

WEST RIDGE MINE

007/041

**CHANGE TO THE MINING AND
RECLAMATION PLAN**

**SUBMITTAL OF APPENDIX 5-19
DEFICIENCY RESPONSE MARCH 22, 2012
TASK ID#4010**

SUBMITTAL OF APPENDIX 5-19

**TO ALLOW TEMPORARY
RE-OPENING OF THE
“B” CANYON PORTAL**

**RESPONSE TO THE DEFICIENCIES AND ORIGINAL
SUBMITTAL**

SUBMITTED: MAY 10, 2012

C0070041
Incoming
4098
α



P.O. Box 910, East Carbon, Utah 84520
Telephone (435) 888-4000 Fax (435) 888-4002

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

May 15, 2012

Attn: Darron Haddock
Permit Supervisor

Re: West Ridge Mine C/007/041
Response to Deficiencies Task ID #4010
Change to Allow Re-Opening of B Canyon Portal

Dear Mr Haddock::

Enclosed are six (6 ea.) copies of the deficiency response TA #4010, to allow the re-opening of the B Canyon portal. Note that this submittal is intended to satisfy the requirements for 6 clean copies as well as addresses the deficiencies identified in TA #4010. The submittal is in the format that can be readily inserted into the approved MRP.

This action is needed so that we may conduct safety related rehabilitation work in some of the old Kaiser mine entries prior to longwall development in that area. This action would be temporary (within six months after re-opening the portal, we would then seal it back up and reclaim it). As we discussed earlier, this portal was backfilled by AML back in 1998, but the steel canopy is still intact and easily accessible.

A letter addressing how the deficiencies were addressed is included along with a C1 and C2 forms. A redline strikeout copy is also included to assist in the review. A new complete copy of Chapter 1 and 5 is included for insertion to the MRP. The new copies are needed to correct page numbering and formats to the original approved copies. The only changes made are shown in the redline strikeout copies.

If you have questions or comments please contact me at (435) 888-4016.

Sincerely,
David Hibbs

David Hibbs
Resident Agent

RECEIVED
MAY 15 2012
DIV. OF OIL, GAS & MINING

File in:
 Confidential
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 Expandable
Date Folder *05/15/12* C/ *0070041*
Incoming, See Confidential

Deficiency List
Task N. 4010
Re-Opening of B Canyon Portal

R645-301-244.200, Please modify the reclamation plan described in Chap 2 and Chap 5 to include 1 T/ac straw mulch incorporated into the surface soil and 1 Ton/ac mulch scattered over the surface after seed and mulch application and scattering of slash on the seeded and mulched surface. (These techniques were successfully used in the 1998 AMR/007/930 reclamation.) (PB)

The text in Chapter 2 and Chapter 5 of appendix 5-19 has been revised to state. A 1 T/ac straw mulch will be incorporated into the surface soil and a 1 Ton/ac mulch will be scattered over the surface after the seed and mulch application and scattering of slash on the seeded and mulched surface.

R645-301-742: The permittee must provide additional information/clarification as to the sediment control measures to be implemented at the proposed project site. Plate #2 of 2 in Attachment 10 must be revised to clearly identify that excelsior logs will be utilized as the 'continuous sediment control' at the base of the temporary topsoil storage pile and directly adjacent to the B canyon drainage. (SC)

Plate #2-2 of Attachment #10 has been revised to clarify that the excelsior logs would be used for continuous sediment control and be left in place until after final reclamation.

R645-301.513.500; R645-301.551 The applicant must include a commitment to backfill the portal opening to a minimum of 25 feet. The applicant must also include a cross section drawing that depicts the 25 feet of backfilled material as well as the locating of the seal as it will be at the portal's reclaimed configuration. (JO)

The text has been revised in Chapter 5 of Appendix 5-19 to reflect "The portal opening will be backfilled from the portal opening to a minimum of 25 feet (see Plate 2 of 2)" Also a cross section depicting the 25' fill and seal location has been added to Plate 2 of 2.

R645-301-830.140: The mine has adequate bond in place to allow for reclamation of the B Canyon portal. However, the applicant must submit an updated bond calculation spreadsheet for the portal and an updated bond calculation summary sheet to amend the bonding section of the MRP.

A bond calculation spreadsheet for the "B" canyon portal demolition has been added to the end of the Demolition section. The Demolition summary spreadsheet has been updated. The Bond Calculation Summary Sheet has been updated to reflect adding the B Canyon portal and to reflect a .012 escalation factor. A complete review of the total bond calculation will be completed with the response to mid term deficiencies Task #4046.

Bonding details should be removed from the Engineering portion of the application and should be included in a Bonding section. The Division agrees to use \$4,604 as the unit cost for this particular portal reclamation. (JO)

The bonding information has been removed from Chapter 5 of Appendix 5-19. Revised test refers to Attachment #17 of the MRP for bonding information.

APPLICATION FOR PERMIT PROCESSING

<input type="checkbox"/> Permit Change	<input type="checkbox"/> New Permit	<input type="checkbox"/> Renewal	<input type="checkbox"/> Transfer	<input type="checkbox"/> Exploration	<input type="checkbox"/> Bond Release	Permit Number: ACT/007/041
Title of Proposal: Task 4010 UEI WR-12-001 Response to B Canyon Re-Opening Deficiencies						Mine: West Ridge Mine
						Permittee: UtahAmerican Energy, Inc.

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

Instructions: If you answer yes to any of the first 8 questions (gray), submit the application to the Salt Lake Office. Otherwise, you may submit it to your reclamation

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

X Attach 6 complete copies of the application.

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.

David W. Hobbs, President, 5/11/12
Signed - Name - Position - Date

Subscribed and sworn to before me this 11th day of May, 2012

Linda Kerns
Notary Public

My Commission Expires: 03 27 16 Utah, 1999

Attest: _____ COUNTY OF Carbon



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MAY 15 2012
DIV. OF OIL, GAS & MINING

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REDLINE STRIKEOUT COPIES

Appendix 1-12 for details)

3) BLM Right-of-Way 87110 This right-of way authorizes the installation of three (3 ea.) catchment structures in the C Canyon drainage below the mine. These catchments are designed to provide containment of unanticipated coal-fines accumulations from the mine discharge water. These catchment structures comprises a total of 0.69 acres (Refer to Appendix 5-15 for details).

The total permit area is 7,600.38 acres. Refer to Map 1-1 for the permit area location. Refer to Table 1-4 for the legal description of the permit area by composite leasehold, and Table 1-5 for the legal description of the permit area in total area. Table 1-6 describes the surface ownership of the permit area.

The permit area consists of the following areas:

- 1) all of federal coal leases SL-068754-U-01215 (2,650.67 acres)
- 2) most of federal coal lease UTU 78562 (2,403.07 acres),
- 3) all of state coal leases ML-47711 (801.24 acres)
- 4) all of state coal lease ML-49287 (881.10 acres)
- 5) much of state coal lease ML-51744 (212.5 acres)
- 6) much of the Penta Creek fee coal lease (650.49 acres)
- 7) SITLA surface lease 1163, for topsoil borrow area (9.6 acres).
- 8) BLM right-of-way UTU-77120, for pumping station (0.23 acres)
- 9) BLM right-of-way UTU-87110, for catchment structures A, C and E (0.69 acres)
- 10) Carbon County authorization, road security gate (0.79 acres). See Appendix 1-13

Disturbed area within the permit area consists of the following:

1) Minesite surface facilities	29.82 acres
2) Pumping station	0.23 acres
3) GVH installation (main pad)	0.24 acres
4) GVH installation (GVH 5 "pullout")	0.02 acres
5) GVH topsoil storage	0.1 acres
6) Catchment structures A	0.12 acres
7) Catchment structures C	0.23 acres
8) Catchment structures E	0.23 acres
9) B Canyon Portal re-opening	<u>0.25 acres</u>
TOTAL	31.24 acres

See Table 1-7 for complete legal description of disturbed areas.

114.200 Not applicable, the fee lease mineral estate is not severed from the surface estate.

**TABLE 1-6
SURFACE OWNERSHIP OF PERMIT AREA**

T(S)/R(E)	Section	BLM	Penta Creek	Hinkins	Wells	Rauhala	SITLA	Total
13/13	34	-	-	-	120.00	-	-	120.00
13/13	35	40.00	-	448.91	151.09	-	-	640.00
13/13	36	-	372.50	-	-	-	-	372.50
13/14	31	108.82	-	-	-	-	-	108.82
14/12	25	0.23	-	-	-	-	-	0.23
14/13	1	283.75	328.68	-	-	39.92	-	652.35
14/13	2	-	641.24	-	-	-	-	641.24
14/13	3	-	-	-	80.66	-	520.44	601.10
14/13	10	360.00	-	-	-	-	280.00	640.00
14/13	11	650.87	-	-	-	-	-	650.87
14/13	12	-	648.96	-	-	-	-	648.96
14/13	13	640.00	-	-	-	-	-	640.00
14/13	14	440.00	-	-	-	-	-	440.00
14/13	15	41.02	-	-	-	-	-	41.02
14/13	16	-	-	-	-	-	9.60	9.60
14/13	21	0.23	-	-	-	-	-	0.23
14/13	24	440.00	-	-	-	-	-	440.00
14/12	28	0.23	-	-	-	-	-	0.23
14/14	5	-	-	15.00	-	-	-	15.00
14/14	6	76.41	478.88	30.00	-	-	-	585.29
14/14	7	74.08	86.69	-	-	-	-	160.77
14/14	8	-	-	-	-	-	-	0.00
14/14	18	117.25	74.92	-	-	-	-	192.17
		3272.89	2631.87	493.91	351.75	39.92	810.04	7600.38

6) Catchment Structure A: portion thereof of the following, containing 0.12 acres (all BLM)

T 14 S, R 13 E Section 15: SESW

7) Catchment Structure C: portion thereof of the following, containing 0.23 acres (all BLM)

T 14 S, R 13 E Section 28: NWNW

8) Catchment Structure E: portion thereof of the following, containing 0.23 acres (all BLM)

T 14 S, R 12 E Section 25: SESE

9) B Canyon Portal Re-Opening: portion thereof of the following, containing 0.25 acres (all BLM)*

T 14 S, R 13 E Section 14 SWNE

TOTAL DISTURBED AREA = 31.24 acres

* Note: All disturbance associated with the B Canyon Portal Re-Opening will be within the area of previous (pre-SMCRA) disturbance.

**TABLE OF CONTENTS- APPENDICES
R645-301-500 CHAPTER 5**

(Continued)

APPENDIX NUMBER	DESCRIPTION
APPENDIX 5-13	Grassy Trail Dam Monitoring/Inspection Plan, Panel #7
APPENDIX 5-13A	Grassy Trail Dam Monitoring/Inspection Plan, Panel Block #18-21
APPENDIX 5-14	Bear Canyon Gob Gas Vent Hole (GVH)
APPENDIX 5-15	Catchment Structure, C Canyon Drainage
APPENDIX 5-16	Grassy Trail Dam and Reservoir Mining-Induced Seismicity Summary Report, 2008
APPENDIX 5-17	Grassy Trail Dam and Reservoir Mining-Induced Seismicity Summary Update Report (RB&G Engineering, 2010)
APPENDIX 5-18	Subsidence Monitoring Survey Points, Right Fork of Whitmore Canyon
APPENDIX 5-19	B Canyon Re-Opening Project

Historical Note 3: In the spring of 2012, the company made application to re-open a sealed-up portal located in B Canyon. This portal was constructed in the early 1960's as part of an underground mine extension of the old Kaiser Mine. The portal was later reclaimed by the Utah Division of Oil, Gas and Mining's Abandoned Mine Lands (AML) Program in the summer of 1998. West Ridge Resources now needs to re-open this portal to gain access to the underground workings in order to perform safety-related work in preparation for future longwall mining in this area. A complete description of the portal re-opening project is provided in Appendix 5-19.

R645-301-511 GENERAL REQUIREMENTS

Chapter 5 contains information regarding the proposed coal mining operation and reclamation plans, a discussion of its potential impact to the environment and methods to achieve compliance with design criteria.

Reclamation plans and estimates are presented for postmining restoration of the area.

NOTE: The following discussion for the remainder of R645-301-511 applies specifically to the Gob Gas Vent Hole (GVH) installation proposed in Bear Canyon. In order to facilitate the review it is presented here in its entirety rather than interspersed throughout the chapter. A more detailed and complete discussion of the Bear Canyon GVH proposal can be found in Appendix 5-14. Unless specifically noted in this following discussion, nothing related to the Bear Canyon GVH proposal affects the contents of the existing approved MRP as described hereinafter.

The GVH facility will consist of three drillholes, four methane extractor units, and interconnecting piping. A detailed description of the drillhole installation, and the assembly and operation of the methane extractor units can be found in Attachment 7 of Appendix 5-14. The site pad will consist of a narrow strip (approximately 35' wide x 300' long) located adjacent to and parallel with the road. The drillholes will be located at the southern (down-canyon) end of the site pad. The extractor units will be located in a serial arrangement along the northern (up-canyon) end of the site pad. The total facility area will be about 0.24 acres, including the adjacent cutslopes.

Three angled holes will be drilled at angles ranging from 20 degrees to 45 degrees from vertical. Drilling will be conducted using tri-cone rotary and/or hammer. Drilling fluid will be primarily compressed air (600-800 psi) with water and Baroid Quick Foam and EZ Mud (see Attachment 15 for MSDS sheets for these products). Cuttings will pass up the annulus and be diverted to the reserve pit on the surface. Each hole will be spudded with a 19" diameter hole into which a 16" diameter conductor casing will be set and grouted to an approximate depth of 20'. Thereafter, a 12.25" hole will be drilled to within 200' of the Lower Sunnyside coal seam (an inclined depth of 200'-300'). A 9.625" T&C casing will be set and grouted to total depth of the 12.25" bore. An 8.75" bit will be tripped in to drill out the shoe and will continue about 175' to within 25' of the coal seam horizon. Sections of 7" slotted casing will be tripped in from bottom of hole to about 40' above the bottom of the

Attachment 3 show, subsequent re-vegetation appears healthy and diverse. Also, Mt Nebo Scientific has conducted an on-site vegetation report (see Attachment 7), which lists the plant species (shrubs, forbs and grasses) which have successfully re-established themselves at the site over the last 12 years since the AML reclamation.

Based on these observations, the company proposes to remove all existing vegetation from the area in front of the portal and store this material in a separate pile. A minimum of 12" of surface "topsoil" material will then be salvaged and stored in a nearby pile. The remaining earthen material in front of portal will be pulled down to construct the access ramp leading to the portal opening. As mentioned previously, the portal re-opening project will be temporary. The company estimates that it should be able to complete all the underground mine safety work in less than six months, at which time the portal would be re-sealed, and the site would then be backfilled and reclaimed to its existing (AML) condition and contour. At the time of reclamation, after the ramp has been removed and the portal has been backfilled, the "topsoil" material will be placed back over-top the backfill, and the vegetation material will then be spread back over the disturbed area as mulch. A 1 T/ac straw mulch will be incorporated into the surface soil and a 1 Ton/ac mulch will be scattered over the surface after the seed and mulch application and scattering of slash on the seeded and mulched surface.

The company proposes to re-seed the disturbed area with the same seed mix which was used by the AML reclamation team in 1998. Attachment 6 includes this seed mix, which was obtained from the Division's public records. As shown on the engineering drawing in Attachment 10, the maximum extent of new disturbance is about 0.25 acres. However, this area includes all the area potentially involved in the re-opening project. Much of this area will not be subject to any earthwork or excavation-type disturbance, but may be involved by placing portable equipment directly on the ground, or by parking vehicles at the existing vehicle turn-around area. In this sense, it could be disturbed, but there would be no vegetation removed nor any kind of invasive earthwork. The area of actual disturbance would be much smaller, and is estimated at about 0.07 acres. This is the area immediately in front of the portal associated with the access ramp. Assuming a salvage depth of 12", approximately 113 cubic yards of topsoil would be removed and stored in the adjacent stockpile. Another 50 cubic yards of underlying earth material would then be reworked to expose the portal and construct the access ramp. These quantities are estimates only, and could vary upon final construction, but it can be safely stated that the quantities involved in this project are small, and the project can be completed with minimal disturbance. For example, records from the previous AML backfill efforts indicate that the volume of material used in backfilling the portal was only about 10 cubic yards.

CHAPTER 3: BIOLOGY

As stated previously, the revegetation that has been established at the site after the AML reclamation seems to have been successful, despite the fact that the AML team did not at the time have a designated topsoil resource to re-apply to the backfilled portal site. As the photos in

several trips in and out of the portal for the work crew, and to deliver consumable supplies, such as roof bolts, timbers and concrete blocks needed for the re-habilitation work, and to deliver fuel for the generator. All of this deliver of men and materials can be accomplished using small mine-approved diesel pick-up trucks. There will be no storage of supplies or materials on the surface at the site: all materials will be hauled directly underground for storage.

After the underground re-hab work is complete, the seal will be re-constructed at the B Canyon portal. All portable equipment (fan, generator, vent tubing, etc.) will be removed. The steel canopy will be left in place, just as it is now. The portal opening will be backfilled from the portal opening to a minimum of 25 feet (see Plate 2 of 2), the access ramp will be obliterated, the topsoil material will be laid back, and the stockpiled vegetation mulch material will be spread over the reclaimed area. This will result in achieving approximate original (AML) contour. The surface will be roughened (gouged/pocked) to aid in water retention and to minimize soil lose to erosion. The area will then be re-seeded with the seed mix approved by the previous AML reclamation project. A 1 T/ac straw mulch will be incorporated into the surface soil and a 1 Ton/ac mulch will be scattered over the surface after the seed and mulch application and scattering of slash on the seeded and mulched surface. A row of excelsior logs (sediment control structures) will then be placed around the down-slope toe of the disturbed area for additional erosion control. This row of excelsior logs will be in addition to the excelsior logs placed at the stream buffer prior to initial construction, which will also be left in place after reclamation until the Division has determined that re-vegetation has been established sufficient to provide adequate sediment control.

Due to the small size of the project site, it is estimated that the reclamation work can be completed in 2-3 days. According to AML records, an identification monument was placed on top of the backfill during the 1998 reclamation. If the monument is still there, the company will save it, and replace it after the re-opening reclamation has been completed.

Bonding calculations for reclamation of the site include earthwork and revegetation. Since all equipment used will be mobile, and since the existing steel portal canopy will remain in place (although backfilled and covered), there will be no demolition costs.

- 1) Earthwork.....Total earthwork volumes are liberally estimated to be no more than 163 cubic yards, including 113 yds for topsoil removal/replacement and 50 yards for ramp construction and portal backfill.
- 2) Revegetation....The total area to be re-vegetated is about 0.07 acres.

Given the small size of the reclamation requirements for this project, perhaps the most straight-forward means of determining an adequate reclamation cost amount is to compare it to a similar approved amount for a somewhat comparable installation. For example, in November, 2008, the Division approved the Bear Canyon GVH site, which is small isolated disturbed area located nearby within the West Ridge Mine permit area. The total reclamation cost of the Bear Canyon

GVH site associated with earthwork is \$2143, and for revegetation is \$2461, for a total of \$4604. This is for a 0.34 disturbed acre site, involving 842 cy of back fill, and 515 cy of topsoil replacement. In comparison the B Canyon portal disturbed area is 0.07 acres, involving 50 cy of backfill, and 113 cy of topsoil replacement. Again, there are no demolition costs associated with the B Canyon project. The Bear Canyon GVH site is obviously a much larger site to reclaim than the B Canyon portal site, with quantities generally about five times greater than for the B Canyon portal site. Therefore, in the interest of expediency, the company would agree to a \$4604 reclamation cost for the B Canyon portal job, as determined for the similar but more expansive Bear Canyon GVH installation.

~~At present (February, 2012), the total reclamation cost estimate for the entire West Ridge Mine is \$1,998,000 (escalated to 2013), and the posted bond amount is \$2,184,000. The difference between the current bond amount and the estimated reclamation cost is \$218,000. Therefore, there is currently ample bonding in place for the West Ridge Mine to include the additional reclamation cost associated with the B Canyon portal re-opening project. —~~ The updated bond information has been included in Attachment #17 of the MRP.

CHAPTER 6: GEOLOGY

The geology of the B Canyon portal area is nearly identical to the geology of the West Ridge minesite surface facilities located about a half mile away in nearby C Canyon. This geology is described in detail in Chapter 6 of the MRP.

CHAPTER 7: HYDROLOGY

As shown in the drawings in Attachments 1 and 10, and the photos of Attachment 3, the B Canyon portal is located in the bottom canyon near the drainage channel. B Canyon is an ephemeral drainage, typical of the Book Cliffs, and similar to the drainages of nearby C Canyon and Bear canyon described in greater detail in Chapter 7 of the MRP. All construction work associated with the re-opening of the B Canyon portal will be done with the area of previous disturbance, including the AML reclamation of 1998. There will be no activity within the drainage channel. In fact, there is an existing sediment-control berm, presumably constructed by AML, that separates the portal site from the drainage. This berm will remain in place during and after the portal re-opening project to provide adequate sediment control protection to the drainage channel. In addition, the company will install additional temporary sediment control protection between the construction area and the drainage, in the form of a continuous row of excelsior logs, as shown in Attachment 10. The company will also install a row of excelsior log sediment control around the base of the topsoil storage pile, even though this pile is temporary and should itself be reclaimed within six months of the re-opening project.

After the re-opening project is completed, the site will be reclaimed to its approximate original

Bonding Calculations

Direct Costs

Subtotal Demolition and Removal	\$357,541.00
Subtotal Backfilling and Grading	\$775,240.00
Subtotal Revegetation	\$196,409.00
Direct Costs	\$1,329,190.00

Indirect Costs

Mob/Demob	\$132,919.00	10.0%
Contingency	\$66,460.00	5.0%
Engineering Redesign	\$33,230.00	2.5%
Main Office Expense	\$90,385.00	6.8%
Project Mainagement Fee	\$33,230.00	2.5%
Subtotal Indirect Costs	\$356,224.00	26.8%

Total Cost	\$1,685,414.00
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Escalation factor		0.012
Number of years		5
Escalation	\$103,581.00	

Reclamation Cost	\$1,788,995.00
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Bond Amount (rounded to nearest \$1,000) 2011 Dollars	\$1,789,000.00
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Bond Posted 2004	\$2,117,000.00
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Difference Between Cost Estimate and Bond	\$328,000.00
Percent Difference	18.33%

Ref	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Small Factor	Quantity	Unit	Cost
		Shop Warehouse 01																			107001
		Ballroom 02																			23984
		Power House 03																			19016
		Power House 04																			486
		Overhead Conveyor 05																			8059
		Conveyor Bents 06																			1905
		Dive Unit 07																			3370
		Discharge Structure 08																			1865
		Bent Angle Bracing 09																			1000
		Reclaim Conveyor Straps 10																			11442
		Crusher Building 11																			13984
		Reclaim Tunnel Headwall 12																			2333
		Leadout Conveyor 13																			1340
		Leadout Conveyor Bent 14																			187
		Main Fan 15																			6541
		Ductwork Airvck 16																			1097
		Make Room 17																			958
		MCC 18																			20800
		Reclm Bent Tanks 20																			4780
		Oil Gases Storage 21																			1215
		Dunnster Bay 22																			3336
		Mendonga Wall 23																			5000
		Hickory Wall 24																			17760
		Guard Rail 25																			6939
		Bypass Culvert 26																			21160
		Culverts 27																			442
		Water Tanks 28																			4138
		Reclaim Vales 29																			3801
		Reclaim Tunnel Sempshere 30																			8113
		Ramp 38																			40120
		Gob Gas Vent Hole																			453
		9 Canyon Portal Reclamation																			453
		Total																			357541

CHAPTER 1

REPLACEMENT TEXT

~WEST RIDGE MINE - PERMIT APPLICATION PACKAGE~

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SCOPE

The objective of this chapter is to set forth all relevant information concerning ownership and control of WEST RIDGE Resources, Inc., the ownership and control of the property to be affected by mining activities and all other information and documentation required under Part UMC.

R645-301-112 IDENTIFICATION OF INTERESTS

112.100 WEST RIDGE Resources, Inc. is a corporation organized and existing under the laws of Utah and qualified to do business in Utah.

112.200 The applicant, WEST RIDGE Resources, Inc. will also be the operator.

WEST RIDGE Resources, Inc.
P.O. Box 910
East Carbon, Utah 84520
(435) 888-4000
David Hibbs - President

Employer Identification Number: 87-0585129

112.220 The resident agent of the applicant, WEST RIDGE Resources, Inc., is:

Dave Hibbs
WEST RIDGE Resources, Inc.
P.O. Box 910
East Carbon, Utah 84520

(435) 888-4000

112.230 WEST RIDGE Resources, Inc. will pay the abandoned mine land reclamation fee.

112.300 **Ownership and Control** - See Appendix 1-7

WEST RIDGE Resources, Inc. is the permittee and operator of the WEST RIDGE Mine. WEST RIDGE Resources, Inc. is a wholly owned subsidiary of ANDALEX Resources, Inc.. WEST RIDGE Resources, Inc. is a Utah corporation licensed to do business in the State of Utah. All leases associated with the WEST RIDGE Mine are owned by ANDALEX Resources, Inc. ANDALEX Resources, Inc. is a wholly owned subsidiary of UtahAmerican Energy Inc., which in turn is a wholly owned subsidiary of Murray Energy Corporation.

112.340 See Appendix 1-5

112.350 See Appendix 1-5

112.410 See Appendix 1-5

112.420 See Appendix 1-7

112.500 Surface Owners:

Bureau of Land Management
Utah State Office
136 East South Temple
Salt Lake City, Utah 84111

Glen Wells
700 West U.S. Hwy 6
Price, Utah 84501

Penta Creek, LLC
140 S. Newton
Albert Lea, MN 56007

David Hinkins
155 West 100 South
Orangeville, Utah 84537

School and Institutional Trust
Lands Administration
355 West North Temple, Suite 400
Salt Lake City, Utah 84180-1204

Matt Rauhala
1236 East Main
Price, Utah 84501

Subsurface Owners:

Bureau of Land Management
Utah State Office
136 East South Temple
Salt Lake City, Utah 84111

Penta Creek, LLC
140 S. Newton
Albert Lea, MN 56007

School and Institutional Trust
Lands Administration
355 West North Temple, Suite 400
Salt Lake City, Utah 84180-1204

WEST RIDGE Resources, Inc. is the holder of record for federal lease SL-068754 and UTU 78562 (see Table 1-1), state lease ML 47711 and ML 49287 (see Table 1-2A) and the Penta Creek Fee lease (see Table 1-2B).

Proof of lease assignment for all leases (Federal leases SL-068754 and UTU 78562, and State leases ML 47711 and ML 49287), and the Penta Creek fee lease can be found in Appendix 1-4.

112.600 Contiguous surface owners:

Bureau of Land Management
Utah State Office
136 East South Temple
Salt Lake City, Utah 84111

Dave Hinkins
155 West 100 South
Orangeville, Utah 84537

Glen Wells
700 West U.S. Hwy 6
Price, Utah 84501

Penta Creek, LLC
140 S. Newton
Albert Lea, MN 56007

School and Institutional Trust

Lands Administration
355 West North Temple, Suite 400
Salt Lake City, Utah 84180-1204

Contiguous subsurface owners:

School and Institutional Trust
Lands Administration
355 West North Temple, Suite 400
Salt Lake City, Utah 84180-1204

Penta Creek, LLC
140 S. Newton
Albert Lea, MN 56007

David Hinkins
155 West 100 South
Orangeville, Utah 84537

Emily P Marston
843 Genodle Drive
Midvale, Utah 84047

Leonard J. Pagano
55 West main Street
Price, Utah 84501

Bureau of Land Management
Utah State Office
136 East South Temple
Salt Lake City, Utah 84111

112.700 See Appendix 1-5

112.800 There are no pending interests or bids existing on lands contiguous to the present leased area.

112.900 After WEST RIDGE Resources, Inc. is notified that the application is approved, but before the permit is issued, WEST RIDGE Resources, Inc. will update, correct or indicate that no change has occurred in the information previously submitted under R645-301-112.100 through R645-301-112.800.

R645-301-113 VIOLATION INFORMATION

- 113.100 The applicant or any subsidiary, affiliate or persons controlled by or under common control with the applicant has not had a federal or state permit to conduct coal mining and reclamation operations suspended or revoked in the five years preceding the date of submission of the application.
- 113.120 The applicant etc. has not forfeited any performance bond or similar security
- 113.200 Not applicable
- 113.300 A listing of violations received by the applicant in connection with any coal mining and reclamation operation during the three year period preceding the application date is provided in Appendix 1-2. MSHA numbers for the operations can be found in Appendix 1-5. There have been no unabated violations or cessation orders issued to any affiliated companies during the previous three years.
- 113.400 After WEST RIDGE Resources, Inc. is notified that the application is approved, but before the permit is issued, WEST RIDGE Resources, Inc. will update, correct or indicate that no change has occurred in the information previously submitted under R645-301-113.

114.100

WEST RIDGE Resources, Inc., currently holds 5256.16 acres of federal coal (2,650.67 acres leased under SL-068754 and 2605.49 acres leased under UTU 78562) in the Book Cliffs coal field (refer to Maps 1-0 and 5-3). A complete legal description of all Federal leases held by WEST RIDGE is found in Table 1-1. WEST RIDGE currently holds 2162.34 acres of state coal (801.24 acres under ML 47711, 881.10 under ML 49287, and 480 acres under ML 51744). A complete legal description of all State leases held by WEST RIDGE is found in Table 1-2. WEST RIDGE also holds 1189.84 acres leased on contiguous private (fee) coal lands located along the eastern side of the mineable reserve. A complete legal description of this fee lease is found in Table 1-3. None of these leases are the subject of any pending litigation. Proof of lease assignment for all leases can be found in Appendix 1-4.

WEST RIDGE Resources, Inc. bases its legal right to enter and conduct mining activities in the permit area pursuant to the language contained in the Federal Coal Lease, Part I Lease Rights Granted which reads as follows:

"That the lessor, in consideration of the rents and royalties to be paid and the covenants to be observed as hereinafter set forth, does hereby grant and lease to the lessee the exclusive right and privilege to mine and dispose of all the coal in, upon, or under the following described tracts of land, situated in the State of Utah... together with the right to construct all such works, buildings, plants, structures and appliances as may be necessary and convenient for the mining and preparation of the coal for market, the manufacture of coke or other products of coal, the housing and welfare of employees, and subject to the conditions herein provided, to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted."

In addition to the coal leases, WEST RIDGE also holds several surface use permits as part of the operation, including:

1) SITLA Special Use Lease Agreement No. 1163. The substitute topsoil borrow area, which is also included within the permit area, is located on lands administered by the Utah School and Institutional Trust Lands Administration (SITLA). This area is located within the SE1/4 of section 16, T 14 S, R 13 E. SITLA has issued a long term special use permit to WEST RIDGE Resources, Inc. which provides full assurance that the topsoil resource in this area will be available for (and, indeed dedicated to) final reclamation of the West Ridge minesite if needed. This area is not contiguous with the main coal leasehold. (See Appendix 1-10 for details)

2) BLM Right-of-Way UTU-77120 This right-of-way authorizes the installation and operation of a pumping station used to facilitate the delivery of culinary water to the West Ridge Mine. This area is not contiguous with the main coal leasehold. (See Appendix 1-12 for details)

3) BLM Right-of-Way 87110 This right-of way authorizes the installation of three (3 ea.) catchment structures in the C Canyon drainage below the mine. These catchments are designed to provide containment of unanticipated coal-fines accumulations from the mine discharge water. These catchment structures comprises a total of 0.69 acres (Refer to Appendix 5-15 for details).

The total permit area is 7,600.38 acres. Refer to Map 1-1 for the permit area location. Refer to Table 1-4 for the legal description of the permit area by composite leasehold, and Table 1-5 for the legal description of the permit area in total area. Table 1-6 describes the surface ownership of the permit area.

The permit area consists of the following areas:

- 1) all of federal coal leases SL-068754-U-01215 (2,650.67 acres)
- 2) most of federal coal lease UTU 78562 (2,403.07 acres),
- 3) all of state coal leases ML-47711 (801.24 acres)
- 4) all of state coal lease ML-49287 (881.10 acres)
- 5) much of state coal lease ML-51744 (212.5 acres)
- 6) much of the Penta Creek fee coal lease (650.49 acres)
- 7) SITLA surface lease 1163, for topsoil borrow area (9.6 acres).
- 8) BLM right-of-way UTU-77120, for pumping station (0.23 acres)
- 9) BLM right-of-way UTU-87110, for catchment structures A, C and E (0.69 acres)
- 10) Carbon County authorization, road security gate (0.79 acres). See Appendix 1-13

Disturbed area within the permit area consists of the following:

1)	Minesite surface facilities	29.82 acres
2)	Pumping station	0.23 acres
3)	GVH installation (main pad)	0.24 acres
4)	GVH installation (GVH 5 "pullout")	0.02 acres
5)	GVH topsoil storage	0.1 acres
6)	Catchment structures A	0.12 acres
7)	Catchment structures C	0.23 acres
8)	Catchment structures E	0.23 acres
9)	B Canyon Portal re-opening	<u>0.25 acres</u>
	TOTAL	31.24 acres

See Table 1-7 for complete legal description of disturbed areas.

114.200 Not applicable, the fee lease mineral estate is not severed from the surface estate.

**TABLE 1-1
FEDERAL LEASE and R.O.W. PROPERTIES**

<u>PARCEL</u>	<u>ACREAGE</u>	<u>LEGAL DESCRIPTION</u>
1) <u>FEDERAL COAL LEASE SL-068754</u> (SL-068754-U-01215)	2,650.67	T 14 S, R 13 E
		Section 10: NE, E2NW, N2SE, SESE
		Section 11: All
		Section 12: S2SW, NWSW
		Section 13: S2, NW, S2NE, NWNE
		Section 14: E2, N2NW, SENW
		Section 15: NENE
		Section 24: N2, N2SE, NESW
2) <u>FEDERAL COAL LEASE UTU-78562</u>	2,249.25	T 13 S, R13 E
		Section 34: NESE, S2SE
		Section 35: All
		T 13 S, R 14 E
		Section 31: Lot 4, S2SESW, NESESW, SENWSESW, W2SWSE, S2SESWSE, S2S2SESE
		T 14 S, R 13 E
		Section 1: All
		Section 12: Lots 1 thru 4, S2N2, NESW, SE
		Section 13: NENE
		T 14 S, R 14 E
Section 5: Lot 4, W2W2SWNW, SWNWSW, W2NWNWSW, W2SWSW		
Section 6: Lot 6, NESW, NESE		
Section 7: Lots 3 and 4		
Section 8: W2NWNW, W2SENWNW,		

			SWNENWNW, W2SWNW, W2E2SWNW, W2NWSW, SWSW
		Section 17:	N2NWNWNE
		Section 18:	Lot 1, E2NW
<u>3) PUMPING STATION</u>	0.23	T 14 S, R 13 E	
(BLM R.O.W. UTU-7712)		Section 21:	NENE (0.23 acres thereof)
<u>4) CATCHMENT STRUCTURE A</u>	0.23	T 14 S, R 13 E	
(BLM R.O.W. UTU-87110)		Section 15:	SESW (0.23 acres therein)
<u>5) CATCHMENT STRUCTURE C</u>	0.23	T 14 S, R 13 E	
(BLM R.O.W . UTU-87110)		Section 28:	NWNW (0.23 acres therein)
<u>6) CATCHMENT STRUCTURE E</u>	0.23	T 14 S, R 12 E	
(BLM R.O.W . UTU-87110)		Section 25:	SESE (0.23 acres therein)
 <u>TOTAL FEDERAL</u>	 <u>5257.08 acres</u>		

**TABLE 1-2
STATE (SITLA) LEASE and SPECIAL USE PROPERTIES**

<u>PARCEL</u>	<u>ACREAGE</u>	<u>LEGAL DESCRIPTION</u>
<u>1) STATE LEASE ML 47711</u>	801.24	T 14 S, R 13 E Section 2: Lots 1 thru 4, S2N2, S2 (i.e. All) T 13 S, R 13 E Section 36: SW
<u>2) STATE COAL LEASE ML 49287</u>	881.10	T 14 S, R 13 E Section 3: Lots 1, 2, 3, S2N2, S2 Section 10: W2NW, SW, SWSE
<u>3) STATE COAL LEASE ML 51744</u>	480	T 13 S, R 13 E Section 36: N2, SE
<u>4) STATE SURFACE LEASE SPECIAL USE PERMIT (Agreement #1163)</u>	9.6	T 14 S, R 13 Section. 16: E2NESE (9.6 acres thereof, containing substitute topsil area)
<u>TOTAL STATE</u>	<u>2171.94</u>	

**TABLE 1-3
FEE LEASE PROPERTIES
(PENTA CREEK)**

<u>PARCEL</u>	<u>ACREAGE</u>	<u>LEGAL DESCRIPTION</u>
<u>1) PENTA CREEK FEE LEASE</u>	382.08	T 14 S, R 14 E Section 6: Lot 7, SESW Section 7*: Lots 1* and 2*, NENW*, E2SW*, SWSE Section 18: Lots 2 and 3, NWNE
<p>*Less and excepting from the portion of the above legal subdivisions in Section 7, those lands under and around Grassy Trail Dam and Reservoir owned by East Carbon City and Sunnyside City, such lands being more accurately described in Appendix 1-15.</p>		
<u>2) PENTA CREEK LEASE EXTENSION</u> (Extension 1, August, 2010)	352.36	T 14 S, R 14 E Section 6: Lots 2, 3, 4 and 5, SENW, SWNE, NWSE, S2SE
<u>3) PENTA CREEK LEASE EXTENSION</u> (Extension 2, March, 2011)	295.40	T 14 S, R 14 E Section 6: Lot 1, SENE Section 7: SWNE, NWSE, SESE, SENW Section 18: NENE
<u>4) HINKINS FEE LEASE**</u>	160.00	T 14 S, R 14 E Section 7: N2NE, SENE, NESE
<u>TOTAL FEE LEASES:</u>	<u>1189.84</u>	

** This lease area is held as follows:
(individually)

David P. Hinkins, Todd S. Hinkins and Ross D. Hinkins.....	50%
Emily P. Marston.....	25%
Leonard Pagano.....	25%

**TABLE 1-4
LEGAL DESCRIPTION OF PERMIT AREA
(BY LEASEHOLD)**

<u>PARCEL</u>	<u>ACREAGE</u>	<u>LEGAL DESCRIPTION</u>
1) <u>FEDERAL LEASE SL-068754</u> (SL-068754-U-01215)	2,650.67	T 14 S, R 13 E
		Section 10: NE, E2NW, N2SE, SESE
		Section 11: All
		Section 12: S2SW, NWSW
		Section 13: S2, NW, S2NE, NWNE
		Section 14: E2, N2NW, SENW
		Section 15: NENE
		Section 24: N2, N2SE, NESW
2) <u>FEDERAL LEASE UTU-78562</u>	2403.07	T 13 S, R13 E
		Section 34: NESE, S2SE
		Section 35: All
		T 13 S, R 14 E
		Section 31: Lot 4, S2SESW, NESESW, SENWSESW, W2SWSE, S2SESWSE, S2S2SESE
		T 14 S, R 13 E
		Section 1: All
		Section 12: Lots 1 thru 4, S2N2, NESW, SE
		Section 13: NENE
		T 14 S, R 14 E
		Section 5: W2W2SWNW, W2NWNWSW
		Section 6: Lot 6, NESW, N2NESE, SWNESE
		Section 7: Lots 3 and 4
Section 18: Lot 1, E2NW		

TABLE 1-4 (continued)

<u>3) STATE LEASE ML 47711</u>	801.24	T 14 S, R 13 E
		Section 2: Lots 1 thru 4, S2N2, S2
		T 13 S, R 13 E
		Section 36: SW
<u>4) STATE LEASE ML 49287</u>	881.10	T 14 S, R 13 E
		Section 3: Lots 1, 2 and 3, S2N2, S2
		Section 10: W2NW, SW, SWSE
<u>5) STATE LEASE ML 51744</u>	212.5	T 13 S, R 13 E
		Section 36: SW, SWNWSWNW, S2S2NW, S2SWNE, W2SE, SESE, S2NESE, NWNESE
<u>6) PENTA CREEK FEE LEASE</u>	238.17	T 14 S, R 14 E
		Section 6: Lot 7, SESW
		Section 7*: Lot 1*, SESW, SWNESW
		Section 18: Lots 2 and 3
<u>7) PENTA CREEK LEASE EXTENSION</u> (Extension #1, August, 2010)	402.32	T 14 S, R 14 E
		Section 6: Lots 1, 2, 3, 4 and 5, SENW, SWNE, NWSE, SWSE, SENE, NWSESE
<u>8) PUMPING STATION</u> (BLM R.O.W. UTU-7712)	0.23	T 14 S, R 13 E
		Section 21: NESENE (0.23 acres thereof, containing pumping station)

TABLE 1-4 (continued)

<u>9) TOPSOIL SALVAGE AREA</u> (SITLA special use agreement #1163)	9.6	T 14 S, R 13 E	Section 16: E2NESE (9.6 acres thereof, containing substitute topsoil area)
<u>10) CATCHMENT STRUCTURE A</u> (BLM R.O.W . UTU-87110)	0.23	T 14 S, R 13 E	Section 15: SESW (0.23 acres thereof, containing catchment structure)
<u>11) CATCHMENT STRUCTURE C</u> (BLM R.O.W . UTU-87110)	0.23	T 14 S, R 13 E	Section 28: NWNW (0.23 acres thereof, containing catchment structure)
<u>12) CATCHMENT STRUCTURE E</u> (BLM R.O.W . UTU-87110)	0.23	T 14 S, R 12 E	Section 25: SESE (0.23 acres thereof, containing catchment structure)
<u>13) SECURITY GATE</u> (Carbon County authorization)	0.79	T 14 S, R 13 E	Section 15: NWSENE (0.79 acres thereof, containing security gate)
<u>TOTAL PERMIT AREA</u>	<u>7600.38 acres</u>		

*Less and excepting from the portion of the above legal subdivisions in Section 7, those lands under and around Grassy Trail Dam and Reservoir owned by East Carbon City and Sunnyside City, such lands being more accurately described in Appendix 1-15.

**TABLE 1-5
LEGAL DESCRIPTION OF PERMIT AREA
(TOTAL AREA)**

T13S, R13E	Section 34	NESE, S2SE
	Section 35	All
	Section 36	SW, SWNWSWNW, S2S2NW, S2SWNE, W2SE, SESE, S2NESE, NWNESE,
T13S, R14E	Section 31:	Lot 4, S2SESW, NESESW, SENWSESW, W2SWSE, S2SESWSE, S2S2SESE
T14S, R12E	Section 25	SESE (part thereof containing catchment structure E)
T14S, R13E	Section 1	All
	Section 2	All
	Section 3	Lots 1, 2 and 3, S2N2, S2
	Section 10	All
	Section 11	All
	Section 12	All
	Section 13	All
	Section 14	E2, N2NW, SENW
	Section 15	NENE, NWSENE (part thereof, containing security gate) SESW (part thereof, containing catchment structure A)
	Section 16	E2NESE (part thereof, containing substitute topsoil area)
	Section 21	NESENE (part thereof, containing pumping station)
	Section 24	N2, N2SE, NESW
	Section 28	NWNW (part thereof, containing catchment structure C)
T14S, R14E	Section 5:	W2W2SWNW, W2NWNWSW
	Section 6	Lots 1, 2, 3, 4, 5, 6 and 7, SENW, E2SW, W2SE, S2NE, N2NESE, SWNESE, NWSESE
	Section 7*	Lots 1*, 3 and 4, SESW, SWNESW
	Section 18	Lots 1, 2 and 3, E2NW

TOTAL PERMIT AREA = 7,600.38 acres.

*Less and excepting from the portion of the above legal subdivisions in Section 7, those lands under and around Grassy Trail Dam and Reservoir owned by East Carbon City and Sunnyside City, such lands being more accurately described in Appendix 1-15.

**TABLE 1-6
SURFACE OWNERSHIP OF PERMIT AREA**

T(S)/R(E)	Section	BLM	Penta Creek	Hinkins	Wells	Rauhala	SITLA	Total
13/13	34	-	-	-	120.00	-	-	120.00
13/13	35	40.00	-	448.91	151.09	-	-	640.00
13/13	36	-	372.50	-	-	-	-	372.50
13/14	31	108.82	-	-	-	-	-	108.82
14/12	25	0.23	-	-	-	-	-	0.23
14/13	1	283.75	328.68	-	-	39.92	-	652.35
14/13	2	-	641.24	-	-	-	-	641.24
14/13	3	-	-	-	80.66	-	520.44	601.10
14/13	10	360.00	-	-	-	-	280.00	640.00
14/13	11	650.87	-	-	-	-	-	650.87
14/13	12	-	648.96	-	-	-	-	648.96
14/13	13	640.00	-	-	-	-	-	640.00
14/13	14	440.00	-	-	-	-	-	440.00
14/13	15	41.02	-	-	-	-	-	41.02
14/13	16	-	-	-	-	-	9.60	9.60
14/13	21	0.23	-	-	-	-	-	0.23
14/13	24	440.00	-	-	-	-	-	440.00
14/12	28	0.23	-	-	-	-	-	0.23
14/14	5	-	-	15.00	-	-	-	15.00
14/14	6	76.41	478.88	30.00	-	-	-	585.29
14/14	7	74.08	86.69	-	-	-	-	160.77
14/14	8	-	-	-	-	-	-	0.00
14/14	18	117.25	74.92	-	-	-	-	192.17
		3272.89	2631.87	493.91	351.75	39.92	810.04	7600.38

**TABLE 1-7
DISTURBED AREA WITHIN PERMIT AREA**

1) Minesite surface facilities: portions of the following, totaling 29.82 acres (all BLM)

T14S, R13E	Section 10:	SESESE NESESE
T14S, R13E	Section 11:	SWNESW NWSESW NESWSW NWSWSW SWSWSW SESWSW
T14S, R13E	Section 15:	NENENE NWNENE SWNENE SENENE NWSENE

2) Pumphouse: portion thereof of the following, containing 0.23 acres (all BLM)

T14S, R13E	Section 21:	NESENE
------------	-------------	--------

3) Gob gas vent hole (GVH) installation (main pad): portion thereof of the following, containing 0.24 acres (all SITLA)

T14S, R13E	Section 3:	NESWSE
------------	------------	--------

4) Gob gas vent hole (GVH) installation (GVH 5 "pullout"): portion thereof of the following, containing 0.02 acres (all SITLA)

T14S, R13E	Section 3:	NESWSE
------------	------------	--------

5) Gob gas vent hole (GVH) topsoil pile: portion thereof of the following, containing 0.1 acres (all SITLA)

T14S, R13E	Section 10:	SENWNW
------------	-------------	--------

6) Catchment Structure A: portion thereof of the following, containing 0.12 acres (all BLM)

T 14 S, R 13 E Section 15: SESW

7) Catchment Structure C: portion thereof of the following, containing 0.23 acres (all BLM)

T 14 S, R 13 E Section 28: NWNW

8) Catchment Structure E: portion thereof of the following, containing 0.23 acres (all BLM)

T 14 S, R 12 E Section 25: SESE

9) B Canyon Portal Re-Opening: portion thereof of the following, containing 0.25 acres (all BLM)*

T 14 S, R 13 E Section 14 SWNE

TOTAL DISTURBED AREA = 31.24 acres

* Note: All disturbance associated with the B Canyon Portal Re-Opening will be within the area of previous (pre-SMCRA) disturbance.

R645-301-115 STATUS OF UNSUITABILITY CLAIMS

115.100 The proposed permit area is not within an area designated as unsuitable for mining. WEST RIDGE Resources, Inc. is not aware of any petitions currently in progress to designate the area as unsuitable for coal mining and reclamation activities.

The area in which the proposed facility will be located has been evaluated within area management plans. It has not been found unsuitable for mining activities under any categories of examination.

115.200 Not applicable.

115.300 WEST RIDGE Resources, Inc. will not be conducting mining operations within 100 feet of an occupied dwelling. WEST RIDGE Resources, Inc. has received permission from Carbon County to construct facilities and operate coal mining activities within 100 feet of a public road. Refer to the letter from Carbon County in Appendix 1-8.

R645-301-116 PERMIT TERM

116.100 The anticipated starting and termination dates of the coal mining and reclamation operation are as follows:

	<u>Begin</u>	<u>Complete</u>
Construction of Mining Pad, Mining Support Structures, and Portals	Apr. 1999	Dec. 1999
Begin Mining	Jan. 2000	
Terminate Mining		Dec. 2017*
Remove Facilities	Jan. 2018*	June 2018*
Regrade Area	July 2018*	Sept. 2018*
Revegetate Site	Oct. 2018*	Nov. 2018*

*This assumes mine life extended through acquisition of adjacent state and federal coal reserves.

116.200 The initial permit application will be for a five year term with successive five year permit renewals.

R645-301-117 INSURANCE, PROOF OF PUBLICATION AND FACILITIES OR STRUCTURES USED IN COMMON

- 117.100 The Certificate of Liability Insurance is included as Attachment 1-1 in Appendix 1-1.
- 117.200 A copy of the newspaper advertisement of the application for a permit and proof of publication are included as Attachment 1-2 and 1-3 respectively, in Appendix 1-1. A copy of the newspaper advertisement for the Whitmore lease revision is included as Attachment 1-3 in Appendix 1-1.
- 117.300 Not applicable.

R645-301-118 FILING FEE

Verification of filing fee payment is included as Attachment 1-4 in Appendix 1-1.

R645-301-123 NOTARIZED STATEMENT

A notarized statement attesting to the accuracy of the information submitted can be referenced as Attachment 1-5 in Appendix 1-1.

R645-301-130 REPORTING OF TECHNICAL DATA

Technical reports prepared by consultants specifically for WEST RIDGE Resources, Inc. are typically presented in an appendix format and, in general, provide the name and address of the person or company (consultant) preparing the report, the name of the report, the date of collection and analysis of the data, and descriptions of the methodology used to collect and analyze the data. The body of the report usually will provide the date the actual field work was conducted and a description of the methodology used to collect and analyze the data. The format of each report may vary depending on the contents of the report and organization preparing it.

For laboratory analyses, such as Appendix 7-2 and 7-3, the company performing the analyses as well as the date of the analyses, is presented on the laboratory report rather than the cover page.

A list of consultants and their appended reports is contained in Appendix 1-6, Consultation and Coordination. Sources used in the preparation of the permit application are referenced in Appendix 1-3. References in all chapters are keyed to this main reference list.

Mining and exploration activities had been conducted in the currently proposed disturbed area prior to August 3, 1977. A road existed into C Canyon in 1952 when drill hole B-6 was drilled in the right fork. A road was also constructed up the left fork of C Canyon to a drill hole site during the same year. In addition to the drill holes, the coal outcrop in the left fork of C Canyon was exposed for sampling purposes. A small pad was built at the outcrop location and it was left in place as were the roads.

In 1986, another drill hole, 86-2, was drilled west of the first drill hole in the right fork. A minor amount of road work was done in conjunction with this second drill hole. Kaiser Coal Company obtained permission from the BLM to grade the existing road and make it passable for the drill rig. The drill hole site was reclaimed but the road, a public road, was left in place.

Through use of aerial photography and site evaluations, it is possible to document previous mining related disturbances in C Canyon. Refer to Map 5-1 for delineation of the disturbance prior to August 3, 1977.

The total of all the previously disturbed areas within the minesite disturbed area is estimated to be as follows:

roads in right and left forks	=	1.27 acres
road culvert	=	.05 acres
water monitoring well	=	.05 acres
material storage pad	=	.05 acres
		1.62 acres

WEST RIDGE Resources, Inc. is proposing to utilize the entire previously disturbed area in their current proposal and to reclaim it upon cessation of mining operations.

In the 1950's a road was constructed in the Right Fork of Bear Canyon to access an exploratory drillhole site. This road now provides access to the site of the Bear Canyon GVH installation. (Refer to Appendix 5-14 for a detailed description of the Bear Canyon GVH facility)

ATTACHMENT 1-5
VERIFICATION STATEMENT

I hereby certify that I am a responsible official (Resident Agent) of the applicant (ANDALEX and IPA for WEST RIDGE Resources, Inc.) 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

David W. Hibbs

Signed - Name - Position - Date

David Hibbs, Resident Agent

Subscribed and sworn to before me this 11th day of May, 2012

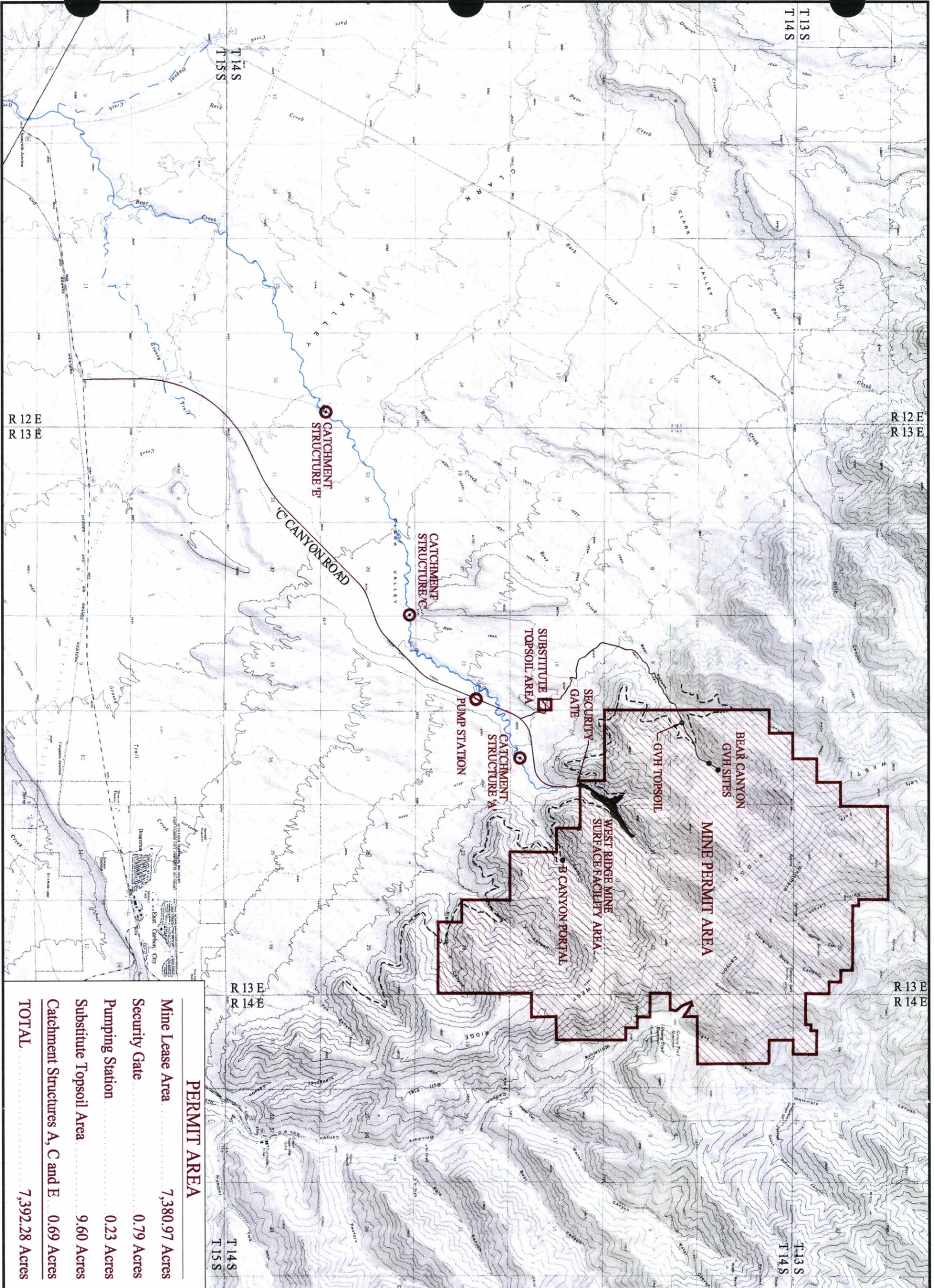
Linda Kerns
Notary Public

My commission Expires: March 27, 2013)

Attest: STATE OF Utah) ss:

COUNTY OF Carbon)





PERMIT AREA	
Mine Lease Area	7,380.97 Acres
Security Gate	0.79 Acres
Pumping Station	0.23 Acres
Substitute Topsoil Area	9.60 Acres
Catchment Structures A, C and E	0.69 Acres
TOTAL	7,392.28 Acres

WEST RIDGE MINE
 Map 1-0, Permit Map
 Map 1-1, Location Map

LEGEND:

- Lease Areas
- Surface Facility Area
- GVH Site
- Outcrop



I CERTIFY THIS MAP TO BE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



WEST RIDGE
 RESOURCES, INC.

SCALE: 1"=5000'

CHAPTER 5

REPLACEMENT TEXT

~WEST RIDGE MINE - PERMIT APPLICATION PACKAGE~

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Figure 5-2	Typical Portal Seal
Figure 5-3	C Canyon Road - West Ridge Mine Site Typical Section

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APPENDIX 5-2	Letter from Carbon County Commission
APPENDIX 5-3	Resource Recovery and Protection Plan (R2P2)
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APPENDIX 5-4	Stability Evaluation for Construction and Reclaimed Slopes, West Ridge Mine
APPENDIX 5-5	Construction/Reclamation Plan
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APPENDIX 5-10	SITLA Mine Plan Approval State Lease ML-47711, ML-49287 and ML-51744
APPENDIX 5-11	Grassy Trail Dam and Reservoir Mining - Induced Seismicity Report, Pre-mining Report (RB&G Engineering)
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APPENDIX 5-14	Bear Canyon Gob Gas Vent Hole (GVH)
APPENDIX 5-15	Catchment Structure, C Canyon Drainage
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APPENDIX 5-17	Grassy Trail Dam and Reservoir Mining-Induced Seismicity Summary Update Report (RB&G Engineering, 2010)
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MAP NUMBER	DESCRIPTION	SCALE
MAP 5-1*	Previous Disturbance	1"=100'
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MAP 5-3*	Sub-surface Ownership	1"=1000'
MAP 5-4A*	Mining Projections	1"=1000'
MAP 5-4B*	Mining Projections - Extended Reserves	1"=1000'
MAP 5-5*	Surface Facility Map	1"=1000'
MAP 5-6*	Mine Site Cross-Section & Profile Index Map	1"=1000'
MAP 5-6A*	Mine-Site Cross-Sections	1"=50'
MAP 5-6B*	Mine Site Cross-Sections	1"=50'
MAP 5-6C*	Mine Site Cross-Sections	1"=1000'
MAP 5-7*	Subsidence Map	1"=1000'
MAP 5-8*	Undisturbed Drainage Culvert Profile	1"=100'
MAP 5-9*	Mine Site Reclamation	1"=100'
MAP 5-10*	Construction/Reclamation Area-Types	1"=100'
MAP 5-11*	Construction Sequence	No scale
MAP 5-12*	Reclamation Sequence	No Scale
MAP 5-13*	Pre-construction Drainage Photos Index Map	1" = 100'
MAP 5-13(A-H)*	Pre-construction Drainage Photos	No Scale
MAP 5-14*	Pump House Site Map	1" = 10'
MAP 5-14A*	Pump House Reclamation Map	1" = 10'
MAP 5-14B*	Pump House Cross-Sections	1" = 10'
MAP 5-15*	Roads Map	1" = 100'

*Not included on disk

CHAPTER 5
R645-301-500 ENGINEERING

Historical Note 1: In the spring of 2009, and again in the summer of 2010, the company constructed small catchment structures in the C Canyon drainage below the minesite. The purpose of these structures was to contain coal-fines which had accumulated in the drainage channel as a result of non-compliance discharge water from the mine, and to assist in the subsequent clean-up project. After the unit was constructed it was determined that it should be included within the Mining and Reclamation Plan. Please refer to Appendix 5-15 for a complete description of these catchment structures, including history, location, right-of-entry, as-built design, operational criteria, and reclamation information.

Historical Note 2: In the summer of 2011 the company acquired a modification of federal lease UTU-78562 along the eastern side of the permit area. Mining in this new lease will involve development mining under the stream in the Right Fork of Whitmore Canyon which supplies most of the water to the Grassy Trail Reservoir. Due to concerns for the water rights in this area the company has agreed to collecting additional hydrologic baseline data. This data acquisition will include, but is not limited to the following:

- a) Installation and/or rehabilitation of measuring flumes in the upper and lower reaches of both Right and Left Forks of Whitmore Canyon above the reservoir (total of 4 ea. flumes).*
- b) Installation of subsidence monitoring stations at approximate 100' intervals along the bottom of the Right Fork drainage within the permit area.*
- c) Installation of flow meters within the underground mine water collection/pumping system sufficient to adequately assess the quantity and location of groundwater sources encountered in the mine works in the vicinity of the Right Fork.*
- d) On-site location and development of selected springs in the Right Fork area subject to future monitoring, conducted in conjunction with stakeholder input.*
- e) Expansion of the seep and spring survey in the Right Fork to include more of the upper drainage area above longwall Panel #22.*
- f) Completion of a detailed gain-loss analysis of the stream flow in the Right Fork within the area of proposed development mining.*

It should be noted that there will be no longwall mining under (beneath) the Right Fork of Whitmore Canyon, nor any other mining that would result in subsidence under the drainage of the Right Fork. The only mining under the Right Fork will be a limited number of development entries associated with the longwall bleeder system. All such development mining associated with Panel #22 will be conducted at depths in excess of 2600' below the Right Fork drainage.

Information regarding the subsidence monitoring points in the Right Fork can be found in Appendix 5-18.

Information regarding the underground (in-mine) flow meters can be found in Appendix 7-16.

Information regarding the expanded seep and spring survey can be found in Appendix 7-6B.

Information regarding the gain-loss analysis of the Right Fork can be found in Appendix 7-14.

Historical Note 3: In the spring of 2012, the company made application to re-open a sealed-up portal located in B Canyon. This portal was constructed in the early 1960's as part of an underground mine extension of the old Kaiser Mine. The portal was later reclaimed by the Utah Division of Oil, Gas and Mining's Abandoned Mine Lands (AML) Program in the summer of 1998. West Ridge Resources now needs to re-open this portal to gain access to the underground workings in order to perform safety-related work in preparation for future longwall mining in this area. A complete description of the portal re-opening project is provided in Appendix 5-19.

R645-301-511 GENERAL REQUIREMENTS

Chapter 5 contains information regarding the proposed coal mining operation and reclamation plans, a discussion of its potential impact to the environment and methods to achieve compliance with design criteria.

Reclamation plans and estimates are presented for postmining restoration of the area.

NOTE: The following discussion for the remainder of R645-301-511 applies specifically to the Gob Gas Vent Hole (GVH) installation proposed in Bear Canyon. In order to facilitate the review it is presented here in its entirety rather than interspersed throughout the chapter. A more detailed and complete discussion of the Bear Canyon GVH proposal can be found in Appendix 5-14. Unless specifically noted in this following discussion, nothing related to the Bear Canyon GVH proposal affects the contents of the existing approved MRP as described hereinafter.

The GVH facility will consist of three drillholes, four methane extractor units, and interconnecting piping. A detailed description of the drillhole installation, and the assembly and operation of the methane extractor units can be found in Attachment 7 of Appendix 5-14. The site pad will consist of a narrow strip (approximately 35' wide x 300' long) located adjacent to and parallel with the road. The drillholes will be located at the southern (down-canyon) end of the site pad. The extractor units will be located in a serial arrangement along the northern (up-canyon) end of the site pad. The total facility area will be about 0.24 acres, including the adjacent cutslopes.

Three angled holes will be drilled at angles ranging from 20 degrees to 45 degrees from vertical. Drilling will be conducted using tri-cone rotary and/or hammer. Drilling fluid will be primarily compressed air (600-800 psi) with water and Baroid Quick Foam and EZ Mud (see Attachment 15 for MSDS sheets for these products). Cuttings will pass up the annulus and be diverted to the reserve pit on the surface. Each hole will be spudded with a 19" diameter hole into which a 16" diameter conductor casing will be set and grouted to an approximate depth of 20'. Thereafter, a 12.25" hole will be drilled to within 200' of the Lower Sunnyside coal seam (an inclined depth of 200'-300'). A 9.625" T&C casing will be set and grouted to total depth of the 12.25" bore. An 8.75" bit will be tripped in to drill out the shoe and will continue about 175' to within 25' of the coal seam horizon. Sections of 7" slotted casing will be tripped in from bottom of hole to about 40' above the bottom of the

upper casing, but will not be grouted so that it can move with any additional subsidence.

Before construction starts identification signs will be posted at the site. These signs will list the company name as permit holder, the permit number, address and phone number. During the initial phase of construction, topsoil will be salvaged. Based on a recent Order 1 soils survey the current estimate of topsoil to be salvaged is approximately 515 cubic yds. (See Appendix 2-10 and also Attachment 2 of Appendix 5-14.). After the topsoil has been removed, the slope will be excavated back for a distance of about 20', leaving a 1:1 cutslope against the hillside. Based on current surveys it is estimated that about 1,357 total yds of material will be excavated from the bank. This includes the estimated 515 yds of topsoil, so the remaining amount of excavated material will be about 842 yds (see Cut Slope Excavation Volumes, Attachment 1 of Appendix 5-14 for details). Material excavated from the cutslope will be used to level off the area for the drillhole (for the drilling operation) and for the individual methane extractor units. Excess material may be used to raise the grade of the adjacent roadway. All fill areas will then be compacted for stability.

During the drilling phase of the GVH installation, the pad area will be used as an equipment lay-down area for drill steel, drill casing, drilling mud, concrete, etc. The pad will also be used to accommodate the mud pits needed during the drilling operation. The mud pit will measure approximately 30' long x 10' wide x 10' deep, and will be located immediately down-canyon, i.e., southwest of, the drillholes, as shown in Attachment 1. The pit will be lined with a 12 mil plastic liner, with a 20 mil felt underlayment. Based on the diameter and total combined length of the drillholes, and assuming a swell factor of 40% for the cuttings, the estimated volume of cuttings is 1283 cubic feet, or 47 yds. This would result in a total depth of cuttings remaining in the bottom of the pit of 4.28 ft. After the drillholes have been completed the remaining cuttings will be mixed with native material until it can be handled with heavy machinery. It will then be removed from the pit and hauled off-site to an approved disposal facility.. After the cuttings have been removed, the pit will be backfilled and eliminated. The site will then be cleaned up and fine-graded prior to installing the methane extractor units (see Attachments 1 and 7 of Appendix 5-14 for details).

After the cutslopes have been excavated, the slopes will be reclaimed (interim reclamation) by pocking, re-seeding and applying a layer of wood straw as described above. A disturbed area drainage ditch will be constructed along the toe of the cut. This ditch will be designed to handle the flow from the up-slope undisturbed area, the reclaimed cutslope, the drillpad, and the adjacent section of road. Runoff from the ditch will be routed through a series of sediment-control structures (silt fences, excelsior logs, etc.) to effectively remove sediment. (A more detailed description of the sediment control measures associated with the site can be found in the Chapter 7, Hydrology discussion of Appendix 5-14.)

A security fence may be installed around the perimeter of the pad between the

facilities and the road.. The facilities will not encroach upon nor affect the road nor the road turn-around, and neither will public use of the road be affected. The Company will provide the Division with an as-built drawing of the facility upon completion of construction.

Operation of the GVH facility is expected to continue for the life of the West Ridge operation. Therefore, reclamation of the site will be done at the same time and under the same conditions as for the minesite surface facilities in C Canyon. However, if temporary cessation of mining operations occurs, the GVH well will continue to function.

Prior to final reclamation, all drillholes will be plugged and sealed in accordance with State and Federal regulations. The casings will be plugged at the bottom to hold the concrete. A lean concrete mixture will be poured into the casing until the concrete is within five (5) feet of the surface. At that time the casing will be cut off at ground level and the rest of the casing will be filled with lean concrete. The concrete will be allowed to harden before final reclamation is completed. There will be three drillholes installed and therefore plugged at reclamation. (This commitment is identical to the currently approved plan for the Tower (Centennial, C/007/014) GVH reclamation plan.) Based on current projections the holes will be drilled at 45 degree angles into the mine, and will have individual depths (lengths) of 504', 376', and 502', for a combined total depth of 1382'. Using 9-5/8" casing for all holes, the volume of concrete needed to plug all three holes would be 26 cu. yds.

On final reclamation, the pad area and cutslopes will be backfilled to approximate original contour (see Reclamation Contours, Attachment 1 of Appendix 5-14). Fill material will be obtained from the adjacent roadway and leveling pads. This is the exact same material that was excavated from the cutslope during initial construction. The cutslope will be backfilled in 18"-24" lifts and compacted with rubber-tired vehicles and/or vibratory mechanical equipment. The reclaimed slopes, at approximate original contour, will average about 1.5: 1, so slope stability will not be an issue. Because of the compaction in lifts, and the rocky nature of the backfill material (one and the same as the original native material), stability of the reclaimed slopes is sufficient to achieve approximate original contour and eliminate the potential for remnant cutslope exposures. A slope stability analysis prepared by Blackhawk Engineering concludes that "calculations show safety factors well in excess of the required 1.3 for the reclaimed cut slopes of 1.5H:1V and up to 30' in height. This is not inconsistent with the natural conditions of the area, and will allow for complete reclamation of all cut slopes created by the emergency drilling pads." (See Attachment 8 of Appendix 5-14 for the complete slope stability analysis report.) The slope will then be re-topsoiled and re-vegetated according to the same existing approved plan for the minesite in nearby Canyon, as specified in R645-301-341, and as described in the Chapter 3, Biology discussion in Appendix 5-14.

The amount of backfill material is estimated to be up to 842 cubic yards, and the amount of replaced topsoil is estimated at about 515 cubic yards. Total reclaimed

area, including both pad and cutslopes will be approximately 0.24 acres. Because the cutslopes are only about 20' maximum high, all work, both backfilling and topsoil replacement, can easily be done from the existing adjacent road-pad surface, using trackhoes with sufficient boom reach. After the reclaimed slopes have been topsoiled and reseeded, a row of excelsior logs will be installed along the full length of the toe of the slope between the slope and the remaining road. The purpose of this row of excelsior logs is to control sediment of the site until the revegetation has become established.

Bonding and reclamation costs for the Bear Canyon GVH installation can be found in Appendix 5-14 in the Chapter 8, Bonding discussion.

HISTORICAL NOTE: The preceding discussion of the Bear Canyon GVH was approved by the Division on May 25, 2010, as was Appendix 5-14 which described the GVH installation in detail. In April, 2011 the company applied for an amendment of the MRP to add two additional GVH holes (GVH 4 and GVH 5) to the Bear Canyon GVH installation. Complete details of the GVH 4 and 5 amendment can be found in Appendix 5-14A, which is an addendum to the approved GVH Appendix 5-14.

R645-301-512 CERTIFICATION

512.100 Cross Sections And Maps

Maps, cross sections, figures and tables which require certification will be certified by a qualified, registered, professional engineer or land surveyor.

Cross sections, maps and drawings will be certified prior to determination of completeness for the permit application.

512.200 Plans And Engineering Designs

A qualified registered professional engineer will certify plans and designs for impoundments and primary roads. No excess spoil or durable rock fill designs are proposed.

R645-301-513 COMPLIANCE WITH MSHA REGULATIONS AND APPROVALS

- 513.100 MSHA regulations 30 CFR 77.216-1 & 30 CFR 77.216-2 do not apply as no coal processing dams or embankments are being proposed.
- 513.200 MSHA regulation 30 CFR 77.216 (a) does not apply because of the restricted size of the sediment ponds and low hazard potential.
- 513.300 No coal processing waste is proposed to be disposed of in underground workings. Refer to R645-301-528.321.
- 513.400 No refuse piles are being proposed.
- 513.500 Upon completion of final mining activities, any shafts, drifts, exploratory holes or entryways from the surface will be capped, sealed, backfilled or otherwise properly managed consistent with MSHA, 30 CFR 75.1771. All exploration holes will be filled with concrete.

 Mine portals will be sealed by constructing a concrete block stopping at least 25 feet in from the surface opening and backfilling the 25 feet of the entry from the surface opening to the stopping with incombustible earth materials. The area in front of the portal will be backfilled and graded to approximate original contour using materials stored in the mine pad fill. Topsoil will be applied on the regraded fill. The surface will then be seeded and mulched.
- 513.600 No discharge into an underground mine is proposed, therefore MSHA approval is not required.
- 513.700 No surface mining is proposed in the permit area. No surface mining is proposed for areas within 500 feet of an active underground mine.
- 513.800 Not applicable.

All engineering inspections, other than those inspections to be done by a qualified person designated by the operator, will be performed by a registered, professional engineer or other qualified specialist under the direction of the professional engineer.

514.100 No excess spoil is anticipated at the proposed underground mine site. A soil scientist will be on-site during final reclamation to oversee topsoil redistribution.

514.200 No refuse piles are being proposed.

514.300 Impoundments

Properly sized sediment control facilities will be constructed below the mine yard. Inspection of the sediment ponds will be made on a regular basis by a professional engineer or specialist during construction, upon completion of construction and once per year until the structures are removed or the performance bond has been released.

A registered, professional engineer will provide a certified report to DOGM after each inspection stating if the impoundment has been constructed and maintained as designed. The report will discuss, if detected, any sign of instability, structural weakness (or other hazardous condition), depth and elevation of any impounded water, existing storage capacity, and existing or required monitoring procedures and instrumentation. A copy of the report will be kept on file at or near the mine site.

In addition to the above certified annual inspection and report, the sediment pond will be inspected on a quarterly basis by a qualified person designated by the operator. Any appearance of structural weakness or other hazards will be recorded. See R645-301-515-200 for the reporting procedures if a hazard is found. A copy of the report will be kept on file at or near the mine site.

Weekly inspection requirements of MSHA, 30 CFR 77.216 do not apply due to the size of the sediment control structures and low hazard potential. See R645-301-533-600.

515.100 Should a landslide occur which may have a potential adverse effect on public property, health, safety or the environment, WEST RIDGE Resources, Inc. will notify the Division by telephone and comply with required remedial measures.

515.200 Impoundment Hazards

If any examination or inspection discloses that a potential hazard exists for the sediment pond or other facilities which impound water that warrant initiation of emergency procedures, the person making the examination will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. Emergency procedures would include immediately notifying those individuals on site responsible for performing the necessary remedial action.

515.300 Procedures For Temporary Cessation Of Operations

Before temporary cessation of coal mining and reclamation operations for a period of 30 days or more, or as soon as it is known that a temporary cessation will extend beyond 30 days, WEST RIDGE Resources, Inc. will submit to the Division a notice of intent to cease or abandon operations. The notice will include: a statement of the exact number of surface acres and the horizontal and vertical extent of subsurface strata which have been in the permit area prior to cessation or abandonment; the extent and kind of reclamation of surface area which will have been accomplished; and identification of the backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during the temporary cessation.

Support and maintenance of all surface access to underground operations and surface facilities will continue. Temporary cessation will not relieve any obligation to comply with any provision of the approved permit.

R645-301-520 OPERATION PLAN

R645-301-521 GENERAL

WEST RIDGE Resources, Inc. holds federal, state and fee coal leases SL-068754 and UTU-75862, state leases ML 47711, ML 49287 and ML 51744, and the Penta Creek fee lease, totaling 7796.7 acres in the West Ridge area of eastern Carbon County. Much of the Penta Creek Fee Lease, is not included within the permit area at this time and cannot be mined until the permit is amended. Refer to Map 5-4B, Mining Projections - Extended Reserves.

The mine, consists of one longwall and two continuous miner sections. The mining sequence is shown on Map 5-4A, Mining Projections. Initial mine production will come from reserves located in the southeastern portion of the existing lease area. Panels will be developed to the north and south of the mains, progressing in an eastward direction. With the existing leases, the projected life of the West Ridge Mine is 15 years. After the economically recoverable reserves within the permit area have been depleted, the portals would be sealed and reclamation of the surface facility area would begin unless additional leases were acquired.

Surface facilities will be located in C Canyon, where the left and right forks converge, in a previously disturbed area. The extent of the previous disturbance includes access roads, outcrop excavations and exploration drill holes. Previous disturbance at this site is estimated to be approximately 1.62 acres. The total proposed surface disturbed area, as delineated by the tan line on the maps, amounts to approximately 29 acres. Actual anticipated disturbance for surface facilities and topsoil stockpiles (within the disturbance area) is estimated at 26.02 acres. This includes approximately 0.79 acres of Carbon County road which has been included in the disturbed area down to the C Canyon gate, and 0.23 acres for the pumphouse area located below the minesite.

An alternate (substitute) topsoil borrow area would be located about 1 ½ miles to the west of the proposed mine site on a ten acre parcel of State School Trust land. This area would not be included unless needed for final reclamation. No surface disturbance would take place at this location until the time of final reclamation. No additional acreage should be required for the project as proposed in this permit application.

521.100

Cross Sections And Maps

The lease area is located northwest of the old Sunnyside No. 1 underground mine workings. The lease was, at one time, held by U.S. Steel Corp., who authorized Kaiser Coal Company to extend a set of test entries from the Sunnyside No. 1 mine part way through the lease. These test entries were driven to the surface in B Canyon. The portal for this test entry breakout exists presently although it has been sealed. B Canyon is located approximately one mile southeast of C Canyon where the surface facilities for the West Ridge Mine are being proposed. The extent of the underground test entry development within the lease is shown on Map 5-7, Subsidence Map. The old Sunnyside Mine test entries driven north into the proposed permit area were mined in 1959 and 1960, are now inactive and sealed to prevent public access.

The proposed surface facilities are to be situated in C Canyon. north of the old underground mine workings in the Sunnyside No. 1 Mine. The location of the old workings with respect to the proposed development is shown on Map 5-4A. Map 5-1, Previous Disturbance, shows the areal extent of the previous surface disturbance in C Canyon.

521.120

Existing Surface And Subsurface Facilities And Features

No surface or subsurface features, such as commercial buildings, transmission lines, pipelines, or agricultural related features, exist in or near the proposed permit area. Refer to Map 4-1. A pre-mining (pre-subsidence) survey was conducted prior to mining operations, which included the area of lease UTU-78652. Refer to Appendix 5-8. A recreational cabin (seasonal occupation) and trailer are located in Spring Canyon in the northern part of the permit area. In this area, the depth of cover exceeds 2500'. Within 18 months prior to longwall mining in this area a pre-subsidence survey of the cabin/trailer will be conducted. The location of this cabin is shown on Map 4-1, 5-2 and 5-7.

Man-made features in or near the proposed permit area consist primarily of roads. Refer to Map 4-1. Several small roads exist within the permit area. These roads are Carbon County RS2477 roads. They are used primarily to access the top of West Ridge by ranchers in the area.

Approximately 960' of the existing Carbon County road into "C" Canyon has been added to the West Ridge Mine permit and included as disturbed area. The addition of this portion of road was necessitated by the placement of a gate (owned by Carbon County) to allow for better visibility and turnaround area for the public during those times when the gate is closed by the operator.

Roads that lie in or within 100 feet of the proposed permit area are depicted on Map 4-1.

No spoil, waste, noncoal waste, dams, embankments, sediment pond, water treatment or air pollution control facilities exist within the proposed permit area. A small

portion of the Grassy Trail Reservoir (less than 0.6 acres) lies within a corner of the permit area.

521.130 Landownership And Right Of Entry Maps

Ownership boundaries and the names of the present owners of record for surface lands as well as underground are depicted on Maps 5-2, Surface Ownership and 5-3, Subsurface Ownership.

Map 5-4B delineates the federal coal lease SL-068754 and UTU-78562, state lease ML 47711, ML49287 and ML 51744 and the Penta Creek fee lease, totaling 7796.7 acres held by WEST RIDGE Resources, Inc., which is the area for which WEST RIDGE Resources, Inc. Resources has the legal right to enter and begin coal mining and reclamation operations. Much of the Penta Creek Fee Lease is not included within the permit area at this time.

Included in Appendix 5-2 is a letter from Carbon County granting WEST RIDGE Resources, Inc. permission to conduct mining operations within 100 feet of the Carbon County road. This would basically be that segment of road where the road enters the mine facility area.

Also included in Appendix 5-2 is an approval letter from Carbon County, allowing for the periodic closure of approximately 960' of the "C" Canyon Road from the gate to the original mine permit area. The permit area has been extended to the gate, as shown on Plate 4-1.

A public notice has been published providing for request for a public hearing as provided in R645-103-234. A copy of this notice is also included in Appendix 5-2.

521.140 Mine Maps And Permit Area Maps

The permit area proposed to be affected by the coal mining and reclamation operation is shown on Map 5-3. Permit renewals will be reapplied for on five year intervals.

521.141 The mining operation has been divided into five year mining blocks in an attempt to show future areas that will be mined under the permit renewals. The mining blocks are shown on Map 5-4B. All projections and timing are preliminary and general in nature and may change in the future depending on mining, marketing, environmental conditions and/or acquisition of additional state and federal reserves.

Surface support facilities in C Canyon will be utilized for the life of mine operations. The proposed mine surface facility area is depicted on Map 5-5, Surface Facility Map. Reclamation of the facilities will be performed following completion of mining activities and sealing of the portals.

521.142 The surface above mined out longwall panels may be subject to conditions associated

with subsidence. Subsidence may occur under the mined out area.

Map 5-7 identifies the mining area for which planned subsidence mining methods will be used. Based on experience at other nearby mines located in the Book Cliffs (i.e. Soldier Creek, Sunnyside and Andalex Tower), a conservative angle of draw of 20 degrees was used to project the maximum extent of subsidence.

521.143 No underground development waste or excess spoil will be stored at the mine site.

521.150 Land Surface Configuration Map

Map 5-1 represents the existing land surface configuration in the proposed disturbed area. Areas of previous disturbance exist within the proposed disturbed area. These are shown on Map 5-1 and involve approximately 1.62 acres. Map 5-1 extends at least 100 feet beyond the area to be disturbed. Map 5-5 depicts the disturbed area boundary with regard to the proposed structures and facilities. All previous disturbance will be included within the proposed disturbed area boundary and included within the reclamation plan. The proposed disturbed area boundary is depicted on most 1" = 100' scale drawings regardless of subject covered.

521.160 Maps And Cross Sections Of Proposed Features For The Proposed Permit Area

Buildings, utility corridors and facilities, to be constructed and used in conjunction with the mine, are shown on Map 5-5.

The proposed surface disturbance area is shown on Map 5-5. This exhibit depicts the maximum potential disturbance around the facilities that would be used for the life of the mine. The proposed maximum disturbance area amounts to approximately 29 acres. This is composed of the anticipated on-the-ground disturbance (projected at about 25 acres) plus extra buffer acreage around the perimeter of the facility which would remain undisturbed. The proposed disturbed area will be the total disturbance needed for the life of the mine. The actual disturbed area will be reclaimed following the completion of underground mining activities.

The area to be affected during the permit term according to the mining sequence is depicted on Map 5-4A.

A bond will be posted for reclamation of the disturbed area acreage depicted on Map 5-5.

The coal pile area, truck loadout and associated facilities are shown on Map 5-5.

Noncoal waste will be stored in the main storage area immediately southwest of the shop area, as shown on Map 5-5. The locations of the fuel storage facility is shown

on Map 5-5. The proposed topsoil stockpiles are shown on Map 2-4. Cross-sections for the topsoil stockpile areas are presented on Map 2-4 as well.

The explosive storage and handling facility and the sediment pond are depicted on Map 5-5.

Map 7-2 depicts the location of the main undisturbed area bypass culverts. Additional details on the mine yard drainage control structures are shown on Map 5-8, Undisturbed Drainage Culvert Profile. Refer to Map 5-8 for the bypass culvert slope and length. These culverts have been sized to pass the 100 year/6 hour event. Refer to Table 7 in Chapter 7, Appendix 7-4.

The pump house area below the minesite is shown on Plates 1-1 and 5-14.

521.170 Transportation Facilities Map

Transportation of the coal from the mine site to shipping points will be by truck. WEST RIDGE Resources, Inc. proposes to use a Carbon County public road for access to the mine site from State Highway 123.

521.180 Support Facilities

No additional support facilities will be constructed within the permit area.

521.200 Signs And Markers

Signs and markers will be posted, maintained, and removed by the WEST RIDGE Resources, Inc. Signs and markers will be a uniform design that can be easily seen and read, will be made of a durable material, and will conform to local laws and regulations. Signs and markers will be maintained during all activities to which they pertain.

Mine and permit identification signs will be placed at each point of public access to the permit area from public roads. The mine and permit identification sign(s) will indicate the permittee's name, address, phone and permit number. The signs will be retained until after release of all reclamation bonds for the permit area.

521.250 Perimeter Markers

A suitable marker (such as a red or yellow steel, wood or fiberglass post or brightly colored rope tied around a tree trunk) will be used to mark the perimeter of the disturbed area prior to conducting mining activities. The proposed disturbed area is depicted on most of the 100 scale maps regardless of subject covered by each map.

521.260 Buffer Zone Markers

By regulatory definition (i.e. drainage area greater than one square mile) the left fork of C Canyon is classified as an ephemeral drainage as it has a drainage area of 231 acres. The right fork is classified as an intermittent drainage by regulatory definition. The drainage are for this fork is just over one square mile, at 687 acres. A stream gauge located in the right fork channel never detected any channel flow even during heavy precipitation events in the summer of 1997.

The right and left fork drainages will be culverted beneath the mine yard facilities; flows will be released down stream from the mine office pad. A sediment pond will be used to treat site drainage to prevent intermingling with the undisturbed area drainage. A stream buffer zone sign will be posted at the upper end of the right fork of the mine yard and below the office pad to indicate a stream buffer zone.

521.270 Topsoil Markers

Signs will be posted to identify stockpiled topsoil materials.

R645-301-522

COAL RECOVERY

A Resource Recovery and Protection Plan (R2P2), has been approved by the BLM. The R2P2 will assure that coal mining and reclamation operations are conducted so as to maximize the utilization and conservation of the coal, while utilizing the best technology currently available to maintain environmental integrity, so that re-affecting the land in the future through coal mining and reclamation operations is minimized. Refer to Appendix 5-3, 5-3A, 5-3B and 5-3C for the R2P2 which includes a discussion of coal resource utilization and conservation. The Utah School and Institutional Trust Lands Administration (SITLA), with concurrence from the BLM, has approved the mining plan for all State Leases (see Appendix 5-10).

R645-301-523

MINING METHODS

Both longwall and continuous miner methods will be employed to recover the coal resource. Longwall will be the primary production method, while continuous miners will be used mainly for mine development to support the longwall. The longwall panels shown on Map 5-4B have been laid out to maximize recovery of the primary coal reserves. Continuous miners will be utilized to develop main entries, longwall gate entries, sumps and other similar development areas.

Initial mine production has come from reserves located in the southeastern portion of the existing lease area. Panels will be developed to the north and south of the mains, progressing in an eastward direction. Longwall panel layout may change depending on conditions encountered in the underground workings.

The projected life of the West Ridge Mine is 15 years. Acquisition of additional federal coal reserves in the West Ridge area would extend the life of the mine beyond 15 years. In the unlikely event that non federal reserves cannot be acquired then the mine plan projection will be altered to maximize the economic and recovery of federal coal in the irregular blocks not amenable to mining. After the economically recoverable reserves within the lease area have been depleted, the portals would be sealed and reclamation of the surface facility area would begin unless additional leases were acquired.

The West Ridge mine is being proposed as an average size underground longwall mine by Utah industry standards, producing at an average rate of about 3 million tons per year. Mine production is subject to normal fluctuations depending on operational variables such as geologic mining conditions, marketing, equipment availability, and/or worker productivity. The mine is expected to produce about 42 million tons of coal from the existing leases. The existing mine plan assumes that mining in the area northeast of Whitmore Canyon will be limited by heavy cover (plus 3000'). However, if conditions allow, mining activity will continue as far as possible in this direction on federal coal which would be leased in the future.

Full production could be reached by a gradual buildup during the first two years of mining. See Map 5B for mine projections and timing information for the future

expanded mining area.

Major equipment for the mine will include:

Continuous Mining System:

Drum-Type Continuous Mining Machine
Shuttle Cars
Roof Bolter
Diesel Scoop Tractor
Feeder Breaker
Section Power Center
Section Auxiliary Face Ventilation Fan

Longwall Mining System:

Double Drum Shearing Machine
Armored Face Conveyor
Hydraulically Activated Shield Roof Support
Armored Stage Loader and Crusher
Longwall Power Center
High Pressure Hydraulic Pumping System

No surface coal mining (strip mining) will be done.

All mining will be done in accordance with the provisions of the approved R2P2 and the terms and stipulations of the federal and state leases within the West Ridge mining area. Stipulation 17 of federal lease UTU-78562 has been complied with. A seismic analysis report of the Grassy Trail Dam and Reservoir has been completed and BLM has determined that the seismic/subsidence effects of longwall mining on the Grassy Trail dam and reservoir have been satisfactorily addressed. The BLM has approved the R2P2 to allow full extraction longwall mining in panel #7. BLM has also approved longwall mining of panels 18, 19 and 20 on federal lease UTU-78562.

For surface blasting incident to underground mining, R645-301-524.100 through R645-301-524.700 are required to be addressed. Blasting will be utilized when necessary during the construction phase of the mine site. Blasting will not be used routinely during the operation or reclamation phase of the mining operations and will not be used as a method of coal extraction.

524.100 All surface blasting incident to underground mining operations will be conducted under the direction of a certified blaster. The blaster will have a current certification or recertification.

Certificates of blaster certification will be on file at the permit area during blasting operations.

A certified blaster and at least one other person will be present at the firing of a blast. The blaster will be familiar with the blasting plan and site-specific performance standards.

524.200 Submittal of blast designs for shots using more than 5 pounds of explosives will be made to the Division for approval prior to conducting surface blasting at the mine site. A schedule will be presented to DOGM prior to conducting blasting activities. The blast design will be prepared and signed by a certified blaster.

Once construction is completed and the mine is in operation, no surface blasting should be necessary.

524.300 A preblasting survey should not be necessary because there are no residents, dwellings or other structures located within one-half mile of the permit area.

524.400 Blasting Schedule

Blasting will be performed, as needed, during the earthwork phase of the minesite construction. The operator will use audible signals to notify those in the vicinity immediately before the blast. No residents live within one-half mile of the proposed blasting site. All blasting will be conducted between sunrise and sunset.

If the blast utilize more than five pounds of explosives, a blast design with a sketch of the drill patterns, delay periods and decking will be submitted for approval. The plan will indicate the type and amount of explosives to be used, critical dimensions, and the location and general description of structures to be protected as well as design factors to protect the public and meet applicable airblast, flyrock and ground vibration standards.

The operator will notify the Carbon County Sheriff's Department, East Carbon City and Sunnyside by phone at least 24 hours to conducting any blasting.

524.500 Blasting Signs, Warnings And Access Control

Signs reading "Blasting Area" will be placed along the edge of any blasting area within 100 feet of the public road right of way and at the point where the road provides access to the blasting area.

At all entrances to the permit area by public road signs will display the message "Warning! Explosives In Use" and describe the audible blast warning and marking of the blasting area.

Each person within the permit area will be notified of the meaning of the blasting signals.

Access within the blasting area will be controlled to prevent the presence of livestock or unauthorized persons during blasting operations.

524.600 Control Of Adverse Blasting Effects

Blasting will be conducted to prevent injury to persons, damage to public or private property outside the permit area, adverse impacts on any underground mine, and change in the course, channel, or availability of surface or ground water outside the permit area. Because of the remoteness of the blast site, it is unlikely that damage to property will occur. Access to the area will be restricted to only those personnel necessary to perform blasting activities.

524.700 Records Of Blasting Operations

Blasting records will be maintained at the mine site for at least three years and will be available for inspection by the Division or the public. Blasting records will contain the following information:

- Name of the operator conducting the blast
- Location, date, and time of the blast
- Name, signature and certification number of the blaster conducting the blast

- Identification, direction, and distance from the nearest blast hole to the nearest dwelling or building outside the permit area
- Weather conditions
- A record of the blast including: type of material blasted; sketch of the blast pattern including number of holes, burden, spacing, decks, and delay pattern; diameter and depth of holes; types of explosives used; total weight of explosives used per hole; maximum weight of explosives detonated in an eight-millisecond period; initiation system; type and length of stemming; mats or other protection used.

524.800 Utah and federal laws and regulations in the use of explosives

WEST RIDGE Resources, Inc. commits to comply with all Utah and federal explosive use laws and regulations.

R645-301-525 SUBSIDENCE

525.100 Subsidence Control Plan

Structure and Renewable Resource Survey, Effects and Mitigation.

A survey of the proposed permit area for renewable resource lands has not found any agriculture or silviculture conducted within or adjacent to the area. There is no food or fiber production within the permit area. The area is primarily used for wildlife habitat and grazing lands.

Seeps and Springs

A ground survey was conducted in September 1985 and also in May and October of 1997. Relatively few spring were found on the west face of West Ridge, probably due to the steep dip of the beds away from the cliff line. More seeps and springs were found on the down-dip side of the ridge. These seeps and springs within the permit area were found to be associated with perched aquifers in the immediate area. Almost all of the springs produced flows of less than 10 gpm. Ground water movement within the permit area moves from areas of high elevation where recharge occurs downgradient in the direction of the slope of the beds. Fractures and local variations in permeability can create an advantage for precipitation infiltration. In alluvial and colluvial deposits, movement of the unconfined water is controlled by the extent of the alluvium or colluvium. Water flows through the unconsolidated material until a less permeable zone is reached, causing the water to emerge at the surface as a seep or spring. Some water may percolate down through cracks into the deeper, consolidated rock thereby becoming a perched aquifer. Movement continues to occur in a downdip direction between beds of less permeable material such as shale or mudstone. The shale and mudstone units typically occur as laterally discontinuous deposits. Water builds up in the permeable bed as the extent of the sandstone unit pinches out.

If the sandstone unit is exposed at the surface, water emerges from the containing bed on top of the confining unit as seen by springs in the Colton, North Horn and Price River Formations. Perched aquifers discharging at either surface springs where a sandstone overlies a less permeable shale bed, or, where the down-dip edge of a less permeable bed ends within the sub-surface or in contact with alluvial or colluvial deposits. Approximately 35% of the springs and seeps identified in the spring 1986 spring and seep survey occurred from sandstone/shale interfaces either at or near the surface or surface deposits. Few springs or seeps were found to be discharging from consolidated aquifers.

In the fall of 1985 and spring of 1986, a seep and spring survey was done on West Ridge to evaluate the density of springs over a mined out area compared to the permit area which had not been mined. The seep and spring density was found to be roughly the same. The mined out area had a density of 21.1 springs and seeps per square mile producing an average of 74.8 gpm/sq mi compared with 22.4 springs and seeps per square mile in the unmined area, producing an average of 79.3 gpm/sq mi. This information indicates that subsidence from mining in the existing Sunnyside Mines has produced no quantifiable difference in flow of seeps and springs on the west side of Whitmore Canyon.

This is particularly valuable information as it substantiates experience with subsidence effects at an adjacent mined area with the same geologic conditions. Observations at the Sunnyside Mines and also above coal mines in the Wasatch Plateau show that subsidence occurs over longwall panels. However, at some distance above the mined out area, the beds no longer break but deform in a more plastic manner which does not disrupt the functionality of the aquifers and aquitards.

Beyond nine coal seam thicknesses above the extracted coal seam the strata behaved like an intact unit. The strata deflected into the rubble area by bending rather than breaking. This information indicates that at some distance above the extracted longwall panel, the strata will deform plastically rather than experience a caving style subsidence. And although there may be perched aquifers visible as seeps and springs above the mining area, the perched aquifers and aquitards will remain intact following mining. There may be a transitory phase during which tension cracks may form, but over all, the aquifers over ten seam thicknesses above the mined out area will not be affected.

An additional geologic factor which will tend to mitigate the effects of subsidence on the upper layers of overburden is the Castlegate Sandstone. The Castlegate Sandstone is a thick, massive, high strength unit which occurs over the entire permit area. The Castlegate ranges in thickness from 120 to 230 feet thick and lies between the coal seam to be mined and the surface beds containing the seeps and springs. Because of its great thickness and high strength, the sandstone will tend to distribute stresses more evenly at the edge of the subsidence zone and will more greatly increase the radius of curvature for the beds above the Castlegate in the mining area. In addition to the capability of the Castlegate to span subsided zones, other actions also occur

which will serve to fill the void created by removal of the coal. They include: coal seam floor movement upward into the void of the mined out panel, lateral movement of the adjacent coal in the ribs, and local roof failure and rubblization.

Subsidence information gathered at the Sunnyside Mine workings have shown a maximum subsidence of three feet where 10.5 feet of coal was mined. The minimal amount of subsidence is attributable to the massive Castlegate Sandstone which lies about 200 feet above the Sunnyside seam. This 150 foot thick sandstone appears to act as a buffering action for subsidence. The Castlegate may limit the vertical extent of the cave and reduce the total amount of subsidence that is measured.

The Sunnyside Mines had an on-going subsidence monitoring program over longwalled panels. The subsidence base net was established in May 1982 and extended in August 1986 to determine the vertical extent of subsidence in an area with the least amount of overburden and the greatest coal height remaining to be mined. This area was chosen to provide a worst case scenario. The maximum subsidence observed was 3 feet over an mined out area where the coal was 10.5 feet high. The low amount of subsidence measured is probably due to the underlying massive, 150 foot thick, Castlegate Sandstone. This sandstone appears to act as a buffering action for subsidence by limiting the vertical extent of the cave and reduce the total amount of subsidence that is measured. The sandstone appears to act as a monolithic slab thus providing a vertical barrier to upward migration of the underlying cave. The sandstone is located about 200 feet over the coal seam which was mined.

It is likely that the affects of mining may cause disruption and dewatering of the strata immediately above the coal seam and for about 100 feet above the mined out area. The areas in excess of 100 feet above the mine out area will experience increasingly lesser effects from subsidence. The remaining Blackhawk between the coal seam and the bottom of the Castlegate ranges from 165 feet to almost 400 feet. Taking a minimum of 165 feet of Blackhawk plus a minimum of 120 feet of Castlegate above that, it is unlikely that there will be any effect on the aquifers above the mining area. Overburden in the mining area averages 1,800 feet, getting up to as much as 2,500 feet under the top of West Ridge.

Based on field surveys and the findings of the Probable Hydrologic Consequence (PHC report), it is concluded that the area above the mine should not be adversely affected by coal mining operations.

As previously discussed, the massive Castlegate Sandstone would minimize the affect of subsidence on the land surface, seeps and springs.

Surface Structures

No surface structures such as pipelines, commercial buildings, or fences exist within the permit area. Several single lane, unmaintained roads occur on public land

throughout the permit area. These roads could easily be regraded if subsidence were to occur. Warning signs would be posted and fences established, if necessary, to protect the public. A recreational cabin (seasonal occupation) and trailer are located in Spring Canyon in the northern part of the permit area. In this area, the depth of cover exceeds 2500'. Within 18 months prior to longwall mining in this area a pre-subsidence survey of the cabin/trailer will be conducted. The location of this cabin is shown on Map 4-1, 5-2 and 5-7.

Prime Farmland

The BLM and NRCS (Natural Resource Conservation Service) have determined that no prime farmland exists on or near West Ridge. Historically, the area has not been utilized for agricultural production. Unless a dependable, economical source of water could be established, farming is not likely to take place. The rough terrain and steep slope would preclude farming over much of the permit area.

In a worst case scenario, seeps could dry up if subsidence cracks were to intersect the surface at these particular locations. Should the seeps not be restored naturally, a combined loss of less than one gallon per minute could be expected. WEST RIDGE Resources, Inc. commits to mitigate the loss by providing an alternate source of water by means of a guzzler or water trough.

The West Ridge area is utilized primarily for wildlife habitat and cattle grazing. If subsidence were to create significant surface cracks, grazing might be restricted within the affected area until subsidence diminished. However, experience with other Utah underground mines, particularly on Forest Service lands, has shown that subsidence has little if any impact on the grazing potential of the affected lands and little impact on springs above the mining area. Should mining disrupt either a seep or spring within the permit area that had a state appropriated water right, WEST RIDGE Resources, Inc. would commit to replace the quantity of water depleted from that particular source at a similar location unless the seep is restored naturally in the same general area.

Description Of Mining Methods

Both longwall and continuous miner methods will be employed to recover the coal resource. Longwall will be the primary production method, while continuous miners will be used mainly for mine development to support the longwall. The longwall panels shown on Maps 5-4A and 5-4B have been laid out to maximize recovery of the primary coal reserves. Continuous miners will be utilized to develop main entries, longwall gate entries, sumps and other similar development areas.

The mine plan shown on Map 5-4A and 5-4B is color coded by year for reference to scheduled development and extraction. The tailgate and headgate entries for each longwall panel will be developed utilizing a continuous miner section which includes the continuous miner, shuttle cars and roof bolters.

After the entries have been driven the length of the panel, the longwall equipment will be moved in. The longwall face will consist of a panline with a chain conveyor to collect the mined coal, a shearer, and hydraulic jacks that support the roof while the shearer cuts the coal. Coal is cut as the shearer makes passes across the face (width) of the longwall panel. Coal is moved by the chain conveyor to the headgate end of the longwall panel. The coal then passes through a feeder/breaker (stage loader) before being transferred to the conveyor system that carries the coal outside. On the west side of the mine the longwall equipment will start on the east end of the panels and mine to the west, i.e., from the extremity of the reserve toward the mains in the middle of the reserve. Mining on the east side would follow the same pattern, from the outside to the interior of the reserve.

Description of Physical Conditions

The cover over the coal seam to be mined varies from 0 feet, at the outcrop, to approximately 2,500 feet under the crest of West Ridge. Cover throughout the mining area is shown on Map 5-7. See R645-301-600 for a description of the geology of the permit area.

The coal seam to be mined, the Lower Sunnyside Seam, ranges in thickness from less than six feet to over ten feet thick within the permit area. The average mineable thickness is approximately eight feet.

Mine Subsidence Effects and Control Measures

Surface movements due to mine subsidence will vary depending on the location, geology and depth of mining. Major factors affecting how subsidence is manifest at the surface include the properties of the underlying rock strata, the mining depth, the mining height and width of extraction and the method used to mine the coal reserve.

The two methods being proposed for mining the coal are the standard room-and-pillar method and longwall mining methods. The room-and-pillar method will be used to develop the main entries, headgate and tailgate entries. The longwall method will be employed to mine the outlined panels.

The surface expression of a single subsided longwall panel is in the form of a broad trough with the maximum lowering of the surface elevation over the center of the panel. From the maximum subsidence at the panel center, the lowering of surface elevations tapers to zero at a point outside the boundary of the mined panel. This effect produces a gradual slope toward the center of the panel. Subsidence will be at its maximum if the width of the excavation is at its "critical" value. Subcritical widths are too narrow for maximum subsidence to occur at more than one point. A recent Bureau of Mines study in Utah found the critical width to be nearly 1.6 times the depth.

As the minimum dimension of the extraction exceeds the critical width and becomes "supercritical", the subsidence profile assumes a characteristic flat-bottomed shape

with more than a single point reaching maximum possible subsidence (Allgaier, 1988). This would be the case when adjacent longwall panels are mined or a single panel is mined under lesser overburden. Pillars between adjacent longwall panels can cause humps in the subsidence profile if they are not designed to crush under the weight of the collapsing roof.

Accompanying the subsidence process are tensile (+E) and compressive (-E) strains. Strain is defined as change in length per unit of original ground length. Excessive tensile strains can cause surface fissures, while compressive strains can cause buckling.

Specific relationships have been found among strain, the subsidence profile and the mined opening. Tensile strain occurs on both sides of the subsidence profile; whereas, compressive strain is located around the center. The transition from tension to compression coincides with the point of one-half maximum subsidence. The maximum tensile strain is located directly above or near but outside the edge of the mined opening. The maximum compressive strain is located either above the center or near but inside of the edge of the mined opening. Maximum possible tensile strain is found in subcritical openings, while maximum possible compressive strain is found in supercritical openings. In the case of the West Ridge Mine, the final mined-out area will be supercritical. As a result, fissure causing tensile strains will be supercritical.

The areas most likely to be affected by surface cracking will be near the periphery of the mine where a transition is made from the subsided area to areas of no subsidence. Experience in Utah has shown that these surface cracks often heal themselves in about six months (Clawson, 1990).

Use of the longwall mining method will minimize surface impacts from subsidence. Removal of coal by this method leaves no blocks or stumps and coal pillars left between the panels will yield. The result will be a broad gradual subsidence profile as opposed to the abrupt profiles which can cause increased surface impacts. Uniform subsidence can be restricted to specific predictable areas.

The surface will decline in elevation in a broad gentle trough over the extracted panels. From the maximum subsidence at the panel center, the lowering of surface elevations tapers to zero at a point outside the boundary of the mined panel. Movements over the mid-section of longwall panels are vertical and horizontal. As a result, some surface fractures may result at the panel edges. These fractures would be slip fractures rather than gap fractures and could be repaired by minimal earthwork (grading) if necessary.

Experience in other parts of Utah has shown that the maximum surface subsidence over the center of a longwall panel can range from 33% to 65% of the mining height. ("Coal Mine Ground Control", Peng, p. 284, Table 9.2.2). This is dependent on the local geology and the mining method used. Subsidence is expected to fall within this range at the West Ridge Mine because conditions and geology are similar to other mining districts of Utah. Based on these observations and the seven foot mining height projected for longwall extraction in the West Ridge Mine, maximum

subsidence (S max) could approach 4.5 feet in the center of certain panels.

Experience has shown that common angles of draw for western mines range between 12° and 27° ("Coal Mine Ground Control", Peng, p. 283, Table 9.2.1). Subsidence analysis by the U.S. Bureau of Mines over central Utah longwall mines in similar geologic conditions have demonstrated draw angles of 10° - 27° (Surface Subsidence Over Longwall Panels In The Western United States, Frederick K. Allgaier, U.S. Bureau of Mines Circular 8896). The subsidence information gathered by the Sunnyside Mines indicates the angle of draw in the West Ridge area is about 15 degrees. A more conservative angle of 20 degrees has been used to project the maximum extent of subsidence for the West Ridge Mine as shown on Map 5-7.

Map 5-7 shows the results of using a 20° angle of draw to identify zones of potential subsidence over the projected mining area. This map depicts several areas in which the potential subsidence may extend slightly beyond the permit area. These areas are on adjacent SITLA coal lands which are included in the extended mining projections. The SITLA reserves are presently secured under an option agreement. There is an extremely high probability that these areas will be mined as shown on the extended mine plan depicted by the black projections on Map 5-7. If, for any reason, these adjacent reserves cannot be acquired and mined as shown, the underground longwall panels will be reconfigured as necessary (i.e., shortened and/or narrowed) to ensure that subsidence effects do not extend beyond the permit area onto these adjacent lands. By the time these panels are mined the actual angle of draw characteristic of the West Ridge reserve will have been more accurately determined from actual empirical subsidence monitoring survey measurements and can be used to more accurately configure the longwall panels in those areas. Map 5-7 clearly notes that "longwall panels will be reconfigured to prevent unauthorized subsidence beyond the permit area if extended reserves are not acquired in the future." The mine plan depicted on Map 5-7 has been approved by the BLM as part of the current Resource Recovery and Protection Plan (R2P2).

Wherever feasible, longwall mining has been planned. This will minimize the impacts of subsidence because of the uniform nature of longwall related subsidence. Support pillars in main entries, permanent air courses and travelways will be developed on 80' x 80' (minimum) centers. Entries will be driven 20' wide leaving 60' x 60' (minimum) remaining pillars. Main entries and air courses will be driven approximately 8' high.

Subsidence Monitoring

Monitoring for subsidence will be conducted to document the effects of mining activities and to develop a model for subsidence prediction. Aerial photography and mapping will be used to monitor subsidence. Aerial photography for subsidence monitoring is commonly used in the industry and is highly accurate.

In order to monitor for subsidence, a network of ground control stations will be located on the surface outside the mining area. Typical locations for the first set of

control points for the initial five year mining area are shown on Map 5-7. These control stations will be field surveyed and used for baseline reference data.

Additional control points will be added as mining progresses.

Aerial photographs of the designated area will be taken prior to longwall mining.

Elevations on a predetermined grid pattern over the area to be mined will then be mapped. Data from this initial grid pattern will provide a base for comparison to the photogrammetric data obtained after subsidence has occurred.

New photography will be obtained annually as mining progresses. Elevation changes of the initial grid pattern points will then be noted and the amount of subsidence recorded. The photogrammetric subsidence readings (baseline elevation minus the new elevation) will then be contoured into a map to depict the net change in elevation of the area. The accuracy of this process is plus or minus two tenths of an inch.

In October, 2000, thirteen permanent subsidence monitoring control points were established in the southeastern half of the permit area. This included four control points within the newly acquired federal lease UTU-78562. The location of these points is shown on Map 5-7. These points were surveyed in using state-of-the-art GPS (Global Positioning System) technology. The area was then aerially photographed and the pre-existing, pre-mining contour elevations were established. This initial control area covers the mining area scheduled longwall extraction over the three years through the year 2004. Longwall mining began in May, 2001. On October 9, 2001, the area was re-surveyed (GPS) and aerially photographed. The pre-mining and post mining surveys were then digitally overlain for comparison. WEST RIDGE Resources will continue to conduct annual surveys in the fall of each year to monitor the surface effects of subsidence. As longwall extraction progresses to the northeast under West Ridge, additional control points will be added. The approximate location of these future points is shown on Map 5-7.

A report of the subsidence monitoring results will be kept on record at the mine office. A copy will be supplied to DOGM in an annual report.

Panels will no longer be monitored once the effects of mining have stabilized and vertical movement is less than six inches/year. The above procedure will be repeated as mining progresses.

Visual observations will also be made at least quarterly on the surface to determine if the effects of subsidence appear on the surface. A record will be kept which will include: mining progress by date, dates of inspection, dates of any observed effects, and a description of effects.

If and when other means of monitoring subsidence in areas of heavy cover become available and are shown to have as good or better detection capabilities, WEST RIDGE will investigate utilizing the best technology available to conduct annual subsidence monitoring.

Mitigation

Mitigation measures may include: grading of damage resulting from subsidence on grazable lands (where accessible), fencing to restrict access (where necessary) and restoration of adversely affected roads and trails. Graded areas will be reseeded using a seed mix designated by the BLM.

525.130 State Appropriated Waters-Quantity and Use

Refer to Appendix 7-5 for all state appropriated water right within and adjacent to the permit area, including appropriated quantities and designated usage.

525.200 Subsidence Control

WEST RIDGE Resources, Inc. will adopt measures which are technologically and economically feasible to prevent subsidence under areas to be protected and to provide for planned controlled subsidence in all other areas. WEST RIDGE Resources, Inc. will comply with all provisions of the approved subsidence control plan.

Material damage resulting from subsidence will be corrected to the extent technologically and economically feasible. Where possible, the land will be restored to a condition comparable to the use it supported prior to subsidence.

Mining will not be conducted beneath or adjacent to public buildings, churches, schools, hospitals. None of these structures exist within or adjacent to the permit area. A small portion of Grassy Trail Reservoir (less than 0.6 acres) lies within a corner of the permit area. Grassy Trail Reservoir impounds more than 20 acre feet of water. However, there will be no mining or mining related subsidence below this reservoir.

The Grassy Trail Reservoir, which impounds more than 20 acre-feet of water, is located partially within and adjacent to the permit area. There will be no mining conducted beneath the reservoir or impoundment structure. As presently planned, Panel 7 is the closest longwall panel to Grassy Trail Reservoir, located approximately 995' from the reservoir measured horizontally. This panel is also 1664' below the reservoir at this point.

WEST RIDGE Resources hired RB&G Engineering to prepare a study of the risk to the Grassy Trail dam and reservoir from seismicity and subsidence associated with longwall mining in the West Ridge Mine. This study involved collection of additional data from newly-installed accelerometers, subsidence monitoring stations, and piezometers in the area around the dam. This study was conducted with input from BLM, DOGM, Division of Dam Safety, and East Carbon City.

On August 5, 2005 RB&G Engineering completed the seismicity study. (Refer to Appendix 5-11, Grassy Trail Dam & Reservoir Mining - Induced Seismicity Report.) In addition, RB&G prepared a second report which analyzed the Grassy Trail Dam so that East Carbon City can comply with the regulatory requirements of Utah Division of Dam Safety. There are a number of overlapping and interconnected issues addressed in the seismicity study and the dam safety study. Therefore the dam safety

study is included as Appendix 5-12 (Grassy Trail Dam & Reservoir, Phase II Dam Safety Study, August 27, 2005.)

After a thorough review of the study the BLM approved a minor modification of the R2P2 (see Appendix 5-3B) to allow full extraction longwall mining of Panel #7. In the approval BLM concluded that *"The submitted report from RB&G concludes that it is unlikely that the anticipated mining of panel 7 would impact the performance of the dam and reservoir. The analysis of seismic impacts used a large maximum event (3.9 Richter Scale Magnitude) which is well above any recorded event in the immediate area. Using the maximum event, RB&G still anticipates a factor of safety still well above minimum Utah State Dam Safety standards. The BLM accepts the report and agrees with the recommendations. West Ridge is hereby authorized to extract longwall panel #7 per the approved R2P2, having met the conditions for approval."*

The seismicity report addressed the issues of dam stability analysis, subsidence, internal erosion potential, reservoir seepage and landslide potential. The report concluded that "it is unlikely that the anticipated mining induced seismicity will impact the performance of the dam and reservoir." The report also recommended the following inspection and monitoring program during the longwall mining of Panel #6 and Panel #7:

- *Bi-weekly site reconnaissance to observe any change of conditions in the embankment crest or slopes and landslide areas. Particular attention should be given to cracking, ground deformation or seepage.*
- *Monthly measurement of inclinometers, piezometers and ground motion monitoring devices.*
- *Annual survey of control points on the embankment and in the landslide areas.*
- *Daily monitoring of the UUSS list of recent seismic events (www.seis.utah.edu/recactivity/recent.shtml) should be performed. A daily record should be maintained of the largest recorded event within 5 miles of the site. When an event greater than 3.0 occurs within 5 miles of the site, a site reconnaissance of the embankment crest, slopes and landslide areas should be performed within 24 hours and a review of ground motion recordings should be made. If recorded ground acceleration exceeds 0.4g, instrumentation readings should be performed.*
- *Site reconnaissance and instrumentation reports should be forwarded to RB&G Engineering and the Utah State Dam Safety Engineer within 24 hours, and the daily monitoring record should be submitted on a monthly basis.*

The BLM R2P2 approval is conditioned upon WEST RIDGE Resources monitoring the inspection/monitoring program as outlined above. Therefore WEST RIDGE

Resources, Inc. commits to implementing this inspection/monitoring program effective immediately upon Division approval for full extraction of Panel #7. This monitoring plan has been expanded to address concerns raised by Utah Division of Dam Safety (refer to Appendix 5-13).

Based on subsequent approval of the mine plan, panel #7 was extracted starting in December, 2005, and completing in September 2006. Extraction closest to the Grassy Trail Reservoir occurred in March, 2006. Monitoring, as described above, was conducted continuously during the mining of panel #7. As predicted by the RB&G report, there was no mining related damage to the dam, although some slumpage of the adjacent hillside occurred, resulting in minor movement of the west abutment of the dam. There was no loss of integrity of the earthen structure of the dam. In January, 2008, after the area above and adjacent to panel 7 had completely stabilized, RB&G Engineering prepared a post-mining Summary Report of the mining-induced seismicity. This report is included in Appendix 5-16.

After panel 7 was completed, longwall mining moved to the west side of the mains near the outcrop (more than two miles distant from the dam), and then proceeded to the northeast. Also during this time, the company went to a panel-barrier system of longwall extraction, replacing the previous side-by-side panel method. This panel-barrier system leaves a 400' wide solid barrier pillar between each longwall panel, and has significantly reduced the magnitude and frequency of mining-related seismic events. During the ensuing five years of mining, the company has continued to monitor the dam and reservoir. Results of this monitoring have been provided to all the regulatory agencies and the owners of the reservoir on a regular basis. The results of this monitoring have shown that all mining-related effects on the reservoir have stabilized. RB&G Engineering then, in September, 2010, prepared a summary report of the subsequent mining-induced seismicity, and this report is included in Appendix 5-17.

On July, 21, 2010, BLM approved the R2P2 for federal lease UTU-78562 and approved mining of panels 18, 19 and 20 on the east side of the mains in the vicinity of the Grassy Trail Reservoir. In the decision document, BLM states, *"We agree with the conclusion that mining longwall panels 18 through 20 as submitted should have no adverse effects on the dam structure or reservoir. The dam structure has seen no detectable affects from the mining of panel number 7. The proposed panels are further distant from the reservoir and much further from the Grassy Trails Reservoir dam. Also, the new panel-barrier design has reduced dramatically the amount and intensity of any mining induced seismicity or subsidence. Additionally, this mining plan will comply with the lease stipulation to not subside perennial streams, unless authorized, as the Left Fork Whitmore Canyon Stream will be under a barrier pillar and no full extraction mining is planned under the stream."* A copy of the approved R2P2 for panels 18-20 is included in Appendix 5-3C. As with the previous mining of panel 7, the company commits to conducting the same level of intensive monitoring of the dam during mining of panel block 18-20, as previously approved by the regulatory agencies, as stated above. This monitoring plan has been updated for panel block 18-21, and is included in Appendix 5-13A.

As mentioned in the BLM approval letter, mining of panel block 18-20 will be further distance away from the Grassy Trail dam than with panel 7. Panel 7 mined within 995' (horizontal) from the dam, while the closest mining from Block 18-20 would be more than 3000' (horizontal) away. Also, panel 7 was about 1664' stratigraphically lower than the dam, while panel block 18-20 is located more than 2200' lower than the dam. The hypocentral distance of panel 7 was 1939' from the dam, compared to 3723' for the closest distance for panel block 18-21. Also, panel 7 was mined using side-by-side panels, whereas panel block 18-20 will be mined as panel-barrier, further reducing the potential for seismicity.

In the 2005 approval of Panel 7, BLM added a special stipulation #17 to the federal lease related specifically to the Grassy Trail Reservoir, stating, "*The Lessee is and will remain liable for any and all damages or hazardous conditions resulting from the mining operations under the lease.*" This new 2010 BLM approval for panel block 18-20 contains reference to this same lease stipulation #17. It should also be noted that, as with previous mining of panel 7, the Utah Division of Dam Safety will have authority to stop any longwall mining of panel block 18-21 if it determines that mining-related seismicity or subsidence is creating, or has created, an unacceptable level of risk to the Grassy Trail dam or reservoir, based on monitoring at the time.

On June 17, 2011, BLM approved longwall panel 23 within the Federal lease modification UTU-78562 (see Appendix 5-3D). On September 20, 2011, BLM approved extraction of longwall panel 22, also in lease modification UTU-78562 (see Appendix 5-3E). It should be noted that there will be no longwall mining under (beneath) the Right Fork of Whitmore Canyon, nor any other mining that would result in subsidence under the drainage of the Right Fork. The only mining under the Right Fork will be a limited number of development entries associated with the longwall bleeder system. All such development mining associated with Panel #22 will be conducted at depths in excess of 2600' below the Right Fork drainage. However, due to concerns for the stream-flow in the Right Fork, the company has installed survey monitoring stations at approximate 100' intervals in the bottom of the Right Fork drainage within the permit area to detect any potential vertical or horizontal movement in the area. These monitoring stations are shown in greater detail on Map 5-7 and in Appendix 5-18. These points will be monitored for at least eighteen months after the final mining in this area has been completed and the lower (northeast) half on the mine has been sealed, according to MSHA and BLM approvals, presently scheduled for March, 2013. These points will be monitored quarterly (subject to winter-time accessibility) and the results will be forwarded electronically to the Division, and will also be provided in the annual reports. Again it should be emphasized that there will be no longwall mining conducted under the Right Fork drainage. The only mining will be the development entries associated with the ventilation bleeders, identical to those previously approved by the Division for similar gate roads already developed under the Right Fork for longwall panel #20. All mining in this area is under more than 2500' of cover.

525.300 Public Notice of Proposed Mining

No coal mining will be conducted under any buildings, facilities or impoundments (other than the recreational cabin referred to in 521.120). The BLM will be kept informed as to the dates and locations of mining activities. All owners of surface property and structures (BLM) above the underground works will receive notification at least six months prior to mining of the specific areas in which mining will take place, dates of mining and the location at which the subsidence control plan may be examined.

525.480 State Appropriated Water Replacement Mitigation

WEST RIDGE Resources, Inc. commits to mitigate the diminution or degradation of state appropriated waters within or adjacent to the permit area caused by surface affects of mine related subsidence. Mitigation measures would include such measures as sealing surface cracks with expansive clay materials (such as bentonite), trucking water, piping across fracture zones, transfer of water rights, installation of wildlife guzzlers and/or compensation to water rights owners.

525.480 Bear Canyon is situated in the northwest portion of the permit area within the SITLA lease area. This canyon is unique because it is within the right fork of this drainage that the cover over the longwall subsidence zone is the shallowest of anywhere in the entire permit area. In one part of the bottom of the (right fork) Bear Canyon drainage the cover over the longwall panes is approximately 325'. Due to the increased potential for the effects of subsidence to reach the surface in this area special attention has been focused on the hydrologic character of the Bear Canyon drainage.

Bear Canyon is typical of the canyons draining the southwest-facing front slopes of the Book Cliffs in this area. These canyons are generally shorter and drier than those drainages on the back-side of the Cliffs. Several baseline surveys of Bear Canyon right fork done in the late 1980's showed the drainage to be mostly dry and the canyon was identified as ephemeral along with other similar front-facing canyons in the permit area, such as "C" Canyon, "B" Canyon, and "A" Canyon. However, during site visits in June and July of 2005, substantial stream-flow was observed in the drainage. This occurrence of flow, along with the observation of riparian vegetation in the lower stretches of the canyon, has led to a re-evaluation of the classification of the drainage as intermittent. Also, because the area of the Bear Canyon watershed is greater than one square mile the drainage is classified as intermittent under DOGM regulations.

Historical observation of Bear Canyon shows the streamflow in the bottom of the drainage to be a combination of surface flow and subsurface flow. In those areas where bedrock is at or close to the surface, flow is forced up to the surface. In other areas where the alluvium in the channel is thick and porous the flow is subsurface and the stream channel is often dry. The stretches of channel exhibiting surface flow as opposed to subsurface flow will vary from season to season, and year to year depending on prior precipitation trends in the watershed. There are times when the entire length of the channel could be expected to exhibit surface flow, and other times when surface flow is confined to certain segments. And, according to past monitoring

observations, there are often times when there is no flow in the stream channel. In order to better define the hydrologic character of the canyon WEST RIDGE Resources will expand the monitoring program in Bear Canyon by adding two new monitoring sites and relocating a third site (see Map 7-7 and Table 7-1).

As mentioned previously, there is a point in the right fork of Bear Canyon where cover over the longwall panel will be about 325' which is the shallowest surface cover of any place within the current WEST RIDGE mine plan. This, along with the fact that there are state-appropriated surface water rights in this drainage (refer to Appendix 7-5), makes this an area of special interest. There is reason to expect that full-extraction longwall mining will not adversely affect the hydrologic resources of the canyon in this area. According to Syd S. Peng, ("Coal Mine Ground Control", 1978, Wiley, New York) a general rule-of-thumb is that subsidence-related fractures can be expected for a distance above the coal seam equal to 50 times the mining height, which works out to be 316' for the shallow point in Bear Canyon, which is slightly less than the cover in that area. Therefore due to the shallowness of cover in this area there could be subsidence fractures which reach the surface in the bottom of the canyon, and mitigation will be done to protect the resource.

The shallow overburden point coincides with the inflection point of the longwall subsidence profile. Based on a 22 degree angle of draw the tension zone will extend along the surface from the inflection point (shallow point) downstream approximately 130'. Areas upstream from the inflection point will be in compression as the longwall panel are extracted in progression from the southwest to the northeast according to the approved mining plan. Cracks are more likely to open up in the tension zone as compared to the compression zone where lateral forces are pushing toward each other rather than pulling apart. As mining progresses to the northeast, cover increases rapidly because of the gradient of the channel bottom and the dip of the coal seam, and surface effects of subsidence should diminish in that direction. Therefore, it is expected that any cracking which might reach the surface should most likely appear in the canyon bottom in the 130' (plus/minus) tension zone down-canyon from the inflection point. Special subsidence monitoring will be focused on this area.

WEST RIDGE will establish two new hydrologic monitoring sites in the right fork of Bear Canyon. The first site (ST-11) will be located within the tension zone described above. This site was chosen because this location should be well-suited to determine if tension cracks have affected stream flow. It is also, coincidentally, one of the areas where the bedrock nature of the channel bottom forces water to the surface, thereby making streamflow measurements more accurate. The second site (ST-12) will be located about 2400' farther up-canyon in another area where, again, the bedrock nature of the channel allows for a more accurate streamflow measurement. A third monitoring site (ST-13) will be located below the forks of Bear Canyon just outside the permit area boundary. This site will replace the existing monitoring site ST-4.

During the flow season of 2005 and 2006 (that is, May 15 through September 15) site ST-11 will be monitored monthly as long as flow is present. This monthly monitoring will help better define the nature of streamflow prior to longwall extraction in the area, which is presently scheduled for May, 2007. Thereafter,

monitoring will be done on the regular quarterly basis. Site ST-12 is more inaccessible, and could be dangerous to reach in the winter. Therefore this site will be monitored twice a year, once during late spring/early summer (expected peak flow) and once in late summer/early fall, when the canyons are normally much drier. Site ST-13 will be monitored quarterly.

The longwall is presently scheduled to pass under Bear Canyon in the spring of 2007. Prior to that, WEST RIDGE will complete a survey of a series of subsidence monitoring points established up the bottom of the drainage on either side of the inflection point. After the longwall has passed under the drainage these points will be re-surveyed and an accurate account undermined WEST RIDGE will visually inspect the area to determine if any effects of subsidence are apparent. Within thirty days of the inspection WEST RIDGE will submit a written report to the Division outlining the results of this inspection.

Recent site visits have determined the existence of riparian type vegetation in the lower reaches of Bear Canyon below the forks. WEST RIDGE commits to preparing a detailed vegetation survey and mapping of the canyon bottom with emphasis on the existence of riparian specie. This survey will be conducted during the growing season of 2005 or 2006. The survey will be done in consultation with Division biologists and the completed report will be added to the Mining and Reclamation Plan as an appendix.

If it is determined that mining-related subsidence has adversely impacted the hydrologic resources of Bear Canyon, including and state-appropriated water rights, WEST RIDGE will mitigate the damage. The first option would be to seal any cracks with the application of bentonite clay. Bentonite sealing compounds are available commercially made specifically for such applications. Access to the are would be by pack animals along the remnants of an old existing drill-hole access road. If larger mechanical equipment is needed. Access could be improved as necessary because the surface is owned by the BLM and SITLA and the coal leases held by WEST RIDGE provides for such surface rights. If bentonite sealing proved ineffective, WEST RIDGE would propose the installation of piping to transport stream water across the fracture zone to continue the flow downstream. Any work done in the stream channel would most likely require the issuance of a channel alteration permit from the Utah Division of Water Rights.

Spring Canyon is located in the northern part of the permit area in SITLA lease 44771. There are no state-appropriated water rights on this lease. (Refer to Appendix 7-5 for additional details.) The surface is privately owned by Penta Creek with whom WEST RIDGE maintains coal mining rights. Longwall mining in this area is not scheduled until the year 2014. In this area the coal seam is 2500' deep under the bottom of the Canyon. Spring Canyon, as the name would imply, contains several springs. The drainage area of Spring Canyon is well in excess of one square mile. The canyon supports a number of beaver dams indicative of perennial flow. WEST RIDGE will add three additional monitoring points to collect baseline water monitoring data in Spring Canyon, namely ST-15 located upstream from the junction of Grassy Trail Creek, SP-101 located on a channel-bottom spring a short ways up

Little Spring Canyon (a fork of Spring Canyon), and SP-102 located about 1000' upstream from the junction of Little Spring Canyon. This spring emanates from the west side of the canyon approximately 200' up from the canyon bottom. Refer to Map 7-7 and Table 7-1 for details. For the first two years (starting with the third quarter of 2005) these sites will be monitored on a quarterly basis for baseline data according to the field measurements and laboratory measurements outlined in Table 7-2 (Surface Monitoring) and Table 7-3 (Groundwater Monitoring). Thereafter, all sites will be monitored for flow and field parameters on a quarterly basis.

526.100 Mine Structures And Facilities

Surface structures and facilities for the West Ridge Mine, an underground mine, will be constructed in C Canyon near the fork in the canyon, in portions of sections 10, 11, 14 and 15; T14S, R13E, Carbon County, Utah. The function of the surface facility area is to provide for mine access, mine ventilation, coal storage, coal loading, warehousing, offices, and bathhouse. A plan view of this complex is provided on Map 5-5.

Access to the underground mine will be through drift entries on the south side of the mine yard along the outcrop of the coal seam to be mined. Material generated by face up work in the portal area will be used to construct a mine pad area. Mine structures and facilities will be constructed on this mine pad area.

Prior to construction of the mine pad, steel drainage diversion culverts will be placed in the bottom of the main drainage channels. These culverts will allow undisturbed drainage from above the disturbed area to be bypassed underneath the mine yard. After these culverts are in place, they will be covered and backfilled with material excavated from cut slopes or hauled in from an off-site borrow source.

To control runoff and drainage from the disturbed area, all drainage from the constructed mine facility disturbed area will be collected and treated in a properly sized and constructed sediment pond. Ditches and culverts throughout the disturbed area have been designed to effectively convey site drainage to the pond. Inlet structures to the pond will be protected through rip rapping or culverting to prevent channel erosion and scouring.

The final lower cell will be constructed with a combination of 2 spillways. The principal spillway located in the lowest pond cell will be a 36" C.M.P. culvert riser and oil skimmer. This spillway will overflow at an elevation at least 3' below the top of the dam. This spillway will discharge directly into the bypass culvert (UC-OO) which is located beneath the pond. In the unlikely event of failure of the principal spillway, the lower pond cell will also be equipped with a second (emergency) culvert spillway, consisting of a 36" C.M.P. culvert riser and oil skimmer, with a minimum depth of 2.0' below the top of the dam. This spillway will also flow directly into the undisturbed bypass culvert (UC-OO).

Buildings to be constructed at the minesite include: an administrative office, a shop/warehouse building, and a bathhouse/lamphouse building. The shop/warehouse will be used to repair and store mine equipment and supplies. The yard area around these buildings will be used for additional outside storage and parking. The bathhouse and office buildings will be sized to accommodate a workforce of approximately 130 people.

The following facilities will be constructed in conjunction with the mining operation:

a) Administration Office

The main office will be a framed building measuring approximately 40' wide x 60' long. It will handle the administrative functions such as accounting, engineering, payroll, marketing and management. The main office will be located on a dedicated pad at the lower (southernmost) extent of the mineyard. Parking will be made available in the area adjacent to the main office.

b) Sediment Pond

The sediment pond will consist of a two individual cells located at the lower (southern) end of the mineyard. The cells will be designed to accommodate the entire runoff from the disturbed area plus additional runoff from several adjacent undisturbed areas as well. Runoff and sediment will enter both cell A and B. If runoff exceeds the capacity of the upper cell, it will then flow to the lower cell by way of an open channel spillway. The total combined capacity of the cells will be sufficient to handle a 10 year, 24 hour precipitation event. A principal spillway consisting of a 36" cmp culvert riser and oil skimmer will permit runoff in excess of the 10 year-24 hour event to flow into the bypass culvert. A second 36" cmp culvert riser and oil skimmer in cell B will route emergency overflow (in excess of the 25 year, 6 hour) back into the natural canyon drainage through the bypass culvert beneath the pond embankment.

c) Bypass Culvert

A continuous culvert system will be installed within the main drainage channel to carry the natural undisturbed drainage underneath the mineyard, thereby bypassing the disturbed areas of the minesite. This bypass culvert system will effectively segregate drainage coming off the undisturbed areas adjacent to the mine yard from the drainage coming off the disturbed area of the mine operations. The bypass culvert will handle the mine canyon drainage from both the left and right fork of C Canyon. It will also collect drainage from several smaller side drainages in the area of the minesite. The culvert will be sized to adequately handle a 100 year, 6 hour flow event. Risers will be installed at regular intervals to provide hydraulic venting and access for inspection and maintenance.

d) Mine Portals

Mine portals will be located in the right fork on the southeast side of the canyon where the coal seam outcrops. Four portal openings will be constructed to provide surface access to the underground mine workings. Two portals will provide intake ventilation to the mine, one of which will serve as the primary accessway for employees and materials in and out of the mine. One portal will contain the main conveyor belt used to bring coal out of the mine. The fourth portal will accommodate the main mine fan. These portals will be spaced as close together as possible to minimize the length of highwall required for access to the underground workings.

e) Mine Fan

The mine fan will be located at the return air portal. It will be a 12' diameter, direct drive, 1,000 hp, axial vane exhausting type fan. The fan housing will include airlock travel doors for machinery and personnel. The exhaust ductwork will be quipped with acoustical sound-proofing material to keep noise levels at a minimum.

f) Bathhouse/Lamphouse

The bathhouse building will be a pre-fabricated metal structure measuring approximately 40 feet wide by 120 feet long. It will be located in the central part of the mineyard in convenient proximity to the mine portals. An employee parking lot will be located nearby. The bathhouse will be sized to accommodate the anticipated workforce of about 130 employees. Located at one end of the bathhouse building will be the lamp house and the offices for the mine supervisory personnel.

g) Shop/Warehouse

The shop/warehouse building will be a pre-fabricated metal structure measuring approximately 60 feet wide by 160 feet long. It will be located in the northern part of the mineyard conveniently adjacent to the mine portals. A storage area for materials and supplies will be located nearby, as will be the fuel storage, rock dust storage and garbage repository (dumpster) facilities. A 40' x 60' enclosed storage shed will be constructed adjacent to the shop on the south end.

h) Coal Stockpiling Facilities

Coal will be brought out of the mine and delivered to the surface via a 2,000 ton per hour, 60" wide mine conveyor belt. The mine conveyor will exit out of a portal located about 40' high on the east side of the right fork of C Canyon. Even though the mine portals are located in the right fork, the run of mine coal will be stockpiled in a storage area located in the left fork. Coal will be transported from the right fork portals to the left fork stockpile by an

800 foot long, elevated overland conveyor gallery. This 2,000 ton per hour, 60" wide conveyor will be covered, and will be supported along a series of box truss galleries elevated approximately 50-60 feet above the right fork mineyard. These conveyor truss galleries are, in turn, supported by several two-legged steel bents spaced approximately 120' apart. After crossing the nose of land that separates the right and left forks, the conveyor will terminate at a cantilevered discharge structure at a location above the coal stockpile area in the left fork. A conical coal pile will be built directly below the discharge structure. The pile will be about 80 feet high at full capacity and will contain about 30,000 tons of coal. Additional storage can be obtained by pushing the pile northward onto the coal storage pad extending up the left fork.

i) Coal Reclaiming Facilities

A 13 foot diameter multiplate reclaim tunnel will be located below (underneath) the coal pile. Two reclaim draw down ports located at the end of the tunnel will allow coal to be reclaimed from the bottom of the pile directly onto a 54" reclaim conveyor located within the tunnel. Each reclaim port will contain a pile activator, a hydraulically operated single bladed shut-off gate, and a discharge chute leading to the reclaim conveyor. Each port will be capable of loading the reclaim conveyor at a full capacity of approximately 1,400 tons per hour. Once the coal has been loaded onto the reclaim conveyor, it will then be transported out from underneath the pile. The reclaim conveyor will bring the coal out of the tunnel and transport it to a crushing/screening building.

The crusher building will be an open steel structure. It will contain a 40 hp, 8' x 20' scalping screen which will remove all minus 2" coal ahead of the crusher. The plus 2" coal from the top screen deck will be fed to a 300 hp hammermill impact crusher where the coal will be reduced to a 2" x 0" product. All transfer points within the crusher building will utilize enclosed chutework to contain and control fugitive dust emissions. These transfer points include the transfer from the reclaim conveyor to the screen, the screen unders (minus 2") to the loadout conveyor, the screen overs (plus 2") to the crusher, and the crusher discharge (minus 2") to the loadout conveyor.

Within the crusher building will also be located a self cleaning tramp iron magnet (located at the reclaim conveyor discharge pulley ahead of the crusher), and an automated ASTM sampling system. The crusher building and the coal reclaim tunnel will be separated by a wire reinforced earth wall (e.g. Hilfiker wall) constructed about 25 feet high. The crusher building will be located on a bench on the lower (down-canyon) side of the wall and will be positioned in such a manner that gravity flow will aid the movement of coal through the screening, crushing, and sampling operations.

From the crusher building the crushed and screened 2" x 0" coal will then be loaded onto a covered 48" wide loadout conveyor operating at a rate of 1,400 tons per hour. The coal will then be transported to an automated truck loadout

station. The truck loadout will be an elevated steel frame structure constructed high enough to allow the trucks to be positioned under a pant-leg loading chute during loading. Electronic sensors will determine when the truck is properly positioned under the chute. The feed conveyors (i.e. loadout conveyor and reclaim conveyor) will start and stop automatically to load the individual truck trailers with a predetermined amount of coal. Certified belt scales will be used to control the loading process.

The truck loadout will be located at the upper end of the truck loop. The loop will be long enough to accommodate up to 4 empty trucks in the queuing lane waiting to be loaded. After being loaded, the trucks will leave the minesite and haul the coal to a train loading facility located off-site. All conveyors will be covered and all conveyor transfer points will be enclosed.

j) Electrical power

An overhead 46 KV powerline will be installed and maintained by the local utility company. The line will originate from an existing Utah Power 69KV Helper-Columbia #1 powerline near the Sunnyside Junction. From there it will follow the County road to the mine site, where it will terminate at the mine substation. The mine substation will be located in the right fork below the portal bench. The substation will contain a 12 MVA 46 KV/12.5 KV transformer, along with various other electrical power control apparatus (air-break switches, visual disconnects, bussing, ground fault detection, vacuum circuit breakers, power factor capacitor banks, metering equipment, and a control room). From the secondary side of the substation, power will be distributed throughout the mine yard and to the underground workings at 12,500 volts. At various locations within the mineyard, the power will be routed through a set of 12.5 KV/4160 V/480 V transformer banks and motor control centers (MCCs) to operate the surface equipment. These combination transformer/MCC units will be located at the crusher building, overhead conveyor drive station, mine fan, and shop/warehouse. All power poles will be designed and constructed using an approved raptor safe design to protect raptors from electrocution.

k) Water Facilities

Water will be delivered to the site by a 6" pipeline originating in East Carbon City. Water storage facilities (tanks) will be located on the surface to provide storage for culinary (potable) usage and as pre-storage before being pumped into the mine to an underground storage sump for use in the mining operation. The surface storage tanks would be located above the bath house to provide sufficient static head (pressure) for yard distribution.

l) Other Structures

Additional, smaller structures will include miscellaneous storage sheds, pump house, above ground storage tanks (for fuel, water, and dust control chemicals), powder magazines, rock dust storage tanks and trash containment structures. All buildings and structures will be made of conventional construction materials including wood, masonry, or steel. Buildings will be color coordinated to blend in with the natural surroundings.

It should be noted that the pump house area has been added to the minesite permit area, although it is located offsite. This area is shown on Plates 1-1 and 5-14. The pumphouse and related fence area contains approximately 0.44 acres, and is designated as an ASCA. Sediment control is accomplished through use of recontouring, roughening, reseeding and a slag/gravel coating over non-vegetated areas, as shown on Map 5-14. This area will be maintained throughout the life of the project, and reclaimed upon completion. Reclamation will consist of removal of the power supply, fence, pumps and building, along with regrading and reseeding according to the approved plan. Reclamation costs and sediment control for the pumphouse are described in Appendix 5-7. Right of Way information for the waterline and pumphouse is included in Appendix 1-12

Maintenance of Facilities

Maintenance of the mine surface complex will include the following procedures. The sediment pond, drainage control ditches and culverts will be periodically cleaned. Cleanout material will be disposed of off-site in an approved solid waste disposal facility such as ECDC. Dust will be controlled on the conveyor system and transfer points by enclosures, telescoping chutes and sprays as necessary. Dust from unpaved roads will be controlled by applying water or a dust suppressing solution. Drainage culverts will be cleaned and maintained in operable condition. Erosion will be controlled on constructed earth slopes by planting vegetation and/or other suitable methods. All disturbance will be confined within the approved disturbed area boundary. Sediment controls such as the sediment pond, silt fences or straw bales will be utilized.

Reclamation of Facilities

Upon completion of final mining activities, the mine surface complex will be reclaimed in accordance with the approved reclamation plan. Reclamation will begin with the removal of all buildings, structures and concrete. The highwalls will then be backfilled to their approximate original contour utilizing the yard pad material. The undisturbed diversion culverts will be removed to reestablish the canyon drainage channels. The regraded area will then be revegetated. For a detailed discussion of the reclamation plan refer to Appendix 5-5.

526.110 Existing structures

No structures currently exist within the proposed surface facility area other than the monitoring well.

526.200 Utility Installation And Support Facilities

Mining and reclamation will be conducted in a manner which minimizes damage, destruction, or disruption of services provided by oil, gas, and water wells; oil, gas, and coal-slurry pipelines; railroads; electric and telephone lines; and water and sewage lines which pass over, under, or through the permit area. None of the utilities listed above exist within the permit area.

Support facilities will be operated and maintained in accordance with the permit issued for the West Ridge Mine and will be located, operated and maintained in a manner that: prevents or controls erosion and siltation, water pollution and damage to public or private property and, to the extent possible using the best technology currently available, minimize damage to fish, wildlife, and related environmental values. The support facilities will be designed to minimize additional contributions of suspended solids to the stream flow or runoff outside the permit area and, should any contributions occur, such contributions will not be in excess of limitations of Utah or Federal law.

For a discussion of the proposed mine facilities see R645-301-526-100.

526.300 Water Pollution Control Facilities

A spill prevention control and countermeasure plan (SPCC plan) has been developed to protect the undisturbed drainages from accidental spills of oil or other petroleum products within the disturbed area. This plan is included as Appendix 5-6 and will be available for review at the West Ridge mine site after facilities have been constructed.

All drainage from the minesite disturbed area will be conveyed to and treated by a sediment pond located within the disturbed area. This system of collection ditches, culverts, and sediment pond is shown of Map 7-2. (This map also shows the undisturbed drainage culvert system.) The sediment pond size has been calculated based on a 10 year, 24 hour event. Ditch and culvert design are also based on a 10 year, 24 hour event. Refer to Appendix 7-4 for the Sedimentation and Drainage

Control Plan For the West Ridge Mine.

The undisturbed drainage areas contributing to the sediment pond are shown on Map 7-2. Refer to Appendix 7-4 for ditch and pond sizing calculations.

Prior to construction of the mine yard facilities, properly sized undisturbed drainage culverts (bypass culverts) must first be installed in the bottom of the main canyon and side canyons within the proposed disturbed area. These culverts will divert natural drainage under and past the minesite construction area, including the sediment pond embankment. Details of the design of the undisturbed drainage culvert system can be found in Appendix 7-4 and Map 7-2.

Expeditious installation of the bypass culvert system will be a top priority when construction of the mineyard is initiated. This is important for several reasons. First, undisturbed drainage from above the mine yard area must be routed past the facility area by means of the culvert system as quickly as possible to minimize the potential for storm-related impacts. Secondly, the bypass system must be in place prior to the construction of overlying facilities and the sediment impoundment (which will be installed as soon as possible). This construction methodology will provide the most expeditious installation of the bypass culvert in the shortest time frame possible, thus minimizing exposure of the yard area to storm runoff events and providing permanent sediment control for the minesite construction as soon as practical.

Prior to beginning installation of the bypass culvert system, interim (temporary) sediment control measures (berms, silt fences and temporary sediment pond) will be constructed in the drainage near the downstream end of the proposed mine yard area. These features, which will treat disturbed area runoff, will be installed as temporary measures to control sediment during the installation of the bypass culvert system.

Refer to the construction plan in Appendix 5-5 for details regarding the culvert installation and mine yard construction.

As the sediment pond embankment is being constructed, it will be inspected on a regular basis and at critical construction phases by a certified, professional engineer. Following construction, the pond will be inspected and the as-built design will be certified. During routine operation, the pond will be visually inspected daily for unusual conditions.

Details of the sediment pond design are shown on Maps 7-4 and 7-4A and presented in Appendix 7-4. The pond will be composed of two cells. The two cells will be connected from one to the other with open channel spillways. The final (lower-most) cell will be constructed with two 36" riser culverts acting as the principal and emergency spillways. The principal spillway will be a 36" culvert riser combined with an oil skimmer. The emergency spillway also be a 36" culvert riser with the inlet at least one foot higher than the primary spillway and two feet below the top of the dam. The spillway is designed for the flow from a 25 year, 6 hour event. The pond capacity will hold 7.67 acre-feet allowing for an excess of 0.62 acre-foot over the design requirement for the 10 year, 24 hour event.

526.400 Air pollution control facilities

An air quality permit for the West Ridge Mine has been obtained from the Utah Division of Air Quality. The air quality plan will include the following dust control measures:

- a) all conveyors will be covered;
- b) all conveyor transfer points will be enclosed;
- c) the coal pile will be built and reclaimed in a manner that minimizes the drop distance from the conveyor discharge structure to the pile;
- d) coal will be reclaimed from the bottom of the stockpile directly onto a conveyor belt located within an enclosed tunnel located under the pile;
- e) chute work for draw down ports within the reclaim tunnel will be enclosed;
- f) all chutework leading into and exiting from the crusher and the screen will be enclosed;
- g) all chute work and transfer points at the truck loadout will be enclosed;
- h) the coal moisture level within the coal pile will be maintained at approximately 6.0% or greater. This will be accomplished by means of water sprays located on the main mine conveyor;
- i) access roads and high traffic work areas will be treated with water and/or dust suppressant chemicals, as needed;
- j) the truck loop/loading area will be broom swept and/or water flushed as needed;
- k) non-working areas of the minesite (i.e., pad slopes, road embankments, cut slopes, etc.) will be revegetated.

R645-301-527 TRANSPORTATION FACILITIES

527.100 Road classification

Map 4-1 shows all of the roads found within and adjacent to the permit area and their classification. The Carbon County public road will enter the permit area from the southwest. This road will extend into the permit area and terminate at the junction of the truck loop. This road is classified as a primary road within the

permit area.

The existing county roads within the permit area have been in existence for a number of years. Map 4-1 shows the relationship of the roads to other roads in the area.

The majority of the roads within the permit area were developed many years ago. They are still in use today as access for grazing permittees, drilling, and recreational vehicles. WEST RIDGE Resources, Inc. may use existing roads on an infrequent basis for purposes such as subsidence monitoring and water monitoring. Carbon County plans to construct/reconstruct a public road to provide improved access into the area.

Approximately 1,960 feet of the northern end of the Carbon County road will extend into the minesite disturbed area. This includes approximately 1000' of road from the original disturbed area boundary up to the junction of the truck loop, and an additional 960' of road above the newly installed gate. The gate was installed at this location to provide better visibility and turn around area for the public during those times the gate is closed. Carbon County has approved the installation and periodic closure of this portion of road (see Appendix 5-2). The road will terminate at the junction of the truck loop. A turn around will be constructed at this terminus to give public vehicles an opportunity to turn around without having to drive through the mine yard. This segment of public road, from the terminus of the road at the truck loop junction to the gate will be included within the permit area of the West Ridge mine and will be classified as a primary road. Carbon County will allow special mine-related utilization of this segment of the road, such as the ability to operate mine vehicles thereon. In return, WEST RIDGE Resources, Inc. will be responsible for maintenance along this road segment, including maintenance of drainage ditches and culverts. Runoff from this road surface will be treated according to the mine's sedimentation and drainage control plan, as presented in Appendix 7-4. Refer to Figure 5-3 West Ridge Road - Typical Cross-Section for the typical engineering cross-section of the Carbon County road.

Other mine roads within the permit's disturbed area are shown on Map 5-15. The road from the county road to the warehouse pad will be classified as a primary road as will the ramp up to the coal storage pad. The road up to the overland belt drive on the "nose" will be classified as an ancillary road.

R645-301-528 HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL AND COAL MINE WASTE

528.100 Coal Removal, Handling, Storage, Cleaning And Transportation Facilities

WEST RIDGE Resources, Inc. proposes to use longwall and continuous miner methods to mine the coal reserve. A conveyor belt system will transport the coal from out of the mine to the surface where it will be crushed and transported, as a run-of-mine product, by truck to railroad loading facilities located off the permit area.

Coal will be transported to the surface from underground by a 60" mine conveyor. The coal will be transported to a discharge structure located at a height of about 80 feet above the ground. The discharge structure will deposit coal on the stockpile. The operational storage capacity of the stockpile is estimated at approximately 30,000 tons.

Draw-down ports located within the reclaim tunnel under the stockpile will feed coal from the bottom of the stockpile onto a reclaim conveyor. Reclaimed coal will then be delivered to a coal crushing structure.

The crusher and all associated chutework will be enclosed to contain fugitive dust emissions. Run-of-mine coal will be reduced from 8 x 0 inch down to a 2 x 0 inch product. Coal will be shipped as a run-of-mine product to various markets. For a more detailed description of the coal handling facilities refer to R645-301-526.100.

All conveyor transfers in the mine yard will be enclosed to minimize fugitive dust emissions. The conveyors leading to the stockpile will be covered. The reclaim tunnel and the chute work leading to and from the crushing structure will also be enclosed.

Dust will be controlled on unpaved roads in the disturbed area by restricting the speed limit, and by treatment with a chemical stabilizer solution as needed. This solution will be applied in accordance with the manufacturers directions and will be applied with a water truck sprayer.

Conveyor transfers in the mine yard will be enclosed to minimize fugitive dust emissions. The reclaim tunnel will be enclosed as will the chutework leading to and from the crushing facility.

Mine facilities will be operated in accordance with an approved air quality permit issued by the Utah Division of Air Quality. For a more detailed discussion of air quality control measures, refer to R645-301-526.400.

Maintenance of the mine surface complex will include the following procedures. Sediment pond and drainage control ditches will be periodically cleaned. Drainage culverts will be kept open and free of obstructions. Erosion will be controlled on constructed earth slopes by planting vegetation or equivalent methods. All disturbances will be confined within the approved disturbed area boundary.

All drainage from the disturbed area will be contained within the sediment pond. Drainage will flow through culverts and ditches that have been sized for the 10 year, 24 hour runoff event. Where the flow velocity is expected to exceed 5 feet per second, a concrete lining or rip rap will be used to minimize erosion of the ditches. Sediment production from the disturbed area will be minimized, where practical, by vegetation cover and land imprinting.

Upon permanent cessation of mining, all facilities will be disassembled and removed. The area will then be regraded to approximate original contour and

revegetated.

528.200 Mining will be conducted using underground mining techniques. No overburden will be removed during underground mining operations.

528.300 Spoil, Coal Processing Waste, Mine Development Waste And Noncoal Waste Removal, Handling, Storage, Transportation, And Disposal Areas And Structures;

528.310 No excess spoil is anticipated at the proposed underground mine site.

528.320 Coal Mine Waste

528.321 WEST RIDGE Resources, Inc. is not proposing to return any coal processing waste to abandoned, underground workings. There are no plans to wash or process the coal, therefore, no coal mine waste rock is anticipated. If, however, minor amounts of waste rock are developed from inside the mine, (overcast material, roof fall cleanup, etc.) which cannot be stored underground and is brought to the surface, it will be hauled off site after 12 cubic yards total (one truck load) has accumulated or after storage on-site for six months. The waste rock will be disposed of in an approved coal refuse site at the Andalex Wildcat loadout facility or ECDC. Two temporary waste rock storage areas are depicted on Map 5-5.

528.322 No refuse piles are being proposed.

528.323 Burning And Burned Waste Utilization

Coal mine waste fires are not anticipated because no coal mine waste will be stored at the minesite.

528.330 Noncoal Mine Waste

Noncoal mine wastes including grease, lubricants, flammable liquids, garbage, abandoned mining equipment, lumber and other combustible materials generated during mining activities will be placed and stored in a controlled manner in a designated portion of the permit area. Refer to Map 5-5 for the Storage Area location. Grease, lubricants, flammable liquids, lumber and other combustible material that are mine supplies and not noncoal mine waste will not be subject to this provision.

Final disposal of noncoal mine waste will be in a State-approved solid waste disposal site such as ECDC.

The noncoal mine waste storage site will not be located within eight feet of any coal outcrop or coal stockpile.

Any noncoal mine waste defined as "hazardous" under Resource Conservation and Recovery Act (RCRA) and 40 CFR Part 261 will be handled accordingly and disposed of properly.

528.340 Underground Development Waste

Underground development waste will not be stored in surface excess spoil piles (no surface excess spoil piles are being proposed).

528.350 Disposal Of Acid-Forming, Toxic-Forming And Flammable Materials

Noncoal mine waste, including combustible material, is discussed in R645-301-528.330.

For compliance with R645-301-542.740 and R645-301-747 refer to the discussion under R645-301-528.330.

Noncoal waste will not be permanently disposed of within the permit area.

Also, refer to discussions under: R645-301-537.200, 553.100 through 553.600, and 553.900.

528.400 Dams, Embankments And Other Impoundments

Embankments constructed in conjunction with the sediment pond will be designed and constructed according to standard engineering practices. The embankment of the sediment pond will be constructed using imported fill material. Refer to Maps 7-4 and 7-4A for the design of the sediment pond embankment.

The sediment pond design has been certified by a professional engineer (see Map 7-4). The constructed pond will be certified "as built" upon completion of construction. The pond will be designed to contain the 10 year, 24 hour event as required by the regulations. Two 36" culvert riser primary/emergency spillways are designed to safely handle a 25 year, 6 hour precipitation event and will be utilized to convey overflow from the pond in case of an emergency.

Inspection of the sediment pond will be made on a regular basis by a professional engineer or specialist during construction, upon completion of construction and once per year until the structure is removed or the performance bond released.

A registered, professional engineer will provide a certified report to DOGM after each inspection stating that the impoundment has been constructed and maintained according to the approved design. The report will discuss any detected sign of instability, structural weakness or other hazardous condition, depth and elevation of any impounded water, existing storage capacity, and existing or required monitoring

procedures and instrumentation. A copy of the report will be kept on file at or near the mine site.

In addition to the above certified annual inspection and report, the sediment pond will be inspected on a quarterly basis by a qualified person designated by the operator. Any appearance of structural weakness or other hazards will be reported and addressed, then recorded. A copy of the report will be kept on file at or near the mine site. Weekly inspection requirements of MSHA, 30 CFR 77.216 do not apply.

R645-301-529

MANAGEMENT OF MINE OPENINGS

Portals within the permit area will be sealed by constructing a concrete block wall (or seal) a minimum of 25' inside of the portal entrance. The area between the seal and the entrance to the portal will then be backfilled with incombustible material. The seal will be constructed out of solid concrete blocks with cement mortar joints. The seal will be built on solid footing with two rows of block keyed into the solid rib of coal. Refer to Figures 5-1 and 5-2 for a typical backfilling and seal design.

At most, four portals will have to be sealed. This includes two intake portals, the belt portal and one return portal. Approximate dimensions of each portal to be backfilled would be 8' high by 20' wide by 25' long. Incombustible material will then be graded over the coal seam at the entrance to the portals. This will be done as the yard is being regraded to approximate original contour during final reclamation operations.

Should periods of temporary cessation of mining operations occur, the portals or portal areas will be secured by steel chain-link fence or equivalent physical barriers to prevent access into underground workings by unauthorized persons. The fences will be secured with locks. Gates at points of access will be locked and signs posted to discourage unauthorized access.

R645-301-530

OPERATIONAL DESIGN CRITERIA AND PLANS

R645-301-531

GENERAL

The sediment pond will not be located over old or new works. Mining will not affect the sediment pond, the embankment or any other structure in the area.

R645-301-532

SEDIMENT CONTROL

Sediment control measures within the proposed disturbed area will include the installation of a sediment pond below the disturbed area. All surface, disturbed area runoff, coal fines and sediment will be diverted into the pond. Drainage ditches and culverts designed to convey the 10 year, 24 hour flow will channel runoff to the sediment pond. Refer to Map 7-2 for the minesite drainage control structures.

Ditches and culverts incorporate the 10 year, 24 hour event design requirements applied for temporary structures. The sediment treatment facility has been designed for the 10 year, 24 hour event. The design of the sediment pond incorporates a sediment storage allowance of three years as estimated by the Universal Soil Loss Equation. Refer to Appendix 7-4 for the Sedimentation And Drainage Control Plan and drainage calculations.

Where the flow velocity is determined to be excessive (i.e. in excess of 5 ft/sec), concrete liners or other equivalent erosion control methods will be used to minimize

erosion of the ditches. Sediment production from the disturbed area will be minimized by vegetation cover, grade control and riprapped ditches where necessary.

R645-301-533 IMPOUNDMENTS

- 533.100 The proposed sediment pond does not meet the size or other criteria of 30 CFR 77.216(a). The sediment pond has been designed to be stable under all conditions with a minimum static safety factor of 1.3. Refer to Appendix 5-4 for slope stability analyses.
- 533.200 The foundation for the sediment pond will be excavated down to bedrock or other stable material. All vegetative and organic materials will be removed. Available topsoil material in the sediment pond area will be removed and stockpiled in the designated topsoil storage area prior to constructing the pond facilities. The slopes of the pond embankment will be approximately 2:1 on the inslope and 3:1 on the outslope. Where the pond slopes are incised into competent material, interior slopes (other than those of the embankment) may exceed 2:1.
- 533.300 The bottom and sides of the open channel spillways will be lined with adequately sized riprap or concrete to prevent surface erosion. Slopes will be revegetated to reduce surface erosion.
- 533.400 The outslopes of the pond will be revegetated to the extent possible to provide surface stabilization and prevent erosion. The vegetation planted will consist of forbs and grasses included in the reclamation seed mix. None of the species planted will threaten the integrity of the pond. The vegetation will enhance the stability of the slopes by curbing erosion and holding the soil in place. Seeding will be done immediately following construction. The seed will be spread by hand and raked in. Straw mulch will be applied at a rate of one ton per acre and will be anchored with hydro mulch.
- 533.500 Not applicable.

533.600

The sediment pond impoundment proposed for the mine site does not meet the criteria of MSHA, 30 CFR 77.216(a) for the following reasons:

- The proposed total pond capacity is 7.67 acre-feet. The pond can not impound a volume of 20 acre-feet or more, which is the storage volume stated in 30 CFR 77.216(a)(1).
- The pond can not impounded water, sediment, or slurry to an elevation of 20' or more above the upstream toe of the dam structure as stated in 30 CFR 77.216(a)(2). The maximum height water could be impounded in either of the cells is 16.5 feet (to the principal spillway in cell A). The 36" cmp riser spillway is designed for a 25 year, 6 hour event.
- The impoundment would not present a hazard to the coal miners per 30 CFR 77.216(a)(3).
- The design for the sediment pond is shown on Map 7-4. Cross-sections for the pond are shown on Map 7-4A. These maps include construction details for the structure. Refer to the Sedimentation And Drainage Control Plan in Appendix 7-4 for additional calculations.

R645-301-534

ROADS

534.100

Roads within the disturbed area have been designed to prevent damage to public and private property. A nonacid, nontoxic-forming substance (such as gravel or asphalt) will be used to surface the road. Embankments have been designed to be stable at a minimum static safety factor of 1.3 by using standard engineering practices (refer to Appendix 5-4).

Construction of the road, within the disturbed area, will take place once the undisturbed drainage bypass culvert and the sediment pond have been installed. Maintenance of the road within the mine site will be the responsibility of WEST RIDGE Resources, Inc.

The road will have a 24' wide running surface with shoulders and ditches along the length. Cross culverts will be located along the length of the road to facilitate drainage control. Drainage control structures will be sized to handle the 10 year, 24 hour event.

The road will have a crowned, gravel or asphalt surface on top of 6" untreated base coarse overlying a granular borrow sub-base. Concrete "Jersey Barriers" or equivalent will be installed as required along berms and outlopes.

All roads within the disturbed area will be removed and the area reclaimed according to the approved reclamation plan.

Dust will be controlled on unpaved roads within the disturbed area by restricting the speed limit, and by treatment with a chemical stabilizer solution as needed. This solution will be handled in accordance with the manufacturers directions and will be

applied with a water truck sprayer.

Maintenance of the roads within the minesite will include the following procedures. Ditches will be periodically cleaned. Drainage culverts will be checked and cleaned as needed after each storm event.

534.200 The type and size of vehicular use has been considered in the design of the road. A relatively flat grade will be constructed in the truck loop area to better facilitate truck loading. Adequate surface width and appropriate spacing of culvert crossings have been incorporated into the design to prevent road damage and promote safety.

534.300 Primary Roads

The primary road will meet the requirements of R645-301-358, R645-301-527.100, R645-301-527.230, R645-301-534.100, R645-301-534.200, R645-301-542.600, R645-301-762.

The access road (primary road) is a Carbon County road. It is a public road and will remain a public accessway after mining operations have ceased.

Other primary roads are the road from the county road to the warehouse pad and the ramp up to the coal storage pad.

The access road design (within the permit area) has been certified by a registered professional engineer and is included as Figure 5-3. The other primary road designs are shown on Map 5-15.

All drainage culverts installed under the primary road will be designed, installed and maintained according to AASHTO standards as part of the overall Carbon County road design.

R645-301-535 SPOIL

535.100 No excess spoil is anticipated at the proposed underground mine site. Cut and fill operations for the drift entry faceup and yard construction have been balanced so that all materials will be used during final reclamation to restore approximate original contour or taken underground for permanent storage. See Appendix 5-1 for the mass balance calculations.

Earth and rock materials excavated during operations for the portal faceup and yard construction will be placed in the yard fill. The yard area (pad) will be used for the life of the mine. This pad material will be regraded to approximate original contour or permanently stored underground following cessation of mining activities.

535.200 No excess spoil is anticipated. No valley fills or head-of-hollow-fills are proposed.

535.300 No excess spoil is anticipated. Disposal of excess spoil by gravity placement methods is not proposed.

535.400 No excess spoil is anticipated. WEST RIDGE Resources, Inc. Is not proposing disposal of excess spoil by placement on pre-existing benches.

535.500 Rock material resulting from faceup operations for underground coal mine development will be placed in the mine pad fill as part of a cut and fill structure. Fill will be placed in accordance with: R614-301-211, R614-301-212, R614-301-412.300, R614-301-512.210, R614-301-512.220, R614-301-514.100, R614-301-528.310, R614-301-535.100 through R614-301-535.130, R614-301-535.500, R614-301-536.300, R614-301-542.720, R614-301-553.240, R614-301-745.100, R614-301-745.300 and R614-301-745.400. Refer to a discussion of the above referenced regulations in the following text preceded by a # (pound sign).

For the discussion with regard to R614-301-512.210, R614-301-512.220, R614-301-514.100, R614-301-528.310, R614-301-535.100 through R614-301-535.130, and R614-301-535.500 refer to the appropriate section of the permit application.

#210 GENERAL REQUIREMENTS

#211 A description of the pre-mining soil resources as specified under R614-301-221 is presented in Chapter 2. Topsoil will be removed and segregated from other material as required by R614-301-232.

#212 After topsoil has been removed, it will be stockpiled pending redistribution are specified by R645-301-234. Topsoil removal procedures are discussed under R614-301-232. Refer to Appendix 5-5.

#412.300 No excess spoil is anticipated at the proposed underground mine site.

- #536.300 No excess spoil is anticipated at the proposed underground mine site. Coal mine waste will not be disposed of in excess spoil fills.
- #542.720 No excess spoil is anticipated at the proposed underground mine site.
- #553.240 No excess spoil is anticipated at the proposed underground mine site.
- #745.100 No excess spoil is anticipated at the proposed underground mine site.
- #745.300 No excess durable rock spoil is anticipated at the proposed underground mine site.
- #745.400 No excess spoil is anticipated at the proposed underground mine site.

R645-301-536 COAL MINE WASTE.

The proposed surface facilities of the West Ridge Mine do not include any coal preparation systems that will generate processing waste. There are no plans to wash or process the coal, therefore, no coal mine waste rock is anticipated. If, however, minor amounts of waste rock are developed from inside the mine, (overcast material, roof fall cleanup, etc.) which cannot be stored underground and is brought to the surface, it will be hauled off site after either 12 cubic yards (one truck load) has accumulated or 180 days has elapsed. The waste rock will be stored in an approved coal refuse site at the Andalex Wildcat loadout facility. Sediment pond wastes will not be taken into underground workings for disposal. Coal mine waste generated from the cleanout of the sediment pond will be trucked to the ECDC landfill in East Carbon. No refuse disposal facilities will be located within the permit area.

R645-301-537 REGRADED SLOPES

537.100 No alternate specifications are being proposed at this time.

537.200 Fills utilized during the operational phase of mining will be regraded back to approximate original contour.

R645-301-540 RECLAMATION PLAN

R645-301-541 GENERAL INFORMATION

541.100 Upon final cessation of coal mining activities at the proposed site, WEST RIDGE Resources, Inc. will permanently reclaim all affected areas in accordance with the regulations and approved permit.

541.200 WEST RIDGE Resources, Inc. is not proposing surface coal mining and reclamation activities.

541.300 All surface equipment, structures, or other facilities not designated to be left in conjunction with the post-mining land use plan will be disassembled and removed. The affected area will then be reclaimed.

541.400 The reclamation plan for the proposed disturbed areas within the proposed permit area is presented in detail in Appendix 5-5. The plan is outline below for quick reference. Appendix 5-5, however, contains the detail and discussion for the reclamation plan. All proposed plans have been designed to comply with R645-301 and environmental protection requirements.

All lands within the proposed permit area affected by impacts of mining will be reclaimed in accordance with the approved DOGM permit. WEST RIDGE Resources, Inc. commits to mitigate the impacts caused by mining as soon as possible upon discovery of those impacts.

Reclamation of the mine site will begin with the demolition of all buildings and

structures. The materials will be removed from the site and hauled to an approved solid waste landfill. After demolition and structural removal of all existing structures at the site, regrading activities will commence. The yard area will be restored to approximate original contour. Excess fill material will be hauled into the abandoned mine entries. The portals will be then be sealed and backfilled according to the approved sealing plan. See Figures 5-1 and 5-2.

The highwalls will be backfilled as described in Appendix 5-9. Fill will be placed to the top of the highwall area. Boulders will be used on the highwall benches to add an additional measure of stability to the fill slopes.

During reclamation activities, the undisturbed drainage diversion culverts will be removed to reestablish the canyon drainages. Diversion culverts will be excavated and the natural drainages re-established beginning at the top of the culverts and working downstream.

As portions of the mineyard are regraded, topsoil will be re-applied and the area gouged to contain runoff and sediment. The area will then be reseeded and mulched. This will be done for the entire reclaimed area. Map 5-9, Mine Site Reclamation, shows the reclamation drainage plan. See Appendix 7-4 for the design details regarding reclaimed channels.

Drainage from the reclaimed areas will be treated prior to entering the undisturbed drainage in the reestablished channels. Surface gouging, silt fences, and straw bales will be utilized for sediment treatment.

Restoration of the drainage channels will seek to present a natural appearance to the drainage while providing a suitable channel configuration. The designs presented are for a permanent structure and calculated for a 100 year, 6 hour event.

The reclaim channel side slopes, widths, and gradients have been designed to closely resemble the premining channel and the channel above and below the disturbed area. The reclaimed channel will be capable of passing the same flow as the undisturbed channel above and below the reclaimed area. As no riparian zone exists along the drainage channel, the regraded slopes will be hydroseeded and mulched with the same treatment used on the yard areas.

In response to a request from the Division an alternate to the approved highwall reclamation plan using a lessor slope is included in Appendix 5-9. The Division approved this alternate reclamation plan on April 24, 2006. Therefore, WEST RIDGE Resources, Inc. has now adopted it as the preferred reclamation plan. Under this "reduced slope" plan, the amount of backfill placed against the highwall will increase by approximately 50,000 cubic yards. However, the amount of excess pad fill which will have to be hauled away will decrease by the same amount. According to the current approved bonding calculations (Nov. 2001) the Division estimates the cost of backfilling the highwall at \$2.15/yd (x 50,000 yd = \$107,000). And the cost of removing the excess pad fill at \$2.92/yd (x 50,000 yd = \$146,000). Therefore the cost of adopting the "reduced slope" reclamation plan should be approximately

\$38,500 less than the currently approved plan. Therefore, the existing reclamation bond should be adequate for the alternate "reduced slope" reclamation plan.

TABLE 5-1
RECLAMATION TIME TABLE
WEST RIDGE MINE

RECLAMATION OPERATION	MAY				JUNE				JULY				AUGUST				SEPTEMBER				OCTOBER							
	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4				
Left Fork Area																												
Remove structures																												
Remove asphalt and concrete																												
Vacuum coal fines from hillside																												
Backfill/regrade/recontour out slopes																												
Retopsoil cut slopes																												
Remove fill haul into mine works																												
Expose and revitalize left-in-place topsoil																												
Recontour and reestablish fill slopes																												
Remove culvert/reestablish channel																												
Reseed/mulch/revegetate																												
Right Fork Area																												
Remove structures																												
Remove asphalt and concrete																												
Backfill/regrade/recontour cut slopes																												
Retopsoil cut slopes																												
Remove fill haul into mine works																												
Expose and revitalize left-in-place topsoil																												
Recontour and reestablish fill slopes																												
Remove culvert/reestablish channel																												
Reseed/mulch/revegetate																												
Main Canyon Area																												
Remove structures																												
Remove asphalt and concrete																												
Backfill/regrade/recontour cut slopes																												
Retopsoil cut slopes																												
Remove fill haul into mine works																												
Expose and revitalize left-in-place soil																												
Recontour and reestablish fill slopes																												
Install silt fences across main drainage																												
Remove sediment pond																												
Remove culvert/reestablish channel																												
Reseed/Mulch/Revegetate																												
Portals/Highwall Area																												
Remove structures																												
Haul pad material into mine works or off-site																												
Seal portals																												
Backfill portals																												
Backfill/regrade/recontour highwall																												
Retopsoil highwall																												
Reseed/Mulch/Revegetate																												

5-48
5-50 Rjm

APR 01 1999

- 542.100 A schedule for the completion of each major step in the reclamation plan is provided on Table 5-1.
- 542.200 The anticipated final surface configuration is shown on cross-sections of the regraded area (Maps 5-6, 5-6A, 5-6B and 5-6C, Mine Site Cross-Sections). The final surface topography and the replaced drainage channels is depicted on Map 5-9.

Appendix 5-1 contains the details of the reclamation mass balance cut and fill calculations. Appendix 5-5 contains the detailed description of the reclamation plan for the mine site.

As the yard fill is being excavated, the drainage diversion culverts (bypass culverts) will be removed and replaced by open channels. The alignments of the restored channels are shown on Map 5-9. Profiles of the channel gradients are shown on Map 5-8.

During construction activities, up to 6,506 cubic yards of topsoil material will be stockpiled for replacement during final reclamation activities. In addition, approximately 37,000 cubic yards of substitute topsoil material is available to be utilized from the topsoil borrow area, if needed. This substitute material would be used only if necessary to supplement the stockpiled material in order to provide adequate topsoil/growth medium over the regraded yard area.

At the time of final reclamation after the final contouring has been established, the surface will be scarified to a depth of 6" to 12". Topsoil from the stockpile will be trucked to the regraded slope areas and spread with a dozer, loader or grader to the required depth. The area will then be gouged, hydroseeded and mulched. This portion of the reclamation activity will take place as the surface areas are prepared.

On the area where the topsoil has been protected in-place, the geotextile will be removed and a hay mulch applied over the surface at a rate of 2,000 pounds per acre. Then, the surface will be gouged to relieve compaction and promote water infiltration. The area will be either broadcast or hydroseeded with the seed mixture listed in Table 3-2B. The seed will be applied at a rate specified on the table. Next, a weed-free straw mulch will be blown onto the surface at a rate of 2,000 pounds per acre and held to the surface with mulch and a tackifier. If root stock is listed in the seed mix, the containerized plants will be planted at the rate specified in the seed list table. Refer to Appendix 2-6 Plan For Experimental Practice In-Place Topsoil Storage for more details.

Refer to R645-301-537.200, R645-301-552 through R645-301-553.230, and R645-301-553.260 through R645-301-553.900 for additional detail regarding backfilling

and grading during final reclamation.

All water monitoring wells will be sealed in accordance with the requirements for abandonment and reclamation in the Administrative Rules for Water Wells established by the Division of Water Rights. WEST RIDGE Resources, Inc. commits to complying with the requirements for closure and will use a certified water well driller to close the wells. Abandonment reports will be submitted to the Division of Water Rights at the time.

542.300 Map 5-9 shows the anticipated final surface to be achieved for the reclaimed area. The earth work calculations for the reclamation activities are presented in Appendix 5-1.

Maps 5-6A, 5-6B and 5-6C show the approximate original contour that will be replaced during reclamation activities in plan view. Maps and cross-sections have been certified as required by R645-301-512.

Refer to Map 5-9 for the segment of Carbon County road which will remain in the permit area as a permanent feature.

542.400 Before seeking bond release, a description of the site ensuring that all temporary structures have been removed and reclaimed will be submitted to the Division.

542.500 The timetable provided on Table 5-1 provides a schedule which includes removal of the sediment pond.

542.600 The access road within the mine site will be reclaimed during reclamation of the mine site. All other roads within the disturbed area will be removed and the area reclaimed according to the approved reclamation plan. The Carbon County public road will be left in place as an approved post-mining land use. The road will terminate at a turnaround. The road will continue to serve as permanent access to public lands in the West Ridge Area.

542.700 Final Abandonment Of Mine Openings And Disposal Areas

542.710 Map 5-9 shows the proposed final reclaimed surface configuration.

Figure 5-2 shows the method for sealing mine portals upon final reclamation. Refer to the discussion presented under R301-645-529.

Surface exploration holes will be sealed to within one foot of the surface with concrete. The water monitoring well, when deemed no longer necessary for ground water monitoring, will be filled with concrete to within one foot of the surface. Plans for final abandonment of surface and mine openings are in accordance with R645-301-529, R645-301-551, R645-301-631, R645-301-738 and R645-301-765.

542.720 Excess rock and spoil material are not anticipated at this location.

542.730 Not applicable.

542.740 Disposal Of Noncoal Mine Wastes

Noncoal mine wastes including, but not limited to grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber and other combustible materials generated during mining activities will be disposed of in a permanent, state approved landfill facility approved for disposal of such materials. These wastes will not be disposed of within the permit area. Grease, lubricants, flammable liquids, lumber and other combustible material that are mine supplies and not noncoal mine waste will not be subject to this provision.

Prior to their permanent disposal, noncoal mine waste will be temporarily placed and stored in a controlled manner (such as dumpsters) in the main yard storage area near the shop/warehouse. Mine waste may be temporarily placed next to the dumpsters until it can be sorted into the proper dumpster (i.e. garbage, scrap metal, recyclables, copper, etc.). The area will be suitable for storage of such materials and will be maintained so reclamation and revegetation will not be hindered. Dumpsters will be used to temporarily store trash.

542.800 A detailed cost estimate for reclamation operations is presented in Appendix 5-1. The costs are based on the criteria presented in R645-301-830.100 through R645-301-830.300, and estimated per assumptions stated in section R645-301-540. Unit costs presented are found in the "Means Site Work Cost Data" book for 1997.

R645-301-550 RECLAMATION DESIGN CRITERIA AND PLANS

Site specific plans which incorporate the required design criteria for reclamation activities are presented below.

R645-301-551 CASING AND SEALING OF UNDERGROUND OPENINGS

When no longer needed for monitoring or mining purposes, each shaft, drift, tunnel or other opening to the surface from mine workings will be capped, sealed and backfilled as required by the Division and MSHA, 30 CFR 75.1771. Permanent closure plans are designed to prevent access to the mine workings by people, livestock, fish, wildlife, machinery and to prevent drainage from entering ground or surface waters.

Portals within the proposed permit area will be sealed by constructing a concrete block wall (seal) a minimum of 25' inside of the portal entrance. The area between the seal and the entrance to the portal will then be backfilled with incombustible material. The seal will be constructed of solid concrete blocks with cement mortar joints. The concrete seal will be built on solid footing with two rows of block keyed into the solid rib of coal. Refer to Figures 5-1 and 5-2 for typical backfilling and seal design.

At most, four portals would be sealed. Approximate dimensions of the portals to be backfilled would be 8' high by 20' wide by 25' long. Incombustible material will then be graded over the coal seam at the entrance to the portals when the mine yard is regraded to approximate original contour during final reclamation operations. Map 5-9 depicts the final reclaimed surface configuration.

R645-301-552 PERMANENT FEATURES

- 552.100 Gouging or land imprinting is being proposed as a method of water harvesting. Depressions approximately 24" x 36" x 18" are being proposed to assist reclamation efforts.
- 552.200 No permanent impoundments will be retained. No stock ponds are being proposed as permanent features.

553.100 Upon final cessation of coal mining activities at the proposed site, WEST RIDGE Resources, Inc. will permanently reclaim all affected areas in accordance with the regulations and approved permit.

Disturbed areas will be regraded to achieve approximate original contour, eliminate highwalls and achieve a stable, long term slope having a static safety factor of 1.3. The disturbed areas will be backfilled and graded to minimize erosion and water pollution, and will support the approved postmining land use.

The postmining highwall slopes will be constructed to achieve long-term stability. The slope stability has been analyzed for the steepest highwall fill. In general, 2:1 fill slopes will be used. However, because of existing topography or physical constraints a steeper slope of up to 1:1 is planned for certain areas, such as the portal highwall area and the conveyor gallery nose-cut. The slope stability analyses are found in Appendix 5-4.

During backfilling and grading operations, the sediment pond will remain in place to minimize degradation of the undisturbed drainage. Silt fences and straw bales will be used where needed to supplement erosion and sediment controls.

The portals will be sealed and backfilled according to the design presented in Figures 5-1 and 5-2. Because all of the portals are in the same stratigraphic location and all have a highwall, they will all be reclaimed using the same design. A block wall (seal) will be built a minimum of 25 feet in by the portal. Incombustible material will be used to fill the portal and block the entrance.

In order to comply with MSHA regulations, a minimum of four feet of incombustible material will be used to cover the exposed coal seam. Where the seam has been exposed, a minimum of four feet of material will be compacted over the coal outcrop.

The area will be regraded to approximate original contour. Map 5-9 depicts the final reclaimed surface configuration, and the erosion and water pollution control systems.

The post mining land use of the area will consist of the same uses that presently exist, namely, grazing, recreation, and wildlife habitat. Restoration of the approximate original contour of the mine yard will allow revegetation to be performed on the site. Native plants will be utilized in the revegetation plan. The reclaimed area will resemble the adjacent, undisturbed area and will be capable of supporting the same uses. Refer to Appendix 5-5 for the complete reclamation plan.

The success of natural revegetation within the mine yard area and areas of prior disturbance has demonstrated that reclamation of the land can be achieved. The condition and existing uses of the previously disturbed and regraded land document the fact that backfilling and grading will support the proposed postmining land use.

Several site specific locations within the proposed disturbed area demonstrate this.

553.200

Spoil and Waste

No excess spoil is expected based on cut and fill calculations. Map 5-6A, 5-6B, 5-6C and 5-9 and Figures 5-1 and 5-2 show the methods for sealing mine portals upon final reclamation.

Appendix 5-1 contains the details of the reclamation mass balance cut and fill calculations. Enough material will be on hand to completely regrade the disturbed area. Excess fill material will be hauled off-site or disposed of in the abandoned mine workings.

No terraced excess spoil fills are proposed.

553.250

No refuse piles will be constructed or reclaimed.

553.260

No coal processing wastes or underground development waste will be disposed of in any mined-out surface areas.

553.300

All exposed coal seams will be covered with at least four feet of nontoxic, noncombustible materials during reclamation activities to prevent spontaneous combustion of the seam and to assist with revegetation of the site.

553.400

Terracing is not currently being proposed in the reclamation design.

553.500

Previously Mined Areas

Areas of prior disturbance have been incorporated in the reclamation plan and will be reclaimed at the same time as the proposed surface facilities.

553.600

Approximate Original Contour

The disturbed area will be regraded to approximate original contour. No highwalls will be left.

553.700

The applicant is not proposing surface coal mining activities.

553.800

The applicant is not proposing surface coal mining activities.

553.900 The applicant is not proposing to leave settled and revegetated fills in place at the conclusion of coal mining and reclamation operations.

R645-301-560 PERFORMANCE STANDARDS

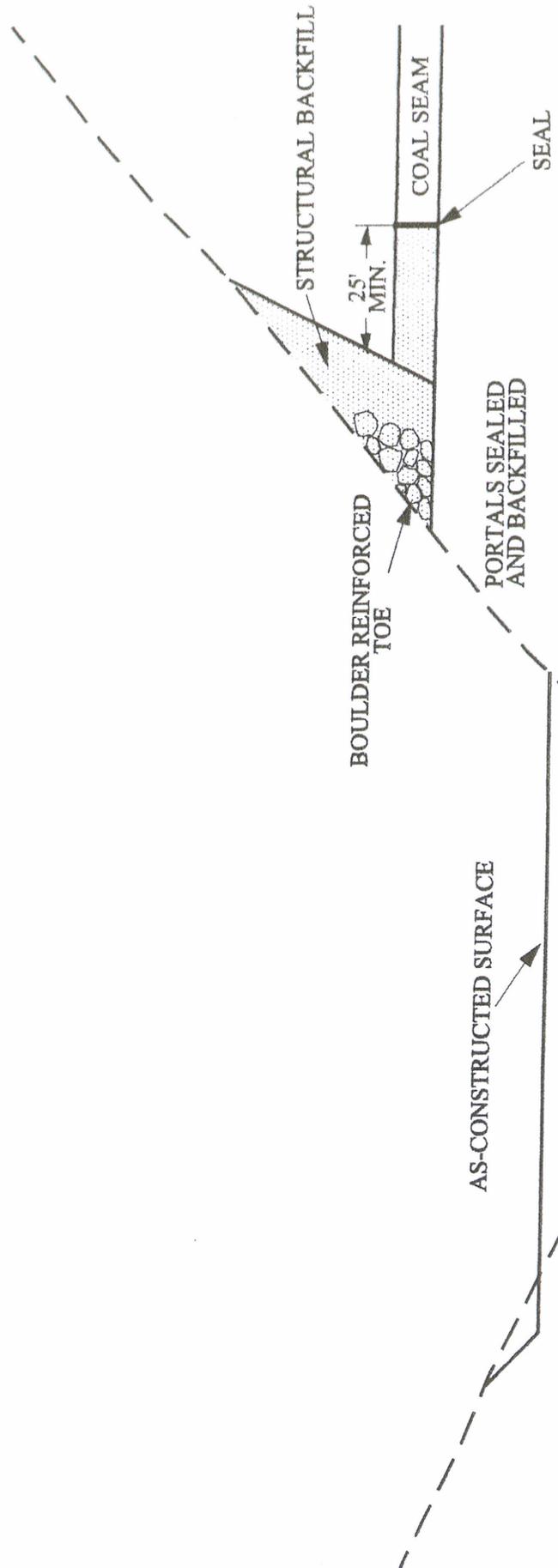
Coal mining and reclamation operations will be conducted in accordance with the approved permit and requirements of R645-301-510 through R645-301-553.

FIGURES

Figure 5-1 Typical Portal Reclamation

Figure 5-2 Typical Portal Seal

Figure 5-3 C Canyon Road - West Ridge Mine Site Typical Section



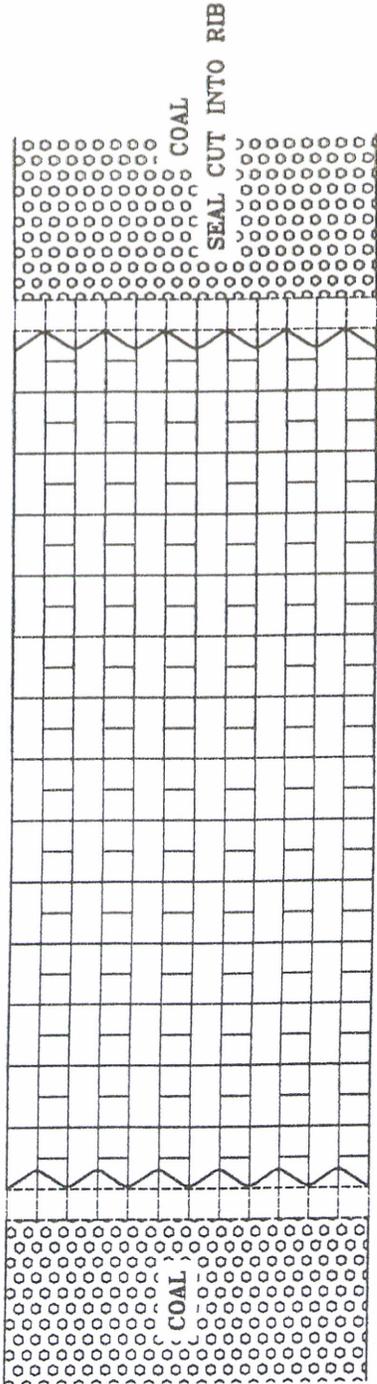
TYPICAL PORTAL RECLAMATION

FIGURE 5-1

INCORPORATED
EFFECTIVE:
APR 01 1999
UTAH DIVISION OIL, GAS AND MINING

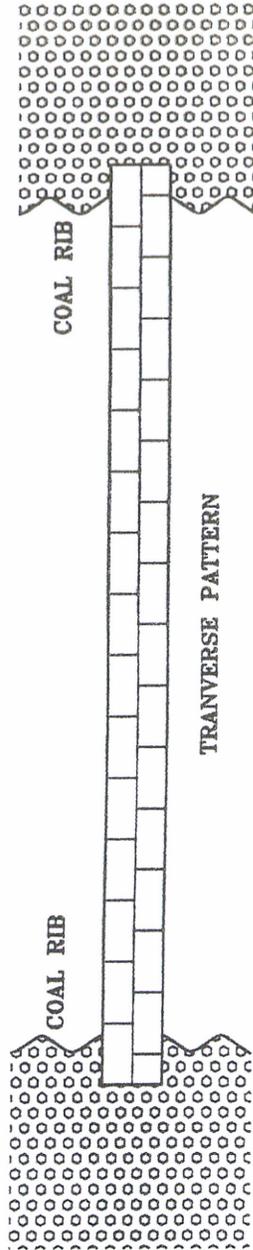
8" x 8" x 16" SOLID CONCRETE BLOCK

ROOF



FLOOR

FRONT VIEW

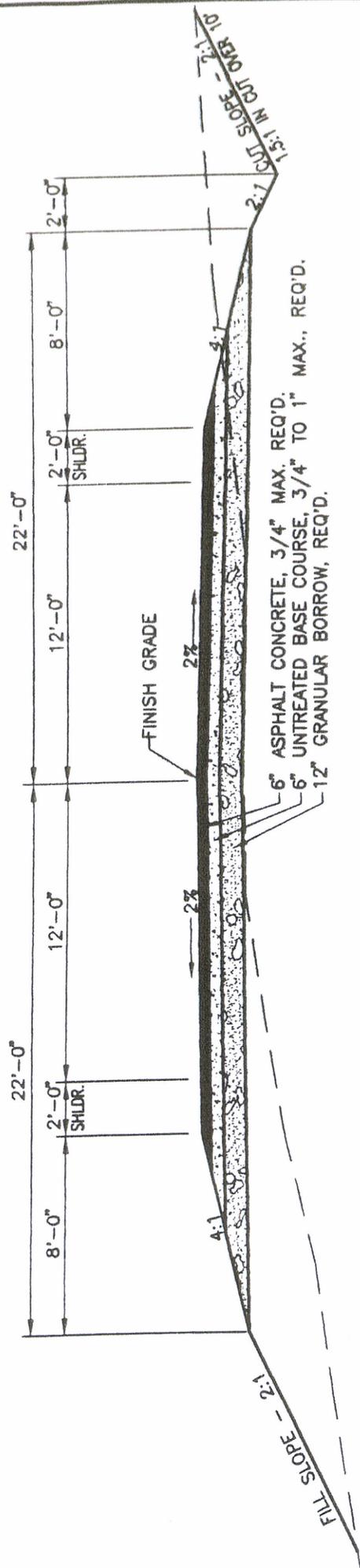


TOP VIEW

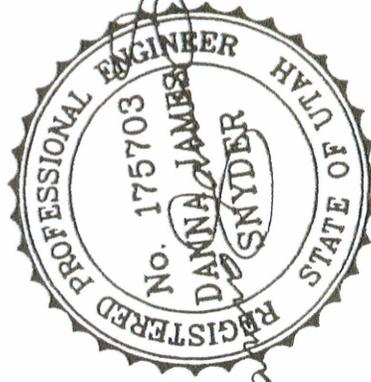
TYPICAL PORTAL SEAL

FIGURE 5-2

INCORPORATED
EFFECTIVE:
APR 01 1999
UTAH DIVISION OIL, GAS AND MINING



TYPICAL SECTION



INCORPORATED
EFFECTIVE:
APR 01 1999
UTAH DIVISION OIL, GAS AND MINING

10" C" Canyon Road, Westridge Mine Site
Typical Section

CREAMER & NOBLE
ENGINEERS
ST. GEORGE, UTAH

FIGURE 5-3

09/09/98

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

SS.

County of Carbon.)

I, Kevin Ashby, on oath, say that I am the Publisher of the Sun Advocate, a twice-weekly newspaper of general circulation, published at Price, State and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for 4 (Four) consecutive issues, and that the first publication was on the 23rd day of March 2000, and that the last publication of such notice was in the issue of such newspaper dated the 11th day of April, 2000.

Kevin Ashby
Kevin Ashby - Publisher

Subscribed and sworn to before me this 11th day of April, 2000.

Linda Thayne
Notary Public My commission expires January 10, 2003 Residing at Price, Utah

Publication fee, \$ 116.00

PUBLIC NOTICE

Notice is hereby given to the public that there is a gate installed on Carbon County's new C Canyon Road, approximately 900 feet below the WEST RIDGE Mine existing permit area (slightly over 1/4 miles below the mine site). The gate is located in the SE1/4 of the NE1/4 of section 15, T14SR13E. This notice is to inform the public that occasionally this gate will be locked for safety and security reasons. The closure of this gate will be at the discretion of WEST RIDGE Resources, Inc., management and generally will include night time hours, weekends and holidays. Following the publication of this notice, there will be an opportunity for a public comment should anyone desire. Anyone wishing to comment on this activity should address their comment to the Utah Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, Box 145801, Salt Lake City, Utah 84114-5801, Attn: Lowell P. Braxton. In addition, but not in substitution, comments may also be directed to the Bureau of Land Management, 125 South 600 West, Price, Utah 84501, Attn: Mark Mackiewicz.

Published in the Sun Advocate March 23, 30 and April 6 and 11, 2000.

RECEIVED

APR 26 2000

DIVISION OF OIL, GAS AND MINING
INCORPORATED
DIRECTIVE:
MAY 26 2000
UTAH DIVISION OIL, GAS AND MINING



LINDA THAYN
NOTARY PUBLIC • STATE of UTAH
845 EAST MAIN
PRICE, UTAH 84501
COMM. EXP. 1-10-2003

Minutes of the meeting of the Board of Commissioners, Carbon County, State of Utah, held December 8, 1999, at the Courthouse Building, Price, Utah, commencing at 6:00 p.m.

Those present: William D. Krompel, Chairman
Michael S. Milovich, Commissioner
Tom Matthews, Commissioner

Also present: Robert P. Pero, County Clerk
Gene Strate, County Attorney
Jana Hoyt, Transcriptionist
Dave Levanger, Building & Zoning
Dennis Dooley, Personnel Director

Clerk's Certificate of Compliance with Open Meeting Law was filed.

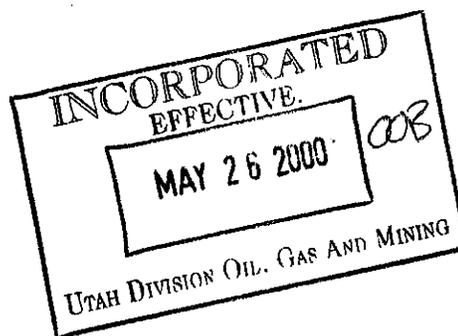
Chairman Krompel led the Pledge of Allegiance to the Flag. A motion was made by Commissioner Milovich to approve minutes of November 3, 1999. Seconded by Commissioner Matthews. Motion carried.

Commissioner Milovich motioned to approve minutes of November 22, 1999, after amended. Commissioner Matthews seconded the motion. Motion carried.

The Warrant Edit Report was approved, as were the November Monthly Reports of Ambulance, Assessor, Building Official, Clerk/Auditor, Recorder, and Sheriff.

9) — Discussion regarding action on "C" Canyon Road in connection with Andalex's Quit Claim Agreement and security concerns at the coal mine site-Dave Shaver.

Mr. Shaver explained that the C Canyon Road terminates at the mine. There is a gate in place, of which Westridge could grant ownership to the County. The construction of the gate cost \$6,000. The gate necessary for security of the mine and public safety/liability purposes. The only time gate is locked is when there is no one at the mine, which is limited to some weekends and holidays. Chairman Krompel requested that a concrete pad be put in at the intersection for maintenance purposes. Commissioner Milovich moved to turn the gate over to the County and let Westridge Resources control the opening and closing. Commissioner Matthews seconded the motion. Motion passes.





United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Price Field Office
125 South 600 West
Price, Utah 84501
(435) 636-3600

2810
UTU-74334
(UT-070)

Mr. Mike Milovich, Chairman
Carbon County Commission
Carbon County Courthouse
Price, Utah 84501

RECEIVED

APR 26 2000

MAR 28 2000

**DIVISION OF
OIL, GAS AND MINING**

Dear Mr. Milovich:

On September 8, 1998, the Bureau of Land Management granted Carbon County a right-of-way to construct, operate and maintain a road that leads to a mine operated by West Ridge Resources, Inc. (UTU-74334). The subject grant was issued for a term of thirty (30) years with the right of renewal.

Recently there has been concern regarding a gate West Ridge Resources constructed approximately 1500 feet south of the mine site. The gate is located on public lands administered by the Bureau of Land Management within right-of-way UTU-74334. West Ridge Resources has met with my staff and requested authorization to lock the gate when necessary for safety and security reasons at the discretion of West Ridge Resources Management.

The Bureau of Land Management supports the decision to install and lock the gate in question. We hereby give our approval for Carbon County to install and lock the subject gate at your discretion. Please let us know in writing if this arrangement meets with approval of the Carbon County Commission.

If you have any questions, please feel free to contact Mark Mackiewicz of my staff at (435) 636-3616.

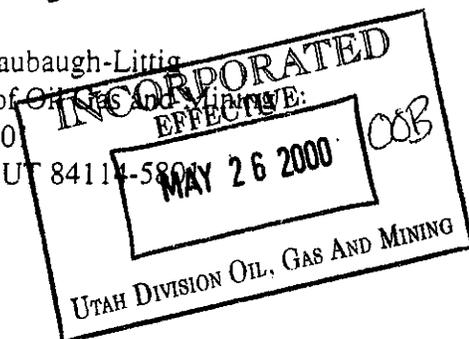
Sincerely,

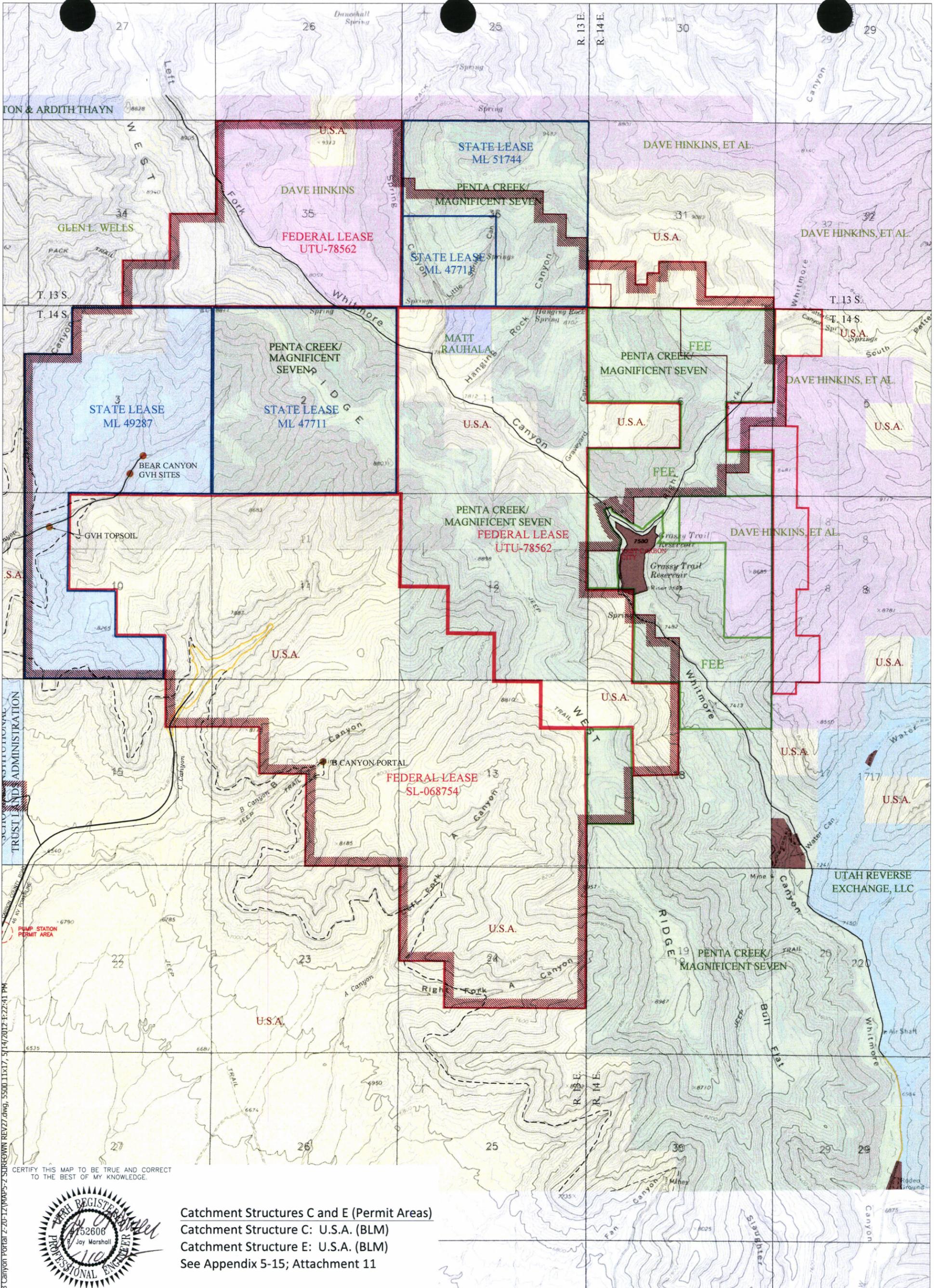
Thomas E. Naamuse (Acting)

Field Manager

cc: Mr. Michael Glasson
West Ridge Resources, Inc.
P. O. Box 902
Price, UT 84501

Ms. Pamela Graubaugh-Littig
Utah Division of Oil, Gas and Mining
P. O. Box 14580
Salt Lake City, UT 84114-5800





WEST RIDGE MINE
Map 5-2
Surface Ownership Map

DATE: 5-14-12 REV: 27 ACAD REF: MAP5-2 SURFOWN REV27

Catchment Structures C and E (Permit Areas)
 Catchment Structure C: U.S.A. (BLM)
 Catchment Structure E: U.S.A. (BLM)
 See Appendix 5-15; Attachment 11

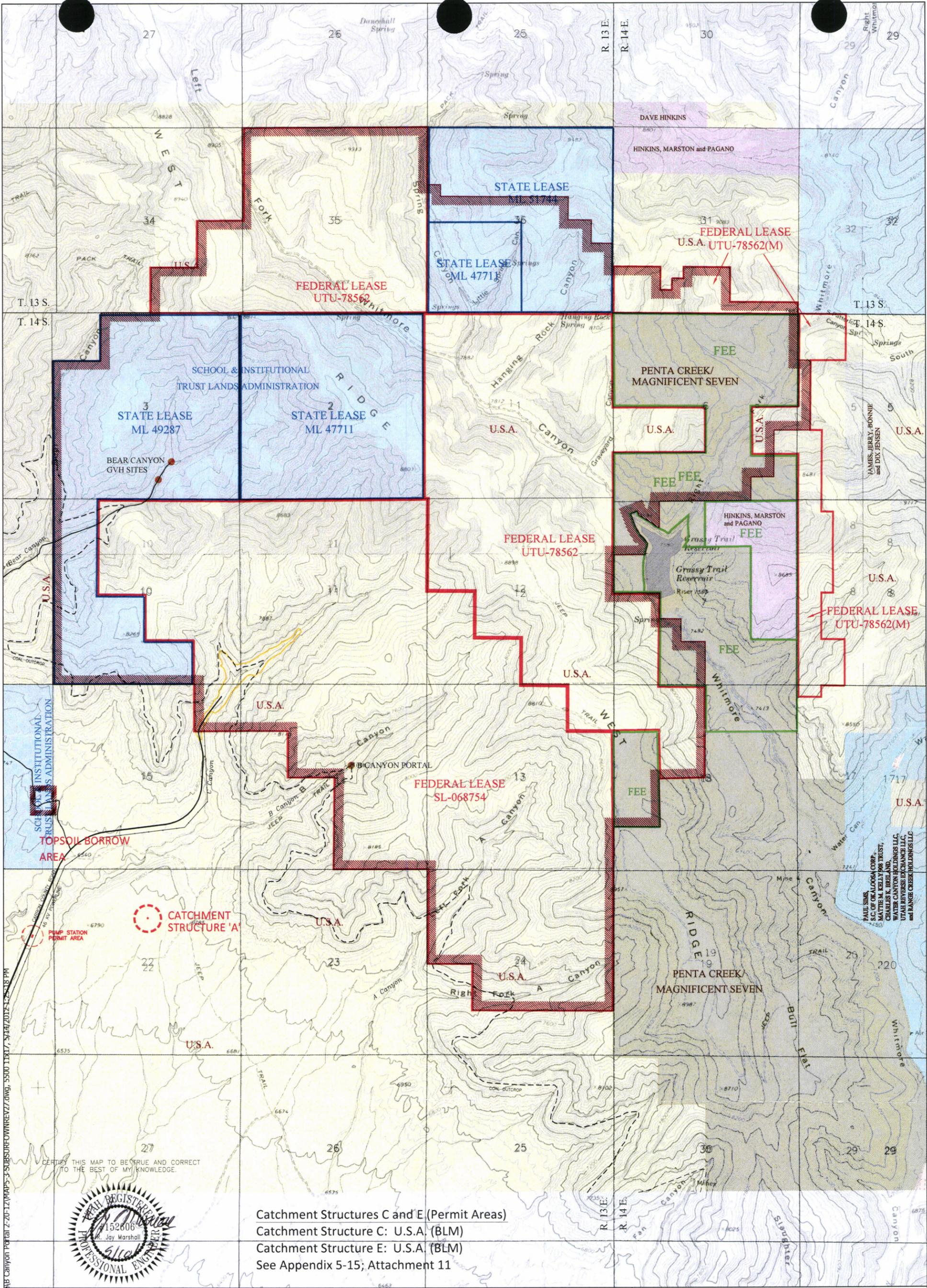


LEGEND:

Permit Boundary		School Trust Land (SITLA)	
Federal Lease		Penta Creek/ Magnificent Seven	
State Lease		U.S.A. (BLM)	
Penta Creek Fee		Dave Hinkins, et al.	
Surface Facility Area		Glen L. Wells	
GVH Site		Matt Rauhala	
Outcrop		Milton & Ardith Thayn	
		East Carbon City	
		Utah Reverse Exchange	

WEST RIDGE
 RESOURCES, INC.

SCALE: 1"=2500'



Catchment Structures C and E (Permit Areas)
 Catchment Structure C: U.S.A. (BLM)
 Catchment Structure E: U.S.A. (BLM)
 See Appendix 5-15; Attachment 11



WEST RIDGE MINE

Map 5-3

Sub-surface Ownership Map

LEGEND:

Permit Boundary		School Trust Lands (SITLA)	
Federal Lease		Penta Creek/Magnificent Seven	
State Lease		U.S.A. (BLM)	
Penta Creek Fee		Dave Hinkins, et al.	
Surface Facility Area		East Carbon City	
GVH Site		James T. Jensen, et al.	
Outcrop		Paul Sims, et al.	

WEST RIDGE
RESOURCES, INC.

SCALE: 1"=2500'

Appendix 5-19

B Canyon Portal Re-Opening Project

APPENDIX 5-19

B CANYON PORTAL OPENING

ATTACHMENTS:

- ATTACHMENT 1 MAP OF B CANYON PORTAL REHABILITATION PROJECT
- ATTACHMENT 2 AML RECLAMATION INFORMATION FROM DOGM FILES
(INCLUDES PRE-RECLAMATION PHOTOS)
- ATTACHMENT 3 PHOTOS OF EXISTING PORTAL AREA
- ATTACHMENT 4 ORDER 2 SOILS SURVEY (RELEVANT EXCERPTS),
LONG RESOURCE CONSULTANTS
- ATTACHMENT 5 INSPECTION REPORT AND SOILS RECOMMENDATION
- ATTACHMENT 6 APPROVED SEED MIX FROM AML RECLAMATION
OPERATION
- ATTACHMENT 7 VEGETATION AND SENSITIVE SPECIES REPORT,
MT NEBO SCIENTIFIC
- ATTACHMENT 8 CULTURAL REPORT, SENCO-PHENIX ARCHEOLOGICAL
- ATTACHMENT 9 2011 RAPTOR SURVEY AND AGENCY CORRESPONDENCE
REGARDING GOLDEN EAGLE NEST
- ATTACHMENT 10 ENGINEERING DRAWINGS:
EXISTING PORTAL AREA TOPOGRAPHY
PROPOSED PORTAL OPENING PROJECT

INTRODUCTION:

The company needs to uncover the B Canyon Portal in order to gain access to the old Kaiser mine works. As shown on Map 5-4A, there is a two-entry set of exploratory entries which extend from the old Kaiser mine works and was driven into the coal reserve block now controlled by West Ridge Resources. These entries were mined in the early 1960's, prior to the development of the West Ridge mine. These entries were driven from the underground works basically along strike. However, Kaiser also drove a short set of entries to the surface in order to

assist the mine ventilation. These entries broke out to the surface in a single opening in B canyon, where a steel portal canopy was constructed, which still remains intact (see photo in Attachment 2). After the exploratory project was completed, Kaiser sealed the portal with a concrete barricade and a steel fence across the opening of the steel structure.

In 1998, the Utah Division of Oil, Gas and Mining's Abandoned Mine Lands (AML) group reclaimed the portal site. This was small isolated part of a much larger reclamation project involving the entire Sunnyside Mine site in nearby Whitmore Canyon. Reclamation of the B Canyon portal consisted primarily of backfilling the steel canopy and re-vegetating the site. The steel fence at the end of the canopy was removed, but the main portal structure, consisting of circular steel multiplate arch sets, was left in place. Part of the steel arch remains visible at present. According to AML records, approximately 10 cubic yards of earthen material was used to backfill the portal. This material was obtained by excavation the nearby bank. Relevant documentation regarding the AML reclamation of the B Canyon Portal, obtained from the Division's public records, is presented in Attachment 2.

As part of the planned West Ridge Mine development, the company is now proposing to extend longwall gate entries across these old Kaiser mine exploratory entries (see map in Attachment 1). In order to assess the conditions of the old works, the company proposes to uncover the B Canyon portal and breach the seal. This work will be done under the necessary approvals from US Mine Enforcement and Safety Administration (MSHA). The company will then inspect the old works and conduct any needed re-habilitation work, such as re-bolting the roof in selected areas, and perhaps erecting an additional seal in the underground portion of the old works.

Re-opening of the B canyon Portal will be a temporary action. It is estimated that it will take no longer than two-three days to uncover the portal and breach the seal. To provide the necessary ventilation, a small auxiliary face fan will be used, along with a portable generator to provide electrical power. These units will be supported by crib blocks. All installation of components will be temporary; there will be no concrete foundations used. The drawings in Attachment 10 show the existing area and the reclaimed topographic contours, as well as the proposed equipment layout during the re-habilitation work.

Re-hab of the mine entries could take from several weeks to several months, depending on the roof conditions encountered in the old entries. However, after the mine re-hab work is completed, the portal will be re-sealed, and the site will be reclaimed to the same standard as the existing AML reclamation. The following discussion provides greater detail of the portal re-opening plan.

CHAPTER 1; LEGAL

The B Canyon portal is located approximately one-half mile southeast of the main mine surface facilities in C Canyon, as shown on Map 1-0/1-1. The area has been previously disturbed when

Kaiser Coal Company installed the portal in the early 1960's, and again when AML reclaimed the site in 1998. The site is accessed by an existing unimproved dirt road which was initially installed in the 1950's by US Steel to reach a drill site located up-canyon from the portal site. The road has been sufficiently maintained by local usage, and will not need to be upgraded as part of the portal re-opening project.

The portal site is located on BLM land, and is within federal coal lease SL-068754 which is held by West Ridge Resources (see Maps 5-3 and 5-4). Right of entry to do the portal work is granted under the terms and authority of this lease (see Appendix 1-4A). The site is located within the existing DOGM SMCRA permit area for the West Ridge Mine C/007/041). Total disturbance associated with the previous activities is approximately 0.62 acres, based on ground surveys of the area (see map in Attachment 10). Total disturbance associated with the proposed portal-opening project is estimated at about 0.25 acres, all within the previous disturbed area. Chapter 1 has been updated to reflect the additional disturbance associated with this proposal.

CHAPTER 2: SOILS

As stated above, the site has been previously disturbed on two separate occasions; initially in the early 1960's when Kaiser constructed the portals, and then again in 1998 when DOGM/AML did the partial reclamation. Because of this previous activity, there is no native topsoil remaining in the small area immediately in front of the portal, the area now proposed for disturbance as part of the portal re-opening project. DOGM soils scientist has reviewed the site and concluded that adequate reclamation should be obtained by removing the existing vegetation from the area to be disturbed, and then removing the top 12" of material from this area. The vegetation would be stockpiled separately in a nearby location, and the "topsoil" would likewise be stored in its own separate pile located nearby. The proposed location of these stockpiles is shown on the drawing in Attachment 10. The Division has provided its assessment of the topsoil situation in the form of a pre-construction inspection report, which is included in Attachment 5.

Even though this area has been previously disturbed, the company has recently conducted an on-site soils survey of the area associated with a proposed GVH project in the vicinity. In May, 2010, Long Resource Consultants prepared an Order 2 soils survey of the entire B Canyon road, which included soil samples taken at the portal site, as well as samples taken immediately above and below the site. Relevant sections of this survey report are presented in Attachment 4. In reviewing this report, it may be helpful to note that sample B-06 was taken directly at the portal site, while sample B-05 was taken approximately 300' up-canyon from the site, and sample B-07 was taken about 600' below the site. Therefore, the report is able to give a very accurate description of the soils existing in the area.

It should also be noted that the revegetation that was established at the site after the AML reclamation seems to have been successful, despite the fact that the AML team did not at the time have a designated topsoil resource to re-apply to the backfilled portal site. As the photos in

Attachment 3 show, subsequent re-vegetation appears healthy and diverse. Also, Mt Nebo Scientific has conducted an on-site vegetation report (see Attachment 7), which lists the plant species (shrubs, forbs and grasses) which have successfully re-established themselves at the site over the last 12 years since the AML reclamation.

Based on these observations, the company proposes to remove all existing vegetation from the area in front of the portal and store this material in a separate pile. A minimum of 12" of surface "topsoil" material will then be salvaged and stored in a nearby pile. The remaining earthen material in front of portal will be pulled down to construct the access ramp leading to the portal opening. As mentioned previously, the portal re-opening project will be temporary. The company estimates that it should be able to complete all the underground mine safety work in less than six months, at which time the portal would be re-sealed, and the site would then be backfilled and reclaimed to its existing (AML) condition and contour. At the time of reclamation, after the ramp has been removed and the portal has been backfilled, the "topsoil" material will be placed back over-top the backfill, and the vegetation material will then be spread back over the disturbed area as mulch. A 1 T/ac straw mulch will be incorporated into the surface soil and a 1 Ton/ac mulch will be scattered over the surface after the seed and mulch application and scattering of slash on the seeded and mulched surface.

The company proposes to re-seed the disturbed area with the same seed mix which was used by the AML reclamation team in 1998. Attachment 6 includes this seed mix, which was obtained from the Division's public records. As shown on the engineering drawing in Attachment 10, the maximum extent of new disturbance is about 0.25 acres. However, this area includes all the area potentially involved in the re-opening project. Much of this area will not be subject to any earthwork or excavation-type disturbance, but may be involved by placing portable equipment directly on the ground, or by parking vehicles at the existing vehicle turn-around area. In this sense, it could be disturbed, but there would be no vegetation removed nor any kind of invasive earthwork. The area of actual disturbance would be much smaller, and is estimated at about 0.07 acres. This is the area immediately in front of the portal associated with the access ramp. Assuming a salvage depth of 12", approximately 113 cubic yards of topsoil would be removed and stored in the adjacent stockpile. Another 50 cubic yards of underlying earth material would then be reworked to expose the portal and construct the access ramp. These quantities are estimates only, and could vary upon final construction, but it can be safely stated that the quantities involved in this project are small, and the project can be completed with minimal disturbance. For example, records from the previous AML backfill efforts indicate that the volume of material used in backfilling the portal was only about 10 cubic yards.

CHAPTER 3: BIOLOGY

As stated previously, the revegetation that has been established at the site after the AML reclamation seems to have been successful, despite the fact that the AML team did not at the time have a designated topsoil resource to re-apply to the backfilled portal site. As the photos in

Attachment 3 show, subsequent re-vegetation appears healthy and diverse. Also, Mt Nebo Scientific has conducted an on-site vegetation report (see Attachment 7), which lists the plant species (shrubs, forbs and grasses) which have successfully re-established themselves at the site over the last 12 years since the AML reclamation.

Included in the Mt Nebo report is an updated list of Threatened, Endangered and Sensitive Species for Carbon County, Utah. The report concludes that there should be no impacts to any of the listed species as a result of re-opening the B Canyon portal.

Based on the 2011 raptor survey, there are several eagle nests in the B Canyon area. In particular, nest 395 (tended in 2011) is located immediately above, and is visible from, the portal site. Nest 1056 (inactive in 2011) is located down-canyon about 2000' from and in line-of-sight of the portal. Nest 398 (tended in 2011) is located about a mile from the portal, but is around the cliff face out of line of site of the portal and the access road leading to the portal. A copy of the 2011 raptor survey is included in Attachment 9.

Due to the proximity of the eagle nests in the B Canyon area, the company has initiated discussions with DOGM biologist, US Fish & Wildlife Service (FWS) officials, and consulting wildlife specialist to determine to best approach to conduct the portal re-opening project so as to minimize the impact to any eagle activity in the area. A record of this correspondence is included in Attachment 9 as well. In summary, there has been eagle activity noted currently (February, 2012) in the vicinity of Nest 395 located above the portal. The current plan is to employ a trained wildlife biologist to monitor eagle activity in the area while the permitting process is underway. At such time as the permit is approved, the biologist would conduct a ground survey of the nests in question. This may also coincide with the regular annual helicopter raptor survey of the area. If there is no activity at the time (eggs, chicks, fledglings), the company would formally seek approval (from the Division and FWS) to begin construction activities at the portal site. However, if there is any eagle activity at that time, the company will wait until subsequent ground surveys of the nests verify that any fledglings have reached maturity and have left the nest.

CHAPTER 4: LAND USE

After the portal re-opening project has been completed (estimated six months after beginning), the site will be reclaimed. Present land use includes wildlife habitat and limited cattle grazing. Recreation use includes hunting and 4-wheeling. All existing land-use activities can continue during and after the completion of the portal project.

As mentioned previously, the site has been disturbed on several occasions in the past. It is assumed that AML provided the necessary cultural clearances prior to there 1998 reclamation work. However, in September, 2009, the company contracted Senco-Phenix Archeological Consultants to conduct an intensive cultural survey of the area as part of a GVH project that was

being proposed nearby. The survey included the portal site, and as expected, recommended a finding of no effect and cultural clearance. A copy of this report is included in Attachment 8.

CHAPTER 5: ENGINEERING

Before any construction starts an identification sign will be posted at the site. This sign will list the company name as permit holder, the permit number, address and phone number. Disturbed area perimeter markers and stream buffer zone signs will also be established around the construction site prior to any disturbance.

As mentioned above, construction activities associated with the portal re-opening will be minimal. Up to 113 cubic yards of topsoil material will be removed and stockpiled adjacent to the portal. Another 50 cubic yards of earth material will be rework to make a small equipment access ramp leading from the road up to the portal, a distance of about 50'-60'. According to AML records, about 10 cubic yards of material was placed in front of the portal during the 1998 backfill (reclamation) effort. It should be noted that all earth quantities given here are conservatively estimated on the high side. All earthwork can be done using a single small trackhoe, and can be done in less than a day.

After the portal is uncovered, the mining crews, working under strict oversight from the federal Mine Safety and Health Administration (MSHA) will remove the existing seal and begin to slowly and methodically work their way into the old works. In order to provide the necessary ventilation, a small portable face fan will be set up on the surface and vent tubing will be extended from the fan into the mine opening to provide fresh air. The crews will then advance into the mine, making sure the roof control is adequate as they proceed. This may require installing additional timbers and/or supplemental roof bolts. As shown on the underground drawing in Attachment 1, there are three areas where the West Ridge mine development entries are projected to cross the old Kaiser mine works; two longwall gate entries and one set of bleeder entries. Due to the additional abutment loads imposed during future longwall mining, these areas in particular may require supplemental roof support installed ahead of time, such as roof bolts, cable bolts, cribs and/or cans. Also as shown on the drawing, a set of seals will need to be installed to isolate the remaining old works from the new development district.

All facilities associated with the portal re-opening project will be temporary. The only equipment utilized will be a temporary ventilation fan and associated vent tubing, and a small electrical generator to provide power to the fan. This generator will also provide the power for the roof bolting machine. All equipment will be portable, and will be placed on crib blocks for support and leveling. There will be no concrete used. Equipment can be set along the existing roadway or turn-around area, with no excavation required.

The underground re-habilitation project is expected to require no more than six months to complete. During this time the only day-to-day activity at the B Canyon site will consist of

several trips in and out of the portal for the work crew, and to deliver consumable supplies, such as roof bolts, timbers and concrete blocks needed for the re-habilitation work, and to deliver fuel for the generator. All of this deliver of men and materials can be accomplished using small mine-approved diesel pick-up trucks. There will be no storage of supplies or materials on the surface at the site: all materials will be hauled directly underground for storage.

After the underground re-hab work is complete, the seal will be re-constructed at the B Canyon portal. All portable equipment (fan, generator, vent tubing, etc.) will be removed. The steel canopy will be left in place, just as it is now. The portal opening will be backfilled from the portal opening to a minimum of 25 feet (see Plate 2 of 2), the access ramp will be obliterated, the topsoil material will be laid back, and the stockpiled vegetation mulch material will be spread over the reclaimed area. This will result in achieving approximate original (AML) contour. The surface will be roughened (gouged/pocked) to aid in water retention and to minimize soil loss to erosion. The area will then be re-seeded with the seed mix approved by the previous AML reclamation project. A 1 T/ac straw mulch will be incorporated into the surface soil and a 1 Ton/ac mulch will be scattered over the surface after the seed and mulch application and scattering of slash on the seeded and mulched surface. A row of excelsior logs (sediment control structures) will then be placed around the down-slope toe of the disturbed area for additional erosion control. This row of excelsior logs will be in addition to the excelsior logs placed at the stream buffer prior to initial construction, which will also be left in place after reclamation until the Division has determined that re-vegetation has been established sufficient to provide adequate sediment control.

Due to the small size of the project site, it is estimated that the reclamation work can be completed in 2-3 days. According to AML records, an identification monument was placed on top of the backfill during the 1998 reclamation. If the monument is still there, the company will save it, and replace it after the re-opening reclamation has been completed.

Bonding calculations for reclamation of the site include earthwork and revegetation. Since all equipment used will be mobile, and since the existing steel portal canopy will remain in place (although backfilled and covered), there will be no demolition costs.

1) Earthwork.....Total earthwork volumes are liberally estimated to be no more than 163 cubic yards, including 113 yds for topsoil removal/replacement and 50 yards for ramp construction and portal backfill.

2) Revegetation....The total area to be re-vegetated is about 0.07 acres.

Given the small size of the reclamation requirements for this project, perhaps the most straightforward means of determining an adequate reclamation cost amount is to compare it to a similar approved amount for a somewhat comparable installation. For example, in November, 2008, the Division approved the Bear Canyon GVH site, which is small isolated disturbed area located nearby within the West Ridge Mine permit area. The total reclamation cost of the Bear Canyon

GVH site associated with earthwork is \$2143, and for revegetation is \$2461, for a total of \$4604. This is for a 0.34 disturbed acre site, involving 842 cy of back fill, and 515 cy of topsoil replacement. In comparison the B Canyon portal disturbed area is 0.07 acres, involving 50 cy of backfill, and 113 cy of topsoil replacement. Again, there are no demolition costs associated with the B Canyon project. The Bear Canyon GVH site is obviously a much larger site to reclaim than the B Canyon portal site, with quantities generally about five times greater than for the B Canyon portal site. Therefore, in the interest of expediency, the company would agree to a \$4604 reclamation cost for the B Canyon portal job, as determined for the similar but more expansive Bear Canyon GVH installation.

The updated bond information has been included in Attachment #17 of the MRP.

CHAPTER 6: GEOLOGY

The geology of the B Canyon portal area is nearly identical to the geology of the West Ridge minesite surface facilities located about a half mile away in nearby C Canyon. This geology is described in detail in Chapter 6 of the MRP.

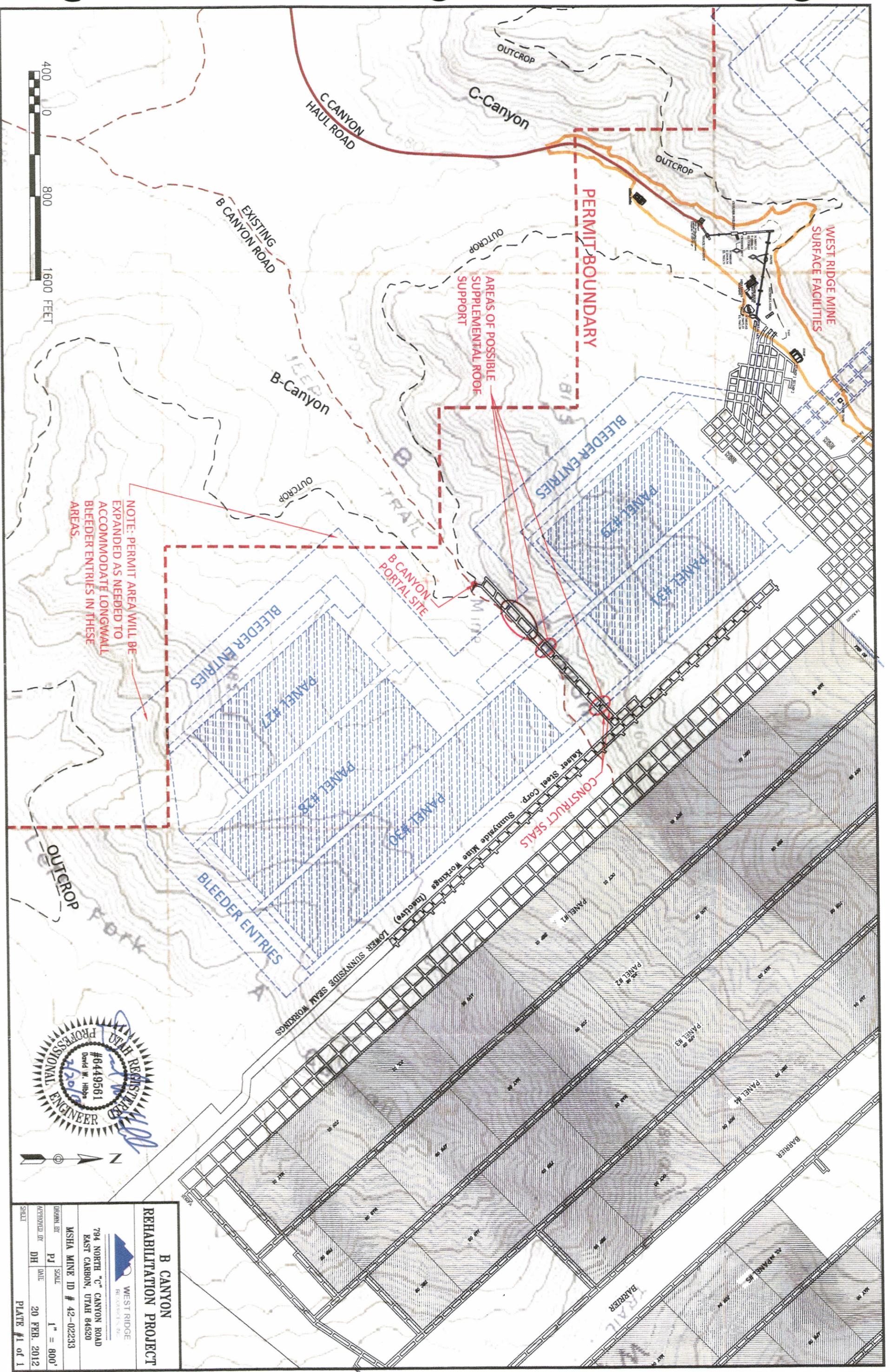
CHAPTER 7: HYDROLOGY

As shown in the drawings in Attachments 1 and 10, and the photos in Attachment 3, the B Canyon portal is located in the bottom canyon near the drainage channel. B Canyon is an ephemeral drainage, typical of the Book Cliffs, and similar to the drainages of nearby C Canyon and Bear canyon described in greater detail in Chapter 7 of the MRP. All construction work associated with the re-opening of the B Canyon portal will be done with the area of previous disturbance, including the AML reclamation of 1998. There will be no activity within the drainage channel. In fact, there is an existing sediment-control berm, presumably constructed by AML, that separates the portal site from the drainage. This berm will remain in place during and after the portal re-opening project to provide adequate sediment control protection to the drainage channel. In addition, the company will install additional temporary sediment control protection between the construction area and the drainage, in the form of a continuous row of excelsior logs, as shown in Attachment 10. The company will also install a row of excelsior log sediment control around the base of the topsoil storage pile, even though this pile is temporary and should itself be reclaimed within six months of the re-opening project.

After the re-opening project is completed, the site will be reclaimed to its approximate original (AML) contour, will be covered back over with the topsoil material, and then re-seeded. An additional row of excelsior logs will be installed along the down-slope edge of the reclaimed area. In addition, the row of perimeter excelsior logs (installed during the initial construction) will also remain in place after reclamation of the site until it has been determined that the revegetation has been established sufficiently to provide sediment control. The existing AML berm will not be disturbed.

ATTACHMENT 1

MAP OF "B" CANYON PORTAL SITE



B CANYON REHABILITATION PROJECT

WEST RIDGE RECONSTRUCTION, INC.

794 NORTH "C" CANYON ROAD
 EAST CARBON, UTAH 84520

MSHA MINE ID # 42-02233

DRAWN BY	PJ	SCALE	1" = 800'
APPROVED BY	DH	DATE	20 FEB. 2012

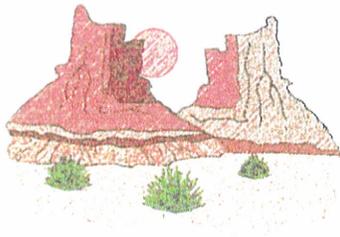
PLATE #1 of 1

ATTACHMENT 2

**ABANDONED MINE LANDS (AML)
RECLAMATION INFORMATION
FROM DOGM FILES**

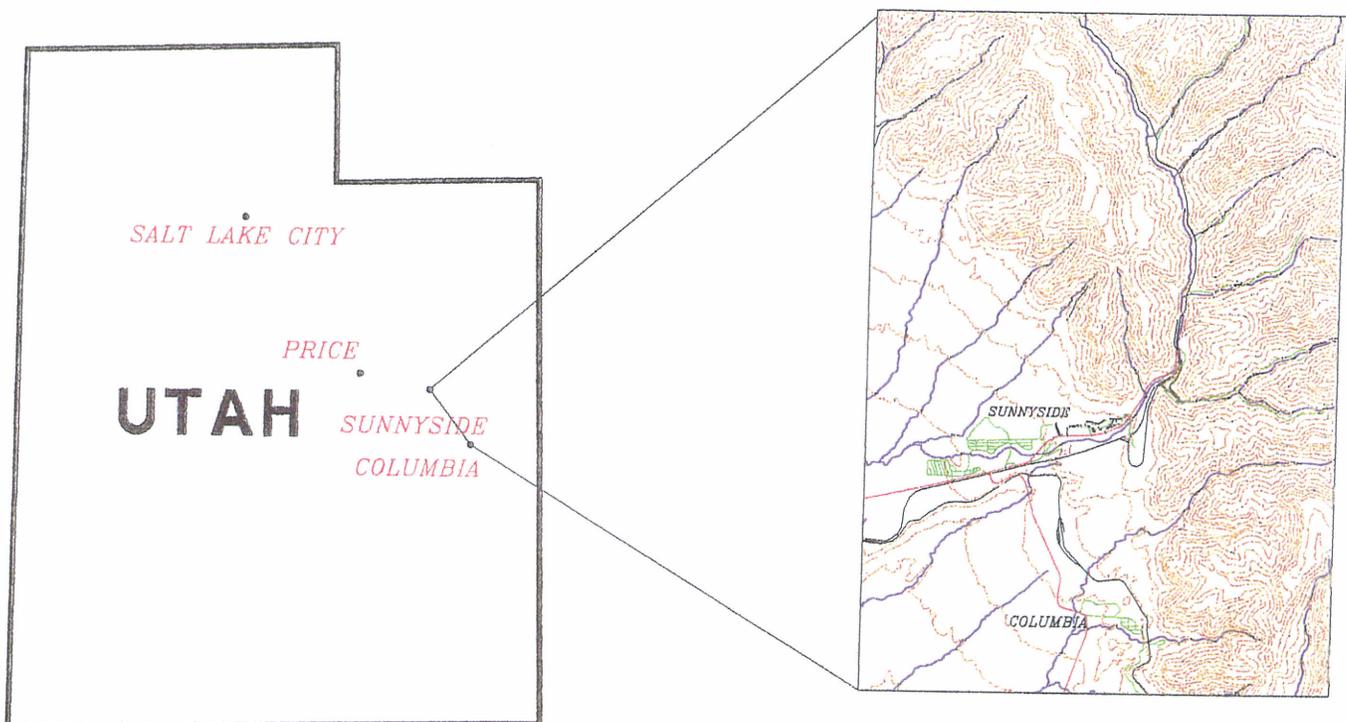
(INCLUDES PRE-RECLAMATION PHOTOS)

CASTLE VALLEY



TECHNICAL SERVICES

Evaluation report of Portals
& Shafts of the Kaiser Steel
and Sunnyside Coal Mines

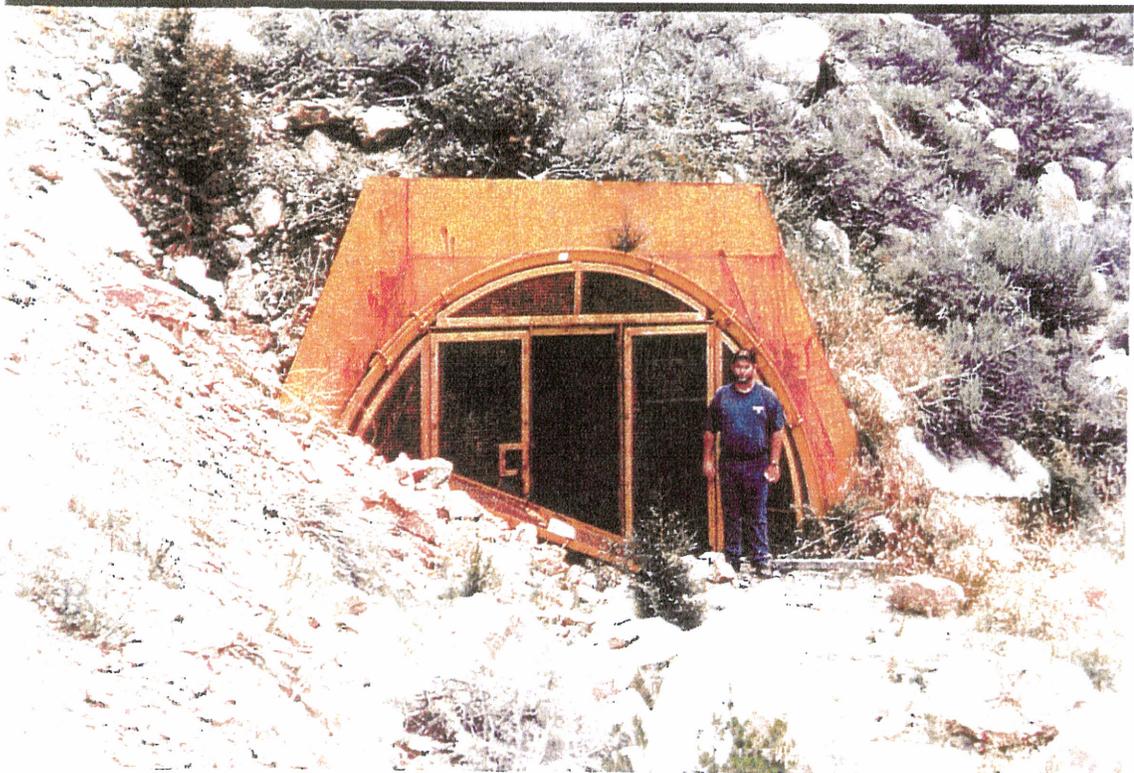


Arranged and compiled for:
MONTGOMERY WATSON
September 1997

Location	Portal No.	Photo Page	Portal Description	Comments and Remarks
Inside Raise Portal	P36	27	<p>This portal is located on the west facing slope in the head of the right fork of an unnamed canyon adjacent to and west of Fan Canyon. This portal is constructed of wooden timbers and props which extend approximately 5' from the hillside. The portal opening is approximately 8' wide by 6' high. An apparent seal is located approximately 80' from the mouth. The roof is constructed of 4 by 8 wooden caps and sides are supported by wooden timber. The seal appears to be block type with a Celtite foam covering. There is minimum air movement.</p> <p>Atmospheric testing reveals:</p> <ol style="list-style-type: none"> 1. O2 = 19.5% 2. CO = 0.0% 3. CH4 = 0.0% <p>Portal opening is screened and dangered off.</p>	<p>This portal is very remote. No real access exists other than by foot. There is very little evidence of a portal other than the opening itself.</p> <p>Care should be taken while working around this portal. Steep slopes and vertical ledges presents a hazard to personnel.</p>
Inside Raise Portal No. 1 Mine	P37	28	<p>This portal is located on the east facing slope in the head of the right fork of an unnamed canyon adjacent to and west of Fan Canyon. It is directly west of portal P36. This portal is constructed of a steel type arched support 17' wide by 9' high with wooden covering. This portal extends 12' from the hillside. A block seal has been constructed approximately 40' inside the portal. There is no air movement into or out of the portal. This portal is located on a ledged outcrop of rock approximately 30' to 40' high.</p>	<p>This portal is very remote. No real access exists other than by foot. Care should be taken while working around this portal. Steep slopes and vertical ledges presents a hazard to personnel.</p>
B Canyon Portal	P38 or P39	29	<p>This portal is located up B Canyon, it is a single portal which accesses two entries underground. This portal is of steel arched construction with sheet metal covering. It is faced with sheet metal and metal screen. The door has been removed but is still attached to the face by a chain and lock.</p> <p>Portal opening is 16' wide by 8' high. Steel arches are on 3' on center. A block seal with mortar face is located in by the portal opening. There is no obvious air movement. no openings nor voids. There is a 30' by 30' earthen pad immediately in front of the portal opening. A 40' long by 30' wide berm exists above the entry.</p>	<p>This portal is accessible by the use of B Canyon road.</p> <p>Care should be taken during demolition to ensure integrity. There is pressure against the inside of the seal as demonstrated when the test valve was opened.</p> <p>Only one portal exists as indicated by residences and veteran miners.</p>
Shop Fan Shaft	S1	30	<p>This shaft is located due south of the main shop. It is well capped with concrete and steel. The cap is 20' by 20' square, framed in 6" by 8" steel beam with 8" concrete. There are no obvious voids or openings, air flow is not evident.</p>	<p>Shaft is well sealed. However, care should be taken during reclamation to maintain the integrity of this seal.</p>



B CANYON PORTAL - ONE PORTAL CONNECTS TWO ENTRIES
P38 OR P39



B CANYON PORTAL
P38 OR P39

FEATURE DESCRIPTION FORM
SHAFT or ADIT

Site ID: AMR / _____ / _____

Tag No: _____

CURRENT CONDITIONS:

Access to Feature (check all that apply):

- no established trail
- foot trail
- ATV/motorcycle
- 4-WD road
- 2-WD dirt road
- paved road
- rubber-tired backhoe
- crawler (track) equipment
- helicopter
- wilderness restrictions

Condition of Entrance:

- Completely collapsed, no access to workings
- Partially collapsed or backfilled at portal, mine visible but not accessible
- Partially collapsed or backfilled at portal, mine workings accessible
- Portal open for access with little or no backfill or collapse (TO SEAL)
- Obstruction at opening makes evaluation of condition impossible
- Existing wall/fence/grate (circle one)
 - intact, acceptable
 - intact, unacceptable
 - damaged, mine accessible
- Shaft collar competent (rock or cribbing)
- Shaft collar sloughing
- Signs of interior visitation (litter/graffiti) present
- Other _____

Stability of Opening/Host Rock:

- unconsolidated soil (unstable)
- friable (unstable)
- highly jointed, fractured (unstable)
- somewhat jointed (fairly stable)
- massive (stable, competent)
STEEL ARCH

Depth to Competent Rock: _____ feet

Water (check all that apply):

- no water present
- dry, but appears to have occasional water
- seep/saturated soil (no flow)
- standing water in opening
- discharge flowing from opening
- discharge infiltrates w/in 50 ft of opening
- discharge flows into intermittent stream
- discharge flows into perennial stream
- water flows through/over waste rock
- water or ground surface discolored
- wetland vegetation present

Wildlife Observations In/Near Opening:

- bats: roosting/flying (circle)
- birds: nesting/roosting/flying (circle)
- guano/droppings/owl pellets
- mammal tracks
- herps

Apparent depth of workings: _____ feet

- terminus visible (SEAL)
- workings extend beyond visibility limits
- crosscuts, other workings visible

Roof or collar support present:

- none visible
- wood props/caps (occasional)
- stulls or square sets
- box cribbing (continuous wood lining)
- log/timber cribbed shaft collar
- loose rock walls or cribbing
- concrete shaft collar or adit bulkhead
- support is failing

MITIGATION/DESIGN CONSIDERATIONS:

Potential Mitigation Actions (check all that apply):

- Masonry Bulkhead
- Backfill
- Bulkhead & Backfill
- Standard Adit Grate
- Bat Grate
- Cable Net
- Locking Adit Door
- Shaft Grate
- PUF Shaft Plug
- Blast
- Probe for mine opening (caved adit)
- Drainage Provisions Required
- Local Site Clean-up and Regrading
- Structure Demolition
- Surface Water Drainage Control
- Cultural Features Needing Protection Present
- No Action Required
- Other _____

Onsite Construction Material Availability:

- Stone suitable for bulkhead (w/in 100 ft)
- Backfill
- Materials not present

Backfill Material Source:

- mine dump
- dig or scale down from brow/adjacent slope
- blast from rock brow or adjacent rock face
- other _____

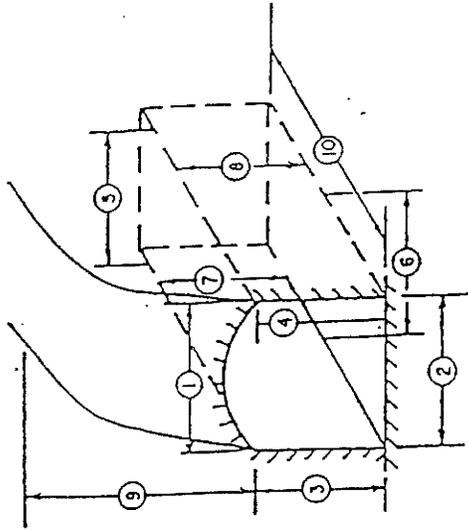
Mine Dump Size:

- small (<20 cubic yards)
- medium (20 - 100 cubic yards)
- large (>100 cubic yards)
- USFS Criteria A3 (>500 cubic yards)

AMR PROGRAM INVENTORY FORM

Site Name Red Hill

ADIT OPENING



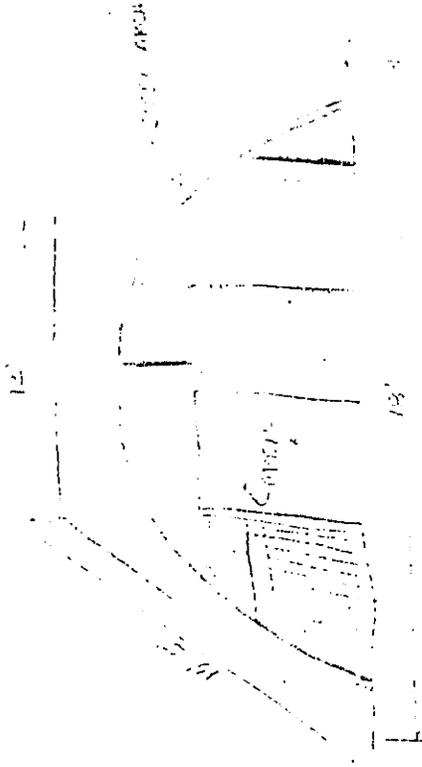
ENTRANCE MEASUREMENTS

- Width at top entrance 1 _____
- Width at bottom entrance 2 _____
- Height left entrance 3 _____
- Height right entrance 4 _____
- Cover height above adft 9 _____
- Type of Cover _____

FEET INSIDE MEASUREMENTS

- Width at top inside 5 _____
- Width at bottom inside 6 _____
- Height left inside 7 _____
- Height right inside 8 _____
- Depth or Length 10 _____

SITE SKETCH



INVENTORIED BY _____

STATE OF UTAH
 DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF OIL, GAS AND MINING

ADIT OR TUNNEL
 FIELD DESCRIPTION FORM

TAG NO. _____ PHOTOGRAPH NUMBERS: _____

DATE _____ ROLL _____

PAGE _____ OF _____ PICTURE(S) _____

Utah Abandoned Mine Reclamation Program
Mine Portal Monument Record Form

MONUMENT NUMBER 1524

Date Installed 7 122 198 By Minchey Diggings

LOCATION

USGS Quad _____ 7 1/2' 15' Code _____

County Carbon Code _____

Twp 14 N(S) Range 13 (E)W Section 14 : SW 1/4 SW 1/4 NE 1/4 SLBM USM

UTM Coordinates: _____ m N _____ m E Zone 12

State Plane Coordinates: N _____ ft E _____ ft

PROJECT INFORMATION

Project Name: Sunnyside Mine Pit Project Number: AMR1071930

Site Name: B-Canyon P-38 & P39

Construction Contractor: Minchey Diggings Commodity Coal

CLOSURE INFORMATION

Opening Type Horizontal Vertical Open (prior to reclamation)
 Inclined Subsidence Closed (prior to reclamation) EXISTING WALL

Portal Designation in Reclamation
Construction Specs B-CANON P-38 & P39 Date (mm/yy) 7 198

Reclamation Action (Check all that apply.)

- | | | |
|--|---|--|
| <input type="checkbox"/> None | <input type="checkbox"/> Permanent grate/grid | <input type="checkbox"/> Fence |
| <input type="checkbox"/> Probe; no workings | <input type="checkbox"/> Lockable gate | <input type="checkbox"/> Other (explain) |
| <input type="checkbox"/> Probe + closure | <input type="checkbox"/> Cable Net | <u>2 ROOMS, 1 COMMON ENTRANCE</u> |
| <input type="checkbox"/> Wall (concrete block) | <input type="checkbox"/> Gas Sample Tube | |
| <input type="checkbox"/> Wall (native stone) | <input type="checkbox"/> Drain Pipe | |
| <input checked="" type="checkbox"/> Backfill | <input type="checkbox"/> Warning Sign | |

Closure condition at time of monument installation: good needs maintenance

COMMENTS:

Monument at ^{top} center of Backfill



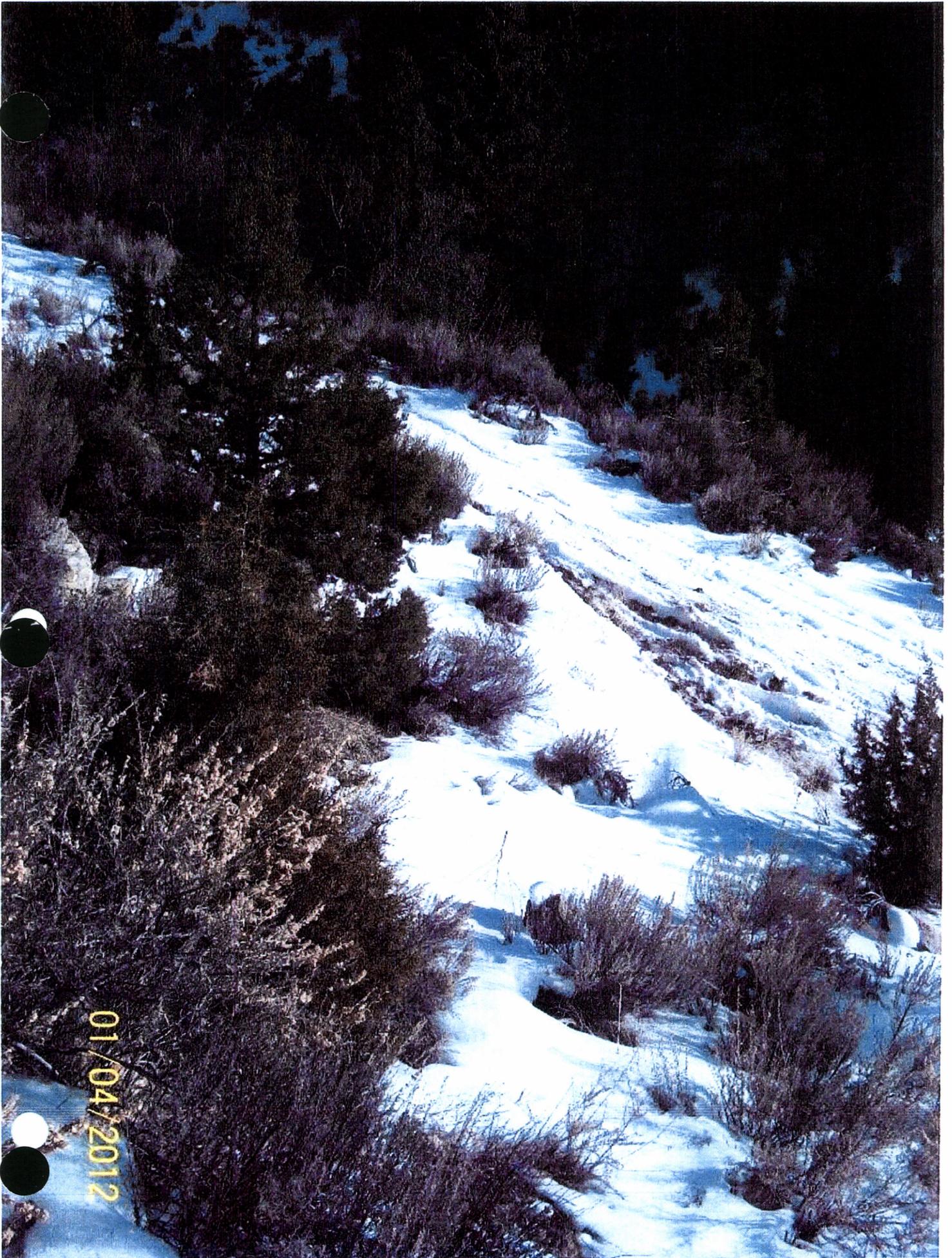
B CANYON PORTAL - ONE PORTAL CONNECTS TWO ENTRIES
P38 OR P39



B CANYON PORTAL
P38 OR P39

ATTACHMENT 3

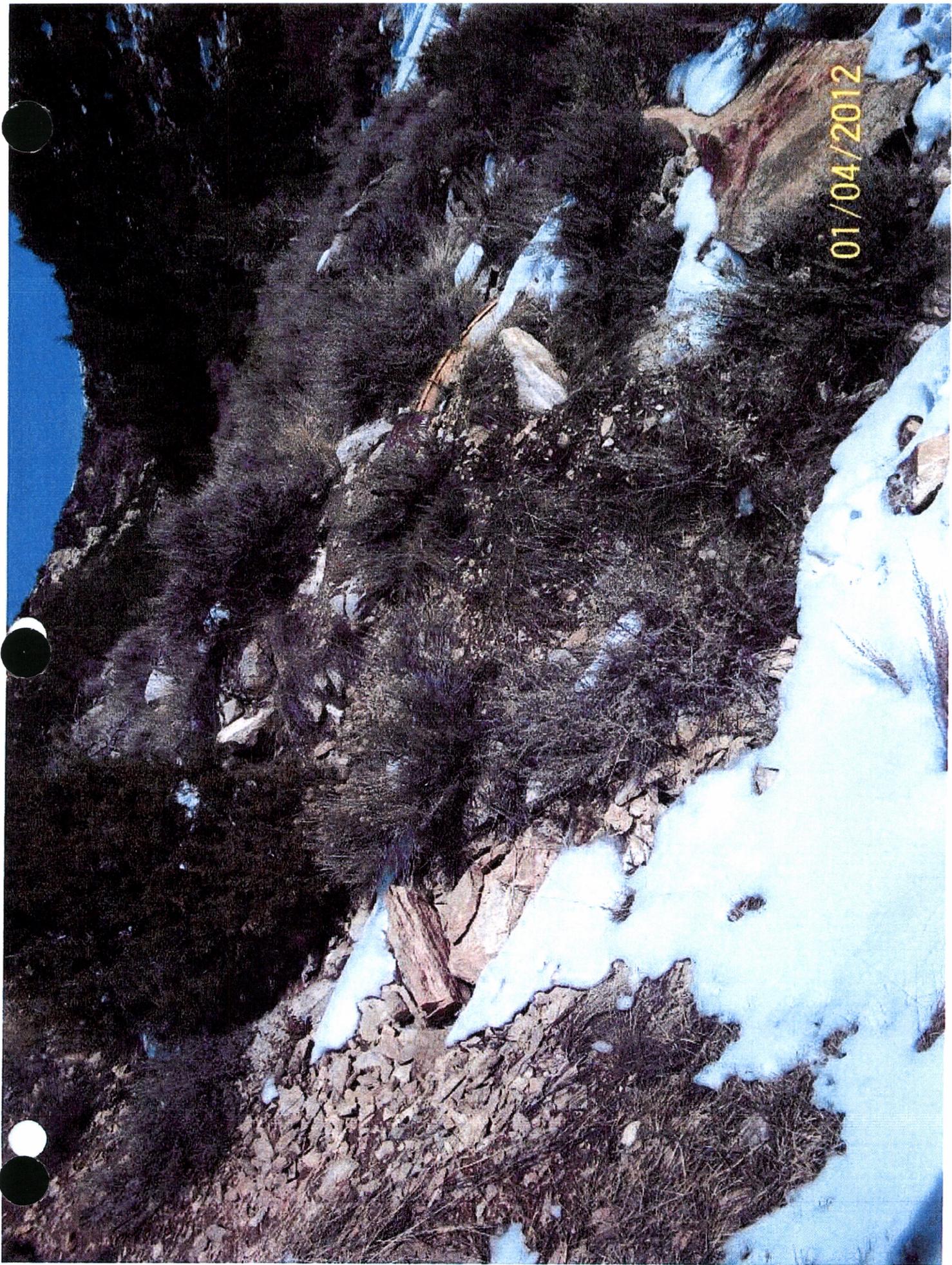
PHOTOS OF EXISTING PORTAL AREA



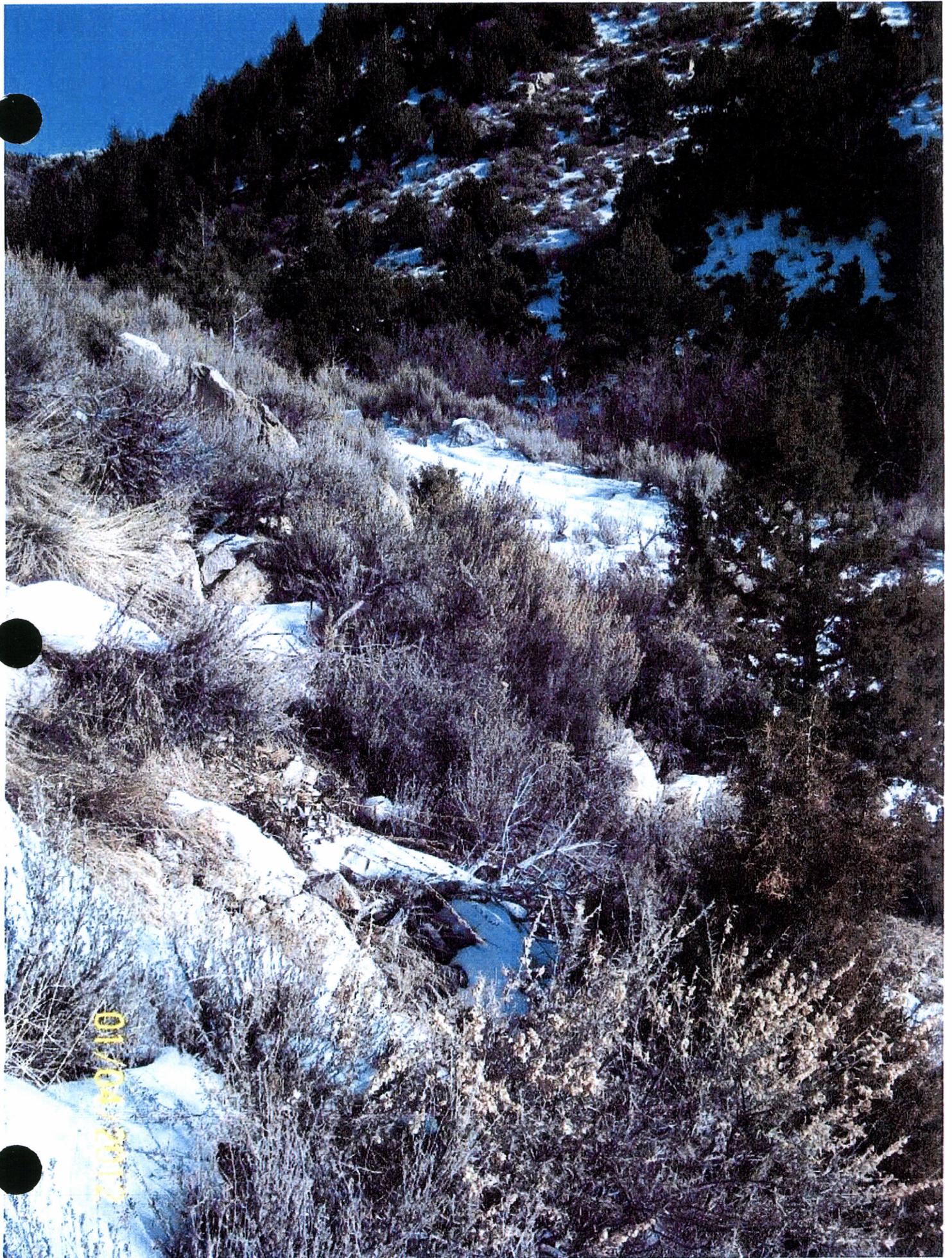
01/04/2012

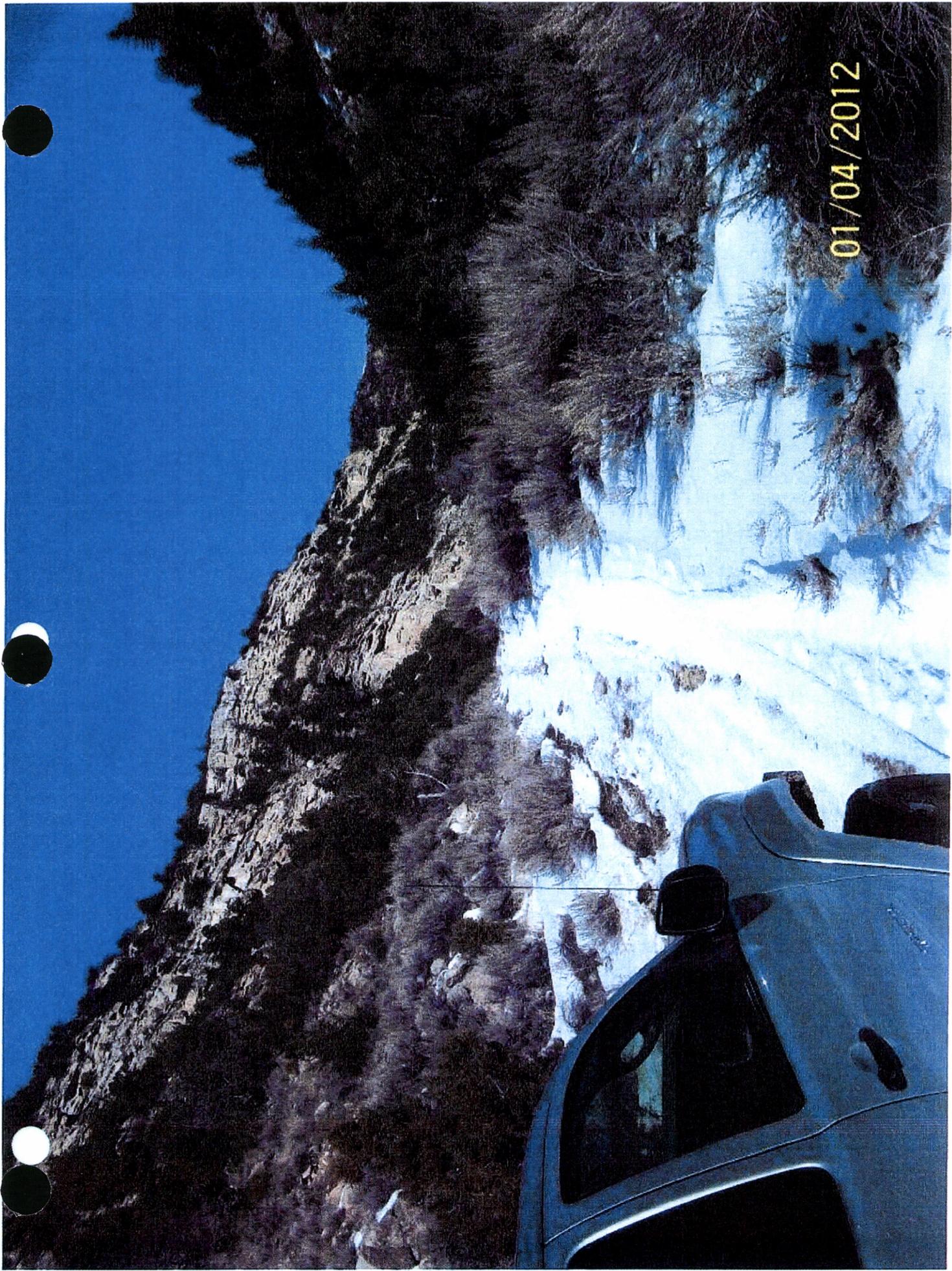




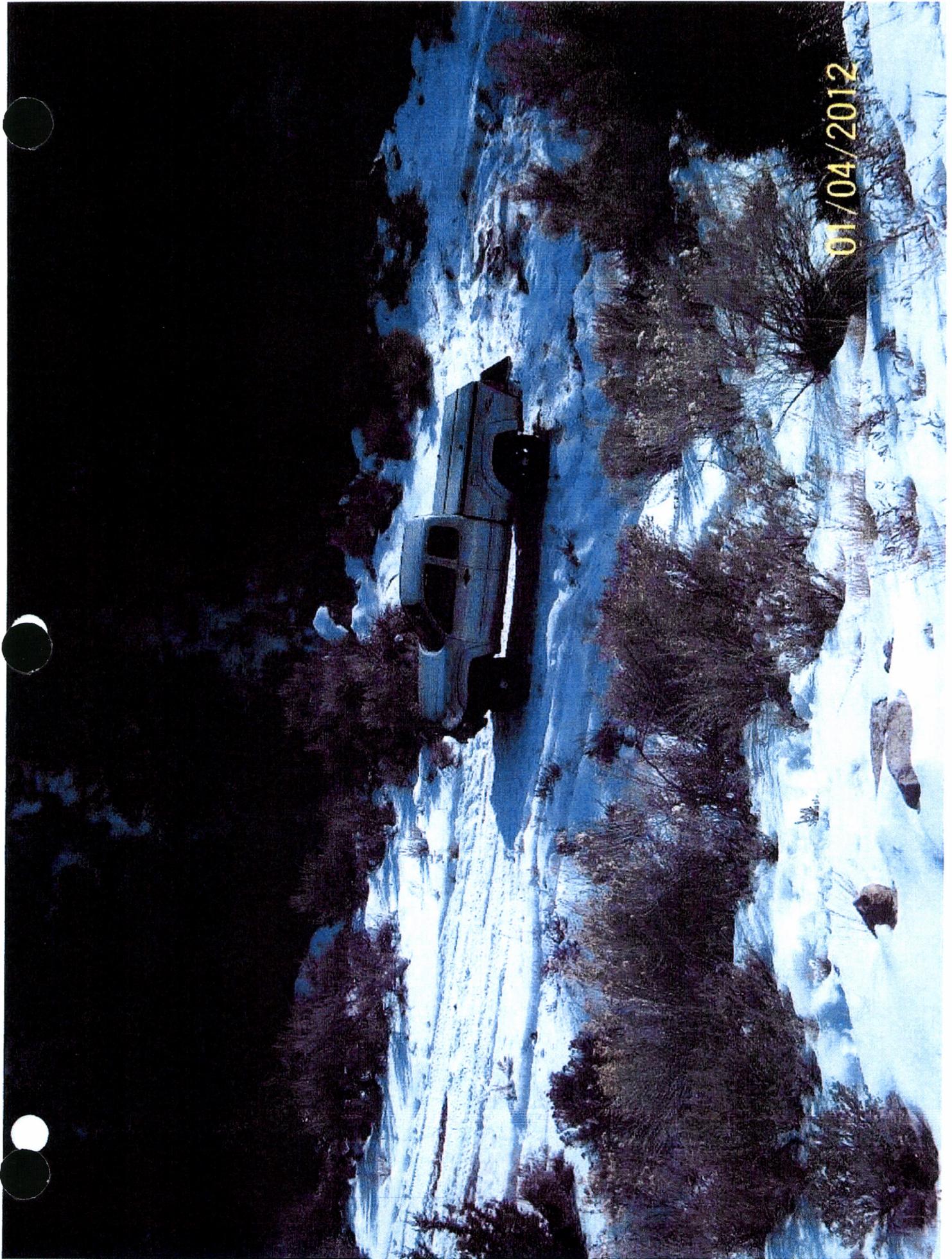


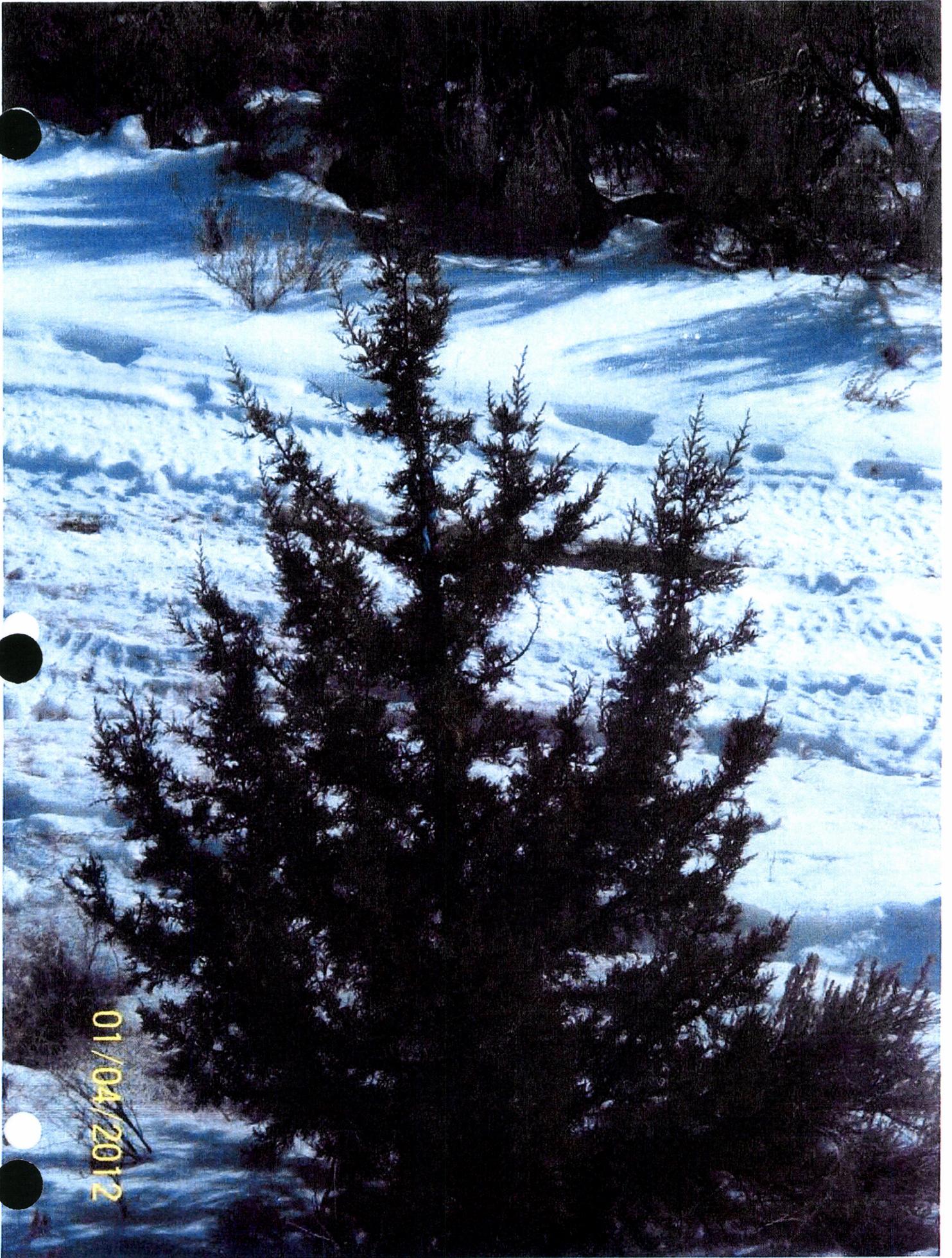
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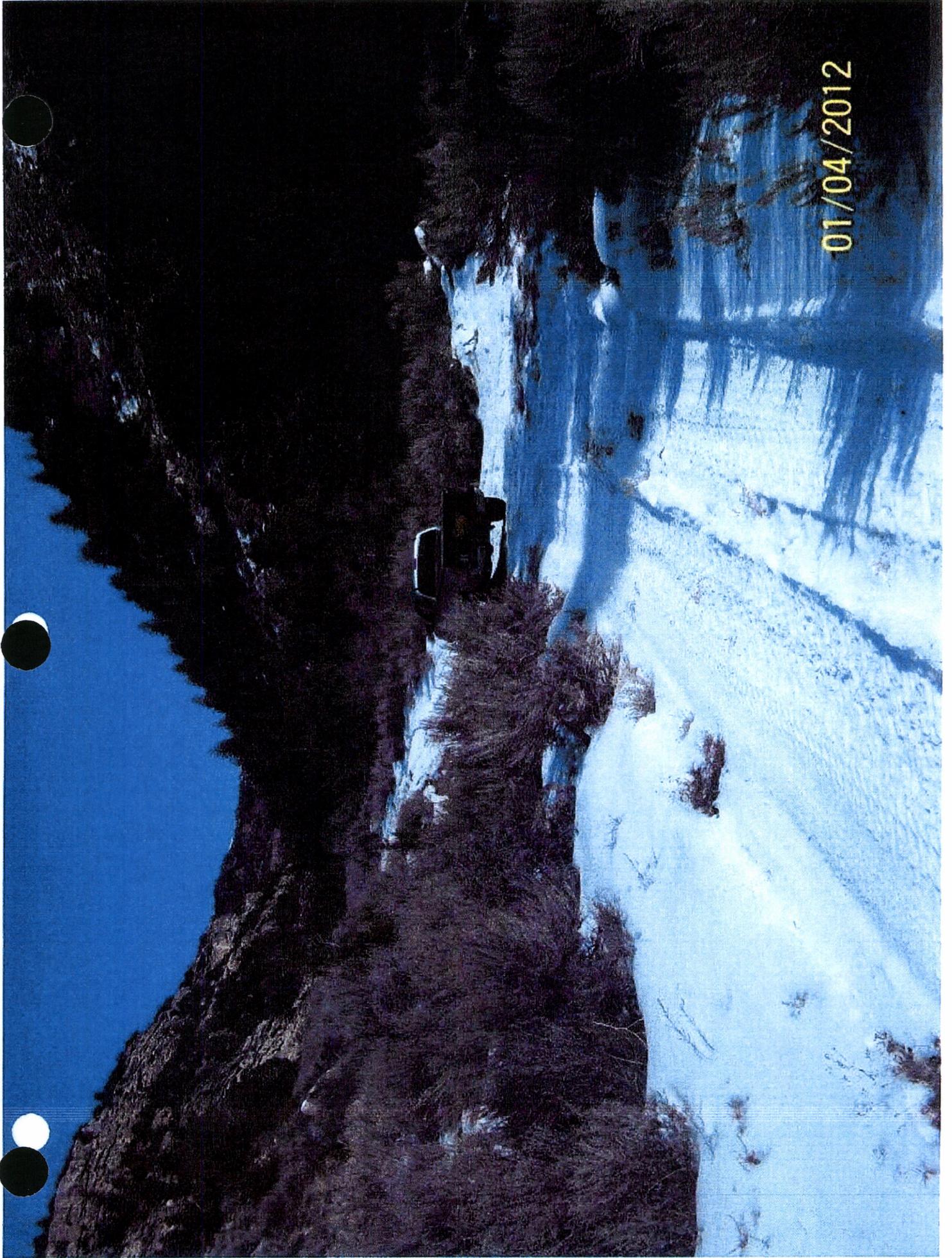


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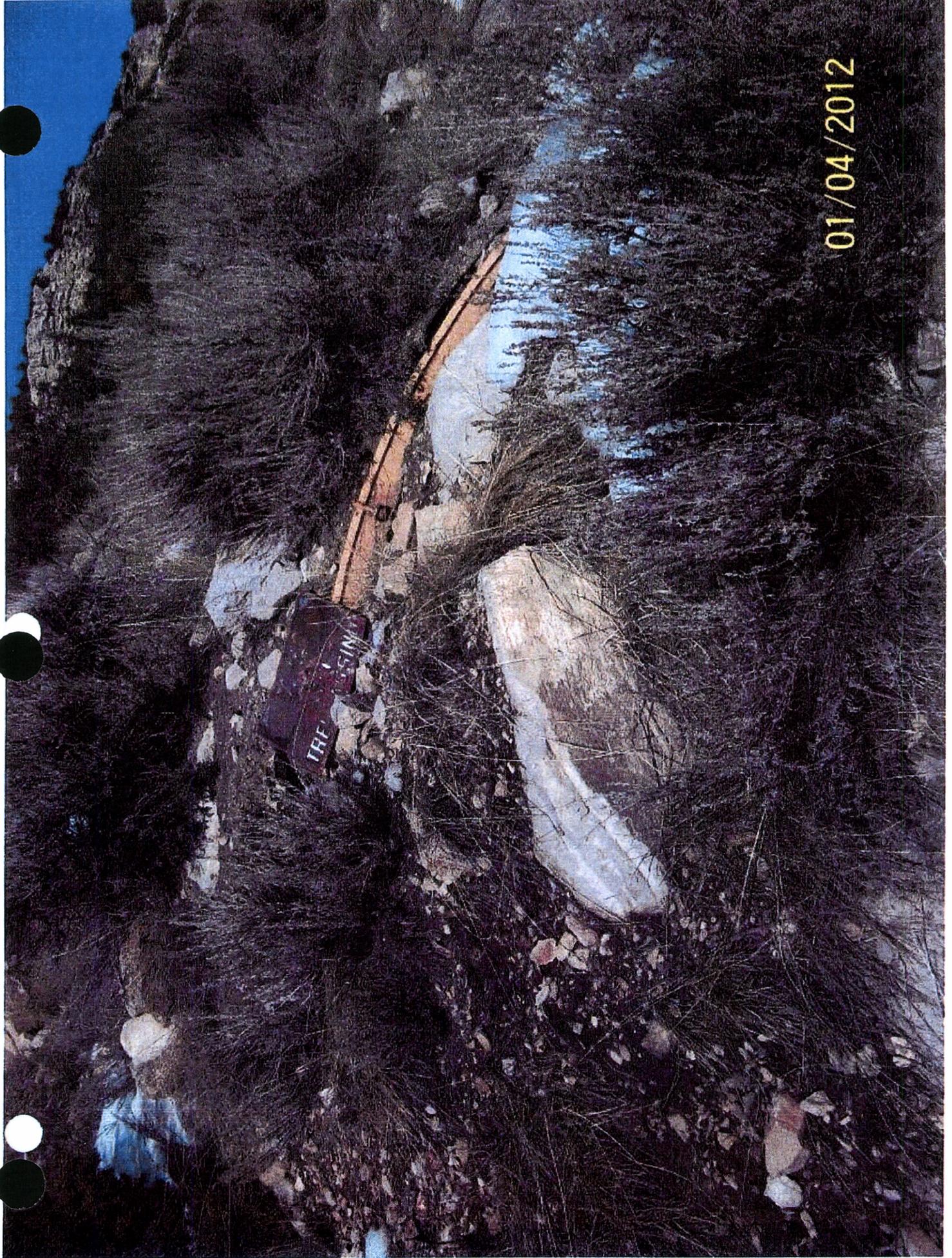




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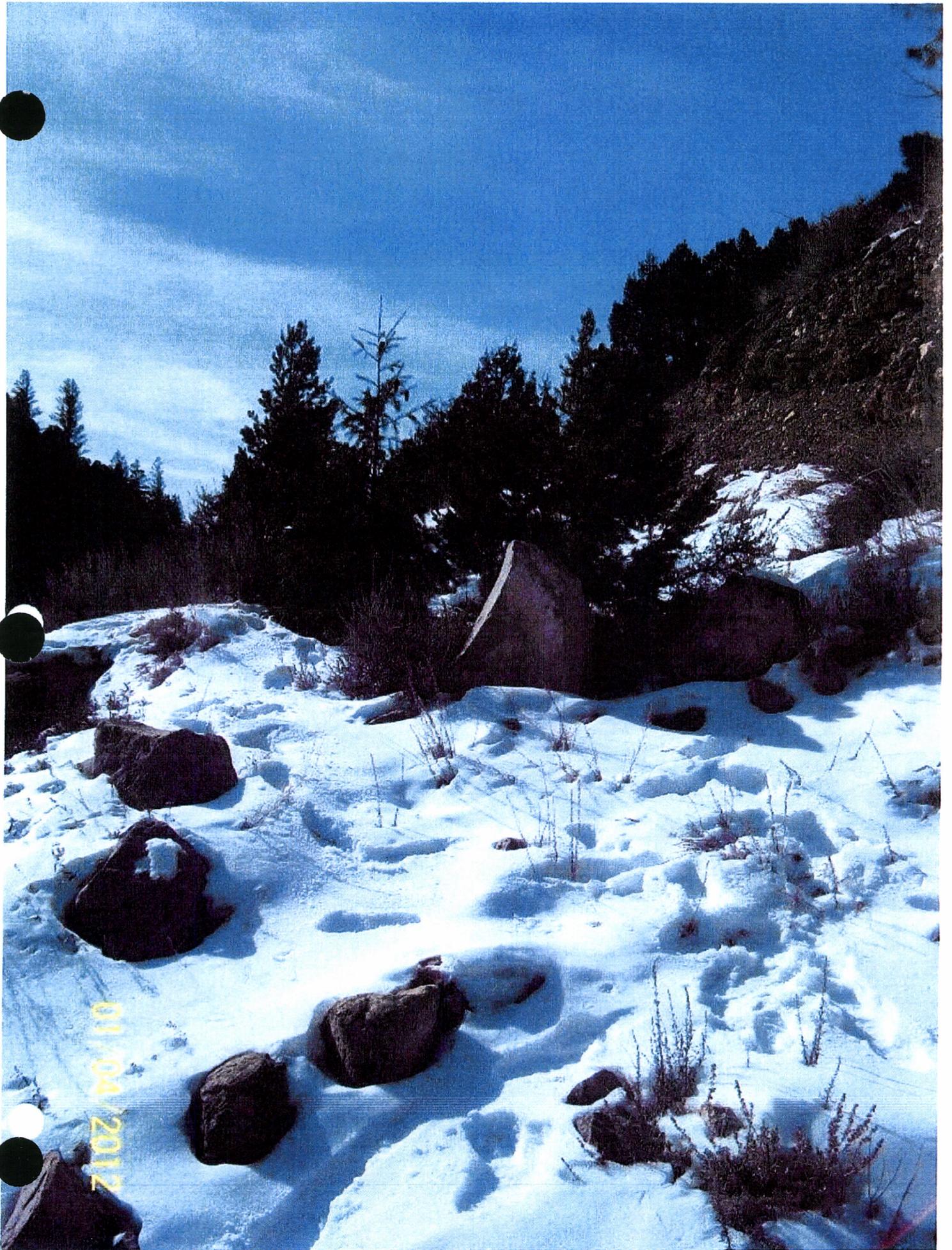


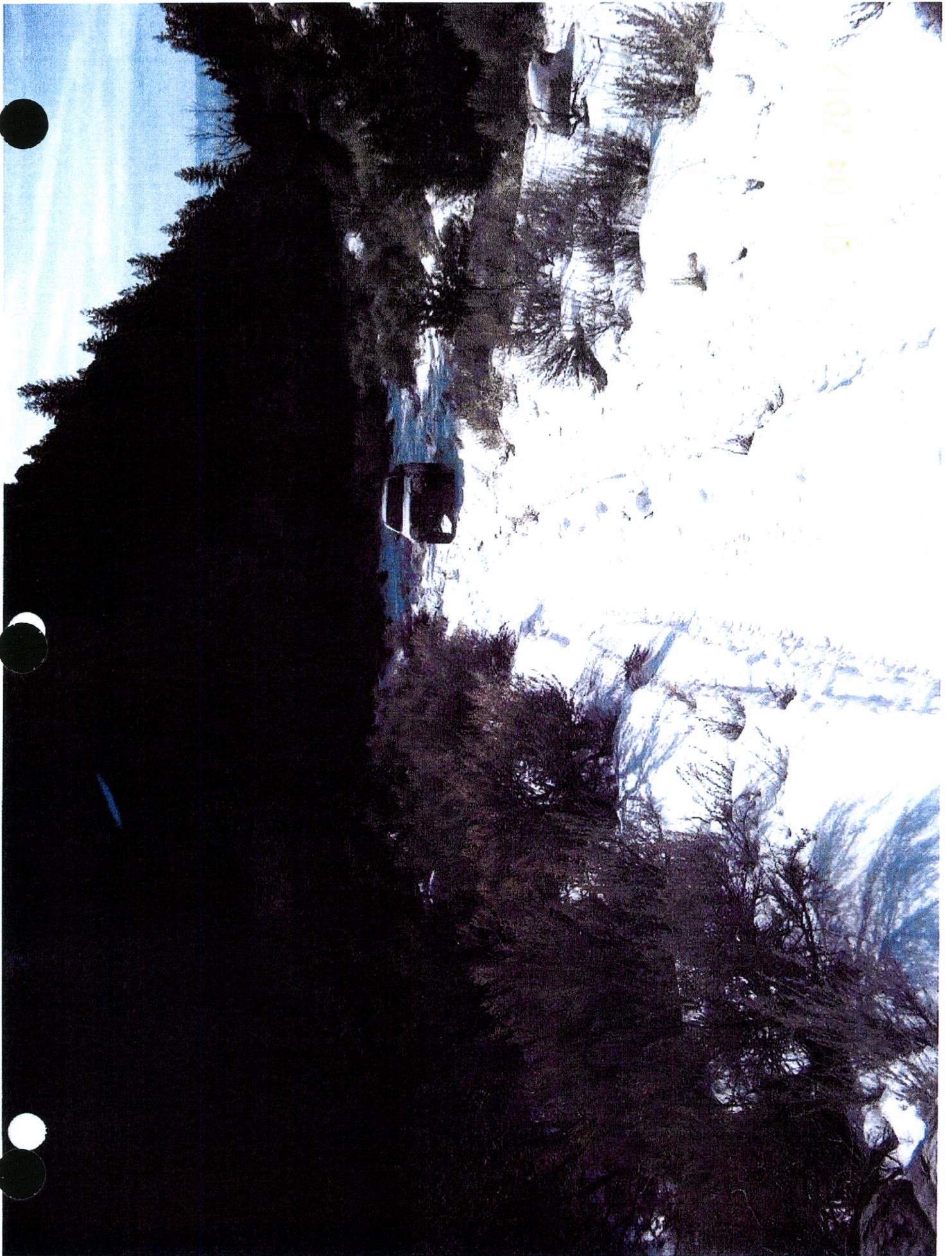
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THE ...







ATTACHMENT 4

ORDER 2 SOILS SURVEY (RELEVANT EXCERPTS)

LONG RESOURCE CONSULTANTS

Order 2 Soil Survey
of
B Canyon Gas Vent Hole
B Canyon Road
Whitmore Canyon Gas Vent Hole
at
West Ridge Mine Area

Prepared by

Robert E. Long, CPSS
Long Resource Consultants, Inc.
1960 W Deep Creek Road
Morgan, Utah 84050
(801) 791-3447

for

Utah American Energy.
WEST RIDGE MINE
794 "C" Canyon Road
East Carbon, Utah 84520

May 4, 2010

B Canyon Road

Purpose of Soil Resource Assessment

The purpose of this soil resource assessment conducted along a portion of the B Canyon Road was to determine native topsoil depths. The intended use of this information was to determine:

- Potential topsoil suitability and salvage depths in areas where additional road development will be required.
- Depths of topsoil and topsoil-subsoil mixture that will need to be placed over the previously disturbed portion of the roadway for reclamation in order to achieve depths of suitable material similar to adjacent native soils.

General Description

The B Canyon Road traverses alluvial fans, stream terraces, and canyon sideslopes up to the proposed B Canyon Gas Vent Hole (GVH) location. Elevation ranges from 6,850 feet on the southwest end to approximately 7,280 feet at the B Canyon GVH site. Slopes range from 3 to 25 percent on the alluvial fans and stream terraces and from 30 to nearly 90 percent on the canyon sideslopes. The length of the evaluated portion of B Canyon Road was approximately 8,530 feet.

The portion of B Canyon Road covered by this assessment is in Sections 14, 15 (SE/4), and 22 (NE/4), Township 14 South, Range 13 East, Salt Lake base meridian.

All sections of the B Canyon Road have been previously disturbed to some extent. The road is visible on the black and white Sunnyside digital orthophoto quadrangle (Utah GIS Portal, 2009) from the mid 1990's. The road surface of segments 1 through 5 was improved by grading just prior to this soil resource assessment to a width that allows by light duty vehicles and equipment. The improved road terminated in the lower portion of segment 6. The road crosses a stream terrace and is just wide enough for ATV travel in the upper segment 6. Segment 7 is an old access road that is only wide enough for an ATV. A portion of the trail in segment 7 traverses through the B Canyon ephemeral drainage.

Soil materials removed during the most recent work on the road were generally bladed into a berm along the down-slope side of the B Canyon Road. This material will need to be pulled back across the road when it is reclaimed. The soil has cascaded down the slope in areas where the road traverses steep and very steep slopes.

Soil materials removed from the roadway prior to this resource assessment appeared to be a mixture of topsoil and subsoil.

Vegetation

The B Canyon Road traverses the following vegetative communities from the lower end to the B Canyon GVH site:

- Utah juniper – Pinyon pine
- Pinyon pine – Utah juniper
- Pinyon pine – Utah juniper – Rocky mountain maple - Mountain brush
- Wyoming big sagebrush
- Pinyon pine – Utah juniper
- Rocky mountain juniper – Rocky mountain maple – Douglas fir
- Douglas fir – Rocky mountain maple

NRCS Soil Map Units

The B Canyon Road crosses NRCS soil map units 37, 62, 95, 96, 113 (USDA- NRCS, Carbon Area, Parts of Carbon and Emery Counties, Utah, September 2009), figure 1.

NRCS soil map unit 37, Gerst – Strych – Badland complex, 50 to 70 percent slopes, is crossed by the B Canyon Road in segments 2, 3, 4, and 5. This NRCS map unit is typically located on very steep south facing slopes. Strych soils are a minor component in segment 2. Map unit 37 soils were not identified in road segments 3, 4, and 5.

NRCS soil map unit 62, Midfork family – Comodore complex, 50 to 70 percent slopes, is crossed by the B Canyon road in segments 5 and 6. Midfork family and Comodore soils have mollic epipedons (dark surfaces) and were not identified in these segments. Native vegetation indicated that the soil temperature was frigid rather than cryic for the Midfork family. The Cortyzack soil identified at B-7-09 is similar to Midfork family, but frigid. A soil similar to Comodore (Modo) was identified at B-8-09, but it did not have a mollic epipedon.

NRCS soil map unit 95, Rock outcrop, is crossed in B Canyon Road segments 3, 6, and 7. This NRCS map unit does not have any developed soils as major components. The soils identified by the B Canyon Road soil assessment were well developed and rock outcrop was a minor component.

NRCS soil map unit 96, Rock outcrop – Rubbleland – Travessilla complex, is crossed by B Canyon Road in the upper portion of segment 7. The soils identified by the B Canyon Road soil assessment were more developed than those described by this NRCS map unit.

NRCS soil map unit 113, Strych very stony loam, 3 to 15 percent slopes, is crossed by B Canyon Road segment 1 and the lower portion of segment 2. Strych soils were identified in segment 1 and are a minor component in segment 2.



Figure 1.
NRCS Soil Map Units along
B Canyon Road

Prepared for: **UtahAmerican Energy, Inc.**
West Ridge Mine
 Prepared by:
Long Resource Consultants, Inc.

Legend

- NRCS Soil Survey
- ▲ Soil Pedons

Feet

0 500 1,000 2,000 3,000

April 22, 2010

Soil Map Units

The B Canyon Road was divided into 7 segments or soil map units based on soil types, vegetation, aspect, and slope, figure 2. Aspect is west in segment 1, northwest in segments 2, 3, and 5, and southeast in segments 4, 6 and 7. Slopes range from 3 to nearly 90 percent. Soil temperature is mesic in segment 1 and frigid in the other road segments with some potentially cryic pockets in the bottom of the canyon and near the upper end of the road. Precipitation ranges from approximately 14 inches at the lower end of the B Canyon Road to 20 inches or greater at the B Canyon GVH site.

Table 1 lists the dominant soil types and typifying soil pedons for each segment of the B Canyon Road. The results of laboratory analysis for each of the typifying soil pedons are in appendix 1. Soil profile descriptions are in appendix 2. Field data sheets for the soil pedons described

Table 1. Soil segments and dominant soils in segments along B Canyon Road.

Road Segment	Percent	Soil Segment Name Component	Typifying Soil Pedon
1	<u>Strych very cobbly sandy clay loam, 8 to 25 percent slopes</u>		B-12-09
	90	Strych very cobbly sandy clay loam	
	10	Notter family sandy loam	
2	<u>Notter family sandy loam, 8 to 16 percent slopes</u>		B-11-09
	85	Notter family sandy loam	
	10	Strych very cobbly sandy clay loam	
	5	Wildmount very channery sandy loam	
3	<u>Wildmount very channery sandy loam, 20 to 70 percent slopes</u>		B-10-09
	85	Wildmount very channery sandy loam	
	12	Notter family sandy loam	
	3	Lakebench channery sandy loam	
4	<u>Lakebench very channery sandy loam, 5 to 16 percent slopes</u>		B-9-10
	80	Lakebench very channery sandy loam	
	10	Wildmount very channery sandy loam	
	10	Cortyzack cobbly loam	
5	<u>Cortyzack - Modo complex 35 to 70 percent slopes</u>		B-7-09 B-8-09
	75	Cortyzack cobbly loam	
	20	Modo sandy loam	
	3	Lakebench very channery sandy loam	
	2	Rock Outcrop	
6	<u>Amalia family – Foy complex, 3 to 80 percent slopes</u>		B-6-09 B-5-09
	65	Amalia family	
	30	Foy very gravelly loam	
	5	Cortyzack cobbly loam	

Table 1, continued. Soil segments and dominant soils in segments along B Canyon Road.

Road Segment	Percent	Soil Segment Name Component	Typifying Soil Pedon
7		<u>Foy very flaggy sandy loam, 45 to 88 percent slopes</u>	
	73	Foy very flaggy sandy loam	B-4-09
	12	Foy very gravelly loam	
	8	Modo sandy loam	
	5	Midfork family	
	2	Rock Outcrop	

The taxonomic classification of the major soils along the B Canyon Road is contained in table 2. These classifications were determined using the *Keys to Soil Taxonomy, Eleventh Edition* (USDA – NRCS, 2010).

Table 2. Taxonomic classification (USDA- NRCS, 2010) of dominant soils along B Canyon Road.

Series/Family	Taxonomic Classification
Amalia	Calcic Haplustalfs loamy-skeletal, mixed, superactive, frigid
Cortyzack	Calcic Argiustolls coarse-loamy, mixed, superactive, frigid
Foy	Typic Calcustepts loamy-skeletal, mixed, superactive, frigid
Lakebench	Aridic Calcustepts coarse-loamy, mixed, superactive, frigid
Modo	Lithic Haplustepts loamy, mixed, superactive, frigid
Notter	Calcic Argiustolls fine-loamy, mixed, superactive, frigid
Strych	Ustic Haplocalcids loamy-skeletal, mixed, superactive, mesic
Wildmount	Aridic Calcustepts loamy-skeletal, mixed, superactive, frigid

Photos of each of the B Canyon Road soil profiles are contained in the "B Canyon Road Photos" section of this report.

Segment Descriptions

1 Strych very cobbly sandy clay loam, 8 to 25 percent slopes

Segment 1 consists of very deep soils on an undulating to moderately steep alluvial fan at the lower end of the B Canyon Road. Soils in this area are warmer (mesic) than the other road segments due to the westerly aspect and lower elevation. Soil profile B-12-09 is representative

of Strych soils in this segment. These soils have a gravelly or cobbly surface with a few scattered stones and boulders. Organic matter decreases and carbonates increase at 30 cm (12 inches).

Also included in this segment are Notter family soils on the steeper north facing slopes.

Vegetation is dominated by Utah juniper with some pinyon pine.

2 Notter family sandy loam, 8 to 16 percent slopes

Segment 2 consists of very deep soils on a strongly sloping alluvial fan where the aspect changes to northwest. These soils have a dark surface (mollic). The northwest aspect results in these soils being cooler (frigid) than soils in segment 1. The surface has a few scattered channers and flags. Soil profile B-11-09 is representative of Notter family soils in this segment. Organic matter decreases and carbonates increase at 29 cm.

Also included in this segment are Strych soils on moderately steep south facing slopes and Wildmount soils on the steep north to northeast facing slopes.

Vegetation is dominated by pinyon pine with some Utah juniper.

3 Wildmount very channery sandy loam, 20 to 70 percent slopes

Segment 3 consists of very deep soils on steep to very steep northwest to northeast facing canyon sideslopes. The surface has a variety of rock fragments with gravels and channers being dominate. Soil profile B-10-09 is representative of Wildmount soils in this segment. Organic matter decreases at 56 cm and carbonates increase below 33 cm.

Also included in this segment are Notter family soils on the alluvial fans and Lakebench soils on the stream terraces.

Vegetation is dominated by pinyon pine with Utah juniper, alderleaf mahogany, Utah serviceberry, and Wyoming big sagebrush.

4 Lakebench very channery sandy loam, 5 to 16 percent slopes

Segment 4 consists of very deep soils on south to northwest facing stream terraces along the ephemeral drainage in B Canyon. The surface is very channery with a few scatterd flags, stones,

and boulders. Soil profile B-9-09 is representative of Lakebench soils in this segment. Organic matter decreases at 10 cm and carbonates increase below 30 cm.

Also included in this segment are Wildmount soils on steep canyon sideslopes and Cortyzack soils on very steep canyon sideslopes.

Vegetation is dominated by Wyoming big sagebrush, rabbitbrush, and grasses.

5 Cortyzack - Modo complex 35 to 70 percent slopes

Segment 5 consists of a complex of very deep and shallow soils on steep to very steep northwest to north facing canyon sideslopes. The very deep Cortyzack soils have a dark (mollic) cobbly surface, B-7-09. Soil colors indicate a change from topsoil to subsoil at 25 cm, while organic matter and carbonates are variable in the upper 90 cm of the profile. The shallow Modo, B-8-09, soils are located near rock outcrops.

Also included in this segment are Lakebench soils on stream terraces and rock outcrop.

Vegetation is dominated by pinyon pine on the Cortyzack soils and mountain brush on the Modo soils. Big sagebrush, mountain snowberry, Douglas fir, rocky mountain maple, and grasses are also present.

6 Amalia family – Foy complex, 3 to 80 percent slopes

Segment 6 consists of very deep soils on southwest to southeast facing stream terraces and very steep canyon sideslopes. Soil profile B-6-09 is representative of Amalia soils and B-5-09 is representative of Foy soils in segment 6. Amalia soils are on the stream terrace and Foy soils are on canyon sideslopes near rock outcrops. Amalia soils have a gravelly surface while Foy soils have a very gravelly surface with scattered stones and boulders. Organic matter decreases and carbonates increase at 52 cm in the Amalia soils. Carbonates increase at 70 cm in the Foy soils.

Soil profile B-6-09 was described near an area that appeared to be a closed mine opening. Very fine and fine coal fragments (visually 2 to 4 percent) were observed between 12 and 52 cm in this soil profile. Total organic carbon laboratory analysis results ranged from 1.0 to 3.7 percent in these horizons which is suitable based on the Utah DOGM guidelines (Utah DOGM, 2005).

Also include in this segment are Cortyzack very cobbly soils on the sides of stream terraces and north facing canyon sideslopes.

Vegetation is dominated by big sagebrush on the stream terrace and pinyon pine on the canyon sideslope.

7 Foy very flaggy sandy loam, 45 to 88 percent slopes

Segment 7 consists of very deep soils on southeast facing canyon sideslopes. Soil profile B-4-09 is representative of Foy soils in this segment. Field observations indicated that carbonates increase at 138 cm, but laboratory data indicates no appreciable difference in the profile. Organic matter decreases at 78cm which corresponds with lighter soil colors below this depth.

Also included in this segment are Midfork family soils on north facing slopes near the upper end of the segment and shallow MODO soils near rock outcrop areas.

Vegetation is dominated by rocky mountain juniper, and Douglas fir. Rocky mountain maple is dominant in the bottom of the canyon.

Topsoil Resource

The depth of topsoil increases with elevation, figure 2. Table 3 lists the estimated average topsoil depths for each road segment along with the dominant vegetation type, and limiting features of the soils. The estimated average topsoil depth is 30 cm (12 inches) in road segments 1 through 5. Road segment 6 has an estimated average topsoil depth of 50 to 70 cm (20 to 28 inches). Average topsoil depths in road segment 7 are as deep as 138 cm with localized shallow areas near rock outcrops.

Topsoil depths vary along each segment of the B Canyon Road. Topsoil salvage from undisturbed areas should be monitored by a Certified Professional Soil Scientist. The presence of large stones, boulders, and rock outcrop will be limiting to topsoil salvage and replacement.

Topsoil in areas where the road was graded prior to this soils evaluation should be stockpiled in approved areas, so that it can be protected from erosion and road maintenance operations. The topsoil will need to be pulled back up the slope in areas where the road crosses steep to very steep canyon sideslopes.

Laboratory analysis of the soil profiles along the B Canyon Road did not identify any "Unacceptable" (Utah DOGM, 2005) properties in any of the analyzed materials. The most limiting soil features are *Fair* (Utah DOGM, 2005) levels of pH, saturation percent, texture, and carbonates in some of the soil horizon samples.

Table 3. Estimated topsoil depths for each segment of the B Canyon Road.

Road Segment	Length feet	Vegetation Type	Soil Temp Regime	Estimated Average Topsoil Depth cm (inches)	Limiting features
1	1,592	Utah juniper – Pinyon pine	mesic	30 cm (12 inches)	>40% rock fragments throughout profile; carbonates increase below 30 cm; organic matter decreases below 30 cm
2	1,522	Pinyon pine – Utah juniper	frigid	30 cm (12 inches)	>40% rock fragments below 29 cm; carbonates increase below 29 cm; organic matter decreases below 29 cm
3	1,097	Pinyon pine – Utah juniper	frigid	30 cm (12 inches)	>40% rock fragments throughout profile; carbonates increase below 33 cm
4	539	Big sagebrush	frigid	30 cm (12 inches)	carbonates with strong to violent effervescence below 30 cm; 45% rock fragments below 105 cm
5	1,126	Pinyon pine – Utah juniper Douglas fir – Mountain brush	frigid	25 to 30 cm (10-12 inches)	Cortyzack: >35% rock fragments below 25 cm; organic matter decreases below 25 cm. Modo: shallow soils
6	767	Big sagebrush – Pinyon pine	frigid	50 to 70 cm (20-28 inches)	Amalia: disturbed soils; carbonates increase below 52 cm; organic matter decrease below 52 cm; >35% rock fragments above 52 cm Foy: extremely slopes; carbonates increase below 70 cm; >40% rock fragments throughout profile; rock outcrops in area
7	1,887	Rocky mountain juniper – Douglas fir	frigid	78 to 138 cm (30-54inches)	Foy: extremely slopes; soil colors lighter below 78 cm; carbonates increase below 138 cm; >35% rock fragments throughout profile
Total	8,530				

Results of the laboratory analysis indicate that existing mixtures of topsoil and subsoil should result in materials that have at least a *Fair* suitability (Utah DOGM, 2005). Representative samples of the soil in berm and other stockpiles should be sampled and analyzed prior to placement in stockpiles.

Estimated available water capacities (AWC) were estimated (Saxton 2009) and are generally fair with some good and two poor values for some horizons. The estimated AWC values which were Poor along the B Canyon Road were B-7-09 (90 to 123 cm) and B-9-09 (105 to 155cm). Both of these horizons have greater than 35 percent rock fragments and are below the topsoil salvage depth of 30 cm (12 inches) for road segments 4 and 5.

Calculated K factor values were all good along the B Canyon Road.

Reclamation

Reclamation potential is good along the full length of the B Canyon Road. The reclamation plan will need to mitigate the potential soil erosion problems due to the steep to very steep traversed by the existing road alignment. Species and density of reclamation vegetation will be dependent on elevation, aspect, and effective precipitation. Reclamation seed mixes will need to account for these factors.

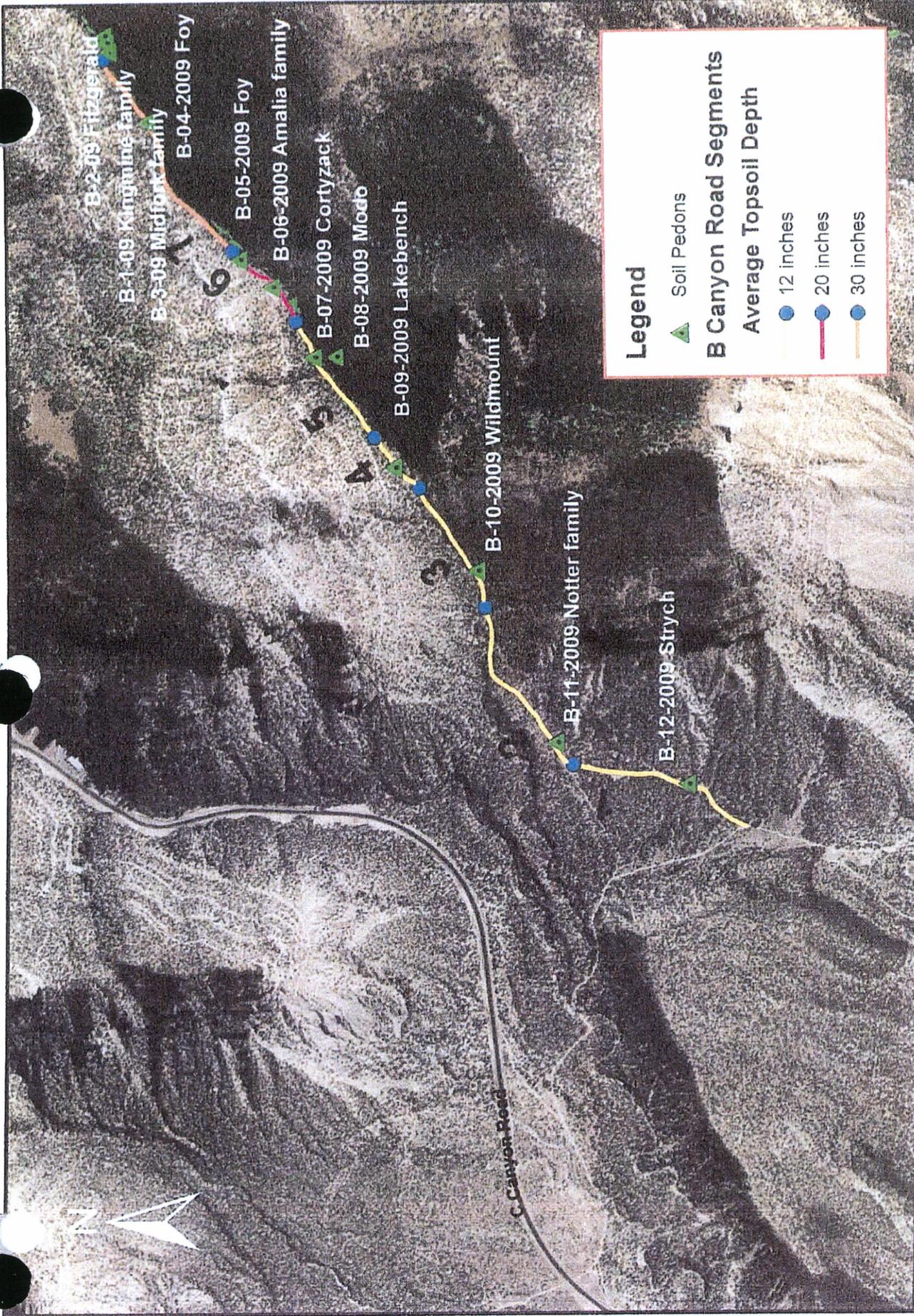


Figure 2.
B Canyon Road
Soil Resource Assessment

Prepared for: **UtahAmerican Energy, Inc.**
West Ridge Mine

Prepared by:
Long Resource Consultants, Inc.

0 500 1,000 2,000 3,000
 Feet

April 22, 2010



Photo 4. Looking north-northwest up broken 86 percent sloped at B Canyon Road soil profile location B-5-09. Foy soil has formed in slope alluvium from inter-bedded sandstone and shale. Large sandstone outcrops are present upslope of this location. This soil profile is near the lower end of the narrow portion of the trail through B Canyon.

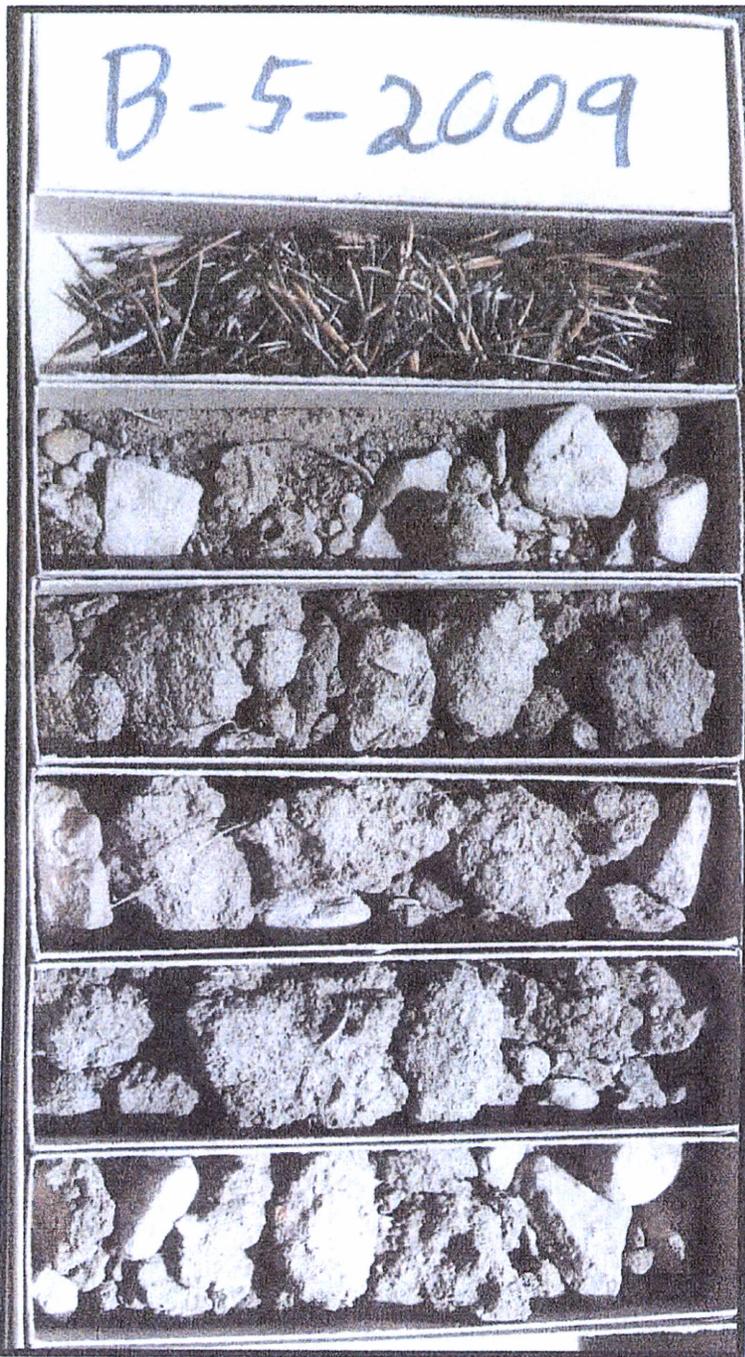


Photo 5. B-5-09 soil profile box, Foy series, Typic Calcustepts loamy-skeletal, mixed, superactive, frigid.



Photo 6. B Canyon Road soil profile B-5-09, Foy soil; Aridic Calcicustpets loamy-skeletal, mixed, superactive, frigid. Profile is located in roadcut on north side of trail.



Photo 7. Looking south across B Canyon Road soil profile location B-6-09 (disturbed area in lower center) and B Canyon Road (center). This location is at the upper end of the portion of B Canyon Road that had been graded prior to the soils assessment. Native vegetation at location 6 consisted of big sagebrush, scattered young Utah junipers, rabbitbrush, and intermediate wheatgrass.



Photo 8. Looking northeast across soil profile location B-6-09. The area appeared to have been previously disturbed for some type of mine opening. The area had been reclaimed.



Photo 9. Soil profile location B-6-09, disturbed Amalia family; Calcidic Haplustalf loamy-skeletal, mixed, superactive, frigid. Rock fragments are concentrated in the upper 52 cm (20 inches) of the soil profile.

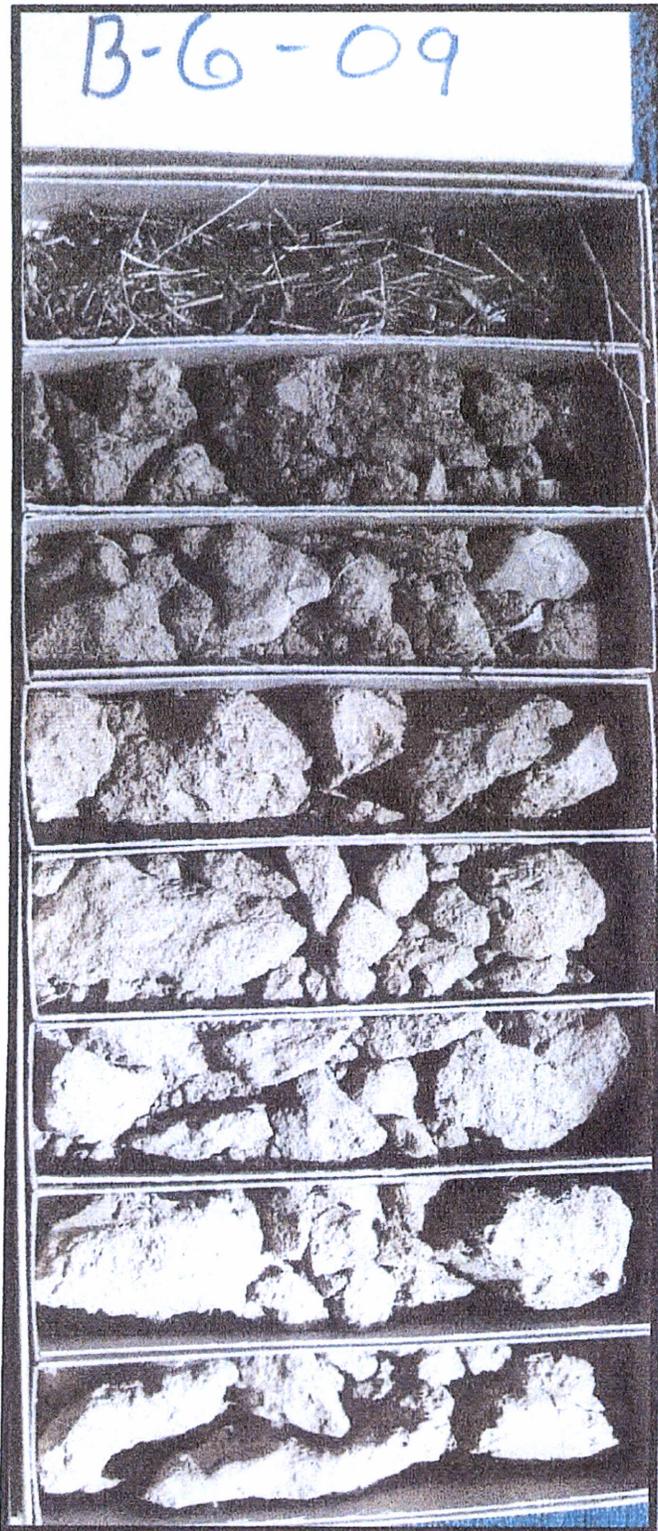


Photo 10. B-6-09 soil profile box, Amalia family, Calcic Haplustalf loamy-skeletal, mixed, superactive, frigid.



Photo 11. Looking southwest across B Canyon Road soil profile location B-7-09. Native vegetation consists of Pinyon pine, Utah juniper, Douglas fir, Wyoming big sagebrush, bluegrass, and wheatgrasses. The northwest facing canyon sideslope has a slope of 45 percent.



Photo 12. B Canyon Road soil profile B-7-09, Cortyzack soil; Calcic Argiustolls coarse-loamy, mixed, superative, frigid. Surface was covered with 3 cm (1.18 inches) of partially decomposing needles, twigs, and cones.

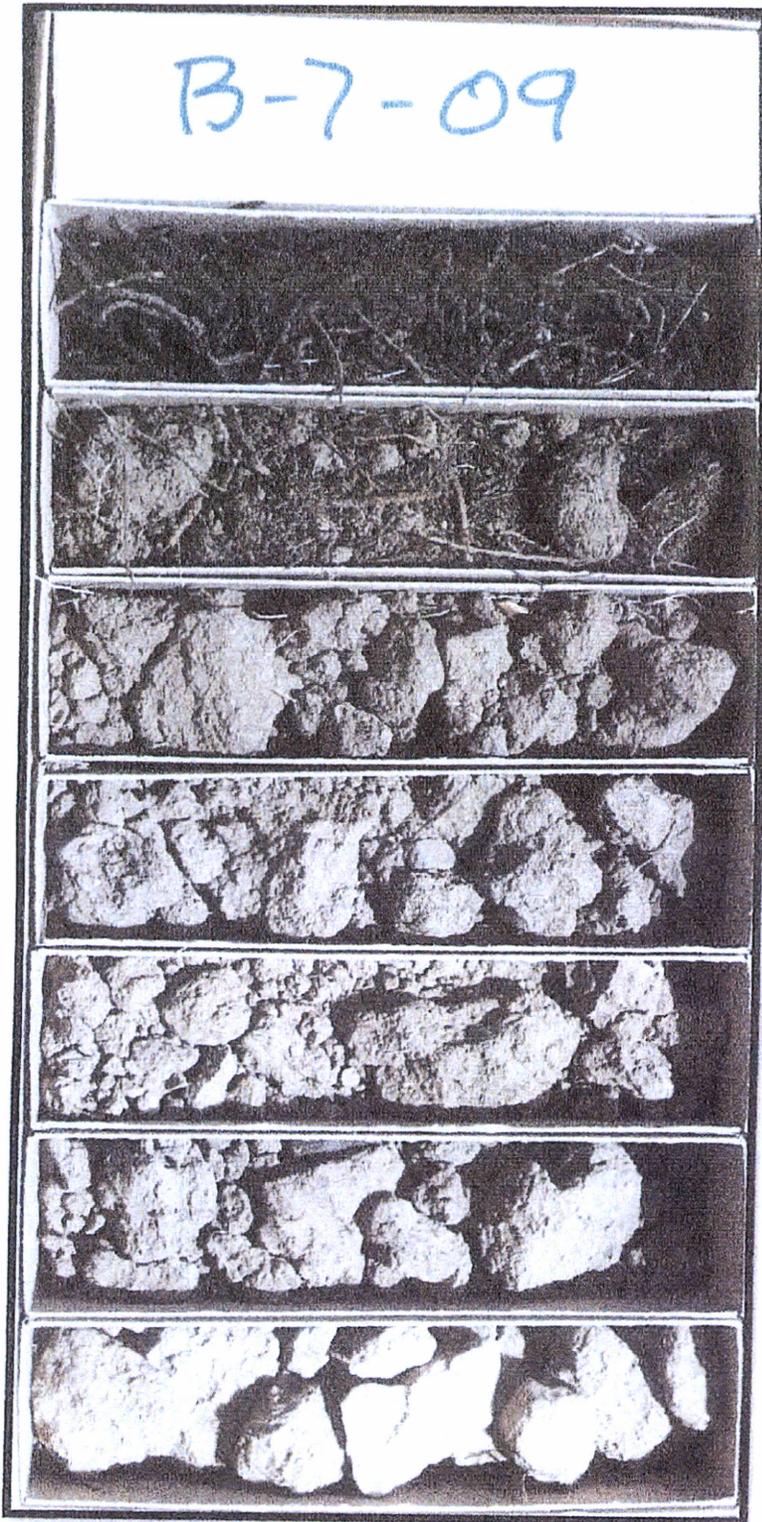


Photo 13. B-7-09 soil profile box, cotyzack series, Calcic Argiustolls coarse-loamy, mixed, superactive, friigd.

Whitmore Canyon GVH, B Canyon GVH, and B Canyon Road Laboratory analysis results of soil samples collected in fall 2009. Suitability ratings are based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005).

Soil Sample Identification	Begin Depth cm	End Depth cm	pH	Saturation %	Electrical Conductivity dS/m	Organic Matter %	PE Calcium meq/L	PE Magnesium meq/L	PE Potassium meq/L	PE Sodium meq/L
WHT-1-2009	0	25	6.4	49.2	0.46	3.8	2.32	0.80	0.40	0.25
WHT-1-2009	25	46	6.7	38.5	0.43	1.6	2.57	0.76	0.24	0.18
WHT-1-2009	46	82	6.8	35.9	0.39	1.0	2.09	0.85	0.19	0.21
WHT-1-2009	82	122	7.2	35.7	0.38	0.8	1.39	0.66	0.14	0.87
B-1-2009	2	20	7.5	35.8	0.65	2.3	4.19	1.37	0.79	0.40
B-1-2009	20	50	7.5	37.3	0.47	2.7	2.73	0.85	0.68	0.20
B-1-2009	50	64	7.5	32.7	0.50	2.0	3.22	0.80	0.69	0.23
B-2-2009	3	18	6.6	46.5	0.39	6.1	2.39	0.70	0.19	0.21
B-2-2009	18	50	6.3	44.2	0.32	3.5	1.74	0.46	0.16	0.20
B-2-2009	50	95	6.5	43.4	0.26	2.8	1.14	0.63	0.14	0.16
B-2-2009	95	124	6.5	36.2	0.19	1.8	0.79	0.37	0.11	0.11
B-2-2009	124	184	6.9	41.1	0.38	1.7	2.20	0.94	0.11	0.18
B-3-2009	4	20	7.0	50.9	1.26	8.3	5.31	2.00	0.80	5.26
B-3-2009	20	44	7.1	46.0	0.58	6.0	3.90	0.92	0.43	0.69
B-3-2009	44	96	7.4	41.2	0.45	4.3	2.70	0.80	0.45	0.30
B-3-2009	96	124	7.3	48.1	0.47	6.6	3.21	1.09	0.49	0.15
B-4-2009	5	23	7.1	41.2	0.62	3.9	4.02	1.39	0.93	0.24
B-4-2009	23	78	7.2	37.3	0.55	4.5	4.13	0.94	0.34	0.29
B-4-2009	78	138	7.3	33.7	0.34	2.9	2.03	0.76	0.22	0.42
B-4-2009	138	180	7.1	67.7	0.91	2.5	5.13	1.81	0.14	1.07
B-5-2009	1	15	7.2	35.1	0.45	3.1	2.81	1.26	0.33	0.14
B-5-2009	15	35	7.2	38.8	0.45	2.7	2.81	1.32	0.25	0.26
B-5-2009	35	70	7.3	35.2	0.44	3.2	2.70	1.34	0.24	0.20
B-5-2009	70	108	7.2	34.4	0.48	2.6	3.13	1.57	0.26	0.47
B-5-2009	108	160	7.3	38.6	0.44	2.4	2.56	1.47	0.11	0.31

Good	Fair	Poor	Unacceptable
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Table 1. Whitmore Canyon GVH, B Canyon GVH, and B Canyon Road laboratory analysis results of soil samples collected in fall 2009. Suitability ratings are based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005).

Soil Sample Identification	Begin Depth cm	End Depth cm	SAR	Sand %	Silt %	Clay %	Texture	Very Fine Sand %	CO ₃ %	Nitrogen Nitrate ppm	Selenium ppm
WHT-1-2009	0	25	0.20	55.0	30.0	15.0	Sandy Loam	19.7	0.9	2.3	
WHT-1-2009	25	46	0.14	59.0	24.0	17.0	Sandy Loam	22.8	0.8	2.7	
WHT-1-2009	46	82	0.18	69.0	18.0	13.0	Sandy Loam	29.9	1.1	2.8	
WHT-1-2009	82	122	0.86	66.0	22.0	12.0	Sandy Loam	27.1	1.2	2.0	
B-1-2009	2	20	0.24	69.0	18.0	13.0	Sandy Loam	30.1	26.5	3.2	<0.02
B-1-2009	20	50	0.15	59.0	21.0	20.0	Sandy Clay Loam	23.8	11.7	2.2	<0.02
B-1-2009	50	64	0.16	65.0	21.0	14.0	Sandy Loam	26.6	18.7	<0.1	<0.02
B-2-2009	3	18	0.17	47.0	36.0	17.0	Loam	13.0	0.9	2.1	
B-2-2009	18	50	0.19	17.0	45.0	38.0	Silty Clay Loam	3.8	0.6	1.9	
B-2-2009	50	95	0.17	43.0	39.0	18.0	Loam	9.6	0.7	2.7	
B-2-2009	95	124	0.15	47.0	34.0	19.0	Loam	12.9	0.5	2.3	
B-2-2009	124	184	0.14	50.0	28.0	22.0	Loam	18.3	3.3	2.6	
B-3-2009	4	20	2.75	51.0	30.0	19.0	Loam	16.4	4.1	3.1	
B-3-2009	20	44	0.44	39.0	37.0	24.0	Loam	11.8	4.9	1.1	
B-3-2009	44	96	0.23	34.0	39.0	27.0	Clay Loam	10.9	10.4	2.6	
B-3-2009	96	124	0.11	28.0	45.0	27.0	Clay Loam	6.2	7.5	1.9	
B-4-2009	5	23	0.15	48.0	37.0	15.0	Loam	13.2	0.8	<0.1	
B-4-2009	23	78	0.18	44.0	37.0	19.0	Loam	11.1	0.8	<0.1	
B-4-2009	78	138	0.36	43.0	36.0	21.0	Loam	11.7	0.6	<0.1	
B-4-2009	138	180	0.58	34.0	39.0	27.0	Clay Loam	8.6	0.8	<0.1	
B-5-2009	1	15	0.10	64.0	25.0	11.0	Sandy Loam	24.4	8.1	<0.1	
B-5-2009	15	35	0.18	54.0	29.0	17.0	Sandy Loam	18.1	7.3	<0.1	
B-5-2009	35	70	0.14	60.0	26.0	14.0	Sandy Loam	20.3	7.2	<0.1	
B-5-2009	70	108	0.31	54.0	29.0	17.0	Sandy Loam	20.5	10.1	<0.1	
B-5-2009	108	160	0.22	54.0	26.0	20.0	Sandy Clay Loam	17.1	12.7	<0.1	

Good Fair Poor Unacceptable

Table 1. Whitmore Canyon GVH, B Canyon GVH, and B Canyon Road Laboratory analysis results of soil samples collected in fall 2009. Suitability ratings are based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005).

Soil Sample Identification	Begin Depth cm	End Depth cm	Boron ppm	Phosphorus ppm	Available Potassium meq/100g	Total Carbon %	Total Organic Carbon %	Total Sulfur %	T.S. AB t/1000t	Neutral Potential t/1000t	T.S.ABP t/1000t
WHT-1-2009	0	25		27.0	0.76	2.6	2.4			9.39	
WHT-1-2009	25	46		30.1	0.54	0.9	0.8			8.12	
WHT-1-2009	46	82		19.9	0.42	0.4	0.3			10.8	
WHT-1-2009	82	122		17.5	0.44	0.5	0.4			11.5	
B-1-2009	2	20	0.22	19.2	0.46	4.2	0.9	<0.01	0	270	270
B-1-2009	20	50	0.24	8.60	0.58	2.4	1.0	<0.01	0	113	113
B-1-2009	50	64	0.18	6.34	0.43	2.8	0.7	<0.01	0	180	180
B-2-2009	3	18		14.0	0.25	2.5	2.4			8.99	
B-2-2009	18	50		12.9	0.38	1.4	1.4			5.57	
B-2-2009	50	95		11.3	0.27	1.1	1.0			6.52	
B-2-2009	95	124		11.5	0.23	0.8	0.7			5.39	
B-2-2009	124	184		21.2	0.37	0.9	0.5			32.6	
B-3-2009	4	20		27.7	0.63	3.7	3.2			40.6	
B-3-2009	20	44		11.2	0.52	3.3	2.7			49.2	
B-3-2009	44	96		7.09	0.54	3.0	1.7			104	
B-3-2009	96	124		13.0	0.56	3.5	2.6			75.2	
B-4-2009	5	23		30.2	0.71	1.9	1.8			6.85	
B-4-2009	23	78		10.8	0.44	1.8	1.7			8.88	
B-4-2009	78	138		3.92	0.38	1.1	1.0			5.90	
B-4-2009	138	180		4.49	0.28	1.0	0.9			7.15	
B-5-2009	1	15		5.84	0.28	1.8	0.8			82.8	
B-5-2009	15	35		5.26	0.28	1.7	0.7			80.9	
B-5-2009	35	70		4.51	0.31	2.0	1.0			79.0	
B-5-2009	70	108		4.50	0.24	2.0	0.7			111	
B-5-2009	108	160		4.14	0.22	2.2	0.6			132	

Good	Fair	Poor	Unacceptable
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Table 1. Whitmore Canyon GVH, B Canyon GVH, and B Canyon Road laboratory analysis results of soil samples collected in fall 2009. Suitability ratings are based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005).

Soil Sample Identification	Begin Depth cm	End Depth cm	pH	Saturation %	Electrical Conductivity dS/m	Organic Matter %	PE Calcium meq/L	PE Magnesium meq/L	PE Potassium meq/L	PE Sodium meq/L
B-6-2009	1	12	7.0	46.3	0.70	6.7	4.49	1.04	1.10	0.17
B-6-2009	12	23	7.0	40.7	0.55	5.5	3.83	1.24	0.63	0.16
B-6-2009	23	52	7.0	42.8	0.40	2.1	2.47	0.95	0.27	0.12
B-6-2009	52	90	7.1	31.5	0.51	1.2	2.24	1.53	0.61	0.19
B-6-2009	90	117	7.2	35.5	0.56	1.1	2.14	1.96	0.47	0.24
B-6-2009	117	133	7.4	35.5	0.59	1.2	2.02	2.93	0.26	0.24
B-6-2009	133	170	7.5	42.2	0.66	1.6	1.69	3.98	0.22	0.29
B-7-2009	5	13	7.2	57.3	0.63	6.8	3.89	1.97	1.15	0.31
B-7-2009	13	25	7.2	50.7	0.54	6.7	3.21	1.50	0.78	0.24
B-7-2009	25	60	7.2	47.1	0.53	3.2	3.67	1.30	0.42	0.29
B-7-2009	60	90	7.4	39.4	0.38	2.1	2.43	0.94	0.28	0.36
B-7-2009	90	123	7.5	40.6	0.46	3.1	3.24	1.27	0.13	0.61
B-7-2009	123	155	7.5	41.3	0.45	2.5	2.61	1.18	0.06	0.55
B-8-2009	2	11	7.4	45.5	0.40	4.1	2.93	0.69	0.17	0.17
B-8-2009	11	28	7.2	46.1	0.48	5.0	3.62	1.04	0.13	0.29
B-9-2009	0	10	7.4	36.8	0.47	2.6	3.49	0.69	0.19	0.17
B-9-2009	10	30	7.3	34.4	0.47	1.9	3.49	0.88	0.20	0.20
B-9-2009	30	65	7.4	32.2	0.45	2.0	3.05	1.00	0.31	0.21
B-9-2009	65	105	7.5	37.0	0.44	1.7	2.28	1.19	0.24	0.77
B-9-2009	105	155	7.7	30.9	0.42	1.3	2.32	1.36	0.21	0.62
B-10-2009	0	10	7.3	46.0	0.48	6.0	3.93	0.63	0.38	0.15
B-10-2009	10	33	7.4	44.1	0.52	3.8	3.64	1.55	0.24	0.11
B-10-2009	33	56	7.7	44.9	0.43	4.3	3.48	1.31	0.16	0.21
B-10-2009	56	80	7.8	40.6	0.40	2.2	2.98	1.22	0.06	0.18
B-10-2009	80	115	8.0	34.4	0.46	2.2	2.96	1.91	0.09	0.36
B-10-2009	115	160	8.1	34.5	0.49	1.9	1.70	3.26	0.04	0.31

Good	Fair	Poor	Unacceptable
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Table 1-1. Whitmore Canyon GVH, B Canyon GVH, and B Canyon Road laboratory analysis results of soil samples collected in fall 2009. Suitability ratings are based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005).

Soil Sample Identification	Begin Depth cm	End Depth cm	SAR	Sand %	Silt %	Clay %	Texture	Very Fine Sand %	CO ₃ %	Nitrogen Nitrate ppm	Selenium ppm
B-6-2009	1	12	0.10	58.0	30.0	12.0	Sandy Loam	18.5	5.4	3.9	<0.02
B-6-2009	12	23	0.10	54.0	31.0	15.0	Sandy Loam	18.0	9.5	<0.1	<0.02
B-6-2009	23	52	0.09	46.0	35.0	19.0	Loam	14.0	7.4	<0.1	<0.02
B-6-2009	52	90	0.14	72.0	16.0	12.0	Sandy Loam	31.8	12.2	2.4	<0.02
B-6-2009	90	117	0.17	72.0	18.0	10.0	Sandy Loam	28.3	9.4	6.8	<0.02
B-6-2009	117	133	0.15	56.0	26.0	18.0	Sandy Loam	23.7	17.6	6.8	<0.02
B-6-2009	133	170	0.17	42.0	38.0	20.0	Loam	6.5	13.0	12.1	<0.02
B-7-2009	5	13	0.18	50.0	36.0	14.0	Loam	19.6	2.7	<0.1	
B-7-2009	13	25	0.15	52.0	32.0	16.0	Sandy Loam	15.7	2.3	<0.1	
B-7-2009	25	60	0.18	49.0	34.0	17.0	Loam	14.5	1.2	<0.1	
B-7-2009	60	90	0.28	51.0	32.0	17.0	Loam	12.6	2.1	<0.1	
B-7-2009	90	123	0.41	42.0	37.0	21.0	Loam	10.4	7.3	<0.1	
B-7-2009	123	155	0.40	46.0	34.0	20.0	Loam	12.4	8.3	<0.1	
B-8-2009	2	11	0.13	72.0	17.0	11.0	Sandy Loam	26.6	5.1	<0.1	
B-8-2009	11	28	0.19	63.0	24.0	13.0	Sandy Loam	23.1	3.0	<0.1	
B-9-2009	0	10	0.12	71.0	22.0	7.0	Sandy Loam	26.6	11.0	<0.1	
B-9-2009	10	30	0.13	72.0	19.0	9.0	Sandy Loam	26.7	12.0	<0.1	
B-9-2009	30	65	0.15	72.0	18.0	10.0	Sandy Loam	27.1	14.5	<0.1	
B-9-2009	65	105	0.58	70.0	17.0	13.0	Sandy Loam	29.6	14.0	<0.1	
B-9-2009	105	155	0.46	73.0	16.0	11.0	Sandy Loam	32.3	15.8	<0.1	
B-10-2009	0	10	0.10	70.0	18.0	12.0	Sandy Loam	28.7	10.8	<0.1	
B-10-2009	10	33	0.07	64.0	19.0	17.0	Sandy Loam	28.0	13.6	<0.1	
B-10-2009	33	56	0.14	58.0	21.0	21.0	Sandy Clay Loam	24.6	19.7	<0.1	
B-10-2009	56	80	0.13	61.0	21.0	18.0	Sandy Loam	26.4	18.9	<0.1	
B-10-2009	80	115	0.23	52.0	31.0	17.0	Sandy Loam	19.6	21.6	<0.1	
B-10-2009	115	160	0.20	56.0	28.0	16.0	Sandy Loam	24.0	20.2	<0.1	

Good Fair Poor Unacceptable

Table 1. Whitmore Canyon GVH, B Canyon GVH, and B Canyon Road laboratory analysis results of soil samples collected in fall 2009. Suitability ratings are based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005).

Soil Sample Identification	Begin Depth cm	End Depth cm	Boron ppm	Phosphorus ppm	Available Potassium meq/100g	Total Carbon %	Total Organic Carbon %	Total Sulfur %	T.S. AB v/1000t	Neutral Potential	
										v/1000t	T.S.ABP v/1000t
B-6-2009	1	12	0.45	20.4	0.65	4.0	3.4	0.04	1.21	53.9	52.7
B-6-2009	12	23	0.25	7.90	0.54	4.9	3.7	0.07	2.30	94.8	92.5
B-6-2009	23	52	0.14	4.92	0.40	1.9	1.0	<0.01	0	70.2	70.2
B-6-2009	52	90	0.13	4.59	0.35	1.5	0.2	<0.01	0	113	113
B-6-2009	90	117	0.15	4.96	0.26	1.4	0.3	<0.01	0	90.7	90.7
B-6-2009	117	133	0.23	4.32	0.32	2.3	0.2	<0.01	0	172	172
B-6-2009	133	170	0.22	5.44	0.31	1.7	0.2	<0.01	0	122	122
B-7-2009	5	13		21.9	1.07	3.5	3.2			27.0	
B-7-2009	13	25		13.4	0.90	2.7	2.5			22.6	
B-7-2009	25	60		7.11	0.56	1.6	1.4			13.2	
B-7-2009	60	90		4.84	0.42	0.8	0.6			18.4	
B-7-2009	90	123		5.40	0.27	1.9	1.0			78.6	
B-7-2009	123	155		4.86	0.18	1.5	0.5			79.9	
B-8-2009	2	11		10.7	0.30	2.1	1.5			49.2	
B-8-2009	11	28		10.8	0.33	2.0	1.6			29.6	
B-9-2009	0	10		7.57	0.31	1.7	0.5			105	
B-9-2009	10	30		4.11	0.19	1.8	0.4			121	
B-9-2009	30	65		4.49	0.22	2.3	0.5			144	
B-9-2009	65	105		3.79	0.23	2.0	0.4			132	
B-9-2009	105	155		3.29	0.14	1.9	<0.1			161	
B-10-2009	0	10		11.6	0.38	3.4	2.2			102	
B-10-2009	10	33		6.70	0.28	2.7	1.1			135	
B-10-2009	33	56		6.80	0.22	3.5	1.1			201	
B-10-2009	56	80		3.49	0.15	2.7	0.5			186	
B-10-2009	80	115		4.00	0.17	2.7	0.2			209	
B-10-2009	115	160		3.15	0.13	2.9	0.4			204	

Good	Fair	Poor	Unacceptable
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Table 1-2. Available water capacity and K factor by soil horizon.

SampleID	Begin Depth cm	End Depth cm	Available Water	
			Capacity ¹ Estimate (Saxton 2006) in/in	K Factor Estimate ² (Renard 1997)
WHT-1-2009	0	25	0.12	0.21
WHT-1-2009	25	46	0.06	0.31
WHT-1-2009	46	82	0.04	0.35
WHT-1-2009	82	122	0.05	0.37
B-1-2009	2	20	0.04	0.25
B-1-2009	20	50	0.05	0.31
B-1-2009	50	64	0.05	0.32
B-2-2009	3	18	0.12	0.23
B-2-2009	18	50	0.11	0.28
B-2-2009	50	95	0.08	0.31
B-2-2009	95	124	0.06	0.32
B-2-2009	124	184	0.06	0.31
B-3-2009	4	20	0.10	0.16
B-3-2009	20	44	0.11	0.21
B-3-2009	44	96	0.08	0.30
B-3-2009	96	124	0.11	0.25
B-4-2009	5	23	0.08	0.30
B-4-2009	23	78	0.09	0.26
B-4-2009	78	138	0.09	0.29
B-4-2009	138	180	0.07	0.33
B-5-2009	1	15	0.06	0.31
B-5-2009	15	35	0.08	0.28
B-5-2009	35	70	0.06	0.27
B-5-2009	70	108	0.08	0.30
B-5-2009	108	160	0.08	0.31
B-6-2009	1	12	0.09	0.19
B-6-2009	12	23	0.09	0.22
B-6-2009	23	52	0.09	0.33
B-6-2009	52	90	0.08	0.35
B-6-2009	90	117	0.08	0.35
B-6-2009	117	133	0.09	0.34
B-6-2009	133	170	0.11	0.31

1. Available Water Capacity suitability ratings based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005). Good >0.10 in/in, Fair 0.05 to 0.10 in.in, and Poor <0.05 inches

2. Estimated K factor suitability ratings based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005). Good <0.37, Fair 0.37, and Poor >0.37.

Good	Fair	Poor	Unacceptable
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Table 1-2. Available water capacity and K factor by soil horizon.

SampleID	Begin Depth cm	End Depth cm	Available Water	
			Capacity ¹ Estimate (Saxton 2006) in/in	K Factor Estimate ² (Renard 1997)
B-7-2009	5	13	0.07	0.33
B-7-2009	13	25	0.08	0.32
B-7-2009	25	60	0.06	0.31
B-7-2009	60	90	0.06	0.32
B-7-2009	90	123	0.04	0.35
B-7-2009	123	155	0.07	0.21
B-8-2009	2	11	0.08	0.24
B-8-2009	11	28	0.10	0.23
B-9-2009	0	10	0.07	0.33
B-9-2009	10	30	0.08	0.32
B-9-2009	30	65	0.06	0.31
B-9-2009	65	105	0.06	0.32
B-9-2009	105	155	0.04	0.35
B-10-2009	0	10	0.07	0.21
B-10-2009	10	33	0.06	0.25
B-10-2009	33	56	0.06	0.27
B-10-2009	56	80	0.06	0.29
B-10-2009	80	115	0.07	0.32
B-10-2009	115	160	0.06	0.34
B-11-2009	3	10	0.13	0.22
B-11-2009	10	29	0.12	0.25
B-11-2009	29	80	0.06	0.31
B-11-2009	80	114	0.10	0.33
B-11-2009	114	135	0.06	0.35
B-11-2009	135	160	0.12	0.35
B-12-2009	1	14	0.06	0.24
B-12-2009	14	30	0.07	0.29
B-12-2009	30	75	0.06	0.32
B-12-2009	75	120	0.05	0.34
B-12-2009	120	166	0.10	0.32

1. Available Water Capacity suitability ratings based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005). Good >0.10 in/in, Fair 0.05 to 0.10 in.in, and Poor <0.05 inches

2. Estimated K factor suitability ratings based on Guidelines for Management of Topsoil and Overburden (Utah DOGM, 2005). Good <0.37, Fair 0.37, and Poor >0.37.

Good	Fair	Poor	Unacceptable
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Soil Analysis Report

Long Resource Consultants, Inc.
1960 West Deep Creek Road
Morgan, UT 84050

Report ID: S0911391001

Project: B Canyon Road Overburden

Date Received: 11/30/2009

Date Reported: 12/18/2009

Work Order: S0911391

Lab ID	Sample ID	Depths cm	pH s.u.	Saturation %	Electrical Conductivity dS/m	Organic Matter %	PE			SAR	
							Calcium meq/L	Magnesium meq/L	Potassium meq/L		Sodium meq/L
S0911391-001	B-6-2009	1-12	7.0	46.3	0.70	6.7	4.49	1.04	1.10	0.17	0.10
S0911391-002	B-6-2009	12-23	7.0	40.7	0.55	5.5	3.83	1.24	0.63	0.16	0.10
S0911391-003	B-6-2009	23-52	7.0	42.8	0.40	2.1	2.47	0.95	0.27	0.12	0.09
S0911391-004	B-6-2009	52-90	7.1	31.5	0.51	1.2	2.24	1.53	0.61	0.19	0.14
S0911391-005	B-6-2009	90-117	7.2	35.5	0.56	1.1	2.14	1.96	0.47	0.24	0.17
S0911391-006	B-6-2009	117-133	7.4	35.5	0.59	1.2	2.02	2.93	0.25	0.24	0.15
S0911391-007	B-6-2009	133-170	7.5	42.2	0.66	1.6	1.69	3.98	0.22	0.29	0.17

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

Long Resource Consultants, Inc.
1960 West Deep Creek Road
Morgan, UT 84050

Report ID: S0911391001

Project: B Canyon Road Overburden

Date Reported: 12/18/2009

Date Received: 11/30/2009

Work Order: S0911391

Lab ID	Sample ID	Depths cm	Very Fine				CO3 %
			Sand %	Silt %	Clay %	Texture	
S0911391-001	B-6-2009	1-12	58.0	30.0	12.0	Sandy Loam	5.4
S0911391-002	B-6-2009	12-23	54.0	31.0	15.0	Sandy Loam	9.5
S0911391-003	B-6-2009	23-52	46.0	35.0	19.0	Loam	7.4
S0911391-004	B-6-2009	52-90	72.0	16.0	12.0	Sandy Loam	12.2
S0911391-005	B-6-2009	90-117	72.0	18.0	10.0	Sandy Loam	9.4
S0911391-006	B-6-2009	117-133	56.0	26.0	18.0	Sandy Loam	17.6
S0911391-007	B-6-2009	133-170	42.0	38.0	20.0	Loam	13.0

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

Long Resource Consultants, Inc.
 1960 West Deep Creek Road
 Morgan, UT 84050

Report ID: S0911391001

Project: B Canyon Road Overburden
 Date Received: 11/30/2009

Date Reported: 12/18/2009
 Work Order: S0911391

Lab ID	Sample ID	Depths cm	Nitrogen		Selenium ppm	Boron ppm	Available		Total		TOC %
			Nitrate ppm	Nitrogen ppm			Phosphorus ppm	Potassium meq/100g	Carbon %		
S0911391-001	B-6-2009	1-12	3.9	<0.02	0.45	20.4	0.65	4.0	3.4		
S0911391-002	B-6-2009	12-23	<0.1	<0.02	0.25	7.90	0.54	4.9	3.7		
S0911391-003	B-6-2009	23-52	<0.1	<0.02	0.14	4.92	0.40	1.9	1.0		
S0911391-004	B-6-2009	52-90	2.4	<0.02	0.13	4.59	0.35	1.5	0.2		
S0911391-005	B-6-2009	90-117	6.8	<0.02	0.15	4.96	0.26	1.4	0.3		
S0911391-006	B-6-2009	117-133	6.8	<0.02	0.23	4.32	0.32	2.3	0.2		
S0911391-007	B-6-2009	133-170	12.1	<0.02	0.22	5.44	0.31	1.7	0.2		

These results apply only to the samples tested.

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 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
Long Resource Consultants, Inc.
 1960 West Deep Creek Road
 Morgan, UT 84050

Report ID: S0911391001

Project: B Canyon Road Overburden

Date Reported: 12/18/2009

Date Received: 11/30/2009

Work Order: S0911391

Lab ID	Sample ID	Depths cm	Total Sulfur %	T.S.		Neutral.		T.S.	
				AB	v/1000t	Potential	v/1000t	ABP	v/1000t
S0911391-001	B-6-2009	1-12	0.04	1.21	53.9	94.8	52.7		
S0911391-002	B-6-2009	12-23	0.07	2.30	70.2	113	92.5		
S0911391-003	B-6-2009	23-52	<0.01	<0.01	90.7	172	70.2		
S0911391-004	B-6-2009	52-90	<0.01	<0.01	122		113		
S0911391-005	B-6-2009	90-117	<0.01	<0.01	122		90.7		
S0911391-006	B-6-2009	117-133	<0.01	<0.01	122		172		
S0911391-007	B-6-2009	133-170	<0.01	<0.01	122		122		

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 + 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

Long Resource Consultants, Inc.
1960 West Deep Creek Road
Morgan, UT 84050

Report ID: S0911393001

Project: B Canyon Road Topsoil

Date Reported: 12/18/2009

Date Received: 11/30/2009

Work Order: S0911393

Lab ID	Sample ID	Depths cm	pH s.u.	Saturation %	Electrical Conductivity dS/m	Organic Matter %	Calcium meq/L	Magnesium meq/L	Potassium meq/L	Sodium meq/L	SAR
S0911393-001	B-4-2009	5-23	7.1	41.2	0.62	3.9	4.02	1.39	0.93	0.24	0.15
S0911393-002	B-4-2009	23-78	7.2	37.3	0.55	4.5	4.13	0.94	0.34	0.29	0.18
S0911393-003	B-4-2009	78-138	7.3	33.7	0.34	2.9	2.03	0.76	0.22	0.42	0.36
S0911393-004	B-4-2009	138-180	7.1	67.7	0.91	2.5	5.13	1.81	0.14	1.07	0.58
S0911393-005	B-5-2009	1-15	7.2	35.1	0.45	3.1	2.81	1.26	0.33	0.14	0.10
S0911393-006	B-5-2009	15-35	7.2	38.8	0.45	2.7	2.81	1.32	0.25	0.26	0.18
S0911393-007	B-5-2009	35-70	7.3	35.2	0.44	3.2	2.70	1.34	0.24	0.20	0.14
S0911393-008	B-5-2009	70-108	7.2	34.4	0.48	2.6	3.13	1.57	0.26	0.47	0.31
S0911393-009	B-5-2009	108-160	7.3	38.6	0.44	2.4	2.56	1.47	0.11	0.31	0.22
S0911393-010	B-7-2009	5-13	7.2	57.3	0.63	6.8	3.89	1.97	1.15	0.31	0.18
S0911393-011	B-7-2009	13-25	7.2	50.7	0.54	6.7	3.21	1.50	0.76	0.24	0.15
S0911393-012	B-7-2009	25-60	7.2	47.1	0.53	3.2	3.67	1.30	0.42	0.29	0.18
S0911393-013	B-7-2009	60-90	7.4	39.4	0.38	2.1	2.43	0.94	0.28	0.36	0.28
S0911393-014	B-7-2009	90-123	7.5	40.6	0.46	3.1	3.24	1.27	0.13	0.61	0.41
S0911393-015	B-7-2009	123-155	7.5	41.3	0.45	2.5	2.61	1.18	0.05	0.55	0.40
S0911393-016	B-8-2009	2-11	7.4	45.5	0.40	4.1	2.93	0.69	0.17	0.17	0.13
S0911393-017	B-8-2009	11-28	7.2	46.1	0.48	5.0	3.62	1.04	0.13	0.29	0.19
S0911393-018	B-9-2009	0-10	7.4	36.8	0.47	2.6	3.49	0.69	0.19	0.17	0.12
S0911393-019	B-9-2009	10-30	7.3	34.4	0.47	1.9	3.49	0.88	0.20	0.20	0.13
S0911393-020	B-9-2009	30-65	7.4	32.2	0.45	2.0	3.05	1.00	0.31	0.21	0.15

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
Long Resource Consultants, Inc.
1960 West Deep Creek Road
Morgan, UT 84050

Report ID: S0911393001

Project: B Canyon Road Topsoil

Date Reported: 12/18/2009

Date Received: 11/30/2009

Work Order: S0911393

Lab ID	Sample ID	Depths cm	Sand			Silt %	Clay %	Texture	Very Fine		CO3 %	Nitrogen		Available	
			%	%	%				Sand %	Nitrate ppm		Phosphorus ppm	Potassium meq/100g		
S0911393-001	B-4-2009	5-23	48.0	37.0	15.0	Loam	13.2	<0.1	30.2	0.8	<0.1	0.71			
S0911393-002	B-4-2009	23-78	44.0	37.0	19.0	Loam	11.1	<0.1	10.8	0.8	<0.1	0.44			
S0911393-003	B-4-2009	78-138	43.0	36.0	21.0	Loam	11.7	<0.1	3.92	0.6	<0.1	0.38			
S0911393-004	B-4-2009	138-180	34.0	39.0	27.0	Clay Loam	8.6	<0.1	4.49	0.8	<0.1	0.28			
S0911393-005	B-5-2009	1-15	64.0	25.0	11.0	Sandy Loam	24.4	<0.1	5.84	8.1	<0.1	0.28			
S0911393-006	B-5-2009	15-35	54.0	29.0	17.0	Sandy Loam	18.1	<0.1	5.26	7.3	<0.1	0.28			
S0911393-007	B-5-2009	35-70	60.0	26.0	14.0	Sandy Loam	20.3	<0.1	4.51	7.2	<0.1	0.31			
S0911393-008	B-5-2009	70-108	54.0	29.0	17.0	Sandy Loam	20.5	<0.1	4.50	10.1	<0.1	0.24			
S0911393-009	B-5-2009	108-160	54.0	26.0	20.0	Sandy Clay Loam	17.1	<0.1	4.14	12.7	<0.1	0.22			
S0911393-010	B-7-2009	5-13	50.0	36.0	14.0	Loam	19.6	<0.1	21.9	2.7	<0.1	1.07			
S0911393-011	B-7-2009	13-25	52.0	32.0	16.0	Sandy Loam	15.7	<0.1	13.4	2.3	<0.1	0.90			
S0911393-012	B-7-2009	25-60	49.0	34.0	17.0	Loam	14.5	<0.1	7.11	1.2	<0.1	0.56			
S0911393-013	B-7-2009	60-90	51.0	32.0	17.0	Loam	12.6	<0.1	4.84	2.1	<0.1	0.42			
S0911393-014	B-7-2009	90-123	42.0	37.0	21.0	Loam	10.4	<0.1	5.40	7.3	<0.1	0.27			
S0911393-015	B-7-2009	123-155	46.0	34.0	20.0	Loam	12.4	<0.1	4.86	8.3	<0.1	0.18			
S0911393-016	B-8-2009	2-11	72.0	17.0	11.0	Sandy Loam	26.6	<0.1	10.7	5.1	<0.1	0.30			
S0911393-017	B-8-2009	11-28	63.0	24.0	13.0	Sandy Loam	23.1	<0.1	10.8	3.0	<0.1	0.33			
S0911393-018	B-9-2009	0-10	71.0	22.0	7.0	Sandy Loam	26.6	<0.1	7.57	11.0	<0.1	0.31			
S0911393-019	B-9-2009	10-30	72.0	19.0	9.0	Sandy Loam	26.7	<0.1	4.11	12.0	<0.1	0.19			
S0911393-020	B-9-2009	30-65	72.0	18.0	10.0	Sandy Loam	27.1	<0.1	4.49	14.5	<0.1	0.22			

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

Long Resource Consultants, Inc.
1960 West Deep Creek Road
Morgan, UT 84050

Report ID: S0911393001

Project: B Canyon Road Topsoil

Date Reported: 12/16/2009

Date Received: 11/30/2009

Work Order: S0911393

Lab ID	Sample ID	Depths cm	Total		Neutral	
			Carbon %	TOC %	Potential V/1000t	
S0911393-001	B-4-2009	5-23	1.9	1.8	6.85	
S0911393-002	B-4-2009	23-78	1.8	1.7	8.88	
S0911393-003	B-4-2009	78-138	1.1	1.0	5.90	
S0911393-004	B-4-2009	138-180	1.0	0.9	7.15	
S0911393-005	B-5-2009	1-15	1.8	0.8	82.8	
S0911393-006	B-5-2009	15-35	1.7	0.7	80.9	
S0911393-007	B-5-2009	35-70	2.0	1.0	79.0	
S0911393-008	B-5-2009	70-108	2.0	0.7	111	
S0911393-009	B-5-2009	108-160	2.2	0.6	132	
S0911393-010	B-7-2009	5-13	3.5	3.2	27.0	
S0911393-011	B-7-2009	13-25	2.7	2.5	22.6	
S0911393-012	B-7-2009	25-60	1.6	1.4	13.2	
S0911393-013	B-7-2009	60-90	0.8	0.6	18.4	
S0911393-014	B-7-2009	90-123	1.9	1.0	78.6	
S0911393-015	B-7-2009	123-155	1.5	0.5	79.9	
S0911393-016	B-8-2009	2-11	2.1	1.5	49.2	
S0911393-017	B-8-2009	11-28	2.0	1.6	29.6	
S0911393-018	B-9-2009	0-10	1.7	0.5	105	
S0911393-019	B-9-2009	10-30	1.8	0.4	121	
S0911393-020	B-9-2009	30-65	2.3	0.5	144	

These results apply only to the samples tested.

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Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

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

Pedon ID: B-5-09
Description Date: 11/06/2009
Describer: Robert Long

Soil Name As Described/Sampled: Foy
Classification: Loamy-skeletal, mixed, superactive, mesic Aridic Calcustepts

County or Parish: WY007 - Carbon
State or Territory: UT - Utah
7.5' Quad: 39110-E4 - Sunnyside, Utah
UTM: 549185E, 4384530N -- Datum NAD83, Zone 12
Legal Description: Section 14, Township 14 South, Range 13 East of the Uintah Meridian

Landscape: plateau
Landform: alluvial fan
Geomorphic Component: Lower third of mountainflank
Profile Pos: Backslope
Slope: 86 percent
Elevation: 2165 meters (7103 feet)
Aspect: 150°
Shape: up/down: Convex; **across:** Linear
Complexity: Complex
Flooding: None
Ponding: None
Drainage: Well drained
Runoff: High
Permeability: Moderately rapid
Erosion: Class 1 - Sheet erosion

Primary Earth Cover: Grass/herbaceous cover; **Secondary Earth Cover:** Conifers
Existing Vegetation: PIED - twoneedle pinyon (*Pinus edulis*); ARTRW8 - Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*); POA - bluegrass (*Poa*); CHRYS9 - rabbitbrush (*Chrysothamnus*); JUOS - Utah juniper (*Juniperus osteosperma*); THIN6 - intermediate wheatgrass (*Thinopyrum intermedium*)
Parent Materials: colluvium
Bedrock:

Particle Size Control Section: 25 to 100 centimeters (9.8 to 39.4 inches)
Diagnostic Features: Cambic horizon: 15 to 70 centimeters (5.9 to 27.6 inches) and Calcic horizon: 70 to 160 centimeters (27.6 to 63 inches)

Oi --- 0 to 1 centimeter (0 to 0.4 inches); needles and twigs.

A — 1 to 15 centimeters (0.4 to 5.9 inches); light olive brown (2.5Y 5/3) dry, very gravelly sandy loam; olive brown (2.5Y 4/3) moist; 64 percent sand; 25 percent silt; 11 percent clay; weak medium subangular blocky parting to moderate fine granular and weak fine subangular blocky structure; very friable, slightly hard, nonsticky, nonplastic; common very fine roots throughout, common fine roots throughout and common coarse roots throughout; many very fine tubular pores; 3 percent nonflat subangular 250 to 600 millimeters (10 to 24 inches) calcareous sandstone fragments, 10 percent flat subangular 150 to 380 millimeters (6 to 15 inches) calcareous sandstone fragments, 5 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 30 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.5 mmhos/cm; noneffervescent by HCl, 1 normal; neutral, pH 7.2; clear smooth boundary; CaCO₃ 8.3 Percent.

Bw1 --- 15 to 35 centimeters (5.9 to 13.8 inches); light brownish gray (10YR 6/2) dry, very flaggy sandy loam; dark grayish brown (10YR 4/2) moist; 54 percent sand; 29 percent silt; 17 percent clay; moderate medium subangular blocky structure; very friable, hard, nonsticky, nonplastic; many very fine roots throughout, common fine roots throughout, common medium roots throughout and common coarse roots throughout; common very fine tubular pores; 10 percent nonflat subangular 250 to 600 millimeters (10 to 24 inches) calcareous sandstone fragments, 5 percent flat subangular 150 to 380 millimeters (6 to 15 inches) calcareous sandstone fragments, 10 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 10 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.5 mmhos/cm; noneffervescent by HCl, 1 normal; neutral, pH 7.2; gradual smooth boundary; CaCO₃ 8.1 Percent.

Bw2 --- 35 to 70 centimeters (13.8 to 27.6 inches); light brownish gray (10YR 6/2) dry, very stony sandy loam; dark grayish brown (10YR 4/2) moist; 60 percent sand; 26 percent silt; 14 percent clay; moderate medium subangular blocky structure; friable, hard, nonsticky, nonplastic; common very fine roots throughout, common fine roots throughout and common medium roots throughout; common very fine tubular pores; 15 percent flat subangular 150 to 380 millimeters (6 to 15 inches) calcareous sandstone fragments, 5 percent nonflat subangular 250 to 600 millimeters (10 to 24 inches) calcareous sandstone fragments, 10 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 20 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.4 mmhos/cm; noneffervescent by HCl, 1 normal; neutral, pH 7.3; clear smooth boundary; CaCO₃ 7.9 Percent.

Bk1 --- 70 to 108 centimeters (27.6 to 42.5 inches); light brownish gray (10YR 6/2) dry, very stony sandy loam; dark grayish brown (10YR 4/2) moist; 54 percent sand; 29 percent silt; 17 percent clay; moderate medium subangular blocky structure; friable, very hard, nonsticky, nonplastic; common very fine roots throughout and common fine roots throughout; common very fine tubular pores; 2 percent (common) fine carbonate concretions on bottom of rock fragments; 15 percent nonflat subangular 250 to 600

millimeters (10 to 24 inches) calcareous sandstone fragments, 10 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 20 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.5 mmhos/cm; strongly effervescent by HCl, 1 normal; neutral, pH 7.2; gradual smooth boundary; CaCO₃ 11.1 Percent.

Bk2 --- 108 to 160 centimeters (42.5 to 63 inches); light yellowish brown (2.5Y 6/3) dry, very channery sandy clay loam; light olive brown (2.5Y 5/3) moist; 54 percent sand; 26 percent silt; 20 percent clay; weak medium subangular blocky structure; friable, very hard, slightly sticky, nonplastic; common very fine roots throughout and common fine roots throughout; common very fine tubular pores; medium masses of carbonate on vertical faces of peds and 5 percent (common) fine carbonate concretions on bottom of rock fragments; 10 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments and 20 percent flat subangular 2 to 150 millimeters (0.1 to 6 inches) calcareous sandstone fragments; electrical conductivity of 0.4 mmhos/cm; violently effervescent by HCl, 1 normal; neutral, pH 7.3; CaCO₃ 13.2 Percent.

Pedon ID: B-6-09

Description Date: 11/13/2009

Describer: Robert Long

Soil Name As Described/Sampled: Amalia family

Classification: Loamy-skeletal, mixed, superactive, frigid Calcic Haplustalfs

County or Parish: WY007 - Carbon

State or Territory: UT - Utah

7.5' Quad: 39110-E4 - Sunnyside, Utah

UTM: 549119E, 4384451N -- Datum NAD83, Zone 12

Legal Description: Section 14, Township 14 South, Range 13 East

Landscape: plateau

Landform: stream terrace

Geomorphic Component: Base Slope

Profile Pos: Toeslope

Slope: 7 percent

Elevation: 2150 meters (7053.8 feet)

Aspect: 226°

Shape: up/down: Concave; **across:** Linear

Complexity: Simple

Flooding: None

Ponding: None

Drainage: Well drained

Runoff: Medium

Permeability: Moderately rapid

Erosion: None - deposition

Primary Earth Cover: Grass/herbaceous cover; **Secondary Earth Cover:** Shrubby rangeland

Existing Vegetation: ARTRW8 - Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*); JUOS - Utah juniper (*Juniperus osteosperma*); CHRYS9 - rabbitbrush (*Chrysothamnus*); THIN6 - intermediate wheatgrass (*Thinopyrum intermedium*)

Parent Materials: alluvium

Bedrock:

Particle Size Control Section: 12 to 52 centimeters (4.7 to 20.5 inches)

Diagnostic Features: Argillic horizon: 12 to 52 centimeters (4.7 to 20.5 inches) and Calcic horizon: 52 to 170 centimeters (20.5 to 66.9 inches)

Oi — 0 to 1 centimeter (0 to 0.4 inches); Leaves and Twigs.

A — 1 to 12 centimeters (0.4 to 4.7 inches); pale brown (10YR 6/3) dry, very cobbly sandy loam; brown (10YR 4/3) moist; 58 percent sand; 30 percent silt; 12 percent clay; moderate medium subangular blocky structure; very friable, slightly hard, nonsticky, nonplastic; many very fine roots throughout, common fine roots throughout, common medium roots throughout and common coarse roots throughout; 15 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 20 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; very slightly effervescent by HCl, 1 normal; neutral, pH 7; clear smooth boundary; CaCO₃ 5.4 Percent.

Bt — 12 to 23 centimeters (4.7 to 9.1 inches); pale brown (10YR 6/3) dry, very cobbly sandy loam; brown (10YR 4/3) moist; 54 percent sand; 31 percent silt; 15 percent clay; moderate medium subangular blocky structure; friable, hard, nonsticky, nonplastic; many very fine roots throughout, common fine roots throughout, common medium roots throughout and common coarse roots throughout; 50 percent (many) clay films on all faces of peds; 1 percent (few) fine threadlike carbonate concretions on bottom of rock fragments; 15 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 20 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; very slightly effervescent by HCl, 1 normal; neutral, pH 7; 4% f coal fragments; clear wavy boundary; CaCO₃ 9.5 Percent.

Btk — 23 to 52 centimeters (9.1 to 20.5 inches); very pale brown (10YR 7/3) dry, very gravelly loam; brown (10YR 5/3) moist; 46 percent sand; 35 percent silt; 19 percent clay; moderate medium subangular blocky structure; friable, hard, slightly sticky, nonplastic; common very fine roots throughout, common fine roots throughout, common medium roots throughout and common coarse roots throughout; 40 percent (common) clay films on all faces of peds; 2 percent (common) fine threadlike carbonate concretions on vertical faces of peds; 5 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 25 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; slightly effervescent by HCl, 1 normal; neutral, pH 7; 2% vf coal fragments; clear wavy boundary; CaCO₃ 7.4 Percent.

2Bk1 — 52 to 90 centimeters (20.5 to 35.4 inches); very pale brown (10YR 7/4) dry, sandy loam; yellowish brown (10YR 5/4) moist; 72 percent sand; 16 percent silt; 12 percent clay; structure; friable, hard, nonsticky, nonplastic; common very fine roots throughout and common fine roots throughout; 2 percent (common) fine threadlike masses of carbonate on vertical faces of peds; strongly effervescent by HCl, 1 normal; neutral, pH 7.1; gradual smooth boundary; CaCO₃ 12.2 Percent.

2Bk2 — 90 to 117 centimeters (35.4 to 46.1 inches); very pale brown (10YR 7/3) dry, sandy loam; brown (10YR 5/3) moist; 72 percent sand; 18 percent silt; 10 percent clay; weak medium subangular blocky structure; friable, hard, nonsticky, nonplastic; common very fine roots throughout; 8 percent (common) fine threadlike masses of carbonate on

vertical faces of peds; strongly effervescent by HCl, 1 normal; neutral, pH 7.2; 1 cm of discontinuous black soil at top of horizon; clear smooth boundary; CaCO₃ 9.4 Percent.

3Bk — 117 to 133 centimeters (46.1 to 52.4 inches); very pale brown (10YR 7/3) dry, cobbly sandy loam; brown (10YR 5/3) moist; 56 percent sand; 26 percent silt; 18 percent clay; moderate medium subangular blocky structure; friable, hard, nonsticky, nonplastic; common very fine roots throughout; 4 percent (common) fine threadlike masses of carbonate on vertical faces of peds; 5 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 15 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; violently effervescent by HCl, 1 normal; slightly alkaline, pH 7.4; clear smooth boundary; CaCO₃ 17.6 Percent.

4Bk — 133 to 170 centimeters (52.4 to 66.9 inches); very pale brown (10YR 7/3) dry, cobbly loam; brown (10YR 5/3) moist; 42 percent sand; 38 percent silt; 20 percent clay; moderate medium subangular blocky structure; friable, hard, slightly sticky, nonplastic; common very fine roots throughout; 4 percent (common) fine threadlike masses of carbonate on vertical faces of peds; 5 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 15 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; violently effervescent by HCl, 1 normal; slightly alkaline, pH 7.5; CaCO₃ 13 Percent.

Pedon ID: B-7-09

Description Date: 11/13/2009

Describer: Robert Long

Soil Name As Described/Sampled: Cortyzack

Classification: Coarse-loamy, mixed, superactive, frigid Calcic Argiustolls

County or Parish: UT007 - Carbon

State or Territory: UT - Utah

7.5' Quad: 39110-E4 - Sunnyside, Utah

UTM: 548949E, 4384351N -- Datum NAD83, Zone 12

Legal Description: Section 10, Township 14 South, Range 13 East of the Salt Lake Meridian

Landscape: plateau

Landform: canyon

Geomorphic Component: Mountainbase

Profile Pos: Footslope

Slope: 45 percent

Elevation: 2176 meters (7139.1 feet)

Aspect: 336°

Shape: up/down: Convex; **across:** Linear

Complexity: Simple

Flooding: None

Ponding: None

Drainage: Well drained

Runoff: High

Permeability: Moderately rapid

Erosion: None - deposition

Primary Earth Cover: Tree cover; **Secondary Earth Cover:** Other shrub cover

Existing Vegetation: PIED - twoneedle pinyon (*Pinus edulis*); JUOS - Utah juniper (*Juniperus osteosperma*); PSME - Douglas-fir (*Pseudotsuga menziesii*); ARTRW8 - Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*); POA - bluegrass (*Poa*); AGROP2 - wheatgrass (*Agropyron*)

Parent Materials: colluvium

Bedrock:

Particle Size Control Section: 25 to 75 centimeters (9.8 to 29.5 inches)

Diagnostic Features: Mollic epipedon: 5 to 25 centimeters (2 to 9.8 inches), Argillic horizon: 25 to 90 centimeters (9.8 to 35.4 inches) and Calcic horizon: 90 to 155 centimeters (35.4 to 61 inches)

Oi --- 0 to 3 centimeters (0 to 1.2 inches); Partially decomposing needles, twigs, & cones.

A --- 3 to 13 centimeters (1.2 to 5.1 inches); grayish brown (10YR 5/2) dry, cobbly loam; very dark grayish brown (10YR 3/2) moist; 50 percent sand; 36 percent silt; 14 percent clay; structure; very friable, slightly hard, nonsticky, nonplastic; many very fine roots throughout, many fine roots throughout, common medium roots throughout and common coarse roots throughout; many very fine interstitial pores; 5 percent nonflat subangular 250 to 600 millimeters (10 to 24 inches) calcareous sandstone fragments, 15 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 10 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.6 mmhos/cm; noneffervescent by HCl, 1 normal; neutral, pH 7.2; clear wavy boundary; CaCO₃ 2.7 Percent.

AB --- 13 to 25 centimeters (5.1 to 9.8 inches); grayish brown (10YR 5/2) dry, cobbly sandy loam; very dark grayish brown (10YR 3/2) moist; 52 percent sand; 32 percent silt; 16 percent clay; moderate medium subangular blocky structure; very friable, slightly hard, nonsticky, nonplastic; many very fine roots throughout, many fine roots throughout, common medium roots throughout and common coarse roots throughout; many very fine dendritic tubular and common fine dendritic tubular pores; 15 percent (few) clay films on all faces of peds; 5 percent nonflat subangular 250 to 600 millimeters (10 to 24 inches) calcareous sandstone fragments, 15 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 10 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.5 mmhos/cm; noneffervescent by HCl, 1 normal; neutral, pH 7.2; clear smooth boundary; CaCO₃ 2.3 Percent.

Bt --- 25 to 60 centimeters (9.8 to 23.6 inches); light brownish gray (10YR 6/2) dry, extremely cobbly loam; dark grayish brown (10YR 4/2) moist; 49 percent sand; 34 percent silt; 17 percent clay; strong medium subangular blocky structure; friable, hard, nonsticky, nonplastic; many very fine roots throughout, common fine roots throughout, common medium roots throughout and common coarse roots throughout; common very fine dendritic tubular and common fine dendritic tubular pores; 15 percent (few) clay films on all faces of peds and 25 percent (common) clay films between sand grains; 5 percent nonflat subangular 250 to 600 millimeters (10 to 24 inches) calcareous sandstone fragments, 20 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 5 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.5 mmhos/cm; slightly effervescent by HCl, 1 normal; neutral, pH 7.2; clear wavy boundary; CaCO₃ 1.3 Percent.

Btk — 60 to 90 centimeters (23.6 to 35.4 inches); pale brown (10YR 6/3) dry, gravelly loam; brown (10YR 4/3) moist; 51 percent sand; 32 percent silt; 17 percent clay; structure; friable, hard, nonsticky, nonplastic; common very fine roots throughout, common fine roots throughout, common medium roots throughout and common coarse roots throughout; common very fine dendritic tubular pores; 5 percent (few) clay films on all faces of peds and 15 percent (few) clay films between sand grains; 2 percent (common) fine carbonate concretions on bottom of rock fragments; 2 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 25 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.4 mmhos/cm; strongly effervescent by HCl, 1 normal; slightly alkaline, pH 7.4; clear smooth boundary; CaCO₃ 1.8 Percent.

Bk1 — 90 to 123 centimeters (35.4 to 48.4 inches); pale brown (10YR 6/3) dry, very gravelly loam; brown (10YR 4/3) moist; 42 percent sand; 37 percent silt; 21 percent clay; moderate medium subangular blocky structure; friable, hard, slightly sticky, slightly plastic; common very fine roots throughout, common fine roots throughout, common medium roots throughout and common coarse roots throughout; common very fine dendritic tubular pores; 2 percent (common) fine masses of carbonate on vertical faces of peds and 4 percent (common) fine carbonate concretions on bottom of rock fragments; 10 percent nonflat subangular 76 to 250 millimeters (3 to 10 inches) calcareous sandstone fragments and 25 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.5 mmhos/cm; violently effervescent by HCl, 1 normal; slightly alkaline, pH 7.5; clear smooth boundary; CaCO₃ 7.9 Percent.

Bk2 — 123 to 155 centimeters (48.4 to 61 inches); light brownish gray (10YR 6/2) dry, loam; brown (10YR 4/3) moist; 46 percent sand; 34 percent silt; 20 percent clay; moderate medium subangular blocky structure; friable, hard, slightly sticky, slightly plastic; common very fine roots throughout, common fine roots throughout, common medium roots throughout and common coarse roots throughout; common very fine dendritic tubular pores; 8 percent (common) fine masses of carbonate on vertical faces of peds and 2 percent (common) fine carbonate concretions on bottom of rock fragments; 10 percent nonflat subangular 2 to 76 millimeters (0.1 to 3 inches) calcareous sandstone fragments; electrical conductivity of 0.5 mmhos/cm; by HCl, 1 normal; slightly alkaline, pH 7.5; CaCO₃ 8 Percent.

10-6-09
USDA USDA-NRCS PEDON DESCRIPTION FORM MO6, LAKEWOOD, CO
Draft 5/97

Series or Comp Name: *Amaliga family* Date: *11-13-09* State: *UT* County: *Carbon B. Canyon* SSA: _____ Unit: _____ MLRA: *48A*

MU Sym: _____ Pedon Type: *Backhoe* Lab #: _____ Photo #: _____ Land Use: *Rangeland*

Surface Frag %: GR: *12* CR: *5* ST: *3* BD: *1* CN: *-* FL: *-* Permeability: *mod High* Drainage: *well* Elevation: *2150m/7150'*

Major Landform: *Piedmont* Local Landform: *Stream Terrace* Moisture Regime: *Arctic Tundra* Percent Slope: *.7* Aspect: *226°*

Up Shape: *concave* Across Shape: *linear* Geomorphic: *B5* Hillslope: *concave*

Erosion: Knd: _____ Dep: _____ Runoff: *mod* Classification: *Calcic Haplustalf*

Location: _____ Latitude: _____ UTM: Zone: _____ mE _____ mN: _____
 Sec. *14 T. 14S R. 13E 3L* Longitude: _____

Parent Material/Bedrock: *Alluvium* Diagnostic: *12-52* *calci: 52-170* Describer(s): *3 Long*

Moisture depth(s): _____ Control Section Ave: Clay %: *12-52cm 18* Rock Frag %: *32* Precipitation: *12-16"* Temperature @ 50 cm: *10°C @ 50cm*

VEGETATION:		
SYMBOL	COMMON NAME	% COV COVER
	<i>Big grass</i>	
	<i>Utah Juniper - narrow</i>	
	<i>Rabbit brush</i>	
	<i>Intermediate shrub</i>	

NOTES:

Upper 52 cm shows evidence of previous disturbance - may have been a fire

Rock fragments in upper 50 cm appear to be result of disturbance

Depth <i>cm</i>	Horizon	Matrix Color		Texture	Structure	Rupture Resist				Mottles			Pod Surface Features			Effer			
		Dry	Moist			Dry	Max	Sck	Pls	% Sz	Con	Col	Slp	Loc	Knd		% Con	Dst	Loc
0-1	OL	<i>Leaves</i>			<i>2 fucoids</i>														
1-12	A	<i>10YR 6/3</i>	<i>10YR 4/2</i>	<i>CBV 5L</i>	<i>2m sbk</i>	<i>5h</i>	<i>fr</i>	<i>50</i>	<i>po</i>										<i>VS</i>
12-27	Bt ₁	<i>10YR 6/3</i>	<i>10YR 4/2</i>	<i>CBV 5L</i>	<i>2m sbk</i>	<i>h</i>	<i>fr</i>	<i>50</i>	<i>po</i>										<i>VS</i>
27-52	Bt ₂ K	<i>10YR 7/5</i>	<i>10YR 5/3</i>	<i>GRV L</i>	<i>2m sbk</i>	<i>h</i>	<i>fr</i>	<i>55</i>	<i>po</i>										<i>5L</i>
52-90	Bt ₃ K1	<i>10YR 7/5</i>	<i>10YR 5/4</i>	<i>5L</i>	<i>2fm sbk</i>	<i>h</i>	<i>fr</i>	<i>50</i>	<i>po</i>										<i>5T</i>
90-117	Bt ₃ K2	<i>10YR 7/5</i>	<i>10YR 5/3</i>	<i>5L</i>	<i>1m sbk</i>	<i>h</i>	<i>fr</i>	<i>50</i>	<i>po</i>										<i>5T</i>
117-133	Bt ₃ K	<i>10YR 7/3</i>	<i>10YR 5/3</i>	<i>CB 5L</i>	<i>2m sbk</i>	<i>h</i>	<i>fr</i>	<i>50</i>	<i>po</i>										<i>VE</i>
133-170	Bt ₃ K	<i>10YR 7/3</i>	<i>10YR 5/3</i>	<i>CB L</i>	<i>2m sbk</i>	<i>h</i>	<i>fr</i>	<i>50</i>	<i>po</i>										<i>VE</i>

Roots Qty Sz Loc	Pores Slp Qty Sz	Concentrations		Rock Frag Knd % Rnd Sz	Wet	pH	Clay %	CCE	Bnd	Notes (e.g., Diagnostic)
		Knd % slip Sz	Loc Col							
				<i>Sand 20% GR 15% Am C</i>	<i>SM</i>	<i>7</i>	<i>12</i>	<i>5.4</i>	<i>CS</i>	
			<i>CALIT BRF</i>	<i>Sand 20% GR 15% Am C</i>	<i>SM</i>	<i>7</i>	<i>15</i>	<i>9.5</i>	<i>CS</i>	<i>4% of soil</i>
			<i>CACZFT VPE</i>	<i>Sand 25% GR 2A 5% CB</i>	<i>clay</i>	<i>7</i>	<i>10</i>	<i>7.0</i>	<i>CS</i>	<i>2% of soil</i>
			<i>CAMRT VPE</i>		<i>clay</i>	<i>7.1</i>	<i>12</i>	<i>11.2</i>	<i>CS</i>	
			<i>CAMBT VPE</i>		<i>clay</i>	<i>7.2</i>	<i>10</i>	<i>9.1</i>	<i>CS</i>	
			<i>CAM4T VPE</i>	<i>Sand 15% GR CB</i>	<i>clay</i>	<i>7.4</i>	<i>18</i>	<i>11.2</i>	<i>CS</i>	
			<i>CAM4T VPE</i>	<i>Sand 15% GR CB</i>	<i>clay</i>	<i>7.5</i>	<i>20</i>	<i>11.2</i>	<i>CS</i>	

B-7-09

USDA USDA-NRCS PEDON DESCRIPTION FORM MOH, LAKEWOOD, CO USD/

Series or Comp Name: *Cortezach* Date: *11-13-09* State: *UT* County: *Carbon* SSA: Unit: MLRA: *48A*

MU Sym: Pedon Type: *Catbank* Lab #: Photo #: Land Use: *woodland*

Surface Frag %: GR: *5* CB: *5* ST: *3* BD: *2* CN: *-* FL: *-* Permeability: *mod High* Drainage: *well* Elevation: *2176m/7140'*

Major Landform: *Plateau* Local Landform: *Canyon* Moisture Regime: *Ustic* Percent Slope: *45* Aspect: *335*

Up Shape: *convex* Across Shape: *linear* Geomorphic: *MB* Hillslope: *Footslope*

Erosion: *mod* Deg: *mod* Runoff: *H* Classification: *Calcic Argiustoll*

Location: Sec *14* T. *14S* R. *13E* *5L* Latitude: *37° 12' N* Longitude: *107° 58' W* UTM Zone: *12* mE: *548949* mN: *438935*

Parent Material/Bedrock: *colluvium* Diagnostic: *mollic argillic* Describer(s): *R Long*

Moisture depth(s): *25-75* Control Section Axis: Clay %: *17* Rock Frag %: *30* Precipitation: *16.24"* Temperature @ 50 cm:

VEGETATION:

SYMBOL	COMMON NAME	% COV COVER
	<i>Pinon Pine</i>	
	<i>Utah Juniper</i>	
	<i>Downy Elm</i>	
	<i>ARTRW</i>	
	<i>Poa</i>	
	<i>Whorlgrass</i>	

NOTES:

Clay increase in Bk likely due to carbonate clays.

Depth cm	Horizon	Matrix Color		Texture no. 6	Structure	Rupture Resist				Mottles			Ped Surface Features			Elev			
		Dry	Moist			Dry	Mst	Slt	Pts	% Sz	Con	Col	Shp	Loc	Knd %		Con	Dst	Loc
0-3	<i>Oi</i>	<i>Partially decomposing</i>																	
3-13	<i>A</i>	<i>10YR 5/2</i>	<i>10YR 3/2</i>	<i>CB L</i>	<i>1m sbk / 2m sbk</i>	<i>sh</i>	<i>h</i>	<i>20</i>	<i>70</i>										<i>NE</i>
13-25	<i>AB</i>	<i>10YR 5/2</i>	<i>10YR 3/2</i>	<i>CB 3L</i>	<i>2m sbk</i>	<i>sh</i>	<i>h</i>	<i>50</i>	<i>70</i>										<i>NE</i>
25-60	<i>Bt</i>	<i>10YR 6/2</i>	<i>10YR 4/2</i>	<i>CBV L</i>	<i>3m sbk</i>	<i>h</i>	<i>fr</i>	<i>70</i>	<i>70</i>										<i>NE</i>
60-90	<i>Bk</i>	<i>10YR 6/3</i>	<i>10YR 4/3</i>	<i>GA L</i>	<i>2m sbk</i>	<i>h</i>	<i>fr</i>	<i>70</i>	<i>70</i>										<i>SE</i>
90-123	<i>Bk1</i>	<i>10YR 6/3</i>	<i>10YR 4/3</i>	<i>GRV L</i>	<i>2m sbk</i>	<i>h</i>	<i>fr</i>	<i>55</i>	<i>57</i>										<i>SE</i>
123-155	<i>Bk2</i>	<i>10YR 6/2</i>	<i>10YR 4/3</i>	<i>L</i>	<i>2m sbk</i>	<i>h</i>	<i>fr</i>	<i>55</i>	<i>57</i>										<i>VE</i>

Roots Qty Sz Loc	Pores Shp Qty Sz	Concentrations Knd % shp Sz Loc Col	Rock Frag Knd % Rnd Sz	Wet	pH	Clay %	CCE	Bnd	Notes (e.g., Diagnostic)
<i>12 VF T</i>	<i>I 12 VF</i>		<i>25 GR</i>	<i>dry</i>	<i>7.2</i>	<i>14</i>	<i>2.7</i>	<i>CU</i>	<i>0.63</i>
<i>6 F 1m C</i>			<i>25 GR</i>	<i>dry</i>	<i>7.2</i>	<i>16</i>	<i>2.3</i>	<i>CU</i>	<i>0.54</i>
<i>9 VF T</i>	<i>D 6 VF</i>		<i>25 GR</i>	<i>dry</i>	<i>7.2</i>	<i>17</i>	<i>1.3</i>	<i>CU</i>	<i>0.57</i>
<i>25 RMC</i>	<i>D 2 F</i>		<i>25 GR</i>	<i>dry</i>	<i>7.4</i>	<i>17</i>	<i>1.9</i>	<i>CU</i>	<i>0.38</i>
<i>7 VF T</i>	<i>D 3 VF</i>	<i>CACRY TUN BRP</i>	<i>25 GR</i>	<i>dry</i>	<i>7.5</i>	<i>21</i>	<i>7.9</i>	<i>CS</i>	<i>0.46</i>
<i>35 RMC</i>	<i>D 1 F</i>	<i>CACRY TUN BRP</i>	<i>10 GR</i>	<i>dry</i>	<i>7.5</i>	<i>20</i>			<i>0.46</i>

ATTACHMENT 5

**DOGM INSPECTION REPORT AND SOILS
RECOMMENDATION**



GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA
Division Director

Inspection Report

Permit Number:	C0070041
Inspection Type:	COURTESY
Inspection Date:	Tuesday, January 17, 2012
Start Date/Time:	1/17/2012 10:00:00 AM
End Date/Time:	1/17/2012 1:30:00 PM
Last Inspection:	Tuesday, December 06, 2011

Representatives Present During the Inspection:	
OGM	Priscilla Burton
Company	Dave Shaver

Inspector: Priscilla Burton

Weather: sun 10F

InspectionID Report Number: 2990

Accepted by: jhelfric
2/6/2012

Permittee: **WEST RIDGE RESOURCES**
 Operator: **WEST RIDGE RESOURCES**
 Site: **WEST RIDGE MINE**
 Address: **PO BOX 910, EAST CARBON UT 84520-0910**
 County: **CARBON**
 Permit Type: **PERMANENT COAL PROGRAM**
 Permit Status: **ACTIVE**

Current Acreages

7,600.38	Total Permitted
30.99	Total Disturbed
	Phase I
	Phase II
	Phase III

Mineral Ownership

- Federal
- State
- County
- Fee
- Other

Types of Operations

- Underground
- Surface
- Loadout
- Processing
- Reprocessing

Report summary and status for pending enforcement actions, permit conditions, Division Orders, and amendments:

Dave Shaver and James Newman (both engineers with Andalex) and I discussed the permitting requirements for re-opening a pre-SMCRA exploration breakout in B Canyon (1/5 mile east of the west ridge mine) that was developed by Kaiser Coal Co in the 1960s. The site was reclaimed by DOGM/Abandoned Mines in May 1998 (AMR/007/930). West Ridge anticipates reopening this breakout to examine roof stability prior to mining through the area and reclaiming the site again within 6 months. We drove to the site which has slight snow cover (approximately 4 inches) to observe site conditions..

Inspector's Signature:

Priscilla Burton

Priscilla Burton,

Inspector ID Number: 37

Date Tuesday, January 17, 2012



Permit Number: C0070041
 Inspection Type: COURTESY
 Inspection Date: Tuesday, January 17, 2012

Inspection Continuation Sheet

REVIEW OF PERMIT, PERFORMANCE STANDARDS PERMIT CONDITION REQUIREMENTS

1. Substantiate the elements on this inspection by checking the appropriate performance standard.
 - a. For COMPLETE inspections provide narrative justification for any elements not fully inspected unless element is not appropriate to the site, in which case check Not Applicable.
 - b. For PARTIAL inspections check only the elements evaluated.
2. Document any noncompliance situation by reference the NOV issued at the appropriate performance standard listed below.
3. Reference any narratives written in conjunction with this inspection at the appropriate performance standard listed below.
4. Provide a brief status report for all pending enforcement actions, permit conditions, Divison Orders, and amendments.

	Evaluated	Not Applicable	Comment	Enforcement
1. Permits, Change, Transfer, Renewal, Sale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Signs and Markers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Topsoil	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.a Hydrologic Balance: Diversions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.b Hydrologic Balance: Sediment Ponds and Impoundments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.c Hydrologic Balance: Other Sediment Control Measures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.d Hydrologic Balance: Water Monitoring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.e Hydrologic Balance: Effluent Limitations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Explosives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Disposal of Excess Spoil, Fills, Benches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Coal Mine Waste, Refuse Piles, Impoundments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Noncoal Waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Protection of Fish, Wildlife and Related Environmental Issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Slides and Other Damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Contemporaneous Reclamation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Backfilling And Grading	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Revegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Subsidence Control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Cessation of Operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.a Roads: Construction, Maintenance, Surfacing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.b Roads: Drainage Controls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Other Transportation Facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Support Facilities, Utility Installations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. AVS Check	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Air Quality Permit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Bonding and Insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Permit Number: C0070041
Inspection Type: COURTESY
Inspection Date: Tuesday, January 17, 2012

Inspection Continuation Sheet

Page 3 of 3

3. Topsoil

The site is previously disturbed. Soil surveys upstream of the site may provide baseline information. Vegetation visible on the site included sagebrush and rabbitbrush. The shrubs should be grubbed and stockpiled for replacement on the surface as mulch. The surface foot of soil should be salvaged and stockpiled to be replaced on the surface of the reclaimed site.

12. Backfilling And Grading

The surface foot of material should be handled separately and stored for replacement on the surface of the reclaimed site. The remainder of the fill may be stockpiled or used for construction of a ramp or roadway to the portal.

ATTACHMENT 6

**APPROVED SEED MIX FROM AML RECLAMATION
PROJECT**

97-011-8742

7/14/98

**SUNNYSIDE MINE PROJECT
RECLAMATION CONSTRUCTION**

◀ CONTRACT SPECIFICATIONS ▶

AMR/007/930

MAY 1998

Requisition Number RX 560 820000018

Carbon County, Utah



**UTAH
NATURAL RESOURCES
Oil, Gas & Mining**

**Abandoned Mine Reclamation Program
Salt Lake City, Utah**

APPENDIX D

**SUNNYSIDE PROJECT REVEGETATION SEED MIX
MIXED SHRUB/HERBACEOUS SEED MIXTURE**

APPENDIX D

SUNNYSIDE PROJECT REVEGETATION SEED MIX
MIXED SHRUB/HERBACEOUS SEED MIXTURE

A. Seed

<u>Common Name</u>	<u>Scientific name</u>	<u>Pounds PLS/Acre*</u>
Grasses		
Thick spike wheatgrass	<i>Elymus dasystachum</i>	1.00
Western wheatgrass	<i>Pascopyrum smithii</i>	2.00
Slender wheatgrass	<i>Elymus trachycaulum</i>	2.00
Mountain brome	<i>Bromuopsis cilatus</i>	3.00
Indian ricegrass	<i>Stipa (Oryzopsis) hymenoides</i>	2.00
Green needlegrass	<i>Stipa viridula</i>	2.00
Forbs		
Cicer milkvetch	<i>Astragalus cicer</i>	0.50
Palmer penstemon	<i>Penstemon palmeri</i>	2.00
Strawberry clover	<i>Trifolium sp</i>	2.00
Everyday Aster	<i>Aster cilensis</i>	2.00
Shrubs		
Mountain big sagebrush	<i>Artemisia tridentata vaseyana</i>	0.50
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	1.00
Four-wing saltbush	<i>Atriplex canescens</i>	4.00
Winterfat	<i>Ceratoides lanata</i>	2.00
Wild rose	<i>Rosa woodsii</i>	2.00
		<u>28.00</u>

The planting rate indicated (pounds PLS/acre) is for broadcast seeding and hydroseeding.

*PLS= Pure Live Seed.

Because packaged seed contains nonviable seed, chaff, and other inert materials in addition to live seed, the actual application rate of total seed mix material will be greater than 28 pounds per acre.

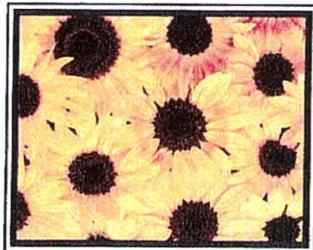
ATTACHMENT 7

VEGETATION AND SENSITIVE SPECIES REPORT

MT. NEBO SCIENTIFIC

Vegetation & Sensitive Species
at the
"B" Canyon Portal Area
West Ridge Mine
2012

Prepared
for
West Ridge Resources, Inc.



Prepared by

MT. NEBO SCIENTIFIC, INC.
330 East 400 South, Suite 6
Springville, Utah 84663
(801) 489-6937

by

Patrick D. Collins, Ph.D.

for

WEST RIDGE RESOURCES, INC.
West Ridge Mine
P.O. Box 910
East Carbon, Utah 84520



February 2012

TABLE OF CONTENTS

INTRODUCTION	1
METHODS	2
RESULTS	3
Portal Reclamation.....	3
Plant Species Seeded	4
Threatened, Endangered & Sensitive Species.....	6
SUMMARY & CONCLUSIONS	9

INTRODUCTION

The West Ridge Mine, an underground coal mine, is located in "C" Canyon of the Book Cliffs Plateau in eastern Utah. West Ridge Resources has plans to re-open an old mine portal in an adjacent drainage called "B" Canyon. The UTM coordinates for the B Canyon Portal area are 0549177m E; 4384246m N (NAD 27).

The B Canyon Portal was originally constructed in conjunction with early coal mining activities by Kaiser Steel and Sunnyside Coal Mines. Long after the portal was vacated, a 1997 technical report called "Evaluation Report of the Portal & Shafts of the Kaiser Steel and Sunnyside Coal Mines" (Castle Valley Technical Services, September 1997) described the B Canyon Portal as follows:

"The portal is located up B Canyon, it is a single portal which accesses two entries underground. This portal is of steel arched construction with sheet metal covering. It is faced with sheet metal and metal screen. The door has been removed but is still attached to the face by a chain and lock.

Portal opening is 16' wide by 8' high. Steel arches are on 3' center. A block seal with mortar face is located in by the portal opening. There is no obvious air movement, not opening nor voids. There is a 30' by 30' earthen pad immediately in front of the portal opening. A 20' long by 30' wide berm exists above the entry."

For an early photograph of the portal, see Figure 1.

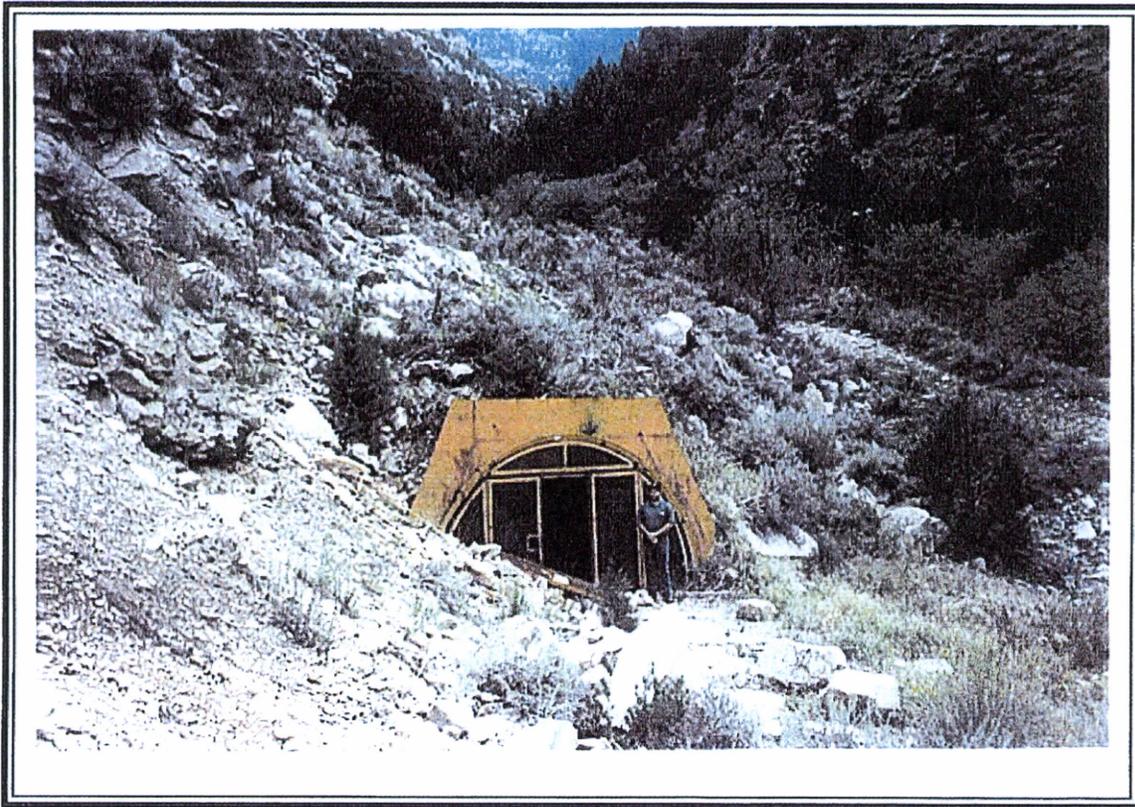


Figure 1: Historical Photograph of the B-Canyon Portal (from a Castle Valley Technical Services report, September 1997)

METHODS

A review of the available information about the B Canyon was completed. A site visit was then conducted on January 18, 2012 that included the author, Dave Shaver, an engineer from West Ridge Resources, and Joe Helfrich, a biologist from the State of Utah, Division of Oil, Gas & Mining (DOG M). Qualitative data about the habitat and plant species present onsite were collected during the site visit.

RESULTS

Portal Reclamation

Although the exact date that the B Canyon Portal was constructed was not shown in the information that was reviewed for this report, it appears that the State of Utah, Abandoned Mine Lands (AML) program sealed and reclaimed the site in July 1998. A current photograph of the reclaimed site is shown in Figure 2 (compare the yellow arch barely visible here with that shown in Figure 1).



Figure 2: Current Photograph of the B-Canyon Portal site (photo by J. Newman, December 2011).

Plant Species Seeded

The AML information indicated that a mixture of shrub and herbaceous plants were seeded at the site after the portal was sealed and backfilled. The list of species planted is shown on Table 1.

Table 1: Seed Mixture for Revegetation at the B Canyon Portal (1998).

SCIENTIFIC NAME*	COMMON NAME
Shrubs	
<i>Artemisia tridentata var. vaseyana</i>	Mountain big sagebrush
<i>Atriplex canescens</i>	Four-wing saltbush
<i>Ceratoides lanata</i>	Winterfat
<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush
<i>Rosa woodsii</i>	Wild rose
Forbs	
<i>Aster chilensis</i>	Pacific aster
<i>Astragalus cicer</i>	Cicer milkvetch
<i>Penstemon palmeri</i>	Palmer penstemon
<i>Trifolium sp.</i>	Strawberry clover
Grasses	
<i>Bromus ciliatus</i>	Fringed brome
<i>Elymus lanceolatus</i>	Thickspike wheatgrass
<i>Elymus trachycaulum</i>	Slender wheatgrass
<i>Elymus smithii</i>	Western wheatgrass
<i>Stipa hymenoides</i>	Indian ricegrass
<i>Stipa viridula</i>	Green needlegrass
* Scientific names updated for this document.	

Although not the optimum time of the year to identify all plant species at the site, a list of species observed at the B Canyon Portal area in January 2012 is shown on Table 2.

Table 2: Plant Species List for the B Canyon Portal (2012).

SCIENTIFIC NAME	COMMON NAME
Shrubs	
<i>Artemisia tridentata</i> var. <i>tridentata</i>	Basin big sagebrush
<i>Artemisia tridentata</i> var. <i>vaseyana</i>	Mountain big sagebrush
<i>Atriplex canescens</i>	Four-wing saltbush
<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush
<i>Ephedra viridis</i>	Mormon tea
<i>Juniperus osteosperma</i>	Utah juniper
<i>Pinus edulis</i>	Pinyon-pine
<i>Pseudotsuga menziesii</i>	Douglas fir
Forbs	
<i>Artemisia dracunculus</i>	Tarragon
<i>Aster chilensis</i>	Pacific aster
<i>Astragalus cicer</i>	Cicer milkvetch
<i>Grindelia squarrosa</i>	Gumweed
<i>Penstemon palmeri</i>	Palmer penstemon
<i>Sisymbrium altissimum</i>	Tumbling mustard
Grasses	
<i>Agropyron cristatum</i>	Crested wheatgrass
<i>Elymus lanceolatus</i>	Thickspike wheatgrass
<i>Elymus spicatum</i>	Bluebunch wheatgrass
<i>Elymus trachycaulum</i>	Slender wheatgrass
<i>Elymus smithii</i>	Western wheatgrass
<i>Stipa hymenoides</i>	Indian ricegrass

Threatened, Endangered & Sensitive Species

A vegetation study and a sensitive species survey were conducted previously at a nearby proposed Gas Vent Site (*Vegetation & Sensitive Species: Gas Vent Site in "B" Canyon for the West Ridge Mine, Carbon County, Utah*. Mt. Nebo Scientific, Inc., Springville, UT. April 2010). The access road for this study began at the B Canyon Portal site and continued up-canyon to the proposed drill site. In the earlier study, no federally listed or otherwise sensitive species were found in the area. Since that study, an updated list of the threatened, endangered & candidate species list for Carbon County, Utah has been formulated and has been included in this report, along with comments about habitat and the likelihood of potential impacts to these species as a result of re-opening the B Canyon Portal (Table 3).

Table 3: Federally listed threatened, endangered & candidate species in Carbon County, Utah and notes regarding potential impacts to them as a result of the proposed construction in B Canyon.

NOTE: This list was compiled using known species occurrences and species observations from the Utah Natural Heritage Program's Biodiversity Tracking and Conservation System (BIOTICS). This list includes both current and historic records. (Last updated on January 12, 2012).

Scientific Name	Common Name	Status*	Site-Specific Notes
<i>Gila cypha</i>	Humpback chub	E	Humpback chub in Utah are now confined to a few white-water areas in the Colorado, Green, and White Rivers. These rivers do not occur in the study area. The drainage control measures of the site limit impacts to the downstream drainage of the Colorado River system. There should be no impacts to this species as a result of re-opening of the portal.

Table 3: Federally listed threatened, endangered & candidate species in Carbon County, Utah and notes regarding potential impacts to them as a result of the proposed construction in B Canyon.

NOTE: This list was compiled using known species occurrences and species observations from the Utah Natural Heritage Program's Biodiversity Tracking and Conservation System (BIOTICS). This list includes both current and historic records. (Last updated on January 12, 2012).

<i>Gila elegans</i>	Bonytail	E	<p>The bonytail is a very rare minnow originally native to the Colorado River system.</p> <p>These rivers do not occur in the study areas. The drainage control measures of the site limit impacts to the downstream drainage of the Colorado River system.</p> <p>There should be no impacts to this species as a result of re-opening of the portal.</p>
<i>Xyrauchen texanus</i>	Razorback sucker	E	<p>This species prefers slow backwater habitats and impoundments in the Colorado River system. Utah Division of Wildlife Resources distribution maps of this species for Carbon County shows to occur near the Green River in extreme eastern portion of the county.</p> <p>These rivers do not occur in the study areas. The drainage control measures of the site limit impacts to the downstream drainage of the Colorado River system.</p> <p>There should be no impacts to this species as a result of re-opening of the portal.</p>
<i>Ptychocheilus lucius</i>	Colorado pikeminnow	E	<p>The Colorado pikeminnow is a fish that prefers medium to large rivers. With the loss of habitat they are now restricted to the upper Colorado River system.</p> <p>These rivers do not occur in the study area. The drainage control measures of the site limit impacts to the downstream drainage of the Colorado River system.</p> <p>There should be no impacts to this species as a result of re-opening of the portal.</p>
<i>Canus lupus</i>	Gray Wolf	E	<p>Although once common in Utah, the gray wolf was extirpated (exterminated) from the state by early settlers. Although they have been reintroduced in adjacent states, and may move into the state, reintroduction to Utah has been planned to-date.</p> <p>There should be no impacts to this species as a result of re-opening of the portal.</p>

Table 3: Federally listed threatened, endangered & candidate species in Carbon County, Utah and notes regarding potential impacts to them as a result of the proposed construction in B Canyon.

NOTE: This list was compiled using known species occurrences and species observations from the Utah Natural Heritage Program's Biodiversity Tracking and Conservation System (BIOTICS). This list includes both current and historic records. (Last updated on January 12, 2012).

<i>Mustela nigripes</i>	Black-footed ferret	Ex	Black-footed ferret habitat is primarily prairie grasslands. The ferret has a diet consisting of almost 90% prairie dogs. This habitat and food source does not occur in the study areas. There should be no impacts to this species as a result of re-opening of the portal.
<i>Centrocercus urophasianus</i>	Greater sage-grouse	C	Greater sage-grouse inhabit sagebrush zone in Utah's mountain valleys and foothills. No brooding or winter habitat for this species is shown on the DWR database. This area in B Canyon is not viable habitat for these birds. There should be no impacts to this species as a result of re-opening of the portal.
<i>Sclerocactus wetlandicus</i>	Uinta Basin hookless cactus	T	<i>Sclerocactus wellandicus</i> (also known as <i>S. glaucus</i> and <i>S. whipplei</i> var. <i>roseus</i>) generally occurs on cobblely, gravelly, or rocky surfaces on river terrace deposits along the White and Green Rivers of Utah. <i>Sclerocactus wellandicus</i> occurs on varying exposures, but is more abundant on south facing exposures, and on slopes to about 30 percent grade; it is most abundant at the point where terrace deposits break from level tops to steeper side slopes. Plant communities and species associated with this species are bud sage, shadscale, black sagebrush and horsebrush. There is no habitat for this cactus at or adjacent to the portal site. There should be no impacts to this species as a result of re-opening of the portal.
<i>Penstemon grahamii</i>	Graham beardtongue	T (P)	<i>Penstemon grahamii</i> is uncommon and mostly found on shale and talus ledges in the Green River formation. This formation does not outcrop near the portal area. There should be no impacts to this species as a result of re-opening of the portal.

* Status
 C = Candidate
 E = Endangered
 T = Threatened
 Ex = Extirpated
 P = Proposed

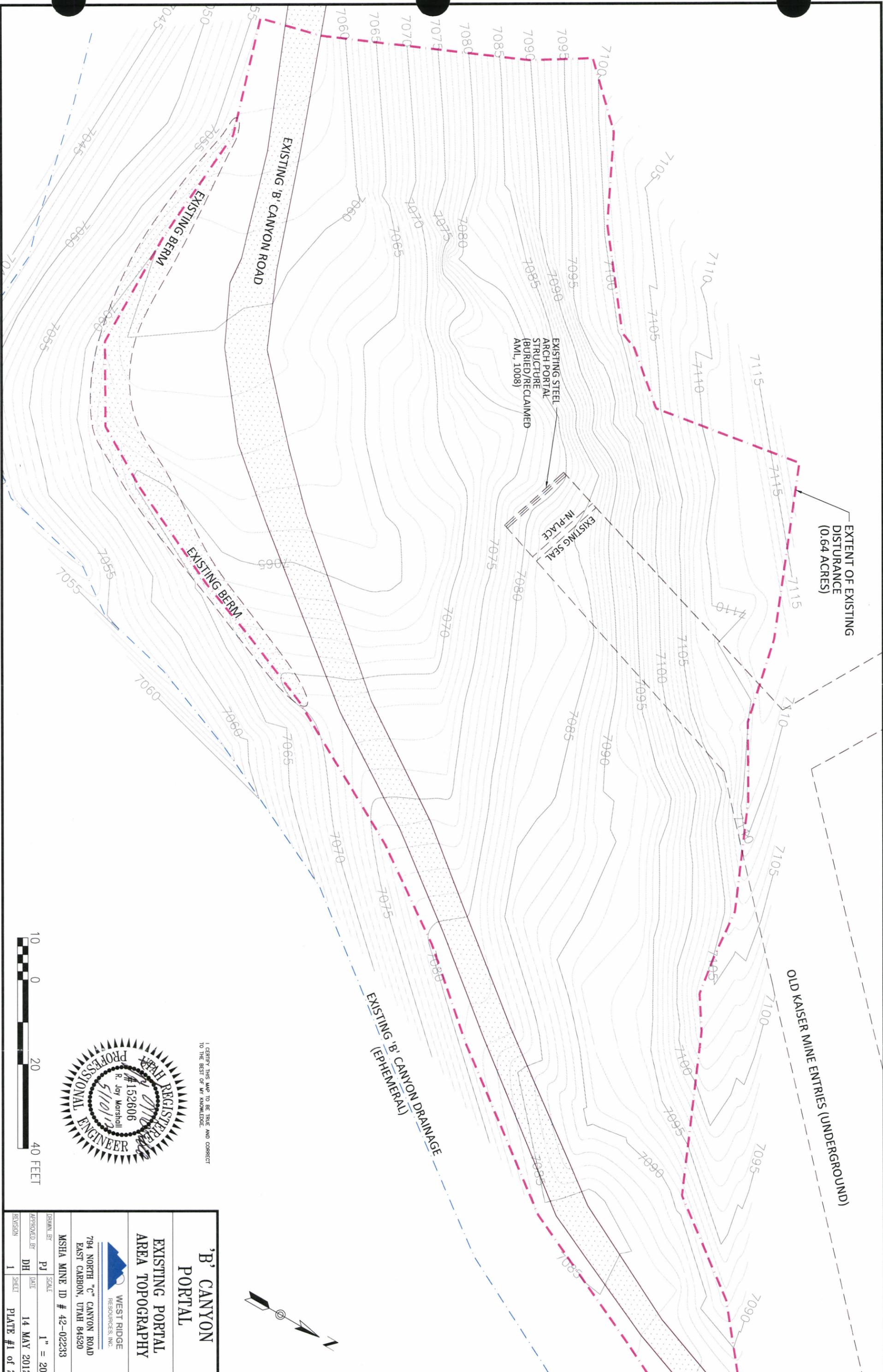
SUMMARY & CONCLUSIONS

West Ridge Resources has proposed to re-open an old mine portal in B Canyon. This portal was closed, sealed, reclaimed and seeded by the State of Utah, Abandoned Mine Lands (AML) program in 1998. A qualitative assessment of the vegetation and sensitive species at the portal site was conducted in 2012. A list of plant species currently present at the site has been included in this report. Additionally, an updated list of the threatened, endangered & candidate species list for Carbon County, Utah has also been provided, as well as comments about habitat and the likelihood of potential impacts to these species as a result of re-opening the B Canyon Portal. When the work in the re-opened portal is complete and the site is reclaimed, a similar seed mixture as was used by AML could be used for revegetation purposes.

ATTACHMENT 10

ENGINEERING DRAWINGS:

- a) EXISTING PORTAL AREA TOPOGRAPHY**
- b) PROPOSED PORTAL OPENING PROJECT**



EXTENT OF EXISTING DISTURANCE (0.64 ACRES)

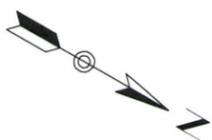
OLD KAISER MINE ENTRIES (UNDERGROUND)

EXISTING STEEL ARCH PORTAL STRUCTURE (BURIED/RECLAIMED AML, 1008)

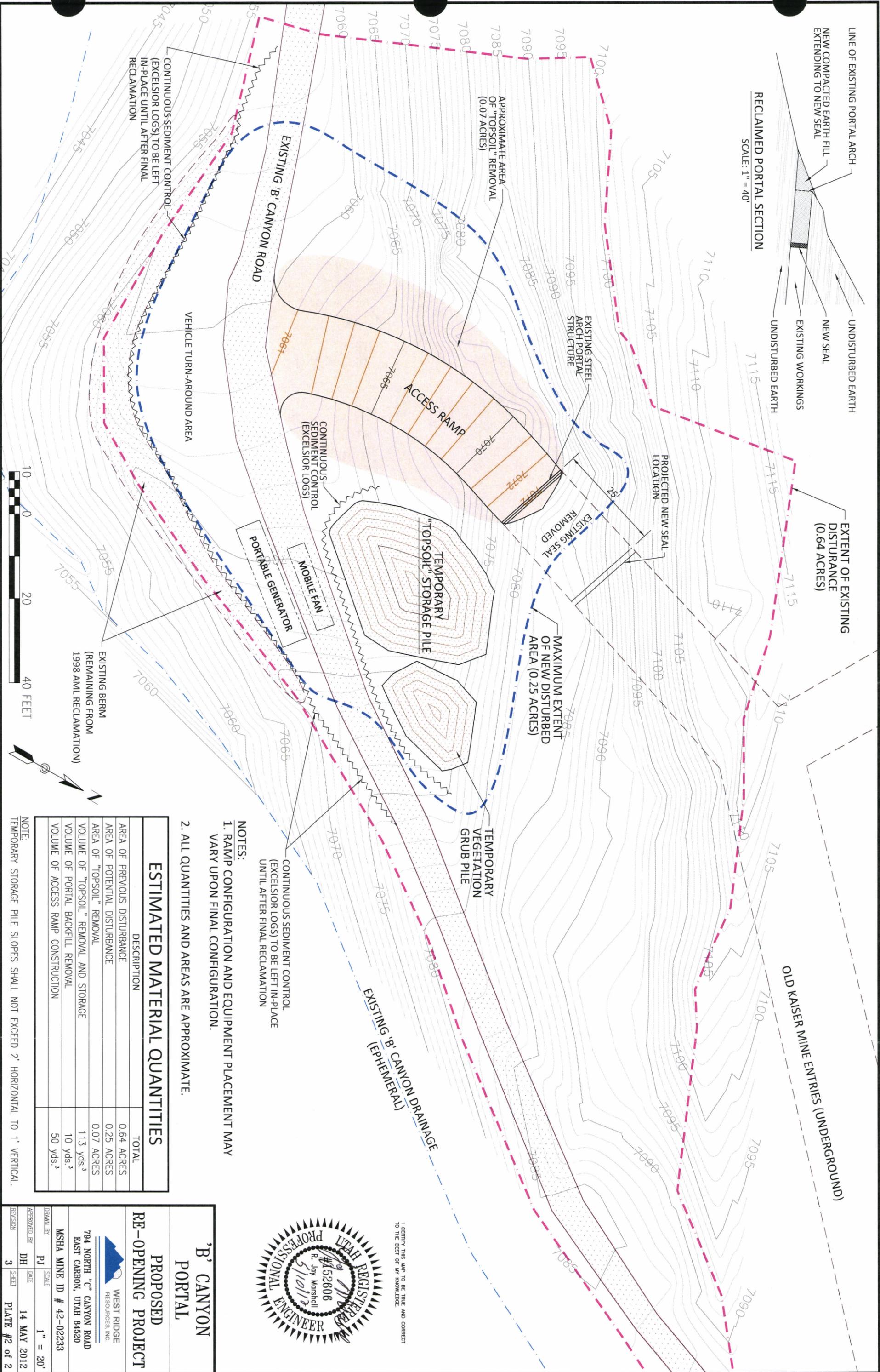
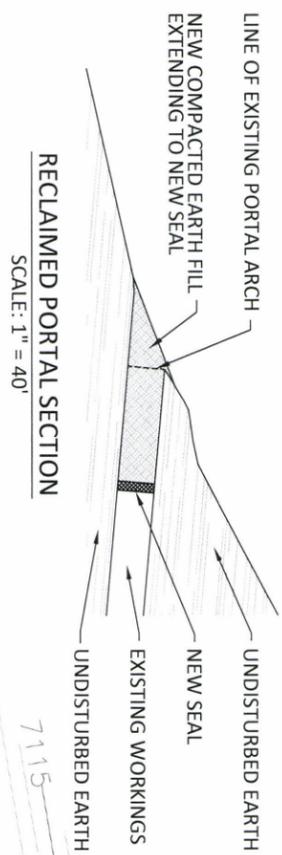
EXISTING SEAL IN-PLACE

EXISTING 'B' CANYON DRAINAGE (EPHEMERAL)

I CERTIFY THIS MAP TO BE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



'B' CANYON PORTAL	
EXISTING PORTAL AREA TOPOGRAPHY	
WEST RIDGE RESOURCES, INC. 794 NORTH "C" CANYON ROAD EAST CARBON, UTAH 84520	
MSHA MINE ID # 42-02233	
DRAWN BY	PJ
APPROVED BY	DH
DATE	14 MAY 2012
SCALE	1" = 20'
REVISION	1 SHEET
PLATE #1 of 2	



EXTENT OF EXISTING DISTURBANCE (0.64 ACRES)

MAXIMUM EXTENT OF NEW DISTURBED AREA (0.25 ACRES)

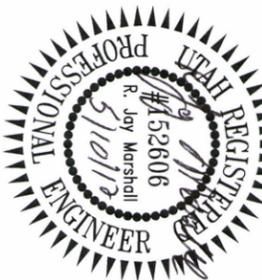
TEMPORARY "TOPSOIL" STORAGE PILE

EXISTING BERM (REMAINING FROM 1998 AML RECLAMATION)

- NOTES:**
1. RAMP CONFIGURATION AND EQUIPMENT PLACEMENT MAY VARY UPON FINAL CONFIGURATION.
 2. ALL QUANTITIES AND AREAS ARE APPROXIMATE.

ESTIMATED MATERIAL QUANTITIES

DESCRIPTION	TOTAL
AREA OF PREVIOUS DISTURBANCE	0.64 ACRES
AREA OF POTENTIAL DISTURBANCE	0.25 ACRES
AREA OF "TOPSOIL" REMOVAL	0.07 ACRES
VOLUME OF "TOPSOIL" REMOVAL AND STORAGE	113 yds. ³
VOLUME OF PORTAL BACKFILL REMOVAL	10 yds. ³
VOLUME OF ACCESS RAMP CONSTRUCTION	50 yds. ³



I CERTIFY THIS MAP TO BE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

'B' CANYON PORTAL

PROPOSED RE-OPENING PROJECT

WEST RIDGE RESOURCES, INC.
794 NORTH "C" CANYON ROAD
EAST CARBON, UTAH 84520

MSHA MINE ID # 42-02233

DRAWN BY	PJ	SCALE	1" = 20'
APPROVED BY	DH	DATE	14 MAY 2012
REVISION	3	SHEET	PLATE #2 of 2

**CHAPTER 8 BONDING
REVISIONS**

Bonding Calculations

Direct Costs

Subtotal Demolition and Removal	\$357,541.00
Subtotal Backfilling and Grading	\$775,240.00
Subtotal Revegetation	\$196,409.00
Direct Costs	\$1,329,190.00

Indirect Costs

Mob/Demob	\$132,919.00	10.0%
Contingency	\$66,460.00	5.0%
Engineering Redesign	\$33,230.00	2.5%
Main Office Expense	\$90,385.00	6.8%
Project Mainagement Fee	\$33,230.00	2.5%
Subtotal Indirect Costs	\$356,224.00	26.8%

Total Cost	\$1,685,414.00
------------	----------------

Escalation factor	0.012
Number of years	5
Escalation	\$103,581.00

Reclamation Cost	\$1,788,995.00
------------------	----------------

Bond Amount (rounded to nearest \$1,000) 2011 Dollars	\$1,789,000.00
--	----------------

Bond Posted 2004	\$2,117,000.00
------------------	----------------

Difference Between Cost Estimate and Bond	\$328,000.00
Percent Difference	18.33%

Ref	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swel Factor	Quantity	Unit	Cost
		Shop Warehouse 01																			107001
		Bathhouse 02																			23354
		Administration Office 03																			19016
		Powder Magazine 04																			488
		Overhead Conveyor 05																			6058
		Conveyor Belts 06																			1882
		Drive Unit 07																			3370
		Discharge Structure 08																			1000
		Bent Ayrge Bracing 09																			11442
		Cast Iron Conveyor Slingers 10																			13384
		Cast Iron Slingers 11																			2333
		Reel Stand (Incl. Stand) 12																			1340
		Loadout Conveyor Bent 13																			167
		Loadout Conveyor Bent 14																			3121
		Mine Fan 15																			6856
		Ductwork Airlock 16																			1091
		Motor Room 17																			959
		MCC 18																			20800
		Petrels 19																			4780
		Rock Dust Tanks 20																			1215
		Oil Grease Storage 21																			3358
		Dumpster Bay 22																			5000
		Monitoring Well 23																			1760
		Hillier Well 24																			8769
		Guard Rail 25																			2528
		Bypass Culvert 26																			442
		Culverts 27																			4138
		Water Tanks 28																			6146
		Reclaim Vails 29																			3801
		Reclaim Tunnel Sumpshere 30																			9713
		Reclaim Vent Hole																			40760
		Grid Gas Vent Hole																			4644
		IF Canyon Portal Rehabilitation																			
		Total																			357541

Rel.	Task	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
		B Canyon Portal Reclamation		DOGMI TI 4010	4604														1	Each	\$4,604	
		Structure's Vol. Demolished																				
		Rubble's Weight (exclude steel)																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Non Steel Truck																				
		Transportation Cost Non Steel Drive																				
		Disposal Cost Non Steel																				
		Steel's Weight																				
		Truck's Capacity																				
		Haulage																				
		Transportation Cost Steel Truck																				
		Transportation Cost Steel Truck Drive																				
		Disposal Cost Steel																				
		Subtotal																				\$4,604
		Equipment's Disposal Cost																				
		Dismantling Cost																				
		Equipment's Vol. Demolished																				
		Loading Costs																				
		Transport Costs																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Concrete Demolition																				
		Demolition Cost																				
		Concrete's Vol. Demolished																				
		Loading Cost																				
		Transportation Cost																				
		Disposal Costs																				
		Subtotal																				
		Total																				\$4,604