug and Alcohol Post Accident Test

Is the BDI employee a D.O.T. regulated employee ? Yes [ ] No [ ]
Did the BDI employee receive a moving traffic violation ? Yes [ ] No [ ]
Were any of the vehicles involved towed away ? Yes [ ] No [ ]
Was "immediate medical treatment" required for anyone ? Yes [ ] No [ ]
Was a post accident drug/alcohol test performed ? Yes [ ] No [ ]
If so, was the D/A test conducted within 2 hours ? Yes [ ] No [ ] N/A [ ]

Investigated by: _____ (Waste Connections Employee)

Title: _____ Date: _____ Department: _____

CORRECTIVE ACTIONS. (Equipment, Practices, Environment, Retraining) Steps that have been, or will be taken to prevent recurrence:

_____

_____

_____

_____

_____

Corrective Action Completed ? ☐ YES Date Completed: _____

- I have been briefed on the corrective actions outlined above
- *Estoy consciente de las acciones correctivas mencionadas anteriormente en esta hoja*

_____

Employee's Signature / Date

REPORT REVIEWED AND CONCLUDED BY:

_____

Immediate Supervisor's Signature / Date

_____

Employee's Manager's Signature / Date

DISCIPLINARY ACTION ? ☐ YES ☐ NO
(Timely forward appropriate paperwork to BDI)

ATTACHMENT II.5.C

RELEASE NOTIFICATION AND CORRECTIVE ACTION

OCD FORM C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # *(assigned by OCD)*
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# *(if applicable)*

Unit Letter	Section	Township	Range	County

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Cause of Release		

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☐ The source of the release has been stopped.

☐ The impacted area has been secured to protect human health and the environment.

☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☐ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	_____ (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☐ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☐ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☐ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☐ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☐ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☐ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☐ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☐ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☐ Data table of soil contaminant concentration data
- ☐ Depth to water determination
- ☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ☐ Topographic/Aerial maps
- ☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature:_____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Form C-141
Page 5

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☐ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

ATTACHMENT II.5.D
INCIDENT REVIEW FORM

INCIDENT REVIEW FORM

Date of Incident: _____

Type of Incident:

- ☐ Fire
- ☐ Explosion
- ☐ Release to Air
- ☐ Release to Soil
- ☐ Release to Surface Water
- ☐ Release to Ground Water

List All Individuals and Companies Involved in the Incident

_____

_____

_____

List all Causes of the Incident

_____

_____

_____

_____

Describe how the EC completed the assessment to identify the character, exact source, amount and extent of released materials and assess possible hazards to fresh water, public health, or the environment that may result from the release, fire or explosion:

_____
_____
_____
_____
_____
_____

How Did BDI Respond to the Incident? Third Party Responders Utilized?

_____
_____
_____
_____

Describe any treatment, storage or disposal of recovered oil field waste or other material that resulted from the release, fire or explosion incident:

_____
_____
_____
_____

Describe how BDI's Contingency Plan can be improved or updated as a result of this incident:

_____
_____
_____
_____
_____

SIGNATURES

_____	_____
Emergency Coordinator	Facility Manager
_____	_____
Date	Date

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF Tables

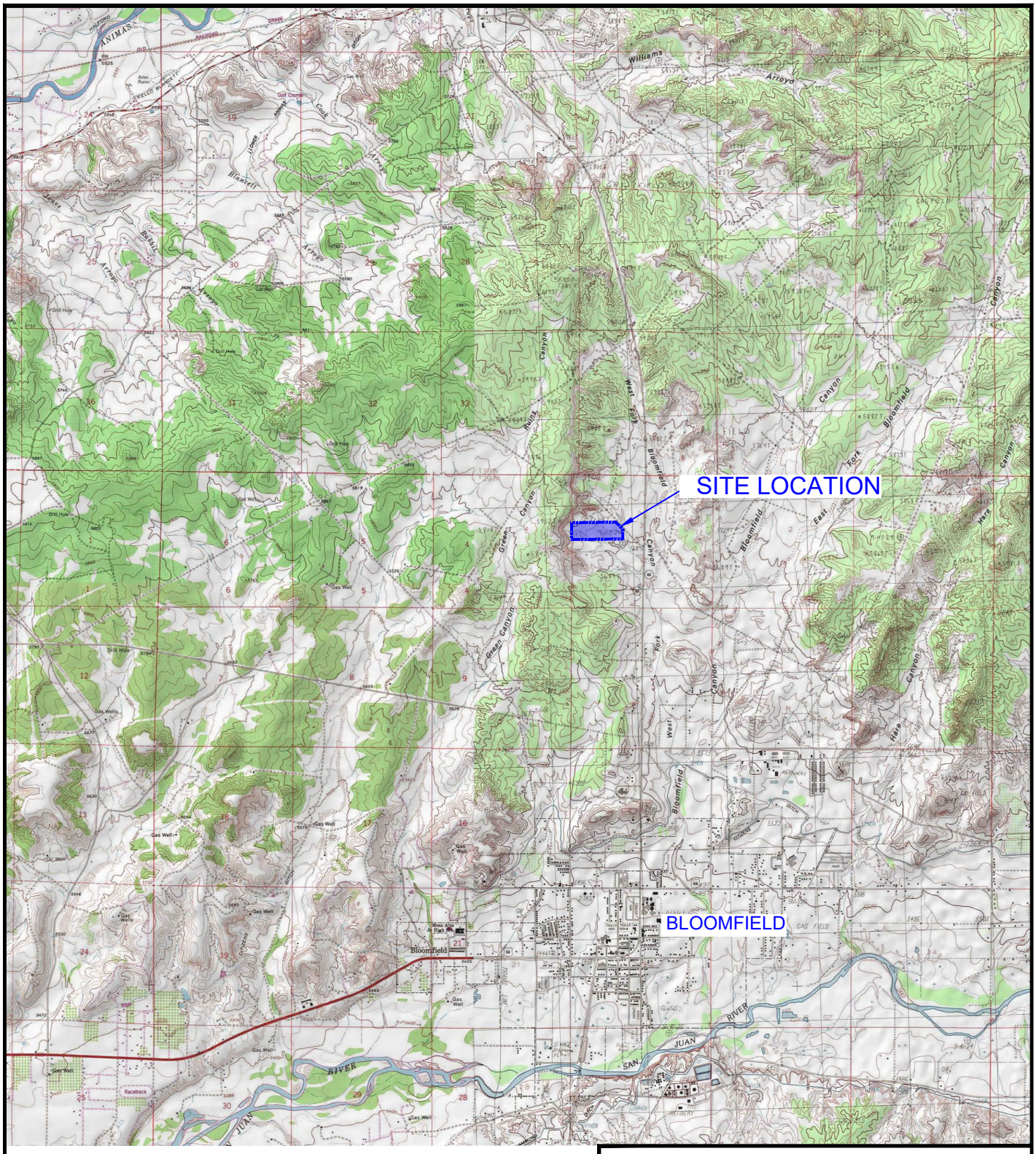
1.0 INTRODUCTION

Basin Disposal, Inc. (BDI) is an existing Surface Waste Management Facility (SWMF) providing oil field waste liquids (OFWL) disposal services. The existing BDI facility is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.36 NMAC, administered by the Oil Conservation Division (OCD) of the NM Energy, Minerals, and Natural Resources Department (NMEMNRD). This document is a component of the "Application for Permit Renewal" that proposes continued operations of the existing approved waste processing and disposal capabilities. The Facility is designed in compliance with 19.15.36 NMAC, and is operated in compliance with a Surface Waste Management Facility Permit issued by the OCD. The Facility is owned and operated by, Basin Disposal Inc.

BDI only accepts liquid waste from the production and exploration of oil fields in northwest New Mexico and the surrounding areas. The existing facility is organized in a pattern that allows for specific liquid waste acceptance, treatment, evaporation, or injection of clean liquid.

1.1 Site Location

BDI is located in unincorporated San Juan County on 27.77 acres entirely within Section 3, Township 29 North, Range 11 West approximately 3 miles north of the intersection of Highway 550 and 64 (**Figure II.6.1**). Coordinates for the approximate center of the BDI site are Latitude 36°45'19.92" and Longitude -107°58'58.73". The site is situated approximately 4 miles north of the San Juan River, and about 4.7 miles south of the Animas River on Crouch Mesa, about 500 feet and 400 feet in elevation above these respective river plains. The site occupies the West Fork of Bloomfield Canyon, an ephemeral drainage channel that drains south to the San Juan River. The site slopes gently to the east and southeast, from a maximum elevation of 5,750 feet to less than 5,700 feet. Detailed site characterization documentation is provided in **Volume IV**.



NOTE:
1. GEOGRAPHIC CENTER, 36° 45' 19.92" N -107° 58' 58.73" W

Drawing:A:\2022\1657.22\03_DSGN\01_DWG\050_CIVIL\02_CONTENT\FIGURES\SITE LOCATION.dwg
Date/Time:Jul. 07, 2022-11:19:32

SITE LOCATION MAP

SURFACE WASTE MANAGEMENT FACILITY
BASIN DISPOSAL, INC.
SAN JUAN COUNTY, NEW MEXICO

Parkhill
333 Rio Rancho Blvd. NE
Suite 400
Rio Rancho, New Mexico,
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 07/05/2022	CAD: SITE LOCATION.dwg	PROJECT #: 1657.22
DRAWN BY: DMI	REVIEWED BY: MWK	FIGURE II.6.1
APPROVED BY: MWK	www.parkhill.com	

1.2 Facility Description

The existing BDI facility is comprised of 27.77 acres and is comprised of the following:

- 2 existing evaporation ponds (1 pending construction)
- 12 existing receiving tanks (6 pending construction)
- 4 existing oily water receiving tanks
- 3 existing skimmed oil tanks
- 3 existing oil heating tanks
- 3 existing settling tanks
- 7 existing oil sales tanks (2 pending construction)
- 3 existing filtered water tanks
- 4 existing bleach tanks
- 1 existing concrete sludge solidification basin
- 2 existing covered below grade tanks (containment sumps)
- 1 existing UIC Class II injection well for disposal of produced water
- 2 existing separation tanks
- Various support facilities including an office, a maintenance building, roads, and a storm water detention basin.

Oil field wastes are delivered to the BDI SWMF from oil and gas exploration and production operations in northwestern New Mexico and southwest Colorado. The Site Plan provided as **Figure II.1.2** identify the locations of the Disposal facilities, evaporation/storage ponds, and all structures. Perimeter of the site is surrounded by commercial/industrial businesses on three sides and buffered by a bluff on the west side of the Facility.

1.3 Purpose

This Migratory Bird Protection Plan (the Plan) for BDI has been prepared in accordance with requirements of 19.15.36.13.I and 19.15.36.17.C(3) NMAC. This Plan describes the procedures for migratory bird protection at BDI. BDI is not proposing to install screening, netting or covering over the evaporation ponds. Instead, BDI is proposing an exception to utilize alternate procedures that have proven historically effective in discouraging bird propagation; and which fulfill the requirements of 19.15.36.13.I and 19.15.36.17.C(3) NMAC for comparable protection of migratory birds.

This Plan may be modified by BDI to address changes in site conditions following OCD review and approval of the proposed change. This Plan may also be amended at the request of OCD should conditions warrant. BDI will coordinate with USEPA Region 6 regarding this Plan if so directed by OCD.

2.0 MIGRATORY BIRD PREVENTION

2.1 Siting Perspective

Since opening the facility in the late 1980's, BDI has not had an issue with aquatic migratory birds congregating around nor landing in the either Evaporation Pond 1 or Evaporation Pond 3 since its construction. This is due primarily to the fact that the facility is in operation both day and night year-round and the lack of a food source at the facility. A records review and interviews with site personnel have confirmed no history of bird congregations or injuries resulting from the evaporation pond operation. Therefore, the Facility is in compliance with 19.15.36.17.C.(3).

2.2 Human and Mechanical Intervention

Basin Disposal is manned by at least two employees 24 hours per day, 7 days per week, and 52 weeks per year. Plant Managers and employees are trained to make hourly inspection rounds making note of any migratory bird activity in or surrounding the evaporation ponds. In addition to these routine hourly inspections, the Site Office is situated in a manner where Pond #1 (existing) is one hundred (100) percent visible, and Pond #3 (existing) is eighty (80) percent visible, which ensures 24 hour observation of migratory bird activity. Undeveloped Pond #2 will also be eighty (80) percent visible from the Site Office upon completion. BDI will continue to make round-the-clock hourly inspection rounds noting any migratory bird activity. Should BDI discover migratory bird activity, the frequency of inspections and scare tactics will be increased to alleviate the roosting of the birds.

In order to prevent oil sheen accumulation on the surface if the ponds [19.15.36.17.C.(1) NMAC], BDI on a consistent basis throughout each working day, removes visible oil layers from the evaporation ponds. This is accomplished by using booms to bring the oil sheen to the banks of the ponds which is then removed by vacuum trucks and returned to the skimmer tanks.

The typical operations do not lend the facility to migratory bird congregation. The site is open 24 hours per day, 7 days per week, and 364 (± 1) days per year. During this time, the spray evaporation systems are in full operation, truck traffic is constantly coming and going from the facility, pumps are transferring waters to and from the ponds, and normal operational human activity during inspections is constantly in motion.

3.0 MIGRATORY BIRD LANDING CONTINGENCY

3.1 Migratory Bird Rescue

In the unlikely event that a bird lands on a pond and becomes contaminated, Facility employees will immediately utilize a boat and side ropes to retrieve the bird. Upon retrieval, Facility employees will transport the bird to a local veterinary clinic for treatment. If only lightly soiled, oil may be removed by BDI personnel using bird rescue procedures adapted from those of the International Bird Rescue Research Center (www.bird-rescue.org) which are provided in **Table II.6.1**.

3.2 Screening and Netting

Although it is highly unlikely the BDI Facility will have a migratory bird issue based on the described preventative methodology and lack of suitable habitat and food, BDI is committed to the protection of migratory birds. Should migratory bird landings become an ongoing concern, BDI will implement more aggressive techniques, such as netting or screening, after review and discussion with OCD and qualified wildlife experts.

TABLE II.6.1 - Bird Rescue Protocol (Typical)

a. The bird's entire body is immersed in a one percent solution of Dawn and warm water (warm enough to approximate the bird's internal body temperature. Once wet, the bird is unable to thermo regulate) by one person while a second vigorously agitates the water into the bird's feathers.
b. A WaterPik® filled with the same solution is used to clean the head.
c. A soft toothbrush and cotton swabs are used to loosen dried oil around the head and eye area.
d. When the water becomes dirty, the bird is moved to a second pan. The washing process is repeated as often as necessary.
e. The bird is considered clean when the tub of water is clear and free of oil.
f. The bird is moved to another pan of clean warm water for rinsing.
g. A WaterPik filled with the warm water is used to clean the head.
h. When the water becomes soapy, the bird is moved to a second pan. The rinsing process is repeated as often as necessary to remove the remaining soap.
i. The bird is considered rinsed when no soap is visible in a fresh pan of water.
j. After wash and rinse, the cleaned bird is placed in a protective net-bottomed pen. As it rests, the bird will begin to preen its own feathers back into place. The complete realignment of feathers in a tight overlapping pattern creates a waterproof seal.
k. The bird is fed a nutritious food mixture to assure proper nourishment, plenty of fluids, as well as vitamins and medications, and is allowed free access to food.
l. The bird is released when it is stable, healthy, and completed preening. The bird shall be taken to a local veterinary clinic for examination prior to release.

Permit Application

FOR RENEWAL

Basin Disposal, Inc.
OCD Facility Permit No.: NM-1-0005
San Juan County, New Mexico

VOLUME III:
ENGINEERING DESIGN AND CALCULATIONS

Submitted To:

New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505
505.476.3440

Prepared For:

Basin Disposal, Inc.
200 Montana Street
Bloomfield, NM 87413
505.632.8936

Prepared By:

Parkhill
333 Rio Rancho Blvd, Suite 400
Rio Rancho, NM 87124
505.867.6990

November 2019 (Updated March 2025)

Parkhill Project #: 01165722

Parkhill

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

Basin Disposal, Inc. (BDI) is an existing Surface Waste Management Facility (SWMF) providing oil field waste liquids (OFWL) disposal services. The existing BDI facility is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.36 NMAC, administered by the Oil Conservation Division (OCD) of the NM Energy, Minerals, and Natural Resources Department (NMEMNRD). This document is a component of the "Application for Permit Renewal" that proposes continued operations of the existing approved waste processing and disposal capabilities. The Facility is designed in compliance with 19.15.36 NMAC, and is operated in compliance with a Surface Waste Management Facility Permit issued by the OCD. The Facility is owned and operated by, Basin Disposal Inc.

BDI only accepts liquid waste from the production and exploration of oil fields in northwest New Mexico and the surrounding areas. The existing facility is organized in a pattern that allows for specific liquid waste acceptance, treatment, evaporation, or injection of clean liquid.

1.2 Site Location

BDI is located in unincorporated San Juan County on 27.77 acres entirely within Section 3, Township 29 North, Range 11 West approximately 3 miles north of the intersection of Highway 550 and 64 (**Figure II.1.1**). Coordinates for the approximate center of the BDI site are Latitude 36°45'19.92" and Longitude -107°58'58.73". The site is situated approximately 4 miles north of the San Juan River, and about 4.7 miles south of the Animas River on Crouch Mesa, about 500 feet and 400 feet in elevation above these respective river plains. The site occupies the West Fork of Bloomfield Canyon, an ephemeral drainage channel that drains south to the San Juan River. The site slopes gently to the east and southeast, from a maximum elevation of 5,750 feet (ft) to less than 5,700 ft. Detailed site characterization documentation is provided in **Volume IV**.

1.3 Facility Description

The existing BDI facility is comprised of 27.7 acres and is comprised of the following:

- 2 existing evaporation ponds (1 pending construction)
- 12 existing receiving tanks (6 pending construction)
- 4 existing oily water receiving tanks
- 3 existing skimmed oil tanks
- 3 existing oil heating tanks
- 3 existing settling tanks
- 7 existing oil sales tanks (2 pending construction)
- 3 existing filtered water tanks
- 4 existing bleach tanks
- 1 existing concrete sludge solidification basin
- 2 existing covered below grade tanks (containment sumps)
- 1 existing UIC Class II injection well for disposal of produced water
- 2 existing separation tanks
- Various support facilities including an office, a maintenance building, roads, and a storm water detention basin.

Oil field wastes are delivered to the BDI SWMF from oil and gas exploration and production operations in northwestern New Mexico and southwest Colorado. The Site Plan provided as **Figure II.1.2** identify the locations of the Disposal facilities, evaporation/storage ponds, and all structures. Perimeter of the site is surrounded by commercial/industrial businesses on three sides and buffered by a bluff on the west side of the Facility.

2.0 DESIGN CRITERIA

This Section, “Engineering Design” is provided as a summary of the engineering design elements for BDI. The Engineering Design has been developed in accordance with the Oil and Gas Rules. More specifically, 19.15.36.17.A NMAC requires an “Engineering Design Plan” for evaporation, storage, treatment and skimmer ponds. In addition, the construction standards for these facilities are also addressed in compliance with 19.15.36.17.B NMAC. The engineering design also addresses the requirements of 19.15.36.13.M NMAC pertaining to the control of run-on and run-off from the 25-year, 24 hour design storm (**Volume III.4** and **Permit Plans**; **Attachment III.1.A**).

The **Permit Plans** included in **Volume III.1** are provided at a reduced scale and depict the originally permitted engineering design criteria for the Facility. The same drawings were submitted to the OCD with the December 2008 Application for Renewal and Modification as a full-size (24 x 36-inch) plan set, OCD approved the Application in May 2010. The List of **Permit Plans** is provided with the master Table of Contents. These **Permit Plans** were signed and sealed by I. Keith Gordon, P.E., a New Mexico Professional Engineer who is a specialist in environmental engineering and waste

containment design. These designs will be supplemented by "Construction Plans and Specifications" sealed by a qualified NM PE prior to installation of the undeveloped Pond 2 and associated structures.

3.0 POND DESIGN STANDARDS

The design for Pond 2 is identical to the developed Pond 3, except that all of the Pond 2 elements are exactly 10 ft higher than the same components in Pond 3 (**Permit Plan; Attachment III.1.A**). Pond 2 is approximately 425 ft (E-W) by 210 ft (N-S) as measured at the centerline of the surrounding berms, for a footprint of 2 acres ±. The floor of the pond is designed with a 2% slope to facilitate drainage in the leak detection system to the two sumps situated on the south sidewall.

Because the berms have a uniform top elevation, the 2% floor slope creates a pond depth that ranges from a maximum of 11 ft to a minimum of just less than 8 ft. Maintaining a high water elevation of 5,727.5 in Pond 2 will provide a freeboard of 3.5 ft in each pond. This is more than adequate to meet the 3 ft minimum freeboard standard; while also accommodating the minimal impact potential of rainfall or wave action (**Volume III.5**). The resultant capacity of the pond is approximately 9.5 acre-feet, not including freeboard, below the maximum 10 acre feet volume prescribed by 19.15.36.17.B.(12) NMAC.

Section 5.0 (Pond Construction) and **Volume III.2** (CQA Plan) provide documentation on the installation of berms, soil subgrade, and geosynthetics. Exceeding the standards specified in 19.15.36.17.B.(4) NMAC, both the exterior and interior sidewalls of Ponds 2 have design slopes of 3:1. The top platform of the berms surrounding Pond 2 has a design width of 10 ft, which is more than adequate for the 2 ft anchor trench shown on the **Permit Plans** (**Attachment III.1.A**).

4.0 LINER SYSTEM

A double liner and leak detection system is designed for each pond. An alternate liner system is being proposed that meets the requirements of 19.15.36.17.B(9) NMAC and has a demonstrated track record for long-term waste containment performance. The alternate liner system consists of a 200-mil HDPE geonet leak detection layer instead of the prescribed two feet of compacted soil and collection piping. The pond liner system consists of from top to bottom:

- 60-mil HDPE primary liner
- 200-mil HDPE geonet leak detection layer

- 60-mil HDPE secondary liner
- GCL under the leak detection sumps
- 6-in. compacted soil subgrade

HDPE material is proposed for the liners and leak detection layer as HDPE has proven to be the preferred material for waste containment facilities due to its durability and resistance to degradation by waste constituents. **Volume III.3** provides documentation regarding HDPE material compatibility in compliance with 19.15.36.17.B(3) NMAC.

An additional layer of 60 mil HDPE (22.5 ft x 60 ft ±) welded at the seams, will be added above the primary liner, where active wastewater discharge will occur (**Permit Plan**). This will protect the liner from excessive hydrostatic force or mechanical damage, and external discharge lines shall not penetrate the liner.

The CQA Plan (**Volume III.2**) provides the most current technical specifications for the geosynthetics. The leak detection system layer design for BDI Pond 2 consists of a 200 mil geonet specifically prescribed for these applications (**Permit Plan**). With a design transmissivity of 1×10^{-3} m^2/sec, it will provide fluid flow potential superior to the prescriptive leak detection layer of 2 ft of pervious soils [19.15.36.17.B.(9) NMAC].

Both the underlaying 60 mil HDPE secondary liner, the 200-mil geonet leak detection layer, and the overlaying 60 mil HDPE primary liner, slope at 2% to the 2 leak detection sumps located in Pond 2 (**Permit Plan**). Fluids collected in the leak detection layer, which encompasses the entire 2 ± acre footprint for the pond, are directed with the 2% slope to one of the two leak detection sumps located on the south sidewall (**Permit Plan**). Each of the sumps is approximately 2 ft deep, as measured from the secondary liner to the primary liner. The sumps consist of ¾ inch to 2 inch dia. pre-qualified select aggregate installed on a geotextile cushion placed over the secondary liner. Classification criteria for the aggregate are specified in the CQA Plan (**Volume III. 2**), which state that it not be angular (i.e., sharp edges which could damage the liners) or calcareous (which could degrade over time). In addition, each sump will be equipped with a secondary liner consisting of a geosynthetic clay liner (GCL), beneath the secondary liner as shown on **Permit Plan**. The purpose of the GCL is to provide a composite liner for temporary storage in the leak detection system, and GCL installation/CQA specifications are included in the CQA Plan (**Volume III.2**).

The fluids potentially collected in the leak detection sumps will be monitored and removed through the sidewall riser pipes that do not penetrate the secondary liner in compliance with 19.15.36.17.B.(9) NMAC. The piping is demonstrated to resist degradation by the waste constituents as documented in **Volume III.3**.

Piping will consist of min. 4 inch diameter SDR 11 HDPE; and will be perforated or slotted for the bottom 2 ft depth within the sump (i.e., 6 ft length at 3:1 slope). HDPE piping has shown superior characteristics for waste containment applications. **Table III.1.1**. The details in the **Permit Plans** reflect the deployment of SDR 11 HDPE piping for the leak detection sump riser pipes.

TABLE III.1.1 – HDPE Sump Riser Pipe

CHARACTERISTIC	4'' DIA. LEAK DETECTION RISER PIPES SDR 11 HDPE
Dimension Ratio	11.0
Method of Joining	Welded
Manning's Number (n)	0.010
Outside Diameter (in)	4.500[2]
Min. Wall Thickness (in)	0.409[2]
Tensile Strength (psi)	5,000
Modulus of Elasticity (psi)	130,000
Flexural Strength (psi)	135,000

Notes:
*PolyPipe, A-4 (**Attachment III.1.G**)*

HDPE or geonet layers will be placed beneath the beveled edge of the perforated riser in the sump profile to a minimum thickness of 200 mil to prevent potential liner damage (**Permit Plan**). Solid HDPE piping will extend from the riser pipe above the sumps to the permanent riser shown on **Permit Plan**. Clean select sand will be placed in the sidewall riser trench between the primary and secondary liners to provide structural stability of the solid riser pipe system and support for the primary liner (**Permit Plan**).

Fluid in the Ponds will protect the floor and lower sidewall liner by providing ballast and deflecting sunlight (i.e., UV rays). The upper sections of sidewall liner are secured by the anchor trench (Section 3.0). Although the freeboard zone of the sidewall liner will be exposed to the elements, recent research indicates that exposed HDPE in similar environments has a functional longevity in excess of 25 years (**Attachment III.1.B**). Parkhill has inspected several water storage ponds in New Mexico and has found exposed geomembrane liners to be functionally intact after over 30 years.

5.0 DRAINAGE DESIGN

The **Permit Plans**, show the stormwater management systems that will be employed to manage both run-on and run-off for the BDI Facility. The design event, pursuant to 19.15.36.13.M NMAC (i.e., 25-year, 24 hour storm) will be managed by a series of drainageways that surround the proposed Pond 2 improvements; and capture stormwater from other on-site areas. A Stormwater Detention Basin was installed as shown on **Permit Plan**; and the Stormwater Management Plan is included in **Volume III.4.** The surrounding berms have a maximum exterior slope of 3:1, and an average height of less than 10 ft, minimizing the potential for soil erosion. The drainageways and Detention Basin and will be regularly inspected and cleaned out as necessary.

6.0 POND CONSTRUCTION

Detailed Construction Plans and Technical Specifications were prepared for BDI Pond 3 , and submitted to pre-qualified Liner Installation Contractor(s) for quotes. The berm construction, floor grading/compaction, and geosynthetics installation will be subject to the rigorous CQA standards specified in **Volume III.2**.

OCD was provided a major milestone schedule in advance of construction; and notified via e-mail/phone at least 3 working days prior to the installation of the primary liner in compliance with 19.15.36.17.B.(10) NMAC. An Engineering Certification Report, sealed by a Professional Engineer with expertise in geotechnical engineering, was submitted to OCD in August 2009 documenting compliance of completed construction with the Permit, regulatory requirements, industry standards, and plans and specification.

The Engineering Design (**Permit Plans**) deliberately provides a “sustainable” configuration that does not require import of off-site soils. The materials equation provides a balance between soils excavation (i.e., pond floors) and fill for the sidewalls. The in-situ and on-site fills soil will be pre-qualified in accordance with the CQA Plan (**Volume III.2**). At least one Standard Proctor Density test will be conducted in the laboratory for each pond footprint or change in subgrade material. These tests will be the basis for field density measurements during construction (i.e., 90% Standard Proctor Density) conducted at a minimum frequency of 4 tests/acre/lift.

Fill for the berms will be placed in horizontal compacted lifts that do not exceed 12 inch in thickness. The subgrade surface will be inspected to confirm the absence of any deleterious materials, abrupt changes in slope, evidence of erosion, etc. The compliance of the completed subgrade construction shall be confirmed prior to secondary liner installation, and documented in the Engineering Certification Report.

The 60 mil HDPE secondary liner shall be installed in direct contact with the prepared and certified subgrade in accordance with the CQA Plan (**Volume III.2**). Installation of the geonet; and construction of the geotextile, aggregate and riser pipes in the sumps will follow. The installation of all soil and geosynthetic components will meet or exceed the requirements of 19.15.36.17.B.(5) NMAC, as detailed in the CQA Plan. Finally, the primary liner will be constructed, and all three liner/leak detection system elements (i.e., secondary, geonet, primary) will be secured in the common anchor trench (**Permit Plans).** The anchor trench will be carefully backfilled with select on-site soils compacted to 90% of Standard Proctor Density by mechanical and/or hand-tamping devices (CQA Plan). Documentation will be provided in the Engineering Certification Report submitted to OCD upon completion of construction.

7.0 POND OPERATION

Detailed plans for the operation of Ponds are prescribed in **Volume II.1**, "Operations, Maintenance, and Inspection Plan". Essentially, it is anticipated that some fluids will accumulate in the leak detection sumps as a result of condensation, construction water, etc. As described in **Volume II.1**, the leak detection sumps will be monitored at least monthly for the presence of fluids, which may be extracted and tested when the level in the sump(s) exceeds 24 inch. The Pond allows for isolation of potential leaks into 4 drainage basins, facilitating necessary evaluation or repair.

8.0 TANK SECONDARY CONTAINMENT

Two (2) additional oil sales tanks and six (6) receiving tanks are permitted but not constructed. Detailed operations of the tanks are prescribed in **Volume II.1,** "Operations, Maintenance, and Inspection Plan". The new tanks were permitted to be constructed with an underlying continuous 30-mil polyester bermed liner system, extended from the existing system and designed to capture any fluids within the watershed of Pond 1 (**Attachment III.1.C**).

The current secondary containment liner in the tank area is a 30-mil polyester liner (XR-5 8130 Reinforced Geomembrane). In the extension of the secondary containment within the tank area, a 30-mil polyester was installed to allow welding between compatible materials (i.e., between the existing liner and the additional liner). The use of the XR-5 8130 Reinforced Geomembrane in the tank area is primarily based on the chemical compatibility and puncture resistance of the material compared to either PVC or HDPE material. The chemical resistance of the XR-5 material exceeds the chemical compatibility of either PVC or HDPE to hydrocarbon products (see Chemical Resistance Chart, Page 13, "Technical Data and Specifications for XR Geomembranes", **Attachment III.1.H**). Since PVC material has marginal chemical resistance in a hydrocarbon environment, physical properties of the XR-5 geomembrane (**Attachment III.1.H**) are compared to 60-mil HDPE geomembrane (**Attachment III.1.I**) as shown in **Table III.1.2**:

TABLE III.1.2 - Physical Properties
XR-5 8130 Reinforced Geomembrane and 60-mil HDPE Geomembrane

PROPERTY	XR-5 8130	60-MIL HDPE
Thickness	30-mil	60-mil
Tear Strength	40 lbs	42 lbs
Puncture Resistance	275 lbs	108 lbs
Break Strength	400 lbs/in	228 lbs/in
Break Elongation	25%	700%
Hydrostatic Resistance	800 psi	> 450 psi
Hydraulic Conductivity	1×10^{-12} cm/sec	2×10^{-13} cm/sec
Seam Properties		
Shear Strength	500 lbs	120 lbs/in
Peel Strength	40 lbs/2 in	91 lbs/in

The necessary storage capacity for the interconnected tank/containment system is sufficiently managed by the existing lined volume of Pond 1. In the unlikely event of a total catastrophic failure of all affected storage units, the contents of the tanks will gravity flow into Pond 1, which has a lined storage capacity of 100,000 ± bbl (excluding freeboard). When the freeboard is included, the storage capacity of Pond 1 is over 135,000 bbl, which results in a net surplus of over 25,000 bbl. The entire volume of the receiving tanks, after installation of the six additional tank's surplus will be 8900 bbl, such that the net excess capacity is over 16,000 bbls. Thus, **Pond 1 will hold the entire volume of the receiving tanks within the required permanent freeboard of 3'.**

Attachment III.1.D provides details for the containment area construction to be completed with the installation of the additional permitted receiving tanks. The seven (7) 440 bbl original oil sales tanks are surrounded by a 30 mil PVC lined berm area with dimensions of 140 feet long x 22 feet wide x 2.5 feet depth resulting in a capacity of 1370 bbl. With the pending addition of two oil sales tanks, the berm will be expanded to 180 ft long x 22 ft wide x 2.5 ft depth (**Attachment III.1.E**) resulting in a capacity of 1763 bbl.

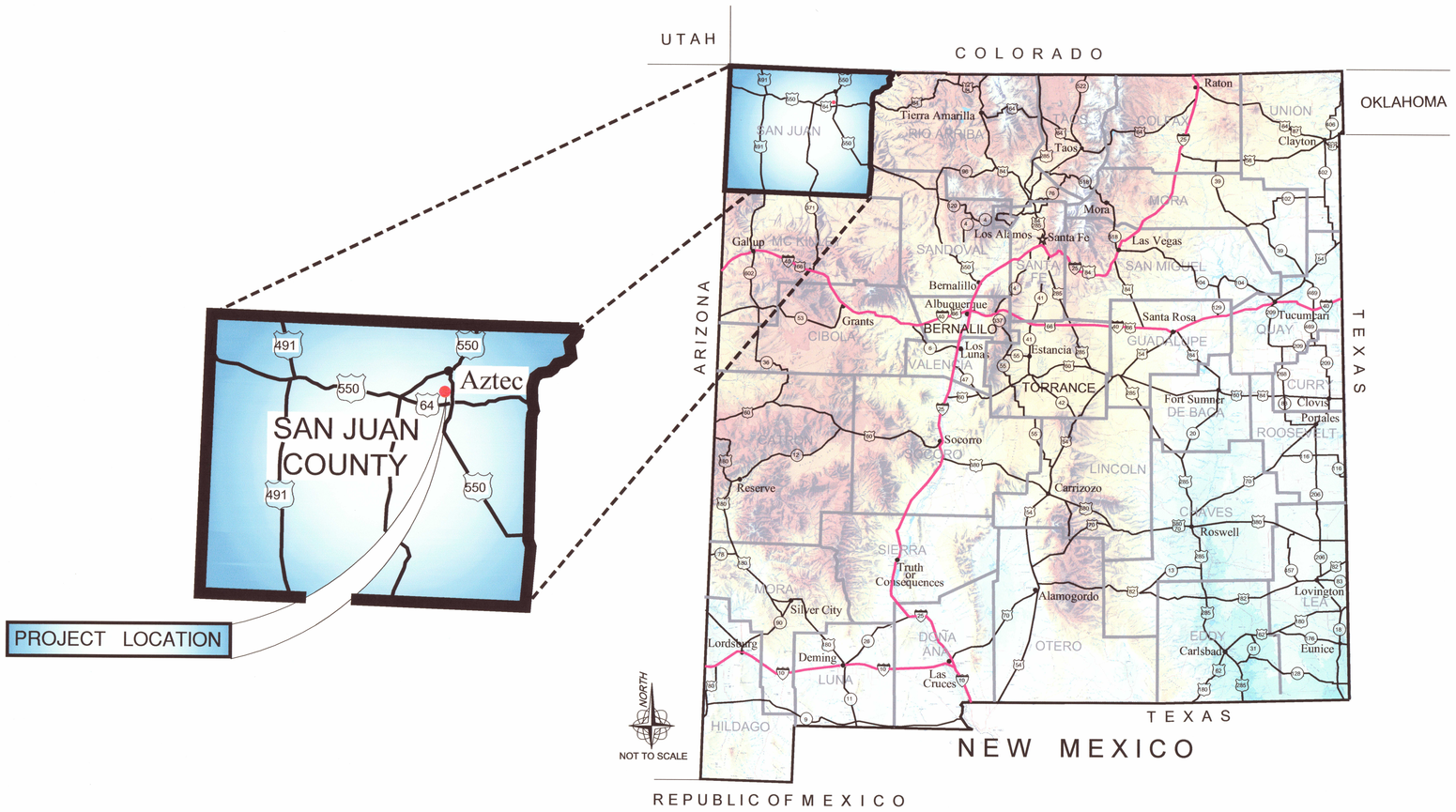
The oil sales tanks are not interconnected at the base. Therefore, the berm is conservatively designed to surround the entire oil sales tank unit, which will result in a holding capacity of 1763 bbl, which is four times greater than the capacity of the largest tank within the bermed containment area. **Therefore the containment berm surrounding the oil receiving tanks is designed to be more than sufficient.** Also included in this Section is a similar analysis presented in a spreadsheet format as **Attachment III.1.F** for the remaining permitted but not constructed tanks.

ATTACHMENT III.1.A

PERMIT PLANS (11 X 17 INCHES)

PERMIT PLANS
FOR
EVAPORATION PONDS

BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO



SITE LOCATION MAP

SHEET	TITLE
01 COVER.DWG	1 SITE LOCATION AND DRAWING INDEX
02 EXISTING.DWG	2 EXISTING SITE CONDITIONS
03 GRADING.DWG	3 GRADING PLAN
04 XSECS.DWG	4 CROSS SECTIONS
05 DRAINAGE.DWG	5 DRAINAGE PLAN
06 DRAIN DETAILS.DWG	6 DRAINAGE CHANNEL DETAILS
07 ENGR DET 1.DWG	7 ENGINEERING DETAILS
08 LINER DET.DWG	8 LINER DETAILS

I. KEITH GORDON, P.E.
N.M. PROFESSIONAL ENGINEER NO. 10984

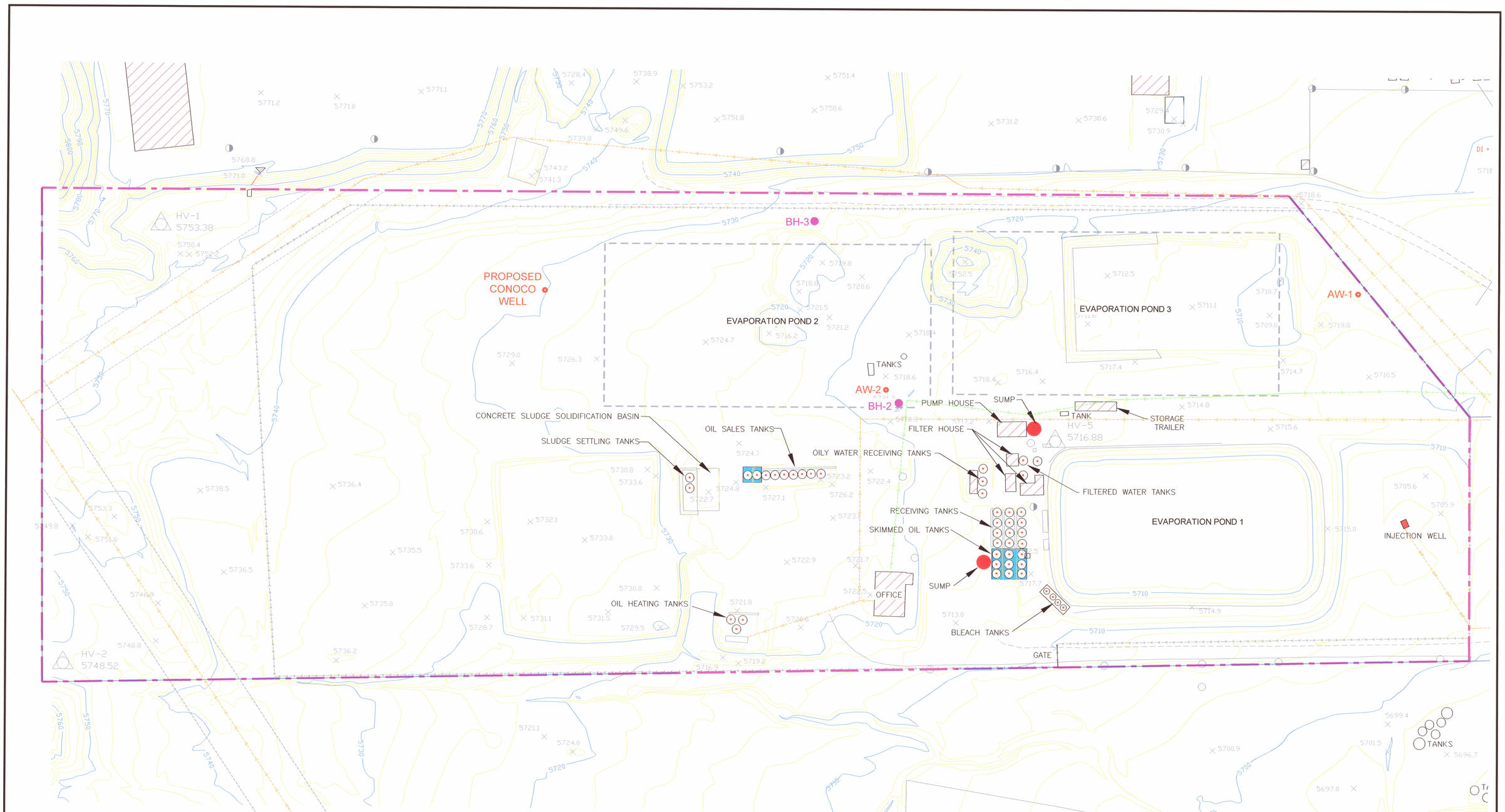
I. KEITH GORDON NEW MEXICO 10984 REGISTERED PROFESSIONAL ENGINEER

SITE LOCATION AND DRAWING INDEX

BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Gordon Environmental, Inc.
Consulting Engineers
213 S. Camino del Pueblo
Bernalillo, New Mexico, USA
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 10/30/08	CAD: 01 COVER.dwg	PROJECT #: 271.01.01
DRAWN BY: JFP	REVIEWED BY: MRH	SHEET 1 of 8
APPROVED BY: IKG	gei@gordonenvironmental.com	



NOTES:

1. LOCATION OF SITE UTILITIES IS APPROXIMATE. LOCATIONS OF SITE UTILITIES WILL BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
2. NOT FOR CONSTRUCTION

Drawing:\\server01\public\acad 2003\520.01.01\PERMIT PLAN SET\02 EXISTING.dwg
Date/Time:Jun. 08, 2009-13:22:57

BOREHOLE LOCATIONS	
BH-2	LAT 36°45'20.54269"N (NAD 83) LONG 107°59'02.70950"W (NAD83) ELEV: 5717.98 (GROUND)
BH-3	LAT 36°45'22.92950"N (NAD 83) LONG 107°59'04.21563"W (NAD83) ELEV: 5727.46 (GROUND)
AW-1	LAT 36°45'22.01797"N (NAD 83) LONG 107°58'55.15402"W (NAD83) ELEV: 5717.85 (TOP OF CAP)
AW-2	LAT 36°45'20.58589"N (NAD 83) LONG 107°59'02.96163"W (NAD83) ELEV: 5722.20 (TOP OF CAP)

LEGEND

- SITE BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 10 CONTOUR (EXISTING)
- 2' DEPRESSION CONTOUR (EXISTING)
- 5700 10' DEPRESSION CONTOUR (EXISTING)
- UNPAVED ROADWAY (EXISTING)
- FENCE (EXISTING)
- 3" GAS LINE (EXISTING)
- SEWER LINE (EXISTING)
- GAS LINE (EXISTING)
- UTILITY EASEMENT
- STRUCTURE
- PROPOSED POND LOCATION
- PROPOSED NEW TANKS
- AW-1 ASSESSMENT WELL
- BH-1 BOREHOLE LOCATION
- TANKS
- LIGHT POLE
- POWER POLE
- HV-5 5716.88 SURVEY CONTROL POINT AND ELEVATION
- 5705.6 SPOT ELEVATIONS

NORTH

0 60' 120'

I. KEITH GORDON, P.E.
N.M. PROFESSIONAL ENGINEER NO. 10984

EXISTING SITE CONDITIONS

BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Gordon Environmental, Inc.
Consulting Engineers
213 S. Camino del Pueblo
Bernalillo, New Mexico, USA
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 06/05/09	CAD: 02 EXISTING.dwg	PROJECT #: 520.01.01
DRAWN BY: GEI	REVIEWED BY: MRH	SHEET 2 of 8
APPROVED BY: IKG	gei@gordonenvironmental.com	

EVAPORATION POND 2

EVAPORATION POND 3

22.5'x30'± POND DISCHARGE AREA (ADDITIONAL 60-mil HDPE LINER EXTRUSION WELDED TO PRIMARY LINER)

10" X 10" FLAP VENT SPACED 75' O.C.

GCL UNDER LEAK DETECTION SUMP

LEAK DETECTION SUMP

LEAK DETECTION RISER

TOE OF SLOPE

10' BENCH

3:1

2.0%

220'

440'

N=13291648.13
E=762192.17
ELEV.=5731.00

N=13291648.13
E=762612.17
ELEV.=5731.00

N=13291666.13
E=762662.17
ELEV.=5721.00

N=13291666.13
E=763082.17
ELEV.=5721.00

N=13291448.13
E=762192.17
ELEV.=5731.00

N=13291448.13
E=762612.17
ELEV.=5731.00

N=13291466.13
E=762662.17
ELEV.=5721.00

N=13291466.13
E=763082.17
ELEV.=5721.00

N=13291393.26
E=762791.25

HV-5
5716.88

5719.00

5709.00

5710.91

5720.91

5712.5

NOTES:

1. LOCATION OF SITE UTILITIES IS APPROXIMATE. LOCATIONS OF SITE UTILITIES WILL BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
2. NOT FOR CONSTRUCTION

Drawing:\\server01\public\acad 2003\520.01.01\PERMIT PLAN SET\03 GRADING.dwg
Date/Time:Jun. 08, 2009-13:22:41

LEGEND

- SITE BOUNDARY
- 2' CONTOUR (EXISTING)
- 5700 10' CONTOUR (EXISTING)
- 2' DEPRESSION CONTOUR (EXISTING)
- 5700 10' DEPRESSION CONTOUR (EXISTING)
- 5720 DESIGN 10' CONTOUR
- 5716 DESIGN 2' CONTOUR
- UNPAVED ROADWAY (EXISTING)
- FENCE (EXISTING)
- 3" GAS LINE (EXISTING)
- SEWER LINE (EXISTING)
- GAS LINE (EXISTING)
- UTILITY EASEMENT
- CHANNEL FLOW LINE
- LEAK DETECTION SUMP AND RISER PIPE
- FLAP VENT
- CUT LIMIT
- FILL LIMIT
- STRUCTURE
- 5705.6 SPOT ELEVATION (EXISTING)
- HV-5 5716.88 SURVEY CONTROL POINT AND ELEVATION
- 5711.04 SPOT ELEVATION (DESIGN)

NORTH

0 30' 60'

I. KEITH GORDON
NEW MEXICO
10984
REGISTERED PROFESSIONAL ENGINEER
06/10/09

I. KEITH GORDON, P.E.
N.M. PROFESSIONAL ENGINEER NO. 10984

REVISIONS		
NO.	DATE	DESCRIPTION
1	05/13/09	ADD GCL UNDER LEAK DETECTION SUMP
2	05/13/09	ADD 60-mil HDPE LINER AT POND DISCHARGE AREA

GRADING PLAN

BASIN DISPOSAL, INC.
BLOOMFIELD, NEW MEXICO

Gordon Environmental, Inc.
Consulting Engineers
213 S. Camino del Pueblo
Bernalillo, New Mexico, USA
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 11/21/08	CAD: 03 GRADING.dwg	PROJECT #: 520.01.01
DRAWN BY: JMC	REVIEWED BY: MRH	SHEET 3 of 8
APPROVED BY: IKG	gei@gordonenvironmental.com	

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 166416

CONDITIONS

Operator: BASIN DISPOSAL INC P.O. Box 100 Aztec, NM 87410	OGRID: 1739
	Action Number: 166416
	Action Type: [C-137] SWM Facility (C-137)

CONDITIONS

Created By	Condition	Condition Date
lbarr	See OCD determination letter.	4/24/2025