Section 2.5.4 Overburden Data for Amendment Lands

Section 2.5.4 outlines the permittee's commitment to handling and backfilling overburden in a 'tiered' system. Based upon the permittee's commitment to extend this commitment to its mining operations on all Amendment lands, the LQD District III has agreed that no overburden sampling or characterization will be provided in any Amendment application as long as the permittee continues mining in the Newcastle Fm. (A-Bed) and/or the Mowry Fm. (C-bed).

However, if the permittee mines other bentonite beds in other formations, the permittee will achieve agreement with the LQD District III office concerning procedures for overburden characterization prior to conducting the field sampling regime.

Section 2.5.4.1 Amendment 3 Lands that include the F-Bed

Amendment 3 lands include proposed mining of the F-Bed that is a component of the Belle Fourche shale Fm. Page 2.5.4-3 is a geologic stratigraphic section that shows the geology of the Belle Fourche shale. Overburden samples were taken with a 4-inch auger drill mounted on a 4X4 1-ton truck. Every 5 feet the drill augers were pulled out of the hole and a composite sample was collected from the auger. Sample results are included starting on page 2.5.4.1-1; samples highlighted are for Amendment 3. The shale tested with a lower pH, 3.9 at the 10-15 feet range. Using the permittee's tiered backfill system the lower pH spoil will be backfilled below the subsoil and topsoil thereby preventing acid spoil from contacting the vegetation rooting zone.

Section 2.5.4.2 Amendment 4 Overburden Data

Mining within the Amendment 4 area will remain in the C-Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3

Section 2.5.4.3 Amendment 5 Overburden Data

Mining in the Amendment 5 Areas (Wolff/Larson and S-14) will focus on the C-Bed (bentonite layer). As a result, the overburden in this Amendment will consist of 20-40 feet above the C-Bed (see page 2.5.4-3). The overburden will be backfilled into pits according to the permittee's tiered system outlined in Section 2.5.3.

There will be three out-of-pit spoil (overburden) piles associated with Amendment 5. These piles will also consist of the 20-40 feet of overburden above the C-Bed. The overburden will have slopes of greater than 4:1 and will be contoured and covered with subsoil (where available) and topsoil. Historical observations of similar out-of-pit overburden placement have shown that this material will not cause adverse impacts to surface water quality and revegetation efforts. Consequently no overburden sampling was performed for Amendment 5. This is consistent with the agreement with DEQ outlined in Section 2.5.4.

BPM 112

Section 2.5.4.4 Amendment 6 Overburden Data

Mining within the Amendment 6 area will remain in the C-Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3.

Section 2.5.4.5 Wolff Larson Amendment Overburden Data

Mining within the Wolff Larson Amendment area will remain in the C-Bed. The permittee will stockpile the overburden near the pit and replace it once the clay is salvaged, as described in 2.10.35-1 *Wolff Larson 3*.

Section 2.5.4.6 Scoggins Busenitz Amendment Overburden Data

Mining within the Scoggins Busenitz Amendment area will remain in the C-Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3.

Section 2.5.4.7 Ridinger Amendment Overburden Data

Mining within the Ridinger Amendment area will remain in the C-Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3.

Section 2.5.4.8 Maurer Lease 20 (NW) Amendment Overburden Data

Mining within the Maurer Lease 20 (NW) area will remain in the Newcastle Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3.

Section 2.5.4.9 State 14 2013 Amendment Overburden Data

Mining within the State 14 2013 area will remain in the C- Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3. There will be one permanent overburden pile on the Amendment area. The overburden will be have approximately 5:1 slopes and be contoured, covered with soil and seeded during reclamation.

Section 2.5.4.10 FAB 5 FAB 6 Joy Bell 3 Amendment Overburden Data

Mining within the FAB 5 FAB 6 Joy Bell 3 area will remain in the C- Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3. There will be no permanent overburden piles on the Amendment area.

Section 2.5.4.11 Joy Bell 12 & Joy Bell 13 Amendment Overburden Data

Mining within the Joy Bell 12 & Joy Bell 13 area will remain in the C- Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3. There will be one permanent overburden pile on the Amendment area, in the southeast corner of the Joy Bell 13 claim. The overburden will be have approximately 5:1 slopes and be contoured, covered with soil and seeded during reclamation.

Section 2.5.4.12 Link & Maurer Lease Amendment Overburden Data

Mining within the Link & Maurer Lease area will remain in the Newcastle Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3.

Section 2.5.4.13 McDonald Amendment Overburden Data

Mining with the McDonald are will include the F-Bed and G-Bed formations. Overburden analysis of Belle Fourche shale formation was completed on the McDonald property. Overburden samples were originally taken as part of Amendment 4 and were taken with a 4-inch auger drill mounted on a 4X4 1-ton truck. Two samples were taken above the G-Bed formation and 3 samples were taken above the F-Bed formation, sample locations can be found on page 2.5.5-6. Every 5 feet the drill augers were pulled out of the hole and a composite sample was collected from the auger. Sample results are included starting on page 2.5.4.1-16. The table below identifies sample results that are marginal or unsuitable with Department of Environmental Quality LQD's standards. Special handling of the material described below will be discussed in further detail in Section 2.10-56.1, in combination with the permittee's tiered backfill system, discussed in Section 2.5.3, in order to have adequate subsoil and topsoil in the reclamation to prevent spoil from contacting the vegetation rooting zone.

Sample	Depth (Ft)	Parameter	Characteristic	Sample	Depth (Ft)	Parameter	Characteristic
S1	0-5	pH	marginal	S3	10-25	EC	marginal
S1	5-10	pH	unsuitable	S3	0-55	SAR	unsuitable
S1	0-55	SAR	unsuitable	S3	0-35	ABP/1000	unsuitable
S1	0-20	EC	unsuitable	S3	0-10	Boron	unsuitable
S1	20-45	EC	marginal	S4	10-35	pH	unsuitable
S1	0-55	ABP/1000	unsuitable	S4	30-40	SAR	unsuitable
S1	0-5,10-15,25-50	Boron	unsuitable	S4	0-40	ABP/1000	unsuitable
S2	0-5	pH	unsuitable	S4	35-40	Boron	unsuitable
S2	10-50	SAR	unsuitable	S5	0-10,20-30	pH	unsuitable
S2	0-10,25-50	ABP/1000	unsuitable	S5	10-30	SAR	unsuitable
S2	5-10,20-25,30-35	Boron	unsuitable	S5	0-15	ABP/1000	unsuitable
S3	0-10	EC	unsuitable	S5	5-15	Boron	unsuitable

Section 2.5.4.14 State Lease 15 2015 Amendment Overburden Data

Mining within the State 15 area will remain in the C- Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3. There will be no permanent overburden piles on the Amendment area.

Overburden sampling was conducted on March 17, 2016 as outlined in WYDEQ/LQD Guideline 1 Section II. Overburden samples were originally taken with a 4-inch auger drill mounted on a 4X4 1-ton truck. Every 5 feet the drill augers were pulled out of the hole and a composite sample was collected from the auger. Sample results are included starting on page 2.5.4.14-1. An illustration of the sample locations can be found on page 2.5.5-8.

Section 2.5.4.15 Wyoming State Lease 42804 Amendment Overburden Data

Mining within the WY State Lease 42804 area will remain in the Newcastle Bed. The permittee will adjust the "general backfilling and handling of overburden in the 'tiered' system" manner as discussed in Section 2.5.3 in order to ensure that the most suitable overburden material (tier's 20-30') lies next to the topsoil, due to the suitability of the overburden samples acquired.

Overburden sampling was conducted on December 16, 2013 as outlined in WYDEQ/LQD Guideline 1 Section II. Overburden samples were originally taken with a 4-inch auger drill mounted on a 4X4 1-ton truck. Every 5 feet the drill augers were pulled out of the hole and a composite sample was collected from the auger. Sample results are included starting on page 2.5.4.15-1. An illustration of the sample locations can be found on page 2.5.5-7. The laboratory overburden analysis for Wyoming State Lease 42804 indicate unsuitably acidic overburden in each of the tiers of sampling except for S1A 0-5' and 20-25' and S2A tier 25-30'.

Inter-Mountain Labs
Your Environmental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 1/9/2015

CLIENT: Bentonite Performance Minerals, LLC
Project: WY State Lease 04
Lab Order: S1412312

CASE NARRATIVE

Report ID: S1412312001

Samples S1A, and S2A were received on December 19, 2014.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Bentonite Performance Minerals, LLC

554 U.S. HWY 212
Belle Fourche, SD 57717

Report ID: S1412312001

Project: WY State Lease 04
Date Received: 12/19/2014

Date Reported: 1/9/2015
Work Order: S1412312

Lab ID	Sample ID	Depths Feet	pH s.u.	Saturation %	Electrical Conductivity dS/m	PE Calcium meq/L	PE Magnesium meq/L	PE Sodium meq/L	SAR
S1412312-001	S1A	0-5	6.6	106	4.81	24.1	37.8	21.1	3.80
S1412312-002	S1A	5-10	3.9	68.1	4.68	23.0	28.1	17.7	3.51
S1412312-003	S1A	10-15	3.8	43.2	1.92	9.81	5.70	4.09	1.47
S1412312-004	S1A	15-20	4.4	55.6	2.70	16.0	9.74	9.70	2.70
S1412312-005	S1A	20-25	7.5	86.4	2.36	12.0	6.41	8.56	2.83
S1412312-006	S2A	0-5	4.0	57.9	0.53	2.49	1.14	0.70	0.52
S1412312-007	S2A	5-10	4.4	64.6	0.36	1.18	0.60	0.91	0.96
S1412312-008	S2A	10-15	4.0	41.4	1.39	6.02	1.97	4.40	2.20
S1412312-009	S2A	15-20	3.8	79.1	3.80	19.0	7.98	19.0	5.17
S1412312-010	S2A	20-25	3.9	81.4	3.46	12.5	5.54	14.7	4.88
S1412312-011	S2A	25-30	6.0	173	1.58	4.87	2.54	7.96	4.13

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

2.5.4.15-2

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Soil Analysis Report

Bentonite Performance Minerals, LLC

554 U.S. HWY 212
Belle Fourche, SD 57717

Report ID: S1412312001

Project: WY State Lease 04
Date Received: 12/19/2014

Date Reported: 1/9/2015
Work Order: S1412312

Lab ID	Sample ID	Depths Feet	Sand %	Silt %	Clay %	Texture	Arsenic ppm	Nitrate(as N) ppm	Molybdenum ppm	Selenium ppm
S1412312-001	S1A	0-5	8.0	4.0	88.0	Clay	0.13	0.7	0.3	<0.02
S1412312-002	S1A	5-10	32.0	15.0	53.0	Clay	1.23	0.1	0.14	<0.02
S1412312-003	S1A	10-15	18.0	62.0	20.0	Silty Loam	0.39	0.2	0.18	<0.02
S1412312-004	S1A	15-20	18.0	50.0	32.0	Silty Clay Loam	0.55	0.2	0.27	<0.02
S1412312-005	S1A	20-25	7.0	51.0	42.0	Silty Clay	0.10	0.2	0.15	<0.02
S1412312-006	S2A	0-5	26.0	32.0	42.0	Clay	0.42	0.2	0.14	<0.02
S1412312-007	S2A	5-10	16.0	36.0	48.0	Clay	0.26	0.1	0.16	<0.02
S1412312-008	S2A	10-15	20.0	57.0	23.0	Silty Loam	0.22	0.1	<0.05	<0.02
S1412312-009	S2A	15-20	10.0	66.0	24.0	Silty Loam	0.74	0.1	0.09	<0.02
S1412312-010	S2A	20-25	10.0	45.0	45.0	Silty Clay	0.70	0.1	0.10	<0.02
S1412312-011	S2A	25-30	16.0	32.0	52.0	Clay	0.75	5.7	0.3	<0.02

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Soil Analysis Report

Bentonite Performance Minerals, LLC

554 U.S. HWY 212
Belle Fourche, SD 57717

Report ID: S1412312001

Project: WY State Lease 04
Date Received: 12/19/2014

Date Reported: 1/9/2015
Work Order: S1412312

Lab ID	Sample ID	Depths Feet	Total Carbon %	TOC %	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Pyr+Org Sulfur %	Pyr+Org AB t/1000t	Pyr+Org ABP t/1000t
S1412312-001	S1A	0-5	0.4	0.2	1.86	58.2	16.8	-41.4	0.60	18.8	-1.99
S1412312-002	S1A	5-10	0.2	0.1	0.47	14.7	5.58	-9.11	0.11	3.53	2.05
S1412312-003	S1A	10-15	0.8	0.8	0.35	10.8	4.11	-6.67	0.26	8.14	-4.03
S1412312-004	S1A	15-20	5.1	5.0	0.42	13.2	3.04	-10.2	0.35	11.0	-7.95
S1412312-005	S1A	20-25	0.9	0.7	0.23	7.19	14.1	6.92			
S1412312-006	S2A	0-5	1.2	1.2	0.24	7.43	4.76	-2.67			
S1412312-007	S2A	5-10	0.9	0.8	0.18	5.66	11.1	5.44			
S1412312-008	S2A	10-15	0.3	0.3	0.09	2.85	2.13	-0.72			
S1412312-009	S2A	15-20	0.3	0.2	0.11	3.28	5.19	1.91			
S1412312-010	S2A	20-25	0.4	0.3	0.09	2.75	9.49	6.74			
S1412312-011	S2A	25-30	0.3	0.1	0.08	2.35	16.7	14.4			

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

2.5.4.15-4