

1997
UTAH BOARD OF OIL, GAS AND MINING
EARTH DAY AWARDS

Nomination Form

Nominee Information

Company Name Amax Coal Company

Address P. O. Drawer PMC

City, State, Zip Price, Utah 84501

Contact Person Johnny Pappas

Phone 801-637-2875

Site Name Castle Gate Mine, Hardscrabble Canyon

Location Hardscrabble Canyon northwest of Helper, Utah

Activity and Category (Please check one activity and one category)

Activity

- Oil & Gas
 Minerals
 Coal

Category

- Environmental improvement to an active mine site, drilling or recovery site, or field
 Outstanding results following applications of innovative environmental technology
 Outstanding final reclamation or site restoration
 Other

Nominated By

Name Paul Baker

Address Division of Oil, Gas and Mining, 1594 West North Temple

City, State, Zip Salt Lake City, Utah 84114

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Nomination Summary (attach additional sheets, photos, etc., as necessary)

Amax Coal Company has gone far beyond regulatory requirements in its reclamation of Hardscrabble Canyon. Although the reclamation is not yet complete, the specific methods used and extra effort are deserving of recognition.

Amax originally had an approved reclamation plan that minimally satisfied regulatory requirements. Recognizing that this plan met regulatory requirements but that reclamation might fail, Amax had the foresight to completely change a plan that had only been approved about two years earlier.

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This was done at considerable expense since it included sampling coal refuse and soil in several locations and at several depths and reworking the engineering drawings in accordance with these results.

Hardscrabble Canyon is in critical deer and elk winter range, so revegetation with proper species is very important. During the winter, one can always find elk and deer sign within the disturbed area with numerous animals peering down from the slopes above the mine. Amax has done everything in its power to assure successful revegetation.

The canyon has had coal mining operations since the late 1800's. Among these operations were several mines, a coal cleaning plant, bathhouses, offices, a warehouse, and truck loading facilities. In addition to the refuse pile at the upper end of the canyon, coal refuse was in large areas almost throughout the canyon. Notably, a side canyon called "Dog Flat" had been filled up to about fifty feet deep with refuse, and one of the sediment ponds was partly incised in coal waste with nearly all of one embankment constructed of refuse.

Dog Flat was a large flat area with a very steep drop to the main part of Hardscrabble Canyon. The original approved plan was to leave the refuse in Dog Flat, but Amax decided reclamation would be much better if the canyon was restored to a more natural configuration. About 15,000 cubic yards of refuse was pulled out of the canyon and graded into other parts of Hardscrabble Canyon. This exposed a natural rock outcrop that blends very well with the surrounding area. Also, the Division expects the drainage control system to function much better with the channel sloping down gradually rather than having it flat with a very steep drop at the end.

The site was disturbed before 1977, so no topsoil was salvaged or available for reclamation. Initial soil investigations identified enough substitute topsoil to cover the entire area with an average of nine inches of soil. However, Amax, the contractor (Minchey Digging), and the Division worked together to identify and test additional substitute topsoil so the average depth of coverage will be about two feet. The contractor dug several pits to find this material, and Amax was willing to pay for soil tests to ensure the material was suitable. Some soil was found to have very high salt concentrations, so it was buried at least four feet deep. The contractor will be moving approximately 30,000 cubic yards of soil material in addition to the 20,270 cubic yards of soil discussed in the plan.

Rather than wrapping the site with hundreds of feet of silt fence, Amax has chosen to use structure-free sediment control measures. Amax is having the area gouged with numerous (about 2-3000 per acre) basins about two feet wide, four feet long, and two feet deep. Past experience has shown these to be more effective at controlling sediment and promoting vegetation establishment than any other method of which the Division is aware.

The site is being mulched with a combination of straw mulch and hydromulch to help reduce erosion. In addition to the erosion control this provides, this combination of mulching treatments was shown to have the best revegetation in test plots at another mine in Utah.

Because the site was disturbed before 1977, there was no consideration for how highwalls and cuts were located and whether it would be feasible to reclaim them. Even though it has been impossible to completely backfill all highwalls and cut slopes, Amax and the contractor have done superb work to make the remaining cuts and highwalls look more natural. Large rocks have been placed at the bottom of two of these areas, and they look like natural rockfalls. This enhances the appearance,

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improves vegetation establishment in the immediate area, and creates wildlife habitat. In one side canyon, Amax made numerous rock piles that are being used by small animals.

Within the disturbed area, there are some areas with native vegetation and a few areas with nearly full-grown cottonwoods that were apparently planted along the channel. The permittee and contractor have altered the original grading plans in order to leave as many of these areas as possible.

The regulations require the operator to establish a channel capable of conveying the runoff from a 100-year, 6-hour precipitation event. Instead, Amax decided to build a channel capable of carrying the flow from a 100-year, 24-hour storm at an additional cost of about \$26,000. However, Amax feels the long-term benefits outweigh the additional costs. In addition, the channel was extended farther up the canyon than called for in the original designs. This was done to better link two sections of the channel but resulted in having to move a few extra thousand cubic yards of coal waste.

Hardscrabble Canyon is a model for how pre-law sites in Utah should be reclaimed. Amax has spent more money than anticipated for this project, but the costs should be repaid in lower maintenance and better revegetation of the site. The postmining land uses of wildlife habitat and grazing will be enhanced while providing more stable channels and better downstream water quality.

Return by January 31, 1997 to: Earth Day Awards, Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, Box 145801, Salt Lake City, Utah, 84114-5801. Phone (801) 538-5327 Fax (801) 359-3940