

CHAPTER 4

LAND USE AND AIR QUALITY

R645-301-400

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## **CHAPTER 4**

### **R645-301-400. LAND USE**

#### **410. REGIONAL LAND USE**

Land use and agricultural production in the Coal Hollow Project region centers around livestock production. Rangeland use for cattle grazing is the predominant land use in the Region. The majority of the land is classified as unimproved rangeland.

Some farming is done within the surrounding lands but crop choice and production levels are severely restricted by climate, soil, and water availability conditions. Alton and Sink Valley incur frequent early spring frost conditions as a result of cold air drainage into these low-lying valleys. These conditions and the resultant short growing season restrict crop choice to the more hardy wheat and small grain crops and alfalfa hay.

This land is also used as watershed, recreational hunting, and wildlife habitat.

Within the permit boundaries, all lands and mineral resources are owned privately. These lands are mainly used for grazing, and native wildlife habitat.

#### **411. ENVIRONMENTAL DESCRIPTION**

The permit area is within elevations 6840 feet and 7000 feet. It incorporated valley floors and hills, cradled between the Dixie National Forest. Climate is largely determined by local topography and the location of the area relative to the principal sources of moisture, the Pacific Ocean and the Gulf of Mexico. The existence of barriers between southern Utah and these moisture sources produces the dry temperature climate for which this area is renowned. A weather station was constructed in the summer of 2005 to monitor, monthly, precipitation, Temperature, Wind direction and speed, and is shown in Photographs 4-1 and 4-2.

Winter season Pacific storms reaching the Utah area must first cross the Sierra Nevada and Cascade Ranges to the west. Lifting of the air masses during passage over these barriers result in the majority of the moisture in the air condensing and falling out as precipitation. Thus, air mass reaching southern Utah from the west is generally dry and the associated precipitation is light. A similar barrier to moisture from the Gulf of Mexico can be found in the Rocky Mountains east of southeast Utah. During the summer, moist air masses do move into the southern part of Utah from the Gulf of California. Precipitation usually falls as thundershowers associated with these air masses. Precipitation for the area generally averages 16 inches per year. Temperature varies from a mean maximum temperature of 92 degrees during the summer months to a mean minimum temperature of 18 degrees during the winter months. Maximum snow depths average about 12” but usually melt fairly rapidly.

The predominant wind direction of south-central Utah ranges from southwest through west, with secondary peaks from the southeast and northwest. Surface winds near the

permit area average about eight miles per hour. Higher wind speeds are usually associated with the passage of frontal systems or thunderstorms, generally during the springtime.

#### 411.100 Premining Land Use Information

The premining use of the land within the permit boundaries is grazing, and wildlife habitat.

Rangeland use for cattle grazing is the predominant land use in the Alton Coal area. Together with lands too steep or unproductive for cattle grazing, these two lands account for 90% of land commitments.

The land within the permit area consists of unmanaged expanses of rolling to steep Pinion-Juniper landscapes, sagebrush and mountain brush, meadow, and pasture land. Some cattle grazing occurs within the pastureland, but is limited due to the short growing season.

Agricultural crop production is sustained on some land east of the permit area. 85% to 90% of this crop is not harvested, but is used for cattle grazing. Crop lands located north of the permit area and south of Alton are devoted to hay production for on-ranch winter cattle feed. Exhibit 4-1 reflects land use within and around the permit area. Photographs 4-3 and 4-4 show actual layout of Crop land and Grazing land.

Wildlife habitats within the mine area are reflected on Drawings 3-2 through 3-5. Black Bear, Rocky Mountain Elk, Mule Deer, and Greater Sage Grouse are some wildlife that uses the lands within the Permit area.

After reclamation, the mining area will be restored to support uses it was capable of supporting prior to mining. Vegetation will be restored to provide habitat and a food source for wildlife. Access roads, fence lines, and supporting structures will be reconstructed pursuant to the wishes of the surface landowner.

#### Utility corridors and other Right-of-ways

Kane County maintains a county road, County Road 136, which runs north-south through the western part of the permit area. This is reflected on Drawing 1-1. Alton Coal Development, under the direction and in corporation with Kane County, plans to temporarily relocate county road 136, east while mining operations commence to the west. This is reflected on Drawing 5-1. After mining is completed below the now existing road bed, the county road will be moved back to its original, permanent location and constructed as required by Kane County Road Department.



#### 411.110 Surface Land Status/Mine Plan Area

Ownership of the surface rights within and contiguous to the mine plan and permit area is shown on Drawing 1-3. The surface within the permit area is privately owned and leased by Alton Coal Development, LLC. The contiguous lands, outside the permit area, are administered by Bureau of Land Management, along with other private owners, as reflected on Drawing 1-3.

Alton Coal Development believes that the mining of the permit area will enhance the post-mining use of the land. Some gullies and rills will be eliminated. Drainages will be enhanced allowing a better use of land. Wildlife habitat will benefit from the planting and reclamation of lands for that purpose. Reclamation will be constructed to the final landform shown on Drawings 5-35 and 5-36.

#### 411.120 Land Capability

The Coal Hollow Project Area has several land uses ranging from wildlife habitat to pasture land. Current vegetative cover and productivity of the plant communities in the permit area are shown in Chapter 3 (321.100 *through* 321.200). Soil resources information of the permit area is provided in Chapter 2 (222.100 *through* 222.400). Topography of the area is described in several chapters, but specifically in Chapter 6. Current hydrologic conditions of the permit and adjacent areas to the project are provided in Chapter 7.

#### 411.130 Existing Land Uses/Land Use Classifications

Kane County has zoned the area within the permit boundaries and surrounding area as Agriculture.

#### 411.140 Cultural and Historic Resource Information

A cultural resource inventory was conducted by Montgomery Archaeological Consultants Inc. (MOAC) in June 2005 for Alton Coal Development, LLC. The project area is located in the Sink Valley area in the Alton Amphitheater. This survey covers the entire permit area, approximately 433 acres, all of which are on private property.

The inventory resulted in the documentation of one previously recorded historic/prehistoric site, five previously recorded prehistoric sites, and nine new prehistoric sites. Five eligible sites will be affected by mining operations. These five locations will require a data recovery treatment plan.

Appendix 4-1, Cultural resource inventory of Alton Coal Developments Sink Valley-Alton Amphitheater Project Area, Kane County, Utah, reflects maps, photographs, and results of the inventory.

#### 411.141 Cultural and Historic Resources Maps

Cultural and Historic Resource Maps are included in Appendix 4-1.

##### 411.141.1 Boundaries of Public Parks

There are no public parks in the permit area. There are known archeological sites as reflected in the Montgomery survey, Appendix 4-1.

##### 411.141.2 Cemeteries Located within 100 feet

No cemeteries exist within the permit area or within 100 feet of the permit area or within any adjacent area subject to potential impacts.

##### 411.141.3 Trails, Wild and Scenic Rivers System

No trails or wild and scenic rivers or study area rivers exist within the permit area or areas of potential impact.

#### 411.142 Coordination with the State Historic Preservation Officer

Coordination with the State Historic Preservation Officer (SHPO) will take place prior to any mining. Clearances will be obtained through SHPO by means of Phase Testing, a data recovery treatment plan, or other appropriate mitigation processes.

The Permit area is not within any publicly owned parks or places listed on the National Register of Historic Places.

##### 411.142.1 Adverse Impacts on publicly owned parks or places listed on the National Register of Historic Places.

The Permit area is not within any publicly owned parks or places listed on the National Register of Historic Places.

##### 411.142.2 Valid Existing Rights / Joint Agency Approval

The Permit area is not within any publicly owned parks or places listed on the National Register of Historic Places.

#### 411.143 Mining on Historical Resources

Alton Coal Development determines there will be no significant effects of mining on historical resources. Alton Coal Development proposes there will be no impacts on mining on human values, cultural or historical.

#### 411.143.1 Collection of Additional Information

Alton Coal Development will continue to conduct field investigations when determined needed.

A map showing the survey area already investigated for archeological importance is included in Appendix 4-1.

#### 411.200 Previous Mining

There has been no mining within the permit area.

### 412 **RECLAMATION PLAN**

#### 412. Reclamation & Land Use

##### 412.100. Postmining Land Use Plan

A description of the proposed land use following reclamation of the mined areas has been provided in this section of the MRP. The discussion includes the utility and capacity of the reclaimed land and the relationship of the proposed uses to existing land use policies and plans, as well as the desires of the current landowners.

412.110. Postmining land use will be achieved by following the detailed reclamation plan included in the MRP. The reclamation plan includes descriptions for structure removal, excess spoil and mine waste disposal, backfilling, compacting, and regrading (Chapter 5); soil handling and stabilization (Chapter 2); revegetation techniques (Chapter 3); measures to control sediments during mining and reclamation activities (Chapter 7).

##### 412.120. Grazing Management Plans

Consultations have been conducted with all surface landowners of the permit area to provide comments in the plan and attain their expectations for the desired postmining land use. According to the landowners, grazing and wildlife habitat would be the desired postmining land use, with emphasis on grazing by domestic livestock in most of the pasture land areas (these areas are shown on Vegetation Map, Drawing 3-1). An exception to this plan is that one area that is currently pasture land will be reseeded appropriately to provide additional habitat for sage grouse, a sensitive species in the area. More about this plan is provided below.

The two landowners of the permit area are: Richard Dame and Burton Pugh (see Land Ownership Map, Drawing 1-3). Descriptions of current management practices as well as future grazing plans for the postmining land use have been provided below.

## **Management Plan for Richard Dame Property**

The portion of land in the permit area owned by Mr. Richard Dame currently provides forage for domestic livestock and some wildlife species. This land is comprised mostly of unirrigated pasture land but also supports some native stands of pinyon juniper and sagebrush communities (see Vegetation Map 3-1).

Mr. Dame has expressed the desire to return his property to pasture land that focuses on domestic livestock, but also included some plant species for wildlife habitat. In doing so, the revegetation seed mix is composed primarily of native and introduced grasses and forbs, with no woody species to be planted (for the seed mixture refer to Chapter 3, Table 3-19).

The livestock currently sustained on Mr. Dame property are mostly cattle, with some horses. The animals are kept in the pastures from April through November of each year. A management plan to support this same postmining land use has been designed so that the property will adequately support the animals desired by the landowner and will not be over-grazed.

The management plan suggests that **1.125 animals/month/acre** could reasonably be sustained on the property. This figure was derived from the *Average Animal Weight Method* (Pratt and Rasmussen) and is based on raising 1 cow weighing 1,000 lbs and her calf on pastures that have an annual biomass productivity of 1,800 lbs/acre. It conservatively estimates that one-half of the production will be consumed ("take half, leave half" rationale). Therefore, the total number of animals allowed on the property in the postmining land use management plan can be calculated by multiplying the estimated number of animals/month/acre by the number of pasture land acres available by the number of months the animals are maintained on a given pasture.

A copy of this management plan signed by the landowners along with their comments are provided in Appendix 4-3 and 4-4 of this chapter of the MRP.

## **Management Plan for Burton Pugh Property**

The land in the permit area owned by Mr. Pugh also provides forage for domestic livestock and wildlife habitat. This land is comprised of unirrigated pasture land, meadows, sagebrush/grass, pinyon juniper, and oak brush communities (see Vegetation Map 3-1). The livestock currently sustained on Mr. Pughes pasture land property are mostly cattle, but sometimes horses are kept on the property. The animals are supported in the pastures from April through November of the year. A management plan to support a similar postmining land use has been designed so that the property will not be over-grazed, yet support the animals desired by the landowner.

Following mining and reclamation activities, Mr. Pugh has expressed the desire for his land to be returned to its current or better condition for livestock and wildlife habitat.

In accomplishing this, the pasture lands will be revegetated to focus on domestic livestock, but the seed mixtures will also include some plant species used by the resident wildlife species. Because it has been postulated that encroachment of juniper trees into the valley in recent years has had a negative effect on the local sage grouse populations, the revegetation plan for these areas will also focus on other plant species, or species that could have a positive effect on the birds as well as provide good forage for domestic livestock. The revegetation seed mixes for the Pugh property are shown in Chapter 3 including: the sagebrush/grass (Table 3-17), meadows (Table 3-18), pasture lands (Table 3-19), oakbrush (Table 3-21), and pinyon-juniper communities (Table 3-23).

The management plan for Mr. Pugh suggests that **1.125 animals/month/acre** could reasonably be sustained on the property. This figure was derived from the *Average Animal Weight Method* (Pratt and Rasmussen 2001) and is based on raising 1 cow weighing 1,000 lbs and her calf on pastures that have an annual biomass productivity of 1,800 lbs/acre. It conservatively estimates that one-half of the production will be consumed ("take half, leave half" rationale). Therefore, the total number of animals allowed on the property in the postmining land use management plan can be calculated by multiplying the estimated number of animals/monthly acre by the number of pasture land acres available by the number of months the animals are maintained on a given pasture.

There is, however, one area within Mr. Pughes' property that currently supports pasture land, but once it is reclaimed, it will be seeded to a mixture that would be conducive to sage grouse enhancement. This field can easily be located on Drawing 3-1 because it is the only pasture land located west of the county road. This land will be seeded with the sagebrush/grass mixture (Chapter 3, Table 3-17).

A copy of this management plan signed by the landowners along with their comments have been provided in the Appendix 4-3 and 4-4 of this chapter of the MRP.

#### 412.130. Post-Mining Land Use Changes

With the exception of improvement of the current pasture lands, and the area mentioned above that will be seeded with plant species that enhances sage grouse habitat, there will be no changes from the pre-mining land use for the postmining land uses.

#### 412.140. Land Use Considerations

Considerations for postmining land use have been made by consulting with the surface landowners for the pasture lands as well as the native plant communities that will be impacted by the mining activities. The landowners have special concerns regarding plant species for livestock and others for wildlife. Basically, the pasture lands will be planted with grass and forb species good for livestock and wildlife

species, and will not include any woody species. At final reclamation, the natural plant communities disturbed by mining will be seeded with native plants, some of which will have special considerations for habitat improvement for the sensitive bird, sage grouse.

Additionally, considerations were made to insure compliance with all state and federal regulations for postmining land use and reclamation. For example, all plant communities that will be impacted by mining will quantitatively sampled beforehand and compared to similar communities that will not be affected. The unaffected communities will remain undisturbed and will be used as "reference areas", or future standard for revegetation success at the time of final reclamation. Nonetheless, reference areas for the pasture lands will also be established for revegetation success standards.

#### 412.200. Land Owner or Surface Manager Comments

The postmining land use plans that have been signed by the landowners and are included in the appendix of this chapter. Also included is a page for "Comments" by the landowners.

#### 412.300. Suitability and Compatibility

The final fills containing excess spoil will be suitable for reclamation and revegetation and are compatible with the natural surroundings and the approved postmining land use. The final fill slopes will be regraded to a maximum angle of 3h: 1v (33 percent). The slopes will be revegetated and drainage will be established in a manner similar to the original flow patterns. These slopes will be suitable for grazing and wildlife habitat. The design for this excess spoil and the final landform can be viewed on Drawings 5-35 and 5-36. The construction and reclamation practices for the excess spoil are further explained in Chapter 5.

### 413 **PERFORMANCE STANDARDS**

#### 413.100. Postmining Land Use

All disturbed areas will be restored in a timely manner to conditions that are capable of supporting the uses that were present before any mining occurred. In some cases improvement of the land will be achieved (see Postmining Land Use Plan above).

#### 413.200. Determining Premining Uses of Land

The pre-mining uses of land in which the postmining land use is compared have been previously described (see Postmining Land Use Plan above).

#### 413.300. Criteria for Alternative Postmining Land Uses

Other than improvements to the existing land described above, the land will be returned to its pre-mining conditions.

#### 420 **AIR QUALITY**

#### 421 **CLEAN AIR ACT**

Coal mining and reclamation operations will be conducted in compliance with the requirements for the Clean Air Act and Any other applicable Utah or Federal statutes and regulations containing air quality standards.

#### 422 **UTAH BUREAU OF AIR QUALITY**

Alton Coal Development, LLC has retained JBR Environmental Consultants to prepare a Notice of Intent (NOI) for a new source at the Coal Hollow Project. This application has been completed and was submitted on May 8, 2007. JBR has been coordinating preparation of the NOI with Tom Bradley and Jon Black of the Utah Division of Air Quality. A copy of the NOI is included as part of this application as Appendix 4-2. Upon approval of the NOI, the Executive Secretary of the Utah Air Quality Board will issue an Approval Order for a new source, which must be obtained before mine construction proceeds.

#### 423.100- 200 **AIR POLLUTION CONTROL PLAN**

Production rates at the Coal Hollow Mine are expected to exceed 1,000,000 tons of coal per year. The Notice of Intent provided as Appendix 4-2 includes proposed air pollution controls and monitoring. This document includes sections detailing Best Available Control Technology Analysis, Air Pollution Control Equipment Information, Limitations/Test Procedures and Federal Limitations/Requirements.

The Coal Hollow Mine will utilize the following methods for controlling fugitive dust emissions in the active mining areas:

- Temporary topsoil and subsoil stockpiles: These piles will be seeded with a temporary seed mix to stabilize soils for protection against wind erosion and dust emissions.
- Reclamation: Reclamation surfaces will be revegetated at the earliest, practical opportunity. Seeding of the reclaim are planned to occur in the fall and spring. ACD plans to minimize the active mining surface area exposed at any one time by dividing the project area into small, manageable pits that can be reclaimed concurrently with mining operations. Drawings 5-17 through 5-19 and 5-38 detail the anticipated steps for the reclamation sequence within the project area.

Mulch will be placed on the seedbed surface once soil amendments have been incorporated and seeding has been accomplished in areas that will be reclaimed to native plant communities (areas used for pasture lands will not be mulched). The mulch should control erosion by wind and water, decrease evaporation and seed predation, and increase survivability of the seeded species. Like the seeding methods, mulch will be applied with a variety of techniques and materials depending on the reclaimed area.

- Roads: All unpaved roads and other unpaved operational areas that are used by mobile equipment shall have water sprayed and/or chemically treated to control fugitive dust emissions. Road surfaces will be graded to stabilize/remove dust-forming debris as required. Areas adjoining primary roads will be stabilized and vegetated as required. Mobile equipment speeds will be controlled to minimize dusting conditions. Speed limits will be posted along all primary haul routes.
- Active Pit Areas: Inherent moisture in the overburden and coal will provide significant fugitive dust control in active mining and overburden removal areas. Should emissions from the active areas exceed the limitations described in Appendix 4-2, water will be applied to these areas as necessary to comply with these standards. Cleared vegetation debris within the mine area will be disposed of by placement in pit backfills.

For details related to air quality monitoring and data evaluation refer to Appendix 4-2, Pages 8 through 10.

#### **424 PLAN FOR FUGITIVE DUST CONTROL PRACTICES**

Proposed mining will exceed 1,000,000 tons annually. Appendix 4-2 and the preceding text contains information related to fugitive dust control practices and proposed air quality monitoring.