



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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July 21, 1992

TO: Daron Haddock, Permit Supervisor  
FROM: *BB* Priscilla Burton, Soils Reclamation Specialist  
RE: Mid-term Permit Review. Belina Complex. Valley Camp of Utah, Inc. ACT/007/001. Folder #2. Carbon County. Utah.

**SUMMARY:**

Stipulation #1 of the July 5, 1990 permit reads as follows:

*Within 90 days of permit issuance, the permittee must adequately respond to all deficiencies as outlined in the May 11, 1990 letter from the Division to Mr. Walter Wright, Valley Camp of Utah, Inc.*

Attached to the letter was a copy of the Technical Deficiency Review (TDR) completed 5/7/90. (Mr. Henry Sauer authored the soils section of this TDR.) An amended Mining and Reclamation Plan (MRP) was received on October 10, 1990 in response to Stipulation #1 on the permit.

The discussion of technical issues which follows pertains to  
1) the adequacy of responses of the 1990 MRP to the TDR, and  
2) an evaluation of the suitability of substitute cover material as determined by 4 years of field trials, and  
3 additional deficiencies identified in this review.

**ANALYSIS:**

**R645-301-223. Soil Resource Information**

Proposal:

Soils within the Valley Camp Lease Area are shown on Map 614-301-223.100 at an Order III level survey intensity. Adjacent soils along the Belina haulroad and at Valcam Loadout are mapped at an Order II intensity.

Soil survey/sampling locations are located on the map. They are not within the disturbed area of the Belina Mine site or the Valcam Loadout.

Analysis:

Valley Camp is not in compliance with Paragraph 1 of deficiency R614-301-223 of 1990. The survey provided is not correlated to the SCS-Carbon County Soil Survey through the use of series or family complex names.

In compliance with paragraph 2 of the 1990 Deficiency, a reliance upon Skyline's information is made clear to the reader. The first 3 pages of Section 2 of the Text discuss the methodologies used by Skyline Mine to evaluate the soils within the area of the Skyline Mine Rail Road Loadout and Conveyor Corridor. Conclusions reached by the Skyline Mine are also included in the text.

Valley Camp has extracted information from the Skyline Mine and attempted to correlate it with the soils of the Belina Mine and Valcam Loadout. No information on how the correlation was accomplished is provided. The Skyline survey/sample locations matched with Belina map units do not appear to correspond in elevation, slope or aspect. How were the Order Three and Order Two soil delineations of Map 614-301-223.100 derived? Please state the methods of correlation and the professional who undertook this technical work.

In responding to the deficiencies below, Valley Camp should keep in mind that R645-301-222 requires *...adequate soil survey information for those portions of the permit area to be affected by surface operations...*The survey must be conducted of the areas disturbed by coal mining activity: Belina Mine site, Belina Haulroad, Valcam Loadout, the General Office complex and Whiskey Creek.

Pertinent information for the soils of the disturbed area are requested under 222.100 through 222.400 and include a map, soil identification, soil description, and present and potential productivity of existing soils. The map must clearly indicate the disturbed area boundary and be on a scale of 1" = 500'. The map will indicate areas of substitute topsoil storage, topsoil storage, soil/vegetation test plots, study areas and other information of value in the determination of suitable cover material quality and quantity. If no information concerning the soils in an undisturbed state can be obtained, then the soils of the disturbed area must be surveyed in their present state to determine if *the best available cover material within the permit area (R645-301-233.100)* can be found within the disturbed area.

Valley Camp can pull together information which is provided in the consultant's reports of the Appendix, Section 6, where the

sampling locations of 1983 are shown at the Belina Mine Site and the Valcam Loadout. The following locations must also be included on the map: sediment pond waste sampled in 1988 and associated field trial at the Fan Portal #1 area (Text, section 2, page 21); storage of 975 yd<sup>3</sup> of sediment pond waste from pond 002A (Text, section 2, pg 22); samples of soils taken from test plots (Text, section 3, page 98); and samples from Areas A, B, G (Text, section 3, pages 89-97).

Deficiencies:

1. The soil survey map must be on a minimum scale of 1" = 500' (1:6000) and represent the disturbed area soils associated with the Belina Mine site, Belina haulroad, Valcam Loadout, General Office Complex, and Whiskey Creek. The disturbed area boundary must be included on the map and in the legend.
2. The soil survey map must indicate sampling locations of soils within the disturbed area (corresponding to the narrative), proposed substitute topsoil locations, topsoil stockpiles, soil/vegetation test plot locations, and other information necessary for the determination of the quality and quantity of cover material available within the disturbed area for reclamation.
3. The information used to correlate the Skyline mine plan soil sampling locations and Valley Camp's Soil survey must be made clear.
4. The qualified professional who prepared the Valley Camp Soil Survey from the Skyline survey must be identified as per R645-301-131 and R645-301-132.

**233. Topsoil Substitutes and Supplements.**

Proposal:

Sample analyses from a 1983 study performed by Morrison-Knudsen Company and their evaluation by Division staff were included as supportive documentation of the suitability of soils located in the Belina Mine area of Pond 004A (36,000 yd<sup>3</sup>) and selected areas of the Valcam Loadout (20,000 yd<sup>3</sup>). Samples from the Belina pad were taken in 2' increments at test hole 1; 4' increments at test hole 2; and unspecified increments at the B5 location. Samples taken from the Valcam Loadout appear to have been composite

samples to a depth of 8 or 10 feet.

Field trials of fill slopes at Valcam loadout and the Belina mine site have been evaluated for four seasons and the suitability of the material for topsoil substitute will be determined (by the Division) on the basis of the cumulative sampling and comparison with appropriate reference areas after the fifth season (1992 sampling). This is stated in the MRP in compliance with the 3rd paragraph of the TDR of 1990.

Analysis:

Valley Camp is not in compliance with the 1st, 2nd and 6th paragraphs of the Technical Deficiencies of 1990. Several sampling occurrences were mentioned within the plan but results were not found within the MRP: for instance, the 975 yd<sup>3</sup> of sediment pond waste from pond 002A (Text, section 2, pg 22); samples of soils taken from test plots (Text, section 3, page 98); samples from Areas A, B, G (Text, section 3, pages 89-97); samples from pond 001A clean-out in 1988 and associated field trial at the Fan Portal #1 area (Text, section 2, page 21). Other substitute topsoil materials which were mentioned, but which have not been sampled are the cut materials from the Belina Haulroad.

Results from the analyses of material which have been sampled and evaluated for use as substitute topsoil must be provided in the MRP or Appendix, including the name of sampler, date of sampling, date of laboratory analysis, laboratory methodology and laboratory name (R645-301-121).

Paragraph 4 of the 1990 TDR requests clarification of substitute topsoil storage pile locations and interim revegetation of fill which will ultimately be utilized for substitute topsoil. Valley Camp has not made this distinction clear either with a map or in the narrative on page 21 and 22 of Section 2 of the MRP. The Division is not certain which areas of pad fill have been designated as substitute topsoil. General areas which were sampled and which are being field tested are shown on figures in Appendix Section 6 along with sampling results. Valley Camp is not in compliance with this deficiency. A response to Item #2 of Deficiency R645-301-223 of 1992 should provide an adequate response to this 1990 deficiency.

Paragraph 5 of the 1990 TDR requests that prior to utilizing sediment pond waste as a substitute topsoil material, Valley Camp commits to analyzing the material for its suitability prior to redistribution of the material as substitute topsoil. This

commitment was not found within the MRP. The applicant is not in compliance with this item. The Division will evaluate suitability based on the following characteristics: pH, texture, soluble Ca, Na, Mg, cation exchange capacity, nitrate-nitrogen, phosphorus, potassium, boron, selenium, acid/toxic forming properties, waste oil & grease (EPA 418.1 or 413.1), gasoline and diesel (EPA 8015 modified or 620) and associated benzene, toluene, ethylene, xylene, naphthalene (BTEX(N), EPA 8020). naphthalene (BTEX(N)) tests.

The 2nd paragraph of the 1990 TDR requests information on mass balance of the Belina Haulroad reclamation. The final surface configuration will be brought to approximately a 2.5h:1v outslope and a 4h:1v road slope. Table 4.1 of Section 5 of the Appendix shows an estimated 31,000 yd<sup>3</sup> of fill material (including 5,000 yd<sup>3</sup> of road asphalt and concrete) to be placed against the cut slopes of the road. Potentially unstable areas listed in Table 2.1 (Appendix 5) will be the source of fill for the Belina Haulroad reclamation. Station locations used in the Table are not the same as those used on the Belina Haul Road Cross Sections (Map R614-301-550, sheet R2, R3, R6), therefore their accuracy could not be checked.

The text in Section 5, page 43, outlines the cut and fill volumes for the entire disturbed area. This table estimates the volume from the haul road as 68,000 yd<sup>3</sup> of cut available and 78,000 yd<sup>3</sup> of fill required for the reclamation of the Belina Haulroad. This information appears to contradict that provided in the Appendix, Section 5 as re-stated above.

Deficiency:

1. All material which is proposed for substitute topsoil (vegetation supporting material) must be sampled and analyzed according to R645-301-233.200 and R645-301-121. The results of sampling must be included within the MRP or its Appendices and its location referred to in the narrative of Section 2, Text.
2. The collection method (pit, auger, drill) for all Belina and Valcam Loadout samples and depth of sampling for test hole B5 at the Belina mine site and the Valcam Loadout sites 1, 2, and 3 must be clarified either within the text or on the sample analysis sheets.
3. A commitment must be found within the plan to test sediment pond waste and pad fill which is to be utilized as substitute topsoil at the time of final

reclamation for plant material growth suitability characteristic parameters (which have been described in the discussion above).

4. A sampling plan for the final graded fill must be developed to assure that there is a 4 foot depth on non-toxic, non-acidic growth medium for revegetation. The sampling plan must include sampling frequency, sampling depth and suitability characteristic parameters as described in the discussion above.
5. Valley Camp must correlate the expected volumes of fill material from the Belina Haulroad reclamation as stated on page 43 of Section 5 of the Text and the volume stated in Appendix, Section 5.
6. Valley Camp must include on Map R614-301-550 the potentially unstable areas designated in Table 2.1 of Appendix 5 which will be the source of fill during final reclamation and provide post-mining reclamation contours of the Eccles Creek Crossing (source of a large portion of the road reclamation fill).
7. A copy of R614-301-550 sheet R4, Belina cross-section locations must be provided with the text.

#### **240. Reclamation Plan.**

##### Proposal:

The reclamation plan for the Belina haulroad includes only areas which are to be regraded for stability. Road outslopes will be seeded only where redisturbance occurs or where existing vegetation requires interseeding to reach reference area standards. The areas which will not be regraded, which have revegetated naturally are located on Map R645-301-820.110.

Slopes at the Belina Mine site will not exceed the angle of repose for the material, except where they are demonstrated to meet the long term static safety factor of 1.3.

##### Analysis:

Map R645-301-820.110 was referred to on page 42 of Section 5 of the text, but could not be found. Reclamation Cost Estimates Table 4.2 (pg 47, Section 5, Text) does not include seeding or topsoiling cost estimates for the 55 acres of road which will not be topsoiled at the time of final reclamation. According to the

Table, asphalt will be broken up on 65 acres of road. Ten acres will be topsoiled (to a *sufficient* depth, pg 37, Section 5, Appendix) and seeded. The reclamation plan for the remaining 55 acres of roadway must be discussed within the MRP and included in the Cost Estimate Table.

Depth of scarification of the Belina Mine site and the Haulroad were alluded to but not defined on pg 24, Section 2, Text; and pg 44, Section 5, Appendix. An 18-24 inch depth is often perceived to be sufficient to allow root penetration and hold a layer of topsoil.

A testing plan for fertilization of cover material and topsoil was alluded to in Section 3, R614-301-300 and R614-301-340; pg 82 & 87 of Section 3, Appendix.

Deficiency:

1. The MRP must include a copy of Map R614-301-820.110 and must state whether these areas are covered by the performance bond or whether there has been a release of bond for these areas.
2. The reclamation plan for the 55 acres of roadway which will not be topsoiled must be discussed within the MRP and included in the Cost Estimate Table.
3. The depth of topsoil cover over the regraded fill areas must be specified within the MRP.
4. The angle of repose for the slopes at the Belina Mine site must be stated within the MRP.
5. The MRP must specify the depth of subsoil ripping prior to application of topsoil or where topsoil will not be applied, specify the depth of scarification of the surface grade.
6. The fertility testing plan for redistributed topsoil and substitute topsoil must be further defined in terms of frequency of tests and parameters to be tested.

**242. Soil Redistribution.**

Proposal:

Substitute Topsoils have been identified from sediment pond waste and pad fill at the Valcam Loadout and the Belina Mine site.

Limited quantities of topsoil is available at the Belina Mine site. At each location the MRP calls for a redistribution depth of 6". An estimated 36,000 yd<sup>3</sup> was determined suitable for substitute topsoil at the pad above the 004A sediment pond at Belina Mine site. An estimated 20,000 yd<sup>3</sup> were determined suitable for substitute topsoil use from selected areas of the Valcam loadout (areas were not shown on a map). The depth and quality of cover material is being tested in field plots at the Loadout and Mine site. Data has been collected from the years 1988-91.

Analysis:

A preliminary conclusion, reached without a reference comparison, is that 6 inches of cover does not provide enough rooting depth for shrubs, nor adequate living cover percentages.

A revisitiation of interimly revegetated Areas A, B, G at the Belina Mine Site and the Valcam truckdump (pg 90, Section 3) and Valcam Fan Portal #1 (pg 21, Section 2)) area seedings may provide a worthwhile comparisons of methodology and treatments for improving cover percentages. Map R614-301-341-300 was referenced for the locations of these plots (page 90, Section 3, Text), but this map could not be found.

No volume estimates or suitability criteria were found within the plan for the Whiskey Creek drainage, as per TDR, paragraph 1 of the 1990 review.

A commitment to separately remove and temporarily stockpile all proposed substitute topsoil material after facility removal and prior to backfilling and grading operations (requested in the 2nd paragraph of the 1990 TDR) could not be found within the MRP.

The mass balance Table found on page 43 of Section 5 of the Text does not differentiate fill from proposed topsoil material (as requested in the 3rd paragraph of the 1990 TDR). The planned excavation depth for salvage of the substitute material from the operations pads was not stated. The volume of topsoil required for cover of each area of disturbance was not found within the MRP. The total volume of stored topsoil was not indicated within the MRP.

Deficiencies:

1. Valley Camp must provide supplemental information for the Belina and Valcam test plots constructed in 1987, including: subsoil preparation techniques, cover soil

application method and depth, soil sampling locations, soils analyses, fertilization level and technique, slope angle, grazing use, and comparison Reference area analyses.

2. Valley Camp must provide Map R614-301-341-300 which was referenced on page 90, Section 3, of the Text.
3. Valley Camp must provide volume estimates and suitability information for areas of the Whiskey Creek drainage which will be disturbed or redisturbed during final reclamation.
4. Valley Camp must provide a commitment within the MRP to separately remove and temporarily stockpile all proposed substitute topsoil material after facility removal and prior to backfilling and grading operations
5. The mass balance Table found on page 43 of Section 5 of the Text must differentiate between fill and proposed topsoil material.
6. The planned excavation depth for salvage of the substitute material from the operations pads must be stated within the MRP and figured into the bonding calculations of R645-301-542.100.
7. The volume of topsoil required for cover of each area of disturbance must be stated in the MRP.
8. The total volume of stored topsoil must be stated in the MRP for each location of storage; the method of volume determination must be included with the statement.

#### 244. Soil Stabilization.

##### Proposal:

Page 46 of Section 5, Appendix indicates that all gullies reaching 9" will be repaired.

Topsoils and substitutes will be mulched in conjunction with the seeding treatment.

##### Analysis:

R645-301-244 requires that all gullies which *disrupt the approved*

*postmining land use or reestablishment of the vegetative cover or cause or contribute to a violation of water quality standards for receiving streams will be repaired.*

Erosion control measures for regraded topsoils and substitutes prior to seeding are not specified.

Deficiency:

1. The MRP must state that rills and gullies will be repaired (regardless of depth) when they are contributing to water quality standard violations or disrupting the postmining land use and/or establishment of vegetative cover.
2. The MRP must specify methods soil stabilization (including suitable mulch) after regrading, and prior to seeding.

**321. Alluvial Valley Floor Determination.**

Proposal:

Page 28 of Section 7 of the Text discusses an Soil Conservation Service determination and a DOGM 1984 Permit Finding that no alluvial valley floors exist based on the lack of sub-irrigation in the area, absence of agriculture or flood irrigation within the mine permit area, and due to the typical topography being a narrow canyon. Valley Camp is not in compliance with the Alluvial Valley Floors deficiency requests of the 1990 permit renewal. Information could not be found within the MRP to support the conclusions of Finding referred to on page 28 of Section 7 of Text.

Analysis:

Regulations require that the Division must issue a Finding based upon *information set forth in the application* (R645-302-232). Regardless of the presence of an alluvial valley floor, the Division must allow coal mining and reclamation operations to continue in an area if they were producing coal in commercial quantities prior to August 3, 1977.

Of concern is the Valcam Loadout permit area. As stated in the Text, Section 7, pg 1: *The Valcam portion of the Mine Permit Area crosses over a total of four small watersheds. Green Canyon is an east facing drainage and the remaining three (Broads Canyon*

*and two unnamed watersheds) are west facing drainages...Local perennial streams which may potentially be impacted by mining include...Mud Creek.*

Other statements within the plan indicate that the local alluvium are important water yielding strata (pg 48, Section 7 Text) and that water table conditions exist along larger perennial streams in alluvial deposits in flat lying sedimentary rocks (an excerpt from the USGS survey of 1979, pg 3, Section 7 Text).

Map R614-301-724.100a illustrates the locations of three springs and three wells within the Valcam Loadout and General Office disturbed area. Depth to the water table is not indicated. In fact, no groundwater information is available for the Valcam Loadout (pg 7, Section 7 Text).

Map R614-301-724.100a map also shows four points of diversion of Mud Creek below the Valcam Loadout, starting approximately 750' downstream of the mine site. The Scofield reservoir is approximately 3 mi North of the Valcam Loadout (pg 7, Section 7 Text).

The Starpoint sandstone along the Eastern portion of the permit area and on the West side of Mud Creek at the Valcam loadout is the regional groundwater reservoir which discharges to the stream (see Map R614-301-722.100c). The Blackhawk formation along the east of Mud Creek at Valcam Loadout is interbedded sandstone and shale which is fairly impervious and creates perched aquifer conditions (pg 12, Section 7 Text).

The Division requests that the following minimal information (itemized below as deficiencies) is provided to support the Finding disproving the existance of an alluvial valley floor in the region of the Valcam Loadout. The Division may reverse this Finding based on the information provided, however the Division may not preclude mining in an AVF where significant production occured prior to 1977.

Deficiencies:

1. Groundwater information including spring flows, and direction of shallow groundwater movement, well depths and water yielding strata for the Valcam Loadout (R645-302-321.210) must be provided within the MRP.
2. A map which shows historically flood irrigated areas, pasture lands, improved pasture and undeveloped rangeland in the permit and adjacent areas (R645-302-321.220 and .230) must be provided within the MRP.

3. Documentation that the Valcam Loadout is or is not subirrigated, based on groundwater monitoring data, soil moisture measurements and mottling characteristics rooting depth and water requirements of the vegetation (R645-302-321.240) must be provided within the MRP.
4. The MRP must include a map illustrating the pre-SMCRA (1977) coal mining activity disturbance boundaries in the Valcam Loadout area and the original contours of the Valcam Loadout area prior to mining activity.

**CONCLUSIONS:**

A mid-term review of the Valley Camp Mining and Reclamation plan raises similar questions that were itemized in the Permit Renewal Technical Deficiency Document.

The Division does not have a clear picture of the volume of cover material required for reclamation, the volume and storage location of substitute material available, the volume of substitute material presently under field testing.

Soil survey information for the site is limited. Results of some soil tests already performed were mentioned in the text but were not included in the Text or Appendix.