AE Order Number Banner

Report Description

This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.

App Number: pEEM0420233082

NM - 29

SOUTHWEST WATER DISPOSAL

8/29/2017

Souder, Miller & Associates ♦ 401 W. Broadway ♦ Farmington, NM 87401
(505) 325-7535 ♦ (800) 519-0098 ♦ fax (505) 326-0045

June 11, 2014

OIL CONS. DIV DIST. 3

JUN 20 2014

#5122412-2014

Mr. Jim Griswold
Bureau Chief, Environmental Bureau
EMNRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

(505) 476-3465
jim.griswold@state.nm.us

RE: RE-VEGETATION, RESEEDING AND STABILIZATION REPORT, FORMER SOUTHWEST WATER DISPOSAL FACILITY, BLANCO AREA, SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Griswold:

Enclosed please find the Re-vegetation & Reseeding Stabilization Report for the Former Southwest Water Disposal (SWWD) facility located approximately 3.0 miles north of Blanco, NM. This report for the SWWD facility is submitted pursuant to the State of New Mexico General Services Department Purchasing Division price agreement #10-805-00-07208 and *Purchase Order (PO) #52100-0000043759* issued by the New Mexico Oil Conservation Division (NMOCD). All work was completed in accordance with the Souder, Miller & Associates (SMA) work plan dated March 10, 2014 and approved by NMOCD.

SMA appreciates the opportunity to provide professional consulting services to NMOCD. If you have any questions or comments concerning the report, please feel free to contact either of us at 505-325-7535 or via e-mail at cindy.gray@soudermiller.com or denny.foust@soudermiller.com.

Sincerely,

SOUDER, MILLER & ASSOCIATES

Cynthia A. Gray, CHMM
Senior Scientist

Denny G. Foust
Senior Geologist

60

RE-VEGETATION, RESEEDING AND STABILIZATION
FORMER SOUTHWEST WATER DISPOSAL FACILITY

NEAR BLANCO, NEW MEXICO
SE/SW & SW/SE SECTION 32,
TOWNSHIP 30 NORTH, RANGE 9 WEST
SAN JUAN COUNTY, NEW MEXICO

Prepared by:
Souder, Miller & Associates
401 West Broadway
Farmington, NM 87401-2247
505-325-7535

Prepared for:
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505

June 11, 2014

SMA

TABLE OF CONTENTS

1.0 Executive Summary

Souder, Miller & Associates (SMA), in accordance with the State of New Mexico General Services Department Purchasing Division Price Agreement #10-805-00-07208 and Purchase Order (PO) # 52100-0000043759 issued by the New Mexico Oil Conservation Division (NMOCD), has completed the Re-vegetation, Reseeding and Stabilization at the Former Southwest Water Disposal (SWWD) facility, near Blanco, San Juan County, New Mexico (SE/SW & SW/SE Section 32-T30N-R9W). The Former SWWD facility is located approximately 3.0 miles north of Blanco, NM and is accessed from County Road 4599. The site is private land, currently owned by Animas Land and Water Company, LLC (Animas) who acquired the property from Constar. Constar principals had purchased the property for delinquent taxes after the facility closure. SMA obtained appropriate site access from Animas prior to field activities.

Under the scope of the current work plan, SMA performed a survey of the site to determine the recommended locations for silt fencing and five re-vegetation channels. Corners for the work area were marked. An additional **6" soil cap was designed to cover the portion of the facility within the** boundary corners, a total of approximately four acres. The onsite work was initiated on April 3, 2014, and completed May 6, 2014.

2.0 Background

The site was formerly operated as a produced water disposal facility with an active evaporation system. After abandonment of the site, the facility was closed in 1995 by NMOCD through offsite disposal of the remaining liquids, solidification of residual sludge and backfilling of the pond area. Above ground storage tanks were also removed at this time. Storm water controls, i.e. Best Management Practices (BMPs), were constructed and the site was seeded and mulched. One subsequent storm water control maintenance event was conducted after the initial closure. However, the storm water controls have not been consistently maintained since. Re-vegetation efforts have met with little success, leaving the surface without effective stabilization. Some significant erosion had occurred along collection points.

In May, 2013, at the request of NMOCD, SMA conducted a site assessment and inspected the existing storm water control features and vegetation at the site. Surface soil samples were collected from each outfall from the small drainages that pass through the site into the regional arroyo, as well as upstream and downstream within the regional arroyo. Four soil samples were collected from each of the corners of the former pond area. One additional background sample was collected outside of the pond area, in what appeared to be native, undisturbed soil.

Based on visual observation of existing site conditions combined with the laboratory results of the soil samples, SMA concluded that the site was unfavorable for natural vegetation growth. Since the closure eighteen years ago, very little vegetation has been established across the majority of the pond area. Only small areas that are collection points for ponding of storm water have developed marginal vegetative cover. The lack of significant vegetation has left the site vulnerable to significant erosion of soils from slopes and the cap.

Implementation (and subsequent maintenance) of soil erosion controls should prove to be effective in promoting vegetation growth. In addition, adequate storm water controlls will aid in slowing the sheet flow of storm water runoff across the cap, a problem that had contributed greatly to the migration of salts and contaminants into the wash. In order to prevent failure of these controls **(as was the case with the previously established BMP's), proper and regular maintenance** of the site storm water controls is recommended until vegetation is well established.

Based on recommendations by SMA's Engineering Staff, as part of the 2013 workplan, the existing storm water structures were modified to function on an interim basis. A backhoe was used to augment the rip-rap structure in the diversion channel around the facility to allow it to contact the surface of the channel bed. On June 20, 2013, a motor-grader re-contoured the existing earthen berms and channels at the site. The channel responsible for diverting run-on around the site was graded to encourage sheet flow drainage and to minimize pooling. Storm water pooling had been the cause for failure of the existing storm water controls in this area. Storm water channels on the backfilled pond area with significant washout were filled and contoured to improve and control surface water drainage on an interim basis. The toe of each of the three existing berms was increased in size to minimize failure and to increase infiltration. The height of the berms was also increased to improve holding capacity. The goal of these two approaches to berm improvement was to prevent breakthrough and to improve subsurface infiltration and natural evaporation.

3.0 WORKPLAN DEVELOPMENT

In FY 2013-2014, New Mexico Oil Conservation Division personnel requested a workplan for additional measures to promote the long-term stabilization and re-vegetation at the Southwest Water Disposal site. **SMA's initial** draft workplan was based on building five re-vegetation channels 2 feet deep and 10-15 feet wide across the site perpendicular to the direction of drainage flow. The cut channels were to be filled with soil suitable as growth media, hauled from offsite. The excavated material would be rolled into additional berms immediately down gradient from the channel excavations. Mr. Brandon Powell of NMOCD District III had noted what non-woody vegetation present was associated with windblown loess from offsite. Mr. Powell suggested the addition of a six inch cap of growth media across the approximate four acres at the closed facility with the material disked or ripped into the existing surface. The closest and best source for four to six thousand cubic yards of suitable soil at a nominal cost beyond trucking was determined to be an NMOCD permitted soil remediation facility, the JFJ Land Farm operated by Industrial Ecosystems (IEI).

The JFJ Land Farm, located on Crouch Mesa between Farmington and Bloomfield, was included as the source for remediated hydrocarbon contaminated soils to be moved to the SWWD site for surface stabilization. In preparation for a request by IEI to the NMOCD for permission to use the remediated soils for a beneficial use at the SWWD site, the procedures and tasks detailed in Section 4.0 below were performed. Industrial Ecosystems, operator of the JFJ Land Farm, requested NMOCD permission to move the six biopiles identified above for beneficial use at the SWWD revegetation project with a March 21, 2014, letter to the Director of NMOCD for review and approval (Appendix A). The **Director's** approval was issued April 1, 2014 (Appendix B).

Access permission and agreement to implement the proposed workplan, including application of the specified seed mix, were obtained from the surface owner, Animas Land and Water Company (Appendix C).

4.0 Procedures Implemented to Clear Remediated Soils for Use

Suitability of the remediated soils for use in a re-vegetation project was initially determined through informal telephone consultation with New Mexico State University agronomists. With their assistance, an analytical suite was designed to test the soils planned for importation to demonstrate viability as a growth medium. Recommended testing included anions-cations, electrical conductivity, sodium absorption ratio (SAR) and the eight RCRA Metals by Total Analysis (SW846 Method 6010B) in addition to the standard hydrocarbon-related analyses. Six remediated biopiles at JFJ Land Farm meeting NMOCD land farm closure criteria were selected as potential sources for imported soils for the SWWD site. Results of analyses performed are discussed below and detailed in Tables 1 and 2.

Testing for Total Chloride concentration utilizing Method 4500-C1-B for the six piles yielded results ranging from 240 mg/kg to less than the method detection limit of 16 mg/kg. Testing for Total Petroleum Hydrocarbon concentrations by Method 418.1 ranged from 374 mg/kg down to 120 mg/kg. However, TPH analysis by 418.1 is not an appropriate method for this application because it does not discriminate between non-petroleum organics and petroleum. The biopiles contain manure added as part of the remediation process, making the use of 418.1 invalid.

Total volatile organic compounds (benzene, toluene, ethylbenzene, and xylene) were all below the detection limits of Method 8021B. Benzene concentrations were below the detection limit of 0.050 mg/kg. Toluene was not found above the detection limit of 0.050 mg/kg. Ethylbenzene results were all below the detection limit. A composite sample taken from the six biopiles was analyzed for SAR, calcium, magnesium, potassium, and sodium for comparison to the existing materials at the SWWD and for evaluation as to viability as a growth medium.

Table 1: JFJ Land Farm Analysis for Hydrocarbons, Chlorides, SAR

Sample	Chloride	TPH	BTEX	GRO	DRO	SAR	Ca	Mg	K	Na
Pile 777	ND	184	< 0.3	< 10	< 10	Not tested	Not tested	Not tested	Not tested	Not tested
784	32	213	< 0.3	< 10	12.6	--------	---------	--------	--------	------
802	240	296	< 0.3	< 10	< 10	--------	---------	--------	--------	------
822	64	337	< 0.3	< 10	34.9	--------	---------	--------	--------	------
824	16	120	< 0.3	< 10	< 10	--------	---------	--------	--------	------
856	112	112	< 0.3	< 10	11.6	Not tested	Not tested	Not tested	Not tested	Not tested
Composite of Six Piles	Not tested	Not tested	Not tested	Not Tested	Not tested	2.77	492	141	10.1	271

All concentrations are in mg/kg.

Method 6010B for RCRA 8 Toxic Metals by total extraction results exhibited Arsenic, Cadmium, Lead, Selenium and Silver below method detection limits as detailed in Table 2. Total Barium concentration results ranged from 348 down to 155 mg/kg by Method 6010 B but when following

the rule of twenty (If a waste is 100% solid, as defined by the TCLP method, then the results of the total constituent analysis may be divided by twenty to convert the total results into the maximum leachable concentration), the test results were well below the TCLP standard for Barium of 100 mg/l. Chromium concentrations ranged from a high of 20 mg/kg to below the detection limit of 5.0 mg/kg but again, following the rule of twenty, the results were below the TCLP standard of 5 mg/l. Mercury analyses were run by Method 7471 with one sample exhibiting a concentration of 0.559 mg/kg. All other samples were below the method detection limit of 0.103 mg/kg. Again, using the rule of twenty, all results were well below the TCLP standard of 0.2 mg/l. Refer to Appendix D for analytical reports.

Table 2: JFJ Land Farm Analysis for RCRA 8 Metals by Total Extraction

Sample	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
*777&784	<10	169	<5.0	<5.0	<10	<20	<5.0	<0.105
802	< 10	155	<5.0	<5.0	< 10	<20	<5.0	O.559
*822&824	< 10	174	<5.0	5.09	< 10	<20	<5.0	<0.105
856	< 10	348	<5.0	20.00	< 10	<20	<5.0	<0.105

*Composite samples were taken from the selected biopiles within the same cell at the land farm. All concentrations are in mg/kg.

The soils added from JFJ Land Farm to the cap and re-vegetation corridors have improved the vegetative viability of the existing surface cap by diluting the Chlorides and Metals present in the cap. This dilution is illustrated by the analytical results detailed in Table 3 and Table 4 below. The average levels of the samples taken at the four corners of the existing cap are magnesium 3250 mg/kg, potassium 2200 mg/kg, calcium 5525 mg/kg, chromium 6.5 mg/kg, sodium 6,725 mg/kg and barium 970 mg/kg. Refer to Appendix D for analytical reports of the samples of the existing surface taken during the previous project.

Table 3: SWWD Surface Samples 2013 for Chlorides, SAR

Sample	Chloride	TPH	BTEX	GRO	DRO	SAR	Ca	Mg	K	Na
NE Corner	1,000	Not tested	Not tested	Not tested	Not tested	330	5,700	2,900	2,100	5,200
NW	1,200	Not tested	Not tested	Not tested	Not tested	810	3,500	2,500	2,000	4,900
SE	2,000	Not tested	Not tested	Not tested	Not tested	710	5,000	2,800	2,000	7,500
SW	1,400	Not tested	Not tested	Not tested	Not tested	810	7,900	3,900	2,700	9,300

All concentrations are in mg/kg.

Table 4: SWWD Surface Samples 2013 for RCRA 8 Metals by Total Extraction

Sample	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
NE Corner	< 05.0	1300	< 0.20	6.5	4.8	< 5.0	< 0.50	0.69
NW	< 13.0	460	< 0.20	5.9	3.7	<13.0	<1.30	0.19
SE	< 0.50	820	< 0.20	6.1	3.8	< 5.0	< 0.50	0.40
SW	< 0.50	1300	< 0.20	7.4	5.5	< 5.0	< 0.50	0.83

All concentrations are in mg/kg.

Industrial Ecosystems, operator of the JFJ Land Farm, requested NMOCD permission to move

the six biopiles identified above for beneficial use at the SWWD revegetation project with a March 21, 2014, letter to the Director of NMOCD for review and approval (Appendix A). The Director's approval was issued April 1, 2014 (Appendix B)

5.0 Work Performed at the SWWD Site

Initial staking and layout of the site was performed by SMA surveyors on March 27, 2014. The work area was defined by corner and boundary stakes. Denny Foust and the surveyors defined the tentative location for the re-vegetation channels and silt fence locations utilizing labeled stakes.

The primary dirt subcontractor, La Plata Construction, began reconstruction of the access road April 3, 2014. A 20 foot section of 15" culvert was installed using road base from Four Corners Materials. La Plata Construction finished grading the access road the same day allowing trucks to begin hauling the following Monday. Approximately 2,200 feet of silt fence was constructed along the southern boundary of the work area and the west half of the access road as a storm water BMP to prevent any runoff of materials from the site during construction. La Plata experimented on re-vegetation channel #1 to determine the best equipment and most practical method to implement the designed 2 foot deep 10-15 feet wide re-vegetation channels across the site. To ensure adequate documentation of materials sources and quantities, SMA and La Plata coordinated with the JFJ Land Farm for IEI to track the loads leaving the site as support for La Plata's bills of lading from the truck drivers.

La Plata Construction began hauling remediated hydrocarbon contaminated material from the six approved biopiles to the site on April 7, 2014. Two hundred seventy-two loads were hauled to SWWD from JFJ Land Farm totaling 4,658 cubic yards through April 24, 2014. An additional 16 loads of mixed cow and horse manure were hauled to the site from the adjacent landowner with verbal approval from NMOCD representative Brandon Powell, for an approximate total of 150 cubic yards. La Plata cut the five re-vegetation channels shown on Figure #1. The channels were filled with remediated soils and the 2013 cap area (approximately the fenced area) was covered with an additional six inch cap of remediated soils. The five new berms constructed with materials from the re-vegetation channels were also covered. La Plata Construction completed mixing the remediated soils into the cap and cleaning up debris on April 25, 20014.

Nelson Revegetation was on site April 28, 2014 with their tractor and no-till drill to perform the seeding of the salt tolerant seed mix (Appendix E) developed for the SWWD site. An additional three crew members started installing the biodegradable erosion blankets over vulnerable reseeded areas. Seeding was completed utilizing approximately 3.5 5# bags of seed per acre for heavy coverage. A two-man crew returned to the site on April 29, 2014, to complete the installation of 2200 square feet of erosion blankets. The blankets were installed with wooden stakes as pins. Refer to Appendix F, Photo Gallery.

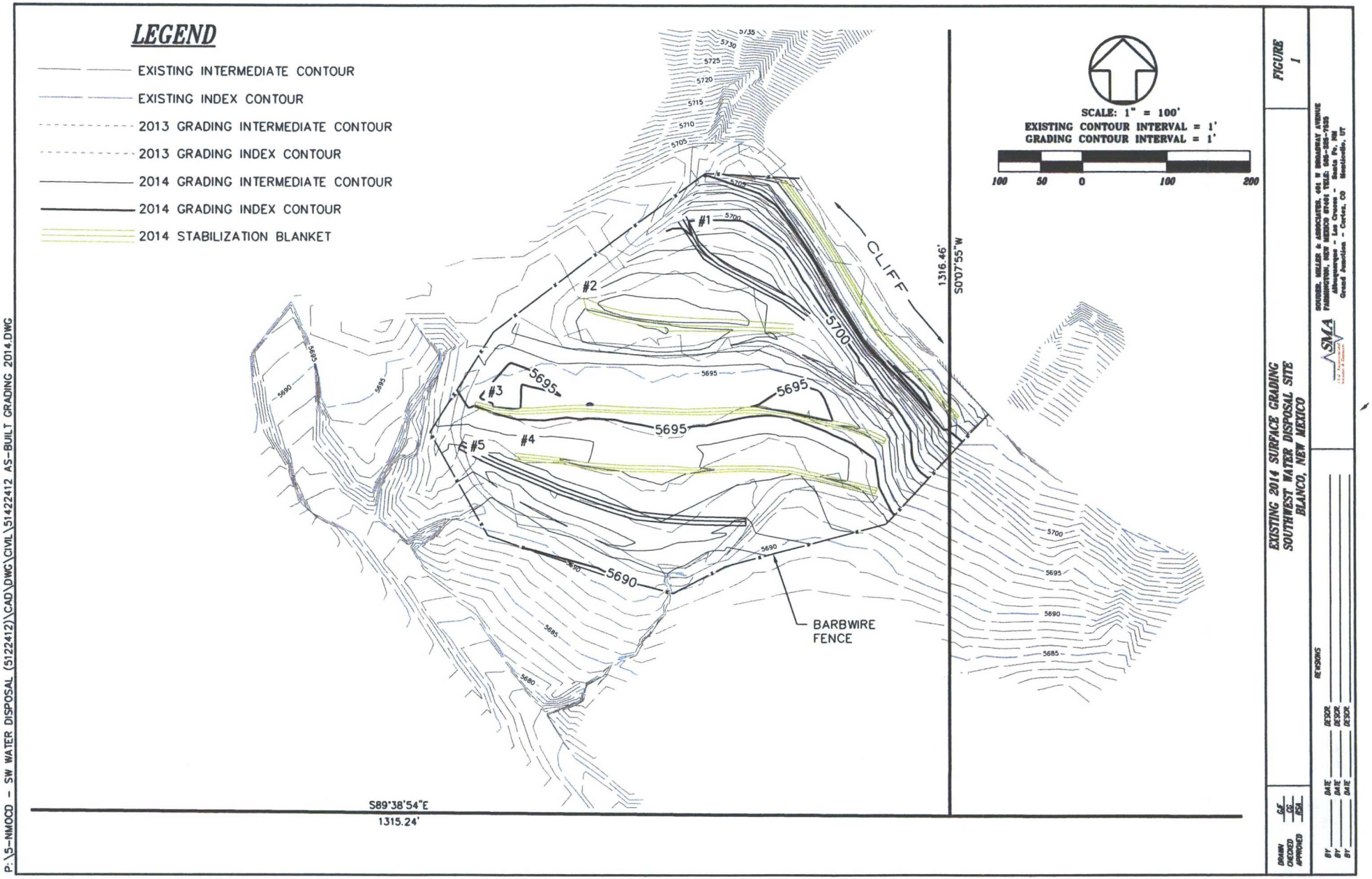
SMA surveyors returned to the site on April 30, 2014 to identify and document the locations of the newly constructed re-vegetation channels, and erosion blanket installations. The surveyors also identified the perimeter of the area to be fenced with a three strand barbed wire fence. The fencing is necessary to keep open range cattle from destroying seedlings.

TCP, LLC, a service company, provided a roustabout crew on site May 1, 2014 to construct a three strand barbed wire fence around the seeded area. The crew drove 61 T-posts, dug holes for gate posts, and cemented in the wooden gate posts. On May 2, 5, and 6, 2014, the TCP crew worked on the southern perimeter fence, strung and stretched barbed wire, installed the gate to the seeded area, and installed the lower gate, limiting access to the entryway. The gates were locked and keys conveyed to the NMOCD District Office personnel. Refer to Figure #1 Site Map with Improvements and the Photo Gallery in Appendix F.

6.0 RECOMMENDATIONS

SMA recommends monthly monitoring for plant growth and storm water impacts. Impacts identified during monitoring should be repaired immediately to prevent continued deterioration of the erosion control system and to protect the reseeded area from damage. An annual letter report with photographic documentation should be submitted to NMOCD.

Figure #1 – Current Site Map


LEGEND
EXISTING INTERMEDIATE CONTOUR
EXISTING INDEX CONTOUR
2013 GRADING INTERMEDIATE CONTOUR
2013 GRADING INDEX CONTOUR
2014 GRADING INTERMEDIATE CONTOUR
2014 GRADING INDEX CONTOUR
2014 STABILIZATION BLANKET
SCALE: 1" = 100'
EXISTING CONTOUR INTERVAL = 1'
GRADING CONTOUR INTERVAL = 1'
100 50 0 100 200
#1
#2
#3
#4
#5
CLIFF
1316.46'
S0°07'55"W
S89°38'54"E
1315.24'
BARBWIRE FENCE
5700
5695
5690
5685
5680
FIGURE 1
EXISTING 2014 SURFACE GRADING
SOUTHWEST WATER DISPOSAL SITE
BLANCO, NEW MEXICO
SMA
SOUDER, MILLER & ASSOCIATES, 401 W BROADWAY AVENUE
FARMINGTON, NEW MEXICO 87401 TELE: 505-325-7535
Albuquerque - Las Cruces - Santa Fe, NM
Grand Junction - Cortez, CO Bountiful, UT
REVISIONS
DRAWN CE
CHECKED CC
APPROVED RSA
P:\5-NMOCD - SW WATER DISPOSAL (5122412)\CAD\DWG\CIVIL\51422412 AS-BUILT GRADING 2014.DWG

Appendix A – Industrial Ecosystems Request Letter

Industrial Ecosystems Inc.
Soil Reclamation Center

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

March 21, 2014

Ms Jamie Bailey, Division Director Oil Conservation Division
1220 South St. Francis Drive Santa Fe, NM 87506

RE: Utilizing Remediated Oil Field Soils to help Re-vegetation at Southwest Water Disposal, a Closed and Abandoned Oilfield Facility.

Dear Director Bailey:

JFJ Land Farm requests permission for remediated soils from biopiles 777, 784, 822, 824, 802 and 856 to be hauled from the JFJ Land Farm facility on Crouch Mesa, Permit# NM-01-0010B, for beneficial use at the former Southwest Water Disposal (SWWD) site, SE/4 SW/4 and SW/4 SE/4, S32 T30N, R09W, NMPM. The SWWD project site is approximately 2 miles north of Blanco, NM, accessed from County Road #4599, and is also known as San Juan County Assessor Parcel #2053174198066. This is a New Mexico Oil Conservation Division (NMOCD) reclamation project where the remediated soils will be used to provide a vegetation friendly growth medium in newly constructed re-vegetation channels and spread a vegetation friendly soil cap over the approximately four acre core of the closed evaporation pond at the SWWD facility site. The soils will significantly improve the surface soils, potentially allowing establishment of stabilizing vegetation on the core of the project site (Attachment #1 Existing Site Surface Soil Analytical Results).

The biopiles, totaling approximately 6,000 cubic yards, have undergone remediation in the JFJ Land Farm and reached standards as required in the JFJ permit (Attachment #2, Permit Excerpt, Paragraph 17) to allow the biopiles to be dismantled. Manure was previously added to the biopiles as part of the remediation process rendering the use of Method 418.1 inappropriate due to the presence of non-petroleum organics. However, Total Petroleum Hydrocarbons, GRO/DRO measured by EPA SWA 846 Method 8015B are well below the 100 ppm standard required in the JFJ permit. The soils have undergone additional testing (Attachment #3 Remediated Soils Laboratory Analytical Results) to confirm that volatile hydrocarbons are remediated below standards. Gasoline Range Organic Petroleum Hydrocarbons (GRO) totals all remain below the 10 mg/kg detection limit by Test Method 80158. Diesel Range Organic Petroleum Hydrocarbons (ORO) ranged from a maximum of 34.6 mg/kg to below the detection limit of 10 mg/kg by Test Method 8015B.

Total volatile organic compounds, BTEX are all below the detection limits of Method 8021B. Benzene concentrations were below the detection limit of 0.050 mg/kg. Toluene was not found above the detection limit of 0.050 mg/kg. Ethylbenzene results were all below the detection limit of 0.050 mg/kg. Xylene concentrations were not found above the detection limit of 0.150 mg/kg.

According to the laboratory analytical results, total metals are below regulatory standards when mathematically converted to a leachate by the "rule of twenty for solids". Method 6010B total metals tests results exhibit Arsenic, Cadmium, Lead, Selenium and Silver below detection limits noted in the analytical results, Attachment 3. Total Barium concentration results range from 348 down to 155 mg/kg by Method 6010 B but when following the rule of twenty (If a waste is 100% solid, as defined by the TCLP method, then the results of the total constituent analysis may be divided by twenty to convert the total results into the maximum leachable concentration), the test results are well below the TCLP standard for Barium of 100 mg/1. Utilizing Test Method 60108 total metals, Chromium ranges from a high of 20 mg/kg to below the detection limit of 5.00 mg/kg but again, following the rule of twenty, the results are below the TCLP standard of 5 mg/1. Mercury analyses were run by Test Method 7471 with one sample exhibiting a concentration of 0.559 mg/kg. All other samples were below the detection limit of 0.103 mg/kg. Again, using the rule of twenty, all results were below the TCLP standard of 0.2 mg/1.

Anions and Cations are significantly lower than the levels found in the existing onsite cap, and the Sodium Absorption Ration (SAR) as well as the Electrical Conductivity (EC) indicates the remediated soils are a suitable growth media for use in the SWWD re-vegetation project.

It is projected that approximately 5,500 cubic yards will be utilized for the SWWD project. These soils will be used at the SWWD site under NMOCD PO #52100-0000039950 issued to Souder, Miller & Associates.

Please sign below to indicate your authorization on behalf of the Division for the soils to be used on the SWWD project under the supervision of Souder, Miller & Associates personnel and NMOCD.

Respectfully,

Signature: _____
Terry Lattin, GM/President

Approved by:

New Mexico Oil Conservation Division
Signature: _____
Jamie Bailey, Division Director

Attachments:
Attachment #1 Existing Site Surface Soil Analytical Results Attachment #2 Excerpt from JFJ Land Farm Permit NM-01-00101B Attachment #3 Remediated Soils Laboratory Analytical Results

Industrial Ecosystems Inc.
Soil Reclamation Center

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

April 15, 2014

Ms. Jamie Bailey, Division Director
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87506

RE: Request to Utilize Additional Remediated Oil Field Soils to help Re-vegetation at Southwest Water Disposal, a Closed and Abandoned Oilfield Facility.

Dear Director Bailey:

Thank you for your approval dated April 1, 2014 for the reuse of remediated soils from biopiles 777, 784, 822, 824, 802 and 856 from the JFJ Land Farm facility on Crouch Mesa, Permit # NM-01-0010B, at the former Southwest Water Disposal (SWWD) site, SE/4 SW/4 and SW/4 SE/4, S32 T30N, R09W, NMPM. The total yardage in the approved piles was found to be less than the estimated 6,000 cubic yards.

During the course of construction of the stabilization and re-vegetation project at the SWWD reclamation site, it has become evident that the quantity of soils in the approved remediated biopiles will not be sufficient to complete the soil cap to support re-vegetation across the core of the closed facility.

Four additional biopiles have been identified that have met the biopile dismantling criteria specified in Condition 17 of the JFJ Land Farm Permit, i.e. for Total Petroleum Hydrocarbons by EPA SWA 846 Method 8015B GRO/DRO total, total organic compounds BTEX by EPA SWA 846 Method 8021B, Benzene also by Method 8021B, and Chlorides by DW Method 4500-Cl-B. Those are:

Pile # 854 Pile #874

Pile #871

The biopiles, totaling approximately 3,000 cubic yards, have undergone remediation in the JFJ Land Farm and reached standards as required in the JFJ Permit Condition 17 to allow the biopiles to be dismantled. Total Petroleum Hydrocarbons, GRO/DRO measured by EPA SWA 846 Method 8015B are well below the 100 ppm standard required in the JFJ permit. Gasoline Range Organic Petroleum Hydrocarbons (GRO) are all below the 10 mg/kg detection limit by Test Method 8015B. Diesel Range Organic Petroleum Hydrocarbons (DRO) range from a maximum of 29.9 mg/kg down to 22.0 mg/kg by Test Method 8015B.

Total volatile organic compounds, BTEX are all below the detection limits of Method 8021B. Benzene concentrations were below the detection limit of 0.050 mg/kg. Toluene was not found above the detection limit of 0.050 mg/kg. Ethylbenzene results were all below the detection limit of 0.050 mg/kg. Xylene concentrations were not found above the detection limit of 0.150 mg/kg.

Analyses performed using Method 4500-Cl-B indicate that Chlorides range from 80.0 mg/kg up to 336.0 mg/kg, significantly lower than the levels found in the existing onsite cap.

These soils will be used at the SWWD site under NMOCD PO #52100-0000039950 issued to Souder, Miller & Associates and under the supervision of Souder, Miller & Associates personnel and NMOCD.

Respectfully,

Terry Lattin
President/GM

Attachments:
Attachment #1 Remediated Soils Laboratory Analytical Results, Biopiles #854, #871, and #874

Appendix B – NMOCD Director's Approval Letter

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division

April 1, 2014

Mr. Terry Lattin
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval of Off-Site Disposition of Remediated Soils
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico

Dear Mr. Lattin:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, dated March 21, 2014, for off-site disposition and reuse of remediated soils (approximately 6000 cubic yards) from the OCD permitted landfarm (Surface Waste Management Facility Permit # NM-1-0010B) to be utilized as backfill and a vegetative soil cover for an OCD reclamation fund remediation project (RECR -028) at the former Southwest Water Disposal site, located in Units N and O of Section 32, Township 30 North, Range 9 West NMPM, San Juan County, New Mexico. OCD has reviewed the analytical results to reuse the remediated soils from the following biopile(s):

Pile # 777	*Pile # 784*	*Pile # 822*
Pile # 824	*Pile # 802*	*Pile # 856*

Based upon the information provided, the above-referenced biopiles are hereby approved for reuse with the following understandings and conditions:

1. JFJ has demonstrated that the proposed soils for reuse satisfy the TPH, BTEX, and Benzene concentrations specified in Condition 17 of the Landfarm and Composting Operations section of your February 3, 2004 surface waste management facility permit (NM1-010-B);

2. OCD shall obtain legal authority from the surface owner prior to placement of the remediated soils for reuse;

3. OCD shall ensure that remediated soils are reused in a manner that prevents the contamination of ground water and surface water, and protects human health and the environment; and

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Mr. Brad A. Jones of my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jami Bailey
Director

JB/baj

cc: Jim Griswold, OCD Environmental Bureau, Santa Fe
OCD District III Office, Aztec

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Director
Oil Conservation Division

April 22, 2014

Mr. Terry Lattin
Industrial Ecosystems Inc.
Box 2043
Farmington, NM 87499

RE: Request for Approval of Remediated Soil Reuse from JFJ Landfarm -- Permit NM1-10-B

Dear Mr. Lattin,

The Oil Conservation Division (OCD) has reviewed Industrial Ecosystems Inc.'s (IEI's) request of April 15, 2014 for the off-site reuse of remediated soils from your permitted JFJ Landfarm. Specifically, approximately 3,000 cubic yards from Piles 854, 871, and 874 to be used as soil amendment to support vegetative cover at the former Southwest Water Disposal site located in Unit Letters N and O of Section 32, Township 30 North, Range 9 West north of Blanco, NM in San Juan County supported by the OCD under our Reclamation Fund (RECR-28). The OCD has reviewed the soil analyses provided and hereby approves your request with the following understandings and conditions:

- IEI has demonstrated that the soils to be reused satisfy the benzene, total BTEX, and TPH concentrations specified in Condition 17 of the Landfarm and Composting Operations sections of your February 3, 2004 surface waste management facility permit NM1-10-B.

- OCD continues to have legal authority from the owner of the reuse site for the emplacement of the remediated soils.

- OCD shall ensure the soils are reused in a manner that is protective of groundwater, surface water, human health, and the environment.

Approval of this request does not relieve IEI or JFJ Landfarm, LLC of liability should operations result in the pollution of surface water, groundwater, or the environment. Nor does it relieve you of responsibility to comply with other applicable rules and regulations.

Respectfully,

Jami Bailey
Director

JB/jeg

cc: OCD District III Office, Aztec

Appendix C – Property Access Agreements

Souder, Miller & Associates • 401 W. Broadway • Farmington, NM 87401
(505) 325-7535 • (800) 519-0098 • fax (505) 326-0045

CONSENT FOR ACCESS TO PROPERTY FOR THE PURPOSE OF ADDING SOIL AND STRUCTURES TO PROMOTE REVEGETATION BY RESEEDING THE FORMER SOUTHWEST WATER DISPOSAL POND AREA

Project: Former Southwest Water Disposal Facility Project #5122412
Project Location: SE/4SW/4 and SW/4SE/4, S32. T30N, R09W, NMPM
Date: March17, 2014
Name of Property Owner: Animas Valley Land and Water Company, LLC

Address of Property Owner: P. O. Box 5520
Farmington, NM 87499
Telephone Number: Office 505-325-2435
Location of Property on which access is sought: Approximately 2 miles north of Blanco, NM accessed from County Road #4599
San Juan County Assessor Parcel #2053174198066

I hereby consent to allow the employees and contractors of Souder, Miller & Associates (SMA) to enter and have access to the property located at the above address ("the property") for the following purposes:

1. After access to the property is granted by the current owner, SMA will construct a road sufficient to access the property with approximately 275 loads (approximately 5500 cy) of remediated soil from JFJ Land Farm to cap the pond area for re-vegetation purposes.
2. The objective is to cap the pond area with sufficient soil to encourage re-vegetation by a salt tolerant seed mix to be applied by drill after the soil is in place.
3. Newly established erosion controls will have weed free organic erosion prevention pads installed for stabilization.
4. After completions of this task SMA will leave the road improvements in place and limit access using dikes and gates.

I understand SMA is performing this work on behalf of the NMOCD. I understand that by granting this consent I am in no way responsible for the actions of the consequences of persons conducting the work described above. I have also been told that the Project Manager for this site is Denny Foust or Cindy Gray whom I may contact at 505-325-7535, if I have questions or concerns about this Consent for Access or any work performed as a result.
After all access permission has been acquired, SMA will schedule the field activities associated with the outlined above.
In return for this permission, SMA agrees to the following.

A. To notify the property owner by telephone 24 hours prior to accessing the property with heavy equipment. SMA will extend the same courtesy for subsequent events. A message left on an answering machine shall constitute notification.
B. To exercise reasonable professional care to limit surface damage to the property. In the event of surface damage other than the access road caused by SMA or its sub contractors activities, the damage will be addressed within 30 days to contour it into the existing surface and have the salt tolerant seed mix applied.
C. All equipment will be promptly removed from the property except erosion prevention pads and any gate and fencing installed.

Work under this agreement will be completed by September 1, 2014

Property Owner or
Authorized Representative
BY: Katrina Chiles
Katrina Chiles office manager
Printed Name and Title

Souder, Miller and Associates

BY: _____
REID S. ALLAN, VICE PRESIDENT
Printed Name and Title
Denny D. Foust

Souder, Miller & Associates • 401 W. Broadway • Farmington, NM 87401
(505) 325-7535 • (800) 519-0098 • fax (505) 326-0045

CONSENT TO ADD REMEDIATED OIL FIELD SOILS FROM JFJ LAND FARM TO PROMOTE REVEGETATION BY RESEEDING THE FORMER SOUTHWEST WATER DISPOSAL POND AREA

Project: Former Southwest Water Disposal Facility Project #5122412
Project Location: SE/4SW/4 and SW/4SE/4 of S32, T30N, R09W, NMPM
Date: March 26, 2014
Name of Property Owner: Animas Valley Land and Water Company

Address of Property Owner: P. O. Box 5520
Farmington, NM 87499
Telephone Number: Office 505-325-2435
Location of Property on which access is sought: Approximately 2 miles north of Blanco, NM accessed from County Road #4599
San Juan County Assessor
Parcel #2053174198066

The purpose of this agreement is to establish that Animas Valley Land and Water Company (ALWC) understands and acknowledges that remediated oilfield soils from JFJ Land Farm, a New Mexico Oil Conservation Division (NMOCD) permitted facility located at #49 CR 3150, San Juan County New Mexico, are to be added to the closed SWWD site now owned by Animas Land and Water Company. The soils have been remediated to NMOCD standards and have had additional testing done to show they are an appropriate medium for re-vegetation by salt tolerant plant species (Attachment #1). Tests on the current surface soils on the property described are attached (Attachment #2). Comparison of the soil analysis shows the biopile soils from JFJ Land Farm are of better quality than those currently on the facility location.

I hereby acknowledge and agree that remediated oilfield soils from the JFJ Land Farm will be added to the former SWWD site, of which Animas Valley Land and Water Company is the owner of record.

I understand SMA is performing this work on behalf of the NMOCD. I understand that by granting this consent, I am in no way responsible for the actions of persons conducting the work described above. I am also aware that the Project Manager for this site is Denny Foust or Cindy Gray whom I may contact at 505-325-7535, if I have questions or concerns about this Consent to add oilfield remediated soils and any work performed as a result.

This agreement is in addition to an access agreement signed by Animas Valley Land and Valley Company, LLC office manager Katrina Chiles, dated March 17, 2014.

Property Owner or
Authorized Representative
BY: Katrina Chiles
Katrina Chiles office manager
Printed Name and Title

Souder, Miller & Associates
BY:
REID S. ALLAN, VICE PRESIDENT
Printed Name and Title
Denny Foust

Appendix D – Laboratory Analytical Reports

ATTACHMENT #1
LABORATORY ANALYTICAL
REMEDIATED SOILS

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

February 28, 2014

MARCELLA MARQUEZ

INDUSTRIAL ECOSYSTEMS

49 CR 3150

AZTEC, NM 87410

RE: JFJ

Enclosed are the results of analyses for samples received by the laboratory on 02/07/14 11:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

PILE 777

H400390-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	ND		16.0	mg/kg	4	4020713	AP	10-Feb-14	4500-Cl-B	
Organic Compounds										
TPH 418.1	**184**		100	mg/kg	10	4021005	CK	10-Feb-14	418.1	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Toluene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Ethylbenzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total Xylenes*	ND		0.150	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total BTEX	ND		0.300	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*117 %*	*89.4-126*		*4020609*	MS	*07-Feb-14*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	ND		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
DRO >C10-C28	ND		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
Surrogate: 1-Chlorooctane			*96.8 %*	*65.2-140*		*4020608*	ms	*07-Feb-14*	*8015B*	
Surrogate: 1-Chlorooctadecane			*99.2 %*	*63.6-154*		*4020608*	ms	*07-Feb-14*	*8015B*	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

PILE 784

H400390-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	32.0		16.0	mg/kg	4	4020713	AP	10-Feb-14	4500-Cl-B	
Organic Compounds										
TPH 418.1	213		100	mg/kg	10	4021005	CK	10-Feb-14	418.1	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Toluene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Ethylbenzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total Xylenes*	ND		0.150	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total BTEX	ND		0.300	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*119 %*	*89.4-126*		*4020609*	MS	*07-Feb-14*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	ND		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
DRO >C10-C28	12.6		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
Surrogate: 1-Chlorooctane			*97.2 %*	*65.2-140*		*4020608*	ms	*07-Feb-14*	*8015B*	
Surrogate: 1-Chlorooctadecane			*101 %*	*63.6-154*		*4020608*	ms	*07-Feb-14*	*8015B*	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

PILE 802

H400390-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	240		16.0	mg/kg	4	4020713	AP	10-Feb-14	4500-Cl-B	
Organic Compounds										
TPH 418.1	296		100	mg/kg	10	4021005	CK	10-Feb-14	418.1	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Toluene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Ethylbenzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total Xylenes*	ND		0.150	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total BTEX	ND		0.300	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*115 %*	*89.4-126*		*4020609*	MS	*07-Feb-14*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	ND		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
DRO >C10-C28	ND		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
Surrogate: 1-Chlorooctane			*86.8 %*	*65.2-140*		*4020608*	ms	*07-Feb-14*	*8015B*	
Surrogate: 1-Chlorooctadecane			*88.2 %*	*63.6-154*		*4020608*	ms	*07-Feb-14*	*8015B*	
Green Analytical Laboratories										
General Chemistry										
% Dry Solids	94.3			%	1	B402164	LLG	24-Feb-14	EPA160.3	H1
Total Metals by ICP										
Arsenic	ND		10.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Barium	155		1.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Cadmium	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Chromium	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Lead	ND		10.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

PILE 802

H400390-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Green Analytical Laboratories										
Total Metals by ICP										
Selenium	ND		20.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Silver	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Total Mercury by CVAA										
Mercury	0.559		0.103	mg/kg dry	485	B402182	JGS	26-Feb-14	EPA7471	M5

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

PILE 822

H400390-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	64.0		16.0	mg/kg	4	4020713	AP	10-Feb-14	4500-Cl-B	
Organic Compounds										
TPH 418.1	337		100	mg/kg	10	4021005	CK	10-Feb-14	418.1	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Toluene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Ethylbenzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total Xylenes*	ND		0.150	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total BTEX	ND		0.300	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*119 %*	*89.4-126*		*4020609*	MS	*07-Feb-14*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	ND		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
DRO >C10-C28	34.9		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
Surrogate: 1-Chlorooctane			*91.8 %*	*65.2-140*		*4020608*	ms	*07-Feb-14*	*8015B*	
Surrogate: 1-Chlorooctadecane			*95.4 %*	*63.6-154*		*4020608*	ms	*07-Feb-14*	*8015B*	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

PILE 824

H400390-09 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	16.0		16.0	mg/kg	4	4020713	AP	10-Feb-14	4500-Cl-B	
Organic Compounds										
TPH 418.1	120		100	mg/kg	10	4021005	CK	10-Feb-14	418.1	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Toluene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Ethylbenzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total Xylenes*	ND		0.150	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total BTEX	ND		0.300	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*115 %*	*89.4-126*		*4020609*	MS	*07-Feb-14*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	ND		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
DRO >C10-C28	ND		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
Surrogate: 1-Chlorooctane			*95.2 %*	*65.2-140*		*4020608*	ms	*07-Feb-14*	*8015B*	
Surrogate: 1-Chlorooctadecane			*97.3 %*	*63.6-154*		*4020608*	ms	*07-Feb-14*	*8015B*	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

PILE 856

H400390-10 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	112		16.0	mg/kg	4	4020713	AP	10-Feb-14	4500-Cl-B	
Organic Compounds										
TPH 418.1	371		100	mg/kg	10	4021005	CK	10-Feb-14	418.1	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Toluene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Ethylbenzene*	ND		0.050	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total Xylenes*	ND		0.150	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Total BTEX	ND		0.300	mg/kg	50	4020609	MS	07-Feb-14	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*118 %*	*89.4-126*		*4020609*	MS	*07-Feb-14*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	ND		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
DRO >C10-C28	11.6		10.0	mg/kg	1	4020608	ms	07-Feb-14	8015B	
Surrogate: 1-Chlorooctane			*99.1 %*	*65.2-140*		*4020608*	ms	*07-Feb-14*	*8015B*	
Surrogate: 1-Chlorooctadecane			*102 %*	*63.6-154*		*4020608*	ms	*07-Feb-14*	*8015B*	
Green Analytical Laboratories										
General Chemistry										
% Dry Solids	90.3			%	1	B402164	LLG	24-Feb-14	EPA160.3	H1
Total Metals by ICP										
Arsenic	ND		10.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Barium	348		1.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Cadmium	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Chromium	20.0		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Lead	ND		10.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

PILE 856

H400390-10 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Green Analytical Laboratories										
Total Metals by ICP										
Selenium	ND		20.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Silver	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Total Mercury by CVAA										
Mercury	ND		0.106	mg/kg dry	480	B402182	JGS	26-Feb-14	EPA7471	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

COMP 777 & 784

H400390-11 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Green Analytical Laboratories										
General Chemistry										
% Dry Solids	93.9			%	1	B402164	LLG	24-Feb-14	EPA160.3	III
Total Metals by ICP										
Arsenic	ND		10.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Barium	169		1.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Cadmium	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Chromium	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Lead	ND		10.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Selenium	ND		20.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Silver	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Total Mercury by CVAA										
Mercury	ND		0.105	mg/kg dry	495	B402182	JGS	26-Feb-14	EPA7471	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

COMP 822 & 824

H400390-12 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Green Analytical Laboratories										
General Chemistry										
% Dry Solids	91.8			%	1	B402164	LLG	24-Feb-14	EPA160.3	III
Total Metals by ICP										
Arsenic	ND		10.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Barium	174		1.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Cadmium	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Chromium	5.09		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Lead	ND		10.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Selenium	ND		20.0	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Silver	ND		5.00	mg/kg dry	100	B402159	JGS	25-Feb-14	EPA6010 B	
Total Mercury by CVAA										
Mercury	ND		0.108	mg/kg dry	495	B402182	JGS	26-Feb-14	EPA7471	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 2078 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 28-Feb-14 12:50

COMP 777,784,822,824,802,856

H400390-13 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Green Analytical Laboratories										
General Chemistry										
% Dry Solids	92.4			%	1	B402164	LLG	24-Feb-14	EPA160.3	HI
Soluble (DI Water Extraction)										
Alkalinity, Total	113		10.0	mg/kg dry	4	B402190	ABP	25-Feb-14	2320 B	HI
Chloride	99.6		40.0	mg/kg dry	4	B402189	ABP	25-Feb-14	4500-Cl- C	
Sulfate	5710		866	mg/kg dry	80	B402188	ABP	26-Feb-14	4500-SO42-E	
Saturated Paste Extraction										
Calcium	492		10.0	mg/kg dry	10	B402197	JGS	27-Feb-14	EPA200.7	
Conductivity	3530			umhos/cm	1	B402201	JAW	27-Feb-14	ASA#9 10-3.3	
Magnesium	141		10.0	mg/kg dry	10	B402197	JGS	27-Feb-14	EPA200.7	
Potassium	10.1		10.0	mg/kg dry	10	B402197	JGS	27-Feb-14	EPA200.7	
SAR	2.77			[blank]	1	B402197	JGS	27-Feb-14	Calculation	
Sodium	271		10.0	mg/kg dry	10	B402197	JGS	27-Feb-14	EPA200.7	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

KUSH Please

Green Analytical Laboratories

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: I.C.I
Contact: Marcella
Address: 49 CR 3150
Aztec, NM 87410
Phone Number: 505.632.1782
Email: Marcella@industrialecosystems.com

NOTES:
1) Ensure proper container packaging.
2) Ship samples promptly following collection.
3) Designate Sample Reject Disposition.
PO# 2078
Project Name: JFJ

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other (Specify) ____

FOR GAL USE ONLY
GAL JOB #

Samplers Signature:

Lab Name: Green Analytical Laboratories (970) 247-4220 FAX (970) 247-4227
Address: 75 Suttle Street, Durango, CO 81303 www.greenanalytical.com

Sample ID	Collection: Date	Collection: Time	Misc: Collected by: (Init.)	Misc: Matrix Type From Table 1	Misc: No. of Containers	Misc: Sample Filtered ? Y/N	Preservative(s): Unpreserved (Ice Only)	HNO3	HCL	H2SO4	NAOH	Other (Specify)	Analyses Required: TPH-418.1	DRO/GRO-8015M	BTEX-8021B	Chloride-300.0	Total RCRA Metals (8 total)					Comments
H40039D																						
1. P.G [redacted]	2/6/14	10:10	RC	3	1	N							✓	✓	✓	✓						
2. [redacted]		10:30											✓	✓	✓	✓						
3. [redacted]		10:50											✓	✓	✓	✓						
4. [redacted]		11:20											✓	✓	✓	✓						
5. 777		11:45											✓	✓	✓	✓						
6. 784		12:40											✓	✓	✓	✓						
7. 802		1:16											✓	✓	—	✓	✓					
8. 822		1:30											✓	✓	✓	✓						
9. 824		1:45											✓	✓	✓	✓						
10. 856		2:00											✓	✓	✓	✓	✓					

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[signature]	2-6-14	2:10	M. Mello	2/6/14	2:10
M. Mello	2/6/14	1430	[signature]	2/6/14	1430
[signature]	2/6/14	1600	KANGAROO	FedEx 2/6/14	1600

* Sample Reject: [ ] Return [ ] Dispose [ ] Store (30 Days)

3.2°C
Jodi Henson 2/7/14 11:15

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	IFI	**BILL TO**	
Project Manager:	Marcella	**P.O. #:**	2078
Address:	49 CR 3150	**Company:**	
City:	Aztec **State:** NM **Zip:** 87410	**Attn:**	
Phone #:	505-632-1782 **Fax #:**	**Address:**	
Project #:	**Project Owner:**	**City:**	
Project Name:	SFJ	**State:**	**Zip:**
Project Location:		**Phone #:**	
Sampler Name:		**Fax #:**	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	**Sample I.D.**	**(G)RAB OR (C)OMP.**	**# CONTAINERS**	**GROUNDWATER**	**WASTEWATER**	**SOIL**	**OIL**	**SLUDGE**	**OTHER :**	**ACID/BASE:**	**ICE / COOL**	**OTHER :**	**DATE**	**TIME**	Total RCRA 8 metals 6010 (Ba, Cd, Cr, Pb, Se, Ag)		Cation/Anion / Hardness	EC	SAR (report calculations from SAR)							
H400390-																									
11	Comp 777 & 784		1			✓					✓		2/6/14		✓										
12	Comp 822 & 824		1			✓					✓				✓										
13	Comp 777, 784, 822, 824, 782, 756		1			✓					✓						✓	✓	✓						

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	**Date:**	**Received By:**	
	Time:		
Relinquished By:	**Date:**	**Received By:**	
	Time:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	**Sample Condition** Cool: ☐ Yes ☐ No Intact: ☐ Yes ☐ No	**CHECKED BY: (Initials)**	

Phone Result: ☐ Yes ☐ No **Add'l Phone #:**
Fax Result: ☐ Yes ☐ No **Add'l Fax #:**
REMARKS:
(Added cr analysis, 2/20/14) as per Marcella. ch 2/21/14

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

ATTACHMENT #2
LABORATORY ANALYTICAL
EXISTING SURFACE
SOUTHWEST WATER DISPOSAL

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 06, 2013

Cindy Gray
Souder, Miller and Associates
2101 San Juan Boulevard
Farmington, NM 87401
TEL: (505) 325-5667
FAX (505) 327-1496

RE: SW Disposal

OrderNo.: 1305837

Dear Cindy Gray:

Hall Environmental Analysis Laboratory received 12 sample(s) on 5/21/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller and Associates
Project: SW Disposal
Lab ID: 1305837-007 **Matrix:** SOIL

Client Sample ID: SE Corner
Collection Date: 5/20/2013 11:22:00 AM
Received Date: 5/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: **JRR**
Fluoride	5.1	1.5		mg/Kg	5	5/23/2013 5:19:40 PM	7593
Chloride	2000	75		mg/Kg	50	5/24/2013 3:30:32 PM	7593
Nitrogen, Nitrite (As N)	ND	1.5		mg/Kg	5	5/23/2013 5:19:40 PM	7593
Bromide	6.7	1.5		mg/Kg	5	5/23/2013 5:19:40 PM	7593
Nitrogen, Nitrate (As N)	18	1.5		mg/Kg	5	5/23/2013 5:19:40 PM	7593
Phosphorus, Orthophosphate (As P	ND	7.5		mg/Kg	5	5/23/2013 5:19:40 PM	7593
Sulfate	2300	30		mg/Kg	20	5/23/2013 5:32:05 PM	7593
EPA METHOD 7471: MERCURY							Analyst: **IDC**
Mercury	0.40	0.16		mg/kg	5	5/29/2013 11:47:28 AM	7635
EPA METHOD 6010B: SOIL METALS							Analyst: **ELS**
Arsenic	ND	5.0		mg/Kg	2	5/29/2013 9:37:55 AM	7618
Barium	820	2.0		mg/Kg	20	5/30/2013 9:25:13 AM	7618
Cadmium	ND	0.20		mg/Kg	2	5/29/2013 9:37:55 AM	7618
Calcium	5100	50		mg/Kg	2	5/30/2013 9:19:09 AM	7618
Chromium	6.1	0.60		mg/Kg	2	5/29/2013 9:37:55 AM	7618
Lead	3.8	0.50		mg/Kg	2	5/29/2013 9:37:55 AM	7618
Magnesium	2800	50		mg/Kg	2	5/30/2013 9:19:09 AM	7618
Potassium	2000	100		mg/Kg	2	5/30/2013 9:19:09 AM	7618
Selenium	ND	5.0		mg/Kg	2	5/30/2013 9:19:09 AM	7618
Silver	ND	0.50		mg/Kg	2	5/29/2013 9:37:55 AM	7618
Sodium	7500	50		mg/Kg	2	5/30/2013 9:19:09 AM	7618
SAR SOLUBLE CATIONS							Analyst: **JLF**
Sodium Adsorption Ratio	710	0			1	5/28/2013 2:49:00 PM	7596
RESISTIVITY							Analyst: **JML**
Resistivity	138	1.00		Ohms * cm	1	5/22/2013 6:55:00 PM	7575

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller and Associates
Project: SW Disposal
Lab ID: 1305837-008 **Matrix:** SOIL

Client Sample ID: NE Corner
Collection Date: 5/20/2013 11:28:00 AM
Received Date: 5/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	4.9	1.5		mg/Kg	5	5/23/2013 5:44:30 PM	7593
Chloride	1000	30		mg/Kg	20	5/23/2013 5:56:55 PM	7593
Nitrogen, Nitrite (As N)	ND	1.5		mg/Kg	5	5/23/2013 5:44:30 PM	7593
Bromide	4.0	1.5		mg/Kg	5	5/23/2013 5:44:30 PM	7593
Nitrogen, Nitrate (As N)	11	1.5		mg/Kg	5	5/23/2013 5:44:30 PM	7593
Phosphorus, Orthophosphate (As P)	ND	7.5		mg/Kg	5	5/23/2013 5:44:30 PM	7593
Sulfate	710	7.5		mg/Kg	5	5/23/2013 5:44:30 PM	7593
EPA METHOD 7471: MERCURY						Analyst: **IDC**	
Mercury	0.69	0.16		mg/kg	5	5/29/2013 11:49:15 AM	7635
EPA METHOD 6010B: SOIL METALS						Analyst: **ELS**	
Arsenic	ND	5.0		mg/Kg	2	5/29/2013 9:43:17 AM	7618
Barium	1300	5.0		mg/Kg	50	5/30/2013 9:35:23 AM	7618
Cadmium	ND	0.20		mg/Kg	2	5/29/2013 9:43:17 AM	7618
Calcium	5700	50		mg/Kg	2	5/30/2013 9:27:58 AM	7618
Chromium	6.5	0.60		mg/Kg	2	5/29/2013 9:43:17 AM	7618
Lead	4.8	0.50		mg/Kg	2	5/29/2013 9:43:17 AM	7618
Magnesium	2900	50		mg/Kg	2	5/30/2013 9:27:58 AM	7618
Potassium	2100	100		mg/Kg	2	5/30/2013 9:27:58 AM	7618
Selenium	ND	5.0		mg/Kg	2	5/30/2013 9:27:58 AM	7618
Silver	ND	0.50		mg/Kg	2	5/29/2013 9:43:17 AM	7618
Sodium	5200	50		mg/Kg	2	5/30/2013 9:27:58 AM	7618
SAR SOLUBLE CATIONS						Analyst: **JLF**	
Sodium Adsorption Ratio	330	0			1	5/28/2013 2:49:00 PM	7596
RESISTIVITY						Analyst: **JML**	
Resistivity	224	1.00		Ohms * cm	1	5/22/2013 6:55:00 PM	7575

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Analytical Report
Lab Order 1305837
Date Reported: 6/6/2013

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller and Associates
Project: SW Disposal
Lab ID: 1305837-009 **Matrix:** SOIL

Client Sample ID: NW Corner
Collection Date: 5/20/2013 11:33:00 AM
Received Date: 5/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JRR
Fluoride	3.4	1.5		mg/Kg	5	5/23/2013 6:34:10 PM	7593
Chloride	1200	75		mg/Kg	50	5/24/2013 3:42:57 PM	7593
Nitrogen, Nitrite (As N)	ND	1.5		mg/Kg	5	5/23/2013 6:34:10 PM	7593
Bromide	4.1	1.5		mg/Kg	5	5/23/2013 6:34:10 PM	7593
Nitrogen, Nitrate (As N)	23	1.5		mg/Kg	5	5/23/2013 6:34:10 PM	7593
Phosphorus, Orthophosphate (As P)	ND	7.5		mg/Kg	5	5/23/2013 6:34:10 PM	7593
Sulfate	1100	30		mg/Kg	20	5/23/2013 6:46:35 PM	7593
EPA METHOD 7471: MERCURY							Analyst: IDC
Mercury	0.19	0.033		mg/kg	1	5/29/2013 11:22:13 AM	7635
EPA METHOD 6010B: SOIL METALS							Analyst: ELS
Arsenic	ND	13		mg/Kg	5	5/30/2013 9:38:08 AM	7618
Barium	460	1.0		mg/Kg	10	5/30/2013 9:41:14 AM	7618
Cadmium	ND	0.50		mg/Kg	5	5/30/2013 9:38:08 AM	7618
Calcium	3500	130		mg/Kg	5	5/30/2013 9:38:08 AM	7618
Chromium	5.9	1.5		mg/Kg	5	5/31/2013 4:04:28 PM	7618
Lead	3.7	1.3		mg/Kg	5	5/30/2013 9:38:08 AM	7618
Magnesium	2500	130		mg/Kg	5	5/30/2013 9:38:08 AM	7618
Potassium	2000	250		mg/Kg	5	5/30/2013 9:38:08 AM	7618
Selenium	ND	13		mg/Kg	5	5/30/2013 9:38:08 AM	7618
Silver	ND	1.3		mg/Kg	5	5/30/2013 9:38:08 AM	7618
Sodium	4900	130		mg/Kg	5	5/30/2013 9:38:08 AM	7618
SAR SOLUBLE CATIONS							Analyst: JLF
Sodium Adsorption Ratio	810	0			1	5/28/2013 2:49:00 PM	7596
RESISTIVITY							Analyst: JML
Resistivity	186	1.00		Ohms * cm	1	5/22/2013 6:55:00 PM	7575

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller and Associates
Client Sample ID: SW Corner
Project: SW Disposal
Collection Date: 5/20/2013 11:38:00 AM
Lab ID: 1305837-010 **Matrix:** SOIL **Received Date:** 5/21/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JRR
Fluoride	7.5	1.5		mg/Kg	5	5/23/2013 6:59:00 PM	7593
Chloride	1400	75		mg/Kg	50	5/24/2013 3:55:22 PM	7593
Nitrogen, Nitrite (As N)	ND	1.5		mg/Kg	5	5/23/2013 6:59:00 PM	7593
Bromide	5.2	1.5		mg/Kg	5	5/23/2013 6:59:00 PM	7593
Nitrogen, Nitrate (As N)	35	1.5		mg/Kg	5	5/23/2013 6:59:00 PM	7593
Phosphorus, Orthophosphate (As P	ND	7.5		mg/Kg	5	5/23/2013 6:59:00 PM	7593
Sulfate	2600	30		mg/Kg	20	5/23/2013 7:11:24 PM	7593
EPA METHOD 7471: MERCURY							Analyst: IDC
Mercury	0.83	0.16		mg/kg	5	5/29/2013 11:51:05 AM	7635
EPA METHOD 6010B: SOIL METALS							Analyst: ELS
Arsenic	ND	5.0		mg/Kg	2	5/29/2013 10:04:03 AM	7618
Barium	1300	5.0		mg/Kg	50	5/31/2013 4:10:11 PM	7618
Cadmium	ND	0.20		mg/Kg	2	5/29/2013 10:04:03 AM	7618
Calcium	7900	1200		mg/Kg	50	5/31/2013 4:10:11 PM	7618
Chromium	7.4	0.60		mg/Kg	2	5/29/2013 10:04:03 AM	7618
Lead	5.5	0.50		mg/Kg	2	5/29/2013 10:04:03 AM	7618
Magnesium	3900	1200		mg/Kg	50	5/31/2013 4:10:11 PM	7618
Potassium	2700	2500		mg/Kg	50	5/31/2013 4:10:11 PM	7618
Selenium	ND	5.0		mg/Kg	2	5/31/2013 4:07:21 PM	7618
Silver	ND	0.50		mg/Kg	2	5/29/2013 10:04:03 AM	7618
Sodium	9300	1200		mg/Kg	50	5/31/2013 4:10:11 PM	7618
SAR SOLUBLE CATIONS							Analyst: JLF
Sodium Adsorption Ratio	810	0			1	5/28/2013 2:49:00 PM	7596
RESISTIVITY							Analyst: JML
Resistivity	142	1.00		Ohms * cm	1	5/22/2013 6:55:00 PM	7575

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: SMA-FARM | Work Order Number: 1305837 | RcptNo: 1

Received by/date: CM 05/21/13

Logged By: Anne Thorne 5/21/2013 10:00:00 AM Anne Thorne

Completed By: Anne Thorne 5/21/2013 Anne Thorne

Reviewed By: TO 05/21/2013

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.3	Good	Yes			

Chain-of-Custody Record

Client: SMA - Farmington

Mailing Address: 2101 San Juan Blvd

Phone #: 505-325-7535

email or Fax#: steven.mostal@sudermiller.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: SW Disposal

Project #: 5122412

Project Manager: Cindy Gray

Sampler: Steve Mostal / Shawna Chubbuck

On Ice: ☒ Yes ☐ No

Sample Temperature: 4 °C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1305021
5/20/13	1026	soil	[redacted]	3x8oz.	none	-001
	1037		[redacted]			-002
	1051		[redacted]			-003
	1057		[redacted]			-004
	1112		[redacted]			-005
	1116		[redacted]			-006
	1122		SE corner			-007
	1128		NE corner			-008
	1133		NW corner			-009
	1138		SW corner			-010
	1205		[redacted]			-011
↓	1214	↓	[redacted]	↓	↓	-012

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals (+Cations)	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	GOLOB SHA	Resistivity	2.3.8.0 Alkalinity (Bicarbs)	300.0 anions	Air Bubbles (Y or N)
						↓					↓	↓	↓	↓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
5/20/13	1640	[signature]	[signature]	5/20/13	1640
5/20/13	1740	[signature]	[signature]	05/21/13	1000

Remarks: Please email report to
Shawna.Chubbuck@Sudermiller.com
Cindy.Gray@ "
Jenny.Faust@ "
Please call anions/Alk 5/22/13

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Appendix E – Seed Mix

NRE FIELD SERVICES

"Dependable Service To Suit Your Needs"

SOUTHWEST WATER DISPOSAL SITE

DENNY FOUST/SOUDER MILLER

	SPECIES	PLS
1	INDIAN RICE GRASS	4.00
2	FOUR WING SALTBUSH	2.00
3	BOTTLE BRUSH SQUIRREL TAIL	2.00
4	ALKALI SACATON	0.50
5	SHADE SCALE	1.00
6	NARROWLEAF PENSTEMON	0.25
7	ARRIBA WESTERN WHEAT GRASS	3.25
8	SIBERIAN WHEAT GRASS	2.00
		15.00 LBS

TO BE DRILLED AT 15LBS PER ACRE

Appendix F – Photograph Gallery

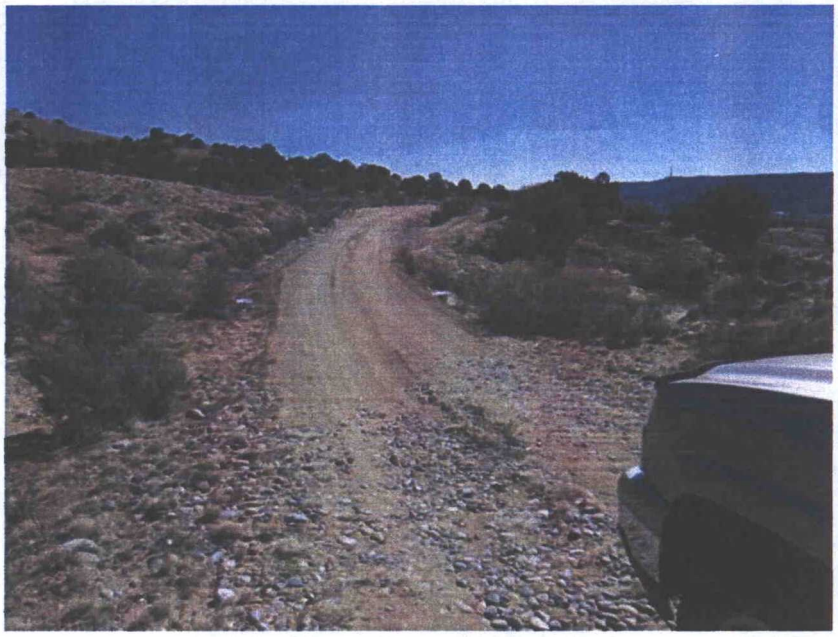


Photo 1 Entry Road and New Culvert

Photo 2 Silt Fence Construction

Photo 3 Re-vegetation Channel #1

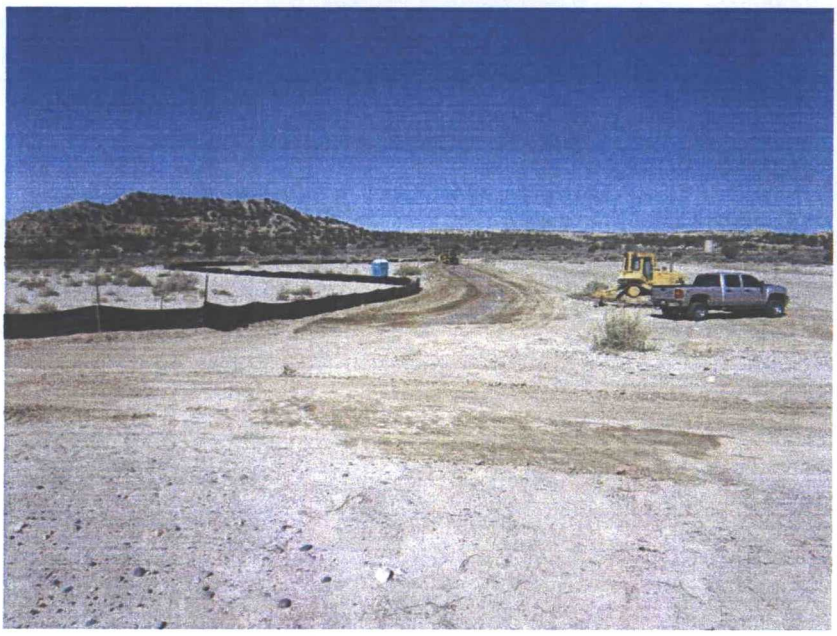


Photo 4 Re-vegetation Channel #4

Photo 5 Soil Cap Application

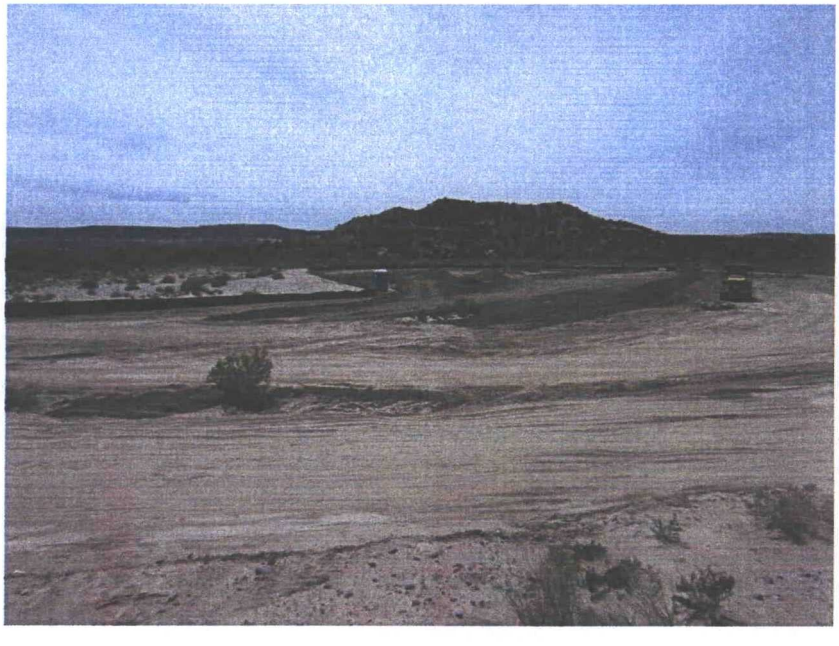


Photo 6 Work in Progress

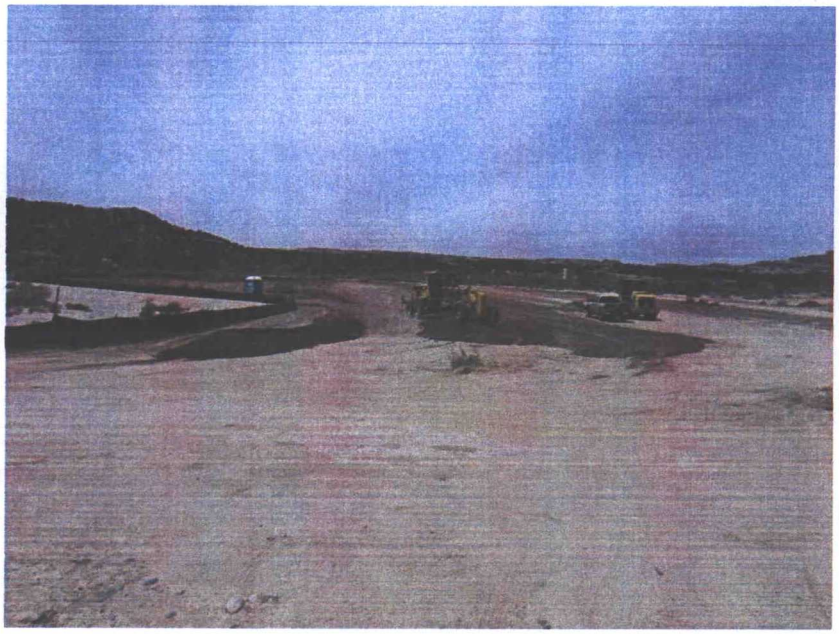


Photo 7 Grader Spreading and Contouring

Photo 8 Soil Cap Below Down Gradient Berm

Photo 9 Erosion Blankets Installation

Photo 10 Reseeded and Blankets Installed

Photo 11 Three Strand Barbed Wire Fence and Site Gate

Photo 12 Entry Gate at Road Culvert

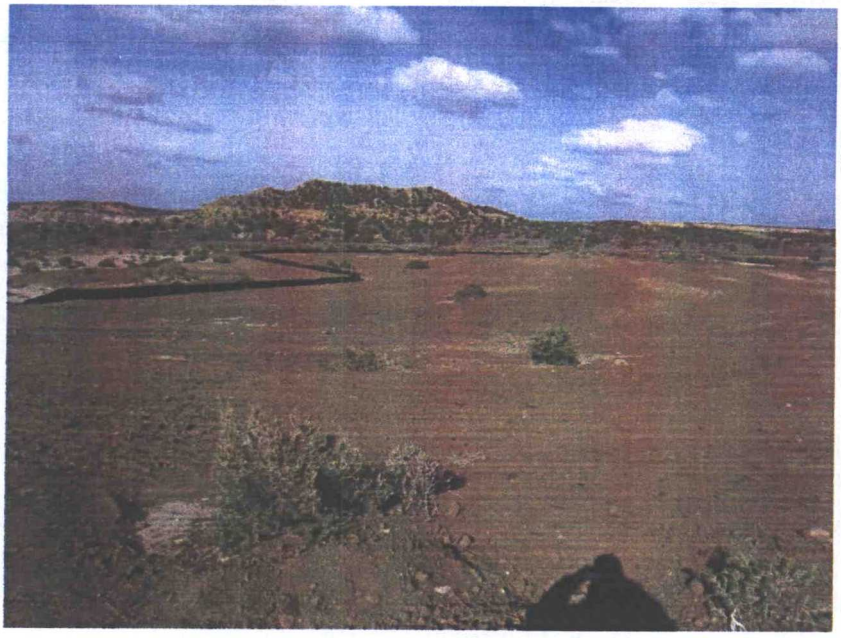


Photo 13 Looking Across Finished Growth Media Cap

Photo 14 Across Finished Growth Media Cap

Photo 15 Across Finished Growth Media Cap

Photo 16 Waiting for Rain