

August 13, 2013

Permit Supervisor
Utah Coal Regulatory Program
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P. O. Box 145801
Salt Lake City, Utah 84114-5801

RECEIVED
AUG 14 2013
DIV. OF OIL, GAS & MINING

Re: Sediment Overflow Pond As-Built Amendment Deficiencies, Canyon Fuel Company, LLC,
Sufco Mine, Task ID# 4366, Permit Number C/041/0002

Dear Permit Supervisor:

Please find enclosed with this letter a Sufco Mine permit revision amendment to update the existing Sediment Overflow Pond expansion as-built drawings and to address deficiencies prepared by Division personnel.

Outstanding Deficiencies and Associated Explanation

R645-301-222

Soil Survey data for overflow pond area is provided for inclusion in Appendix 2-2

R645-301-231.400

Plate 7-4A is a design drawing and will not be revised as an as-built, thus the revisions to Plate 5-2B will remain as the as-built drawing. The topsoil pile configuration on Plate 5-2B is correct and an exhibit has been added to Appendix 2-2 of the topsoil pile configuration. The location of the drawing and exhibit are referenced in Section 2.3.1.4.

R645-301-233.100

We could not find a reference to "substitute topsoil" in the text, but upon your request we will revise the text referencing the dam materials being used as fill.

As an explanation we have provided the following information. The dam on the upper sediment pond (primary) could supply some fill material for reclamation, however calculating the volume would require supposition on the mine's part. The dam has an emergency spillway and pond outlet structure running through it. According to research (Valley Engineering drawing, prepared by M. Gregory Cloward, P.E.) when the pond was constructed in 1979 – 1980, the "material for construction of the dam will be a homogeneous sandy clay from onsite location which have been previously disturbed or will be disturbed during construction of the dam. Final design of keyway, grouting of abutments, etc. will be made after excavation on abutments etc. including removal of topsoil, trees, brush and all other undesirable material is complete". We are not aware of what the quality of the material was that was used in the construction and therefore do not want to assume it would be suitable as substitute topsoil. In addition, according to Mr. Cloward's design drawing running through the dam are a spillway designed to be 18" to 5' deep and 29' wide and a discharge outlet structure between 3 to 5' square.

The lower sediment pond has an undisturbed culvert, rippapped emergency spillway and pond discharge pipe running through the south end of the pond embankment, calculating material available for use during reclamation would be difficult and likely inaccurate.

We are not comfortable including volumes of material/ substitute topsoil for use in reclamation from the upper pond dam since it cannot be verified as suitable and from both ponds as we do not have a means to calculate the available volume with accuracy.

R645-301-241 and R645-301-352

We have a picture taken October 20, 2011 of the area with vegetation growing on it, so the assumption would be that the topsoil was replace following the finish of construction and that the area was likely seeded at the same time (October 2010, photo).

R645-301-512.100

The permit area lines on Plates 5-2A and B have been corrected.

We have included three copies of the as-built modified text and plates in redline/strike-through format along with completed C1 and C2 forms. A fourth copy has been included for the Forest Service should they need to review this information. Pagination will be adjusted when clean copies are submitted.

If you have any questions regarding the information contained in this letter or within the permit modification, please contact Vicky Miller at (435) 286-4481.

Sincerely,

CANYON FUEL COMPANY, LLC
SUFCO Mine



Kenneth E. May
General Manager

Encl.

cc: DOGM Correspondence File

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change New Permit Renewal Exploration Bond Release Transfer

Permittee: Canyon Fuel Company, LLC

Mine: Sufco Mine

Permit Number: C/041/0002

Title: Revisions to Amendment for Overflow Sediment Pond As-Builts, Task ID#4366

Description, Include reason for application and timing required to implement:

Instructions: If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

- Yes No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ increase decrease.
- Yes No 2. Is the application submitted as a result of a Division Order? DO# _____
- Yes No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- Yes No 4. Does the application include operations in hydrologic basins other than as currently approved?
- Yes No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes No 6. Does the application require or include public notice publication?
- Yes No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- Yes No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- Yes No 9. Is the application submitted as a result of a Violation? NOV # _____
- Yes No 10. Is the application submitted as a result of other laws or regulations or policies?
Explain: _____
- Yes No 11. Does the application affect the surface landowner or change the post mining land use?
- Yes No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
- Yes No 13. Does the application require or include collection and reporting of any baseline information?
- Yes No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- Yes No 15. Does the application require or include soil removal, storage or placement?
- Yes No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- Yes No 17. Does the application require or include construction, modification, or removal of surface facilities?
- Yes No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- Yes No 19. Does the application require or include certified designs, maps or calculation?
- Yes No 20. Does the application require or include subsidence control or monitoring?
- Yes No 21. Have reclamation costs for bonding been provided?
- Yes No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
- Yes No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you. (These numbers include a copy for the Price Field Office)

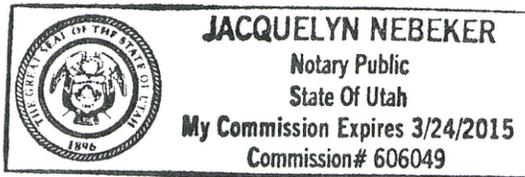
I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Kenneth E. May 8/13/2013
Print Name Date

David B. Hill Maint Manager
Sign Name, Position, Date

Subscribed and sworn to before me this 13 day of August, 2013

Jacquelyn Nebeker
Notary Public
My commission Expires: _____, 20____ }
Attest: State of _____ } ss:
County of _____



For Office Use Only: 	Assigned Tracking Number:	Received by Oil, Gas & Mining <div style="text-align: center; color: red; font-weight: bold; font-size: 1.2em;"> RECEIVED AUG 14 2013 DIV. OF OIL, GAS & MINING </div>
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CHAPTER 2

SOILS

from the minesite. Storage of the topsoil and subsoil piles will be done in accordance with Section 2.3.1.4 of this M&RP.

The topsoil removed from construction of the overflow pond and overflow pond access road will be stockpiled on a stable surface southwest of the overflow pond, see Plate 7-4A. According to Plate 2-1 the overflow pond site consists of type T soil. The A horizon is 0 to 2 inches in depth and the B horizon is 2-12 inches in depth. The topsoil stockpile will be segregated between A and B horizons. Much of the site of the overflow pond is on steep hill sides where topsoil is less than 6 inches deep. Assuming an average of 12 inches of removal the following quantities have been calculated:

$$0.167 \text{ ft} \times 49,950 \text{ sq ft} = 8,342 \text{ cu ft} (\sim 309 \text{ cy}) \text{ horizon A}$$

$$0.833 \text{ ft} \times 49,950 \text{ sq ft} = 41,608 \text{ cu ft} (\sim 1,541 \text{ cy}) \text{ horizon B}$$

$$\text{Total } 309 \text{ cy} + 1,541 \text{ cy} = 1,850 \text{ cy}$$

A site specific soil survey will be completed for the Overflow Pond prior to disturbance and this information will be utilized in determining topsoil salvage depth. During topsoil removal observations and measurements in the field will be conducted by the site construction supervisor or a trained representative. **Actual volume of topsoil removed and stockpiled for the Overflow Pond was 1,488 cubic yards.**

During the topsoil removal operation for the temporary access road for the construction of the bypass culvert portion of the overflow pond, the total depth of soil removal will be based upon the color change between the upper most and underlying layer and the use of a tape measure. For calculation purposes, the upper layer of soils was assumed to average 12-inches. Therefore, the total material removed prior to excavating the bypass culvert trench is:

$$13000 \text{ sq ft} \times 1.0 \text{ ft} = 13000 \text{ cubic feet or approximately } 482 \text{ cubic yards.}$$

The 482 yards of salvaged soils will be removed and placed adjacent to the new bypass culvert trench location. The remaining material, C2 horizon, will be excavated from the trench and temporarily stored adjacent to the excavation but not mixed with the 482 cubic yards of salvaged

soil. After the culvert is placed, the excavated C2 material will be replaced in the trench and any remaining material will be evenly spread over the disturbed trench area. The salvaged 482 cubic yards of soils will then be spread over the disturbed area. The surface will be left in a roughened state to reduce erosion. Reseeding of the area **was completed in 2010.**

2.3.1.2 Suitability of Topsoil Substitutes/Supplements

See Section 2.3.3.2

2.3.1.3 Testing of Topsoil Handling and Reclamation Procedures Regarding Revegetation

The Applicant will exercise care to guard against erosion during and after application of topsoil and will employ the necessary measures to ensure the stability of topsoil on graded slopes. Erosion control measures will include surface roughing and erosion mat placement on slope areas thought to be unstable. The Applicant will fill, regrade, or otherwise stabilize any rills or gullies deeper than nine (9) inches which form in areas which have been regraded and topsoiled. The areas adjacent to any rills or gullies which have been filled, regraded or otherwise stabilized, will be reseeded or stabilized accordingly.

Methods used to evaluate success of revegetation and stabilization appear in page 37 of Appendix 2-2. Erosion monitor pins will be placed on the slopes at the time of reseeded. Locations of the erosion pins will be obtained via a random number generator. The pin locations will be surveyed and revegetation analyses conducted annually following completion of reseeded, until the release of the bond.

2.3.1.4 Construction, Modification, Use, and Maintenance of Topsoil Storage Piles

The topsoil storage piles (Plate 2-1) at the SUFCA Mine in East Spring Canyon area consist of small amounts of topsoil, from the substation pad (27 cubic yards) and the area where the sediment pond (1,200 cubic yards) was constructed. The topsoil materials were segregated and stockpiled. The stockpiled materials were selectively placed in small area exemption areas within the permit area on stable surface areas below the sediment pond (0.105 acres) and on the south

not be moved or disturbed until it is required for redistribution during final reclamation. The surface of the topsoil pile will be pitted to reduce runoff and erosion. Vegetation removed during site construction, such as sage brush and other woody plants, will be placed on top of the pile.

Excess subsoil associated with construction of a run of mine coal stockpile **and the West Lease portal tunnel development** is stored at SUFCO Mine's ~~40-acre~~ waste rock disposal site (see Section 3.1.6 of Volume 3 of this M&RP). This material is segregated and will be available for fill during the reclamation phase of the mine site if needed. ~~About 1,100~~ **A total of 756.4** cubic yards of topsoil are stored immediately west **and to the east** of the subsoil pile. This material represents the upper ~~24~~**12** inches of topsoil removed prior to placing the subsoil. This material is stored and protected as described in Section 3.1.6 of Volume 3 of this M&RP. This topsoil is reserved to reclaim the subsoil storage area. The substation binwall has 2,160 cubic yards of subsoil material and 5,300 cubic yards of road base **and there is 11,364 cubic yards subsoil material stored at the waste rock site for a total of 18,824 cubic yards** that will be available for use as subsoil material during final reclamation **of the minesite facilities pad site.**

Refer to Appendix 2-2 and Plate 5-2B for the topsoil stockpile configuration for the lower overflow sediment pond.

2.3.2 Topsoil and Subsoil Removal

2.3.2.1 Topsoil Removal and Segregation

All topsoil thicker than 6 inches will be removed as a separate layer from the subsoil, segregated, and stockpiled separately. Topsoil less than 6 inches thick will be removed according to Section 2.3.2.3. However, in the areas of the Link Canyon Substation Nos. 1 and 2 pads, all soil will be removed and stored in one area as a single soil resource. At substation pad No. 1, the maximum projected volume of topsoil salvage based on the soil survey depth of 20 inches and the projected topsoil salvage area of 0.08 acres is 224 cubic yards. The salvaged topsoil will be removed as a separate layer, segregated and placed on the south end of the pad outslope. The remaining excavated material in the deeper cuts will be used as fill material for the access road and the north

APPENDIX 2-2

**Report of Studies of Vegetation and Soils for
SUFCA Mine**



Soil Analysis Report
Canyon Fuel Company, LLC.

397 South 800 West
Salina, UT 84654

Report ID: S0909487002
(Replaces S0909487001)

Project: Sufco Sed. Pond

Date Received: 9/23/2009

Date Reported: 10/2/2009

Work Order: S0909487

Lab ID	Sample ID	Depths Inches	pH s.u.	Saturation %	Electrical		Organic Matter %	Calcium meq/L	Magnesium meq/L	Potassium meq/L	Sodium meq/L	SAR
					Conductivity dS/m	PE						
S0909487-001	S-1-09	0-6	7.8	45.9	0.64	3.2	4.90	1.08	0.25	0.62	0.36	
S0909487-002	S-1-09	6-13	7.5	49.8	0.97	1.7	7.86	1.91	0.17	0.85	0.38	
S0909487-003	S-1-09	13-20	7.3	49.1	1.90	2.0	18.0	4.19	0.17	1.54	0.46	
S0909487-004	S-1-09	20-32	6.9	37.4	3.92	8.0	34.5	33.1	0.29	1.15	0.20	
S0909487-005	S-1-09	32-42	7.0	43.5	3.59	9.5	32.4	30.3	0.12	0.91	0.16	
S0909487-006	S-1-09	42-54	7.4	40.0	2.31	4.6	15.9	17.1	0.22	2.03	0.50	
S0909487-007	S-1-09	54-72	7.6	36.1	2.07	3.4	16.2	12.6	0.38	1.49	0.39	
S0909487-008	S-3-09	0-8	7.3	56.9	0.80	9.5	5.83	2.44	0.41	0.58	0.28	
S0909487-009	S-3-09	8-19	7.3	58.4	0.45	7.9	2.82	1.52	0.08	0.24	0.16	
S0909487-022	S-3-09	19-30	6.5	86.0	0.43	3.8	2.29	1.61	0.20	0.43	0.31	
S0909487-010	S-3-09	30-39	7.2	35.1	0.61	3.2	4.01	1.74	0.13	0.40	0.24	
S0909487-011	S-3-09	39-45	7.5	34.8	0.51	2.6	3.41	1.36	0.13	0.24	0.15	
S0909487-012	S-3-09	45-60	8.0	24.4	0.36	0.8	1.71	0.93	0.12	0.42	0.36	
S0909487-013	S-3-09	60-73	8.1	26.5	0.31	1.4	2.28	0.91	0.20	0.16	0.13	
S0909487-014	S-3-09	73-82	7.7	53.3	0.53	4.4	3.42	1.17	0.19	0.17	0.11	
S0909487-015	S-3-09	82-94	8.3	21.4	0.25	0.4	2.60	1.33	0.45	0.17	0.12	
S0909487-016	S-4-09	0-6	7.4	34.5	1.36	4.1	5.53	5.25	0.25	4.67	2.01	
S0909487-017	S-4-09	6-12	7.2	51.0	0.84	6.7	4.06	2.35	0.24	2.36	1.32	
S0909487-018	S-4-09	12-24	7.2	60.6	0.76	5.3	3.81	2.53	0.19	1.63	0.92	
S0909487-019	S-4-09	24-36	7.1	37.5	0.80	6.5	4.02	2.56	0.18	1.71	0.95	

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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



Soil Analysis Report

Canyon Fuel Company, LLC.

397 South 800 West
Salina, UT 84654

Report ID: S0909487002
(Replaces S0909487001)

Date Reported: 10/2/2009
Work Order: S0909487

Project: Sufco Sed. Pond
Date Received: 9/23/2009

Lab ID	Sample ID	Depths Inches	Sand		Silt %	Clay %	Texture	Very Fine		CO3 %
			%	%				Sand %	Sand %	
S0909487-001	S-1-09	0-6	50.0	25.0	25.0	25.0	Sandy Clay Loam	21.9	9.3	
S0909487-002	S-1-09	6-13	48.0	26.0	26.0	26.0	Sandy Clay Loam	21.6	7.6	
S0909487-003	S-1-09	13-20	40.0	29.0	29.0	31.0	Clay Loam	15.2	9.3	
S0909487-004	S-1-09	20-32	42.0	33.0	33.0	25.0	Loam	9.0	25.6	
S0909487-005	S-1-09	32-42	52.0	24.0	24.0	24.0	Sandy Clay Loam	6.3	19.1	
S0909487-006	S-1-09	42-54	32.0	39.0	39.0	29.0	Clay Loam	4.4	29.8	
S0909487-007	S-1-09	54-72	34.0	37.0	37.0	29.0	Clay Loam	5.8	32.9	
S0909487-008	S-3-09	0-8	69.0	18.0	18.0	13.0	Sandy Loam	11.8	12.0	
S0909487-009	S-3-09	8-19	81.0	11.0	11.0	8.0	Loamy Sand	7.3	10.1	
S0909487-022	S-3-09	19-30	98.0	<0.1	<0.1	2.0	Sand	5.9	1.3	
S0909487-010	S-3-09	30-39	72.0	16.0	16.0	12.0	Sandy Loam	14.0	12.5	
S0909487-011	S-3-09	39-45	66.0	17.0	17.0	17.0	Sandy Loam	13.7	16.7	
S0909487-012	S-3-09	45-60	87.0	7.0	7.0	6.0	Loamy Sand	0.6	11.5	
S0909487-013	S-3-09	60-73	80.0	10.0	10.0	10.0	Loamy Sand	10.7	21.6	
S0909487-014	S-3-09	73-82	44.0	33.0	33.0	23.0	Loam	13.5	21.8	
S0909487-015	S-3-09	82-94	92.0	3.0	3.0	5.0	Sand	4.4	11.1	
S0909487-016	S-4-09	0-6	78.0	12.0	12.0	10.0	Sandy Loam	11.5	15.9	
S0909487-017	S-4-09	6-12	64.0	23.0	23.0	13.0	Sandy Loam	16.2	19.2	
S0909487-018	S-4-09	12-24	39.0	41.0	41.0	20.0	Loam	19.6	21.4	
S0909487-019	S-4-09	24-36	74.0	15.0	15.0	11.0	Sandy Loam	13.4	17.0	

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2O Sol= 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



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Lab ID	Sample ID	Depths Inches	Selenium ppm	Boron ppm	Nitrogen		Available		Total	
					Nitrate ppm	Phosphorus ppm	Potassium meq/100g	Carbon %	TOC %	
S0909487-001	S-1-09	0-6	<0.02	1.36	4.8	4.2	0.08	5.0	4.0	
S0909487-002	S-1-09	6-13	<0.02	0.94	32.3	26.4	0.05	3.6	2.7	
S0909487-003	S-1-09	13-20	<0.02	0.90	64.0	16.6	0.05	4.5	3.5	
S0909487-004	S-1-09	20-32	0.21	4.49	61.8	4.3	0.03	19.9	16.9	
S0909487-005	S-1-09	32-42	0.07	5.50	44.3	3.7	0.02	29.9	27.7	
S0909487-006	S-1-09	42-54	0.04	2.27	20.2	3.3	0.02	9.1	5.6	
S0909487-007	S-1-09	54-72	0.02	1.32	12.7	6.3	0.03	6.2	2.5	
S0909487-008	S-3-09	0-6	<0.02	2.44	18.0	17.7	0.07	35.8	34.6	
S0909487-009	S-3-09	8-19	<0.02	4.39	0.3	3.1	0.01	49.4	48.4	
S0909487-022	S-3-09	19-30	<0.02	5.14	5.6	3.7	<0.01	67.8	67.7	
S0909487-010	S-3-09	30-39	<0.02	2.58	10.1	54.1	0.02	2.5	1.1	
S0909487-011	S-3-09	39-45	<0.02	1.79	7.0	40.4	0.01	3.0	0.9	
S0909487-012	S-3-09	45-60	<0.02	0.44	<0.1	18.0	<0.01	1.4	0.3	
S0909487-013	S-3-09	60-73	<0.02	0.81	1.0	27.8	<0.01	2.3	<0.1	
S0909487-014	S-3-09	73-82	<0.02	2.11	6.7	16.6	0.03	4.1	1.5	
S0909487-015	S-3-09	82-94	<0.02	0.44	<0.1	7.3	<0.01	1.0	<0.1	
S0909487-016	S-4-09	0-6	<0.02	1.20	<0.1	8.0	0.01	9.6	8.1	
S0909487-017	S-4-09	6-12	<0.02	2.22	<0.1	12.6	0.02	10.6	8.2	
S0909487-018	S-4-09	12-24	<0.02	1.82	1.1	11.2	0.02	11.1	8.6	
S0909487-019	S-4-09	24-36	<0.02	1.54	1.5	5.6	0.01	26.1	24.1	

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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

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Karen Secor, Soil Lab Supervisor



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Project: Sufco Sed. Pond
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Lab ID	Sample ID	Depths Inches	Total		T.S.		Neutral.		T.S.	
			Sulfur %	AB /1000t	AB /1000t	Potential /1000t	ABP /1000t			
S0909487-001	S-1-09	0-6	0.04	1.17	87.0	85.9				
S0909487-002	S-1-09	6-13	0.02	0.71	74.0	73.3				
S0909487-003	S-1-09	13-20	0.04	1.18	84.1	82.9				
S0909487-004	S-1-09	20-32	0.20	6.20	248	242				
S0909487-005	S-1-09	32-42	0.28	8.69	188	180				
S0909487-006	S-1-09	42-54	0.05	1.61	297	296				
S0909487-007	S-1-09	54-72	0.01	0.37	309	308				
S0909487-008	S-3-09	0-8	0.18	5.58	100	94.6				
S0909487-009	S-3-09	8-19	0.25	7.73	85.7	78.0				
S0909487-022	S-3-09	19-30	0.31	9.63	13.8	4.16				
S0909487-010	S-3-09	30-39	<0.01	<0.01	115	115				
S0909487-011	S-3-09	39-45	0.02	0.51	174	174				
S0909487-012	S-3-09	45-60	<0.01	<0.01	92.6	92.6				
S0909487-013	S-3-09	60-73	<0.01	<0.01	187	187				
S0909487-014	S-3-09	73-82	0.02	0.62	218	217				
S0909487-015	S-3-09	82-94	<0.01	<0.01	86.9	86.9				
S0909487-016	S-4-09	0-6	0.05	1.70	130	128				
S0909487-017	S-4-09	6-12	0.07	2.17	208	205				
S0909487-018	S-4-09	12-24	0.20	6.13	202	196				
S0909487-019	S-4-09	24-36	0.23	7.17	170	163				

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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



Soil Analysis Report
Canyon Fuel Company, LLC.
397 South 800 West
Salina, UT 84654

Report ID: S0909487002
(Replaces S0909487001)
Date Reported: 10/2/2009
Work Order: S0909487

Project: Sufco Sed. Pond
Date Received: 9/23/2009

Lab ID	Sample ID	Depths Inches	pH s.u.	Saturation %	Electrical Conductivity dS/m	Organic Matter %	PE			SAR	
							Calcium meq/L	Magnesium meq/L	Potassium meq/L		
S0909487-020	S-4-09	36-48	7.1	44.5	0.85	5.1	4.72	3.20	0.21	1.46	0.73
S0909487-021	S-4-09	48-54	7.1	45.6	0.90	5.5	5.34	3.34	0.23	1.57	0.75

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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



Soil Analysis Report

Canyon Fuel Company, LLC.

397 South 800 West
Salina, UT 84654

Report ID: S0909487002
(Replaces S0909487001)

Date Reported: 10/2/2009
Work Order: S0909487

Project: Sufco Sed. Pond
Date Received: 9/23/2009

Lab ID	Sample ID	Depths Inches	Very Fine					
			Sand %	Silt %	Clay %	Texture	Sand %	CO3 %
S0909487-020	S-4-09	36-48	70.0	18.0	12.0	Sandy Loam	15.8	12.3
S0909487-021	S-4-09	48-54	65.0	22.0	13.0	Sandy Loam	13.8	14.4

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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 Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report

Canyon Fuel Company, LLC.
397 South 800 West
Salina, UT 84654

Report ID: S0909487002
(Replaces S0909487001)

Date Reported: 10/2/2009
Work Order: S0909487

Project: Sufco Sed. Pond
Date Received: 9/23/2009

Lab ID	Sample ID	Depths Inches	Selenium		Boron ppm	Nitrogen		Available		Total	
			ppm	ppm		Nitrate ppm	Phosphorus ppm	Potassium meq/100g	Carbon %	TOC %	
S0909487-020	S-4-09	36-48	<0.02	1.70	<0.1	7.0	0.02	29.8	28.5		
S0909487-021	S-4-09	48-54	<0.02	1.34	0.3	7.2	0.01	19.7	18.2		

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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



Soil Analysis Report

Canyon Fuel Company, LLC.

397 South 800 West
Salina, UT 84654

Report ID: S0909487002
(Replaces S0909487001)

Date Reported: 10/2/2009
Work Order: S0909487

Project: Sufco Sed. Pond
Date Received: 9/23/2009

Lab ID	Sample ID	Depths Inches	Total Sulfur %	T.S.		Neutral.		T.S.	
				AB	U/1000t	Potential	U/1000t	ABP	U/1000t
S0909487-020	S-4-09	36-48	0.45	14.0	113	113	99.1		
S0909487-021	S-4-09	48-54	0.27	8.32	125	125	116		

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2Osol= 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



Soil Analysis Report
Canyon Fuel Company, LLC.
397 South 800 West
Salina, UT 84654

Report ID: S0909486001

Project: Sufco Sed. Pond
Date Received: 9/23/2009

Date Reported: 10/2/2009
Work Order: S0909486

Lab ID	Sample ID	Depths Inches	pH s.u.	Saturation %	Electrical Conductivity dS/m	Organic Matter %	PE			SAR	
							Calcium meq/L	Magnesium meq/L	Potassium meq/L		
S0909486-001	S-2-09	2-5	7.4	51.8	1.18	7.6	4.90	4.24	1.67	2.12	0.99
S0909486-002	S-2-09	5-10	7.5	30.8	0.69	3.9	3.14	2.15	1.26	0.95	0.58
S0909486-003	S-2-09	10-18	7.7	31.8	0.81	4.2	3.81	1.93	1.34	1.09	0.64
S0909486-004	S-2-09	18-28	7.8	31.1	0.71	2.6	2.41	1.75	0.95	1.54	1.07
S0909486-005	S-2-09	28-40	8.0	38.0	0.74	4.7	1.94	2.06	1.06	2.60	1.84
S0909486-006	S-2-09	40-51	8.0	24.7	0.46	1.7	1.45	1.01	0.75	0.87	0.79
S0909486-007	S-2-09	51-65	7.8	27.0	0.52	2.1	2.30	1.28	0.81	0.80	0.60

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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



Soil Analysis Report

Canyon Fuel Company, LLC.
397 South 800 West
Saltina, UT 84654

Report ID: S0909486001

Project: Sufco Sed. Pond

Date Received: 9/23/2009

Date Reported: 10/2/2009

Work Order: S0909486

Lab ID	Sample ID	Depths Inches	Sand				Silt %	Clay %	Texture	Very Fine		Nitrogen		Available	
			%	%	%	%				Sand %	CO3 %	Nitrate ppm	Phosphorus ppm	Potassium meq/100g	
S0909486-001	S-2-09	2-5	54.0	26.0	20.0	20.0	Sandy Clay Loam	14.2	20.7	0.6	30.4	0.10			
S0909486-002	S-2-09	5-10	72.0	16.0	12.0	12.0	Sandy Loam	6.5	21.6	0.1	11.2	0.05			
S0909486-003	S-2-09	10-18	64.0	21.0	15.0	15.0	Sandy Loam	9.7	21.9	0.9	17.8	0.06			
S0909486-004	S-2-09	18-28	56.0	29.0	15.0	15.0	Sandy Loam	11.7	31.3	<0.1	5.6	0.04			
S0909486-005	S-2-09	28-40	52.0	27.0	21.0	21.0	Sandy Clay Loam	<0.1	25.2	<0.1	6.4	0.07			
S0909486-006	S-2-09	40-51	82.0	10.0	8.0	8.0	Loamy Sand	38.7	21.0	<0.1	3.6	0.03			
S0909486-007	S-2-09	51-65	70.0	20.0	10.0	10.0	Sandy Loam	5.1	24.6	<0.1	3.8	0.03			

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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



Soil Analysis Report
Canyon Fuel Company, LLC.
397 South 800 West
Salina, UT 84654

Report ID: S0909486001

Project: Sufco Sed. Pond
Date Received: 9/23/2009

Date Reported: 10/2/2009
Work Order: S0909486

Lab ID	Sample ID	Depths Inches	Total		Neutral.	
			Carbon %	TOC %	Potential U/1000t	
S0909486-001	S-2-09	2-5	9.4	6.9	207	
S0909486-002	S-2-09	5-10	4.2	1.6	216	
S0909486-003	S-2-09	10-18	5.5	2.9	219	
S0909486-004	S-2-09	18-28	5.7	1.9	313	
S0909486-005	S-2-09	28-40	5.1	2.1	252	
S0909486-006	S-2-09	40-51	3.0	0.5	210	
S0909486-007	S-2-09	51-65	4.3	1.4	246	

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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= 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



Soil Analysis Report
Canyon Fuel Company, LLC.
397 South 800 West
Salina, UT 84654

Report ID: S0910070001

Project: Sufco Sed Pond
Date Received: 10/16/2009

Date Reported: 10/13/2009
Work Order: S0910070

Lab ID	Sample ID	Depths Inches	pH s.u.	Saturation %	Electrical Conductivity dS/m	Organic Matter %	PE			PE		
							Calcium meq/L	Magnesium meq/L	Potassium meq/L	Sodium meq/L	Sulfur meq/L	SAR
S0910070-001	S-5-09	1-5	7.3	73.2	0.85	13.0	4.96	1.80	1.08	0.91	0.49	
S0910070-002	S-5-09	5-12	7.6	33.8	0.76	4.2	2.97	1.18	0.58	2.47	1.71	
S0910070-003	S-5-09	12-18	7.6	37.5	0.70	4.7	3.61	1.49	0.75	0.73	0.46	
S0910070-004	S-5-09	18-30	7.6	39.9	0.78	3.6	3.34	1.69	0.46	1.96	1.24	
S0910070-005	S-5-09	30-43	7.6	42.7	0.70	5.1	3.21	1.55	0.27	1.40	0.91	
S0910070-006	S-5-09	43-47	7.5	38.5	1.65	4.8	9.74	3.45	0.38	1.82	0.71	
S0910070-007	S-5-09	47-63	7.6	28.8	1.78	1.6	10.2	4.39	0.33	2.58	0.95	
S0910070-008	S-5-09	63-68	7.5	32.6	2.77	1.9	17.6	6.91	0.64	3.79	1.08	
S0910070-009	S-5-09	68-76	7.6	36.1	3.18	1.8	18.5	10.6	0.91	6.02	1.58	

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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 Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report
Canyon Fuel Company, LLC.
397 South 800 West
Salina, UT 84654

Report ID: S0910070001

Project: Sufco Sed Pond

Date Reported: 10/13/2009

Date Received: 10/6/2009

Work Order: S0910070

Lab ID	Sample ID	Depths Inches	Very Fine				Nitrogen		Available		
			Sand %	Silt %	Clay %	Texture	Sand %	CO3 %	Nitrate ppm	Phosphorus ppm	Potassium meg/100g
S0910070-001	S-5-09	1-5	57.0	26.0	17.0	Sandy Loam	20.4	23.0	0.3	13.2	0.87
S0910070-002	S-5-09	5-12	63.0	22.0	15.0	Sandy Loam	7.2	30.3	0.3	6.86	0.37
S0910070-003	S-5-09	12-18	69.0	19.0	12.0	Sandy Loam	12.9	24.6	5.9	7.14	0.44
S0910070-004	S-5-09	18-30	60.0	22.0	18.0	Sandy Loam	11.1	26.8	4.6	6.53	0.37
S0910070-005	S-5-09	30-43	53.0	26.0	21.0	Sandy Clay Loam	5.1	27.9	<0.1	6.31	0.32
S0910070-006	S-5-09	43-47	63.0	17.0	20.0	Sandy Clay Loam	2.3	24.5	0.5	6.26	0.24
S0910070-007	S-5-09	47-63	73.0	12.0	15.0	Sandy Loam	6.4	33.3	0.5	4.04	0.13
S0910070-008	S-5-09	63-68	57.0	24.0	19.0	Sandy Loam	4.7	25.9	0.9	4.00	0.29
S0910070-009	S-5-09	68-76	57.0	23.0	20.0	Sandy Clay Loam	4.9	27.4	0.9	4.08	0.33

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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



Soil Analysis Report
Canyon Fuel Company, LLC.
 397 South 800 West
 Salina, UT 84654

Report ID: S0910070001

Project: Suftco Sed Pond

Date Received: 10/6/2009

Date Reported: 10/13/2009

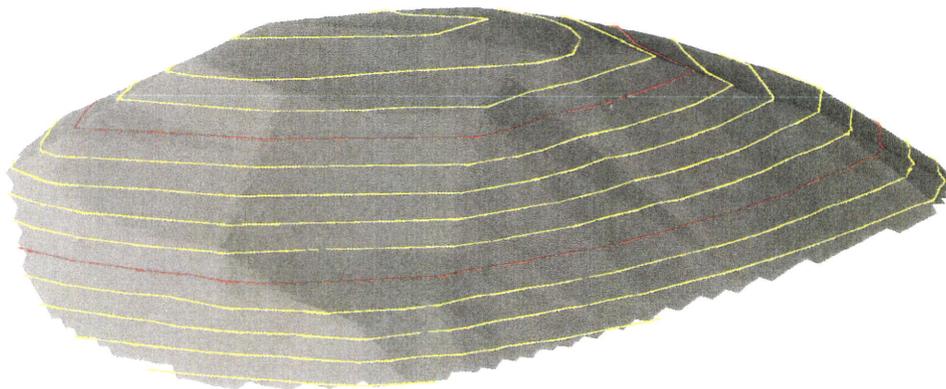
Work Order: S0910070

Lab ID	Sample ID	Depths Inches	Total		Neutral	
			Carbon %	TOC %	Carbon %	Potential 1/1000t
S0910070-001	S-5-09	1-5	13.7	11.0	230	
S0910070-002	S-5-09	5-12	5.8	2.1	303	
S0910070-003	S-5-09	12-18	4.7	1.7	246	
S0910070-004	S-5-09	18-30	5.2	1.9	268	
S0910070-005	S-5-09	30-43	5.8	2.4	279	
S0910070-006	S-5-09	43-47	5.5	2.6	245	
S0910070-007	S-5-09	47-63	4.0	<0.1	333	
S0910070-008	S-5-09	63-68	4.0	0.9	259	
S0910070-009	S-5-09	68-76	4.0	0.7	274	

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2SO4= 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



Site Volume Table: Unadjusted

Site	Stratum	Surf1	Surf2	yards	Cut	yards	Fill	yards	Net	Method
TOPSOIL	topsoil	topsoil-base	topsoil-pile		0		1486		1486 (F)	Grid
					0		1488		1488 (F)	Composite
					0		1488		1488 (F)	End area

CHAPTER 7
HYDROLOGY

Overflow Pond, Primary Sedimentation Pond and Concrete Sediment Trap. The calculations contained in Appendix 7-14 were based on the assumption that the primary sedimentation pond will fully contain the runoff from the main facility disturbed areas. The concrete sediment trap will pass the water to the sedimentation pond, but will not provide significant runoff storage. The concrete sediment trap is used primarily for the removal of sediment.

Several drainage areas, identified on Plate 7-6, contribute runoff to the overflow pond. The disturbed drainage area contributing directly to the overflow pond are DIS-1 through DIS-6. The undisturbed drainage area contributing to the overflow pond is CBW-1.

The curve numbers used to determine the design runoff volume were based on information presented in Appendix 7-11 and Appendix 7-23. The curve number assumed for the disturbed watershed DIS-1 through DIS-4 is 80 and for DIS-5 and DIS-6 is 100, see Appendix 7-11 and 7-23. The curve number for undisturbed watersheds CBW-1 is 72, see Appendix 7-11. Refer to Table 7-6 for a list of all disturbed and undisturbed subwatershed areas and curve numbers within the facilities area. Based on the curve numbers presented above, the storm runoff volume from the 10-year, 24-hour storm event to the overflow pond is 57,898 cubic feet (1.33 acre-feet). The maintenance runoff rate of 0.046 cfs adds 3,975 cubic feet (0.0913 acre-feet) to this volume during a 24-hour period, resulting in a combined required runoff storage volume of 61,873 cubic feet (1.42 acre-feet) without sediment storage. The calculations, presented in Appendix 7-23, are based on hydrologic design methods described in Appendix 7-10. As presented above, the maximum sediment storage volume is 24,211 cubic feet. In order to fully contain the runoff from the 10-year, 24-hour storm event and the maximum sediment storage, the primary spillway elevation for the overflow pond is 7252.5 (2.14 acre-feet), from the stage-capacity table contained in Table 7-8A. The required minimum elevation for the primary spillway with a volume of 24,211 cubic feet is 7,252.26, for ease of construction the primary spillway elevation will be 7,252.50 feet. **The actual overflow pond is 3.15 acre-feet.**

Several drainage areas, identified on Plate 7-6, contribute runoff to the primary sedimentation pond. The disturbed drainage areas contributing to the pond are DIS-1, DIS-2, DIS-3, DIS-4, and DIS-5. The undisturbed drainage area contributing to the pond is CBW-1. The undisturbed drainage CBW-1 is discharged to the pond because it was determined that construction of a diversion ditch along the