



**State of Utah**  
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 DIVISION OF OIL, GAS AND MINING

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May 11, 1994

TO: File

FROM: Susan M. White, Senior Reclamation Biologist. *SMW*

RE: Technical Analysis, Sunnyside Refuse and Slurry,  
 Sunnyside Cogeneration Associates, ACT/007/035, Folder  
 #2, Carbon County, Utah

Synopsis

Included below is my review of the Application For Permit Right, dated September 15, 1993. My review includes an analysis and finding of the plan as it pertains to land use, vegetation and wildlife.

Technical Analysis

**HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION**

Regulatory Reference:

Analysis:

Chapter 4 of the permit provides a description of the archeological resource information. Two sites are described as being eligible for nomination to the National Register of Historic Places. These are the coke ovens located within the SCA permit area and a cemetery located approximately 300 feet away from the permit area boundary. Page 400-3 of the permit states that a cultural resource survey of the SCA Permit Area was completed by the Utah Historical Society Preservation Office Survey and Planning staff in the fall of 1993 and is found in Appendix 4-3. This statement is somewhat misleading. Appendix 4-3 contains a letter from SHPO (State Historic Preservation Officer) stating that the permit application had been reviewed and that only the coke ovens had the potential to be affected. No on-site or other survey was conducted by SHPO. The letter stated that there will be a "No Effect," if the ovens are avoided and requested plans for protection of the site. Appendix 4-1 contains what appears to be a historic and archeological survey with site descriptions of each identified cultural or historic site in a survey. No information is given as to the scope, author, or year of the survey.



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Findings:

The information does not meet the requirement of R645-301-411.140. The plan must provide complete reference information for the cultural resource survey in Appendix 4-1.

**VEGETATION RESOURCE INFORMATION**

Regulatory Reference:

Analysis:

Plate 3-3 is a vegetation map which adequately details the vegetation within the permit area. The map does not delineate the vegetation adjacent to the permit area. Adjacent area is required in order to extrapolate the premining vegetation for postmining success standards. The plan states that three vegetation types have been disturbed by mining: Pinyon-Juniper/Grass; Atriplex/Grass; and Sagebrush/Grass. This list is incomplete and must also list the Hydrophytic Vegetation type as being disturbed. A very brief description of the vegetative communities are given on page 300-3 and a detailed description of the Hydrophytic community is given in Appendix 3-1. The communities proposed as a success standard, Pinyon Juniper/Sagebrush and Atriplex/Grass are described in detail according to the Division's Vegetation Information Guidelines in Appendix 3-3.

The Pinyon/Juniper/Sagebrush community had 37 percent vegetative cover. The dominant vegetation consisted of of Big sagebrush, Pinyon pine, and Indian ricegrass. The Atriplex/Grass community had 30 percent vegetative cover. Dominant species in this community aare Shadscale and Salina wildrye.

Findings:

The vegetation adjacent to the permit area must be mapped as required by R645-301-323.400.

**FISH AND WILDLIFE RESOURCE INFORMATION**

Regulatory Reference:

Analysis:

Fish and wildlife resource information is given on page 300-4 through 300-13, Figure 3-4, and Appendix 3-6. The permit

discusses wildlife in the region as recited in nearly every coal mining permit. And for some reason the permittee thought it was "important to note that bobcats occasionally kill the young of big game". The category "Macrophyte" is used in this section. Phyte pertains to plants and macro means large. The meaning of macrophyte in this section of the permit is unclear and must be defined or deleted. Specific site information is also given. Appendix 3-6 reports on a fish inventory conducted in September of 1993 in Icelander Creek. Speckled dace were found close to the permit area boundary. Further downstream the less common Flannelmouth sucker was included in the inventory. In May 1994, a second fish survey will be conducted to assess potential breeding species.

The U. S. Fish and Wildlife Service (USFWS) has stated that five endangered species may occur in the area of influence of the project site (Figure 3-2). These are Bald eagle, Humpback chub, Bonytail chub, Colorado squawfish, and Razorback sucker. Because the watershed is within the Colorado River basin, the USFWS has determined that any water depletion creates a "may affect" on these endangered fish. The USFWS also stated that Canyon Sweet-vetch may occur within the permit area. Canyon Sweet-vetch is a Category 2 species, which has for no legal protection. Pioneer Environmental Consulting performed an on-site survey and analyzed existing information and interviewed local biologists concerning the Bald eagle, other raptors and the Canyon sweet-vetch (Figure 3-4). Pioneer concluded that the SCA project would have no effect on migrant wintering bald eagles.

#### Findings:

The term macrophyte must be defined or deleted prior to acceptance of this section.

#### **LAND-USE RESOURCE INFORMATION**

##### Regulatory Reference:

##### Analysis:

Land use resource information is given in Chapter 4 of the plan. Land was used primarily for wildlife habitat prior to mining (page 400-2). Currently the land use is dominated by a refuse pile (page 400-3).

Statements are made that the area is generally too steep for livestock or farming use, although surrounding areas are used for those purposes. The SCS (Figure 3-5) made an assessment of the

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vegetation reference areas which should represent the site prior to disturbance. Vegetation productivity was 900 pounds per acre for the Pinyon/Juniper/Grass and 500 pounds per acre for the Atriplex/Grass site. The SCS stated that "the overall view of the area that has been disturbed is good." And that range condition is considered good or high.

Previous mining activity was confined to operations related to coal mine waste disposal. The plan refers to the current mining methods as re-mining. The use of the term re-mining is used loosely and does not meet the definition of re-mining as defined by the Division. Current use is surface mining of coal mine waste.

No land use classifications under local law of the permit area or adjacent areas is given in the plan.

#### Findings:

The land use classification under local law of the permit area and adjacent areas must be stated in the plan as required in R645-301-411.130.

### **PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES**

#### Analysis:

Site 42Cb325, the coke ovens, have potential to be nominated to the National Register of Historic Places. Approximately 26 coke ovens remain on site from the original 800 (page 400-4). The coke ovens are located on the east side of the refuse pile. Avoidance is the planned protection for these ovens. The site will be staked and flagged to avoid activity within the marked area. At this time no ground disturbance activities are planned that will impact this site (page 400-5).

#### Findings:

The plan meets the minimum regulatory requirements of this section.

### **FISH AND WILDLIFE INFORMATION**

#### Regulatory Reference:

*Protection and enhancement plan.*

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The plan states that the project site and associated fish and wildlife species have been impacted for over 80 years since mining began in the Sunnyside area. And that once reclamation is achieved, the displaced wildlife will return. SCA has committed to interim revegetation and contemporaneous revegetation.

SCA has committed to an education program for all employees associated with the surface mining activities (page 300-14). This is a general commitment that is easily overlooked unless specific dates of training are given and a new employee program is specified. SCA must provide a schedule of actual training times. DWR has assisted in training programs for other mining operations and should be contacted.

*Endangered and threatened species.*

Figure 3-4, Biological Assessment for the Bald Eagle Associated with the Sunnyside Cogeneration Project Environmental Impact Statement PA93-1 and Biological Consideration for Other Sensitive Species, discusses the potential impact of the mining project on threatened and endangered species. The plan commits to notification if threatened or endangered species are sighted on the SCA permit area (page 300-14).

*Bald and golden eagles.*

Contained in Figure 3-4, the statement is made that "EWP has informed PIONEER that there may be existing power transmission lines traversing the project property which may not incorporate raptor protection measures". The plan must designate those power lines which are not raptor safe. The statement is made that SCA does not own or utilize these lines, however ownership should be noted. SCA has committed to power line construction that will be raptor safe (page 300-14).

*Wetlands and habitats of unusually high value for fish and wildlife.*

The seep area is considered a high value habitat. Appendix 3-2, Iron and TDS Report, discusses the high concentration of iron and TDS in the seep water which is potentially toxic to fish. The source water is assumed to be from the slurry ponds. Since the closure of the Sunnyside Mines and subsequent non use of the slurry ponds, the source of water given time should dry. SCA has committed to a water sampling program for the seep waters.

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Findings:

The requirements of R645-301-333 will be met when the plan adequately states methods for employee wildlife protection educational training. The methods must include times, dates and documentation of DWR correspondence. New employee training must be described as to how, where and whom will be educated.

R645-301-358.510. requires that all powerlines within the permit area be designed and constructed to minimize electrocution hazards to raptors. The plan states that unsafe powerlines may be in the permit area but are not under SCA ownership or use. Clarification is required in order to determine compliance. Unsafe lines must be identified and described as to ownership.

**POSTMINING LAND USES**

Regulatory Reference:

Analysis:

The stated post mining land use is wildlife habitat. Other inferred post mining land use is of historical value. The coke ovens are to be deeded to the City of Sunnyside (page 400-11). The permit states that other uses of the area such as agriculture and livestock grazing are not practicable because of lack of water and steep slopes. Figure 4-3 contains a letter from the land owner, Sunnyside Cogeneration Associates, concerning the proposed postmining land use. The letter basically states that any use proposed in the plan is agreeable to them.

The plan fails to give any details as to the extent of the expected post mining land use, such as expected species of wildlife which may use the reclaimed areas. Specific habitat requirements of the identified wildlife species are required in order to determine if the reclamation plan will meet the post-mining land use.

The plan states that the coke ovens will be deeded to the City of Sunnyside. However, no agreement or comments from the City of Sunnyside have been provided. No details have been given as to the exact size of the area or condition of the land which will be given to the City.

Findings:

R645-301-412.110 requires that the plan explain how the proposed postmining land use is to be achieved and the necessary

support activities which may be needed to achieve the proposed land use. The plan fails to provide details as to the proposed wildlife species use and their specific habitat requirements. The plan also fails to provide specific detail as to the disposition of the coke ovens and comments from the City of Sunnyside and SHPO.

#### PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

##### Analysis:

Comments are made in the plan (page 300-6) that no polluted waters enter Iceland Creek from the permit area. This statement is not supported by the water monitoring data from the seep area. The plan must describe measures taken to avoid disturbances, enhance where practicable, restore, or replace, wetlands and riparian areas.

1. The plan identifies the seed mixture to be used in revegetation of the reclaimed areas on map 10-1. The seed mixture provides for a variety of grass, forb and shrub species which have a high value as big game forage use. The seed mixture includes Rubber Rabbitbrush in both seed mixtures. Table 3-1, Value of Revegetation Species to Deer and Elk for the Sunnyside Mine, list Rubber Rabbitbrush in the low to moderate range as forage value. Given the tendency of Rabbitbrush to become weedy, the low forage value, and the abundance of seed on site, this species should be either greatly reduced in the seed mixture or eliminated. *Atriplex canescens*, which is proposed for the Atriplex/Grass seed mixture, has been successfully seeded at the Horse Canyon Mine and is known to be very palatable to a variety of wildlife. This species should also be included in the Pinyon/Juniper/Sagebrush seed mixture.

R645-301-342.100 clearly requires the plan to contain wildlife enhancement measures. The plan alludes to Pinyon pine and Juniper transplants and rock piles (page 900-18), however their value to wildlife is not described. Areas in which Pinyon and Juniper will be planted are not detailed and the rock piles intended users, size, shape and placement are not described.

##### Findings:

R645-301-342.100 requires the plan to describe measures taken to avoid disturbances to, enhance where practicable, restore, or replace wetlands and riparian areas. The water monitoring data from the seep area shows that wetland and

riparian areas are being polluted. However, the plan does not address this and instead states that no polluted waters enter Icelander Creek. The requirements of R645-301-342.100 must be addressed as they concern the seep area. The plan must also include a description of the terrestrial wildlife enhancement measures.

R645-301-342.200 requires that plant species to be used on reclaimed areas be selected for their ability to support wildlife. The Pinyon/Juniper/Sagebrush seed mixture must be modified to reduce or completely delete Rabbitbrush. Fourwing saltbush must be added to the mixture. The Atriplex/Grass seed mixture must be modified to reduce or eliminate Rabbitbrush.

#### **CONTEMPORANEOUS RECLAMATION**

##### Analysis:

Areas of contemporaneous reclamation are designated on Plate 9-3. Reclamation will proceed as described in Chapter 9. Page 900-24 commits to the reclamation of areas 2 acres or larger as they become available.

##### Findings:

The plan meets the minimum regulatory requirements of this section.

#### **REVEGETATION**

##### Analysis:

*Revegetation: General requirements.*

The details of the revegetation procedures are given on page 900-17 to 900-20. The seed mixtures are specified on Plate 10-1. A Pinyon/Juniper/Sagebrush and Atriplex/Grass are the two seed mixtures proposed for final reclamation. Basically the Atriplex/Grass mixture will be used on the outslopes of the refuse embankment and roadcut. The remainder of the site will be seeded with the Pinyon/Juniper/Sagebrush mixture. The seed mixture is composed primarily of species native to the area. Slender wheatgrass (*Elymus trachycaulum*) is not included in the seed mixture. Horse Canyon used this species when seeding in 1991 and early data indicate high occurrence on site. The plan should include this species in both seed mixtures. Gardener saltbush (*Atriplex gardneri* var. *cuneata*) has shown successful seeding results on heavy clay soils in Carbon and Emery Counties

and should be added to the Atriplex/Grass seed mixture.

All seeding will be done by broadcast methods. Either hydroseeding or hand broadcasting methods. All seeded areas will be raked to ensure good soil/seed contact (page 900-19). This method has proven to be acceptable to the Division in past reclamation projects. A commitment is made to limit the amount of time the seed is in the hydroseeder to 30 minutes (page 900-17).

A commitment is made in the plan to leave the site in a roughened state (page 900-17). This roughened state has proven to be very important to the success of the reclamation project. Therefore, this commitment must be further defined and the dimensions of the roughness given (for example 1 to 2 feet deep by 3 feet wide depression every 4 feet or discontinuous deep ripping on the contour). Techniques must be described for the various slopes encountered. The commitment must also be made that the last pass on any surface by equipment be made on the contour on all slopes less than 2:1. The out slopes of the first and second lift of the refuse pile shows evidence of equipment having run vertically on the slope and success has been marginal.

*Revegetation: Timing.*

The plan commits to planting between October 1st and November 30 (page 900-17). This is the normally accepted time of year to be seeding in the region. The plan does not provide for a contingency if seeding is not completed by November 30. A contingency plan should include some type of interim erosion control such as seeding with an annual grain, mulching or netting until the seeding window has opened.

*Revegetation: Mulching and other soil stabilizing practices.*

The plan commits to applying 2 tons per acre wood fiber plus tackifier by a hydroseeder as a mulch (page 900-20) on slopes less than 2:1. Hydromulching has been effective in controlling erosion and stabilizing the soil surface on slopes less than 2:1. The success of hydromulch and subsequent seed germination has been variable in the arid west. The Sunnyside area should receive adequate precipitation for the use of hydromulch. Long fiber mulch such as alfalfa or grass hay have been successfully used for erosion control and seed germination in Carbon County. Erosion control matting will be used on all slopes 2:1 or steeper. Erosion control matting is essential for stabilizing soil surface and seeded slopes on these steep areas.

*Revegetation: Standards for success.*

The success of the revegetation will be compared to two reference areas (Appendix 3-3, Table 6 is missing). The majority of the site will be compared with the Pinyon/Juniper/Sagebrush reference area (Plate 10-1). The embankments of the refuse pile and the south facing ridge line will meet the Atriplex/Grass reference area standard. Quantitative monitoring will be done in years 2,3,5,9 and 10 for vegetative cover and woody plant density. Year 5 sampling will evaluate the 80/60 rule for shrub establishment.

The minimum tree and shrub numbers used for determining success on both the Pinyon/Juniper/Sagebrush and Atriplex/Grass areas is recommended to be 1000 per acre. The Division has set this standard based on existing shrub densities (1319/acre on the Atriplex/Grass reference area and 2923/acre on the Pinyon/Juniper/Sagebrush reference area) within the region and similar standards required by other coal mines within the area. The Division is currently waiting for concurrence from other agencies.

An extensive evaluation was made in 1992 of Sunnyside revegetation efforts. The data is reported in Appendix 3-5. Pages 21 to 30 are missing from the report, which qualify my findings. Vegetation data was collected and reported from five sites (excluding Sacco Test Plot) in the SCA permit area. Of those five sites, two would meet the vegetation cover requirement of the reference area and none would meet the diversity requirement. Vegetative cover has a high annual weed component which was not included in my evaluation of the seeding. The fact that weed seed is so available on site and in topsoil piles can be very limiting to revegetation success. The statement is made on page 900-23 that mulching during seeding will control weed emergence. The operator must explain this method of weed control and describe how the mulch will selectively prevent weed seed from germinating and not desirable seed.

Sacco Flats test plots were designed to test the minimum amount of plant growth medium required over refuse to meet the vegetation success standards. The design included exposed coarse refuse, topsoil and up to 48 inches of borrow material. The test plots were installed in 1983(?). The 1992 vegetation inventory (Appendix 3-5) data summary demonstrate that 48 inches of borrow material produced the greatest perennial cover (25 percent). Perennial cover decreased with a corresponding decrease in plant growth medium over coarse refuse. The most successful plot, 48 inches of borrow, is still not sufficient to meet the revegetation success standard for bond release. This fact makes a finding of reclaimability impossible to make. The data shows that the greater the amount of material over the coarse refuse

material the greater the perennial cover. The operator must investigate using more than 48 inches of growth medium over the refuse material and/or other treatment methods necessary to meet the revegetation success standard.

The plan includes (page 900-22 and 900-23) maintenance related commitments. The operator should be aware that any maintenance or replanting after reclamation is completed and during the liability period has the potential to reset the bond clock as described in R645-301-357.100. The liability period for this site is a minimum of ten years.

#### Findings:

R645-301-341.210 will be met when Slender wheatgrass is added to both seed mixtures and Gardner saltbush is added to the Atriplex/Grass seed mixture. Additionally, from the previous section, Fourwing saltbush must be added and Rabbitbrush greatly reduced or eliminated from the seed mixtures.

Surface roughness is extremely important to revegetation success. Therefore, the plan must provide specific details of the roughness as required by R645-301-341.220. A commitment must also be made to require the last pass by equipment during reclamation be made on the contour on all slopes less than 2:1.

The plan must describe a contingency for stabilizing areas which are not seeded within the seeding window as described in R645-301-354. The plan may include annual grain seeding, mulching, netting or other methods of control.

The plan must commit to a success standard of 1000 shrub or trees per acre as required by R645-301-356.231.

The plan must include Table 6 to Appendix 3-3 and pages 21 to 30 of Appendix 3-5.

The plan does not demonstrate that the R645-301-350 standards for revegetation success can be met. In fact, the plan demonstrates the contrary. The plan must include steps according to R645-301-341.300 to demonstrate that revegetation is feasible. These steps must address how the coarse refuse material will be revegetated since the initial test methods did not produce vegetation that met success standards. The plan must also include test methods to demonstrate that species diversity can be met. Weed control on topsoil piles and borrow areas must be described and methods to reduce weed competition during revegetation must be demonstrated.